Teck Coal Limited
Water Quality Management
P.O. Box 1777
421 Pine Avenue
Sparwood, B.C. Canada V0B 2G0

+1 250 425 8086 Tel
www.teck.com

Technical Report Overview

Report: 2021 Annual Report: Elk Valley Regional and Site-Specific Groundwater Monitoring Programs

Overview: This report presents the 2021 results of the regional groundwater monitoring program and the site-specific programs at Fording River Operations, Greenhills Operations, Line Creek Operations, Elkview Operations, and Coal Mountain mine required under Sections 8.2 and 9.4 of Permit 107517. This report summarizes the results of groundwater quality and quantity in 2021 and compares them to relevant screening values and historical data. It also compares groundwater chemistry to nearby surface water chemistry to understand groundwater transport pathways and groundwater/surface water interaction.

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

For More Information
If you have questions regarding this report, please:

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

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

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2021 Annual Report: Elk Valley Regional and Site-Specific Groundwater Monitoring Programs

Fording River Operations
Greenhills Operations
Line Creek Operations
Elkview Operations
Coal Mountain mine
Regional Groundwater Monitoring Program

VOLUME II OF IV

Prepared for:

Teck Coal Limited

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Appendix VII

Background Groundwater Monitoring 2021 SSGMP and RGMP Report

- Figures
- Tables
- Drawings
- Attachments
  - I. Borehole Logs
  - II. Mann-Kendall Analyses

1 Background Groundwater Monitoring

1.1 Overview

A Background Assessment (BGA) was completed for the 2020 Regional Groundwater Monitoring Program (RGMP) Update (SNC-Lavalin, 2020). The intent of this effort was to select monitoring wells in the Elk Valley that may be representative of background groundwater conditions in unconsolidated sediments and bedrock. As part of the assessment, analytical data were compiled and classified by three well groupings: unconsolidated (overburden) background, bedrock background and mine-influenced.

Based on the above criteria, the BGA determined a subset of monitoring wells considered to represent background conditions:

- FR_MW_CH2
- FR_MW_FRRD1
- FR_MW_CH1A
- LC_PIZDC1307
- LC_PIZDC1308
- GH_MW_BG1A/B/C
- GH_MW-Willow-1D
- GH_MW-Willow-2S/D
- GH_MW-Wolf-1S/D
- GH_MW-Wolf-2D
- LC_PIZP1103
- LC_PIZP1101
- EV_GV4A/B
- CM_MW3-SH/DP
- CM_MW6-DP

From this subset, select wells were chosen for monitoring and sampling at least twice a year. The BGA also determined a list of parameters considered to be mining-related Constituents of Interest (CI), and non-mining related.

Mining-related:

- antimony
- cobalt
- nickel

- nitrite
- total dissolved solids (TDS)
- uranium

Non-mining-related:

- ammonia
- barium
- boron
- fluoride
- lithium
- manganese
- molybdenum
- zinc

Molybdenum has since been identified as a component of antiscalants used for calcite treatment in specific locations (Azimuth, 2021), however no calcite treatment sites are located upgradient of wells included in the background monitoring well network.

In September 2021, two wells (RG_MW_AC1A/B) were installed to assess groundwater conditions upgradient of Elkview Operations (EVO), following recommendations in the 2020 RGMP Annual Report (SNC-Lavalin, 2021). Groundwater analytical results have been included; however, the dataset is insufficient (less than a year worth of data) and will not be evaluated in this report. Additionally, three wells were installed in the Tornado Creek catchment at LCO in December 2021, which will be evaluated for inclusion in the background monitoring well network in future reporting.

1.2 Groundwater Monitoring Well Locations

The 2021 RGMP groundwater monitoring locations were sampled in accordance with the 2017 and 2020 RGMP Updates (SNC-Lavalin, 2017; 2020). Table BG-01 presents the 21 monitoring wells sampled as part of the background network that was initially developed in the 2020 RGMP Update (SNC-Lavalin, 2020) and the two new monitoring wells (RG_MW_AC1A/B) that were installed following recommendations in the 2020 RGMP Annual Report (SNC-Lavalin, 2021). Drawing BG-01 shows the locations of monitoring wells relative to key surface water and mine site features. Additional well details (including screened material descriptions), including RG_MW_AC1A/B, are provided on borehole logs in Attachment I, and summarized in Table BG-01. The following sections provide an update on groundwater conditions in select background monitoring wells.

1.3 Program Modifications

Data for background wells were collected in accordance with recommendations in the 2017 RGMP Update (SNC-Lavalin, 2017) and the BGA completed for the 2020 RGMP Update (SNC-Lavalin, 2020). Additional monitoring wells (RG_MW_AC1A/B) to support the RGMP background well network were installed in Q3 of 2021.

1.4 Results

- A summary of 2021 groundwater monitoring and sampling results for the background monitoring network is presented in Table A with references to supporting information (Drawings, Figures, Tables, and Attachments). Table A has been subdivided by geographical areas relative to Study Areas, as follows: Within Study Area 1 (Fording River Operation [FRO]/Greenhills Operations [GHO] Boundary).
- Upgradient of Study Area 2.
- Upgradient of Study Area 4 (GHO).
- Upgradient of Study Areas 5/6 (Line Creek Operations [LCO]).
- Upgradient of Study Area 7 (Elkview Operations [EVO]).
- Upgradient of Study Area 10.
- Upgradient of Study Area 11 (Coal Mountain mine [CMm]).

Table A: Summary of 2021 Groundwater Monitoring and Sampling Results for Background Monitoring Network

Hydrogeological Information		Description	Reference
Within Study Area 1 (FRO/GHO Boundary)			
Physical Hydrogeology	Monitoring Locations	**Fording River Valley Flank, along Fording River:** FR_MW_FRRD1 (Overburden) **Fording River Valley Flank along Fording River, Chauncy Creek Watershed:** FR_MW_CH1-A (Overburden), FR_MW_CH2 (Overburden)	Drawing BG-01 Tables BG-01 and -02
	Groundwater Elevation Trends	› Seasonal variability, dominated with a freshet dominated regime: – FR_MW_FRRD1 - Higher elevations were measured in the late spring (March to April 2021); and – FR_MW_CH1-A and FR_MW_CH2 – Higher elevations were measured in the early summer (May to June 2021).	Figure BG-01 Table BG-02
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – Background locations FR_MW_FRRD1 and FR_MW_CH2 are not nested wells, and the nested pair for FR_MW_CH1-A was dry, therefore, vertical gradients could not be calculated. › Flow Direction: – Groundwater flow is inferred to be towards the Fording River valley bottom.	Table BG-02 Drawing FR-03 (Appendix VIII)
Chemistry	2021 SSGMP/RGMP Order Constituents Results	› Concentrations of Order Constituents (OC) in groundwater were below primary screening criteria at all monitoring wells in 2021. › Most of the 2021 ranges for OC were within the historical ranges for these wells. The following are exceptions, where the 2021 concentration was the higher than historical: – FR_MW_CH2 (Historical analytical results for groundwater at this location are limited); and ▪ 2021 Q1 Nitrate and Sulphate – this is the first Q1 sample obtained in the dataset and OC concentrations remain one to two orders of magnitude below primary screening standards.	Tables BG-03 and -04 Drawings BG-02 to -05
	Non-Order Mining-Related and Naturally Occurring Constituents	› Primary Screening Criteria Exceedances: – Lithium: FR_MW_CH2 (CSR DW in 2021 Q4); and – Based on the BGA, concentrations of lithium are inferred to be naturally occurring. › Concentrations of all other non-OC in groundwater were below primary screening criteria at all monitoring wells in 2021. › Most of the 2021 ranges for non-OC were within the historical ranges. The following are exceptions, where the 2021 concentration was the higher than historical: – FR_MW_FRRD1: 2021 Q3 TDS; and – FR_MW_CH1-A: 2021 Q1 Uranium. – TDS and uranium were both identified as mining-related in the BGA.	Tables BG-03 and -04
	Mann-Kendall Trend Analysis	› Insufficient data to complete robust Mann-Kendall trend analysis at FR_MW_CH2. › Stable, decreasing or no trend were predominantly calculated for most parameters from each background well, except for: – TDS: FR_MW_FRRD1 (Increasing).	Table B Attachment II
Upgradient of Study Area 2			
Physical Hydrogeology	Monitoring Location	**Along Dry Creek, near the East Tributary:** LC_PIZDC1307 (Overburden, deep), LC_PIZDC1308 (Overburden, shallow).	Drawing BG-01 Tables BG-01 and -02
	Groundwater Elevation Trends	› Seasonal variability, dominated with a freshet dominated regime. – LC_PIZDC1307 and LC_PIZDC1308 – Higher elevations were measured in the early summer (May to June 2021).	Figure BG-02 Table BG-02
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – LC_PIZDC1307 and LC_PIZDC1308 – 0.008 to 0.1 m/m downwards. › Flow Direction: – Groundwater flow is inferred to be parallel to the Dry Creek Valley bottom).	Table BG-02 Drawing LC-02 (Appendix X)
Chemistry	2021 SSGMP/RGMP OC Results	› Concentrations of OC in groundwater were below primary screening criteria at both monitoring wells in 2021. › All concentrations of OC were within the historical ranges at both wells, with the exception of cadmium, which exceeded the historical maximum concentration at LC_PIZDC1308 in Q2.	Tables BG-03 and -04 Drawings BG-02 to -05
	Non-Order Mining-Related and Naturally Occurring Constituents	› Primary Screening Criteria Exceedances: – Barium: LC_PIZDC1307 (Q1 to Q4); – Lithium: LC_PIZDC1307 (Q1 to Q4) and LC_PIZDC1308 (Q1 to Q4); and – Molybdenum: LC_PIZDC1307 (Q1 to Q4).	Tables BG-03 and -04

Table A (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Background Monitoring Network

Hydrogeological Information		Description	Reference
Upgradient of Study Area 2 (Cont'd)			
Chemistry (Cont'd)	Non-Order Mining-Related and Naturally Occurring Constituents (Cont'd)	› Based on the BGA, concentrations of barium, lithium and molybdenum are inferred to be naturally occurring. › Concentrations of all other non-OC in groundwater were below primary screening criteria at all monitoring wells in 2021. › Most of the 2021 ranges for non-OC were within the historical ranges, with one exception: › LC_PIZDC1308: 2021 Q2 Uranium, which exceeded the historical maximum concentration.	
	Mann-Kendall Trend Analysis	› Stable, decreasing or no trend were predominantly calculated for most parameters from each background well, except for: – Uranium: LC_PIZDC1308 (Increasing); and – TDS: LC_PIZDC1308 (Prob. Increasing/Increasing).	Table B Attachment II
Upgradient of Study Area 4 (GHO)			
Physical Hydrogeology	Monitoring Location	› **Elk River Valley Bottom:** GH_MW_BG1A/B/C (All three overburden). › **Elk River Valley Bottom, Willow Creek Watershed:** GH_MW-Willow-1D (Overburden), GH_MW-Willow-2S/D (Both Overburden). › **Elk River Valley Bottom, Wolf Creek Watershed:** GH_MW-Wolf-1S (Overburden), GH_MW-Wolf-1D (Overburden/Bedrock): – GH_MW-Wolf-2D (Overburden/Bedrock).	Drawing BG-01 Tables BG-01 and -02
	Groundwater Elevation Trends	› Seasonal variability, dominated with a freshet dominated regime. – GH_MW-Willow-1D, GH_MW-Willow-2S/D, GH_MW-Wolf-1S/D and GH_MW-Wolf-2D – Higher elevations were measured in the late spring to mid- summer (April to July 2021); and – GH_MW-Wolf-1S is typically dry outside of freshet. The manual groundwater level measurements indicated approximately 7 cm of standing water in the well, which is not considered representative of groundwater in the formation. › GH_MW_BG1A/B/C – Only manual measurements are available, which show relatively stable groundwater elevations until an increase in 2021 Q4 for GH_MW_BG1A.	Figure BG-03 Table BG-02
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – GH_MW_BG1A/B – 0.04 to 0.09 m/m upwards; – GH_MW_BG1B/C – 0.02 to 0.07 m/m downwards (Q1, Q2 & Q4); 0.02 m/m upwards (Q3); – GH_MW-Willow-2S/D – 0.1 to 0.3 m/m downwards; and – GH_MW-Wolf-1S/D – GH_MW-Wolf-1S was dry in 2021 and a gradient could not be calculated. › Flow Direction: – The shallow groundwater flow is inferred to follow topography in Wolf and Willow creek watersheds; deep groundwater flow direction unknown.	Table BG-02
Chemistry	2021 SSGMP/RGMP OC Results	› Concentrations of OC in groundwater were below primary screening criteria at all monitoring wells in 2021, within the historical ranges. – Dissolved selenium concentration fluctuated at GH_MW_BG1A/B/C, discussed further in Section 1.5.	Tables BG-03 and -04 Drawings BG-02 to -05
	Non-Order Mining-Related and Naturally Occurring Constituents	› Primary Screening Criteria Exceedances: – Fluoride: GH_MW-Willow-2D (Q1 to Q4); – Barium: GH_MW-Willow-1D (Q1 to Q4); GH_MW-Willow-2D (Q3); – Lithium: GH_MW_BG1A (Q1 to Q4), GH_MW-Willow-1D (Q1 to Q4), GH_MW-Willow-2D (Q1 to Q4); GH_MW-Willow-2S (Q1, Q2, and Q4), GH_MW-Wolf-1D (Q1 to Q4) and GH_MW-Wolf-2D (Q1 to Q4); – Manganese: GH_MW_BG1A (Q1 to Q4); GH_MW-Wolf-1D (Q1 and Q4); and – Molybdenum: GH_MW-Willow-2D (Q3). › Based on the BGA, concentrations of fluoride, barium, lithium, manganese and molybdenum are inferred to be naturally occurring. › Concentrations of all other non-OC in groundwater were below primary screening criteria at all monitoring wells in 2021, and within historical ranges.	Tables BG-03 and -04
	Mann-Kendall Trend Analysis	› Insufficient data to complete robust Mann-Kendall trend analysis at GH_MW_BG1A/B/C. › Stable, decreasing or no trend were predominantly calculated for parameters for all other background wells.	Table B Attachment II

Table A (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Background Monitoring Network

Hydrogeological Information		Description	Reference
Upgradient of Study Areas 5/6 (LCO)			
Physical Hydrogeology	Monitoring Location	**Fording River Valley Bottom, LCO Processing Plant Area:** LC_PIZP1103 (Overburden), LC_PIZP1101 (Overburden).	Drawing BG-01 Tables BG-01
	Groundwater Elevation Trends	› Groundwater elevations are relatively consistent, with minimal fluctuations.	Figure BG-03 Table BG-02
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – The background locations upgradient of Study Areas 5/6 are not nested wells, therefore, vertical gradients were not calculated. › Flow Direction: – Shallow groundwater flow is inferred to follow topography. To the northeast of the Process Plant Area, groundwater likely recharges through infiltration from Line Creek over the alluvial fan (refer to in-text Table E within the LCO report).	Table BG-02, Drawing LC-02
Chemistry	2021 SSGMP/RGMP OC Results	› Concentrations of OC in groundwater were below primary screening criteria at all monitoring wells in 2021, within historical ranges.	Tables BG-03 and -04 Drawings BG-02 to -05
	Non-Order Mining-Related and Naturally Occurring Constituents	› Primary Screening Criteria Exceedances: – Fluoride: LC_PIZP1101 (Q1 to Q4); – Boron: LC_PIZP1103 (Q3); – Lithium: LC_PIZP1103 (Q1 to Q4) and LC_PIZP1101 (Q1 to Q4); – Manganese: LC_PIZP1101 (Q1 to Q3, and in Q4 for the duplicate), LC_PIZP1103 (Q1 and Q2); and – Molybdenum: LC_PIZP1101 (CSR IW for all 2021 results); LC_PIZP1103 (CSR IW for 2021 Q1, Q3 and Q4). › Based on the BGA, concentrations of fluoride, boron, lithium, manganese and molybdenum are inferred to be naturally occurring. › Concentrations of all other non-OC in groundwater were below primary screening criteria at all monitoring wells in 2021. › Most of the 2021 ranges for non-OC were within the historical ranges, with one exception: – LC_PIZDC1101: 2021 Q4 TDS; 2021 Q4 Uranium.	Tables BG-03 and -04
	Mann-Kendall Trend Analysis	› Stable, decreasing or no trend were predominantly calculated for parameters from each background well, except for: – TDS: LC_PIZP1101 (Prob. Increasing); and – Cadmium: LC_PIZP1103 (Prob. Increasing).	Table B Attachment II
Upgradient of Study Area 7 (EVO)			
Physical Hydrogeology	Monitoring Location	**Elk River Valley, Grave Creek Watershed:** EV_MW_GV4A (Bedrock, sandstone, interpreted to be Rocky Mountain Group) and EV_MW_GV4B (Overburden).	Drawing BG-01 Tables BG-01 and -02
	Groundwater Elevation Trends	› Groundwater elevations in EV_MW_GV4A had the highest response during last spring (April/May 2021), likely a response to freshet. › Groundwater elevations in EV_MW_GV4B is relatively stable.	Figure BG-04 Table BG-02
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – EV_MW_GV4A/B – 0.1 m/m to 0.2 m/m downward. › Flow Direction: – Shallow groundwater flow is inferred to follow topography. Bedrock flow direction unknown.	Table BG-02 Drawing EV-03
Chemistry	2021 SSGMP/RGMP OC Results	› Concentrations of OC in groundwater were below primary screening criteria at all monitoring wells in 2021, and within the historical ranges for each monitoring well. – There were some higher OC concentrations at EV_MW_GV4A/B, discussed further in Section 1.5.	Tables BG-03 and -04; Drawings BG-02 to -05
	Non-Order Mining-Related and Naturally Occurring Constituents	› Primary Screening Criteria Exceedances: – Lithium: EV_MW_GV4A (Q1 to Q4) and EV_MW_GV4A (Q1 to Q4); and – Manganese: EV_MW_GV4A (Q1 to Q3). › Based on the BGA, concentrations of lithium and manganese are inferred to be naturally occurring. › Concentrations of all other non-OC in groundwater were below primary screening criteria at all monitoring wells in 2021, and within historical ranges.	Tables BG-03 and -04
	Mann-Kendall Trend Analysis	› Insufficient data to complete robust Mann-Kendall trend analysis at EV_MW_GV4A/B.	-

Table A (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Background Monitoring Network

Hydrogeological Information		Description	Reference
Upgradient of Study Area 10			
Physical Hydrogeology	Monitoring Location	**Alexander Creek Watershed:** RG_MW_AC1A/B (Both overburden).	Drawing BG-01 Tables BG-01 and -02
	Groundwater Elevation Trends	› RG_MW_AC1A/B – Elevation trends are not available since there is only one data point.	Table BG-02
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – RG_MW_AC1A/B – 0.002 m/m downward. › Flow Direction: – Shallow groundwater flow is inferred to follow topography.	Table BG-02 Drawing CM-02
Chemistry	2021 SSGMP/RGMP OC Results	› Concentrations of OC in groundwater were below primary screening criteria at all monitoring wells in 2021.	Tables BG-03 and -04 Drawings BG-02 to 05
	Non-Order Mining-Related and Naturally Occurring Constituents	› Primary Screening Criteria Exceedances: – Molybdenum: RG_MW_AC1A (Q4); and – Based on the BGA, the concentration of molybdenum is inferred to be naturally occurring. › Concentrations of all other non-OC in groundwater were below primary screening criteria at all monitoring wells in 2021.	Tables BG-03 and -04
	Mann-Kendall Trend Analysis	› Insufficient data to complete robust Mann-Kendall trend analysis at RG_MW_AC1A/B.	-
Upgradient of Study Area 11 (CMm)			
Physical Hydrogeology	Monitoring Location	**Michel Creek Watershed:** CM_MW3-SH (Overburden), CM_MW3-DP (Bedrock, siltstone, interpreted to be Fernie Fm) **Lower Corbin Creek Watershed (Corbin Pond area):** CM_MW6-DP (Bedrock, siltstone, interpreted to be Fernie Fm)	Drawing BG-01 Tables BG-01 and -02
	Groundwater Elevation Trends	› Pressure transducers were installed in CM_MW3-SH/DP in 2021 Q2. Only manual measurements are available for CM_MW6-DP. › Manual measurements (and continuous water level data where available), show the highest response in late spring (May 2021), likely a response to freshet.	Figure BG-05 Table BG-02
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – CM_MW3- SH/DP – 0.03 m/m upward (Q1, Q3 & Q4); 0.001 m/m downward (Q2); – CM_MW6-SH/DP – 0.07 to 0.2 m/m upward: ▪ This was calculated as a part of the CMm report, and calculations can be found in Table CM-2. Only the deep well (CM_MW6-DP) is considered a background well. › Flow Direction: – CM_MW6-DP – The horizontal gradient in the Lower Corbin Creek valley (Corbin Pond area) is steeper than in the Michel Creek valley. More details are within Table B of the CMm report. – CM_MW3- SH/DP – Shallow groundwater flow is inferred to follow topography in each of these areas.	Table BG-02 Drawing CM-02
Chemistry	2021 SSGMP/RGMP OC Results	› Concentrations of OC in groundwater were below primary screening criteria at all monitoring wells in 2021. › Most of the 2021 ranges for OC were within the historical ranges. The following are exceptions, where the 2021 concentration was the higher than historical: – CM_MW3-SH: 2021 Q3 Nitrate; 2021 Q1 Sulphate; and – CM_MW3-DP: 2021 Q1 Sulphate.	Tables BG-03 and -04 Drawings BG-02 to 05
	Non-Order Mining-Related and Naturally Occurring Constituents	› Primary Screening Criteria Exceedances: – Chloride: CM_MW3-DP (Q1 to Q4). This is consistent with historical results; – Sodium: CM_MW3-DP (Q1 to Q4). This is consistent with historical results. CM_MW6- DP (Q1 to Q4); – Lithium: CM_MW3-DP (Q1 to Q4) and CM_MW6-DP (Q1 to Q4); and – Based on the BGA, concentrations of chloride, sodium, and lithium are inferred to be naturally occurring. › Concentrations of non-OC in groundwater were below primary screening criteria at all monitoring wells in 2021. › Most of the 2021 ranges for OC were within the historical ranges, with the exception of: – CM_MW3-DP: 2021 Q2 Uranium.	Tables BG-03 and -04

Table A (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Background Monitoring Network

Hydrogeological Information		Description	Reference
Upgradient of Study Area 11 (CMm) (Cont'd)			
	Mann-Kendall Trend Analysis	› Stable, decreasing or no trend for most calculated parameters, except for: – Nitrate: CM_MW3-SH (Increasing); – Sulphate: CM_MW3-SH (Increasing); and – Selenium: CM_MW3-SH (Increasing).	Table B Attachment II

Table B presents Mann-Kendall trend analyses completed for data from the background wells with seven or more sampling events, and with concentrations of Order and potentially mine-influenced non-OC greater than the method detection limit (MDL; Attachment II). Mann-Kendall trend analysis was not completed on any wells for dissolved antimony or nitrite-N due to concentrations typically at or below the MDL. In addition, early analytical data from wells that had not stabilized as well as obvious outliers were removed from the trend analyses. Seasonality in chemistry was also observed at LC_PIZPDC1308; therefore, trend analysis on the highest concentrations per year (typically Q1 for dissolved cobalt and Q2 for the remainder of the analyzed parameters) was also conducted but fewer data points were available (indicated as 'seasonal' in Table B below).

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Table B: Background – Summary of Mann-Kendall Trend Analysis for Constituents of Interest

Parameter / Well ID	Nitrate-N	Sulphate	Dissolved Cadmium	Dissolved Selenium	Dissolved Cobalt	TDS	Dissolved Uranium
Within Study Area 1 (FRO/GHO Boundary)							
FR_MW_CH1-A	Prob. Decreasing	Stable	Stable	Stable	-	No Trend	No Trend
FR_MW_FRRD1	Stable	Decreasing	Stable	Decreasing		Increasing	Decreasing
Upgradient of Study Area 2							
LC_PIZDC1307	-	-	-	-	-	Prob. Decreasing	Decreasing
LC_PIZDC1308	Decreasing	No Trend	Stable	Decreasing	No Trend	Prob. Increasing	Increasing
LC_PIZDC1308 (Seasonal[2])	Decreasing	No Trend	Stable	Decreasing	Prob. Decreasing	Increasing	Increasing
Upgradient of Study Area 4 (GHO)							
GH_MW-Willow-1D	-	Decreasing	-	-	-	Stable	Decreasing
GH_MW-Willow-2D	No Trend	Decreasing	Decreasing	Decreasing	-	No Trend	Decreasing
GH_MW-Wolf-1D	-	Prob. Decreasing	-	-	Decreasing	Stable	Decreasing
Upgradient of Study Areas 5/6 (LCO)							
LC_PIZP1103	No Trend	Decreasing	Prob. Increasing	No Trend	Prob. Decreasing	No Trend	Decreasing
LC_PIZP1101	-	Decreasing	-	-	Stable	Prob. Increasing	No Trend
Upgradient of Study Area 11 (CMm)							
CM_MW3-SH	Increasing	Increasing	Stable	Increasing	-	No Trend	Prob. Decreasing
CM_MW3-DP	-	No Trend	-	-	-	Stable	Decreasing
CM_MW6-DP	-	No Trend	-	-	-	Prob. Decreasing	Decreasing

Notes:

[1] Where Constituents of Interest were measured above primary screening criteria in 2021, the trend result is ***italics***. Where increasing trends are noted, the cell is shaded yellow.

[2] Seasonality observed in concentrations of well. Mann-Kendall analysis completed on highest concentrations measured per year (typically Q1 for dissolved cobalt and Q2 for the others); however, only 7 seasonal data points are available. Seasonal trend analysis was completed where both a seasonal trend was visually identified, and where data has been collected over a minimum of seven years.

'-' denotes trend analysis was not completed as concentrations of parameter have consistently been less than, or marginally greater than, the detection limit.

1.5 Discussion

Groundwater quality results for OC in background wells were below the primary screening criteria for each quarter in 2021, and generally consistent with historical data (Tables BG-3 and -4; Figures BG-06 to -08). Discussion is provided below on specific wells.

Upgradient of Study Area 4 (GHO)

In Q4 2020, a higher concentration of 5.52 µg/L of dissolved selenium was in the groundwater from GH_MW_BC1A; however, in 2021, dissolved selenium ranged from non-detect (Detection limit of 0.050 µg/L) to 0.328 µg/L. Therefore the concentration in 2020, which was observed in the first sample collected after the drilling and installation of the monitoring well, appears to be an outlier.

Upgradient of Study Area 7 (EVO)

In 2020, higher dissolved selenium concentrations were also measured at EV_MW_GV4A/B (3.61 µg/L to 5.4 µg/L). In 2021, the dissolved selenium concentration range for groundwater from EV_MW_GV4A was 3.27 µg/L to 4.9 µg/L, and 3.7 µg/L to 4.05 µg/L from EV_MW_GV4B (Figure BG-06). On the Se:SO4(S) plot (Figure BG-09), EV_MW_GV4A/B cluster just outside of the defined range of natural non-contact water. The inferred boundaries defining non-contact water from mine-influenced water are based on 95th percentile concentrations of background wells. Therefore, continued monitoring should occur in conjunction with isotopic sampling to assess the provenance of the groundwater. Also, new wells have been installed in the area, and a field assessment to determine the feasibility of installing a new surface water monitoring station in Grave Creek has been recommended (Appendix XI), which should provide additional information on groundwater flow regime and potential influences on the groundwater quality at this location.

Upgradient of Study Area 10

Monitoring wells RG_MW_AC1A/B were installed in 2021 and only one data point is available for each well. Concentrations of OC were relatively low, and the Se:SO4(S) (Figure BG-09) shows that the groundwater does not appear to be mine-influenced. However, the dataset is very limited and future analytical data will be assessed.

Upgradient of Study Area 11 (CMm)

The Mann-Kendall trends for nitrate, sulphate, and dissolved selenium at CM_MW3-SH were increasing, where nitrate and sulphate had historical high concentrations of 0.0253 mg/L (Q3) and 17.1 mg/L (Q1), respectively. For nitrate, concentrations were decreasing prior to Q3 2020; however, the concentrations appear to be increasing after 2020 (Figure BG-10). Sulphate was identified as increasing in 2020 (SNC-Lavalin, 2021) and continues to show this trend in 2021, except for a decrease in Q2. Both the nitrate and sulphate concentrations are well below the most conservative primary screening criteria of 10 mg/L (CSR DW) and 500 mg/L (CSR DW), respectively. No trend was identified for TDS, however the Q4 2021 result of 280 mg/L exceeded the historical high concentration of 219 mg/L. Concentrations of TDS will continue to be reviewed in 2022 to assess potential trends. For dissolved selenium, concentrations in 2021 ranged from 0.254 µg/L to 0.306 µg/L, where the highest concentration is lower than the historical high of 0.313 µg/L (Q3 of 2019), and well below the primary screening criteria of 10 µg/L (CSR DW). An upward vertical gradient was identified between CM_MW3-SH and CM_MW3-DP in 2021 Q1, Q3, and Q4. Additionally, nitrate-N concentration at CM_MW3-DP was greater than nitrate-N concentration at CM_MW3-SH in these quarters, indicating the source of nitrate-N at CM_MW3-SH may be bedrock.

At CM_MW3-DP, chloride exceeded the CSR IW, CSR LW and CSR DW, and sodium exceeded the CSR DW for all 2021 results, which is similar to 2020. CM_MW3-DP is screened between 14.0 and 17.1 meters below ground surface (mBGS), while CM_MW3-SH is screened between 4.4 and 7.4 mBGS. Bedrock was encountered at CM_MW3-DP at 6.7 mBGS, while CM_MW3-SH is screened in clay and gravel. Chloride and sodium concentrations were overall three magnitudes lower in the shallower well, and origin of the groundwater from CM_MW3-DP is inferred to be bedrock. 2021 chloride and sulphate concentrations are consistent with historical results, and the Se:SO4(S) (Figure BG-09) shows that the groundwater at CM_MW3-DP is not mine-influenced; therefore the high chloride and sodium concentrations are inferred to be naturally occurring. At CM_MW6-DP, sodium also exceeded the CSR DW in all quarters, and is inferred to be naturally occurring. At this time, the monitoring wells selected for background monitoring and sampling are considered appropriate; however, they should be reassessed annually.

2 Recommendations

New and Existing recommendations are presented in Table C and Table D below.

Table C: Summary of New Recommendations - Background SSGMPs and RGMP

Program	Recommendation
Regional Groundwater Monitoring Program	
Background	Update the Background Assessment as part of the 2023 RGMP Update, including a review of the adequacy of the current background monitoring well network. Continue to supplement the background monitoring network with new monitoring wells.
	Evaluate analytical results for newly installed background wells including RG_MW_AC1A/B once one year of data is available to assess whether they should be added to the background monitoring network.
	Sample groundwater at all background monitoring wells once for isotope analysis (^{3}H, ^{2}H, ^{18}O and potentially ^{14}C) to obtain a better understanding of the origin of groundwater in background monitoring wells.
	Install data loggers within GH_MW_BG1A/B/C to assess continuous groundwater level changes.
	Assess trends of Cl in background monitoring wells on an annual basis, and reassess annually if they should continue to be considered as representative of background groundwater quality.
	RG_DW-03-10 (Sparwood Well 4) in Study Area 8 should be added to the background monitoring network.

Table D: Summary of Existing Recommendations - Background SSGMPs and RGMP

Program	Recommendation
Regional Groundwater Monitoring Program	
Background	Continue to monitor/sample background locations at least two times in a year, as recommended in the 2020 RGMP Update (SNC-Lavalin, 2020).

3 References

Azimuth Consulting Group Inc. 2021. AMP Technical Memo MQ6-KU6.3-2021, Proposed surface water to groundwater triggers for the protection of drinking water users for Order and non-Order constituents using select surface water stations in the Elk Valley. Prepared for Teck Coal Limited. Dated November, 2021.

British Columbia Ministry of Environment and Climate Change Strategy. 2019. Contaminated Sites Regulation (CSR), B.C. Reg. 375/96, includes amendments up to B.C. Reg. 196/2017. January 24, 2019.

SNC-Lavalin Inc. 2017. Regional Groundwater Monitoring Program Elk Valley, BC. Prepared for Teck Coal Limited. Dated September 29, 2017.

SNC-Lavalin Inc. 2019. Evaluation of CPX2 Expansion Program, Castle Expansion Program, and Existing Monitoring Wells to Fill Gaps in the RGMP. Memo prepared for Teck Coal Limited. Dated October 24, 2019.

SNC-Lavalin Inc. 2020. 2020 Regional Groundwater Monitoring Program Update. Report prepared for Teck Coal *Limited*. Dated December 4, 2020.

SNC-Lavalin Inc. 2021. 2020 Annual Report: Elk Valley Regional and Site-Specific Groundwater Monitoring Programs. Report Prepared for Teck Coal *Limited.* Dated March 31, 2021.

Figures:

Figure BG-01: Background (Fording River Valley Bottom) - Hydrograph

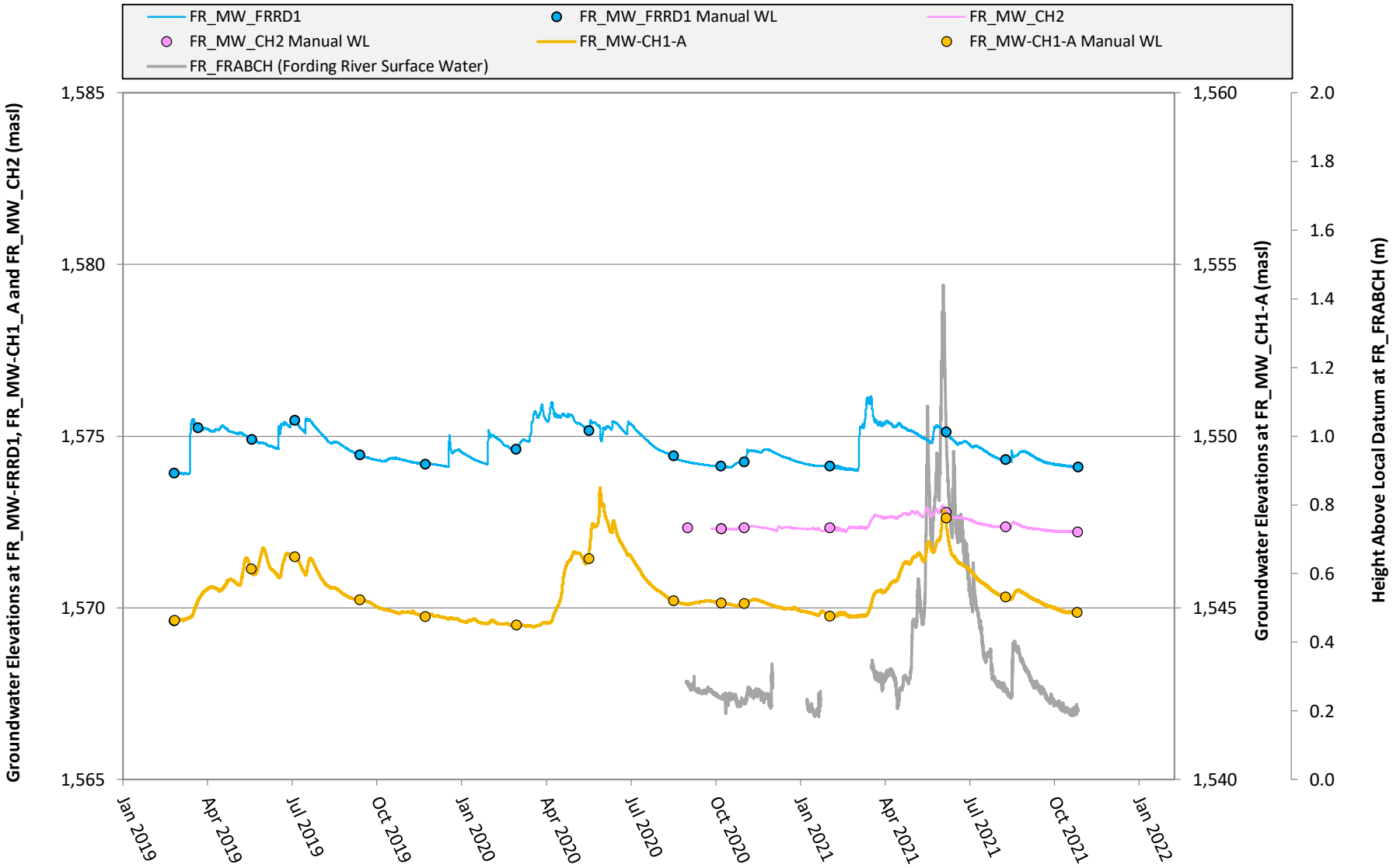


Figure BG-02: Background (Dry Creek) - Hydrograph

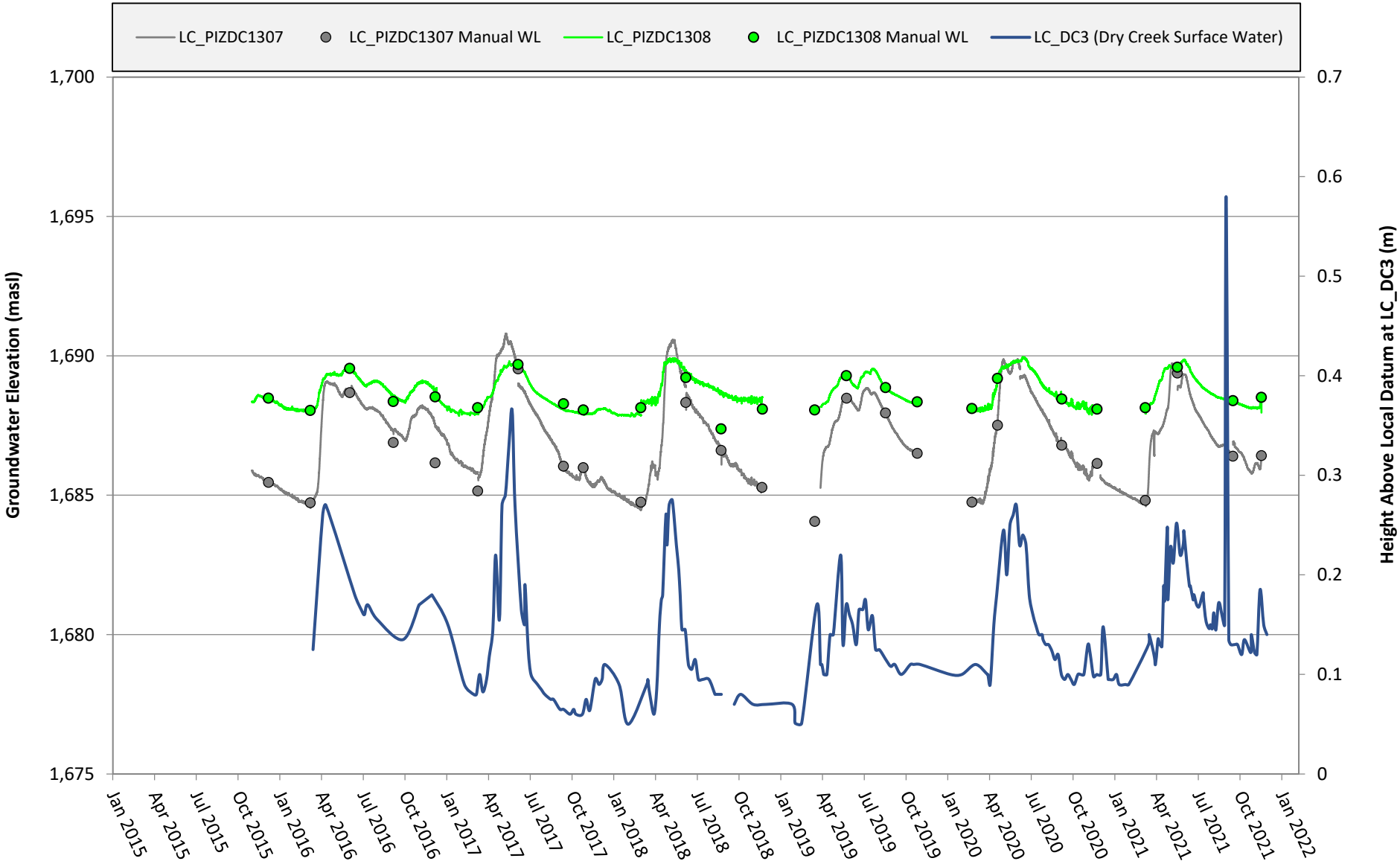
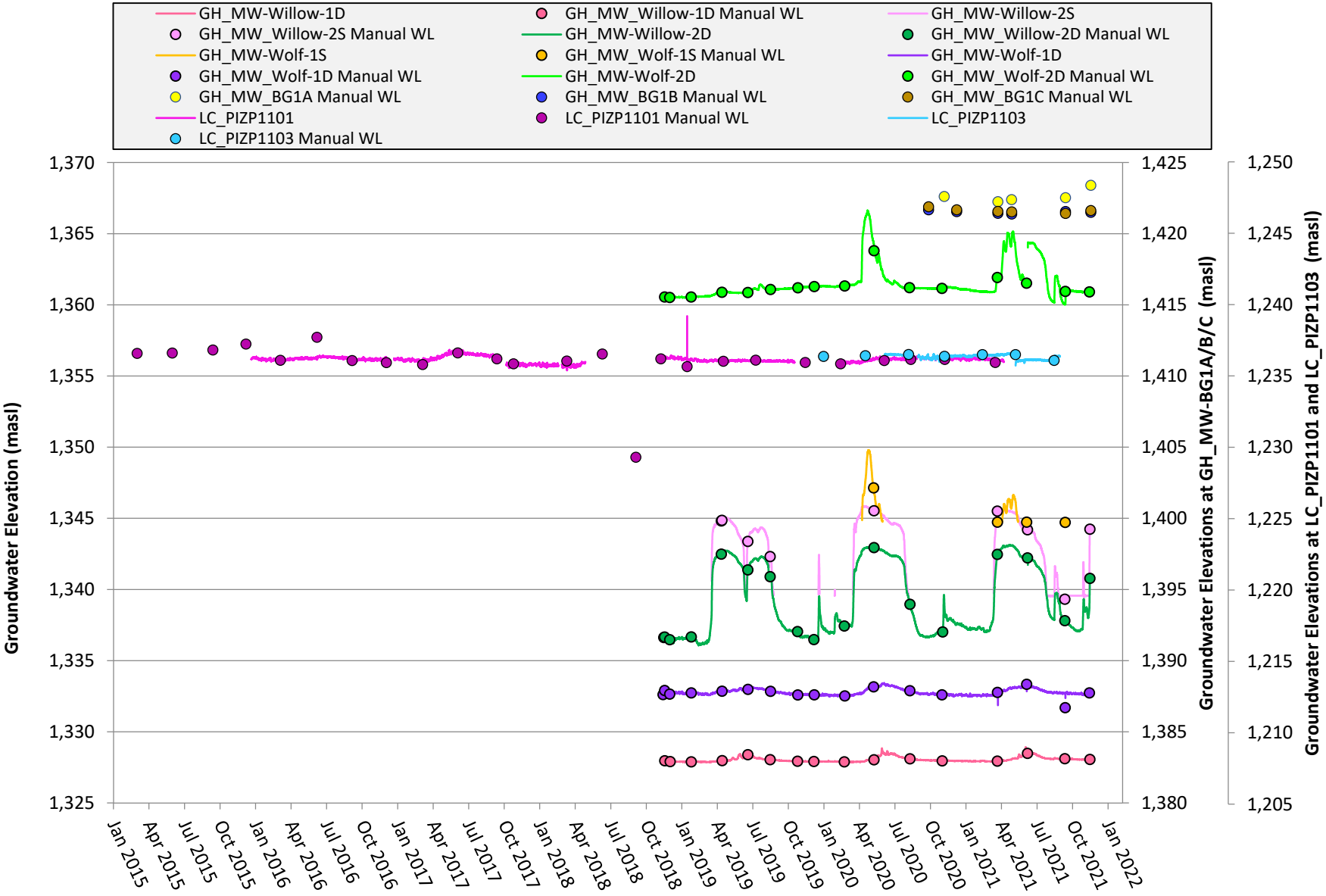
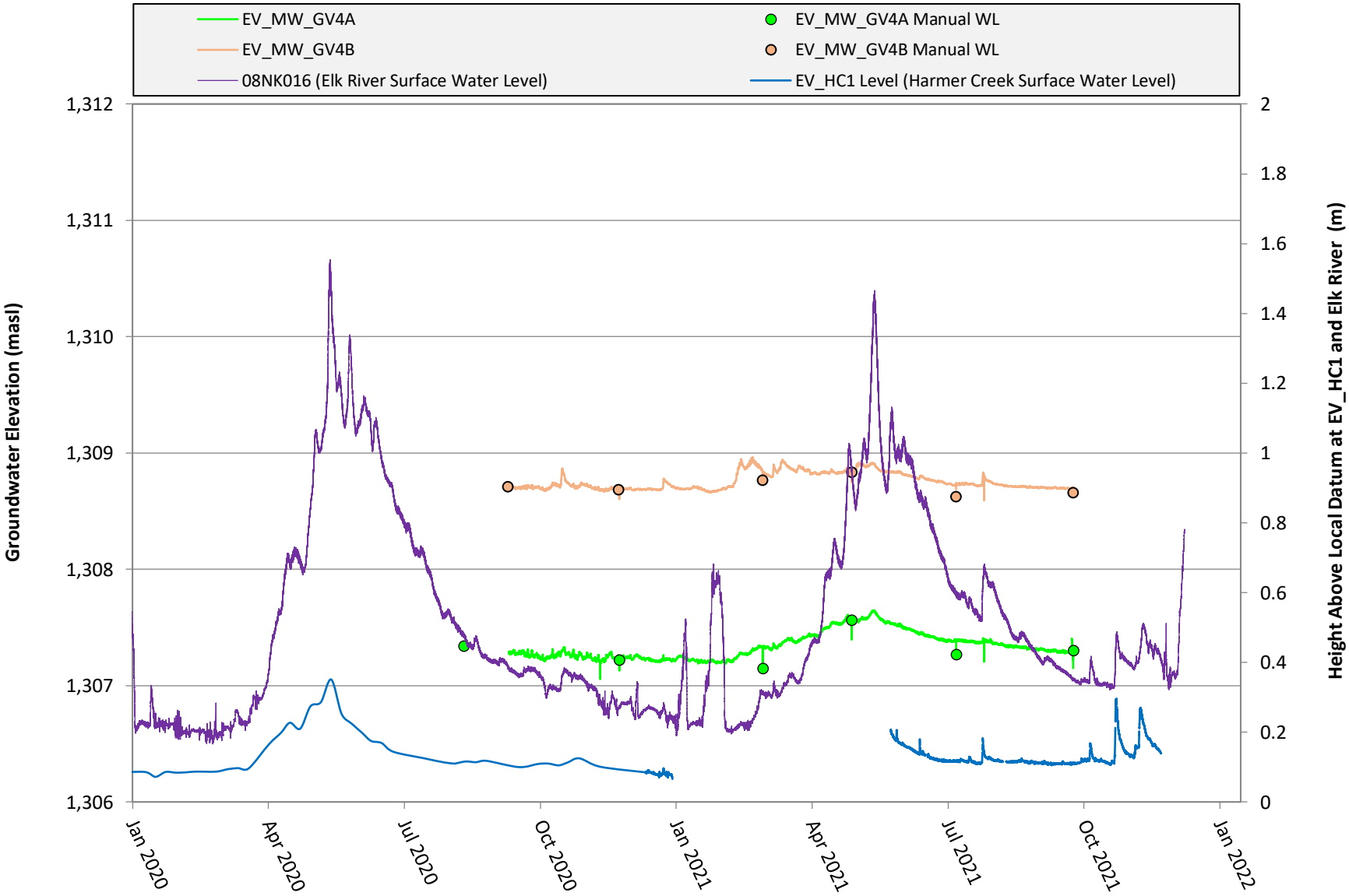


Figure BG-03: Background (Elk River Valley Bottom) - Hydrograph



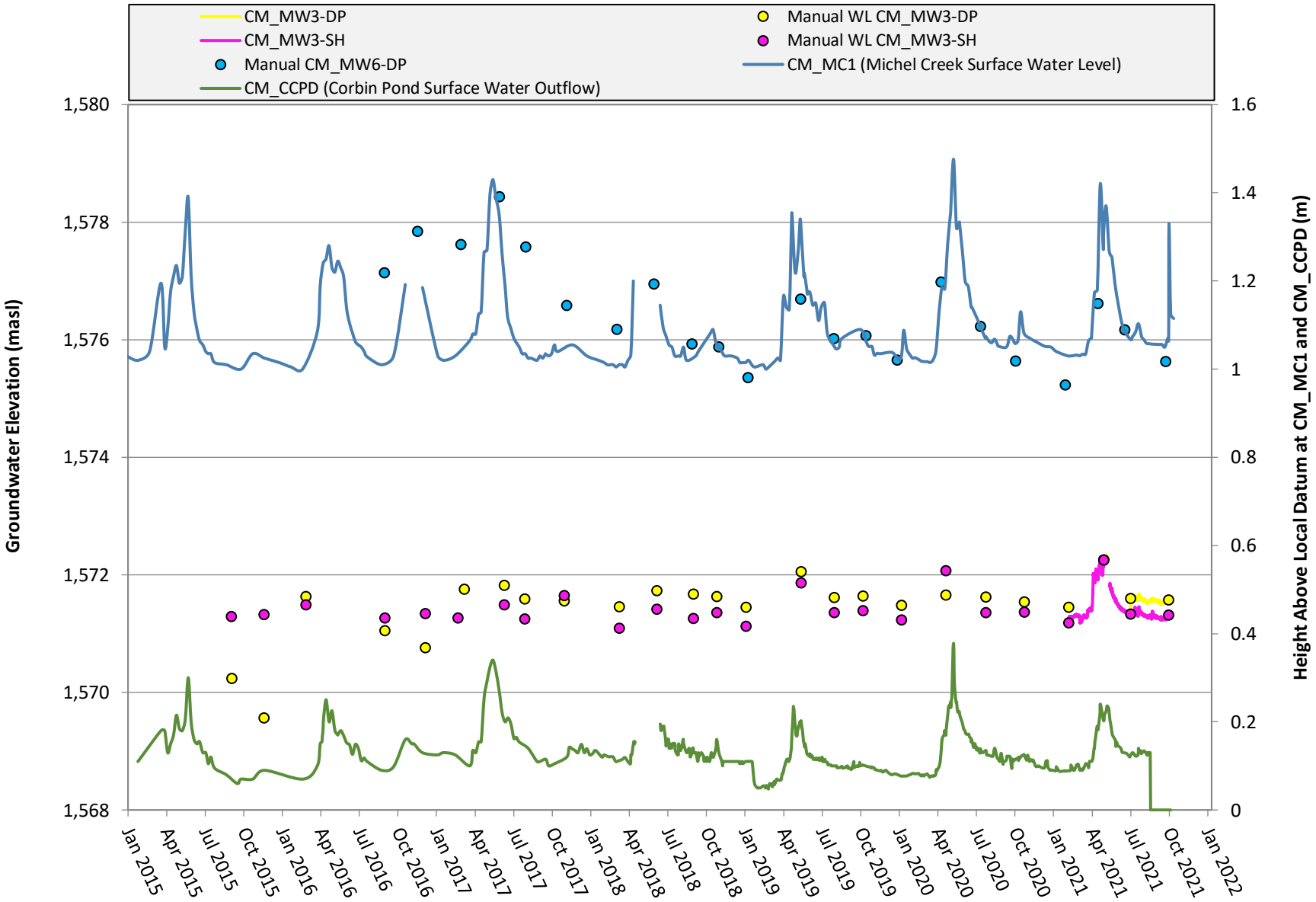
Note: Continuous water level data was compensated using barologgers at GH_MW-Willow-1S (GH-series wells) and LC_MW_ER4B (LC-series wells).

Figure BG-04 : Background (Grave Creek) - Hydrograph



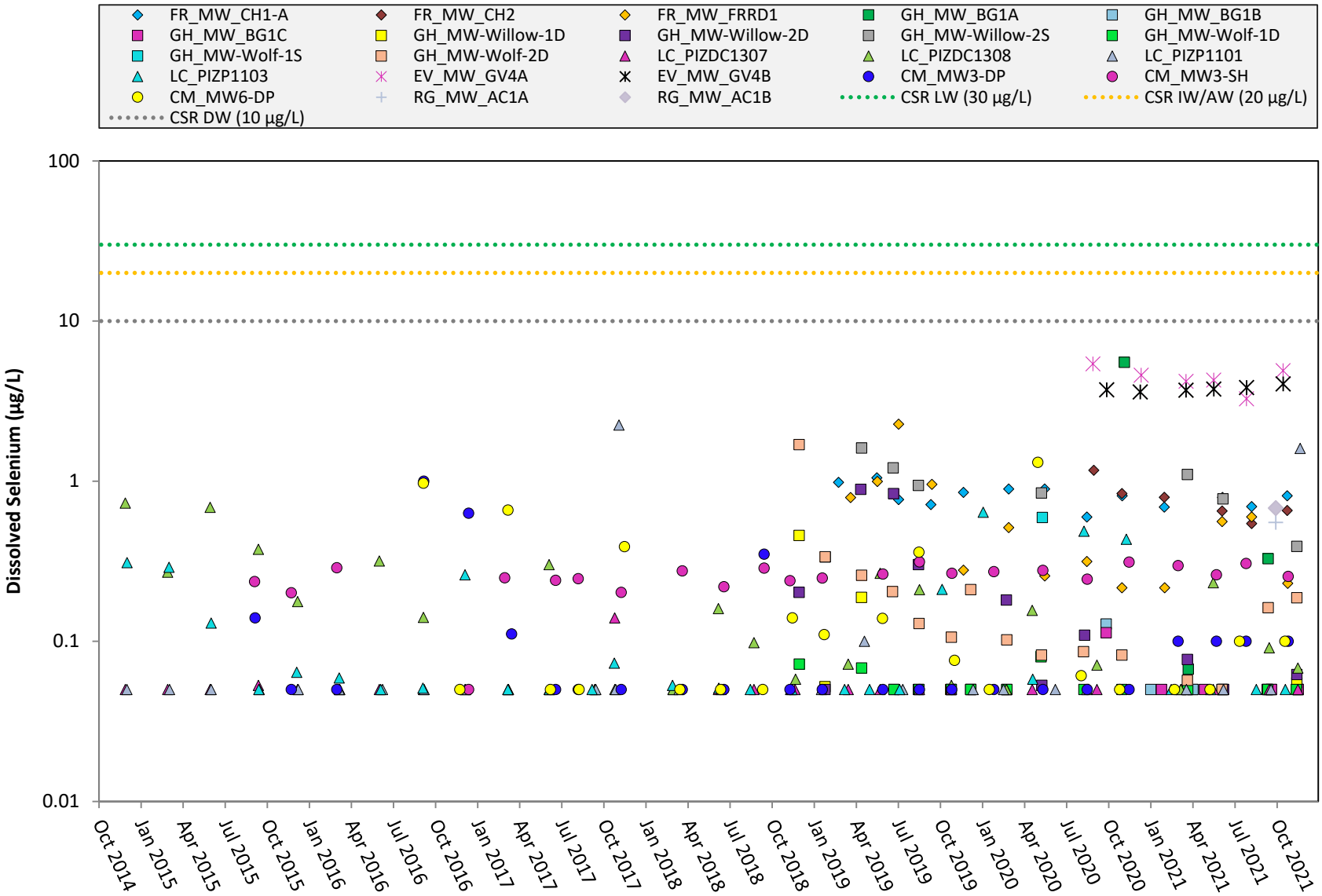
Note: Continuous water level data was compensated using barologgers at EV_MW_SPR1B.

Figure BG-05 : Background (Michel Creek Valley Bottom) - Hydrograph



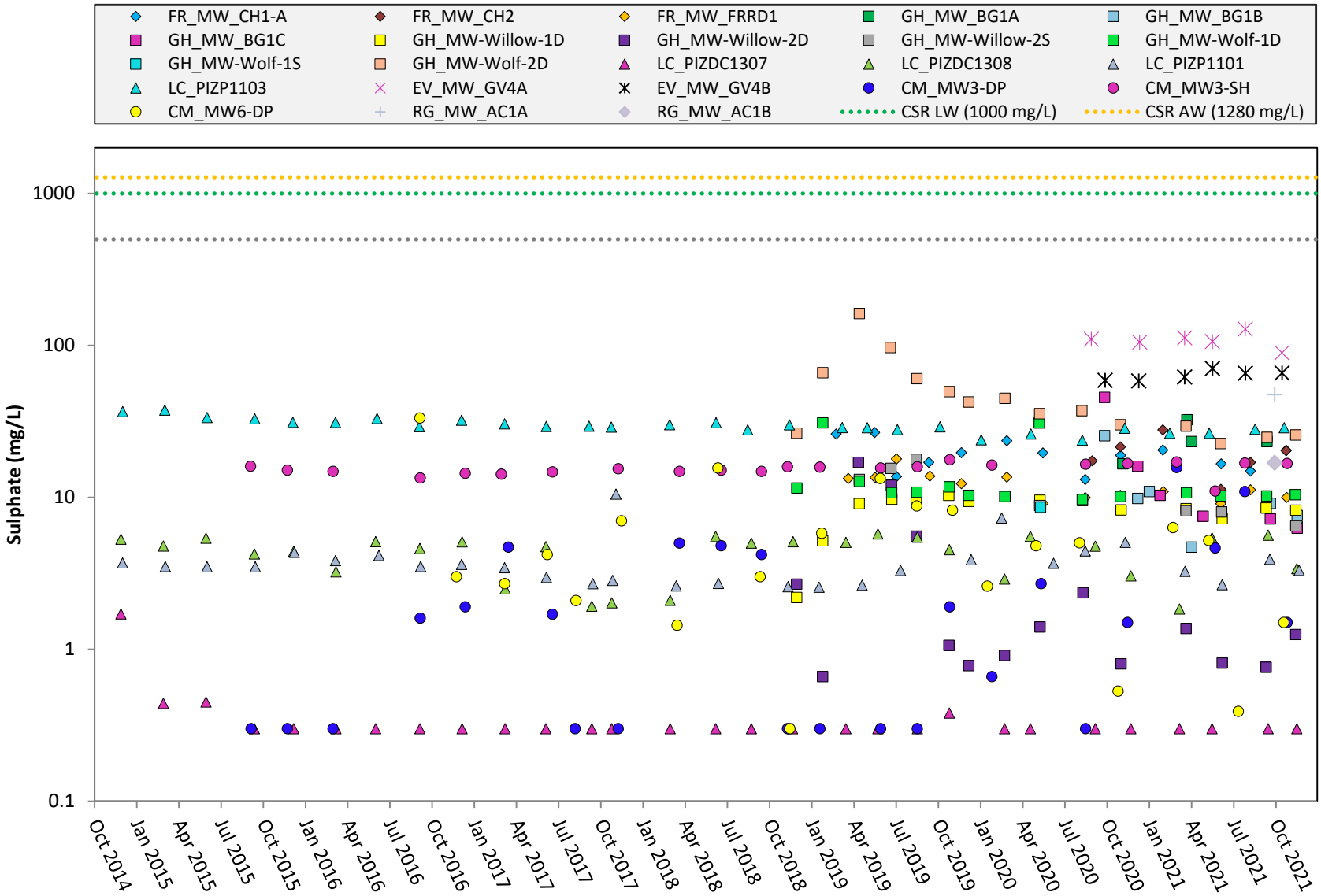
Note: Continuous water level data was compensated using barologgers at CM_MW5-DP.

Figure BG-06: Background - Dissolved Selenium Concentrations



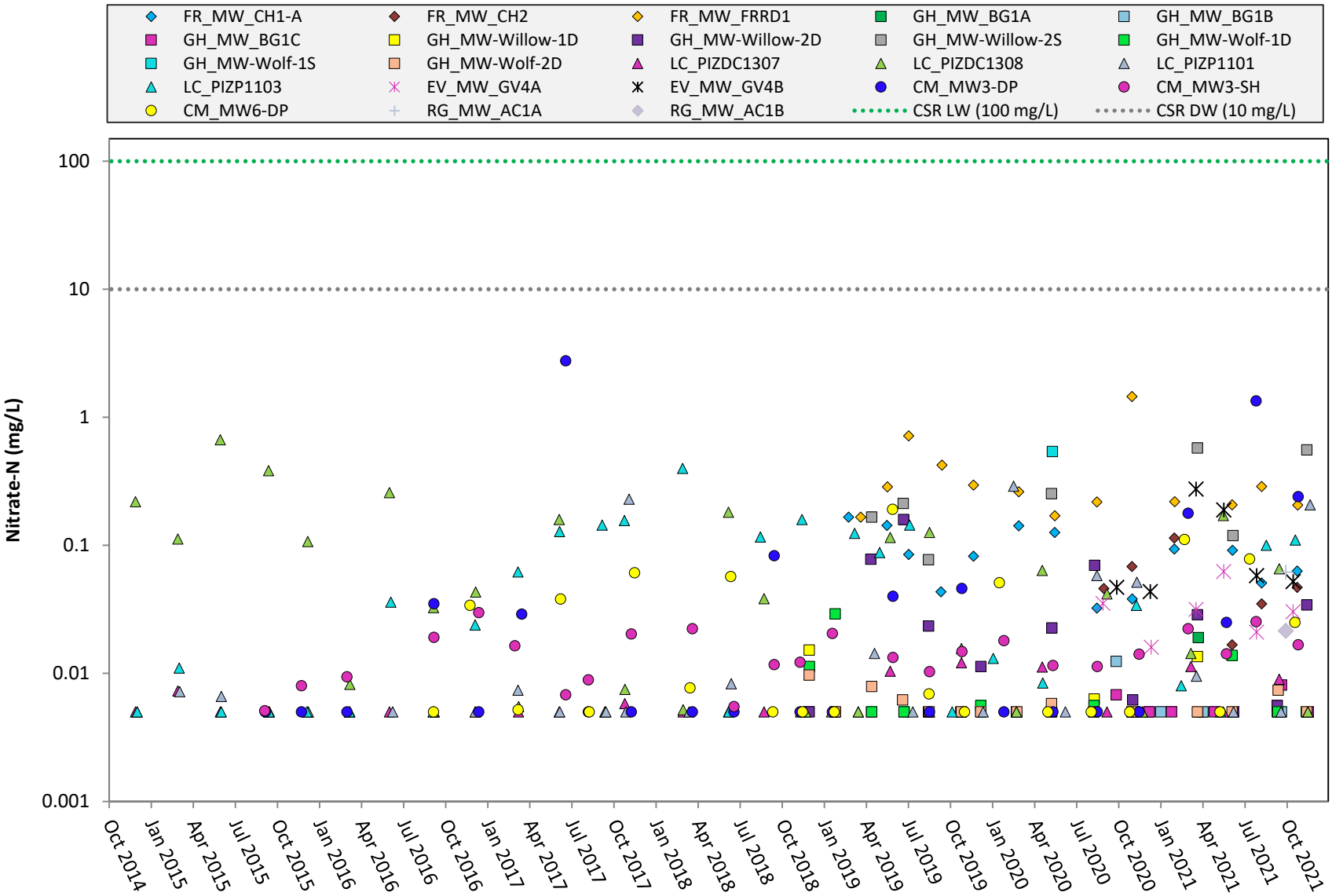
Note: Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria. For concentrations measured below the method detection limit, the method detection limit (0.05 µg/L) was utilized for plotting purposes.

Figure BG-07: Background - Sulphate Concentrations



Note: Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria. For concentrations measured below the method detection limit, the method detection limit (0.3 mg/L) was utilized for plotting purposes.

Figure BG-08: Background - Nitrate-N Concentrations



Note: Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria. For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes.

Figure BG-09: Background - Se:SO4 (S)

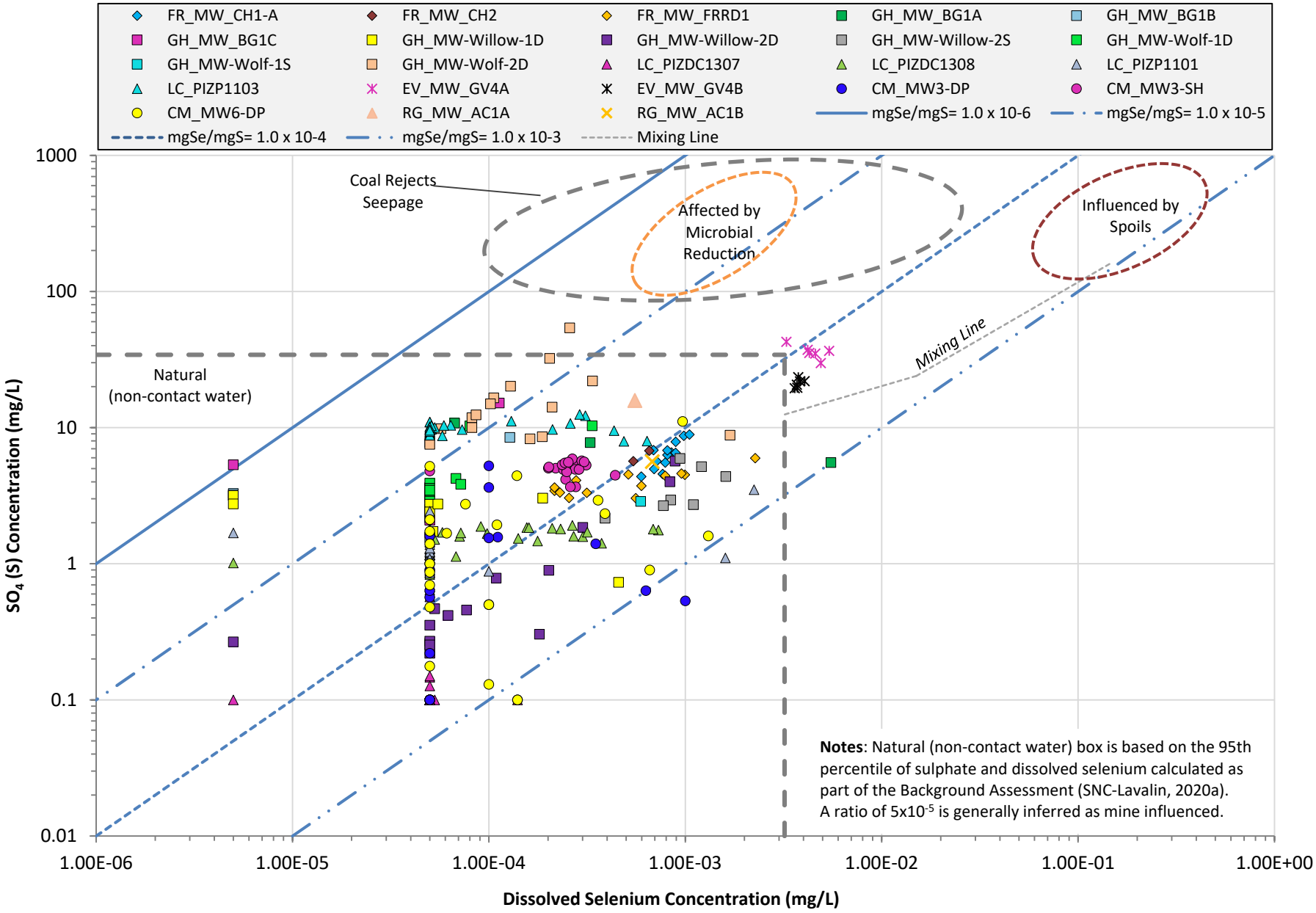
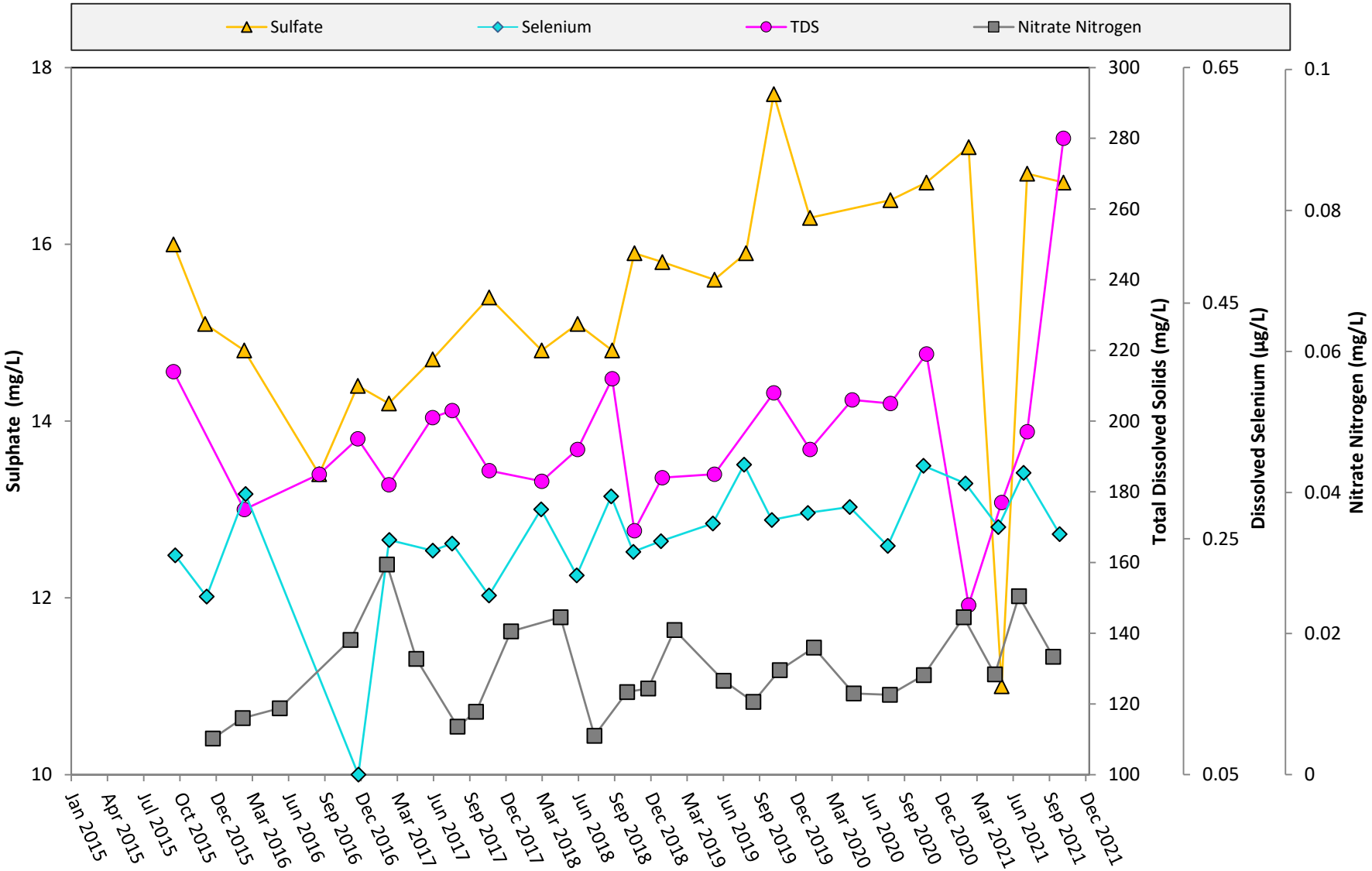


Figure BG-10: Background - CM_MW3-SH



Tables:

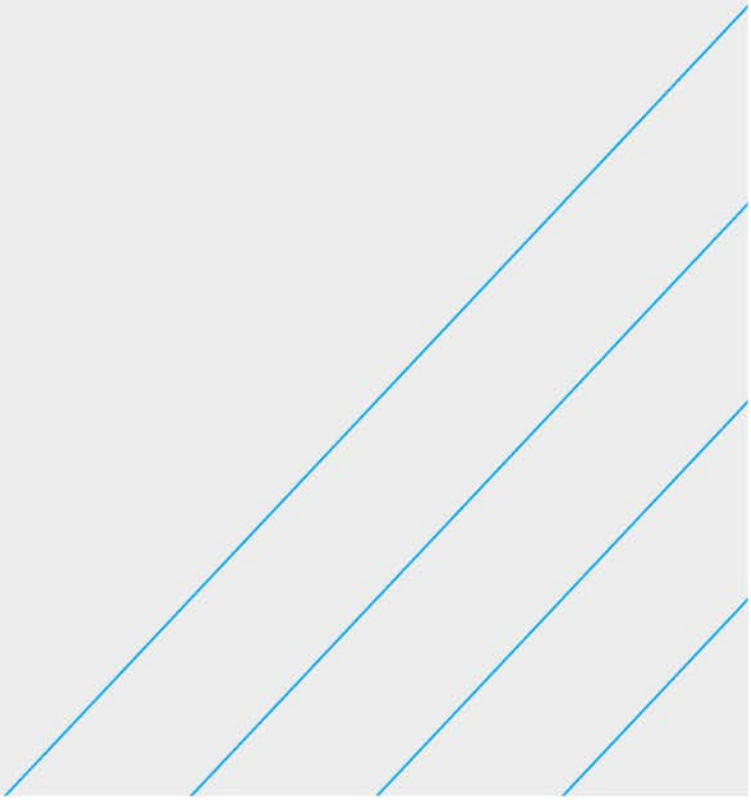


TABLE BG-01: Summary of Well Installation Details and Hydrogeological Information (Background)

Area	Well ID[a]	Monitoring Program[b]	Well Type	Logs (Y/N)	Coordinates (UTM NAD 83)		Ground Elevation	TOC Elevation	Stick Up Height	Drilled Depth	Well Diameter	Top of Screen Depth	Bottom of Screen Depth	Screened Formation	Depth to Bedrock	Hydraulic Conductivity
					Easting	Northing	masl	masl	m	mbgs	mm	mbgs	mbgs		mbgs	m/s
Within Study Area 1 (FRO/GHO Boundary)	FR_MW_FRRD1	RGMP	Monitoring	Y	653884	5556128	1581.02	1581.95	0.93	14.6	50	8.8	9.3	Sand	11.9	4.7E-05
	FR_MW_CH1-A	RGMP	Monitoring	Y	655940	5552549	1562.01	1562.94	1.20	41.2	50	28.4	29.9	Sand and Gravel	38.4	-
	FR_MW_CH2	RGMP	Monitoring	Y	656107	5552945	1573.39	1574.07	0.68	10.7	50	2.4	4.0	Gravel and silty sand	4.9	-
Upgradient of Study Area 2	LC_PIZDC1307	RGMP	Monitoring	Y	658111	5541267	1690.50	1691.21	0.71	34.6	49	32.8	34.8	Till	-	1.00E-07
	LC_PIZDC1308	RGMP	Monitoring	Y	658111	5541267	1690.42	1691.37	0.95	9.0	49	6.1	9.1	Colluvium and Till	-	7.00E-07
Upgradient of Study Area 4 (GHO)	GH_MW_BG1A	RGMP	Monitoring	Y	645670	5565171	1448.63	1449.51	0.88	71.6	51	65.9	67.4	Sand and Gravel	69.8	-
	GH_MW_BG1B	RGMP	Monitoring	Y	645664	5565168	1448.71	1449.69	0.98	47.8	-	45.3	46.8	Silty Sand and Gravel	-	-
	GH_MW_BG1C	RGMP	Monitoring	Y	645663	5565165	1448.48	1449.34	0.86	38.5	-	36.1	37.7	Silty Sand and Gravel	-	-
	GH_MW-Willow-1D	RGMP	Monitoring	Y	647475	5556081	1345.54	1346.42	0.88	37.8	51	35.7	37.5	Sand and Gravel	37.5	7.00E-04
	GH_MW-Willow-2S	RGMP	Monitoring	Y	647553	5556015	1346.42	1346.85	0.85	22.0	51	6.1	7.6	Silty Sand	20.4	2.20E-05
	GH_MW-Willow-2D	RGMP	Monitoring	Y	647553	5556015	1346.86	1347.70	0.84	22.0	51	15.2	18.3	Silty Sand and Gravel		1.40E-06
	GH_MW-Wolf-1S	RGMP	Monitoring	Y	647378	5556787	1357.19	1358.14	0.95	35.1	51	9.5	12.5	Sand and Gravel	-	-
	GH_MW-Wolf-1D	RGMP	Monitoring	Y	647377	5556787	1357.19	1358.13	0.95	35.1	51	31.7	34.8	Silty Sand and Gravel	-	1.90E-06
	GH_MW-Wolf-2D	RGMP	Monitoring	Y	647501	5556856	1376.57	1377.48	0.91	18.9	51	4.3	5.8	No Recovery	-	-
Upgradient of Study Areas 5/6 (LCO)	LC_PIZP1103	RGMP	Monitoring	Y	654250	5528634	1263.49	1264.49	1.00	41.2	-	35.1	38.1	Clayey Silt	38.8	7.5E-08
	LC_PIZP1101	RGMP	Monitoring	Y	653960	5528263	1266.00	1267.06	1.06	41.2	-	38.2	41.2	Sand and Gravel	-	7.4E-04
Upgradient of Study Area 7 (EVO)	EV_MW_GV4A	RGMP	Monitoring	Y	656665	5522317	1310.66	1311.53	0.87	16.5	50	14.1	15.7	Bedrock	13.4	7.50E-06
	EV_MW_GV4B	RGMP	Monitoring	Y	656662	5522318	1310.64	1311.66	1.02	6.8	50	4.3	5.8	Silty Gravel and Silt	-	5.30E-06
Upgradient of Study Area 10 (EVO)	RG_MW_AC1A[c]	RGMP	Monitoring	Y	663653	5502845	1303.93	1304.82	0.89	15.2	51	13.4	14.9	Silty Clay	-	6.1E-04
	RG_MW_AC1B[c]	RGMP	Monitoring	Y	663654	5502845	1303.99	1304.83	0.84	6.1	51	3.3	4.9	Sand and Gravel	-	1.5E-05
Upgradient of Study Area 11 (CMm)	CM_MW3-DP	RGMP	Monitoring	Y	668237	5482854	1573.40	1574.16	0.76	27.4	51	14.0	17.1	Bedrock	6.7	1.0E-07
	CM_MW3-SH	RGMP	Monitoring	Y	668237	5482854	1573.40	1574.21	0.75	-	51	4.4	7.4	Clay and Gravel	-	3.9E-04
	CM_MW6-DP	RGMP	Monitoring	Y	670118	5486464	1579.66	1580.53	0.87	41.7	51	38.7	41.7	Bedrock	21.8	< 1.0E-07

Notes:

a: Wells have been included based on the background assessment completed as part of the 2020 RGMP Update.

b: RGMP denotes Regional Groundwater Monitoring Program.

c: Monitoring wells installed in 2021 to support the RGMP.

masl denotes metres above sea level.

mbgs denotes metres below ground surface.

TOC denotes top of pipe casing.

"-" denotes data not available.

TABLE BG-02: Summary of Groundwater Levels and Sampling Information (Background)

Area	Well ID	Ground Elevation	TOC Elevation	Stick Up Height	Date of Static Water Level Measurement	Depth to Water	Potentiometric Elevation	Well Pairs	Date of Static Water Level Measurement	Calculated Vertical Gradient		Continuous Water Level Monitoring	Purging / Sampling Methodology
		masl	masl	m	yyyy-mm-dd	mbtoc	masl		yyyy-mm-dd	m/m	Direction	Quarter	
Within Study Area 1 (FRO/GHO Boundary)	FR_MW_FRRD1	1581.02	1581.95	0.93	2021-02-02	7.84	1574.11	-	-	-	-	Q1, Q2, Q3, Q4	Q1, Q3:Submersible Q2, Q4: Peristaltic
					2021-06-07	6.84	1575.11						
					2021-08-10	7.63	1574.32						
					2021-10-27	7.86	1574.09						
	FR_MW_CH1-A	1562.01	1562.94	1.20	2021-02-02	18.17	1544.77	-	-	-	-	Q1, Q2, Q3, Q4	Submersible
					2021-06-07	15.32	1547.62						
					2021-08-10	17.61	1545.33						
					2021-10-26	18.07	1544.87						
	FR_MW_CH2	1573.39	1574.07	0.68	2021-02-02	1.73	1572.35	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-06-07	1.28	1572.79						
					2021-08-10	1.71	1572.36						
					2021-10-26	1.86	1572.22						
Upgradient of Study Area 2	LC_PIZDC1307	1690.50	1691.21	0.71	2021-03-10	6.40	1684.82	LC_PIZDC1307 and LC_PIZDC1308	2021-03-10	-0.128	Downward	Q1, Q2, Q3, Q4	Q1: Bladder Q2, Q3, Q4: Peristaltic
					2021-05-19	1.83	1689.38		2021-05-19	-0.008	Downward		
					2021-09-17	4.81	1686.40		2021-09-17	-0.076	Downward		
					2021-11-18	4.79	1686.42		2021-11-18	-0.080	Downward		
	LC_PIZDC1308	1690.42	1691.37	0.95	2021-03-10	3.23	1688.14	-	-	-	-	Q1, Q2, Q3, Q4	Q1: Bladder Q2, Q3, Q4: Peristaltic
					2021-05-19	1.78	1689.59						
					2021-09-17	2.98	1688.39						
					2021-11-18	2.86	1688.51						
Upgradient of Study Area 4 (GHO)	GH_MW_BG1A	1448.63	1449.51	0.88	2021-03-26	27.27	1422.24	GH_MW_BG1A and GH_MW_BG1B	2021-03-26	0.040	Upward	Q1, Q2, Q3, Q4	Q1: Info n/a Q2, Q3, Q4: Bladder
					2021-04-30	27.12	1422.39		2021-04-30	0.049	Upward		
					2021-09-15	26.98	1422.53		2021-09-15	0.047	Upward		
					2021-11-19	26.12	1423.39		2021-11-19	0.092	Upward		
	GH_MW_BG1B	1448.71	1449.69	0.98	2021-01-26	28.19	1421.50	GH_MW_BG1B and GH_MW_BG1C	2021-01-26	-0.071	Downward	Q1, Q2, Q3, Q4	Bladder
					2021-03-26	28.27	1421.43		2021-03-26	-0.016	Downward		
					2021-04-30	28.32	1421.38		2021-04-30	-0.017	Downward		
					2021-09-22	28.14	1421.56		2021-09-22	0.015	Upward		
					2021-11-19	28.20	1421.49		2021-11-19	-0.015	Downward		
	GH_MW_BG1C	1448.48	1449.34	0.86	2021-01-26	27.21	1422.13	-	-	-	-	Q1, Q2, Q3, Q4	Bladder
					2021-03-26	27.78	1421.57						
					2021-04-30	27.81	1421.53						
					2021-09-22	27.92	1421.42						
					2021-11-19	27.72	1421.63						
	GH_MW-Willow-1D	1345.54	1346.42	0.88	2021-03-24	18.49	1327.93	-	-	-	-	Q1, Q2, Q3, Q4	Submersible
					2021-06-09	17.98	1328.44						
					2021-09-13	18.31	1328.11						
					2021-11-16	18.37	1328.05						
	GH_MW-Willow-2S	1346.42	1346.85	0.85	2021-03-24	2.20	1344.65	GH_MW-Willow-2S and GH_MW-Willow-2D	2021-03-24	-0.231	Downward	Q1, Q2, Q3, Q4	Peristaltic
					2021-06-09	3.51	1343.34		2021-06-09	-0.119	Downward		
					2021-09-13	Dry	-		2021-09-13	-	-		
					2021-11-16	3.47	1343.39		2021-11-16	-0.275	Downward		
	GH_MW-Willow-2D	1346.86	1347.70	0.84	2021-03-24	5.23	1342.47	-	-	-	-	Q1, Q2, Q3, Q4	Submersible
					2021-06-09	5.48	1342.22						
					2021-09-13	9.89	1337.81						
					2021-11-16	6.92	1340.78						
	GH_MW-Wolf-1S	1357.19	1358.14	0.95	2021-03-24	Dry	-	GH_MW-Wolf-1S and GH_MW-Wolf-1D	-	-	-	Q1, Q2, Q3, Q4	Not applicable
					2021-06-07	Dry	-						
					2021-09-14	Dry	-						
					2021-11-15	-	-						
	GH_MW-Wolf-1D	1357.19	1358.13	0.95	2021-03-24	25.37	1332.77	-	-	-	-	Q1, Q2, Q3, Q4	Submersible
					2021-06-07	24.80	1333.34						
					2021-09-14	26.44	1331.69						
					2021-11-15	25.41	1332.73						
	GH_MW-Wolf-2D	1376.57	1377.48	0.91	2021-03-24	15.55	1361.93	-	-	-	-	Q1, Q2, Q3, Q4	Q1: Peristaltic Q2, Q4: Submersible Q3: Bailer
					2021-06-07	15.95	1361.53						
					2021-09-14	16.53	1360.95						
					2021-11-15	16.56	1360.91						

Notes:
TOC denotes top of pipe casing.
masl denotes metres above sea level.
mbtoc denotes metres below top of casing.
"-" denotes data not available.
Quarter is represented as Q1, Q2, Q3, Q4.

TABLE BG-02: Summary of Groundwater Levels and Sampling Information (Background)

Area	Well ID	Ground Elevation	TOC Elevation	Stick Up Height	Date of Static Water Level Measurement	Depth to Water	Potentiometric Elevation	Well Pairs	Date of Static Water Level Measurement	Calculated Vertical Gradient		Continuous Water Level Monitoring	Purging / Sampling Methodology
		masl	masl	m	yyyy-mm-dd	mbtoc	masl		yyyy-mm-dd	m/m	Direction	Quarter	
Upgradient of Study Areas 5/6 (LCO)	LC_PIZP1103	1263.49	1264.49	1.00	2021-05-13	28.04	1236.45	-	-	-	-	Q2, Q3, Q4	Bladder
					2021-06-13	28.06	1236.43						
					2021-08-20	28.45	1236.04						
					2021-10-22	29.15	1235.34						
	LC_PIZP1101	1266.00	1267.06	1.06	2021-03-22	31.11	1235.95	-	-	-	-	Q1	Q1: Bailer Q2, Q3, Q4: Bladder
					2021-06-10	Damaged	-						
					2021-09-21	Damaged	-						
					2021-11-23	Damaged	-						
Upgradient of Study Area 7 (EVO)	EV_MW_GV4A	1310.66	1311.53	0.87	2021-03-21	4.38	1307.15	EV_MW_GV4A and EV_MW_GV4B	2021-03-21	-0.164	Downward	Q1, Q2, Q3, Q4	Peristaltic
					2021-05-20	3.97	1307.56		2021-05-20	-0.129	Downward		
					2021-07-30	4.18	1307.35		2021-07-30	-0.136	Downward		
					2021-10-27	4.23	1307.30		2021-10-27	-0.138	Downward		
	EV_MW_GV4B	1310.64	1311.66	1.02	2021-03-21	2.90	1308.77	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-05-20	2.83	1308.83						
					2021-07-30	2.98	1308.68						
					2021-10-27	3.00	1308.66						
Upgradient of Study Area 10 (EVO)	RG_MW_AC1A	1303.93	1304.82	0.89	2021-10-01	3.00	1301.82	RG_MW_AC1A and RG_MW_AC1B	2021-10-01	-0.002	Downward	Q4	Peristaltic
	RG_MW_AC1B	1303.99	1304.83	0.84	2021-10-01	2.98	1301.85		-	-	-	Q4	Peristaltic
Upgradient of Study Area 11 (CMm)	CM_MW3-DP	1573.40	1574.16	0.76	2021-03-04	2.71	1571.45	CM_MW3-DP and CM_MW3-SH	2021-03-04	0.027	Upward	Q1, Q2, Q3, Q4	Bladder
					2021-05-26	1.91	1572.25		2021-05-26	-0.001	Downward		
					2021-07-29	2.56	1571.60		2021-07-29	0.028	Upward		
					2021-10-28	2.59	1571.57		2021-10-28	0.026	Upward		
	CM_MW3-SH	1573.40	1574.21	0.75	2021-03-04	3.03	1571.19	-	-	-	-	-	Bladder
					2021-05-26	1.96	1572.26						
					2021-07-29	2.88	1571.33						
					2021-10-28	2.89	1571.32						
	CM_MW6-DP	1579.66	1580.533	0.87	2021-02-24	5.30	1575.23	-	-	-	-	-	Bladder
					2021-05-12	3.92	1576.61						
					2021-07-15	4.36	1576.17						
					2021-10-21	4.90	1575.63						

Notes:
TOC denotes top of pipe casing.
masl denotes metres above sea level.
mbtoc denotes metres below top of casing.
"-" denotes data not available.
Quarter is represented as Q1, Q2, Q3, Q4.

TABLE BG-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Organics, Nutrient and Organics in Groundwater (Background)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
			Field Temperature C	pH (field) pH	Dissolved Oxygen mg/L	Field Conductivity µS/cm	Field ORP mV	pH pH	Hardness mg/L	Conductivity µS/cm	Total Suspended Solids mg/L	Total Dissolved Solids mg/L	Turbidity ntu	Total Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Hydroxide mg/L	Bromide mg/L	Chloride mg/L	Fluoride mg/L	Sulphate mg/L	Ammonia Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Kjeldahl Nitrogen-N mg/L	Ortho-Phosphate mg/L	Phosphorus, Total mg/L	Total Organic Carbon mg/L	Dissolved Organic Carbon mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Within Study Area 1 (FRO/GHO Boundary)																													
FR_MW_FRRD1	FR_MW-FRRD1_WG_2021_02_03_NP	2021 02 03	4.3	7.06	7.49	692	203.9	7.77	322	634	39.8	417	32.7	325	397	< 5.0	< 5.0	< 0.050	37.9	0.065	10.9	0.0057	0.219	< 0.0010	0.262	0.0034	0.0907	1.82	1.67
	FR_MW-FRRD1_WG_2021_06_07_NP	2021 06 07	5.1	7.13	3.87	717	-	7.93	349	650	1.0	421	1.08	270	329	< 5.0	< 5.0	0.056	59.5	0.108	9.09	0.0767	0.207	< 0.0010	0.133	0.0023	< 0.0020	1.67	1.84
	FR_MW_MC10A_WG_2021_06_07_NP	Duplicate	-	-	-	-	-	7.98	346	641	< 1.0	416	0.92	266	324	< 5.0	< 5.0	< 0.050	59.5	0.111	9.05	0.0081	0.202	< 0.0010	< 0.050	0.0023	< 0.0020	1.48	1.72
	QA/QC RPD%		-	-	-	-	-	1	1	1	*	1	16	1	2	*	*	*	0	3	0	*	2	*	*	*	*	*	*
	FR_MW-FRRD1_WG_2021_08_10_NP	2021 08 10	4.3	7.35	6.23	630	111.8	7.84	326	609	14.3	443	27.9	271	331	< 5.0	< 5.0	0.063	56.6	0.097	11.2	< 0.0050	0.288	< 0.0010	< 0.20	0.0030	0.0240	3.11	2.75
	FR_MW_MC10A_WG_2021_08_10_NP	Duplicate	-	-	-	-	-	7.83	324	607	8.8	442	29.1	287	350	< 5.0	< 5.0	0.063	56.4	0.100	11.1	0.0160	0.279	< 0.0010	< 0.20	0.0031	0.0234	3.52	2.79
	QA/QC RPD%		-	-	-	-	-	0	1	0	48	0	4	6	6	*	*	*	0	*	1	*	3	*	*	*	3	12	1
	FR_MW-FRRD1_WG_2021_10_27_NP	2021 10 27	4.28	6.92	6.83	664.72	289.1	7.80	325	722	8.0	430	11.1	336	409	< 5.0	< 5.0	0.053	43.0	0.095	10.0	< 0.0050	0.206	< 0.0010	0.087	0.0031	0.0124	1.49	1.31
FR_MW_CH1-A	FR_MW-CH1-A_WG_2021_02_02_NP	2021 02 02	4.4	7.56	7.12	271.2	84.3	8.09	150	281	17.0	174	9.84	146	178	< 5.0	< 5.0	< 0.050	0.39	0.333	20.5	< 0.0050	0.0935	0.0010	0.106	0.0014	0.0250	3.97	2.72
	FR_MW_MC10A_WG_2021_02_02_NP	Duplicate	-	-	-	-	-	8.09	147	280	16.9	159	11.1	145	177	< 5.0	< 5.0	< 0.050	0.39	0.338	20.2	0.0062	0.0907	< 0.0010	0.100	0.0011	0.0322	2.42	2.15
	QA/QC RPD%		-	-	-	-	-	0	2	0	1	9	12	1	1	*	*	*	*	1	1	*	3	*	*	*	25	*	*
	FR_MW-CH1-A_WG_2021_06_08_NP	2021 06 08	3.7	7.71	9.6	268.3	-	8.10	149	278	18.8	169	12.2	138	208	< 5.0	< 5.0	< 0.050	1.86	0.160	16.6	0.0159	0.0914	< 0.0010	0.122	0.0018	0.0531	< 0.50	< 0.50
	FR_MW-CH1-A_WG_2021_08_10_NP	2021 08 10	4.7	7.44	8.8	281.4	206.1	8.33	134	262	2.8	152	2.19	134	160	< 5.0	< 5.0	< 0.050	0.17	0.133	14.9	< 0.0050	0.0508	< 0.0010	< 0.20	0.0037	0.0088	1.85	2.10
	FR_MW-CH1-A_WG_2021_10_26_NP	2021 10 26	5.6	7.63	7.48	265.51	265	8.22	155	295	< 1.0	184	0.18	141	172	< 5.0	< 5.0	< 0.050	0.17	0.145	20.4	< 0.0050	0.0629	< 0.0010	0.059	0.0028	0.0023	0.73	0.58
	FR_MW_MC10A_WG_2021_10_26_NP	Duplicate	-	-	-	-	-	8.17	154	294	< 2.0	177	0.13	146	178	< 5.0	< 5.0	< 0.050	0.18	0.149	20.3	< 0.0050	0.0608	< 0.0010	< 0.050	0.0029	0.0028	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	1	1	0	*	4	*	3	3	*	*	*	*	3	0	*	3	*	*	*	*	*	*
FR_MW_CH2	FR_MW_CH2_WG_2021_02_02_NP	2021 02 02	1.6	7.19	7.75	297	103.6	8.01	164	303	< 1.0	180	0.22	148	181	< 5.0	< 5.0	< 0.050	0.25	0.164	27.8	0.0181	0.114	< 0.0010	0.075	0.0028	0.0029	5.34	3.40
	FR_MW_CH2_WG_2021_06_07_NP	2021 06 07	3	7.44	3.42	287	-	8.27	167	290	< 1.0	161	0.95	159	193	< 5.0	< 5.0	< 0.050	0.16	0.139	11.3	0.112	0.0167	< 0.0010	0.108	< 0.0010	0.0026	1.97	2.01
	FR_MW_CH2_WG_2021_08_10_NP	2021 08 10	5.8	7.62	4.27	319.2	-88.4	8.39	160	309	1.5	183	1.64	162	191	< 5.0	< 5.0	< 0.050	0.11	0.136	17.0	0.119	0.0349	< 0.0010	< 0.20	0.0017	0.0035	1.97	2.16
	FR_MW-CH2_WG_2021_10_26_NP	2021 10 26	5.29	7.32	4.91	310.93	-57.4	8.14	176	342	3.0	203	3.93	174	213	< 5.0	< 5.0	< 0.050	0.14	0.127	20.3	0.448	0.0469	< 0.0010	0.537	0.0016	0.0099	1.31	1.51
Upgradient of Study Area 2																													
LC_PIZDC1307	LC_PIZDC1307_WG_Q1-2021_NP	2021 03 10	2.48	7.93	0.1	398.4	-184.8	8.28	185	375	2.5	191	6.45	224	274	< 5.0	< 5.0	< 0.050	0.23	0.406	< 0.30	0.104	0.0113	< 0.0010	0.233	< 0.0010	0.0116	1.81	1.55
	LC_PIZDC1307_WG_Q2-2021_NP	2021 05 19	4.7	7.84	-0.6	397	-207.3	8.42	198	381	< 1.0	205	6.84	221	258	5.5	< 1.0	< 0.050	0.17	0.559	< 0.30	0.119	< 0.0050	< 0.0010	0.164	< 0.0010	0.0127	1.15	1.26
	LC_PIZDC1307_WG_Q3-2021_NP	2021 09 17	4.1	7.93	0.08	381	-179	8.32	180	383	3.5	222	12.0	239	284	3.6	< 1.0	< 0.050	0.16	0.500	< 0.30	0.103	0.0090	< 0.0010	0.179	< 0.0010	0.0136	2.04	2.01
	LC_PIZDC1307S_WG_Q4-2021_NP	2021 11 18	1.9	8.15	0.15	388	-197	8.30	168	388	2.8	211	8.03	245	294	2.2	< 1.0	< 0.050	0.20	0.570	< 0.30	0.212	< 0.0050	< 0.0010	0.168	< 0.0010	0.0131	1.73	2.05
LC_PIZDC1308	LC_PIZDC1308_WG_Q1-2021_NP	2021 03 10	3.2	7.44	0.02	479	-107	8.12	245	448	< 1.0	242	4.21	267	325	< 5.0	< 5.0	< 0.050	0.31	0.183	1.84	0.0583	0.0143	< 0.0010	0.163	< 0.0010	< 0.0020	2.09	2.27
	LC_PIZDC1308_WG_Q2-2021_NP	2021 05 19	4.02	6.9	0.04	720	198.5	8.28	430	671	< 1.0	396	< 0.10	412	502	< 1.0	< 1.0	< 0.050	2.30	0.136	5.41	< 0.0050	0.171	< 0.0010	0.096	< 0.0010	< 0.0020	3.36	3.38
	LC_PIZDC1308_WG_Q3-2021_NP	2021 09 17	5.5	6.98	0.04	639	67	7.99	366	660	< 1.0	396	0.58	399	487	< 1.0	< 1.0	< 0.050	1.46	0.137	5.64	0.0071	0.0656	0.0028	0.089	< 0.0010	< 0.0020	2.90	3.17
	LC_PIZDC1308D_WG_Q4-2021_NP	2021 11 18	2.6	7.16	0.14	587	-2	7.87	315	608	< 1.0	328	1.99	380	464	< 1.0	< 1.0	< 0.050	0.89	0.227	3.39	0.116	< 0.0050	0.0010	0.078	< 0.0010	< 0.0020	2.24	3.60

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

TABLE BG-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Organics, Nutrient and Organics in Groundwater (Background)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature	pH (field)	Dissolved Oxygen	Field Conductivity	Field ORP	pH	Hardness	Conductivity	Total Suspended Solids	Total Dissolved Solids	Turbidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Bromide	Chloride	Fluoride	Sulphate	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Kjeldahl Nitrogen-N	Ortho-Phosphate	Phosphorus, Total	Total Organic Carbon	Dissolved Organic Carbon
			C	pH	mg/L	µS/cm	mV	pH	mg/L	µS/cm	mg/L	mg/L	ntu	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Upgradient of Study Area 4 (GHO)																													
GH_MW_BG1A	GH_MW_BG1A_WG_2021_03_26_NP	2021 03 26	-	-	-	-	-	7.62	284	593	9.3	345	13.6	340	415	< 5.0	< 5.0	< 0.050	2.91	0.230	32.4	0.0945	0.0190	< 0.0010	3.07	< 0.0010	0.0133	3.72	3.06
	GH_MW-BG1A_WG_2021-04-05_NP	2021 04 30	4.2	7.45	0.85	579	-83.3	8.14	308	579	13.4	338	13.8	321	391	< 1.0	< 1.0	< 0.050	2.07	0.195	23.3	0.0926	< 0.0050	< 0.0010	0.136	< 0.0010	0.0141	3.56	2.44
	GH_MW_BG1A_WG_2021_09_15_NP	2021 09 15	6.6	7.23	1.03	567.4	-121.7	8.00	286	595	21.1	342	16.6	326	398	< 5.0	< 5.0	< 0.050	1.59	0.167	23.3	0.0831	< 0.0050	< 0.0010	0.146	< 0.0010	0.0251	2.59	2.91
	GH_MW_BG1A_WG_2021_11_19_NP	2021 11 19	4.1	7.27	1.24	534	-133.2	8.23	305	550	10.2	308	17.0	362	442	< 5.0	< 5.0	< 0.050	0.35	0.161	6.51	0.124	< 0.0050	< 0.0010	0.130	< 0.0010	0.0105	1.76	1.74
GH_MW_BG1B	GH_MW_BG1B_WG_2021-01-04_NP	2021 01 27	2.9	7.72	0.94	494	-114.1	8.13	326	516	13.4	294	55.2	300	366	< 5.0	< 5.0	< 0.050	0.79	0.387	10.9	0.153	< 0.0050	< 0.0010	0.130	< 0.0010	0.0080	2.67	2.34
	GH_MW-BG1B_WG_2021-04-05_NP	2021 04 30	7	7.58	0.93	491.6	-122.6	8.17	290	492	13.5	289	50.7	289	353	< 1.0	< 1.0	< 0.050	0.41	0.427	4.70	0.148	< 0.0050	< 0.0010	0.119	< 0.0010	0.0055	2.56	2.41
	GH_MW_BG1B_WG_2021_09_22_NP	2021 09 22	4.6	7.35	0.39	537.5	-138.8	8.13	305	462	20.9	296	47.1	272	331	< 5.0	< 5.0	< 0.050	0.50	0.436	9.11	0.152	< 0.0050	< 0.0010	0.214	< 0.0010	0.0147	3.29	2.60
	GH_MW_BG1B_WG_2021_11_19_NP	2021 11 19	4	7.41	0.67	490.1	-131.7	8.21	271	513	55.7	304	53.9	322	393	< 5.0	< 5.0	< 0.050	0.31	0.363	7.59	0.140	< 0.0050	< 0.0010	0.161	< 0.0010	0.0439	4.45	2.46
GH_MW_BG1C	GH_MW_BG1C_WG_2021-01-04_NP	2021 01 27	3.6	7.73	0.8	511	-120	8.12	326	525	9.8	300	34.1	304	371	< 5.0	< 5.0	< 0.050	0.63	0.374	10.3	0.148	< 0.0050	< 0.0010	0.149	< 0.0010	0.0072	2.92	2.24
	GH_MW-BG1C_WG_2021-04-05_NP	2021 04 30	5.4	7.63	0.67	510	-125.3	8.12	281	504	17.7	295	37.5	307	374	< 1.0	< 1.0	< 0.050	0.36	0.406	7.45	0.149	< 0.0050	< 0.0010	0.209	< 0.0010	0.0063	2.81	2.48
	GH_FOX3_WG_2021-04-05_NP	Duplicate	-	-	-	-	-	8.15	286	508	17	313	39.5	297	395	7.9	< 1.0	< 0.050	0.36	0.403	7.50	0.167	< 0.0050	0.0010	-	< 0.0010	0.0082	2.88	2.74
	QA/QC RPD%		-	-	-	-	-	0	2	1	4	6	5	3	5	*	*	*	*	1	1	11	*	*	-	*	*	2	*
	GH_MW_BG1C_WG_2021_09_22_NP	2021 09 22	4.7	7.39	0.39	526.4	-141	8.24	300	516	10.8	290	40.5	305	372	< 5.0	< 5.0	< 0.050	0.28	0.442	7.20	0.152	0.0081	< 0.0010	0.216	< 0.0010	0.0040	2.63	2.85
	GH_MW_BG1C_WG_2021_11_19_NP	2021 11 19	4.1	7.4	0.65	489.6	-131.2	8.27	277	512	8.1	287	43.7	321	391	< 5.0	< 5.0	< 0.050	0.18	0.361	6.26	0.146	< 0.0050	< 0.0010	0.161	0.0015	0.0141	2.71	2.50
GH_MW-Willow-1D	GH_MW-WILLOW-1D_WG_2021_03_24_NP	2021 03 24	6	7.95	0.1	762.8	-173.7	8.26	140	466	1.1	256	19.1	249	304	< 5.0	< 5.0	< 0.050	10.7	0.815	8.41	0.0792	0.0135	< 0.0010	0.134	0.0029	0.239	0.69	0.51
	GH_MW-WILLOW-1D_WG_2021_06_10_NP	2021 06 10	7.6	7.85	1.2	511.6	-161.1	8.16	128	480	5.0	262	9.61	258	315	< 5.0	< 5.0	0.064	11.4	0.850	7.22	0.0919	< 0.0050	< 0.0010	0.196	0.0021	0.0133	1.32	1.38
	GH_MW_MC10-A_WG_2021_06_10_NP	Duplicate	-	-	-	-	-	8.15	133	485	4.5	269	10.8	258	315	< 5.0	< 5.0	0.063	11.5	0.850	7.22	0.0947	< 0.0050	< 0.0010	0.114	0.0019	0.0125	0.86	0.86
	QA/QC RPD%		-	-	-	-	-	0	4	1	*	3	12	0	0	*	*	*	1	0	0	3	*	*	*	*	6	*	*
	GH_MW-WILLOW-1D_WG_2021_09_13_NP	2021 09 13	9.4	7.85	0.82	472	-154.4	8.47	140	481	21.0	285	28.0	255	290	10.3	< 5.0	< 0.050	11.0	0.930	8.50	0.0976	< 0.0050	< 0.0010	0.153	0.0026	0.0312	1.37	0.80
	GH_MW-WILLOW-1D_WG_2021_11_16_NP	2021 11 16	5.4	7.78	0.95	466	-220.3	8.57	139	460	3.2	235	7.32	270	306	11.5	< 5.0	0.050	8.72	0.856	8.23	0.0852	< 0.0050	< 0.0010	0.092	0.0018	0.0080	0.69	0.70
GH_MW-Willow-2D	GH_MW-WILLOW-2D_WG_2021_03_24_NP	2021 03 24	8	7.92	0.51	1,027	-80.6	8.38	133	643	5.1	375	6.31	376	447	5.4	< 5.0	0.062	13.9	*1.10*	1.37	0.155	0.0287	0.0012	0.257	0.0107	0.117	1.20	0.93
	GH_MW-WILLOW-2D_WG_2021_06_10_NP	2021 06 10	8.7	8.11	0.18	685.9	-120.4	8.31	124	667	8.7	390	9.52	388	469	< 5.0	< 5.0	0.087	14.5	*1.21*	0.81	0.234	< 0.0050	< 0.0010	0.259	0.0045	0.0526	1.42	1.35
	GH_MW-WILLOW-2D_WG_2021_09_13_NP	2021 09 13	10.6	7.9	0.39	672.8	-111.2	8.60	124	702	10.3	427	16.1	377	423	18.4	< 5.0	0.061	15.5	*1.27*	0.76	0.215	0.0056	0.0015	0.265	0.0139	0.0286	1.44	1.33
	GH_MW-WILLOW-2D_WG_2021_11_16_NP	2021 11 16	8.1	7.92	0.84	639	-110.3	8.65	130	663	6.1	365	8.88	399	448	19.2	< 5.0	0.074	12.9	*1.17*	1.25	0.196	0.0342	< 0.0010	0.223	0.0116	0.0642	1.26	1.20
GH_MW-Willow-2S	GH_MW-WILLOW-2S_WG_2021_03_24_NP	2021 03 24	6.7	7.52	8.64	516.7	154.7	8.11	201	368	1.4	198	3.09	217	264	< 5.0	< 5.0	< 0.050	0.50	0.098	8.15	< 0.0050	0.575	< 0.0010	0.182	0.0141	0.0139	4.59	4.59
	GH_MW-WILLOW-2S_WG_2021_06_09_NP	2021 06 09	8	7.59	7.32	382.9	-1.6	7.75	193	327	15.7	212	9.44	218	266	< 5.0	< 5.0	< 0.050	0.35	0.163	8.01	0.0060	0.119	< 0.0010	0.237	< 0.0010	0.0878	4.62	4.12
	GH_MW-WILLOW-2S_WG_2021_11_16_NP	2021 11 16	8.6	7.36	5.06	380	138.9	8.47	203	380	3.8	192	6.85	249	286	8.6	< 5.0	< 0.050	0.41	0.137	6.48	0.0084	0.555	< 0.0010	0.145	0.0220	0.0201	2.93	3.06
GH_MW-Wolf-1D	GH_MW-WOLF-1D_WG_2021_03_25_NP	2021 03 25	6.2	7.39	0.13	730.1	-121.9	7.77	211	393	44.1	220	23.5	228	278	< 5.0	< 5.0	< 0.050	0.75	0.283	10.7	0.0650	< 0.0050	< 0.0010	0.093	< 0.0010	0.0319	1.00	0.70
	GH_MW-WOLF-1D_WG_2021_06_07_NP	2021 06 07	8.5	7.58	1.3	428.1	-103.9	8.24	224	376	17.3	238	31.0	226	276	< 5.0	< 5.0	< 0.050	0.67	0.244	10.2	0.0999	0.0138	< 0.0010	0.379	< 0.0010	0.0213	1.70	1.48
	GH_MW-WOLF-1D_WG_2021_09_14_NP	2021 09 14	7	7.6	0.42	396	-36.3	8.38	184	409	4.9	232	10.6	228	263	7.7	< 5.0	< 0.050	0.75	0.233	10.2	0.0896	< 0.0050	< 0.0010	0.151	< 0.0010	0.0176	1.20	1.45
	GH_MW_MC10-A_WG_2021_09_14_NP	Duplicate	-	-	-	-	-	8.38	186	414	5.7	233	11.1	230	266	7.4	< 5.0	< 0.050	0.74	0.240	10.1	0.0835	< 0.0050	< 0.0010	0.152	< 0.0010	0.0094	1.23	1.30
	QA/QC RPD%		-	-	-	-	-	0	1	1	*	0	5	1	1	4	*	*	1	3	1	7	*	*	*	*	*	*	*
	GH_MW-WOLF-1D_WG_2021_11_15_NP	2021 11 15	5.6	7.6	0.56	412	-129.9	7.90	203	416	12.0	234	-	242	295	< 5.0	< 5.0	< 0.050	0.61	0.242	10.4	0.0951	< 0.0050	< 0.0010	0.124	0.0013	0.0217	1.42	1.27
GH_MW-Wolf-2D	GH_MW-WOLF-2D_WG_2021_03_24_NP	2021 03 24	6.2	7.29	0.76	743.2	-19	8.03	267	525	61.5	306	50.6	292	356	< 5.0	< 5.0	< 0.050	0.81	0.264	29.4	0.0177	< 0.0050	< 0.0010	0.114	0.0071	0.10	4.68	2.44
	GH_MW-WOLF-2D_WG_2021_06_07_NP	2021 06 07	6.6	7.36	1.04	529.6	-21.5	8.11	286	433	4.1	287	12.3	233	285	< 5.0	< 5.0	< 0.050	0.34	0.222	22.6	0.0327	< 0.0050	< 0.0010	0.098	< 0.0010	0.0148	1.82	1.57
	GH_MW-WOLF-2D_WG_2021_09_15_NP	2021 09 15	7.5	7.32	0.62	530.6	59.1	8.08	250	505	132	353	119	282	344	< 5.0	< 5.0	< 0.050	0.40	0.214	24.8	0.0151	0.0074	< 0.0010	< 0.050	0.0047	0.0116	1.22	1.28
	GH_MW-WOLF-2D_WG_2021_11_16_NP	2021 11 16	6.4	7.27	0.68	493.8	-23.5	8.04	263	467	59.9	318	104	272	332	< 5.0	< 5.0	< 0.050	0.31	0.233	25.7	0.0657	< 0.0050	< 0.0010	0.069	0.0063	0.0702	3.6	1.40

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* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

TABLE BG-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Organics, Nutrient and Organics in Groundwater (Background)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
			Field Temperature	pH (field)	Dissolved Oxygen	Field Conductivity	Field ORP	pH	Hardness	Conductivity	Total Suspended Solids	Total Dissolved Solids	Turbidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Bromide	Chloride	Fluoride	Sulphate	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Kjeldahl Nitrogen-N	Ortho-Phosphate	Phosphorus, Total	Total Organic Carbon	Dissolved Organic Carbon
			C	pH	mg/L	µS/cm	mV	pH	mg/L	µS/cm	mg/L	mg/L	ntu	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Upgradient of Study Areas 5/6 (LCO)																													
LC_PIZP1101	LC_PIZP1101_WG_Q1-2021_N	2021 03 22	8.0	7.96	0.13	363	-85	7.92	133	291	300	376	472	197	240	< 5.0	< 5.0	< 0.050	0.65	*1.81*	3.26	0.0287	0.0095	< 0.0010	0.647	0.0107	0.551	< 5.0	< 0.50
	WG_Q1-2021_010	Duplicate	-	-	-	-	-	8.04	130	289	292	380	450	187	229	< 5.0	< 5.0	< 0.050	0.63	*1.80*	3.23	0.0216	0.0079	< 0.0010	0.506	0.0063	0.568	6.5	< 0.50
	QA/QC RPD%		-	-	-	-	-	2	2	1	3	1	5	5	5	*	*	*	3	1	1	*	*	*	24	52	3	*	*
	LC_PIZP1101_WG_Q2-2021_N	2021 06 10	9.1	7.56	0.09	307.6	-123.3	8.29	121	303	69.9	192	102	187	228	< 1.0	< 1.0	< 0.050	0.76	*1.88*	2.66	0.0268	< 0.0050	< 0.0010	0.242	0.0091	0.213	2.08	1.21
	WG_Q2-2021_005	Duplicate	-	-	-	-	-	8.28	120	303	77.9	192	113	179	219	< 1.0	< 1.0	< 0.050	0.76	*1.88*	2.63	0.0705	< 0.0050	< 0.0010	0.239	0.0091	0.223	1.72	1.49
	QA/QC RPD%		-	-	-	-	-	0	1	0	11	0	10	4	4	*	*	*	0	0	1	90	*	*	*	0	5	*	*
	LC_PIZP1101_WG_Q3-2021_N	2021 09 21	17.2	7.8	0	295.5	-189.2	8.15	125	306	2,010	397	4,000	175	214	< 1.0	< 1.0	< 0.050	0.90	*1.89*	3.91	0.0471	< 0.0050	< 0.0010	0.116	0.0045	2.04	32.3	0.82
	LC_CC2_PIZP1101_N	Duplicate	-	-	-	-	-	8.03	122	304	2,080	424	4,000	178	217	< 1.0	< 1.0	< 0.050	0.90	*1.87*	3.87	0.0415	< 0.0050	0.0010	0.111	0.0041	2.03	27.7	1.18
	QA/QC RPD%		-	-	-	-	-	1	2	1	3	7	0	2	1	*	*	*	0	1	1	13	*	*	*	*	0	15	*
	LC_PIZP1101_WG_Q4-2021_N	2021 11 23	4.1	8.02	0.05	306	-152	8.14	120	295	2,160	533	3,110	175	214	< 1.0	< 1.0	< 0.050	0.87	*1.79*	3.31	0.0848	0.207	0.0013	0.114	0.0118	1.89	9.88	< 0.50
	WG_Q4-2021_010_CC3	Duplicate	-	-	-	-	-	8.16	120	297	2,180	415	83.2	178	217	< 1.0	< 1.0	< 0.050	0.86	*1.80*	3.27	0.0874	0.206	0.0012	0.158	0.0112	1.86	< 10.0	< 0.50
	QA/QC RPD%		-	-	-	-	-	0	0	1	1	25	190	2	1	*	*	*	1	1	1	3	0	*	*	5	2	*	*
LC_PIZP1103	LC_PIZP1103_WG_Q1-2021_NP	2021 02 17	4.2	7.5	0.38	785	-29	7.80	137	743	36.8	528	60.9	408	498	< 5.0	< 5.0	< 0.050	4.00	0.254	26.4	0.149	0.0080	0.0029	0.331	0.0493	0.154	1.64	1.44
	LC_PIZP1103_WG_Q2-2021_NP	2021 05 13	8.5	7.44	0.48	740	-50.3	8.62	139	741	16.5	438	16.0	407	444	25.9	< 1.0	< 0.050	2.56	0.347	26.4	0.126	< 0.0050	< 0.0010	0.278	0.0376	0.0502	1.85	1.66
	LC_PIZP1103_WG_Q3-2021_NP	2021 08 20	9.3	7.65	1.09	790	-58	8.05	137	741	16.4	444	17.5	433	528	< 1.0	< 1.0	< 0.050	2.99	0.347	28.1	0.0491	0.0999	0.0109	0.086	0.0483	0.0786	1.70	2.56
	LC_PIZP1103_WG_Q4-2021_N	2021 10 22	7.3	7.4	1.7	742.0	188.6	8.55	136	756	13.6	453	9.62	429	501	10.9	< 1.0	< 0.050	4.10	0.426	28.7	0.0367	0.110	0.0048	0.265	0.0589	0.0485	1.88	1.68
Upgradient of Study Area 7 (EVO)																													
EV_MW_GV4A	EV_MW_GV4A_WG_2021_Q1_NP	2021 03 21	4.2	6.68	2.3	715	42.9	7.79	312	638	4.7	400	1.54	278	339	< 1.0	< 1.0	< 0.050	2.34	0.585	112	0.0087	0.0316	0.0016	< 0.050	< 0.0010	0.0027	4.96	4.21
	EV_MW_GV4A_WG_2021_Q2_NP	2021 05 20	4.6	7.17	2.57	703	-125	7.91	329	613	9.0	406	2.60	291	355	< 2.0	< 2.0	< 0.050	2.32	0.706	106	0.0082	0.0624	0.0019	0.105	< 0.0010	0.0070	3.77	4.12
	EV_MW_GV4A_WG_2021_Q3_NP	2021 07 30	8.6	7.34	1.27	751	178.4	8.20	304	565	5.0	474	1.97	278	340	< 2.0	< 2.0	0.068	1.96	0.641	128	0.0073	0.0210	< 0.0010	0.163	< 0.0010	0.0382	8.37	9.05
	EV_MW_GV4A_WG_2021_Q4_NP	2021 10 17	7.7	7.34	2.06	654	-105.3	8.32	334	637	< 1.0	398	1.18	300	357	4.4	< 2.0	< 0.050	1.45	0.604	89.4	0.0058	0.0303	< 0.0010	0.074	0.0020	0.0066	3.30	3.16
EV_MW_GV4B	EV_MW_GV4B_WG_2021_Q1_NP	2021 03 21	3	6.77	5.4	573	314.8	7.94	303	503	< 1.0	302	0.17	260	317	< 1.0	< 1.0	< 0.050	0.82	0.452	62.0	0.0142	0.275	< 0.0010	< 0.050	0.0024	< 0.0020	0.75	0.82
	EV_MW_GV4B_WG_2021_Q2_NP	2021 05 20	4.2	7.3	5.47	580	127.3	7.97	314	519	27.5	343	26.1	274	334	< 2.0	< 2.0	< 0.050	2.96	0.604	70.5	< 0.0050	0.189	0.0033	0.166	< 0.0010	0.0256	1.43	1.46
	EV_MW_GV4B_WG_2021_Q3_NP	2021 07 30	9.8	7.42	5.27	582	177	8.14	312	539	< 1.0	341	0.47	254	310	< 2.0	< 2.0	< 0.050	0.79	0.519	65.6	< 0.0050	0.0579	< 0.0010	< 0.050	0.0021	< 0.0020	< 0.50	0.61
	EV_MW_MC10A_WG_2021_Q3_NP	Duplicate	-	-	-	-	-	8.17	309	534	1.0	338	0.39	247	301	< 2.0	< 2.0	< 0.050	0.84	0.518	65.8	< 0.0050	0.0629	< 0.0010	< 0.050	0.0016	< 0.0020	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	0	1	1	*	1	*	3	3	*	*	*	6	0	0	*	8	*	*	*	*	*	*
	EV_MW_GV4B_WG_2021_Q4_NP	2021 10 17	8.4	7.38	5.25	574	167.5	8.35	331	562	1.8	345	0.46	264	308	6.6	< 2.0	< 0.050	0.95	0.528	65.9	< 0.0050	0.0521	< 0.0010	< 0.050	0.0023	0.0038	< 0.50	0.80

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[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

TABLE BG-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Organics, Nutrient and Organics in Groundwater (Background)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
			Field Temperature C	pH (field) pH	Dissolved Oxygen mg/L	Field Conductivity µS/cm	Field ORP mV	pH pH	Hardness mg/L	Conductivity µS/cm	Total Suspended Solids mg/L	Total Dissolved Solids mg/L	Turbidity ntu	Total Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Hydroxide mg/L	Bromide mg/L	Chloride mg/L	Fluoride mg/L	Sulphate mg/L	Ammonia Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Kjeldahl Nitrogen-N mg/L	Ortho-Phosphate mg/L	Phosphorus, Total mg/L	Total Organic Carbon mg/L	Dissolved Organic Carbon mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Upgradient of Study Area 10 (EVO)																													
RG_MW_AC1A	RG_MW_AC1A_WG_2021_10_01_NP	2021 10 01	8.2	7.94	0.37	319.4	-183.8	8.09	157	314	7.1	245	2.78	136	165	< 5.0	< 5.0	< 0.050	0.88	0.260	47.5	0.0318	0.0618	0.0071	0.081	< 0.0010	0.0096	1.99	2.69
RG_MW_AC1B	RG_MW_AC1B_WG_2021_10_01_NP	2021 10 01	8	7.56	5.9	319.6	86.2	8.02	165	307	< 1.0	193	0.30	163	198	< 5.0	< 5.0	< 0.050	0.70	0.146	16.9	0.0094	0.0215	< 0.0010	0.078	< 0.0010	0.0032	0.74	2.19
Upgradient of Study Area 11 (CMm)																													
CM_MW3-DP	CM_MW3-DP_WG_2021-01-11_N	2021 03 04	4.89	8.14	0.35	2,917	-139	8.27	51.4	2,700	5.0	1,340	0.68	208	254	< 1.0	< 1.0	2.78	*784*	0.370	15.7	0.682	0.178	< 0.0050	0.059	0.0018	0.0123	< 0.50	< 0.50
	CM_MW3-DP_WG_2021-04-12_N	2021 05 26	5.69	7.77	0.43	3,071	-114.5	7.92	50.6	2,780	1.7	1,470	0.52	212	259	< 1.0	< 1.0	2.51	*780*	0.505	4.64	0.542	< 0.0250	< 0.0050	0.544	0.0036	0.0108	0.66	1.31
	CM_MW3-DP_WG_2021-07-12_N	2021 07 29	6.1	8.29	0.17	2,691	-116	8.10	47.6	2,590	4.8	1,440	8.52	208	254	< 1.0	< 1.0	2.50	*732*	0.336	10.9	0.585	1.34	< 0.0050	< 0.050	< 0.0010	0.0186	0.80	0.59
	CM_MW3-DP_WG_2021-10-11_N	2021 10 28	3.45	8.47	0.54	2,720	-141	7.70	47.1	2,550	9.4	1,410	5.48	226	275	< 1.0	< 1.0	2.33	*663*	0.393	< 1.50	0.556	0.240	0.0711	0.666	< 0.0010	0.0184	0.85	< 0.50
CM_MW3-SH	CM_MW3-SH_WG_2021-01-11_N	2021 03 04	3.1	7.27	8.49	329.6	206.2	8.31	176	309	< 1.0	148	< 0.10	161	190	3.1	< 1.0	< 0.050	1.40	0.085	17.1	< 0.0050	0.0223	< 0.0010	< 0.050	0.0020	< 0.0020	0.56	0.57
	CM_MW3-SH_WG_2021-04-12_N	2021 05 26	2.6	7.6	12.41	345.5	109.9	7.95	187	344	< 1.0	177	0.15	176	214	< 1.0	< 1.0	< 0.050	0.62	0.089	11.0	0.0154	0.0142	< 0.0010	0.090	0.0022	< 0.0020	1.67	1.91
	CM_MW3-SH_WG_2021-07-12_N	2021 07 29	7.11	7.51	3.18	336	179	8.02	178	320	< 1.0	197	0.49	176	214	< 1.0	< 1.0	< 0.050	0.70	0.080	16.8	< 0.0050	0.0253	< 0.0010	< 0.050	0.0038	0.0046	0.96	1.19
	CM_MW3-SH_WG_2021-10-11_N	2021 10 28	4.5	8.38	5.41	330	52.6	7.87	172	333	< 1.0	280	0.27	179	218	< 1.0	< 1.0	< 0.050	1.16	0.095	16.7	0.0070	0.0167	< 0.0010	< 0.050	0.0034	0.0030	< 0.50	< 0.50
CM_MW6-DP	CM_MW6-DP_WG_2021-01-11_N	2021 02 24	1.3	8.44	0.11	1,305	-105.1	8.36	32.6	1,200	15.8	798	16.1	702	836	9.8	< 1.0	0.086	35.1	0.341	6.32	0.748	0.111	0.0011	0.678	0.0235	0.0379	1.93	2.76
	CM_MW6-DP_WG_2021-04-12_N	2021 05 12	6.45	8.17	0.35	1,267	-157.1	8.55	36.2	1,190	1.1	713	0.83	629	731	18.0	< 1.0	0.101	36.6	0.410	5.20	0.307	< 0.0050	< 0.0010	0.272	< 0.0010	0.0070	1.91	3.04
	CM_MW6-DP_WG_2021-07-12_N	2021 07 15	16.3	8.27	0.16	1,287	-87.4	8.53	29.5	1,230	2.2	796	1.58	674	785	18.4	< 2.0	0.089	38.0	0.577	0.39	0.552	0.0781	< 0.0010	0.596	0.0407	0.0352	2.54	4.54
	CM_MW6-DP_WG_2021-10-11_N	2021 10 21	7.7	8.22	2.14	1,291	-177.3	8.51	37.0	1,260	4.3	798	2.81	694	809	11.2	< 2.0	< 0.250	35.1	0.279	< 1.50	0.533	< 0.0250	< 0.0050	0.492	0.0168	0.0320	< 0.50	< 0.50
Blanks																													
Field Blanks																													
FR_MW-FRRD1	FR_MW_MC10B_WG_2021_02_03_NP	2021 02 03	-	-	-	-	-	5.47	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
GH_MW_Wolf-2D	GH_MW_MC10-B_WG_2021_03_24_NP	2021 03 24	-	-	-	-	-	5.52	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
GH_MW_BG1C	GH_RDI2_WG_2021-04-05_NP	2021 04 30	-	-	-	-	-	5.41	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
FR_MW-CH1-A	FR_MW_MC10B_WG_2021_06_08_NP	2021 06 08	-	-	-	-	-	5.12	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
EV_MW_GV4B	EV_MW_MC10B_WG_2021_Q3_NP	2021 07 30	-	-	-	-	-	5.51	< 0.50	< 2.0	< 1.0	< 10	0.20	< 2.0	< 2.0	< 2.0	< 2.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
FR_MW-FRRD1	FR_MW_MC10B_WG_2021_08_10_NP	2021 08 10	-	-	-	-	-	5.63	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.20	< 0.0010	< 0.0020	< 0.50	< 0.50
RG_MW_AC1A	RG_MW_MC10B_WG_2021_10_01_NP	2021 10 01	-	-	-	-	-	4.70	< 0.50	< 2.0	< 1.0	11	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
LC_PIZP1101	WG_Q4-2021_011_MT2	2021 11 23	-	-	-	-	-	5.11	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	0.0313	< 0.0050	< 0.0010	0.057	< 0.0010	< 0.0020	< 0.50	< 0.50
Trip Blanks																													
	FR_MW_MC10C_WG_2021_02_03_NP	2021 02 03	-	-	-	-	-	5.52	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_MW_MC10-C_WG_2021_03_25 _NP	2021 03 25	-	-	-	-	-	5.39	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	FR_MW_MC10C_WG_2021_06_08_NP	2021 06 08	-	-	-	-	-	4.04	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	WG_Q2-2021_006	2021 06 10	-	-	-	-	-	5.31	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	0.0063	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	-
	FR_MW_MC10C_WG_2021_08_10_NP	2021 08 10	-	-	-	-	-	5.25	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.20	< 0.0010	< 0.0020	< 0.50	< 0.50
	RG_MW_MC10C_WG_2021_10_01_NP	2021 10 01	-	-	-	-	-	4.71	< 0.50	< 2.0	< 1.0	22	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	FR_MW_MC10C_WG_2021_10_27_NP	2021 10 27	-	-	-	-	-	4.93	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

TABLE BG-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (Background)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																														
			mg/L	Aluminum µg/L	Antimony µg/L	Arsenic µg/L	Barium µg/L	Beryllium µg/L	Bismuth µg/L	Boron µg/L	Cadmium µg/L	Calcium mg/L	Chromium µg/L	Cobalt µg/L	Copper µg/L	Iron µg/L	Lead µg/L	Lithium µg/L	Magnesium mg/L	Manganese µg/L	Mercury µg/L	Molybdenum µg/L	Nickel µg/L	Potassium mg/L	Selenium µg/L	Silver µg/L	Sodium mg/L	Strontium µg/L	Thallium µg/L	Tin µg/L	Titanium µg/L	Uranium µg/L	Vanadium µg/L	Zinc[f] µg/L
BC Standard																																		
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	1,100-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400[b]
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Within Study Area 1 (FRO/GHO Boundary)																																		
FR_MW_FRRD1	FR_MW-FRRD1_WG_2021_02_03_NP	2021 02 03	322	1.3	< 0.10	0.12	296	< 0.020	< 0.050	< 10	0.0249	92.7	< 0.10	< 0.10	1.95	< 10	< 0.050	4.3	21.9	4.54	< 0.0050	0.468	0.51	1.11	0.216	< 0.010	20.4	116	< 0.010	< 0.10	< 0.30	0.489	< 0.50	6.0
	FR_MW-FRRD1_WG_2021_06_07_NP	2021 06 07	349	1.1	< 0.10	0.16	382	< 0.020	< 0.050	< 10	0.0133	102	< 0.10	< 0.10	0.25	< 10	< 0.050	5.5	23.0	0.56	< 0.0050	0.505	< 0.50	1.16	0.560	< 0.010	29.0	128	0.012	< 0.10	< 0.30	0.460	< 0.50	< 1.0
	FR_MW_MC10A_WG_2021_06_07_NP	Duplicate	346	1.6	< 0.10	0.14	382	< 0.020	< 0.050	< 10	0.0147	101	< 0.10	< 0.10	2.19	< 10	< 0.050	5.5	22.9	0.55	< 0.0050	0.482	< 0.50	1.13	0.495	< 0.010	28.1	129	0.010	< 0.10	< 0.30	0.466	< 0.50	1.6
	QA/QC RPD%		1	*	*	*	0	*	*	*	*	1	*	*	*	*	*	0	0	2	*	5	*	3	12	*	3	1	*	*	*	1	*	*
	FR_MW-FRRD1_WG_2021_08_10_NP	2021 08 10	326	18.0	< 0.10	0.11	337	< 0.020	< 0.050	< 10	0.0186	93.3	0.11	< 0.10	0.36	15	< 0.050	5.1	22.7	21.7	< 0.0050	0.431	< 0.50	1.21	0.573	< 0.010	28.6	130	< 0.010	< 0.10	< 0.30	0.480	< 0.50	1.7
	FR_MW_MC10A_WG_2021_08_10_NP	Duplicate	324	19.2	< 0.10	0.13	342	< 0.020	< 0.050	< 10	0.0172	92.7	0.15	< 0.10	0.35	16	< 0.050	5.2	22.4	22.1	< 0.0050	0.428	< 0.50	1.21	0.598	< 0.010	28.0	130	< 0.010	< 0.10	< 0.30	0.482	< 0.50	1.6
	QA/QC RPD%		1	6	*	*	1	*	*	*	*	1	*	*	*	*	*	2	1	2	*	1	*	0	4	*	2	0	*	*	*	0	*	*
	FR_MW-FRRD1_WG_2021_10_27_NP	2021 10 27	325	< 1.0	< 0.10	0.11	322	< 0.020	< 0.050	< 10	0.0216	94.0	0.15	< 0.10	0.29	< 10	< 0.050	4.9	22.0	9.05	< 0.0050	0.651	< 0.50	1.22	0.230	< 0.010	22.8	124	< 0.010	< 0.10	< 0.30	0.502	< 0.50	< 1.0
FR_MW_CH1-A	FR_MW-CH1-A_WG_2021_02_02_NP	2021 02 02	150	1.6	< 0.10	< 0.10	152	< 0.020	< 0.050	< 10	0.0299	39.5	0.11	< 0.10	0.23	< 10	< 0.050	7.9	12.4	33.0	< 0.0050	4.23	< 0.50	0.37	0.689	< 0.010	1.77	82.5	< 0.010	< 0.10	< 0.30	0.672	0.55	< 1.0
	FR_MW_MC10A_WG_2021_02_02_NP	Duplicate	147	1.6	< 0.10	< 0.10	150	< 0.020	< 0.050	< 10	0.0314	38.7	0.12	< 0.10	0.22	< 10	< 0.050	7.7	12.1	32.5	< 0.0050	4.17	< 0.50	0.37	0.662	< 0.010	1.75	80.7	< 0.010	< 0.10	< 0.30	0.679	0.54	< 1.0
	QA/QC RPD%		2	*	*	*	1	*	*	*	5	2	*	*	*	*	*	3	2	2	*	1	*	0	4	*	1	2	*	*	*	1	*	*
	FR_MW-CH1-A_WG_2021_06_08_NP	2021 06 08	149	2.6	< 0.10	< 0.10	65.3	< 0.020	< 0.050	< 10	0.0118	40.8	0.51	0.11	2.35	28	< 0.050	3.3	11.4	4.20	< 0.0050	0.827	1.88	0.34	0.791	< 0.010	1.41	69.9	< 0.010	0.16	< 0.30	0.595	< 0.50	1.4
	FR_MW-CH1-A_WG_2021_08_10_NP	2021 08 10	134	1.7	< 0.10	< 0.10	60.0	< 0.020	< 0.050	< 10	0.0056	36.4	0.19	< 0.10	0.27	< 10	< 0.050	3.5	10.4	< 0.10	< 0.0050	0.575	< 0.50	0.32	0.694	< 0.010	1.10	64.6	< 0.010	< 0.10	< 0.30	0.525	< 0.50	1.1
	FR_MW-CH1-A_WG_2021_10_26_NP	2021 10 26	155	1.0	< 0.10	< 0.10	78.1	< 0.020	< 0.050	< 10	0.0063	42.1	0.17	< 0.10	< 0.20	< 10	< 0.050	3.9	12.0	1.63	< 0.0050	0.598	< 0.50	0.37	0.811	< 0.010	1.17	74.6	< 0.010	< 0.10	< 0.30	0.560	< 0.50	< 1.0
	FR_MW_MC10A_WG_2021_10_26_NP	Duplicate	154	< 1.0	< 0.10	< 0.10	78.1	< 0.020	< 0.050	< 10	0.0061	42.4	0.18	< 0.10	< 0.20	< 10	< 0.050	3.8	11.8	1.61	< 0.0050	0.591	< 0.50	0.37	0.815	< 0.010	1.05	74.5	< 0.010	< 0.10	< 0.30	0.565	< 0.50	< 1.0
	QA/QC RPD%		1	*	*	*	0	*	*	*	*	1	*	*	*	*	*	*	2	1	*	1	*	0	0	*	11	0	*	*	*	1	*	*
FR_MW_CH2	FR_MW_CH2_WG_2021_02_02_NP	2021 02 02	164	< 1.0	0.13	0.13	211	< 0.020	< 0.050	< 10	0.0205	46.2	0.16	< 0.10	< 0.20	< 10	< 0.050	4.7	11.7	5.75	< 0.0050	0.847	< 0.50	0.52	0.793	< 0.010	1.29	66.9	< 0.010	< 0.10	< 0.30	0.866	< 0.50	1.9
	FR_MW_CH2_WG_2021_06_07_NP	2021 06 07	167	1.5	0.12	0.29	535	< 0.020	< 0.050	< 10	< 0.0050	47.7	< 0.10	0.14	< 0.20	154	< 0.050	6.9	11.7	31.7	< 0.0050	0.966	0.66	0.79	0.651	< 0.010	1.08	66.1	< 0.010	< 0.10	< 0.30	0.948	< 0.50	1.8
	FR_MW_CH2_WG_2021_08_10_NP	2021 08 10	160	< 1.0	0.13	0.23	494	< 0.020	< 0.050	< 10	< 0.0050	44.7	0.11	< 0.10	< 0.20	136	< 0.050	7.7	11.9	13.0	< 0.0050	0.989	< 0.50	0.87	0.544	< 0.010	1.23	73.2	< 0.010	< 0.10	< 0.30	0.883	< 0.50	< 1.0
	FR_MW-CH2_WG_2021_10_26_NP	2021 10 26	176	3.3	< 0.10	0.21	795	< 0.020	< 0.050	< 10	< 0.0050	49.3	< 0.10	< 0.10	< 0.20	207	< 0.050	16.3	13.0	13.4	< 0.0050	0.791	< 0.50	1.54	0.656	< 0.010	1.52	75.7	< 0.010	< 0.10	< 0.30	0.635	< 0.50	1.6
Upgradient of Study Area 2																																		
LC_PIZDC1307	LC_PIZDC1307_WG_Q1-2021_NP	2021 03 10	185	< 3.0	< 0.10	1.69	1,540	< 0.020	< 0.050	23	< 0.015	41.5	< 0.10	< 0.10	1.27	779	0.068	73.0	19.8	8.08	< 0.0050	*32.2*	< 0.50	4.90	< 0.050	< 0.010	13.9	140	< 0.010	< 0.10	< 10	0.033	< 0.50	1.9
	LC_PIZDC1307_WG_Q2-2021_NP	2021 05 19	198	< 1.0	< 0.10	1.80	1,530	< 0.020	< 0.050	25	< 0.0150	42.6	< 0.10	< 0.10	1.27	1,070	< 0.050	80.4	22.2	9.12	< 0.0050	*35.2*	< 0.50	5.57	< 0.050	< 0.010	15.8	153	< 0.010	< 0.10	< 0.30	0.026	< 0.50	1.5
	LC_PIZDC1307_WG_Q3-2021_NP	2021 09 17	180	1.4	< 0.10	1.57	1,410	< 0.020	< 0.050	24	< 0.0150	40.0	< 0.10	< 0.10	< 0.20	1,020	< 0.050	77.4	19.5	8.00	< 0.0050	*31.9*	< 0.50	5.12	< 0.050	< 0.010	14.5	135	< 0.010	< 0.10	< 0.30	0.020	< 0.50	1.6
	LC_PIZDC1307S_WG_Q4-2021_NP	2021 11 18	168	2.9	< 0.10	1.71	1,380	< 0.020	< 0.050	22	< 0.0150	36.4	< 0.10	< 0.10	< 0.20	1,180	< 0.050	72.2	18.8	8.15	< 0.0050	*32.4*	< 0.50	4.94	< 0.050	< 0.010	13.7	133	< 0.010	< 0.10	< 0.30	0.023	< 0.50	1.2
LC_PIZDC1308	LC_PIZDC1308_WG_Q1-2021_NP	2021 03 10	245	< 3.0	< 0.10	0.31	503	< 0.020	< 0.050	15	< 0.010	63.4	< 0.10	0.99	< 0.20	730	< 0.050	24.6	21.0	82.2	< 0.0050	9.52	2.23	2.77	< 0.050	< 0.010	6.53	113	0.036	< 0.10	< 10	0.577	< 0.50	2.0
	LC_PIZDC1308_WG_Q2-2021_NP	2021 05 19	430	1.1	0.11	< 0.10	343	< 0.020	< 0.050	11	0.178	115	< 0.10	0.38	0.38	< 10	< 0.050	8.3	34.6	1.77	< 0.0050	1.35	1.18	2.11	0.232	< 0.010	1.60	125	0.014	< 0.10	< 0.30	1.81	< 0.50	4.0
	LC_PIZDC1308_WG_Q3-2021_NP	2021 09 17	366	< 1.0	< 0.10	< 0.10	300	< 0.020	< 0.050	12	0.0854	99.3	< 0.10	0.65	0.54	38	< 0.050	9.9	28.6	24.9	< 0.0050	2.13	1.25	2.14	0.091	< 0.010	1.97	104	0.017	< 0.10	< 0.30	1.44	< 0.50	2.6
	LC_PIZDC1308D_WG_Q4-2021_NP	2021 11 18	315	< 1.0	< 0.10	0.14	381	< 0.020	< 0.050	13	0.0392	82.8	< 0.10	0.71	0.24	250	< 0.050	14.1	26.2	62.2	< 0.0050	4.74	1.37	2.42	0.068	< 0.010	2.78	114	0.024	< 0.10	< 0.30	1.13	< 0.50	1.5

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

TABLE BG-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (Background)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																														
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
			mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																		
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	1,100-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400[b]
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Upgradient of Study Area 4 (GHO)																																		
GH_MW_BG1A	GH_MW_BG1A_WG_2021_03_26_NP	2021 03 26	284	1.3	< 0.10	2.81	196	< 0.020	< 0.050	25	< 0.0050	64.2	< 0.10	0.46	< 0.20	1,190	< 0.050	18.1	30.1	*394*	< 0.0050	6.40	0.76	2.97	0.067	< 0.010	18.5	106	< 0.010	< 0.10	< 0.30	2.29	< 0.50	< 1.0
	GH_MW-BG1A_WG_2021-04-05_NP	2021 04 30	308	1.2	< 0.10	2.03	198	< 0.020	< 0.050	27	< 0.0050	71.4	< 0.10	0.55	< 0.20	852	< 0.050	18.3	31.4	*404*	< 0.0050	6.93	1.82	3.11	< 0.050	< 0.010	15.4	104	< 0.010	0.11	< 0.30	2.26	< 0.50	1.3
	GH_MW_BG1A_WG_2021_09_15_NP	2021 09 15	286	1.2	< 0.10	0.87	198	< 0.020	< 0.050	23	< 0.0050	64.4	< 0.10	0.37	< 0.20	548	< 0.050	16.0	30.4	*205*	< 0.0050	5.65	0.85	2.54	0.328	< 0.010	16.1	91.1	< 0.010	< 0.10	< 0.30	1.97	< 0.50	< 1.0
	GH_MW_BG1A_WG_2021_11_19_NP	2021 11 19	305	1.2	< 0.10	3.09	252	0.040	< 0.050	26	< 0.0050	70.9	< 0.10	0.41	< 0.20	1,400	< 0.050	20.7	31.1	*217*	< 0.0050	5.64	< 0.50	3.00	0.050	< 0.010	4.70	97.7	< 0.010	< 0.10	< 0.30	1.39	< 0.50	< 1.0
GH_MW_BG1B	GH_MW_BG1B_WG_2021-01-04_NP	2021 01 27	326	< 3.0	< 0.10	0.68	276	< 0.020	< 0.050	13	< 0.0050	85.8	< 0.10	2.58	< 0.20	3,050	< 0.050	4.2	27.2	155	< 0.0050	3.85	5.28	1.34	< 0.050	< 0.010	7.61	122	0.030	< 0.10	< 10	0.345	< 0.50	1.9
	GH_MW-BG1B_WG_2021-04-05_NP	2021 04 30	290	< 1.0	< 0.10	0.76	246	< 0.020	< 0.050	12	< 0.0050	75.3	< 0.10	2.62	< 0.20	3,250	< 0.050	4.2	24.9	152	< 0.0050	4.95	5.22	1.35	< 0.050	< 0.010	3.72	106	0.038	< 0.10	< 0.30	0.218	< 0.50	1.6
	GH_MW_BG1B_WG_2021_09_22_NP	2021 09 22	305	2.0	< 0.10	0.98	251	< 0.020	< 0.050	13	< 0.0050	76.2	< 0.10	2.61	< 0.20	3,380	< 0.050	4.4	27.8	168	< 0.0050	3.27	4.63	1.27	< 0.050	< 0.010	7.63	120	0.034	< 0.10	< 0.30	0.392	< 0.50	1.2
	GH_MW_BG1B_WG_2021_11_19_NP	2021 11 19	271	< 1.0	< 0.10	1.08	225	< 0.020	< 0.050	12	< 0.0050	70.0	< 0.10	2.56	< 0.20	3,260	< 0.050	4.2	23.4	164	< 0.0050	3.09	4.57	1.29	< 0.050	< 0.010	6.76	107	0.037	< 0.10	< 0.30	0.352	< 0.50	< 1.0
GH_MW_BG1C	GH_MW_BG1C_WG_2021-01-04_NP	2021 01 27	326	< 3.0	< 0.10	1.13	234	< 0.020	< 0.050	14	< 0.0050	84.8	< 0.10	1.83	< 0.20	3,010	< 0.050	4.5	27.8	152	< 0.0050	3.66	3.92	1.32	< 0.050	< 0.010	11.4	192	< 0.010	0.11	< 10	0.729	< 0.50	< 1.0
	GH_MW-BG1C_WG_2021-04-05_NP	2021 04 30	281	< 1.0	< 0.10	1.05	202	< 0.020	< 0.050	12	< 0.0050	71.5	< 0.10	1.82	< 0.20	3,120	< 0.050	4.4	24.8	153	< 0.0050	3.22	3.92	1.28	< 0.050	< 0.010	7.65	182	< 0.010	< 0.10	< 0.30	0.586	< 0.50	< 1.0
	GH_FOX3_WG_2021-04-05_NP	Duplicate	286	< 1.0	< 0.10	1.03	207	< 0.020	< 0.050	13	< 0.0050	74.0	< 0.10	1.82	< 0.20	3,140	< 0.050	4.5	24.7	154	< 0.0050	3.34	4.00	1.29	< 0.050	< 0.010	7.77	185	< 0.010	< 0.10	< 0.30	0.620	< 0.50	< 1.0
	QA/QC RPD%		2	*	*	2	2	*	*	*	*	3	*	0	*	1	*	*	0	1	*	4	2	1	*	*	2	2	*	*	*	6	*	*
	GH_MW_BG1C_WG_2021_09_22_NP	2021 09 22	300	< 1.0	< 0.10	1.19	205	< 0.020	< 0.050	13	< 0.0050	74.9	< 0.10	1.89	< 0.20	3,320	< 0.050	4.6	27.4	151	< 0.0050	3.28	4.05	1.15	< 0.050	< 0.010	5.90	206	< 0.010	< 0.10	< 0.30	0.502	< 0.50	< 1.0
	GH_MW_BG1C_WG_2021_11_19_NP	2021 11 19	277	< 1.0	< 0.10	1.12	187	< 0.020	< 0.050	12	< 0.0050	70.8	< 0.10	1.80	< 0.20	3,400	< 0.050	4.2	24.3	154	< 0.0050	3.19	3.93	1.23	< 0.050	< 0.010	5.53	204	< 0.010	< 0.10	< 0.30	0.552	< 0.50	< 1.0
GH_MW-Willow-1D	GH_MW-WILLOW-1D_WG_2021_03_24_NP	2021 03 24	140	1.7	< 0.10	0.38	1,710	< 0.020	< 0.050	161	< 0.0050	29.0	< 0.10	0.15	< 0.20	450	< 0.050	92.3	16.4	61.8	< 0.0050	4.31	2.04	0.99	< 0.050	< 0.010	61.3	634	< 0.010	< 0.10	< 0.30	0.151	< 0.50	< 1.0
	GH_MW-WILLOW-1D_WG_2021_06_10_NP	2021 06 10	128	2.3	< 0.10	0.28	1,510	< 0.020	< 0.050	153	< 0.0050	26.6	< 0.10	< 0.10	< 0.20	415	< 0.050	100	15.0	47.5	< 0.0050	3.90	< 0.50	0.93	< 0.050	< 0.010	62.9	567	< 0.010	< 0.10	< 0.30	0.142	< 0.50	< 1.0
	GH_MW_MC10-A_WG_2021_06_10_NP	Duplicate	133	4.5	< 0.10	0.31	1,530	< 0.020	< 0.050	159	< 0.0050	27.6	< 0.10	< 0.10	< 0.20	425	< 0.050	104	15.7	49.1	< 0.0050	3.96	< 0.50	0.93	< 0.050	< 0.010	65.0	586	< 0.010	< 0.10	< 0.30	0.151	< 0.50	1.5
	QA/QC RPD%		4	*	*	*	1	*	*	4	*	4	*	*	*	2	*	4	5	3	*	2	*	0	*	*	3	3	*	*	*	6	*	*
	GH_MW-WILLOW-1D_WG_2021_09_13_NP	2021 09 13	140	2.4	< 0.10	0.33	1,820	< 0.020	< 0.050	161	< 0.0050	28.6	< 0.10	< 0.10	< 0.20	426	< 0.050	103	16.8	50.2	< 0.0050	7.42	< 0.50	0.90	< 0.050	< 0.010	61.0	639	< 0.010	< 0.10	< 0.30	0.108	< 0.50	1.7
	GH_MW-WILLOW-1D_WG_2021_11_16_NP	2021 11 16	139	4.1	< 0.10	0.31	1,590	< 0.020	< 0.050	158	< 0.0050	29.2	< 0.10	< 0.10	< 0.20	461	< 0.050	89.3	16.1	48.4	< 0.0050	4.58	< 0.50	0.92	0.055	< 0.010	55.0	596	< 0.010	< 0.10	< 0.30	0.141	< 0.50	1.7
GH_MW-Willow-2D	GH_MW-WILLOW-2D_WG_2021_03_24_NP	2021 03 24	133	1.9	< 0.10	1.28	914	< 0.020	< 0.050	326	< 0.0050	26.9	< 0.10	< 0.10	< 0.20	44	< 0.050	218	16.0	14.5	< 0.0050	4.07	< 0.50	2.00	0.077	< 0.010	117	422	< 0.010	< 0.10	< 0.30	0.354	< 0.50	< 1.0
	GH_MW-WILLOW-2D_WG_2021_06_10_NP	2021 06 10	124	2.3	< 0.10	1.17	930	< 0.020	< 0.050	273	< 0.0050	25.1	< 0.10	< 0.10	< 0.20	98	< 0.050	203	15.0	16.2	< 0.0050	3.93	< 0.50	1.93	< 0.050	< 0.010	106	382	< 0.010	< 0.10	< 0.30	0.337	< 0.50	< 1.0
	GH_MW-WILLOW-2D_WG_2021_09_13_NP	2021 09 13	124	1.8	< 0.10	1.23	1,050	< 0.020	< 0.050	359	0.0070	24.0	< 0.10	< 0.10	< 0.20	103	< 0.050	268	15.6	12.3	< 0.0050	*13.5*	< 0.50	1.94	< 0.050	< 0.010	133	438	< 0.010	< 0.10	< 0.30	0.194	0.72	3.0
	GH_MW-WILLOW-2D_WG_2021_11_16_NP	2021 11 16	130	3.1	< 0.10	1.31	918	< 0.020	< 0.050	303	< 0.0050	27.2	< 0.10	< 0.10	< 0.20	70	< 0.050	206	15.0	13.4	< 0.0050	4.50	< 0.50	1.94	0.062	< 0.010	107	386	< 0.010	< 0.10	< 0.30	0.287	< 0.50	1.3
GH_MW-Willow-2S	GH_MW-WILLOW-2S_WG_2021_03_24_NP	2021 03 24	201	1.5	0.11	0.24	172	< 0.020	< 0.050	13	0.0116	50.6	< 0.10	< 0.10	0.48	< 10	< 0.050	9.4	18.0	< 0.10	< 0.0050	0.602	< 0.50	0.93	1.10	< 0.010	6.47	128	< 0.010	< 0.10	< 0.30	0.554	< 0.50	< 1.0
	GH_MW-WILLOW-2S_WG_2021_06_09_NP	2021 06 09	193	1.7	< 0.10	0.17	170	< 0.020	< 0.050	25	0.0120	49.3	< 0.10	< 0.10	0.43	< 10	< 0.050	11.6	16.9	< 0.10	< 0.0050	0.667	< 0.50	1.04	0.774	< 0.010	6.04	127	< 0.010	< 0.10	< 0.30	0.468	< 0.50	< 1.0
	GH_MW-WILLOW-2S_WG_2021_11_16_NP	2021 11 16	203	3.7	< 0.10	0.35	191	< 0.020	< 0.050	17	0.0138	52.2	< 0.10	< 0.10	0.50	< 10	< 0.050	10.8	17.7	< 0.10	< 0.0050	0.860	< 0.50	1.22	0.391	< 0.010	7.32	133	< 0.010	< 0.10	< 0.30	0.559	< 0.50	< 1.0
GH_MW-Wolf-1D	GH_MW-WOLF-1D_WG_2021_03_25_NP	2021 03 25	211	1.9	< 0.10	1.13	186	< 0.020	< 0.050	90	< 0.0050	49.8	< 0.10	0.15	< 0.20	654	< 0.050	31.0	21.1	*226*	< 0.0050	2.70	0.97	1.17	< 0.050	< 0.010	9.80	909	< 0.010	< 0.10	< 0.30	0.343	< 0.50	< 1.0
	GH_MW-WOLF-1D_WG_2021_06_07_NP	2021 06 07	224	14.4	< 0.10	0.99	228	< 0.020	< 0.050	95	0.0076	52.6	0.95	0.19	1.43	836	< 0.050	31.3	22.5	200	< 0.0050	2.87	1.92	1.09	< 0.050	< 0.010	9.81	905	< 0.010	< 0.10	< 0.30	0.255	< 0.50	1.7
	GH_MW-WOLF-1D_WG_2021_09_14_NP	2021 09 14	184	< 1.0	< 0.10	0.93	191	< 0.020	< 0.050	78	< 0.0050	41.4	< 0.10	0.11	< 0.20	670	< 0.050	29.5	19.6	196	< 0.0050	2.85	< 0.50	1.10	< 0.050	< 0.010	9.46	876	< 0.010	< 0.10	< 0.30	0.257	< 0.50	1.1
	GH_MW_MC10-A_WG_2021_09_14_NP	Duplicate	186	1.7	< 0.10	0.93	192	< 0.020	< 0.050	81	< 0.0050	41.9	< 0.10	0.12	< 0.20	705	< 0.050	30.0	19.9	200	< 0.0050	2.81	< 0.50	1.12	< 0.050	< 0.010	9.73	881	< 0.010	< 0.10	< 0.30	0.260	< 0.50	1.2
	QA/QC RPD%		1	*	*	0	1	*	*	4	*	1	*	*	*	5	*	2	2	2	*	1	*	2	*	*	3	1	*	*	*	1	*	*
	GH_MW-WOLF-1D_WG_2021_11_15_NP	2021 11 15	203	1.1	< 0.10	1.20	188	< 0.020	< 0.050	95	< 0.0050	48.2	< 0.10	0.12	< 0.20	705	< 0.050	31.3	20.1	*205*	< 0.0050	2.76	< 0.50	1.21	< 0.050	< 0.010	10.1	915	< 0.010	< 0.10	< 0.30	0.326	< 0.50	< 1.0
GH_MW-Wolf-2D	GH_MW-WOLF-2D_WG_2021_03_24_NP	2021 03 24	267	4.1	< 0.10	1.32	70.8	< 0.020	< 0.050	50	0.0122	70.2	0.20	0.50	0.55	135	< 0.050	15.3	22.4	183	< 0.0050	3.20	4.17	1.94	0.057	< 0.010	17.0	417	0.020	< 0.10	< 0.30	2.32	< 0.50	< 1.0
	GH_MW-WOLF-2D_WG_2021_06_07_NP	2021 06 07	286	2.8	< 0.10	1.86	78.9	< 0.020	< 0.050	47	0.0112	74.7	0.90	0.48	0.24	347	< 0.050	16.9	24.2	141	< 0.0050	3.02	2.42	1.44	< 0.050	< 0.010	9.46	440	0.017	< 0.10	< 0.30	1.18	< 0.50	1.9
	GH_MW-WOLF-2D_WG_2021_09_15_NP	2021 09 15	250	2.7	0.11	0.78	66.4	< 0.020	< 0.050	47	0.0175	63.9	< 0.10	0.21	0.33	< 10	< 0.050	16.1	21.9	67.7	< 0.0050	3.07	0.90	1.74	0.162	< 0.010	9.90	407	0.022	< 0.10	< 0.30	1.96	< 0.50	2.3
	GH_MW-WOLF-2D_WG_2021_11_16_NP	2021 11 16	263	4.2	< 0.10	1.67	76.3	< 0.020	< 0.050	54	0.0136	65.8	< 0.10	0.21	< 0.20	30	< 0.050	16.4	23.9	93.7	< 0.0050	2.83	1.06	1.75	0.187	< 0.010	11.9	401	0.021	< 0.10	< 0.30	1.42	< 0.50	< 1.0

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

TABLE BG-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (Background)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																														
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
			mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																		
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	1,100-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400[b]
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Upgradient of Study Areas 5/6 (LCO)																																		
LC_PIZP1101	LC_PIZP1101_WG_Q1-2021_N	2021 03 22	133	< 3.0	< 0.10	1.07	540	< 0.020	< 0.050	21	< 0.010	28.4	< 0.10	0.17	< 0.20	17	< 0.050	9.2	15.0	*247*	< 0.0050	*11.1*	< 0.50	0.841	< 0.050	< 0.010	21.5	222	< 0.010	0.12	< 10	1.37	0.56	< 1.0
	WG_Q1-2021_010	Duplicate	130	< 3.0	< 0.10	1.09	527	< 0.020	< 0.050	21	< 0.010	28.2	< 0.10	0.17	< 0.20	17	< 0.050	9.3	14.5	*246*	0.0964	*11.1*	< 0.50	0.845	< 0.050	< 0.010	21.3	226	< 0.010	0.12	< 10	1.33	0.60	< 1.0
	QA/QC RPD%		2	*	*	2	2	*	*	*	*	1	*	*	*	*	*	1	3	0	*	0	*	0	*	*	1	2	*	*	*	3	*	*
	LC_PIZP1101_WG_Q2-2021_N	2021 06 10	121	22.7	< 0.10	1.04	474	< 0.020	< 0.050	20	< 0.0050	26.6	< 0.10	0.19	0.21	147	< 0.050	9.1	13.2	*224*	< 0.0050	*13.0*	< 0.50	0.765	< 0.050	< 0.010	20.1	214	< 0.010	< 0.10	0.53	1.40	< 0.50	< 1.0
	WG_Q2-2021_005	Duplicate	120	11.7	< 0.10	1.08	463	< 0.020	< 0.050	20	< 0.0050	26.0	< 0.10	0.18	< 0.20	126	< 0.050	9.0	13.5	*221*	< 0.0050	*12.8*	< 0.50	0.767	< 0.050	< 0.010	20.3	213	< 0.010	< 0.10	0.48	1.36	< 0.50	< 1.0
	QA/QC RPD%		1	64	*	4	2	*	*	*	*	2	*	*	*	15	*	1	2	1	*	2	*	0	*	*	1	0	*	*	*	3	*	*
	LC_PIZP1101_WG_Q3-2021_N	2021 09 21	125	48.2	< 0.10	0.92	460	< 0.020	< 0.050	22	< 0.0150	28.6	< 0.10	0.17	1.81	110	0.063	9.3	13.0	*219*	< 0.0050	*12.3*	< 0.50	0.798	< 0.050	< 0.010	21.0	196	< 0.010	< 0.10	< 2.40	1.69	0.57	1.8
	LC_CC2_PIZP1101_N	Duplicate	122	54.7	< 0.10	0.92	473	< 0.020	< 0.050	22	< 0.0200	27.5	< 0.10	0.17	0.94	108	0.050	9.3	13.0	*222*	< 0.0050	*12.7*	0.53	0.820	< 0.050	< 0.010	21.1	197	< 0.010	< 0.10	1.83	1.72	0.66	1.2
	QA/QC RPD%		2	13	*	0	3	*	*	*	*	4	*	*	*	2	*	0	0	1	*	3	*	3	*	*	0	1	*	*	*	2	*	*
	LC_PIZP1101_WG_Q4-2021_N	2021 11 23	120	4.6	0.55	0.77	618	< 0.020	< 0.050	23	0.0366	25.7	< 0.10	0.22	0.48	< 10	< 0.050	9.2	13.7	198	< 0.0050	*12.7*	1.18	0.942	1.60	< 0.010	21.3	201	0.032	< 0.10	< 0.30	2.43	1.28	< 1.0
	WG_Q4-2021_010_CC3	Duplicate	120	3.2	0.53	0.75	645	< 0.020	< 0.050	22	0.0386	25.3	< 0.10	0.24	0.46	< 10	< 0.050	9.2	13.9	*222*	< 0.0050	*12.0*	1.19	0.960	1.41	< 0.020	21.9	198	0.030	< 0.10	< 0.30	2.36	1.17	< 1.0
	QA/QC RPD%		0	*	4	3	4	*	*	*	5	2	*	*	*	*	*	0	1	11	*	6	*	2	13	*	3	2	*	*	*	3	*	*
LC_PIZP1103	LC_PIZP1103_WG_Q1-2021_NP	2021 02 17	137	< 3.0	0.12	1.03	74.6	< 0.020	< 0.050	472	< 0.0050	28.2	< 0.10	0.55	< 0.20	155	< 0.050	118	16.1	*544*	< 0.0050	*12.5*	1.18	1.70	< 0.050	< 0.010	148	801	< 0.010	< 0.10	< 10	2.07	< 0.50	2.1
	LC_PIZP1103_WG_Q2-2021_NP	2021 05 13	139	2.5	0.25	1.28	80.3	< 0.020	< 0.050	470	< 0.0100	29.5	0.12	0.57	9.37	147	< 0.050	122	15.8	*574*	< 0.0050	9.37	1.34	1.64	< 0.050	< 0.010	128	848	< 0.010	0.17	< 0.30	1.65	< 0.50	6.4
	LC_PIZP1103_WG_Q3-2021_NP	2021 08 20	137	1.8	0.25	1.00	67.2	< 0.020	< 0.050	*543*	< 0.0150	28.0	0.20	0.24	1.26	19	< 0.050	114	16.4	172	< 0.0050	*28.2*	0.68	1.64	< 0.050	< 0.010	142	833	0.011	< 0.10	< 0.30	1.97	0.66	2.9
	LC_PIZP1103_WG_Q4-2021_N	2021 10 22	136	2.2	0.23	0.87	61.2	< 0.020	< 0.050	469	< 0.0150	29.7	0.20	0.12	1.57	< 10	< 0.050	112	15.1	80.0	< 0.0050	*22.8*	0.53	1.53	< 0.050	< 0.010	127	767	< 0.010	< 0.10	< 0.30	1.95	< 0.50	1.8
Upgradient of Study Area 7 (EVO)																																		
EV_MW_GV4A	EV_MW_GV4A_WG_2021_Q1_NP	2021 03 21	312	1.5	0.18	0.71	46.5	< 0.020	< 0.050	16	< 0.0050	75.4	< 0.10	0.91	< 0.20	127	< 0.050	10.8	30.0	*375*	< 0.0050	2.81	1.81	1.46	4.20	< 0.010	33.5	324	0.018	< 0.10	< 0.30	2.90	< 0.50	< 1.0
	EV_MW_GV4A_WG_2021_Q2_NP	2021 05 20	329	1.5	0.11	0.79	53.1	< 0.020	< 0.050	17	< 0.0050	79.1	< 0.10	0.80	0.98	94	0.069	10.8	32.0	*285*	< 0.0050	2.60	1.35	1.51	4.28	< 0.010	28.4	332	0.013	0.15	< 0.30	2.99	< 0.50	2.4
	EV_MW_GV4A_WG_2021_Q3_NP	2021 07 30	304	1.2	0.13	0.84	50.2	< 0.020	< 0.050	21	< 0.0050	74.5	< 0.10	0.69	< 0.20	170	< 0.050	10.9	28.6	*344*	< 0.0050	3.48	1.27	1.45	3.27	< 0.010	39.8	360	< 0.010	0.16	< 0.30	6.04	< 0.50	< 1.0
	EV_MW_GV4A_WG_2021_Q4_NP	2021 10 17	334	1.4	0.13	0.70	56.0	< 0.020	< 0.050	16	< 0.0050	79.6	< 0.10	0.27	< 0.20	168	< 0.050	10.9	32.8	153	< 0.0050	2.61	0.75	1.56	4.90	< 0.010	23.4	373	< 0.010	< 0.10	< 0.30	5.75	< 0.50	< 1.0
EV_MW_GV4B	EV_MW_GV4B_WG_2021_Q1_NP	2021 03 21	303	< 1.0	< 0.10	< 0.10	60.3	< 0.020	< 0.050	< 10	0.0073	72.4	< 0.10	< 0.10	< 0.20	< 10	< 0.050	8.6	29.6	0.72	< 0.0050	1.51	< 0.50	1.10	3.70	< 0.010	3.27	276	< 0.010	< 0.10	< 0.30	1.38	< 0.50	< 1.0
	EV_MW_GV4B_WG_2021_Q2_NP	2021 05 20	314	< 1.0	< 0.10	< 0.10	63.8	< 0.020	< 0.050	< 10	0.0085	75.4	< 0.10	< 0.10	0.51	< 10	0.130	8.9	30.6	0.56	< 0.0050	1.59	< 0.50	1.11	3.76	< 0.010	3.25	271	< 0.010	0.13	< 0.30	1.43	< 0.50	< 1.0
	EV_MW_GV4B_WG_2021_Q3_NP	2021 07 30	312	< 1.0	< 0.10	< 0.10	66.7	< 0.020	< 0.050	< 10	0.0121	75.6	< 0.10	< 0.10	< 0.20	< 10	< 0.050	9.0	30.0	0.14	< 0.0050	1.72	< 0.50	1.19	3.84	< 0.010	2.87	285	< 0.010	< 0.10	< 0.30	1.31	< 0.50	< 1.0
	EV_MW_MC10A_WG_2021_Q3_NP	Duplicate	309	< 1.0	< 0.10	< 0.10	66.0	< 0.020	< 0.050	< 10	0.0086	74.3	< 0.10	< 0.10	< 0.20	< 10	< 0.050	9.0	30.0	0.16	< 0.0050	1.70	< 0.50	1.20	3.75	< 0.010	2.75	276	< 0.010	< 0.10	< 0.30	1.30	< 0.50	< 1.0
	QA/QC RPD%		1	*	*	*	1	*	*	*	*	2	*	*	*	*	*	0	0	*	*	1	*	1	2	*	4	3	*	*	*	1	*	*
	EV_MW_GV4B_WG_2021_Q4_NP	2021 10 17	331	5.1	< 0.10	< 0.10	69.2	< 0.020	< 0.050	< 10	0.0119	80.0	< 0.10	< 0.10	0.26	< 10	0.077	9.9	31.9	0.85	< 0.0050	1.66	< 0.50	1.29	4.05	< 0.010	3.05	295	< 0.010	< 0.10	< 0.30	1.41	< 0.50	< 1.0

All terms defined within the body of SNC-Lavalin's report.
< Denotes concentration less than indicated detection limit.
- Denotes analysis not conducted.
n/a Denotes no applicable standard/guideline.
QA/QC RPD Denotes quality assurance/quality control relative percent difference
* RPDs are not calculated where one or more concentrations are less than five times RDL.
RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.
[b] Standard varies with Hardness.
[c] Standard varies with pH.
[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.
[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).
[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.
[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE BG-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (Background)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																														
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
			mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																		
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	1,100-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400[b]
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Upgradient of Study Area 10 (EVO)																																		
RG_MW_AC1A	RG_MW_AC1A_WG_2021_10_01_NP	2021 10 01	157	20.4	1.14	1.57	50.8	< 0.020	< 0.050	31	0.0066	44.7	< 0.10	0.16	0.29	18	< 0.050	7.7	11.0	39.7	< 0.0050	*12.0*	0.63	0.91	0.553	< 0.010	8.52	218	< 0.010	0.24	< 0.30	0.386	< 0.50	< 1.0
RG_MW_AC1B	RG_MW_AC1B_WG_2021_10_01_NP	2021 10 01	165	1.6	< 0.10	0.12	70.9	< 0.020	< 0.050	< 10	0.0088	45.8	0.17	< 0.10	0.21	< 10	< 0.050	3.9	12.3	1.95	< 0.0050	0.772	< 0.50	0.44	0.679	< 0.010	1.57	115	< 0.010	< 0.10	< 0.30	0.594	< 0.50	< 1.0
Upgradient of Study Area 11 (CMm)																																		
CM_MW3-DP	CM_MW3-DP_WG_2021-01-11_N	2021 03 04	51.4	7.2	< 0.20	0.67	835	< 0.0400	< 0.100	479	< 0.0100	12.5	< 0.20	< 0.200	< 0.40	20	< 0.100	1,490	4.90	30.0	< 0.0050	1.83	< 1.00	2.39	< 0.100	< 0.020	608	1,130	< 0.020	< 0.20	< 0.60	0.358	< 1.00	< 2.0
	CM_MW3-DP_WG_2021-04-12_N	2021 05 26	50.6	4.4	< 0.20	1.73	824	< 0.040	< 0.100	494	< 0.0100	12.5	< 0.20	< 0.20	0.83	< 20	0.536	1,390	4.70	46.6	< 0.0050	4.83	< 1.00	2.49	< 0.100	< 0.020	631	1,250	< 0.020	< 0.20	< 0.60	0.960	< 1.00	12.9
	CM_MW3-DP_WG_2021-07-12_N	2021 07 29	47.6	6.9	< 0.20	0.43	809	< 0.040	< 0.100	491	< 0.0100	11.5	< 0.20	< 0.20	< 0.40	45	< 0.100	1,340	4.60	23.2	< 0.0050	0.803	< 1.00	2.16	< 0.100	< 0.050	545	1,080	< 0.020	< 0.20	< 0.60	0.184	< 1.00	< 2.0
	CM_MW3-DP_WG_2021-10-11_N	2021 10 28	47.1	9.6	< 0.20	0.35	772	< 0.040	< 0.100	469	< 0.0100	11.8	< 0.20	< 0.20	0.48	54	< 0.100	1,340	4.29	18.5	< 0.0050	0.750	< 1.00	2.16	< 0.100	< 0.020	541	1,090	< 0.020	< 0.20	< 0.60	0.162	< 1.00	2.1
CM_MW3-SH	CM_MW3-SH_WG_2021-01-11_N	2021 03 04	176	1.7	< 0.10	0.12	78.8	< 0.0200	< 0.050	20	0.0070	50.6	0.25	< 0.100	1.96	< 10	< 0.050	7.9	12.2	3.98	< 0.0050	0.819	< 0.50	0.713	0.297	< 0.010	4.34	268	< 0.010	< 0.10	< 0.30	0.208	< 0.50	3.8
	CM_MW3-SH_WG_2021-04-12_N	2021 05 26	187	2.5	< 0.10	< 0.10	79.6	< 0.020	< 0.050	17	0.0070	54.0	0.14	< 0.10	0.52	< 10	< 0.050	6.1	12.6	< 0.10	< 0.0050	0.539	< 0.50	0.612	0.260	< 0.010	3.67	276	< 0.010	< 0.10	< 0.30	0.200	< 0.50	< 1.0
	CM_MW3-SH_WG_2021-07-12_N	2021 07 29	178	< 1.0	< 0.10	0.10	78.9	< 0.020	< 0.050	21	0.0081	51.4	0.22	< 0.10	0.90	< 10	0.197	7.1	12.1	1.12	< 0.0050	0.707	< 0.50	0.672	0.306	< 0.010	3.66	269	< 0.010	< 0.10	< 0.30	0.183	< 0.50	2.9
	CM_MW3-SH_WG_2021-10-11_N	2021 10 28	172	11.8	< 0.10	0.11	81.6	< 0.020	< 0.050	21	0.0068	48.4	0.24	< 0.10	0.58	< 10	0.068	8.0	12.4	2.61	< 0.0050	0.815	< 0.50	0.718	0.254	< 0.010	4.27	269	< 0.010	< 0.10	< 0.30	0.220	< 0.50	1.8
CM_MW6-DP	CM_MW6-DP_WG_2021-01-11_N	2021 02 24	32.6	4.0	< 0.10	0.71	316	< 0.0200	< 0.050	248	< 0.00500	8.60	< 0.10	< 0.100	< 0.20	88	< 0.050	386	2.69	66.4	< 0.0050	1.57	< 0.50	2.06	< 0.0500	< 0.020	306	1,040	< 0.010	0.11	< 0.30	0.759	< 0.50	< 1.0
	CM_MW6-DP_WG_2021-04-12_N	2021 05 12	36.2	2.8	< 0.10	0.35	324	< 0.020	< 0.050	308	< 0.0050	9.71	< 0.10	< 0.10	< 0.20	44	< 0.050	399	2.90	32.8	< 0.0050	2.90	< 0.50	1.84	< 0.050	< 0.010	285	983	< 0.010	0.11	< 0.30	0.712	< 0.50	< 1.0
	CM_MW6-DP_WG_2021-07-12_N	2021 07 15	29.5	6.8	< 0.20	0.70	274	< 0.040	< 0.100	290	< 0.0100	7.99	< 0.20	< 0.20	< 0.40	< 20	< 0.100	412	2.32	63.7	< 0.0050	1.61	< 1.00	1.88	< 0.100	< 0.020	337	882	< 0.020	< 0.20	< 0.60	0.593	< 1.00	< 2.0
	CM_MW6-DP_WG_2021-10-11_N	2021 10 21	37.0	5.7	< 0.20	0.53	396	< 0.040	< 0.100	316	< 0.0100	10.1	< 0.20	< 0.20	< 0.40	250	< 0.100	421	2.87	74.2	< 0.0050	1.51	< 1.00	1.91	< 0.100	< 0.020	333	1,150	< 0.020	< 0.20	< 0.60	0.399	< 1.00	3.2
Blanks																																		
Field Blanks																																		
FR_MW-FRRD1	FR_MW_MC10B_WG_2021_02_03_NP	2021 02 03	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	0.139	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
GH_MW_Wolf-2D	GH_MW_MC10-B_WG_2021_03_24_NP	2021 03 24	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
GH_MW_BG1C	GH_RDI2_WG_2021-04-05_NP	2021 04 30	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
FR_MW-CH1-A	FR_MW_MC10B_WG_2021_06_08_NP	2021 06 08	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
EV_MW_GV4B	EV_MW_MC10B_WG_2021_Q3_NP	2021 07 30	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
FR_MW-FRRD1	FR_MW_MC10B_WG_2021_08_10_NP	2021 08 10	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
RG_MW_AC1A	RG_MW_MC10B_WG_2021_10_01_NP	2021 10 01	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
LC_PIZP1101	WG_Q4-2021_011_MT2	2021 11 23	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
Trip Blanks																																		
	FR_MW_MC10C_WG_2021_02_03_NP	2021 02 03	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	GH_MW_MC10-C_WG_2021_03_25_NP	2021 03 25	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	FR_MW_MC10C_WG_2021_06_08_NP	2021 06 08	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	WG_Q2-2021_006	2021 06 10	< 0.50	-	-	-	-	-	-	-	-	< 0.050	-	-	-	-	-	-	< 0.0050	-	-	-	-	< 0.050	-	-	< 0.050	-	-	-	-	-	-	-
	FR_MW_MC10C_WG_2021_08_10_NP	2021 08 10	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	RG_MW_MC10C_WG_2021_10_01_NP	2021 10 01	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	FR_MW_MC10C_WG_2021_10_27_NP	2021 10 27	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	0.317	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

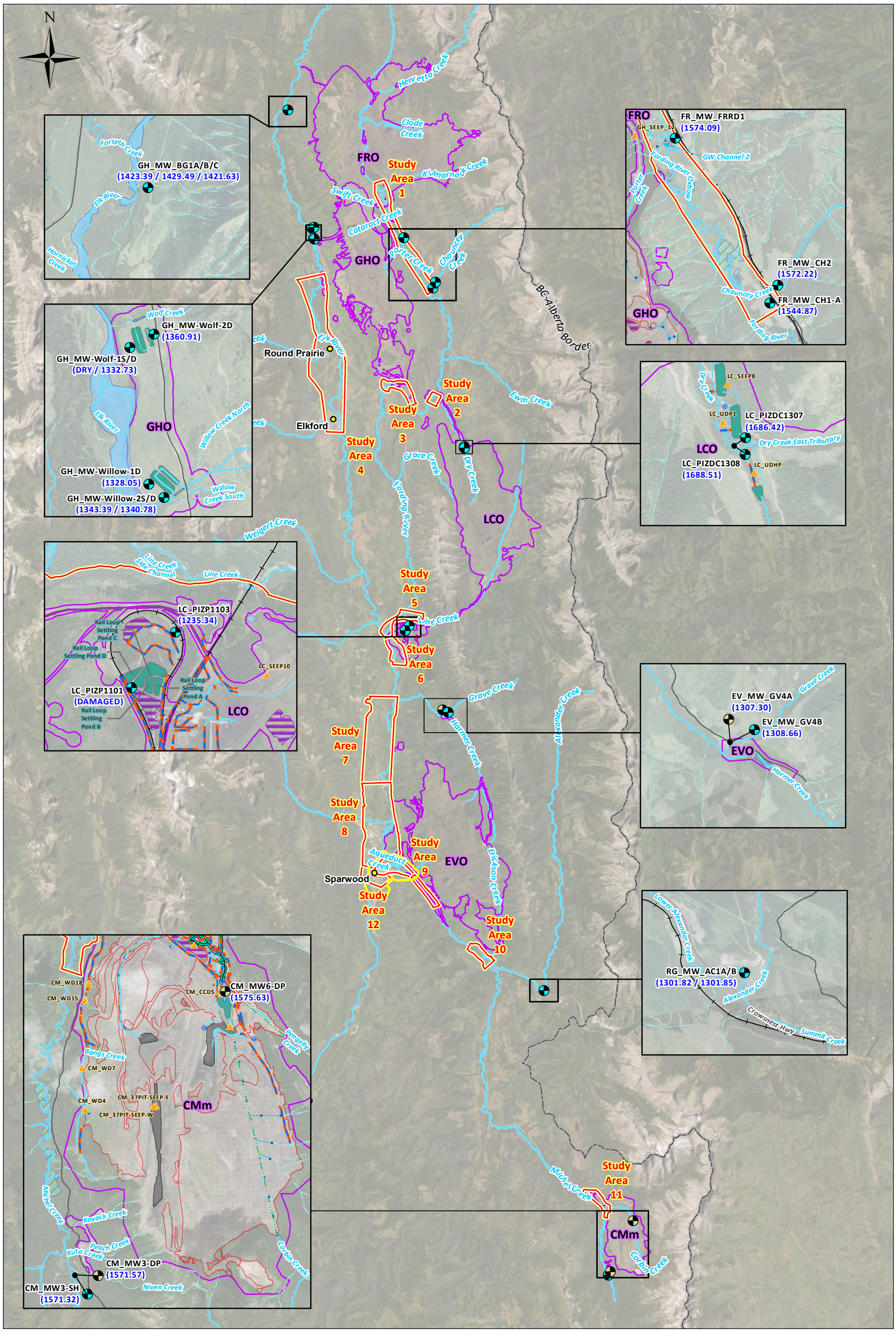
[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

Drawings:

BG-01: Sample Location Plan – Background
BG-02: Spatial Distribution of Nitrate Nitrogen in Groundwater – Background
BG-03: Spatial Distribution of Sulphate in Groundwater – Background
BG-04: Spatial Distribution of Dissolved Cadmium Groundwater – Background
BG-05: Spatial Distribution of Dissolved Selenium in Groundwater – Background



Legend

Groundwater Stations[4]
- Monitoring Well (Bedrock)
- Monitoring Well (Unconsolidated)
- Groundwater Well (Data BC)
- Seep

Site Features
- Study Areas
- BC Communities
- Sparwood Area

(1571.32) Water level (masl) measured during Q4 2021

- BC-Alberta Border
- Highway
- Secondary Road
- Rails
- Tailings/Settling Pond
- Pit
- Stockpiles
- Waste Dump (Spoils)
- Mine Permitted Areas

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Culvert
- Ditch
- Potable Waterline
- Rock Drain
- Water Pipeline
- Lake/River Bed

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.

References:
1. Data provided by Teck Coal Ltd.
2. Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 1.5 3 6 9 12 15 Km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

Sample Location Plan - Background

CHK'D: RS | DATE: 2022-03-16 | SCALE: 1:265,000 | Ref Num:

BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING BG-01

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GISMap Series\635544_2021 RGMP SSGMP Annual Report\635544-8-LocPlan_Bckgnd.mxd

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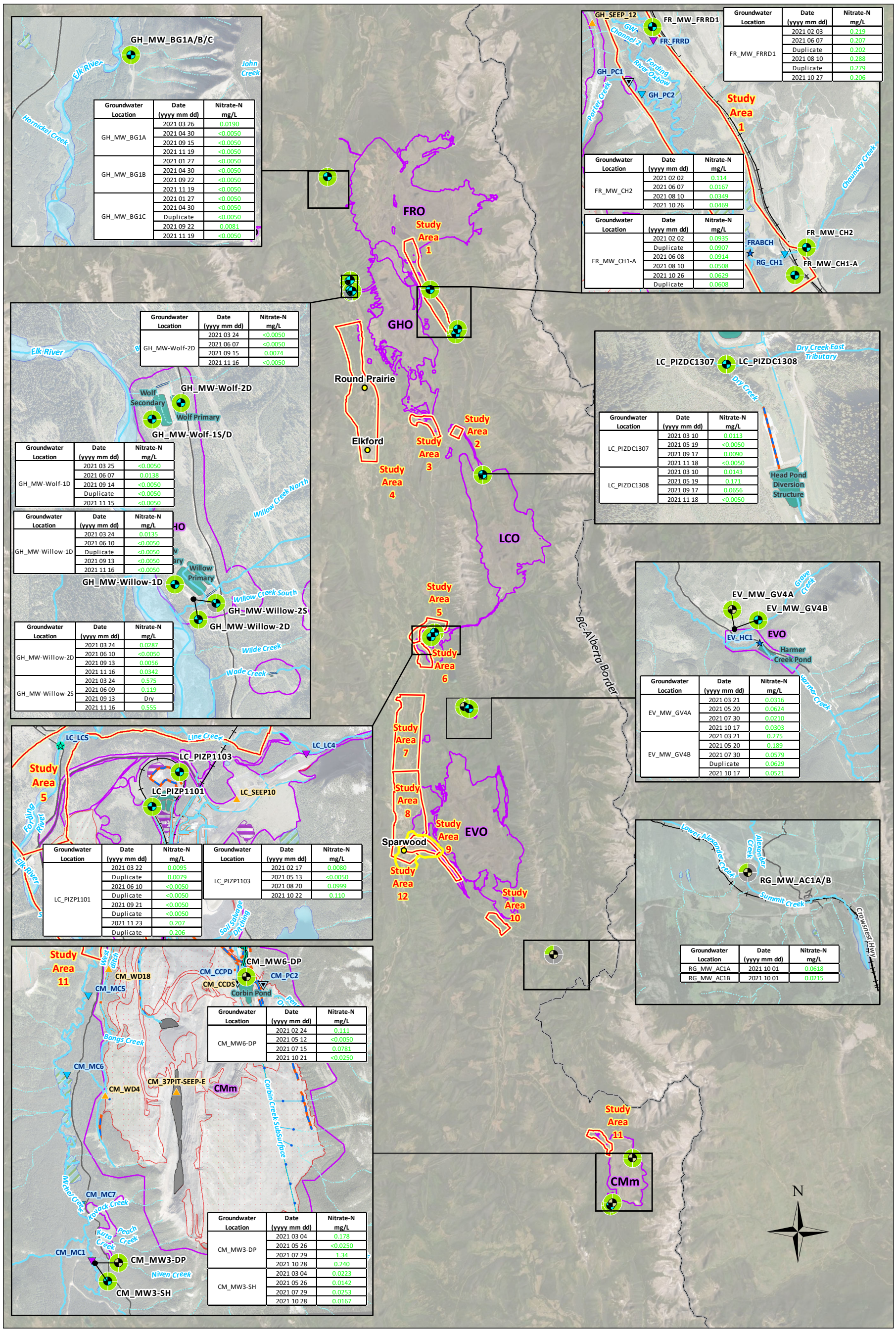


Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_MW_BG1A	2021 03 26	0.0190
	2021 04 30	<0.0050
	2021 09 15	<0.0050
	2021 11 19	<0.0050
GH_MW_BG1B	2021 01 27	<0.0050
	2021 04 30	<0.0050
	2021 09 22	<0.0050
	2021 11 19	<0.0050
GH_MW_BG1C	2021 01 27	<0.0050
	2021 04 30	<0.0050
	Duplicate	<0.0050
	2021 09 22	0.0081
	2021 11 19	<0.0050

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_MW_FRRD1	2021 02 03	0.219
	2021 06 07	0.207
	Duplicate	0.202
	2021 08 10	0.288
	Duplicate	0.279
	2021 10 27	0.206

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_MW_CH2	2021 02 02	0.114
	2021 06 07	0.0167
	2021 08 10	0.0349
	2021 10 26	0.0469

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_MW_CH1-A	2021 02 02	0.0935
	Duplicate	0.0907
	2021 06 08	0.0914
	2021 08 10	0.0508
	2021 10 26	0.0629
	Duplicate	0.0608

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_MW-Wolf-2D	2021 03 24	<0.0050
	2021 06 07	<0.0050
	2021 09 15	0.0074
	2021 11 16	<0.0050

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_MW-Wolf-1D	2021 03 25	<0.0050
	2021 06 07	0.0138
	2021 09 14	<0.0050
	Duplicate	<0.0050
	2021 11 15	<0.0050

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_MW-Willow-1D	2021 03 24	0.0135
	2021 06 10	<0.0050
	Duplicate	<0.0050
	2021 09 13	<0.0050
	2021 11 16	<0.0050

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_MW-Willow-2D	2021 03 24	0.0287
	2021 06 10	<0.0050
	2021 09 13	0.0056
	2021 11 16	0.0342
GH_MW-Willow-2S	2021 03 24	0.575
	2021 06 09	0.119
	2021 09 13	Dry
	2021 11 16	0.555

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
LC_PIZDC1307	2021 03 10	0.0113
	2021 05 19	<0.0050
	2021 09 17	0.0090
	2021 11 18	<0.0050
LC_PIZDC1308	2021 03 10	0.0143
	2021 05 19	0.171
	2021 09 17	0.0656
	2021 11 18	<0.0050

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
EV_MW_GV4A	2021 03 21	0.0316
	2021 05 20	0.0624
	2021 07 30	0.0210
	2021 10 17	0.0303
EV_MW_GV4B	2021 03 21	0.275
	2021 05 20	0.189
	2021 07 30	0.0579
	Duplicate	0.0629
	2021 10 17	0.0521

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
RG_MW_AC1A	2021 10 01	0.0618
RG_MW_AC1B	2021 10 01	0.0215

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
LC_PIZP1101	2021 03 22	0.0095
	Duplicate	0.0079
	2021 06 10	<0.0050
	Duplicate	<0.0050
	2021 09 21	<0.0050
	Duplicate	<0.0050
	2021 11 23	0.207
	Duplicate	0.206

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
LC_PIZP1103	2021 02 17	0.0080
	2021 05 13	<0.0050
	2021 08 20	0.0999
	2021 10 22	0.110

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
CM_MW6-DP	2021 02 24	0.111
	2021 05 12	<0.0050
	2021 07 15	0.0781
	2021 10 21	<0.0250

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
CM_MW3-DP	2021 03 04	0.178
	2021 05 26	<0.0250
	2021 07 29	1.34
	2021 10 28	0.240
CM_MW3-SH	2021 03 04	0.0223
	2021 05 26	0.0142
	2021 07 29	0.0253
	2021 10 28	0.0167

Legend

Groundwater Stations[4]
- Monitoring Well (Bedrock)
- Monitoring Well (Unconsolidated)

Surface Water Stations
- Compliance Point
- Order Station
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Highway
- Secondary Road
- Rails
- BC-Alberta Border
- Sparwood Area
- Study Areas
- Tailings/Settling Pond
- Pit
- Stockpiles
- Waste Dump (Spoils)
- Mine Permitted Areas

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Culvert
- Ditch
- Potable Waterline
- Rock Drain
- Water Pipeline
- Island
- Lake/River Bed
- Wetted Area/Wetland

Green — below the applicable screening criteria
Blue — above the applicable screening criteria
Grey — no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Nitrate-N mg/L
CSR Aquatic Life	400
CSR Irrigation Watering	n/a
CSR Livestock Watering	100
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. Nitrate-N = Nitrate Nitrogen

References:
1. Data provided by Teck Coal Ltd.
2. Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS,

0 1.5 3 6 9 12 15 Km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

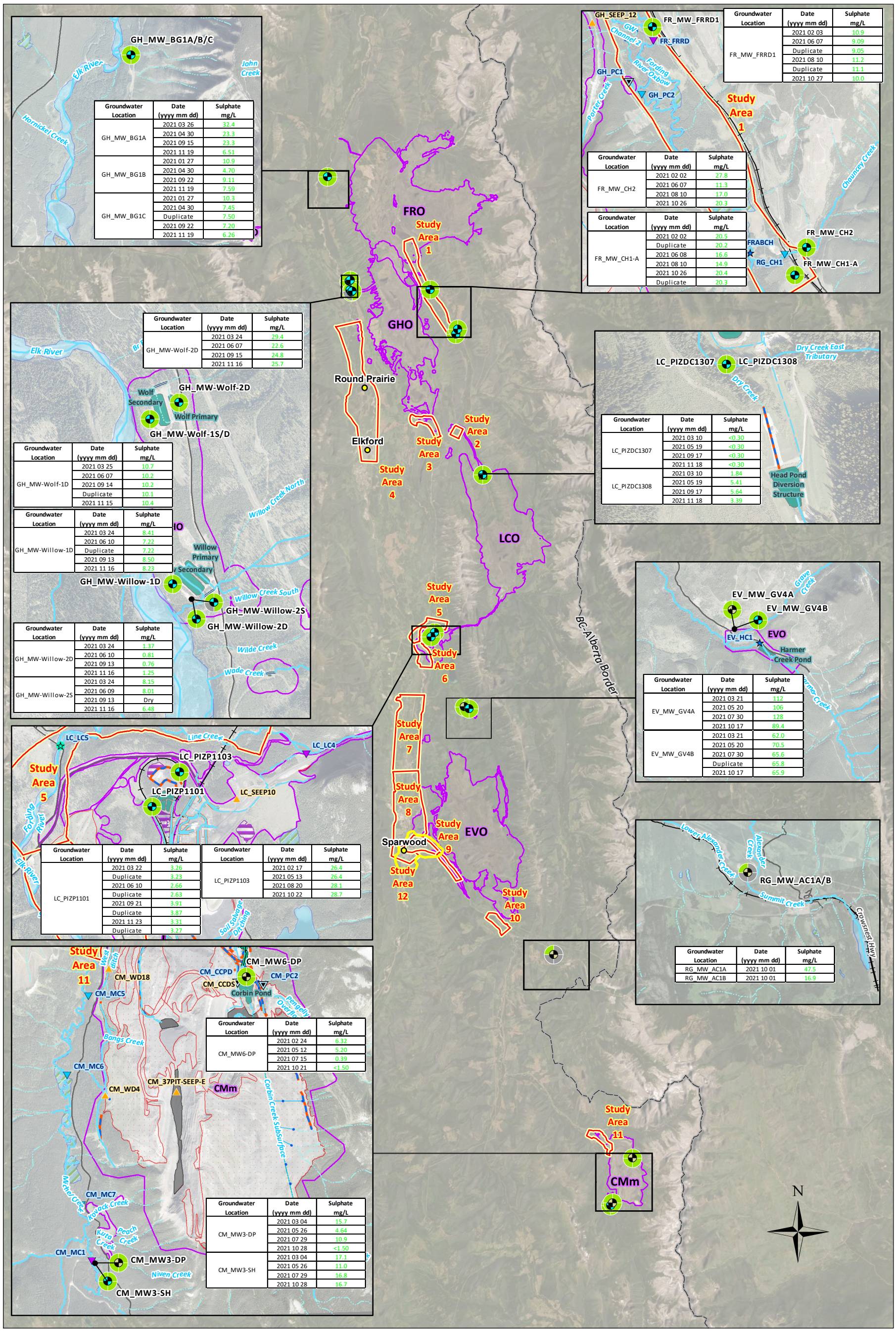
Spatial Distribution of Nitrate Nitrogen in Groundwater - Background

CHK'D: RS | DATE: 2022-02-23 | SCALE: 1:300,000 | Ref Num: DRAWING BG-02

BY: CW | COORD SYS: NAD 1983 UTM Zone 11N

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GISMap Series\635544_2021 RGMP SSGMP Annual Report\635544-9-SpatialDist_N_Bckgnd.mxd



Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_MW_BG1A	2021 03 26	32.4
	2021 04 30	23.3
	2021 09 15	23.3
	2021 11 19	6.51
GH_MW_BG1B	2021 01 27	10.9
	2021 04 30	4.70
	2021 09 22	9.11
	2021 11 19	7.59
GH_MW_BG1C	2021 01 27	10.3
	2021 04 30	7.45
	Duplicate	7.50
	2021 09 22	7.20
	2021 11 19	6.26

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_MW_FRRD1	2021 02 03	10.9
	2021 06 07	9.09
	Duplicate	9.05
	2021 08 10	11.2
	Duplicate	11.1
	2021 10 27	10.0

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_MW_CH2	2021 02 02	27.8
	2021 06 07	11.3
	2021 08 10	17.0
	2021 10 26	20.3

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_MW_CH1-A	2021 02 02	20.5
	Duplicate	20.2
	2021 06 08	16.6
	2021 08 10	14.9
	2021 10 26	20.4
	Duplicate	20.3

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_MW-Wolf-2D	2021 03 24	29.4
	2021 06 07	22.6
	2021 09 15	24.8
	2021 11 16	25.7

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_MW-Wolf-1D	2021 03 25	10.7
	2021 06 07	10.2
	2021 09 14	10.2
	Duplicate	10.1
	2021 11 15	10.4

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_MW-Willow-1D	2021 03 24	8.41
	2021 06 10	7.22
	Duplicate	7.22
	2021 09 13	8.50
	2021 11 16	8.23

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_MW-Willow-2D	2021 03 24	1.37
	2021 06 10	0.81
	2021 09 13	0.76
	2021 11 16	1.25
GH_MW-Willow-2S	2021 03 24	8.15
	2021 06 09	8.01
	2021 09 13	Dry
	2021 11 16	6.48

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
LC_PIZP1101	2021 03 22	3.26
	Duplicate	3.23
	2021 06 10	2.66
	Duplicate	2.63
	2021 09 21	3.91
	Duplicate	3.87
	2021 11 23	3.31
	Duplicate	3.27

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
LC_PIZP1103	2021 02 17	26.4
	2021 05 13	26.4
	2021 08 20	28.1
	2021 10 22	28.7

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
CM_MW6-DP	2021 02 24	6.32
	2021 05 12	5.20
	2021 07 15	0.39
	2021 10 21	<1.50

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
CM_MW3-DP	2021 03 04	15.7
	2021 05 26	4.64
	2021 07 29	10.9
	2021 10 28	<1.50
CM_MW3-SH	2021 03 04	17.1
	2021 05 26	11.0
	2021 07 29	16.8
	2021 10 28	16.7

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
LC_PIZDC1307	2021 03 10	<0.30
	2021 05 19	<0.30
	2021 09 17	<0.30
	2021 11 18	<0.30
LC_PIZDC1308	2021 03 10	1.84
	2021 05 19	5.41
	2021 09 17	5.64
	2021 11 18	3.39

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
EV_MW_GV4A	2021 03 21	112
	2021 05 20	106
	2021 07 30	128
	2021 10 17	89.4
EV_MW_GV4B	2021 03 21	62.0
	2021 05 20	70.5
	2021 07 30	65.6
	Duplicate	65.8
	2021 10 17	65.9

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
RG_MW_AC1A	2021 10 01	47.5
RG_MW_AC1B	2021 10 01	16.9

Legend

Groundwater Stations[4]
- Monitoring Well (Bedrock)
- Monitoring Well (Unconsolidated)

Surface Water Stations
- Compliance Point
- Order Station
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Green — below the applicable screening criteria
Blue — above the applicable screening criteria
Grey — no sample collected

Site Features
- Highway
- Secondary Road
- Rails
- BC-Alberta Border
- Sparwood Area
- Study Areas
- Tailings/Settling Pond
- Pit
- Stockpiles
- Waste Dump (Spoils)
- Mine Permitted Areas

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Culvert
- Ditch
- Potable Waterline
- Rock Drain
- Water Pipeline
- Island
- Lake/River Bed
- Wetted Area/Wetland

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Sulphate mg/L
CSR Aquatic Life	1,280-4,290
CSR Irrigation Watering	n/a
CSR Livestock Watering	1,000
CSR Drinking Water	500

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.

References:
1. Data provided by Teck Coal Ltd.
2. Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the

0 1.5 3 6 9 12 15 Km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

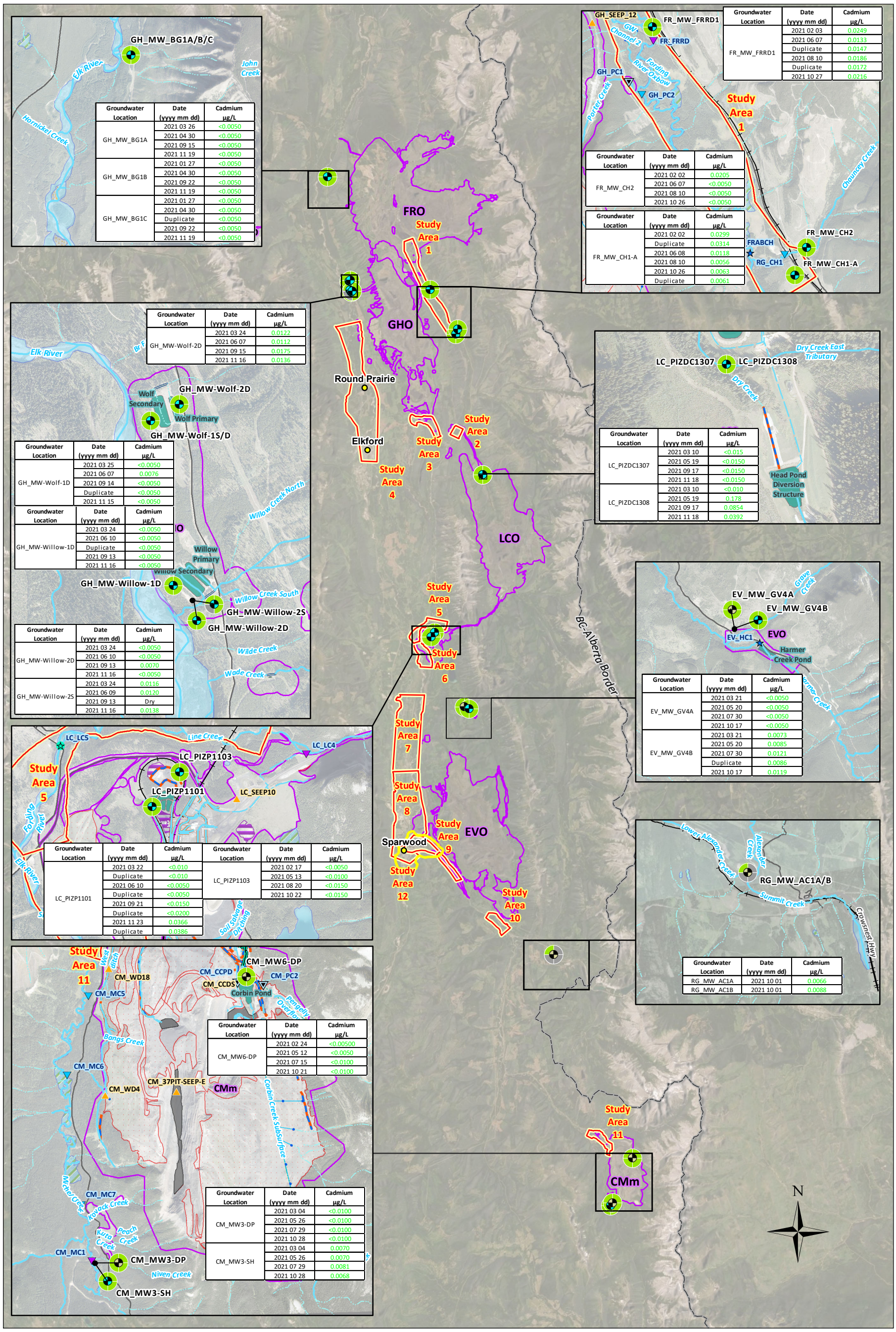
SNC·LAVALIN

Spatial Distribution of Sulphate in Groundwater - Background

CHK'D: RS | DATE: 2022-02-23 | SCALE: 1:300,000 | Ref Num: DRAWING BG-03
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-10-SpatialDist_SO4_Bckgnd.mxd



Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW_BG1A	2021 03 26	<0.0050
	2021 04 30	<0.0050
	2021 09 15	<0.0050
	2021 11 19	<0.0050
GH_MW_BG1B	2021 01 27	<0.0050
	2021 04 30	<0.0050
	2021 09 22	<0.0050
	2021 11 19	<0.0050
GH_MW_BG1C	2021 01 27	<0.0050
	2021 04 30	<0.0050
	Duplicate	<0.0050
	2021 09 22	<0.0050
	2021 11 19	<0.0050

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_MW_FRRD1	2021 02 03	0.0249
	2021 06 07	0.0133
	Duplicate	0.0147
	2021 08 10	0.0186
	Duplicate	0.0172
	2021 10 27	0.0216

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_MW_CH2	2021 02 02	0.0205
	2021 06 07	<0.0050
	2021 08 10	<0.0050
	2021 10 26	<0.0050

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_MW_CH1-A	2021 02 02	0.0299
	Duplicate	0.0314
	2021 06 08	0.0118
	2021 08 10	0.0056
	2021 10 26	0.0063
	Duplicate	0.0061

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-Wolf-2D	2021 03 24	0.0122
	2021 06 07	0.0112
	2021 09 15	0.0175
	2021 11 16	0.0136

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-Wolf-1D	2021 03 25	<0.0050
	2021 06 07	0.0076
	2021 09 14	<0.0050
	Duplicate	<0.0050
	2021 11 15	<0.0050

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-Willow-1D	2021 03 24	<0.0050
	2021 06 10	<0.0050
	Duplicate	<0.0050
	2021 09 13	<0.0050
	2021 11 16	<0.0050

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-Willow-2D	2021 03 24	<0.0050
	2021 06 10	<0.0050
	2021 09 13	0.0070
	2021 11 16	<0.0050
GH_MW-Willow-2S	2021 03 24	0.0116
	2021 06 09	0.0120
	2021 09 13	Dry
	2021 11 16	0.0138

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
LC_PIZP1101	2021 03 22	<0.010
	Duplicate	<0.010
	2021 06 10	<0.0050
	Duplicate	<0.0050
	2021 09 21	<0.0150
	Duplicate	<0.0200
	2021 11 23	0.0366
	Duplicate	0.0386

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
LC_PIZP1103	2021 02 17	<0.0050
	2021 05 13	<0.0100
	2021 08 20	<0.0150
	2021 10 22	<0.0150

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
CM_MW6-DP	2021 02 24	<0.00500
	2021 05 12	<0.0050
	2021 07 15	<0.0100
	2021 10 21	<0.0100

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
CM_MW3-DP	2021 03 04	<0.0100
	2021 05 26	<0.0100
	2021 07 29	<0.0100
	2021 10 28	<0.0100
CM_MW3-SH	2021 03 04	0.0070
	2021 05 26	0.0070
	2021 07 29	0.0081
	2021 10 28	0.0068

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
LC_PIZDC1307	2021 03 10	<0.015
	2021 05 19	<0.0150
	2021 09 17	<0.0150
	2021 11 18	<0.0150
LC_PIZDC1308	2021 03 10	<0.010
	2021 05 19	0.178
	2021 09 17	0.0854
	2021 11 18	0.0392

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
EV_MW_GV4A	2021 03 21	<0.0050
	2021 05 20	<0.0050
	2021 07 30	<0.0050
	2021 10 17	<0.0050
EV_MW_GV4B	2021 03 21	0.0073
	2021 05 20	0.0085
	2021 07 30	0.0121
	Duplicate	0.0086
	2021 10 17	0.0119

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
RG_MW_AC1A	2021 10 01	0.0066
RG_MW_AC1B	2021 10 01	0.0088

Legend

Groundwater Stations[4]
- Monitoring Well (Bedrock)
- Monitoring Well (Unconsolidated)

Surface Water Stations
- Compliance Point
- Order Station
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Highway
- Secondary Road
- Rails
- BC-Alberta Border
- Sparwood Area
- Study Areas
- Tailings/Settling Pond
- Pit
- Stockpiles
- Waste Dump (Spoils)

Water Features
- Mine Permitted Areas
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Culvert
- Ditch
- Potable Waterline
- Rock Drain
- Water Pipeline
- Island
- Lake/River Bed
- Wetted Area/Wetland

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

^ Dissolved phase of the parameter is shown in the spatial plot.

Primary Screening Criteria	Cadmium^ µg/L
CSR Aquatic Life	0.5-4
CSR Irrigation Watering	5
CSR Livestock Watering	80
CSR Drinking Water	5

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.

References:
1. Data provided by Teck Coal Ltd.
2. Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the

0 1.5 3 6 9 12 15 Km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

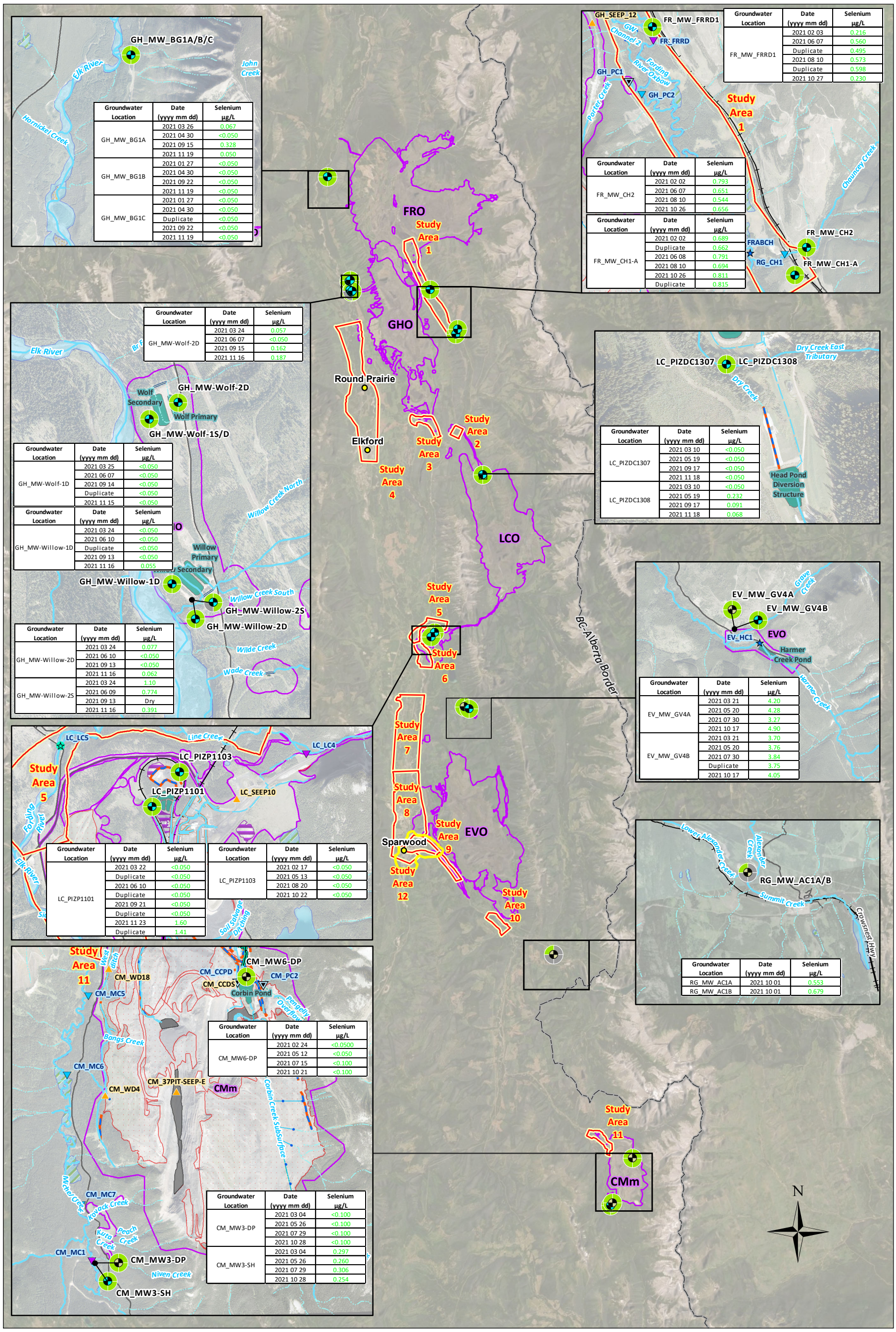
Spatial Distribution of Dissolved Cadmium in Groundwater - Background

CHK'D: RS | DATE: 2022-02-23 | SCALE: 1:300,000 | Ref Num: DRAWING BG-04

BY: CW | COORD SYS: NAD 1983 UTM Zone 11N

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-11-SpatialDist_Cd_Bckgnd.mxd



Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW_BG1A	2021 03 26	0.067
	2021 04 30	<0.050
	2021 09 15	0.328
	2021 11 19	0.050
GH_MW_BG1B	2021 01 27	<0.050
	2021 04 30	<0.050
	2021 09 22	<0.050
	2021 11 19	<0.050
GH_MW_BG1C	2021 01 27	<0.050
	2021 04 30	<0.050
	Duplicate	<0.050
	2021 09 22	<0.050
	2021 11 19	<0.050

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_MW_FRRD1	2021 02 03	0.216
	2021 06 07	0.560
	Duplicate	0.495
	2021 08 10	0.573
	Duplicate	0.598
	2021 10 27	0.230

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_MW_CH2	2021 02 02	0.793
	2021 06 07	0.651
	2021 08 10	0.544
	2021 10 26	0.656

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_MW_CH1-A	2021 02 02	0.689
	Duplicate	0.662
	2021 06 08	0.791
	2021 08 10	0.694
	2021 10 26	0.811
	Duplicate	0.815

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-Wolf-2D	2021 03 24	0.057
	2021 06 07	<0.050
	2021 09 15	0.162
	2021 11 16	0.187

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-Wolf-1D	2021 03 25	<0.050
	2021 06 07	<0.050
	2021 09 14	<0.050
	Duplicate	<0.050
	2021 11 15	<0.050

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-Willow-1D	2021 03 24	<0.050
	2021 06 10	<0.050
	Duplicate	<0.050
	2021 09 13	<0.050
	2021 11 16	0.055

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-Willow-2D	2021 03 24	0.077
	2021 06 10	<0.050
	2021 09 13	<0.050
	2021 11 16	0.062
GH_MW-Willow-2S	2021 03 24	1.10
	2021 06 09	0.774
	2021 09 13	Dry
	2021 11 16	0.391

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
LC_PIZDC1307	2021 03 10	<0.050
	2021 05 19	<0.050
	2021 09 17	<0.050
	2021 11 18	<0.050
LC_PIZDC1308	2021 03 10	<0.050
	2021 05 19	0.232
	2021 09 17	0.091
	2021 11 18	0.068

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
EV_MW_GV4A	2021 03 21	4.20
	2021 05 20	4.28
	2021 07 30	3.27
	2021 10 17	4.90
EV_MW_GV4B	2021 03 21	3.70
	2021 05 20	3.76
	2021 07 30	3.84
	Duplicate	3.75
	2021 10 17	4.05

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
RG_MW_AC1A	2021 10 01	0.553
RG_MW_AC1B	2021 10 01	0.679

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
LC_PIZP1101	2021 03 22	<0.050
	Duplicate	<0.050
	2021 06 10	<0.050
	Duplicate	<0.050
	2021 09 21	<0.050
	Duplicate	<0.050
	2021 11 23	1.60
	Duplicate	1.41

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
LC_PIZP1103	2021 02 17	<0.050
	2021 05 13	<0.050
	2021 08 20	<0.050
	2021 10 22	<0.050

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
CM_MW6-DP	2021 02 24	<0.0500
	2021 05 12	<0.050
	2021 07 15	<0.100
	2021 10 21	<0.100

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
CM_MW3-DP	2021 03 04	<0.100
	2021 05 26	<0.100
	2021 07 29	<0.100
	2021 10 28	<0.100
CM_MW3-SH	2021 03 04	0.297
	2021 05 26	0.260
	2021 07 29	0.306
	2021 10 28	0.254

Legend

Groundwater Stations[4]
- Monitoring Well (Bedrock)
- Monitoring Well (Unconsolidated)

Surface Water Stations
- Compliance Point
- Order Station
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Highway
- Secondary Road
- Rails
- BC-Alberta Border
- Sparwood Area
- Study Areas
- Tailings/Settling Pond
- Pit
- Stockpiles
- Waste Dump (Spoils)

Water Features
- Mine Permitted Areas
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Culvert
- Ditch
- Potable Waterline
- Rock Drain
- Water Pipeline
- Island
- Lake/River Bed
- Wetted Area/Wetland

Green — below the applicable screening criteria
Blue — above the applicable screening criteria
Grey — no sample collected

^ *Dissolved phase of the parameter is shown in the spatial plot.*

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Selenium^ µg/L
CSR Aquatic Life	20
CSR Irrigation Watering	20
CSR Livestock Watering	30
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.

References:
1. Data provided by Teck Coal Ltd.
2. Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the

0 1.5 3 6 9 12 15 Km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

Spatial Distribution of Dissolved Selenium in Groundwater - Background

CHK'D: RS | DATE: 2022-02-23 | SCALE: 1:300,000 | Ref Num: DRAWING BG-05
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GISMap Series\635544_2021 RGMP SSGMP Annual Report\635544-12-SpatialDist_Se_Bckgnd.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

Attachment I: Borehole Logs

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH_FRRD1

PAGE 1 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	657269
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1581.026	Borehole Logged By:	IPC
Borehole Dia. (m)	0.17	Top of Casing Elev. (m)	1581.955	Date Drilled:	2019 01 31
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556128.232	Easting: 653883.845	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW_FRRD1

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND and GRAVEL, fine- to coarse-grained sand, fine to coarse gravel, some silt, subangular, well graded, brown, dry.						
1	At 0.9 m - cobbles, trace silt						
2	SAND, fine- to coarse-grained, some fine to coarse gravel, some silt, subangular, well graded, brown, dry.						
3							
4	Between 4.3 m and 4.9 m - boulder						
5							
6	At 6.1 m - trace to some silt, cobbles, dark brown, damp						
7	At 6.9 m - damp to moist At 7.3 m - some silt, moist						
8							
9	At 8.5 m - trace gravel, damp At 9.1 m - some gravel						
10							

CONCRETE
SAND
BENTONITE
FR_MW_FRRD1
SAND

NOTES

QA/QC: BH 2019 04 01 Print Date:2019-09-26

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH_FRRD1

PAGE 2 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	657269
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1581.026	Borehole Logged By:	IPC
Borehole Dia. (m)	0.17	Top of Casing Elev. (m)	1581.955	Date Drilled:	2019 01 31
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556128.232	Easting: 653883.845	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

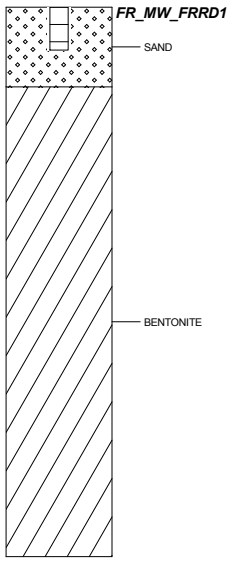
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW_FRRD1

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	SAND, fine- to coarse-grained, some fine to coarse gravel, some silt, subangular, well graded, brown, dry. *(continued)* At 10.1 m - no cobbles, trace gravel						
11	Between 11.0 m and 11.3 m - cobbles						
	SAND and GRAVEL, fine- to coarse-grained sand, fine to coarse gravel, some silt, well graded, moist.						
12	BEDROCK, siltstone, grey.						
13							
14							
	Bottom of hole at 14.6 m.						
15							
16							
17							
18							
19							
20							



NOTES

QA/QC: BH 2019 04 01 Print Date:2019-09-26

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH_CH1

PAGE 1 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	657269
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1562.013	Borehole Logged By:	IPC
Borehole Dia. (m)	0.17	Top of Casing Elev. (m)	1562.940 1562.983	Date Drilled:	2019 01 30
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552549.191	Easting: 655940.085	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC
Slotted PVC

Well Name 1: FR_MW_CH1-A
Well Name 2: FR_MW_CH1-B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	SAND, fine- to coarse-grained, gravelly, fine to coarse, some silt, well graded, grey, dry.					
1	At 1.5 m - cobbles					
2						
3						
4						
5						
6	SAND, fine- to coarse-grained, some fine to coarse gravel, trace silt, well graded, brown, dry.					
7	At 7.3 m - cobbles At 7.6 m - some silt, damp to moist					
8	At 8.4 m - dark brown					
9	At 9.1 m - moist to wet					
10	SAND, fine- to medium-grained, some silt, some gravel, poorly graded, dark brown, moist to wet.					

CONCRETE
SAND
BENTONITE
SLOUGH
BENTONITE
FR_MW_CH1-B
SAND

NOTES

QA/QC: BH 2019 04 01 Print Date:2019-09-26

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH_CH1

PAGE 2 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	657269
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1562.013	Borehole Logged By:	IPC
Borehole Dia. (m)	0.17	Top of Casing Elev. (m)	1562.940 1562.983	Date Drilled:	2019 01 30
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552549.191	Easting: 655940.085	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: FR_MW_CH1-A
Well Name 2: FR_MW_CH1-B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
10	SAND, fine- to medium-grained, some silt, some gravel, poorly graded, dark brown, moist to wet. *(continued)*					
	At 10.4 m - trace gravel					
	At 10.7 m - some silt to silty, trace fine gravel, wet					
11						
12	At 12.3 m - silty					
13						
14						
15						
16						
17						
	At 17.5 m - some gravel					
18						
	SAND, fine- to coarse-grained, some fine to coarse gravel, some silt, well graded, dark brown, wet.					
19						
20						

SAND

BENTONITE

NOTES

QA/QC: BH 2019 04 01 Print Date:2019-09-26

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH_CH1

PAGE 3 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	657269
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1562.013	Borehole Logged By:	IPC
Borehole Dia. (m)	0.17	Top of Casing Elev. (m)	1562.940 1562.983	Date Drilled:	2019 01 30
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552549.191	Easting: 655940.085	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: FR_MW_CH1-A
Well Name 2: FR_MW_CH1-B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
20	SAND, fine- to coarse-grained, some fine to coarse gravel, some silt, well graded, dark brown, wet. *(continued)*					
	At 20.7 m - trace gravel to gravelly					
21						
22						
23						
	GRAVEL, fine to coarse, some fine- to coarse-grained sand, some silt, well graded, brown, wet.					
24						
25						
26						
	At 26.2 m - trace sand					
27						
28						
	At 28.0 m - some sand					
29						
	At 29.0 m - cobbles					
30						

BENTONITE
SLOUGH
BENTONITE
SLOUGH
BENTONITE
FR_MW_CH1-A
SAND

NOTES

QA/QC: BH 2019 04 01 Print Date:2019-09-26

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH_CH1

PAGE 4 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	657269
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1562.013	Borehole Logged By:	IPC
Borehole Dia. (m)	0.17	Top of Casing Elev. (m)	1562.940 1562.983	Date Drilled:	2019 01 30
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552549.191	Easting: 655940.085	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW_CH1-A
Well Name 2: FR_MW_CH1-B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
30	SILT and CLAY (TILL), gravelly, sandy, dark brown, wet. *(continued)*						
31							
32							
33							
34							
35							
36							
37							
38							
39	BEDROCK, siltstone, light grey.						
40							

SAND

BENTONITE

NOTES

QA/QC: BH 2019 04 01 Print Date:2019-09-26

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH_CH1

PAGE 5 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	657269
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1562.013	Borehole Logged By:	IPC
Borehole Dia. (m)	0.17	Top of Casing Elev. (m)	1562.940 1562.983	Date Drilled:	2019 01 30
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552549.191	Easting: 655940.085	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW_CH1-A
Well Name 2: FR_MW_CH1-B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4	
40	BEDROCK, siltstone, light grey. *(continued)*							BENTONITE
41	Bottom of hole at 41.2 m.							
42								
43								
44								
45								
46								
47								
48								
49								
50								

NOTES

QA/QC: BH 2019 04 01 Print Date:2019-09-26

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH_CH2

PAGE 1 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2020 10 08	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1573.385	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1574.071	Date Drilled:	2020 08 17
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552944.466	Easting: 656107.213	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW_CH2

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND, fine grained, brown, loose, damp, organics.						
1	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded to subangular, some silt, brown, loose, wet.			CH2-01			
	At 1.2 m - wet.						
2	GRAVEL, fine to coarse, subangular to angular, some sand, fine to coarse grained, some silt, brown, loose, wet.			CH2-02			
3							
	SILTY SAND, fine to coarse grained, trace gravel, fine, subrounded, dark brown, medium dense, moist.			CH2-03			
4	At 4.3 m - boulder, dark grey, siltstone, water in cuttings.						
5	BEDROCK, dark grey, siltstone, water in cuttings.			CH2-04			
	At 5.5 m - dry.						
6							
7				CH2-05			
	At 7.6 m - water seeped into casing.						
8							
9							
10							

BENTONITE
FR_MW_CH2
SAND
BENTONITE

NOTES
Bolded sample denotes sample analyzed.
*Denotes blind field duplicate.

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH_CH2

PAGE 2 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2020 10 08	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1573.385	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1574.071	Date Drilled:	2020 08 17
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552944.466	Easting: 656107.213	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW_CH2

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4	
10	BEDROCK, dark grey, siltstone, water in cuttings. *(continued)*							BENTONITE
	Bottom of hole at 10.7 m.							
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

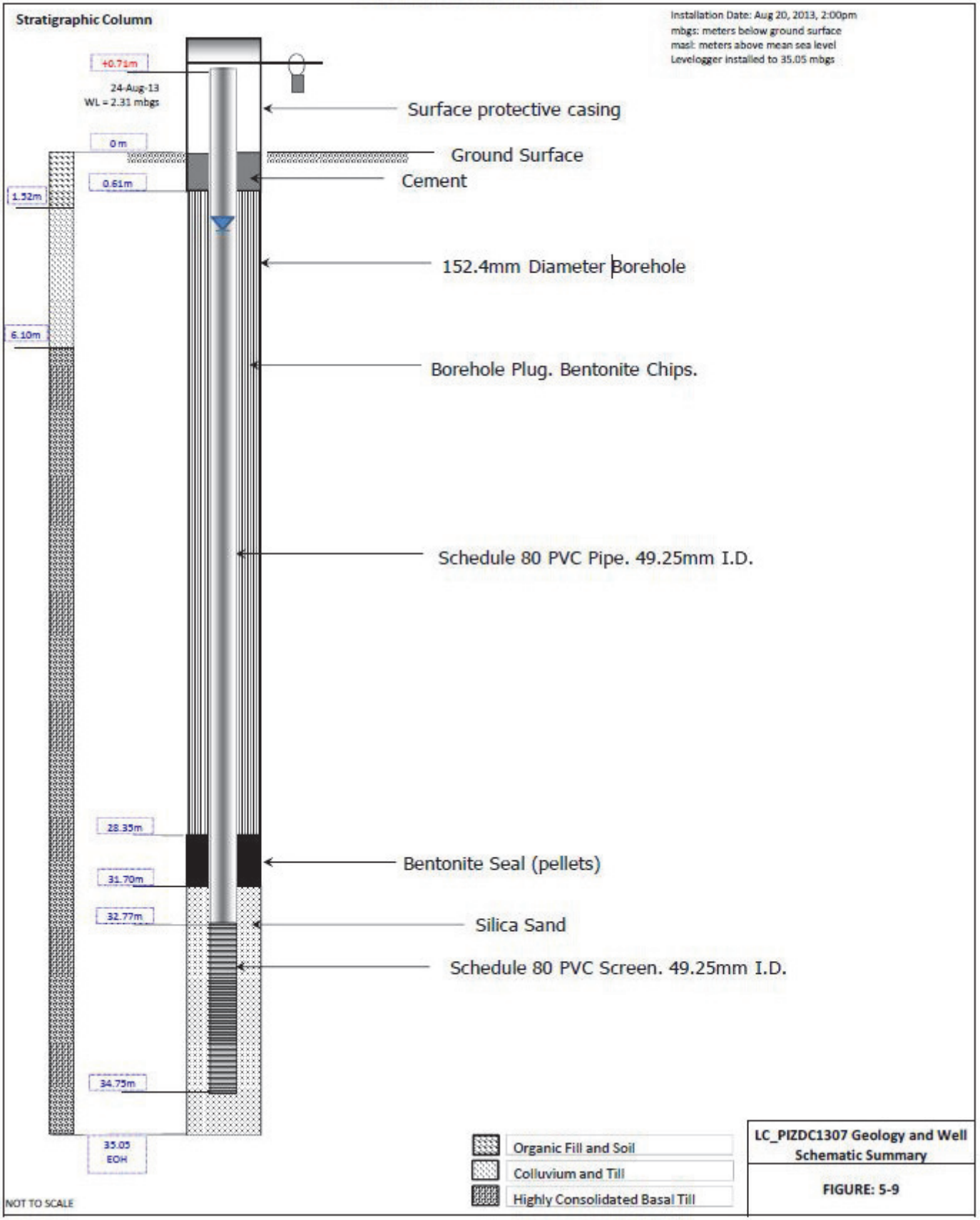
NOTES
Bolded sample denotes sample analyzed.
*Denotes blind field duplicate.

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

MONITORING WELL

Borehole: LC_PIZDC1307 **Location:** 5541229.683N, 658168.846E - 1690.506 masl

DRY CREEK PROJECT - 13-1345-0010



LC_PIZDC1307 Geology and Well Schematic Summary

FIGURE: 5-9

PROJECT No.: 13-1345-0010

RECORD OF MONITORING WELL: LC_PIZDC1307

SHEET 1 OF 4

LOCATION: See Location Plan

N: 5541229.978 E: 658168.873

BORING DATE: August 19, 2013

DATUM: UTM Zone 11 (Nad 83)
Elev = 1690.51 masl

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (10 20 30 40) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		Ground Surface		1690.50							Stickup= 0.71 m
0	Sonic Rig - SR152 Boart LongYear Group	FILL		0.00							Cement
				1689.74							
1		ORGANIC SOIL, black		0.76							
				1689.13							
2		GRAVEL and SAND, sub-angular to angular (up to 100 mm in diameter), some silt, w<PL, compact to dense		1.37							*WL=2.31 mbgs 24 Aug 2013
3				1687.15							
4		SILTY GRAVEL, sub-rounded to sub-angular (up to 50 mm in diameter), some sand, trace clay, w~PL, wet, compact		3.35							
5											Bentonite Plug
6				1684.41							
		SILTY GRAVEL, angular to sub-angular, some sand, trace clay, local cobbles, w~PL, moist, very dense		6.10							
7											
8				1681.97							
		GRAVELY SILT, sub-rounded to sub-angular, trace sand, trace clay, w~PL, wet, very dense		8.53							
9											
10		*CONTINUED NEXT PAGE*									

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: RT

CHECKED:

DATA ENTRY: VI

BOREHOLE - EXPANDED ADD. LAB TESTING 13.1345.0010_BH LOGS.GPJ CALGARY.GDT 10/11/13

DATA ENTRY: VI

PROJECT No.: 13-1345-0010

RECORD OF MONITORING WELL: LC_PIZDC1307

SHEET 2 OF 4

LOCATION: See Location Plan

BORING DATE: August 19, 2013

DATUM: UTM Zone 11 (Nad 83)

N: 5541229.978 E: 658168.873

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	Sonic Rig - SR152 Boart LongYear Group	GRAVELY SILT, sub-rounded to sub-angular, trace sand, trace clay, w~PL, wet, very dense *(continued)*									
11											
12		--- w<PL, moist to dry below 12.2 m									
13				1676.79 13.72							
14		SILTY GRAVEL, sub-rounded to sub-angular, some sand, trace clay, w<PL, moist, dense									
15											Bentonite Plug
16											
17		--- Gravel is sub-angular to angular, w~PL, wet below 16.8 m									
18											
19		--- Gravel is sub-rounded to sub-angular, moist to locally dry, loose below 18.3 m									
20				1670.69 19.81							
		CONTINUED NEXT PAGE									

BOREHOLE - EXPANDED ADD. LAB TESTING 13.1345.0010_BH LOGS.GPJ CALGARY.GDT 10/11/13

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RT

CHECKED:

PROJECT No.: 13-1345-0010

RECORD OF MONITORING WELL: LC_PIZDC1307

SHEET 3 OF 4

LOCATION: See Location Plan

BORING DATE: August 19, 2013

DATUM: UTM Zone 11 (Nad 83)

N: 5541229.978 E: 658168.873

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80); SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}); WATER CONTENT PERCENT (Wp, W, Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20	Sonic Rig - SR152 Boart LongYear Group	SANDY SILT, some sub-rounded to sub-angular gravel, localized sub-rounded to sub-angular cobbles (up to 150 mm in diameter), brown to dark brown, w~PL, moist, compact to dense, stiff *(continued)*									
21											
22											
23				1667.34							
		SANDY GRAVEL, sub-angular to angular (up to 100 mm in diameter), some silt, light brown to grey, w<PL, dry, very loose		23.16 1667.04 23.47							
24		SANDY SILT, some sub-rounded to sub-angular gravel, localized sub-rounded to sub-angular cobbles (up to 100 mm in diameter), brown to dark brown, w~PL, moist, very dense, stiff									Bentonite Plug
25											
				1664.60							
26		SILT, some sand, some sub-rounded to sub-angular gravel (<30 mm in diameter), brown to dark brown, w~PL, wet, compact to dense, firm		25.91							
27											
28											
29											Bentonite Seal
30		*CONTINUED NEXT PAGE*									

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RT

CHECKED:

DATA ENTRY: VI

BOREHOLE - EXPANDED ADD. LAB TESTING 13.1345.0010_BH LOGS.GPJ CALGARY.GDT 10/11/13

DATA ENTRY: VI

PROJECT No.: 13-1345-0010

RECORD OF MONITORING WELL: LC_PIZDC1307

SHEET 4 OF 4

LOCATION: See Location Plan

N: 5541229.978 E: 658168.873

BORING DATE: August 19, 2013

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
30	Sonic Rig - SR152 Boart LongYear Group			1660.33							
		SILTY GRAVEL, sub-rounded to sub-angular (<50 mm in diameter), localized clay, w<PL, dry, very dense, hard --- Localized zones of increased clay, very dry		30.18							Bentonite Seal
31											
32				1658.50							10/20 Colorado Silica Sand
		SILT, some sand, some sub-angular to angular gravel, localized boulders, dark brown, w<PL, moist, dense		32.00							
33											
34											Slotted Screen Section
35				1655.45							
		End of MONITORING WELL. Notes: WL= water level. masl = metres above sea level. * WL measured while LC_PIZDC1309 was flowing at surface. mbgs= metres below ground surface.		35.05							
36											
37											
38											
39											
40											

BOREHOLE - EXPANDED ADD. LAB TESTING 13.1345.0010_BH LOGS.GPJ CALGARY.GDT 10/11/13

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RT

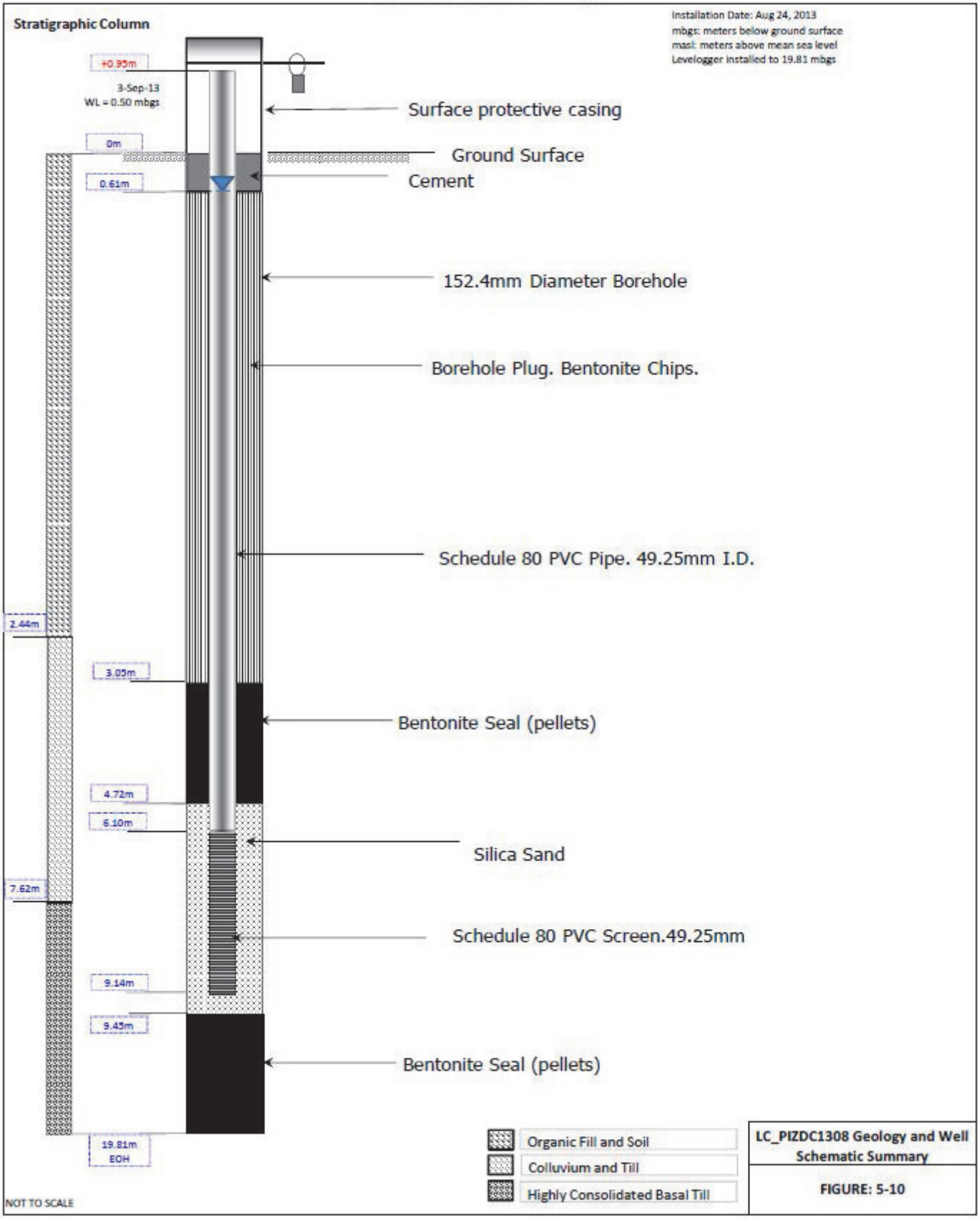
CHECKED:

MONITORING WELL

Borehole: LC_PIZDC1308 **Location:** 5541232.170N, 658167.863E - 1690.424 masl

DRY CREEK PROJECT - 13-1345-0010

Installation Date: Aug 24, 2013
mbgs: meters below ground surface
masl: meters above mean sea level
Levelogger installed to 19.81 mbgs



LC_PIZDC1308 Geology and Well Schematic Summary

FIGURE: 5-10

PROJECT No.: 13-1345-0010

RECORD OF MONITORING WELL: LC_PIZDC1308

SHEET 1 OF 2

LOCATION: See Location Plan

N: 5541232.317 E: 658167.9

BORING DATE: August 21, 2013

DATUM: UTM Zone 11 (Nad 83)
Elev = 1690.42 masl

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m
		Ground Surface		1690.42			
0	Sonic Rig - SR152 Boart LongYear Group	FILL		0.00 1689.65			
1		ORGANIC SOIL, black		0.76 1688.59			
2		SANDY GRAVEL, sub-angular to angular (up to 100 mm in diameter), some silt, w<PL, dry, very loose		1.83 1688.28			
		SILTY GRAVEL, sub-rounded to sub-angular (up to 50 mm in diameter), some sand, trace clay, w~PL, wet, loose		2.13			
3							
4				1685.84			
		SILTY GRAVEL, angular to sub-angular, some sand, trace clay, local cobbles, w~PL, moist to wet, compact		4.57			
5		--- Localized dry loose gravel zone (looks like pad fill material, fresh, dry, powdery, likely sloughed into hole) from 5.5 to 5.8 m					
6							
		--- Localized dry loose gravel zone (looks like pad fill material, fresh, dry, powdery, likely sloughed into hole) from 6.6 to 6.7 m					
7				1682.80			
		GRAVELY SILT, sub-rounded to sub-angular, trace sand, trace clay, w~PL, wet, dense to very dense		7.62			
8		--- Decrease in gravel and clay content below 8.5 m					
9							
10							

DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m: 20 40 60 80

SHEAR STRENGTH Cu, kPa: nat V. + Q - ●; rem V. ⊕ U - ○; 10 20 30 40

HYDRAULIC CONDUCTIVITY, k, cm/s: 10^{-6} 10^{-5} 10^{-4} 10^{-3}

WATER CONTENT PERCENT: Wp W Wl; 10 20 30 40

ADDITIONAL LAB. TESTING

PIEZOMETER OR STANDPIPE INSTALLATION

Stickup= 0.95 m

Cement

***WL=0.50 mbgs 24 Aug 2013**

Bentonite Plug

Bentonite Seal

10/20 Colorado Silica Sand

Slotted Screen Section

Bentonite Seal

CONTINUED NEXT PAGE

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: RT

CHECKED:

PROJECT No.: 13-1345-0010

RECORD OF MONITORING WELL: LC_PIZDC1308

SHEET 2 OF 2

LOCATION: See Location Plan

BORING DATE: August 21, 2013

DATUM: UTM Zone 11 (Nad 83)

N: 5541232.317 E: 658167.9

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ○ W I WI) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	Sonic Rig - SR152 Boart LongYear Group	GRAVELY SILT, sub-rounded to sub-angular, trace sand, trace clay, w~PL, wet, dense to very dense *(continued)*									
11											
12				1678.22							
		GRAVELY SILT, sub-rounded to sub-angular, trace sand, trace clay, local cobbles, w<PL, moist, very dense		12.19							
13											
				1676.70							
14		GRAVELY SILT, sub-rounded to sub-angular, some sand, trace clay, brown to dark brown, w<PL, moist, very dense		13.72							
15											Bentonite Seal
16											
				1673.65							
17		SILTY GRAVEL, sub-angular to angular, some sand, trace clay, w~PL, moist, dense		16.76							
18											
19		Notes: WL= water level. masl = metres above sea level. * WL measured while LC_PIZDC1309 was flowing at surface. mbgs= metres below ground surface.									
				1670.60							
20		End of MONITORING WELL.		19.81							

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: RT

CHECKED:

DATA ENTRY: VI

BOREHOLE - EXPANDED ADD. LAB TESTING 13.1345.0010_BH LOGS.GPJ CALGARY.GDT 10/11/13

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1A

PAGE 1 OF 8

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	635544
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1448.626	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1449.508	Date Drilled:	2020 11 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565171.060	Easting: 645669.946	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

- Reading within indicated scale
- Reading outside indicated scale

- Solid PVC
- Slotted PVC

Well Name 1: GH_MW_BG1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SILT and SAND, fine to medium grained sand, trace gravel, dark brown, soft, damp.						
1							
2	SILT, some sand, fine grained, trace to some gravel, brown, dense, low plasticity, dry.						
3							
4							
5							
6							
7							
8	SAND, fine to coarse grained, trace silt, trace gravel, brown, medium dense, dry.						
9							
10	SILT, some sand, fine grained, trace gravel, fine to coarse, subrounded, trace clay, brown, dense, low plasticity, damp.						

SAND

BENTONITE

NOTES

LH 2021 02 22 Print Date:2021-02-22

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1A

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	635544
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1448.626	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1449.508	Date Drilled:	2020 11 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565171.060	Easting: 645669.946	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	SILT, some sand, fine grained, trace gravel, fine to coarse, subrounded, trace clay, brown, dense, low plasticity, damp. *(continued)*						
11							
12	Below 12.2 m - no clay, no plasticity.						
13							
14							
15							BENTONITE
16							
17	Below 16.8 m - some gravel, fine to coarse, subangular to subrounded.						
18							
19							
20							

NOTES

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1A

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	635544
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1448.626	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1449.508	Date Drilled:	2020 11 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565171.060	Easting: 645669.946	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

- Reading within indicated scale
- Reading outside indicated scale

- Solid PVC
- Slotted PVC

Well Name 1: GH_MW_BG1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
20	SILT, some sand, fine grained, trace gravel, fine to coarse, subrounded, trace clay, brown, dense, low plasticity, damp. *(continued)*						
21							
22							
23							
24							
25	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular to subrounded, brown, dense, moist.						
26							
27							
28	GRAVELLY SAND, fine to coarse grained sand, fine gravel, subangular to subrounded, trace silt, brown, dense, wet.						
29							
30							

BENTONITE

NOTES

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FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1A

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	635544
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1448.626	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1449.508	Date Drilled:	2020 11 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565171.060	Easting: 645669.946	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

- Reading within indicated scale
- Reading outside indicated scale

- Solid PVC
- Slotted PVC

Well Name 1: GH_MW_BG1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4	
30	GRAVELLY SAND, fine to coarse grained sand, fine gravel, subangular to subrounded, trace silt, brown, dense, wet. *(continued)*							
31								
32								
33	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular to rounded, brown, dense, wet. Below 33.5 m - some silt to silty.							
34								
35								BENTONITE
36								
37	Below 36.6 m - trace silt, medium to coarse grained sand.							
38								
39								
40	GRAVEL, fine to coarse, subangular to subrounded, some silt, trace sand, fine to coarse grained, brown, dense, wet.							

NOTES

LH 2021 02 22 Print Date:2021-02-22

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1A

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Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	635544
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1448.626	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1449.508	Date Drilled:	2020 11 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565171.060	Easting: 645669.946	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
40	GRAVEL, fine to coarse, subangular to subrounded, some silt, trace sand, fine to coarse grained, brown, dense, wet. *(continued)*						
41							
42							
43							
44							
45	SILT and GRAVEL, fine to coarse gravel, angular to subrounded, some sand, fine to coarse grained, brown, dense, wet.						
46	SILT, trace sand, fine to coarse grained, brown, dense, wet.						
47							
48							
49							
50							

BENTONITE

NOTES

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1A

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Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	635544
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1448.626	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1449.508	Date Drilled:	2020 11 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565171.060	Easting: 645669.946	Log Typed By:	VL

Drilling Legend
Sample Interval
Air Rotary

Water/NAPL Levels
Water Level 1
Water Level 2
NAPL
NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
50	SILT, trace sand, fine to coarse grained, brown, dense, wet. *(continued)*					
51	Below 51.2 m - trace gravel, fine, subrounded.					
52						
53						
54						
55						
56						
57						
58						
59						
60						

BENTONITE

NOTES

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Client
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Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1A

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Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	635544
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1448.626	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1449.508	Date Drilled:	2020 11 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565171.060	Easting: 645669.946	Log Typed By:	VL

Drilling Legend
Sample Interval
Air Rotary

Water/NAPL Levels
Water Level 1
Water Level 2
NAPL
NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
60	SILT, trace sand, fine to coarse grained, brown, dense, wet. *(continued)*					
61						
62	BOULDERS and COBBLES.					
63						
64						
65						
66	SAND and GRAVEL, medium to coarse grained sand, fine to coarse gravel, subrounded to rounded, brown, dense, wet.					
67						
68	Below 68.0 m - some silt.					
69	SILTY GRAVEL, fine to coarse gravel, subangular to subrounded, some sand, coarse grained, brown, dense, wet.					
70						

BENTONITE
GH_MW_BG1A
SAND
BENTONITE

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1A

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	635544
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1448.626	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1449.508	Date Drilled:	2020 11 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565171.060	Easting: 645669.946	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
70	BEDROCK, siltstone, dark grey with beige weathering, weathered, compentent, soft, white calcite secondary minerals on fracture surfaces. *(continued)*						
71							
	Bottom of hole at 71.6 m.						
72							
73							
74							
75							
76							
77							
78							
79							
80							

BENTONITE

NOTES

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1B

PAGE 1 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 29	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1448.707	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1449.693	Date Drilled:	2020 09 25
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565168.100	Easting: 645663.688	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SILTY SAND, fine to coarse grained, trace gravel, fine, subangular, brown, loose, damp, organics.						
1							
2							
3	At 2.7 m - dry.						
4							
5							
6	SAND, fine to coarse grained, some gravel, fine, angular, some silt, well graded, brown, medium dense, dry.						
7							
8	SILTY SAND, fine to coarse grained, trace gravel, fine, subangular, dark brown, dense, dry.						
9							
10							

BENTONITE

NOTES

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1B

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Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 29	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1448.707	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1449.693	Date Drilled:	2020 09 25
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565168.100	Easting: 645663.688	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	SILTY SAND, fine to coarse grained, trace gravel, fine, subangular, dark brown, dense, dry. *(continued)*						
11							
12							
13							
14							
15							BENTONITE
16							
17							
18	At 18.0 m - some gravel.						
19							
20	At 19.5 m - trace gravel.						

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1B

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Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 29	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1448.707	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1449.693	Date Drilled:	2020 09 25
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565168.100	Easting: 645663.688	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
20	SILTY SAND, fine to coarse grained, trace gravel, fine, subangular, dark brown, dense, dry. *(continued)*						
21							
22	SAND and SILT, fine grained sand, trace gravel, subangular, dark brown, dense, dry.						
23							
24							
25	SAND, fine to coarse grained, some gravel, fine, subangular to subrounded, some silt, well graded, brown, medium dense, dry.						
26	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded, some silt, well graded, dark brown, medium dense, damp.						
27							
28							
29							
30							

BENTONITE

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1B

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Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 29	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1448.707	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1449.693	Date Drilled:	2020 09 25
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565168.100	Easting: 645663.688	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
30	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded, some silt, well graded, dark brown, medium dense, damp. *(continued)*						
31							
32							
33							
34							
35	SILTY, SANDY GRAVEL, fine to coarse gravel, angular to subangular, fine to coarse grained sand, well graded, brown, medium dense, wet.						
36	At 36.3 m - wet.						
37							
38							
39							
40							

BENTONITE

NOTES

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1B

PAGE 5 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 29	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1448.707	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1449.693	Date Drilled:	2020 09 25
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565168.100	Easting: 645663.688	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
40	SILT and GRAVEL, fine to coarse gravel, subangular to angular, some sand, fine to coarse grained, brown, dense, firm, wet.						
41							
42	SILTY SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, angular to subangular, well graded, brown, dense, wet.						
43							
44							
45							
46							
47	Bottom of hole at 47.2 m.						
48							
49							
50							

BENTONITE
BENTONITE
GH_MW_BG1B
SAND

NOTES

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1C

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Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 29	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1448.484	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1449.343	Date Drilled:	2020 09 24
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565164.723	Easting: 645663.041	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Depth in Metres | Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1C

0 SILTY SAND, fine to coarse grained sand, trace gravel, fine, subangular, brown, loose, damp, organics.

1

2

At 2.7 m - dry.

3

4

5

BENTONITE

6 SAND, fine to coarse grained, some gravel, fine, angular, some silt, well graded, brown, medium dense, dry.

7

8 SILTY SAND, fine to coarse grained sand, trace gravel, fine subangular, dark brown, dense, dry.

9

10

NOTES

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1C

PAGE 2 OF 4

Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 29	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1448.484	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1449.343	Date Drilled:	2020 09 24
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565164.723	Easting: 645663.041	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Depth in Metres | Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW_BG1C

10 SILTY SAND, fine to coarse grained sand, trace gravel, fine subangular, dark brown, dense, dry. *(continued)*

11

12

13

14

15 — BENTONITE

16

17

18 At 18.0 m - some gravel.

19 At 19.5 m - trace gravel.

20

NOTES

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Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1C

PAGE 3 OF 4

Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 29	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1448.484	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1449.343	Date Drilled:	2020 09 24
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565164.723	Easting: 645663.041	Log Typed By:	AS

Drilling Legend: Sample Interval; Odex

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm): 10^1 10^2 10^3 10^4

Solid PVC; Slotted PVC

Well Name 1: GH_MW_BG1C

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
20	SILTY SAND, fine to coarse grained sand, trace gravel, fine subangular, dark brown, dense, dry. *(continued)*					
21						
22	SAND and SILT, fine grained sand, trace gravel, subangular, dark brown, dense, dry.					
23						
24						
25	SAND, fine to coarse grained, some gravel, fine, subangular to subrounded, some silt, well graded, brown, medium dense, dry.					
26	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded, some silt, well graded, dark brown, medium dense, damp.					
27						
28						
29	SILTY SAND, fine to coarse grained sand, some gravel, fine, subrounded, well graded, dark brown, damp.					
30						

BENTONITE

NOTES

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_BG1C

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Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 29	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1448.484	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1449.343	Date Drilled:	2020 09 24
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565164.723	Easting: 645663.041	Log Typed By:	AS

Drilling Legend: Sample Interval; Odex

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Solid PVC; Slotted PVC

Well Name 1: GH_MW_BG1C

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
30	SILTY SAND, fine to coarse grained sand, some gravel, fine, subrounded, well graded, dark brown, damp. *(continued)*						
31							
32							
33							
34							
35	SILTY, SANDY GRAVEL, fine to coarse gravel, angular to subangular, fiine to coarse grained sand, well graded, medium dense, wet.						
36							
37							
38	Bottom of hole at 38.1 m.						
39							
40							

BENTONITE

BENTONITE

GH_MW_BG1C

SAND

NOTES

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Willow Pond

Borehole No. : GH_BH-Willow-1

PAGE 1 OF 4

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 07	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1345.524	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1346.420 1346.423	Date Drilled:	2018 11 20
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556081.040	Easting: 647474.898	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Willow-1S
Well Name 2: GH_MW-Willow-1D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND, fine to medium grained, silty, some gravel to gravelly, fine to coarse, cobbles present, subrounded, well graded, brown to light brown, medium dense, dry.						
1							
2	At 1.8 m - brown						
3	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, silty, cobbles present, subrounded to subangular, well graded, dark brown, medium dense, damp.						
4							
5	SILT, sandy, fine grained, some gravel, fine to coarse, subrounded, dark brown, soft, damp. At 4.9 m - damp to dry						
6							
7							
8	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, some silt to silty, subrounded, well graded, dark brown, dense, damp, some fine gravel with evidence of oxidation/weathering.						
9							
10							

BENTONITE

NOTES
Water level 1 and first top of casing elevation is for GH_MW-Willow-1S.
Water level 2 and second top of casing elevation is for GH_MW-Willow-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Willow Pond

Borehole No. : GH_BH-Willow-1

PAGE 2 OF 4

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 07	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1345.524	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1346.420 1346.423	Date Drilled:	2018 11 20
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556081.040	Easting: 647474.898	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Depth in Metres | Soil Description | Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery | Soil Vapour (ppm) 10^1 10^2 10^3 10^4

- Reading within indicated scale
- Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Willow-1S
Well Name 2: GH_MW-Willow-1D

10 SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, some silt to silty, subrounded, well graded, dark brown, dense, damp, some fine gravel with evidence of oxidation/weathering. *(continued)*

At 10.7 m - increased gravel, moist to wet

11

12

13 At 13.0 m - damp to dry

14

15

SAND, silty, fine grained, trace fine to coarse gravel, poorly graded, brown, dense, dry.

16

17

18

19

20

BENTONITE

GH_MW-Willow-1S

SAND

BENTONITE/SLOUGH

NOTES
Water level 1 and first top of casing elevation is for GH_MW-Willow-1S.
Water level 2 and second top of casing elevation is for GH_MW-Willow-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Willow Pond

Borehole No. : GH_BH-Willow-1

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Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 07	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1345.524	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1346.420 1346.423	Date Drilled:	2018 11 20
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556081.040	Easting: 647474.898	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Willow-1S
Well Name 2: GH_MW-Willow-1D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
20	SAND and GRAVEL, fine grained sand, fine to coarse gravel, silty, subrounded, poorly graded, brown, dense, dry. *(continued)*						
21							
22							
22	SILT, sandy, fine grained, trace fine to coarse gravel, subrounded, poorly graded, firm, dry.						
23							
24							
25							
25	SAND and GRAVEL, fine grained sand, fine to coarse gravel, silty, subrounded, poorly graded, brown, dense, dry.						
26							
27	At 27.1 m - increased gravel						
28							
29							
30							

BENTONITE/SLOUGH

NOTES
Water level 1 and first top of casing elevation is for GH_MW-Willow-1S.
Water level 2 and second top of casing elevation is for GH_MW-Willow-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Willow Pond

Borehole No. : GH_BH-Willow-1

PAGE 4 OF 4

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 07	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1345.524	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1346.420 1346.423	Date Drilled:	2018 11 20
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556081.040	Easting: 647474.898	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

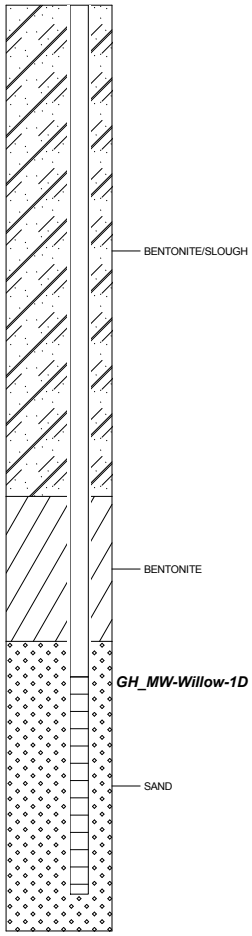
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Willow-1S
Well Name 2: GH_MW-Willow-1D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
30	SAND and GRAVEL, fine grained sand, fine to coarse gravel, silty, subrounded, poorly graded, brown, dense, dry. *(continued)*						
31							
32							
33							
34							
35	SAND and GRAVEL, fine grained sand, fine to coarse gravel, some silt, rounded to subrounded, poorly graded, dense, moist to wet.						
36							
37							
37	BEDROCK, fine grained, grey to dark grey, moderately weathered.						
38	Bottom of hole at 37.8 m.						
39							
40							



NOTES
Water level 1 and first top of casing elevation is for GH_MW-Willow-1S.
Water level 2 and second top of casing elevation is for GH_MW-Willow-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Willow Pond

Borehole No. : GH_BH-Willow-2

PAGE 1 OF 3

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1346.840	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1347.701 1347.695	Date Drilled:	2018 11 19
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556014.905	Easting: 647553.228	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Willow-2S
Well Name 2: GH_MW-Willow-2D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND, fine to medium grained, silty, some gravel to gravelly, fine to coarse, cobbles present, subrounded, well graded, brown to light brown, medium dense, dry.						
1							
2	SAND, fine grained, silty, some fine to coarse gravel, cobbles present, subrounded, poorly graded, light brown, loose, dry.						
3							
4	At 3.7 m - dark brown, medium dense, damp to wet						
5							
6	At 5.8 m - increased silt At 6.1 m - gravelly, moist to wet						
7							
8	SAND, fine grained, silty, some to trace fine to coarse gravel, cobbles present, poorly graded, damp.						
9							
10							

BENTONITE
BENTONITE
GH_MW-Willow-2S
SAND
BENTONITE

NOTES
Water level 1 and first top of casing elevation is for GH_MW-Willow-2S.
Water level 2 and second top of casing elevation is for GH_MW-Willow-2D.

QA: MCA 2019 01 14 Print Date:2019-12-04

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Client
Teck Coal Limited

Location
Greenhills Operations Willow Pond

Borehole No. : GH_BH-Willow-2

PAGE 2 OF 3

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1346.840	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1347.701 1347.695	Date Drilled:	2018 11 19
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556014.905	Easting: 647553.228	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Willow-2S
Well Name 2: GH_MW-Willow-2D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	SAND, fine grained, silty, some to trace fine to coarse gravel, cobbles present, poorly graded, damp. *(continued)*						
11	At 11.3 m - increased gravel and cobbles						
12							
13	SAND, fine grained, some silt, some to trace gravel, fine to coarse, subrounded to subangular, poorly graded, brown, damp.						
14							
15	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, silty, cobbles present, subrounded, well graded, brown, moist to wet.						
16							
17							
18	SILT, some sand to sandy, fine grained, trace gravel, fine to coarse, subrounded, dark brown to black, damp to dry.						
19	At 19.4 m - sandy, gravelly						
20							

BENTONITE
BENTONITE
GH_MW-Willow-2D
SAND
BENTONITE/SLOUGH

NOTES
Water level 1 and first top of casing elevation is for GH_MW-Willow-2S.
Water level 2 and second top of casing elevation is for GH_MW-Willow-2D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Willow Pond

Borehole No. : GH_BH-Willow-2

PAGE 3 OF 3

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1346.840	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1347.701 1347.695	Date Drilled:	2018 11 19
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556014.905	Easting: 647553.228	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Willow-2S
Well Name 2: GH_MW-Willow-2D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
20	SILT, some sand to sandy, fine grained, trace gravel, fine to coarse, subrounded, dark brown to black, damp to dry. *(continued)*						
21	BEDROCK, fine grained, grey to dark grey, moderately weathered.						
22	Bottom of hole at 22.0 m.						
23							
24							
25							
26							
27							
28							
29							
30							

BENTONITE/SLOUGH

NOTES
Water level 1 and first top of casing elevation is for GH_MW-Willow-2S.
Water level 2 and second top of casing elevation is for GH_MW-Willow-2D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Wolf Pond

Borehole No. : GH_BH-Wolf-1

PAGE 1 OF 4

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1357.176	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1358.139 1358.133	Date Drilled:	2018 11 17
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556786.610	Easting: 647377.660	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

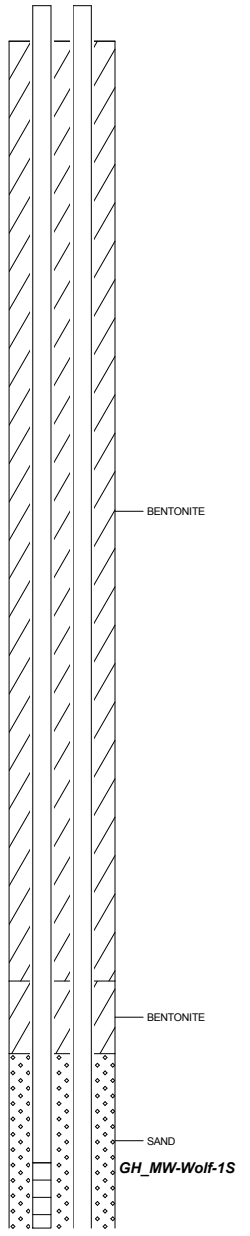
Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Wolf-1S
Well Name 2: GH_MW-Wolf-1D

Depth in Metres	Soil Description
0	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, some silt to silty, cobbles present, subrounded, well graded, brown, loose to medium dense, dry.
1	At 1.1 m - some silt, darker brown with depth
2	From 2.1 m to 6.1 m - very loose (poor drilling recovery)
6	SAND and GRAVEL, fine grained sand, fine to coarse gravel, silty, subrounded, poorly graded, dark brown, medium firm, damp, some weathering/precipitate on gravel.
10	



NOTES
Water level 1 and first top of casing elevation is for GH_MW-Wolf-1S.
Water level 2 and second top of casing elevation is for GH_MW-Wolf-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Wolf Pond

Borehole No. : GH_BH-Wolf-1

PAGE 2 OF 4

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1357.176	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1358.139 1358.133	Date Drilled:	2018 11 17
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556786.610	Easting: 647377.660	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Wolf-1S
Well Name 2: GH_MW-Wolf-1D

Depth in Metres	Soil Description
10	SAND and GRAVEL, fine grained sand, fine to coarse gravel, silty, subrounded, poorly graded, dark brown, medium firm, damp, some weathering/precipitate on gravel. *(continued)*
11	
12	At 11.9 m - moist to wet
	At 12.5 m - damp
13	
	At 13.7 m - increase in gravel content
14	GRAVEL and SAND, fine to coarse gravel, fine grained sand, silty, cobbles present, poorly graded, dark brown, medium dense, damp.
15	
	At 15.4 m - some silt
16	
17	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, cobbles present, subrounded, dark brown, medium dense, damp.
18	
19	
20	At 19.8 m - trace silt, dry

GH_MW-Wolf-1S

SAND

BENTONITE/SLOUGH

NOTES
Water level 1 and first top of casing elevation is for GH_MW-Wolf-1S.
Water level 2 and second top of casing elevation is for GH_MW-Wolf-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Wolf Pond

Borehole No. : GH_BH-Wolf-1

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Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1357.176	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1358.139 1358.133	Date Drilled:	2018 11 17
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556786.610	Easting: 647377.660	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Wolf-1S
Well Name 2: GH_MW-Wolf-1D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
20	SAND, fine grained, some gravel to gravelly, fine to coarse, silty, subrounded, poorly graded, brown, dense, dry to damp.					
23	SILT, sandy, fine grained, some to trace gravel, fine to coarse, subrounded, brown, firm, dry.					
26	GRAVEL and SAND, fine to coarse gravel, fine grained sand, silty, cobbles present, poorly graded, medium dense, dry.					
27	At 27.3 m - increased silt SAND, fine grained, silty, some gravel, subrounded, poorly graded, brown, dense, dry.					

BENTONITE/SLOUGH

BENTONITE

NOTES
Water level 1 and first top of casing elevation is for GH_MW-Wolf-1S.
Water level 2 and second top of casing elevation is for GH_MW-Wolf-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Wolf Pond

Borehole No. : GH_BH-Wolf-1

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Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1357.176	Borehole Logged By:	MCA/AMH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1358.139 1358.133	Date Drilled:	2018 11 17
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556786.610	Easting: 647377.660	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

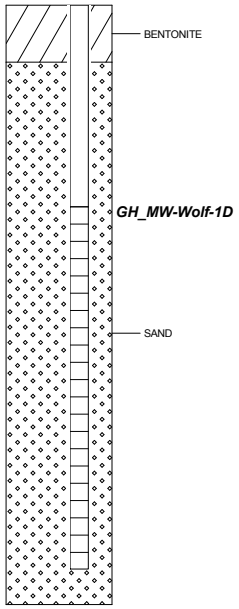
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Wolf-1S
Well Name 2: GH_MW-Wolf-1D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
30	SAND, fine grained, silty, some gravel, subrounded, poorly graded, brown, dense, dry. *(continued)*						
31							
32							
33							
34	SAND, fine grained, silty, some gravel, subrounded, poorly graded, dark brown to black, dense, damp.						
35	BEDROCK, fine grained, grey to dark grey, moderately weathered.						
	Bottom of hole at 35.1 m.						
36							
37							
38							
39							
40							



NOTES
Water level 1 and first top of casing elevation is for GH_MW-Wolf-1S.
Water level 2 and second top of casing elevation is for GH_MW-Wolf-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Wolf Pond

Borehole No. : GH_BH-Wolf-2

PAGE 1 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1376.512	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1377.477 1377.467	Date Drilled:	2018 11 18
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556856.625	Easting: 647501.035	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Wolf-2S
Well Name 2: GH_MW-Wolf-2D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, some silt to silty, cobbles present, subrounded, well graded, brown, loose to medium dense, dry.					
1	From 0.6 m to 1.5 m - boulder					
2	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, cobbles and rock debris present, silty, subrounded to subangular, dark brown, dense, damp.					
3	From 2.4 m to 10.7 m - no recovery					
4						
5						
6						
7						
8						
9						
10						

BENTONITE
BENTONITE
GH_MW-Wolf-2S
SAND
BENTONITE

NOTES
Water level 1 and first top of casing elevation is for GH_MW-Wolf-2S.
Water level 2 and second top of casing elevation is for GH_MW-Wolf-2D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Wolf Pond

Borehole No. : GH_BH-Wolf-2

PAGE 2 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1376.512	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1377.477 1377.467	Date Drilled:	2018 11 18
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5556856.625	Easting: 647501.035	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

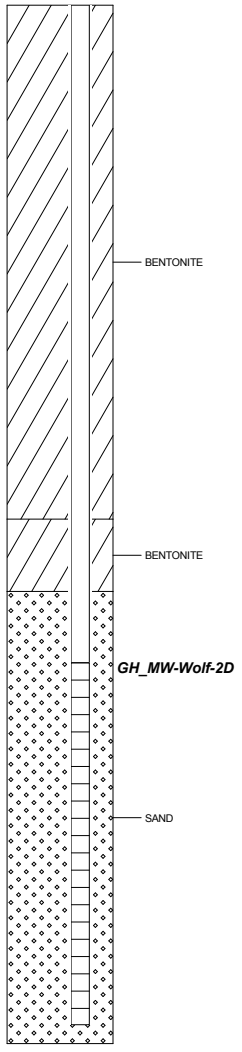
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-Wolf-2S
Well Name 2: GH_MW-Wolf-2D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	From 2.4 m to 10.7 m - no recovery *(continued)*						
11	SAND, fine grained, silty, some fine to coarse gravel, cobbles present, subrounded, dense, damp to dry.						
12							
13							
14							
15	At 14.6 m - damp From 15.6 m to 16.8 m - cobbles						
16							
17							
18							
19	BEDROCK, fine grained, grey to dark grey, moderately weathered. Bottom of hole at 18.9 m.						
20							



NOTES
Water level 1 and first top of casing elevation is for GH_MW-Wolf-2S.
Water level 2 and second top of casing elevation is for GH_MW-Wolf-2D.

QA: MCA 2019 01 14 Print Date:2019-12-04

CLIENT: Teck Coal Ltd.	PROJECT: GW Assessment - Effluent Ponds	BOREHOLE NO: **MW11(P)-03**
DRILLER: JR Drilling	LOCATION: Teck - LCO	PROJECT NO: BX06169
DRILL/METHOD: DR-12/Air Rotary	BOREHOLE LOCATION: Refer to site plan	ELEVATION: 1263.49 m

SAMPLE TYPE: Shelby Tube; No Recovery; SPT Test (N); Grab Sample; Split-Pen

BACKFILL TYPE: Bentonite; Pea Gravel; Slough; Grout; Drill Cuttings; Sand

Depth (m)	GASTECH VAPOUR 200 400 600 800 / STANDARD PEN (N) 20 40 60 80 / PLASTIC M.C. LIQUID 20 40 60 80	SOIL SYMBOL	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO	SPT (N)	WELL INSTALLATION	OTHER TESTS COMMENTS	ELEVATION (m)
0–14	◆		**CLAY**, some silt, some sand, trace organics, very soft, medium plastic, medium brown, moist					Top of casing (TOC) elevation is 1264.53 mASL. Stick-up = 1.04 m.	1263–1249
14–18			**GRAVEL**, some sand, some fines, compact, medium brown, moist						1249–1245
18–29	◆		**SAND**, silty, some gravel, some cobbles, compact, grey, damp						1245–1234
29–39			**SILT**, sandy, some gravel, some cobbles, firm, grey, moist					Depth to water was 27.81 m below TOC on 23 November 2011. Groundwater elevation was 1236.72 m ASL.	1234–1224
29–30			**SAND & GRAVEL**, some fines, dense, medium brown, moist to wet						1234–1233
30–39	◆		**SILT**, clayey, sandy, some gravel, some cobbles, medium brown, moist					The 150 mm steel casing terminates at 31.1 m.	1233–1224
35–38								A 50 mm Schedule 40 slotted PVC screen installed from 35.1 m to 38.1 m.	1228–1225
38								$K = 7.4 \times 10^{-8}$ m/s	1225
39–41	◆		**BEDROCK**						1224–1222
41–45			**END OF BOREHOLE AT 41.2 m** Borehole wet upon completion. Monitoring well installed.						1222–1219

BX06169 - BOREHOLE LOGS - SEPTEMBER 30,2011.GPJ 12/01/04 03:30 PM (BOREHOLE LOG)

amec

AMEC Environment & Infrastructure
Medicine Hat, Alberta

LOGGED BY: RH
REVIEWED BY: LH

COMPLETION DEPTH: 41.20 m
COMPLETION DATE: 11/18/11

CLIENT: Teck Coal Ltd.	PROJECT: GW Assessment - Effluent Ponds	BOREHOLE NO: **MW11(P)-01**
DRILLER: JR Drilling	LOCATION: Teck - LCO	PROJECT NO: BX06169
DRILL/METHOD: DR-12/ Air Rotary	BOREHOLE LOCATION: Refer to site plan	ELEVATION: 1266.06 m

SAMPLE TYPE: Shelby Tube; No Recovery; SPT Test (N); Grab Sample; Split-Pen; Core

BACKFILL TYPE: Bentonite; Pea Gravel; Slough; Grout; Drill Cuttings; Sand

Depth (m)	SOIL DESCRIPTION	SAMPLE NO	SPT (N)	WELL INSTALLATION	OTHER TESTS COMMENTS	ELEVATION (m)
0	**SAND**, silty, some gravel, trace clay, loose, compact, medium brown, dry	1			Top of casing (TOC) elevation is 1267.06 mASL. Stick-up = 1.0 m.	1265
1	-gravelly	2				1264
2	**SILT**, sandy, some cobbles, some gravel, compact, grey brown, damp	3				1263
3		4				1262
4		5				1261
5		6				1260
6	**SILTY SAND**, some gravel, compact, medium brown, dry					1259
7		7				1258
8	**SILT** , some cobbles, trace FG sand, firm, medium brown, damp	8				1257
9		9				1256
10		10				1255
11						1254
12						1253
13						1252
14		11				1251
15						1250
16						1249
17		12				1248
18						1247
19	-damp					1246
20	-dry	13				1245
21						1244
22						1243
23		14				1242
24						1241
25						1240
26	-damp	15			Depth to groundwater was 30.81 m from TOC 23 November 2011 (1236.25 mASL).	1239
27						1238
28						1237
29						1236
30						1235
31						1234
32						1233
33	**SAND AND GRAVEL**, dense, brown grey, moist (sub-rounded gravel)				150 mm steel casing installed from surface to 33.5 m.	1232
34		16				1231
35	**CG SAND**, some gravel, dense, brown grey, wet (sub rounded to sub angular)					1230
36		17				1229
37						1228
38	-wet				A 50 mm Schedule 40 slotted PVC screen was installed from 37.5 m to 40.5 m.	1227
39						1226
40						1225
41	**END OF HOLE AT 41.2 m**				$K = 7.4 \times 10^{-4}$ m/s	1224
42	Borehole wet at completion. Monitoring well installed.					1223
43						1222
44						
45						

GASTECH VAPOUR 200 400 600 800

STANDARD PEN (N) 20 40 60 80

PLASTIC M.C. LIQUID 20 40 60 80

amec

AMEC Environment & Infrastructure
Medicine Hat, Alberta

LOGGED BY: RH
REVIEWED BY: LH

COMPLETION DEPTH: 40.50 m
COMPLETION DATE: 11/15/11

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : EV_BH_GV4A

PAGE 1 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2020 08 31	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1310.661	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1311.532	Date Drilled:	2020 08 09
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5522317.465	Easting: 656664.666	Log Typed By:	AS

Drilling Legend: Sample Interval; Odex

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC; Slotted PVC

Well Name 1: EV_MW_GV4A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular, some silt, well graded, brown, loose, moist, organics.			GV4A-01		
1	At 1.07 m - wet.					
2	SILTY, GRAVELLY SAND, fine to coarse grained, fine gravel, subangular, well graded, brown, medium dense, moist.			GV4A-02		
3				GV4A-03		
4	Below 4.0 m - some clay, loose, wet.					
5				GV4A-04		
6						
7	SAND, fine to coarse grained, trace silt, trace gravel, subrounded, light brown, medium dense, dry.			GV4A-05		
	SILT and SAND, fine to coarse grained sand, some gravel, fine, subangular, some clay, well graded, light brown, medium dense, wet.					
8	SAND, fine to coarse grained, some gravel, fine, angular, trace clay, well graded, light brown, dense, wet.			GV4A-06		
9						
10				GV4A-07		

BENTONITE

BENTONITE

BENTONITE

NOTES
Bolded sample denotes sample analyzed.
* Denotes blind field duplicate.

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : EV_BH_GV4A

PAGE 2 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2020 08 31	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1310.661	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1311.532	Date Drilled:	2020 08 09
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5522317.465	Easting: 656664.666	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

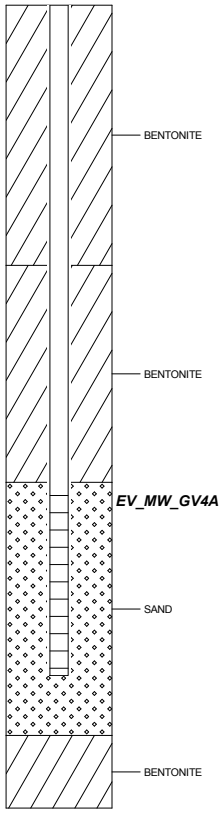
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: EV_MW_GV4A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	SAND, fine to coarse grained, some gravel, fine, angular, trace clay, well graded, light brown, dense, wet. *(continued)*						
11	SILTY SAND, fine to coarse grained sand, some clay, trace gravel, fine to coarse, angular, containing cobbles, well graded, light brown, dense, wet.			GV4A-08			
12							
13	SILT and SAND, fine grained sand, some clay, containing cobbles, light brown, very dense, wet.			GV4A-09			
14	BEDROCK, light brown, sandstone, fine grained.			GV4A-10			
15	At 15.0 m - some grey rock chips, fine grained.						
16				GV4A-11			
17	Bottom of hole at 16.8 m.						
18							
19							
20							



NOTES
Bolded sample denotes sample analyzed.
* Denotes blind field duplicate.

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : EV_BH_GV4B

PAGE 1 OF 1

Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 30	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1310.636	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1311.661	Date Drilled:	2020 08 10
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5522318.467	Easting: 656662.164	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: EV_MW_GV4B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular, some silt, well graded, brown, loose.						
1	At 1.07 m - wet.						
2	GRAVELLY SAND, fine to coarse grained, fine gravel, subangular, well graded, brown, medium dense, moist.						
3							
4							
5	SILTY, GRAVELLY SAND, fine to coarse grained sand, fine to coarse gravel, subangular, some clay, well graded, brown, loose, wet.						
6	Bottom of hole at 6.1 m.						
7							
8							
9							
10							

BENTONITE

EV_MW_GV4B

SAND

NOTES

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_AC1A

PAGE 1 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	n/a	Project Number:	683032
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1303.926	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1304.821	Date Drilled:	2021 09 13
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5502845.016	Easting: 663652.864	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_AC1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded, trace silt, brown, loose, damp, contains organic material.					60	
2	GRAVEL, fine to coarse, subrounded, some sand, fine to coarse grained, brown, loose, wet.						
3	At 2.7 m - containing cobbles (>150 mm), contains organic material.					70	
5	SAND, fine grained, trace silt, poorly graded, brown, soft, wet.						
6	SAND, fine to medium grained, trace silt, poorly graded, brown, dense, wet.					100	
8	At 8.5 m - 100 mm seam of laminated silt and fine grained sand.					100	
10							

BENTONITE

NOTES

QA/QC: KH 2022 01 25 Print Date:2022-03-03

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_AC1A

PAGE 2 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	n/a	Project Number:	683032
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1303.926	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1304.821	Date Drilled:	2021 09 13
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5502845.016	Easting: 663652.864	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_AC1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm)
10	SILTY CLAY, grey, stiff, medium plasticity, moist.						
11	SAND, fine to medium grained, trace silt, brown, firm, wet.						
12						100	
13							
14							
15	SILTY CLAY, trace sand, fine grained, dark brown, stiff, medium plasticity, wet.						
	Bottom of hole at 15.2 m.						
16							
17							
18							
19							
20							

Soil Vapour (ppm): 10^1 10^2 10^3 10^4

BENTONITE

RG_MW_AC1A

SAND

NOTES

QA/QC: KH 2022 01 25 Print Date:2022-03-03

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_AC1B

PAGE 1 OF 1

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	n/a	Project Number:	683032
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1303.989	Borehole Logged By:	MM/AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1304.831	Date Drilled:	2021 09 14
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5502844.815	Easting: 663654.387	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_AC1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm)
0	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded, trace silt, containing cobbles, well graded, grey-brown, loose, damp.					40	
1	At 1.2 m - organic material, wood/tree root.						
2							
3						50	
4	At 3.7 m - large cobbles (200 mm diameter), sediment washed during drilling.					100	
5	SAND, fine to medium grained, rounded, trace silt, poorly graded, brown/grey, soft, wet.						
6	Bottom of hole at 6.1 m.						
7							
8							
9							
10							

Soil Vapour (ppm): 10^1 10^2 10^3 10^4

CONCRETE
BENTONITE
RG_MW_AC1B
SAND

NOTES

QA/QC: KH 2022 01 25 Print Date:2022-03-03

srk consulting

Teck

HOLE ID:	MW-3	COORDINATES:	668230 E 5482814 N
LOCATION:	CMO	DATUM:	UTM Zone 11
PROJECT NO:	1CT017.098	GROUND ELEV (masl):	1573.4
DRILLING CONTRACTOR:	AquaPro Drilling Ltd.	COLLAR DIP:	-90
		EOH ELEV. (masl):	1545.97
DRILLING TYPE:	Air Rotary	TOTAL DEPTH (mbgs):	27.43
LOGGED BY:	LC	STICKUP HEIGHT (magl):	0.81
BORING DATE:	8/11/2015 to 8/12/2015	CASING STICKUP (magl):	0.81

PROJECT: Phase 1 Groundwater Monitoring

CLIENT: Teck Coal Ltd. - CMO

AREA: **Michel Creek**

Lithological Symbol: CL-Clay, LO-Loam, SI-Silt, SA-Sand, GV-Gravel, SS-Sandstone, ST-Siltstone

Hydraulic Conductivity (m/s): 1E-8, 1E-7, 1E-6, 1E-5, 0.0001, 0.001

Well Installation: Sand, Screen, PVC, Pellets, Cave, Chips, Chips/Backfill, Backfill, Casing

Depth (m)	Lithology Description	Drilling Notes and Additional Comments
0	Clay and gravel (CL-CH); Some sand. Very dark grayish brown, gap graded, wet, sub-rounded, medium-plasticity, cohesive.	
2	Gravel and sand (GM); Some silt. Dark brown, well graded, moist, sub-rounded, non-plastic, non-cohesive.	Drilling slow, going through clay with cobbles/gravel, clay quite firm
4	Clay and gravel (CH); Some sand. Very dark grayish brown, gap graded, moist, sub-rounded, high-plasticity, cohesive.	Fines cohesive, but not whole sample
6	Gravel and silt (GM); Very dark grayish brown, gap graded, dry, sub-rounded, non-plastic, non-cohesive.	Hit bedrock, very dry and dusty
8	Siltstone bedrock; Black, dry.	
10		
12		

19-Aug-15

19-Aug-15

19-Aug-15

srk consulting

Teck

HOLE ID:	MW-3	COORDINATES:	668230 E 5482814 N
LOCATION:	CMO	DATUM:	UTM Zone 11
PROJECT NO:	1CT017.098	GROUND ELEV (masl):	1573.4
DRILLING CONTRACTOR:	AquaPro Drilling Ltd.	COLLAR DIP:	-90
		EOH ELEV. (masl):	1545.97
DRILLING TYPE:	Air Rotary	TOTAL DEPTH (mbgs):	27.43
LOGGED BY:	LC	STICKUP HEIGHT (magl):	0.81
BORING DATE:	8/11/2015 to 8/12/2015	CASING STICKUP (magl):	0.81

PROJECT: Phase 1 Groundwater Monitoring

CLIENT: Teck Coal Ltd. - CMO

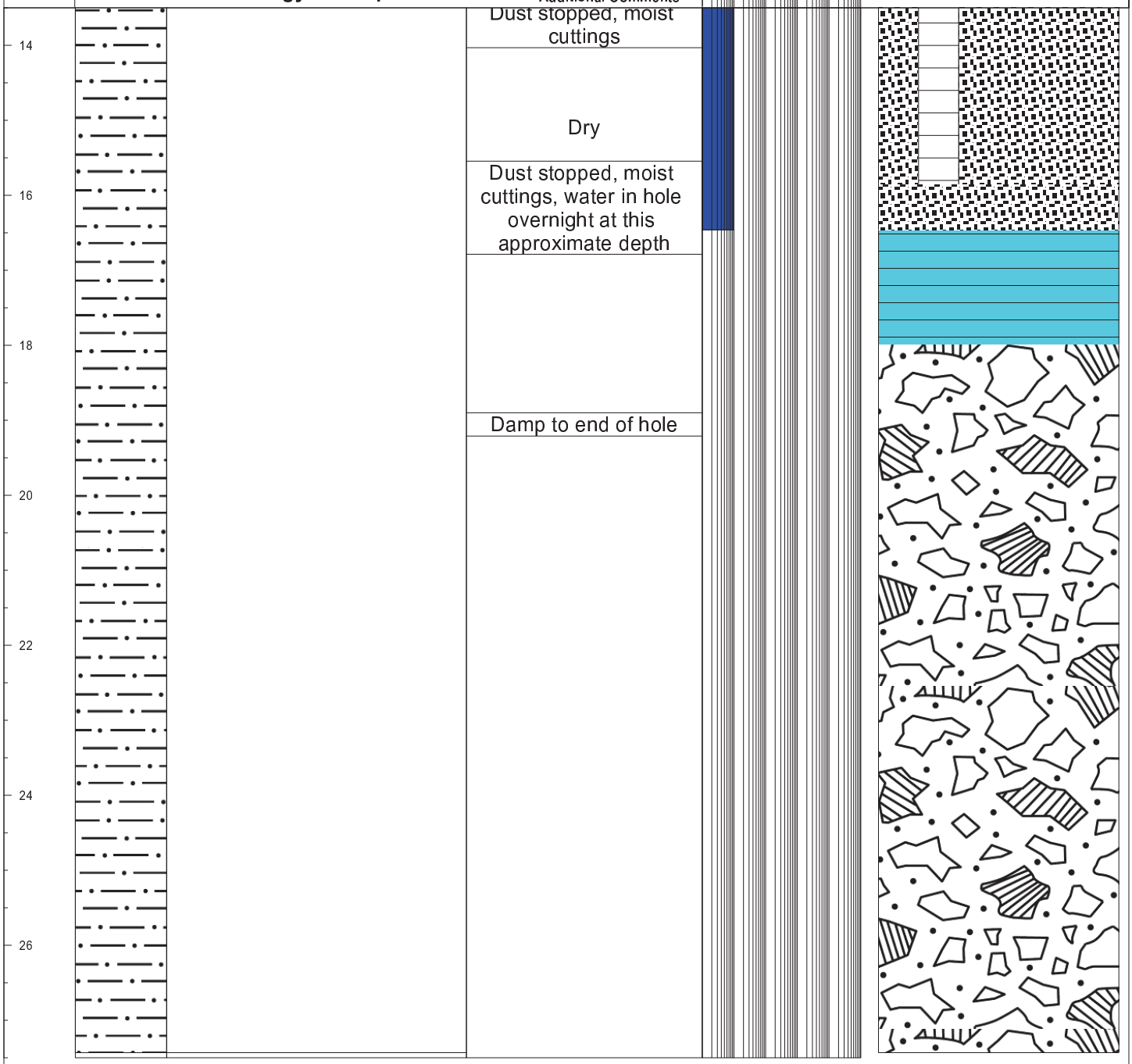
AREA: **Michel Creek**

Lithological Symbol: CL-Clay, LO-Loam, SI-Silt, SA-Sand, GV-Gravel, SS-Sandstone, ST-Siltstone

Hydraulic Conductivity (m/s): 1E-8, 1E-7, 1E-6, 1E-5, 0.0001, 0.001

Well Installation: Sand, Screen, PVC, Pellets, Cave, Chips, Chips/Backfill, Backfill, Casing

Depth (m)	Lithology Description	Drilling Notes and Additional Comments
14		Dust stopped, moist cuttings
		Dry
16		Dust stopped, moist cuttings, water in hole overnight at this approximate depth
18		
		Damp to end of hole
20		
22		
24		
26		



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Teck

HOLE ID:	CM_MW6	COORDINATES:	670117.9 E 5486463.5 N
LOCATION:	CMO	DATUM:	UTM Zone 11
PROJECT NO:	1CT017.114	GROUND ELEV (masl):	1579.66
DRILLING CONTRACTOR:	AquaPro Drilling Ltd.	COLLAR DIP:	-90
		EOH ELEV. (masl):	1478.30336
DRILLING TYPE:	Air Rotary	TOTAL DEPTH (mbgs):	41.69664
LOGGED BY:	EH/KK	STICKUP HEIGHT (magl):	0.83/0.83
BORING DATE:	4/26/2016 to 4/27/2016	CASING STICKUP (magl):	0.88

PROJECT: Phase 2 Groundwater Monitoring

CLIENT: Teck Coal Ltd. - CMO

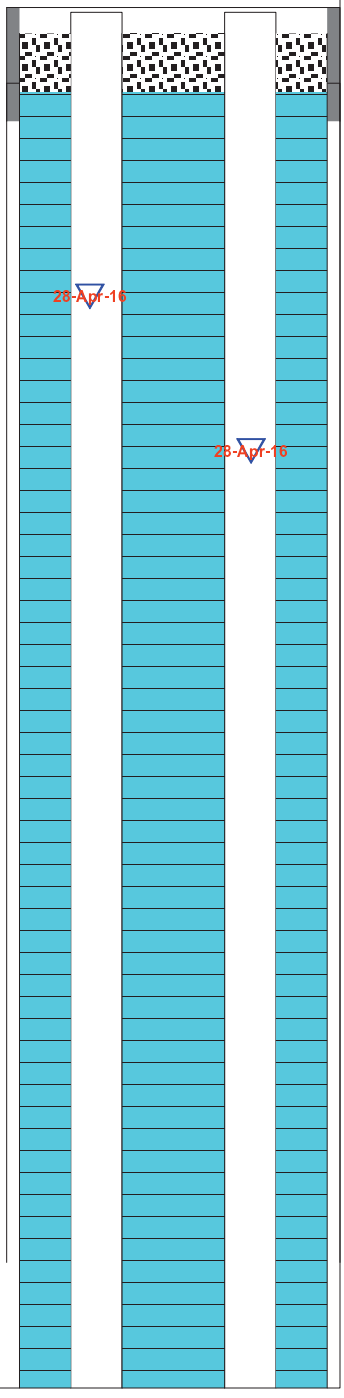
AREA: **Corbin Dam**

Lithological Symbol: CL-Clay, CO-Coal, SI-Silt, SA-Sand, GV-Gravel, SS-Sandstone, ST-Siltstone, BO-Boulders

Hydraulic Conductivity (m/s): 1E-8, 1E-7, 1E-6, 1E-5, 0.0001, 0.001

Well Installation: Sand, Cable, VWP, Screen, PVC, Pellets, Chips, Cave, Casing, Grout

Depth (m)	Lithology Description	Drilling Notes and Additional Comments
0 – 3	Sand - Till (SW); Some gravel, little silt, trace clay. Dark brown, moist, sub-rounded to sub-angular, low plastic, cohesive fi	Lots of boulders and cobbles. Colour changes to dark yellowish brown, becomes drier.
3 – 5		
5 – 7	Sand - Till (SW); Some gravel, little silt, trace clay. Dark brown, wet, sub-rounded to sub-angular, low plastic, cohesive fine	Hit water. Increased boulders and cobbles.
7 – 9		
9 – 11		Changes colour to very dark grey.
11 – 13		



srk consulting

Teck

HOLE ID:	CM_MW6	COORDINATES:	670117.9 E 5486463.5 N
LOCATION:	CMO	DATUM:	UTM Zone 11
PROJECT NO:	1CT017.114	GROUND ELEV (masl):	1579.66
DRILLING CONTRACTOR:	AquaPro Drilling Ltd.	COLLAR DIP:	-90
		EOH ELEV. (masl):	1478.30336
DRILLING TYPE:	Air Rotary	TOTAL DEPTH (mbgs):	41.69664
LOGGED BY:	EH/KK	STICKUP HEIGHT (magl):	0.83/0.83
BORING DATE:	4/26/2016 to 4/27/2016	CASING STICKUP (magl):	0.88

PROJECT: Phase 2 Groundwater Monitoring

CLIENT: Teck Coal Ltd. - CMO

AREA: **Corbin Dam**

Lithological Symbol: CL-Clay, CO-Coal, SI-Silt, SA-Sand, GV-Gravel, SS-Sandstone, ST-Siltstone, BO-Boulders

Hydraulic Conductivity (m/s): 1E-8, 1E-7, 1E-6, 1E-5, 0.0001, 0.001

Well Installation: Sand, Cable, VWP, Screen, PVC, Pellets, Chips, Cave, Casing, Grout

Depth (m)	Lithology Description	Drilling Notes and Additional Comments
15		Strong sulfur smell.
17		
19		Bit plugging slightly, had to start drilling with water.
21		
23	Siltstone bedrock; Dark grey, dry.	Casing shoe chirping and higher pitch to bit, chips are consistent. Bedrock interpreted to be here. Chips go dry.
25		
27		
29		

srk consulting

Teck

HOLE ID:	CM_MW6	COORDINATES:	670117.9 E 5486463.5 N
LOCATION:	CMO	DATUM:	UTM Zone 11
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PROJECT: Phase 2 Groundwater Monitoring

CLIENT: Teck Coal Ltd. - CMO

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Well Installation: Sand, Cable, VWP, Screen, PVC, Pellets, Chips, Cave, Casing, Grout

Depth (m)	Lithology Description	Drilling Notes and Additional Comments
39	Siltstone bedrock; Dark grey, wet.	Chips become wet.
41		Total depth 41.70 mbgs - drilling ceased as depth target reached.

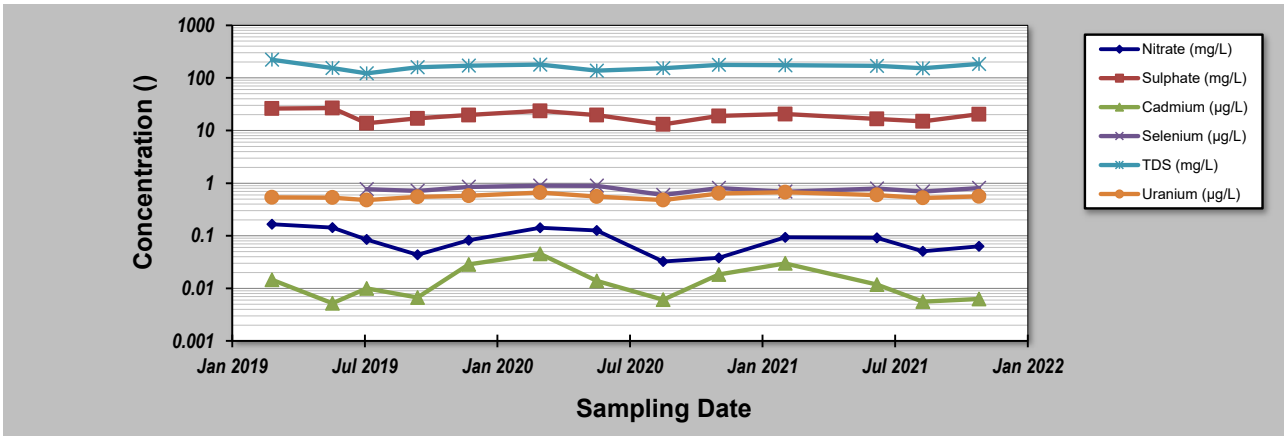
Attachment II: Mann-Kendall Analyses

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	25-Jan-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - BG	Location:	FR_MW_CH1A
Conducted By:	KC		

Sampling Point ID:	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)	TDS (mg/L)	Uranium (µg/L)	

Sampling Event	Sampling Date	FR_MW_CH1A CONCENTRATION ()						
1	28-Feb-19	0.166	26.1	0.0146		222	0.538	
2	22-May-19	0.143	26.7	0.0052		154	0.532	
3	8-Jul-19	0.0848	13.7	0.01	0.767	122	0.475	
4	16-Sep-19	0.0434	17	0.0067	0.714	159	0.548	
5	25-Nov-19	0.0821	19.7	0.0285	0.851	171	0.577	
6	2-Mar-20	0.142	23.6	0.0454	0.894	179	0.663	
7	19-May-20	0.126	19.6	0.0139	0.893	137	0.557	
8	18-Aug-20	0.0323	13.1	0.0061	0.597	153	0.475	
9	3-Nov-20	0.0381	18.9	0.0184	0.81	177	0.639	
10	2-Feb-21	0.09	20.50	0.03	0.69	174	0.67	
11	8-Jun-21	0.09	16.60	0.01	0.79	169	0.60	
12	10-Aug-21	0.05	14.90	0.01	0.69	152	0.53	
13	26-Oct-21	0.06	20.40	0.01	0.81	184	0.56	
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.49	0.22	0.78	0.12	0.15	0.11	
Mann-Kendall Statistic (S):		-28	-18	-4	-5	6	19	
Confidence Factor:		95.0%	84.7%	57.1%	61.9%	61.7%	86.1%	
Concentration Trend:		Prob. Decreasing	Stable	Stable	Stable	No Trend	No Trend	



Notes:

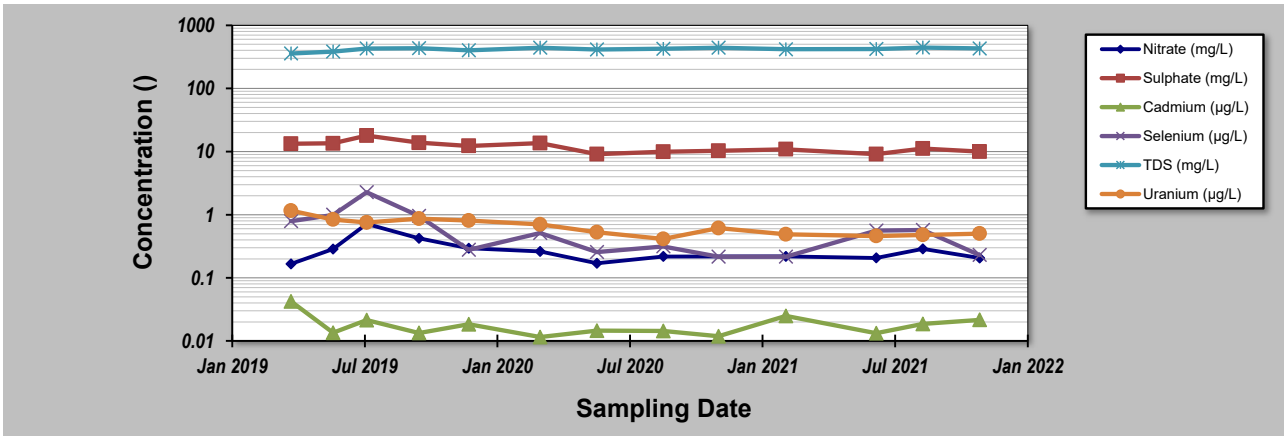
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	25-Jan-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - BG	Location:	FR_MW_FRRD1
Conducted By:	KC		

Sampling Point ID:	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)	TDS (mg/L)	Uranium (µg/L)	

Sampling Event	Sampling Date	FR_MW_FRRD1 CONCENTRATION ()						
1	26-Mar-19	0.166	13.3	0.0423	0.79	357	1.16	
2	23-May-19	0.286	13.5	0.0135	0.995	383	0.84	
3	8-Jul-19	0.716	17.9	0.0214	2.27	428	0.754	
4	18-Sep-19	0.423	13.8	0.0134	0.956	433	0.867	
5	25-Nov-19	0.295	12.3	0.0184	0.278	402	0.808	
6	2-Mar-20	0.262	13.6	0.0115	0.513	441	0.703	
7	19-May-20	0.17	9.13	0.0146	0.256	414	0.529	
8	18-Aug-20	0.218	9.96	0.0144	0.315	424	0.413	
9	2-Nov-20		10.3	0.0119	0.216	441	0.614	
10	3-Feb-21	0.219	10.9	0.0249	0.216	417	0.489	
11	7-Jun-21	0.207	9.09	0.0133	0.56	421	0.46	
12	10-Aug-21	0.288	11.2	0.0186	0.573	443	0.48	
13	27-Oct-21	0.206	10	0.0216	0.23	430	0.502	
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.53	0.21	0.45	0.90	0.06	0.33	
Mann-Kendall Statistic (S):		-16	-34	-2	-33	33	-52	
Confidence Factor:		84.5%	97.9%	52.4%	97.5%	97.5%	100.0%	
Concentration Trend:		Stable	Decreasing	Stable	Decreasing	Increasing	Decreasing	



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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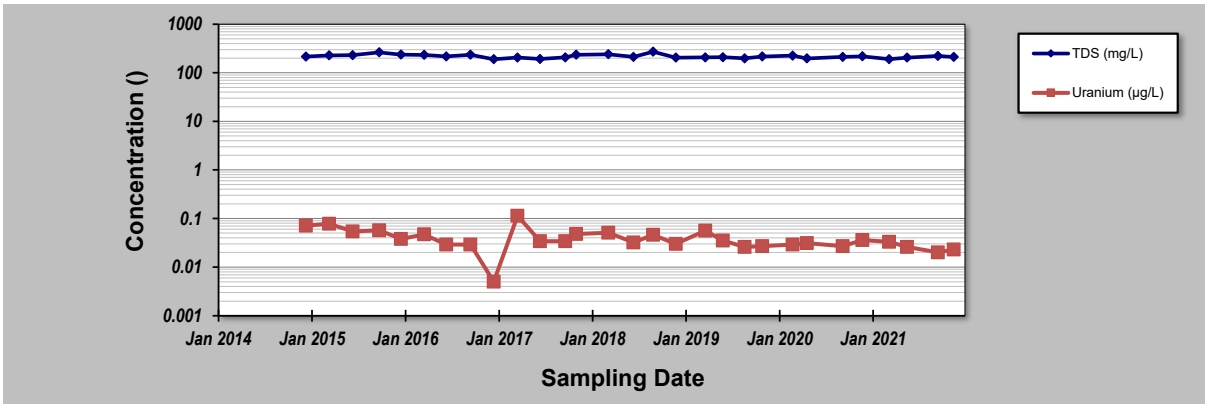
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 25-Jan-22
Facility Name: Teck Coal Regional Groundwater - BG
Conducted By: KC

Job ID: 635544
Location: LC_PIZDC1307

Sampling Point ID:	TDS (mg/L)	Uranium (µg/L)					
Sampling Event	Sampling Date	LC_PIZDC1307 CONCENTRATION ()					
1	9-Dec-14	215	0.071				
2	10-Mar-15	228	0.078				
3	10-Jun-15	231	0.054				
4	22-Sep-15	263	0.057				
5	16-Dec-15	237	0.038				
6	16-Mar-16	233	0.047				
7	10-Jun-16	217	0.029				
8	13-Sep-16	235	0.029				
9	13-Dec-16	190	0.005				
10	16-Mar-17	206	0.114				
11	12-Jun-17	192	0.034				
12	19-Sep-17	207	0.034				
13	1-Nov-17	235	0.048				
14	7-Mar-18	240	0.051				
15	13-Jun-18	212	0.032				
16	29-Aug-18	271	0.046				
17	26-Nov-18	205	0.03				
18	21-Mar-19	207	0.056				
19	29-May-19	209	0.035				
20	22-Aug-19	198	0.026				
21	30-Oct-19	216	0.027				
22	26-Feb-20	225	0.029				
23	22-Apr-20	197	0.031				
24	9-Sep-20	212	0.027				
25	25-Nov-20	218	0.036				
26	10-Mar-21	191	0.033				
27	19-May-21	205	0.026				
28	17-Sep-21	222	0.02				
29	18-Nov-21	211	0.023				
30							
Coefficient of Variation:		0.09	0.52				
Mann-Kendall Statistic (S):		-86	-184				
Confidence Factor:		94.4%	>99.9%				
Concentration Trend:		Prob. Decreasing	Decreasing				



Notes:

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2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
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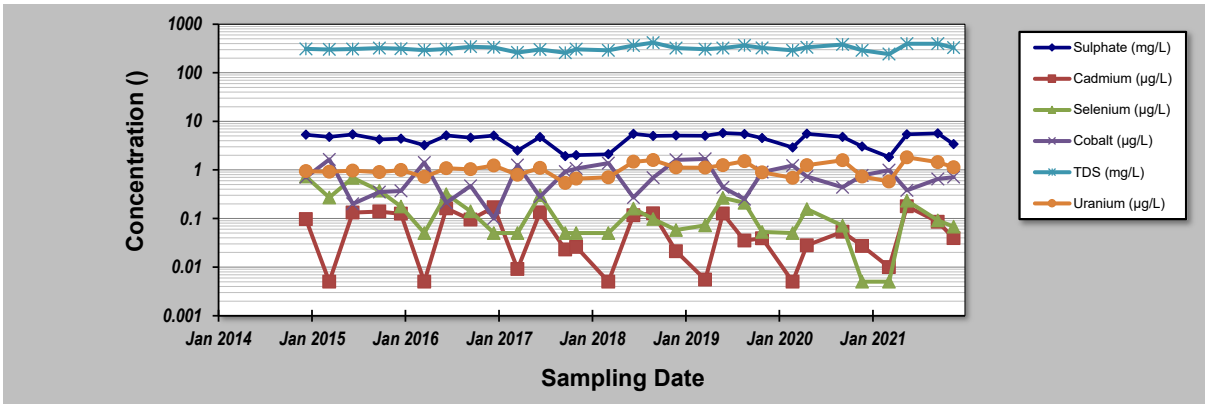
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 25-Jan-22
Facility Name: Teck Coal Regional Groundwater - BG
Conducted By: KC

Job ID: 635544
Location: LC_PIZDC1308

Sampling Point ID:	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)	Cobalt (µg/L)	TDS (mg/L)	Uranium (µg/L)
Sampling Event	Sampling Date	LC_PIZDC1308 CONCENTRATION ()						
1	9-Dec-14	0.219	5.3	0.097	0.73	0.705	310	0.94
2	10-Mar-15	0.112	4.78	0.005	0.27	1.64	302	0.915
3	10-Jun-15	0.667	5.38	0.132	0.686	0.2	307	0.967
4	22-Sep-15	0.383	4.24	0.139	0.375	0.35	322	0.898
5	16-Dec-15	0.107	4.41	0.125	0.177	0.37	312	0.995
6	16-Mar-16	0.0082	3.23	0.005	0.05	1.42	293	0.715
7	10-Jun-16	0.258	5.11	0.161	0.317	0.21	308	1.08
8	13-Sep-16	0.0326	4.6	0.095	0.141	0.47	343	1.03
9	13-Dec-16	0.0432	5.09	0.17	0.05	0.1	333	1.23
10	16-Mar-17	0.0055	2.5	0.0091	0.05	1.26	261	0.789
11	12-Jun-17	0.159	4.74	0.133	0.301	0.28	301	1.1
12	19-Sep-17	0.005	1.92	0.023	0.05	0.92	258	0.537
13	1-Nov-17	0.0075	2.02	0.0259	0.05	1.07	304	0.66
14	7-Mar-18	0.0052	2.1	0.005	0.05	1.38	289	0.703
15	13-Jun-18	0.181	5.53	0.116	0.16	0.27	363	1.47
16	29-Aug-18	0.0383	5	0.127	0.098	0.69	417	1.59
17	27-Nov-18	0.005	5.1	0.0211	0.058	1.61	322	1.12
18	21-Mar-19	0.005	5.05	0.0055	0.072	1.69	305	1.11
19	29-May-19	0.115	5.74	0.126	0.266	0.44	322	1.25
20	22-Aug-19	0.126	5.47	0.0351	0.21	0.25	365	1.51
21	30-Oct-19	0.0156	4.52	0.039	0.053	0.9	324	0.887
22	26-Feb-20	0.005	2.9	0.005	0.05	1.23	289	0.688
23	22-Apr-20	0.0636	5.54	0.0279	0.156	0.73	334	1.25
24	9-Sep-20	0.0417	4.77	0.0533	0.071	0.44	382	1.58
25	25-Nov-20	0.005	3.04	0.0272	0.005	0.77	290	0.729
26	10-Mar-21	0.0143	1.84	0.01	0.005	0.99	242	0.577
27	19-May-21	0.171	5.41	0.178	0.232	0.38	396	1.81
28	17-Sep-21	0.0656	5.64	0.0854	0.091	0.65	396	1.44
29	18-Nov-21	0.005	3.39	0.0392	0.068	0.71	328	1.13
30								
Coefficient of Variation:		1.45	0.30	0.85	1.07	0.63	0.13	0.31
Mann-Kendall Statistic (S):		-117	12	-32	-120	29	79	91
Confidence Factor:		98.6%	58.1%	71.8%	98.8%	69.9%	92.8%	95.4%
Concentration Trend:		Decreasing	No Trend	Stable	Decreasing	No Trend	Prob. Increasing	Increasing



Notes:

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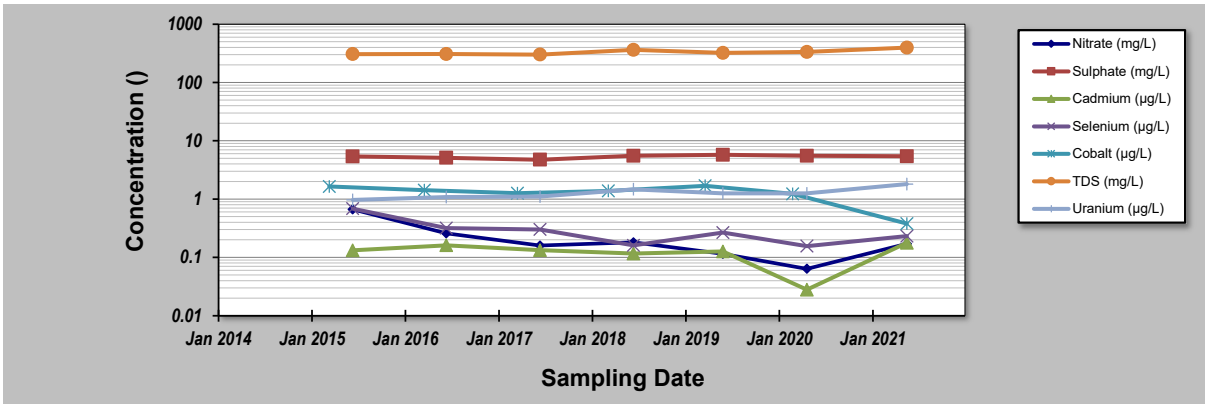
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 17-Mar-21
Facility Name: Teck Coal Regional Groundwater - BG
Conducted By: KC

Job ID: 635544
Location: LC_PIZDC1308

Sampling Point ID:	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)	Cobalt (µg/L)	TDS (mg/L)	Uranium (µg/L)
Sampling Event	Sampling Date	LC_PIZDC1308 CONCENTRATION ()						
1	9-Dec-14							
2	10-Mar-15					1.64		
3	10-Jun-15	0.667	5.38	0.132	0.686		307	0.967
4	22-Sep-15							
5	16-Dec-15							
6	16-Mar-16					1.42		
7	10-Jun-16	0.258	5.11	0.161	0.317		308	1.08
8	13-Sep-16							
9	13-Dec-16							
10	16-Mar-17					1.26		
11	12-Jun-17	0.159	4.74	0.133	0.301		301	1.1
12	19-Sep-17							
13	1-Nov-17							
14	7-Mar-18					1.38		
15	13-Jun-18	0.181	5.53	0.116	0.16		363	1.47
16	29-Aug-18							
17	27-Nov-18							
18	21-Mar-19					1.69		
19	29-May-19	0.115	5.74	0.126	0.266		322	1.25
20	22-Aug-19							
21	30-Oct-19							
22	26-Feb-20					1.23		
23	22-Apr-20	0.0636	5.54	0.0279	0.156		334	1.25
24	9-Sep-20							
25	25-Nov-20							
26	10-Mar-21							
27	19-May-21	0.171	5.41	0.178	0.232	0.38	396	1.81
28	17-Sep-21							
29	18-Nov-21							
30								
Coefficient of Variation:		0.87	0.06	0.38	0.60	0.34	0.10	0.22
Mann-Kendall Statistic (S):		-13	7	-3	-15	-11	13	16
Confidence Factor:		96.5%	80.9%	61.4%	98.5%	93.2%	96.5%	99.0%
Concentration Trend:		Decreasing	No Trend	Stable	Decreasing	Prob. Decreasing	Increasing	Increasing



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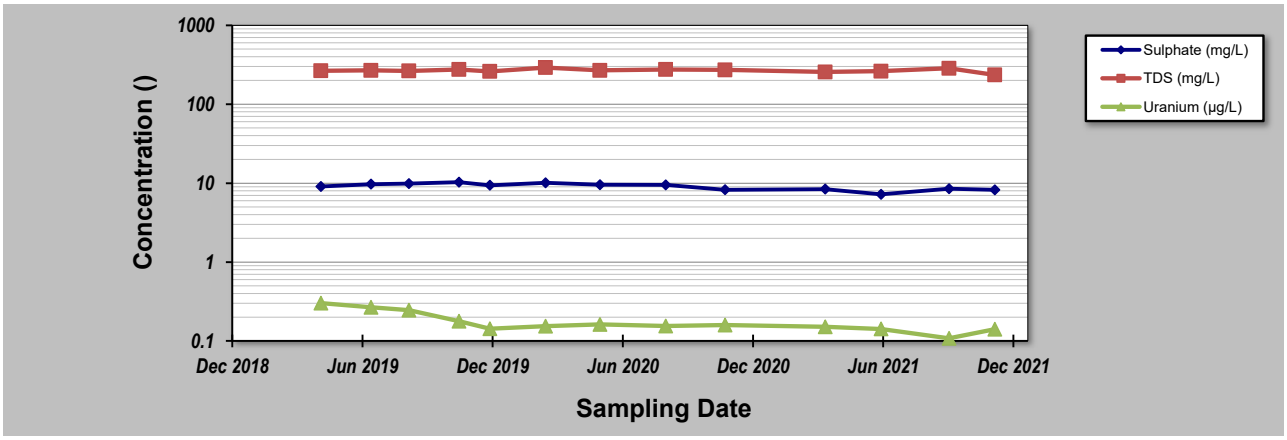
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	25-Jan-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - BG	Location:	GH_MW-Willow-1D
Conducted By:	KC		

Sampling Point ID:	Sulphate (mg/L)	TDS (mg/L)	Uranium (µg/L)				
Sampling Event	Sampling Date	GH_MW-WILLOW-1D CONCENTRATION ()						
1	5-Dec-18							
2	30-Jan-19							
3	19-Apr-19	9.09	265	0.302				
4	28-Jun-19	9.71	268	0.267				
5	20-Aug-19	9.89	264	0.246				
6	29-Oct-19	10.3	275	0.178				
7	11-Dec-19	9.4	260	0.143				
8	27-Feb-20	10.1	291	0.154				
9	13-May-20	9.56	268	0.162				
10	13-Aug-20	9.51	275	0.155				
11	4-Nov-20	8.25	272	0.159				
12	24-Mar-21	8.41	256	0.151				
13	10-Jun-21	7.22	262	0.142				
14	13-Sep-21	8.5	285	0.108				
15	16-Nov-21	8.23	235	0.141				
16								
17								
18								
19								
20								
Coefficient of Variation:		0.10	0.05	0.32				
Mann-Kendall Statistic (S):		-38	-8	-58				
Confidence Factor:		98.9%	66.2%	>99.9%				
Concentration Trend:		Decreasing	Stable	Decreasing				



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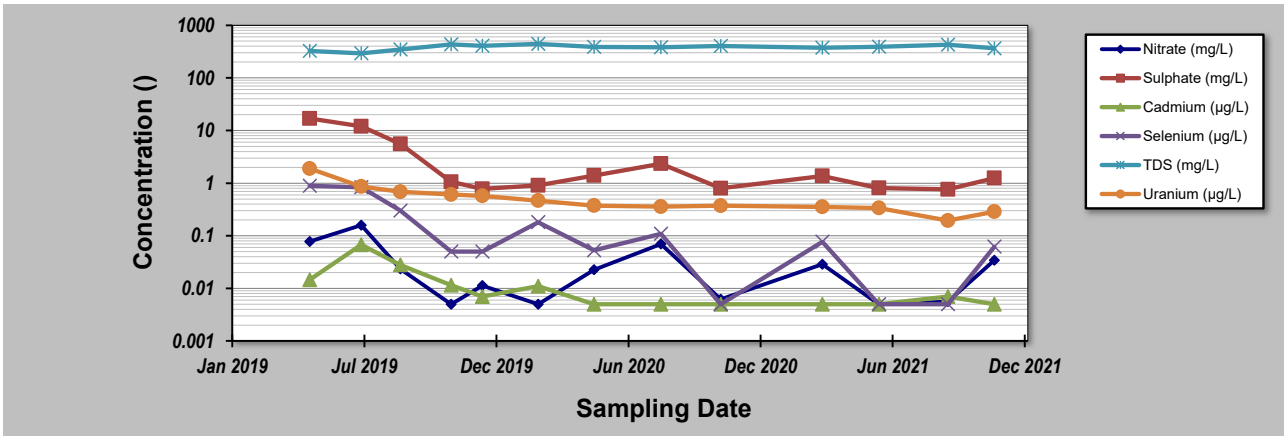
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	25-Jan-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - BG	Location:	GH_MW-Willow-2D
Conducted By:	KC		

Sampling Point ID:	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)	TDS (mg/L)	Uranium (µg/L)	

Sampling Event	Sampling Date	GH_MW-WILLOW-2D CONCENTRATION ()						
1	5-Dec-18							
2	30-Jan-19							
3	17-Apr-19	0.0778	17	0.0146	0.888	326	1.9	
4	27-Jun-19	0.159	12	0.0677	0.835	294	0.862	
5	20-Aug-19	0.0234	5.55	0.0279	0.301	347	0.686	
6	29-Oct-19	0.005	1.06	0.0115	0.05	433	0.61	
7	11-Dec-19	0.0113	0.78	0.007	0.05	407	0.575	
8	26-Feb-20	0.005	0.91	0.011	0.181	442	0.465	
9	13-May-20	0.0226	1.4	0.005	0.053	387	0.375	
10	13-Aug-20	0.0697	2.35	0.005	0.109	383	0.358	
11	4-Nov-20	0.0062	0.8	0.005	0.005	404	0.373	
12	24-Mar-21	0.0287	1.37	0.005	0.077	375	0.354	
13	10-Jun-21	0.005	0.81	0.005	0.005	390	0.337	
14	13-Sep-21	0.0056	0.76	0.007	0.005	427	0.194	
15	16-Nov-21	0.0342	1.25	0.005	0.062	365	0.287	
16								
17								
18								
19								
20								
Coefficient of Variation:		1.27	1.45	1.29	1.51	0.11	0.78	
Mann-Kendall Statistic (S):		-15	-36	-46	-40	12	-74	
Confidence Factor:		79.9%	98.5%	99.8%	99.3%	74.5%	>99.9%	
Concentration Trend:		No Trend	Decreasing	Decreasing	Decreasing	No Trend	Decreasing	



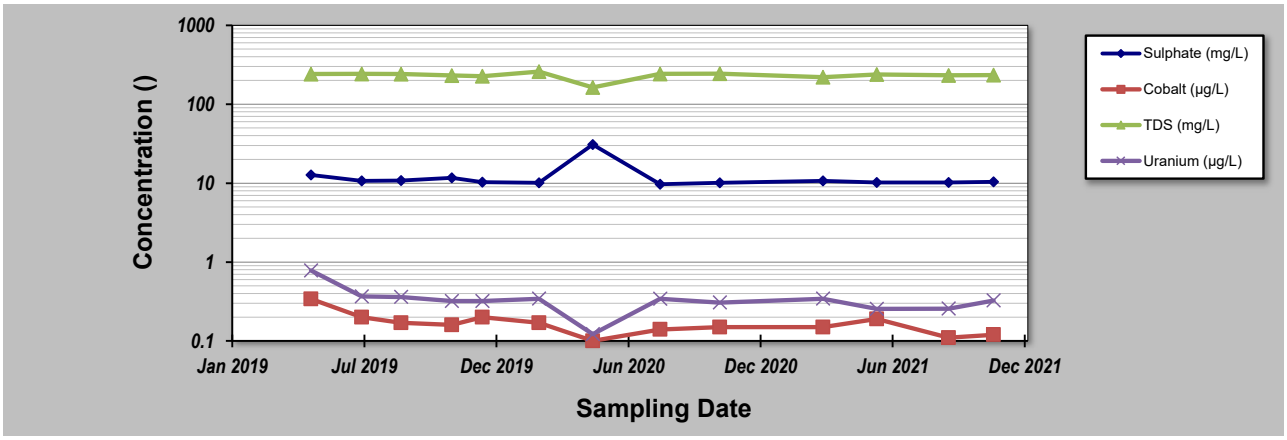
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	25-Jan-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - BG	Location:	GH_MW-Wolf-1D
Conducted By:	KC		

Sampling Point ID:	Sulphate (mg/L)	Cobalt (µg/L)	TDS (mg/L)	Uranium (µg/L)			
Sampling Event	Sampling Date	GH_MW-WOLF-1D CONCENTRATION ()						
1	5-Dec-18							
2	30-Jan-19							
3	19-Apr-19	12.7	0.34	241	0.782			
4	28-Jun-19	10.7	0.2	242	0.367			
5	21-Aug-19	10.8	0.17	241	0.361			
6	30-Oct-19	11.7	0.16	231	0.321			
7	11-Dec-19	10.3	0.2	226	0.321			
8	27-Feb-20	10.1	0.17	259	0.343			
9	11-May-20	30.8	0.1	163	0.122			
10	12-Aug-20	9.67	0.14	242	0.342			
11	2-Nov-20	10.1	0.15	244	0.307			
12	25-Mar-21	10.7	0.15	220	0.343			
13	7-Jun-21	10.2	0.19	238	0.255			
14	14-Sep-21	10.2	0.11	232	0.257			
15	15-Nov-21	10.4	0.12	234	0.326			
16								
17								
18								
19								
20								
Coefficient of Variation:		0.46	0.36	0.10	0.43			
Mann-Kendall Statistic (S):		-23	-39	-12	-36			
Confidence Factor:		90.8%	99.1%	74.5%	98.5%			
Concentration Trend:		Prob. Decreasing	Decreasing	Stable	Decreasing			



Notes:

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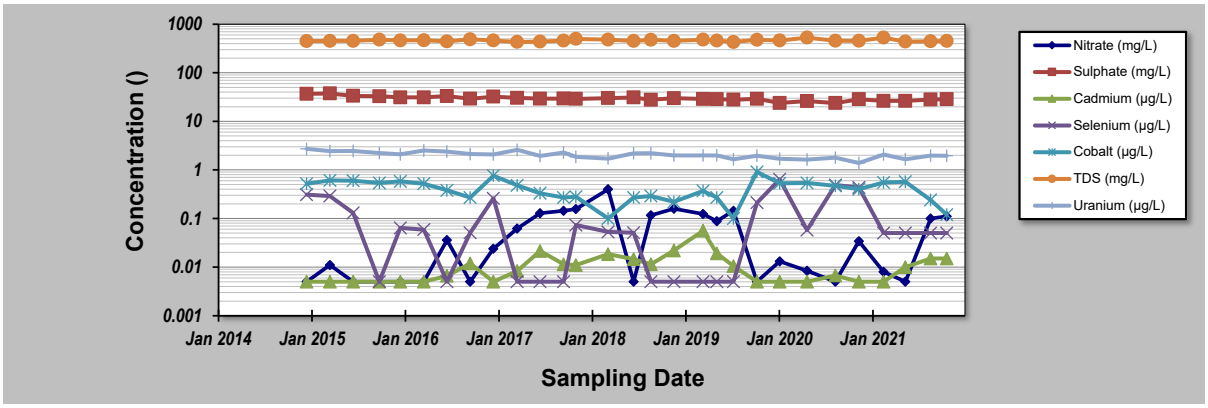
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 25-Jan-22
Facility Name: Teck Coal Regional Groundwater - BG
Conducted By: KC

Job ID: 635544
Location: LC_PIZP1103

Sampling Point ID:	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)	Cobalt (µg/L)	TDS (mg/L)	Uranium (µg/L)
Sampling Event	Sampling Date	LC_PIZP1103 CONCENTRATION ()						
1	12-Dec-14	0.005	36.7	0.005	0.31	0.519	448	2.71
2	13-Mar-15	0.011	37.5	0.005	0.29	0.609	453	2.43
3	12-Jun-15	0.005	33.5	0.005	0.13	0.6	452	2.45
4	23-Sep-15	0.005	32.9	0.005	0.005	0.54	480	2.22
5	14-Dec-15	0.005	31.2	0.005	0.064	0.58	463	2.09
6	15-Mar-16	0.005	31.1	0.005	0.059	0.52	467	2.51
7	13-Jun-16	0.036	33	0.0066	0.005	0.38	442	2.39
8	12-Sep-16	0.005	29.2	0.0119	0.051	0.27	488	2.13
9	12-Dec-16	0.0239	32.2	0.005	0.26	0.76	461	2.08
10	15-Mar-17	0.062	30.5	0.0083	0.005	0.48	431	2.59
11	13-Jun-17	0.128	29.3	0.0214	0.005	0.33	438	1.94
12	13-Sep-17	0.144	29.4	0.0114	0.005	0.27	459	2.27
13	31-Oct-17	0.156	29	0.011	0.073	0.28	498	1.85
14	6-Mar-18	0.399	30.1	0.0184	0.053	0.1	481	1.71
15	14-Jun-18	0.005	31	0.0146	0.051	0.27	451	2.2
16	21-Aug-18	0.116	27.8	0.0114	0.005	0.29	478	2.21
17	19-Nov-18	0.159	30	0.0219	0.005	0.22	452	1.98
18	13-Mar-19	0.124	28.8	0.0561	0.005	0.37	480	1.98
19	6-May-19	0.0878	28.7	0.0191	0.005	0.27	460	1.99
20	10-Jul-19	0.144	27.9	0.0105	0.005	0.1	430	1.65
21	10-Oct-19	0.005	29.1	0.005	0.211	0.91	478	1.96
22	7-Jan-20	0.0131	23.9	0.005	0.639	0.53	462	1.69
23	23-Apr-20	0.0084	26.1	0.005	0.058	0.54	528	1.63
24	12-Aug-20	0.005	23.8	0.0067	0.487	0.47	456	1.78
25	12-Nov-20	0.034	28.5	0.005	0.434	0.4	455	1.39
26	17-Feb-21	0.008	26.4	0.005	0.05	0.55	528	2.07
27	13-May-21	0.005	26.4	0.01	0.05	0.57	438	1.65
28	20-Aug-21	0.0999	28.1	0.015	0.05	0.24	444	1.97
29	22-Oct-21	0.11	28.7	0.015	0.05	0.12	453	1.95
30								
Coefficient of Variation:		1.30	0.11	0.90	1.41	0.47	0.05	0.16
Mann-Kendall Statistic (S):		62	-280	82	-26	-84	4	-230
Confidence Factor:		87.2%	>99.9%	93.5%	67.9%	94.0%	52.2%	>99.9%
Concentration Trend:		No Trend	Decreasing	Prob. Increasing	No Trend	Prob. Decreasing	No Trend	Decreasing



Notes:

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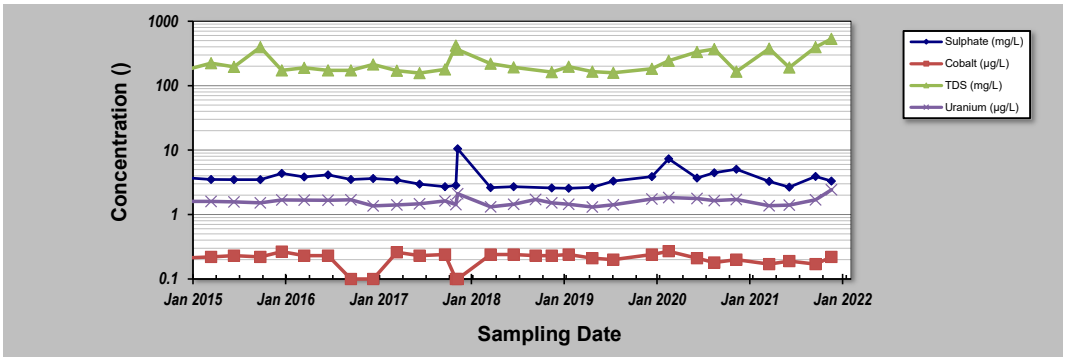
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 15-Mar-22
Facility Name: Teck Coal Regional Groundwater - BG
Conducted By: MTB

Job ID: 635544
Location LC_PIZP1101

Parameter (units)	Sulphate (mg/L)	Cobalt (µg/L)	TDS (mg/L)	Uranium (µg/L)			
Sampling Event	Sampling Date	LC_PIZP1101 CONCENTRATION						
1	13-Jun-13							
2	26-Aug-13	5.41		187	1.44			
3	20-Dec-13	5.29		159	1.49			
4	12-Mar-14	4.65	0.23	209	1.52			
5	26-Jun-14	4.31	0.23	240	1.58			
6	24-Sep-14	3.86	0.22	185	1.64			
7	12-Dec-14	3.7	0.213	179	1.6			
8	14-Mar-15	3.5	0.22	224	1.6			
9	12-Jun-15	3.49	0.23	196	1.57			
10	24-Sep-15	3.49	0.22	395	1.52			
11	18-Dec-15	4.35	0.265	173	1.68			
12	15-Mar-16	3.83	0.23	189	1.67			
13	17-Jun-16	4.14	0.23	173	1.66			
14	15-Sep-16	3.5	0.1	173	1.69			
15	12-Dec-16	3.62	0.1	213	1.36			
16	15-Mar-17	3.44	0.26	171	1.41			
17	13-Jun-17	2.97	0.23	157	1.47			
18	21-Sep-17	2.7	0.24	179	1.63			
19	3-Nov-17	2.84	0.1	419	1.43			
20	10-Nov-17	10.5	0.1	363	2.11			
21	20-Mar-18	2.61	0.24	220	1.32			
22	19-Jun-18	2.71	0.24	193	1.44			
23	13-Sep-18		0.23		1.71			
24	16-Nov-18	2.58	0.23	162	1.52			
25	22-Jan-19	2.56	0.24	197	1.44			
26	25-Apr-19	2.64	0.21	165	1.31			
27	17-Jul-19	3.3	0.2	159	1.42			
28	16-Dec-19	3.88	0.24	183	1.74			
29	20-Feb-20	7.3	0.27	244	1.83			
30	11-Jun-20	3.68	0.21	334	1.77			
31	18-Aug-20	4.44	0.18	370	1.65			
32	13-Nov-20	5.05	0.2	165	1.71			
33	22-Mar-21	3.26	0.17	376	1.37			
34	10-Jun-21	2.66	0.19	192	1.4			
35	21-Sep-21	3.91	0.17	397	1.69			
36	23-Nov-21	3.31	0.22	533	2.43			
37								
38								
39								
40								
Coefficient of Variation:		0.39	0.23	0.41	0.14			
Mann-Kendall Statistic (S):		-149	-73	91	66			
Confidence Factor:		98.6%	86.7%	90.8%	82.1%			
Concentration Trend:		Decreasing	Stable	Prob. Increasing	No Trend			



Notes:

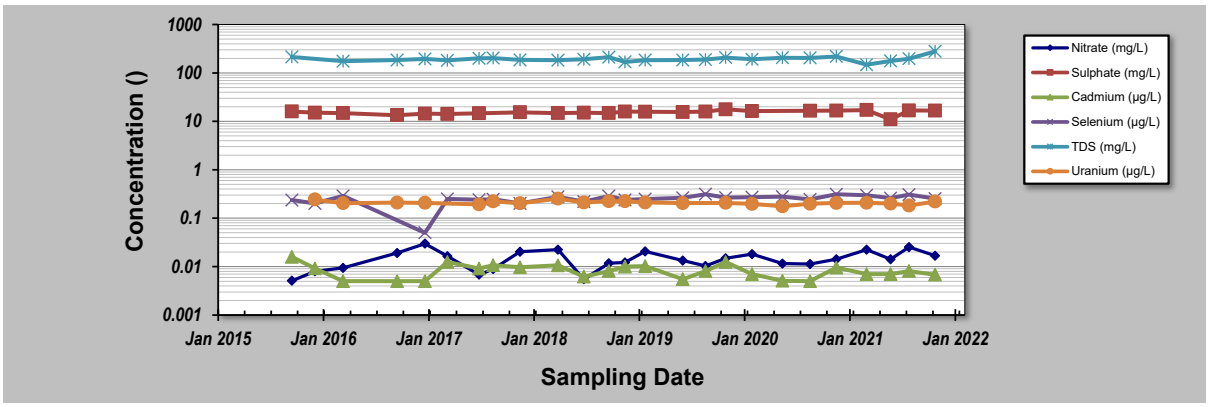
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 03-Mar-22
Facility Name: Teck Coal Regional Groundwater - CMm
Conducted By: MTB

Job ID: 635544
Location CM_MW3-SH

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)	TDS (mg/L)	Uranium (µg/L)	
Sampling Event	Sampling Date	CM_MW3-SH CONCENTRATION						
1	14-Sep-15	0.0051	16	0.0159	0.236	214		
2	3-Dec-15	0.008	15.1	0.0092	0.201		0.243	
3	10-Mar-16	0.0094	14.8	0.005	0.288	175	0.204	
4	14-Sep-16	0.0191	13.4	0.005		185	0.21	
5	20-Dec-16	0.0298	14.4	0.005	0.05	195	0.207	
6	8-Mar-17	0.0164	14.2	0.0124	0.249	182		
7	26-Jun-17	0.0068	14.7	0.0091	0.24	201	0.192	
8	14-Aug-17	0.0089		0.0107	0.246	203	0.222	
9	15-Nov-17	0.0203	15.4	0.0097	0.202	186	0.203	
10	27-Mar-18	0.0223	14.8	0.0106	0.275	183	0.253	
11	25-Jun-18	0.0055	15.1	0.0062	0.219	192	0.211	
12	20-Sep-18	0.0117	14.8	0.0081	0.286	212	0.225	
13	15-Nov-18	0.0122	15.9	0.01	0.239	169	0.225	
14	24-Jan-19	0.0205	15.8	0.0102	0.248	184	0.211	
15	4-Jun-19	0.0133	15.6	0.0055	0.263	185	0.205	
16	22-Aug-19	0.0103	15.9	0.0081	0.313	189		
17	31-Oct-19	0.0148	17.7	0.0124	0.266	208	0.207	
18	30-Jan-20	0.018	16.3	0.007	0.272	192	0.197	
19	15-May-20	0.0115		0.0051	0.277	206	0.176	
20	19-Aug-20	0.0113	16.5	0.005	0.244	205	0.198	
21	18-Nov-20	0.0141	16.7	0.0095	0.312	219	0.206	
22	4-Mar-21	0.0223	17.1	0.007	0.297	148	0.208	
23	26-May-21	0.0142	11	0.007	0.26	177	0.2	
24	29-Jul-21	0.0253	16.8	0.0081	0.306	197	0.183	
25	28-Oct-21	0.0167	16.7	0.0068	0.254	280	0.22	
26								
27								
28								
29								
30								
Coefficient of Variation:		0.43	0.09	0.33	0.21	0.12	0.08	
Mann-Kendall Statistic (S):		79	123	-47	108	42	-54	
Confidence Factor:		96.6%	>99.9%	85.7%	99.7%	84.4%	93.2%	
Concentration Trend:		Increasing	Increasing	Stable	Increasing	No Trend	Prob. Decreasing	



Notes:

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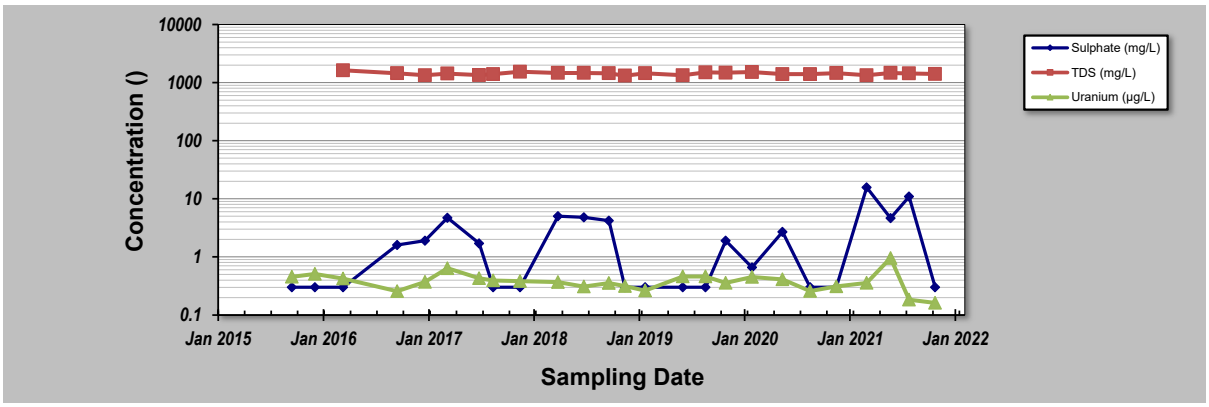
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 01-Mar-22
Facility Name: Teck Coal Regional Groundwater - BG
Conducted By: MTB

Job ID: 635544
Location CM_MW3-DP

Parameter (units)	Sulphate (mg/L)	TDS (mg/L)	Uranium (µg/L)				
Sampling Event	Sampling Date	CM_MW3-DP CONCENTRATION						
1	14-Sep-15	0.3		0.457				
2	3-Dec-15	0.3		0.51				
3	10-Mar-16	0.3	1630	0.426				
4	14-Sep-16	1.6	1450	0.258				
5	20-Dec-16	1.9	1340	0.372				
6	8-Mar-17	4.7	1430	0.636				
7	26-Jun-17	1.7	1350	0.431				
8	14-Aug-17	0.3	1400	0.395				
9	15-Nov-17	0.3	1540	0.385				
10	27-Mar-18	5	1470	0.37				
11	25-Jun-18	4.8	1470	0.309				
12	20-Sep-18	4.2	1450	0.356				
13	15-Nov-18	0.3	1320	0.316				
14	24-Jan-19	0.3	1450	0.264				
15	4-Jun-19	0.3	1340	0.461				
16	22-Aug-19	0.3	1500	0.463				
17	31-Oct-19	1.9	1480	0.358				
18	30-Jan-20	0.66	1520	0.454				
19	15-May-20	2.7	1400	0.411				
20	19-Aug-20	0.3	1400	0.259				
21	18-Nov-20	0.3	1460	0.312				
22	4-Mar-21	15.7	1340	0.358				
23	26-May-21	4.64	1470	0.96				
24	29-Jul-21	10.9	1440	0.184				
25	28-Oct-21	0.3	1410	0.162				
26								
27								
28								
29								
30								
Coefficient of Variation:		1.45	0.05	0.40				
Mann-Kendall Statistic (S):		41	-13	-85				
Confidence Factor:		82.3%	62.3%	97.6%				
Concentration Trend:		No Trend	Stable	Decreasing				



Notes:

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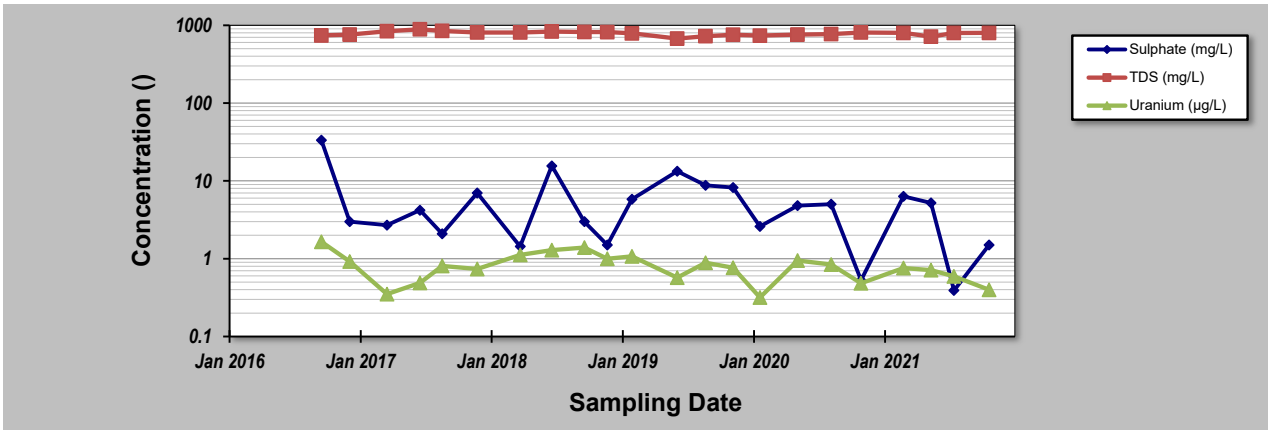
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	25-Jan-21	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - BG	Location:	CM_MW6-DP
Conducted By:	KC		

Sampling Point ID:	Sulphate (mg/L)	TDS (mg/L)	Uranium (µg/L)				
Sampling Event	Sampling Date	CM_MW6-DP CONCENTRATION ()						
1	13-Sep-16	33.3	740	1.65				
2	1-Dec-16	3	760	0.92				
3	15-Mar-17	2.7	838	0.35				
4	15-Jun-17	4.2	888	0.489				
5	16-Aug-17	2.09	847	0.808				
6	22-Nov-17	7	808	0.737				
7	22-Mar-18	1.44	807	1.12				
8	18-Jun-18	15.6	830	1.29				
9	17-Sep-18	3	820	1.39				
10	20-Nov-18	1.5	817	1				
11	28-Jan-19	5.8	786	1.07				
12	3-Jun-19	13.3	676	0.571				
13	21-Aug-19	8.77	725	0.886				
14	6-Nov-19	8.22	756	0.766				
15	20-Jan-20	2.6	736	0.317				
16	4-May-20	4.8	760	0.949				
17	6-Aug-20	5.02	770	0.841				
18	28-Oct-20	0.53	808	0.483				
19	24-Feb-21	6.32	798	0.759				
20	12-May-21	5.2	713	0.712				
21	15-Jul-21	0.39	796	0.593				
22	21-Oct-21	1.5	798	0.399				
23								
24								
25								
Coefficient of Variation:		1.16	0.06	0.42				
Mann-Kendall Statistic (S):		-37	-56	-69				
Confidence Factor:		84.3%	93.9%	97.3%				
Concentration Trend:		No Trend	Prob. Decreasing	Decreasing				



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

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SNC-Lavalin Inc.
#3 - 520 Lake Street
Nelson, British Columbia, Canada V1L 4C6
250.354.1664 604.515.5150
www.snclavalin.com

Appendix VIII

Fording River Operations 2021 SSGMP and RGMP Report

- Figures
- Tables
- Drawings
- Attachments
  - I. Borehole Logs
  - II. Block Diagrams
  - III. Mann-Kendall Analyses

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1 Overview

This report presents the results for the 2021 Fording River Operations (FRO) Site-Specific Groundwater Monitoring Program (SSGMP) and the 2021 Regional Groundwater Monitoring Program (RGMP) Study Area 1. The basis for the SSGMP and RGMP is the conceptual site model (CSM) presented in the approved 2018 SSGMP Update (SNC-Lavalin, 2019), the 2020 RGMP Update (SNC-Lavalin, 2020a) and the 2021 SSGMP Update (SNC-Lavalin, 2021a). The CSMs include descriptions of the physical setting, hydrology, geology, mine-related features, physical hydrogeology, and chemical hydrogeology, and present detailed analysis and interpretation of groundwater flow patterns, groundwater geochemistry, groundwater – surface water interactions and potential sources and transport pathways of order constituents (OC) in groundwater to the main stem valley bottom at FRO.

The Fording River is one of two main tributaries of the Elk River, and is the principal water course in the vicinity of FRO. It flows through the mine site in a generally north to south orientation before joining the Elk River approximately 30 km downstream of FRO in the vicinity of Line Creek Operations (LCO). A number of mine-influenced tributaries flow into the Fording River within the FRO permitted boundaries and Study Area 1, including Henretta Creek, Clode Creek, Lake Mountain Creek, Kilmarnock Creek, Swift Creek, and Porter Creek (Drawings FR-01 and FR-02). Cataract Creek was diverted to Swift Creek in August of 2019. Drainage from Kilmarnock Creek, Swift Creek, and Cataract Creek is currently being treated by the Active Water Treatment Facility (AWTF) South, which began operating in forward flow in December 2021. Several other tributaries unaffected by mining activities also join the Fording River within the Study Area 1 boundary, including tributaries from Castle Mountain and Chauncey Creek (Drawing FR-02).

A number of sedimentation ponds are present throughout the area, as shown on Drawings FR-01 and FR-02. There are also several tailings facilities (including North Tailings Pond [NTP], South Tailings Pond [STP], and the Turnbull Tailings Storage Facility [Turnbull TSF]), actively mined pits, backfilled pits, and waste stockpiles contained within the mine permitted boundaries (Drawings FR-01 and FR-02).

Groundwater in the tributary watersheds is monitored by the FRO SSGMP through wells installed either in the tributary watersheds or in the Fording River Valley bottom, while the valley bottom of the Fording River downstream of mining activities is monitored by the RGMP. The FRO SSGMP covers three watersheds: Henretta Creek, the Fording River Valley, and Swift Creek (Drawings FR-01 and FR-02; Diagram FR-01).

Study Area 1 of the RGMP is downgradient of the STP and encompasses the Fording River Valley bottom between the STP and Chauncey Creek (Drawing FR-02; Block Diagrams FR-02 and FR-03 in Attachment II). The area includes the South Kilmarnock Settling Ponds, and receives drainage from the Kilmarnock Creek, Swift Creek, Cataract Creek, Porter Creek, and Chauncey Creek watersheds. This area was identified for study because it is the focal point for most upland and tributary valley groundwater flow to the Fording River Valley bottom near the FRO and Greenhills Operations (GHO) mine-permitted boundaries.

Surficial geology at FRO is shown on Drawing 4 of the main report and is characteristic of a post-glacial Cordilleran mountain setting (SNC-Lavalin, 2020a). Upland areas are dominated by colluvial veneers and blankets with exposed bedrock in higher peaks. Lower mountain slopes and valley flanks are predominantly till with thick colluvial deposits (e.g., talus piles) in some of the steeper valleys. Fluvial and glaciofluvial deposits, with minor till and colluvium, fill the valley-bottom of the Fording River and the Kilmarnock and Henretta creeks. Lacustrine layers of finer grained sediments are also locally present within the valley-bottom aquifers. Locally, the upper 1 to 2 m of boreholes from the Fording River Valley-bottom comprise organic and fine- to medium-grained sediment deposited in a floodplain environment. Anthropogenic materials (waste rock and tailings) are also present within backfilled pits, tailings storage facilities, and as spoils within the uplands and valley-bottoms.

Bedrock geology and key structural features at FRO are shown on Drawing 2 of the main report. Bedrock at FRO is predominantly Carboniferous to Lower Cretaceous siliciclastic sedimentary rock. There are two major north-trending synclines present at FRO - the Alexander Creek and Greenhills synclines. The Erickson fault runs along the base of the Greenhills range west of the Fording River and terminates south of the confluence of the Fording River and Henretta Creek. The coal-bearing Kootenay Group (Mist Mountain Fm) hosts economic coal seams and is the dominant formation at FRO in the center of the Alexander Creek Syncline, east of the Erickson Fault. The Mist Mountain Fm is underlain by the Moose Mountain Member of the Morrissey Fm, and overlain by the Elk Fm, which caps select ridges at FRO (Kaiser, 1980). The Fernie Fm and the Spray River Group underlie the Kootenay Group and outcrop on the western limb of the syncline near the Fording River Valley-bottom in north-trending beds along the east side of the Erickson Fault. The formations also outcrop along the eastern boundary of the site, and eastern limb of the syncline, in the High Rock Range. The Blairmore Group and Rocky Mountain Supergroup outcrop north and south of the site, respectively. The Rundle Group underlies the Rocky Mountain Supergroup and is composed of limestones that are more resistive to erosion. The Rundle Group limestones form the high alpine peaks and ridges to the west of FRO as well as the upper catchments of the east to west flowing tributaries of the Fording River east of FRO (i.e., Henretta, Kilmarnock and Chauncey creeks). Carbonate deposits of the Rundle Group have been identified to potentially exhibit karstic features that could influence groundwater flow in the general vicinity of the site, however, the Rundle Group deposits do not subcrop within FRO operational areas or Study Area 1.

1.1 Groundwater Monitoring Locations

The 2021 groundwater programs were sampled in accordance with the approved FRO SSGMP Update (SNC-Lavalin, 2019) and the RGMP Update (SNC-Lavalin, 2020a), which has yet to be approved. Two monitoring wells recommended to be added to the FRO SSGMP (FR_MW_NTPSE and FR_MW18-02) and three monitoring wells recommended to be added to the RGMP (RG_MW_FR10A/B/C) have been incorporated into the respective programs for 2021. The 2018 FRO SSGMP was updated in the 2021 SSGMP Update report (SNC-Lavalin, 2021a), which is yet to be approved. The 2021 SSGMP Update report also recommended the evaluation of data from monitoring wells installed within the Study Area 1 boundaries as part of the Mass Balance Investigation (MBI) in 2020 (SNC-Lavalin, 2021b) for their possible inclusion in the RGMP once sufficient data was available. This evaluation will be completed once an interpretive report currently being prepared for the MBI program has been finalized.

The wells included in Study Area 1 of the RGMP and the FRO SSGMP are presented in Tables 1 and 2, respectively, along with the rationale for their inclusion in the respective programs. Including the wells added to the program in the 2021 SSGMP Update, the FRO SSGMP consists of 24 monitoring wells and two supply wells at 18 monitoring locations within the Fording River, Henretta Creek, and Swift Creek watersheds. There are seven wells included in the RGMP within Study Area 1 at six locations (including those added in the 2021 SSGMP Update), three of which (FR_09-01-A/B and FR_GH_WELL4) are also included in the FRO SSGMP. However, monitoring well GH_MW-PC is located within the permitted boundaries of GHO and are included in the GHO SSGMP (Appendix IX). Additional well details are provided in Table FR-01 and on borehole logs in Attachment I; however, borehole logs for the six supply wells that comprise the FR_POTWELLS are not available. These supply wells were installed in the late 1970's. Monitoring well locations are shown on Drawings FR-01 and FR-02 and on the Block Diagrams in Attachment II (Diagrams FR-01 to FR-03). Groundwater elevations and inferred flow directions are shown on Drawings FR-03 and FR-04. The local geological setting is shown on the cross-sections included on Drawings FR-05 to FR-12.

1.2 Program Modifications

A summary and discussion of modifications to the program outlined in the FRO SSGMP are provided in Table A below.

Table A: FRO SSGMP and Study Area 1 Program Modifications

#	Well ID	Program	Q[a]	Modification	Reason
1	FR_MW_NTPSE	SSGMP	4	Monitoring well added to the SSGMP.	Recommendation in the 2021 SSGMP Update.
2	FR_MW18-02	SSGMP	4	Monitoring well added to the SSGMP.	Recommendation in the 2021 SSGMP Update.
3	RG_MW_FR10-A/B/C	RGMP	4	Monitoring wells added to the RGMP.	Recommendation in the 2021 SSGMP Update.

Notes:
[a] Q denotes Quarter (Q1, Q2, Q3, Q4).

1.3 Henretta Creek Valley Watershed

A summary of 2021 groundwater monitoring and sampling results for the Henretta Creek Valley watershed is presented in Table B with references to supporting information (Drawings, Figures, Tables, and Appendices).

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Table B: Summary of 2021 Groundwater Monitoring and Sampling Results for Henretta Creek Valley

Hydrogeological Information		Description	Reference
Monitoring Locations	Relevant FRO SSGMP	**Upstream:** FR_HMW5 **Henretta Spoils:** FR_HMW2 **Henretta Backfilled Pits:** FR_HMW1S/D, FR_HMW3	Drawing FR-01 Table FR-01
	Relevant Monitoring Wells from Other Programs[a]	FR_MW-HC1A/B, FR_MW-HC2A/B, FR_MW-HC3A/B	
	Relevant Surface Water Monitoring Stations[b]	FR_HC1	
	Relevant Seep Monitoring Locations[b]	FR_HENSEEP3	
Physical Hydrogeology	Groundwater Elevation Trends	› **Upstream:** – Groundwater elevations fluctuated seasonally by approximately 0.5 m, with lows in late January and early February and highs in late May and early June. These fluctuations are similar to those observed in previous years. – The water level measured in Q1 (10.615 m btoc) is considered to be an error based on historical manual and continuous water level data. › **Henretta Spoils:** – FR_HMW2 is completed in spoils on the valley flank and typically does not exhibit significant seasonality. Groundwater elevations fluctuated seasonally by approximately 0.5 m, with lows in early February and highs in late April. These fluctuations are similar to those recorded by the datalogger in previous years. Discrepancies between manual and datalogger measurements in previous years are likely the result of a 30 m long piece of Waterra tubing that was lost down FR_HMW2 in 2017. › **Henretta Backfilled Pits:** – Minimum water levels were measured in late January at FR_HMW1S and in late February at FR_HMW3, with peak water levels in early June at both wells. There is no continuous water level data at FR_HMW1D in 2021 due to a connection error between the logger and the port. The maximum annual water level fluctuations in 2021 were approximately 0.8 m at FR_HMW1S and 1.3 m at FR_HMW3.	Table FR-02 Drawing FR-03 Figure FR-01
	Hydraulic Gradients and Flow Direction	› **Vertical Hydraulic Gradient:** – FR_HMW1S/D – 0.01 m/m (Q1) and 0.05 m/m (Q2) downward, and 0.03 m/m upward in Q3. – Vertical gradients in the backfilled pits between FR_HMW1S/D have historically been upward. › **Lateral Hydraulic Gradient:** – The lateral gradient between monitoring wells completed within the spoils (FR_HMW2) and backfilled pits (FR_HMW1S/D and FR_HMW-3) in Q1 was approximately 0.03 m/m, directed S/SW towards Henretta Lake.	
Chemistry	2021 SSGMP/RGMP Order Constituents Results	› **Henretta Spoils:** – Concentrations greater than primary screening criteria: ▪ Dissolved Selenium – greater than the primary and secondary screening criteria in all samples. ▪ Nitrate-N and Sulphate – greater than the primary screening criteria in all samples. › **Henretta Backfilled Pits:** – Concentrations greater than primary screening criteria: ▪ Dissolved Selenium – FR_HMW1S (primary and secondary screening criteria, all samples), FR_HMW3 (primary screening criteria for all samples and secondary screening criteria, Q2), and FR_HMW1D (primary screening criteria, Q1). ▪ Nitrate-N and Sulphate – FR_HMW1S (all samples), FR_HMW1D (all samples), FR_HMW3 (nitrate-N in Q2). › All other OC concentrations were less than the primary screening criteria in 2021.	Table C Tables FR-03 to FR-05 Drawings FR-13 to FR-16 Figures FR-02 to FR-05
	Non-Order Mine-Related and Naturally Occurring Constituents	› **Concentrations Greater than Primary Screening Criteria:** – Lithium – All samples collected from all wells. – Manganese – All samples collected from FR_HMW1S/D. – Uranium – All samples collected from FR_HMW1S/D. › Lithium and manganese were concluded to be unrelated to mining in the background assessment (BGA) completed for the 2020 RGMP Update (SNC-Lavalin, 2020a). Elevated manganese concentrations in the backfilled pits may be associated with reducing conditions. › Uranium was concluded to be mining related in the BGA (SNC-Lavalin, 2020a), and the source is inferred to be waste rock within the backfilled pits. › All other constituents were less than primary screening criteria.	Tables FR-03 and FR-04

Table B (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Henretta Creek Valley

Hydrogeological Information		Description	Reference
Chemistry (Cont'd)	Mann-Kendall Trend Analysis	› **Upstream:** – Increasing trends were identified for sulphate and dissolved selenium. › **Henretta Spoils:** – An increasing trend was identified for dissolved selenium. › **Henretta Backfilled Pits:** – Increasing trends were identified for sulphate at FR_HMW1S/D, for dissolved selenium at FR_HMW1S and FR_HMW3, and for dissolved cadmium at FR_HMW1D. The dissolved cadmium concentrations remain low and less than the primary screening criteria. › Results of all other Mann-Kendall analyses were either decreasing, stable, or non-trending.	Table D Attachment III

Notes:
[a] – Relevant monitoring wells from other programs are those in the area that are under evaluation for potential inclusion in the SSGMP and/or RGMP.
[b] – Relevant surface water stations and seep monitoring locations are as determined in the 2021 SSGMP Update (SNC-Lavalin, 2021a), and represent a sub-set of the surface water and seepage monitoring locations present at FRO and within Study Area 1.

A summary of OC compared to primary screening criteria for the wells in the Henretta Creek Valley is presented below in Table C.

Table C: FRO – Summary of OC compared to Primary Screening Criteria in the Henretta Creek Valley

Parameter[1,2,3] / Well ID	Nitrate-N (mg/L)				Sulphate (mg/L)				Dissolved Cadmium (µg/L)				Dissolved Selenium (µg/L)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Upstream of Henretta Spoils and Backfilled Pits																
FR_HMW5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Henretta Spoils																
FR_HMW2	49.2	47.8	44.6	NS	1,420	1,330	1,230	NS	-	-	-	NS	***385***	***313***	***262***	NS
Henretta Backfilled Pits																
FR_HMW1S	114	118	115	108	1,820	1,850	1,930	1,830	-	-	-	NS	***234***	***242***	***194***	NS
FR_HMW1D	112	119	114	112	1,900	1,950	2,010	1,960	-	-	-	NS	***52.1***	-	-	NS
FR_HMW3	-	13.6	-	-	-	-	-	-	-	-	-	-	***79.4***	***98.0***	***83.7***	***59.8***
CSR AW	400				1,280 – 4,290[4]				0.5 – 4[4]				20			
CSR IW	n/a				n/a				5				20			
CSR LW	100				1,000				80				30			
CSR DW	10				500				5				10			

Notes:
[1] Primary screening criteria: CSR standards for **Aquatic Life (AW)**, Drinking Water (DW), Livestock (LW) and *Irrigation (IW)*.
[2] '–' denotes result is below primary screening criteria.
[3] Where a duplicate was collected, or if more than one sample was collected in a quarter, the higher concentration is provided.
[4] Standard varies with hardness.
'NS' denotes sample not collected.

Mann-Kendall trend analyses were completed for OC for wells the Henretta Creek Valley with seven or more sampling events and are summarized in Table D.

Table D: FRO – Summary of Mann-Kendall Trend Analysis for OC in the Henretta Creek Valley

Parameter[1] / Well ID	Nitrate-N	Sulphate	Dissolved Cadmium	Dissolved Selenium
Upstream of Henretta Spoils and Backfilled Pits				
FR_HMW5	-	Increasing	-	Increasing
Henretta Spoils				
FR_HMW2	***Decreasing***	No Trend	Probably Decreasing	***Increasing***
Henretta Backfilled Pits				
FR_HMW1S	***Decreasing***	***Increasing***	Decreasing	***Increasing***
FR_HMW1D	***Decreasing***	***Increasing***	Increasing	***Decreasing***
FR_HMW3	***Decreasing***	Stable	Decreasing	***Increasing***

Notes:

[1] Where OC were measured above primary screening criteria in 2021, the trend result is ***italics***. Where the OC were measured above secondary screening criteria for selenium during at least one event in 2021, the result is ***shaded and italics***. Where increasing trends are noted, the cell is shaded yellow.

'-' denotes trend analysis was not completed as concentrations of parameter have consistently been less than, or marginally greater than the detection limit.

1.3.1 Discussion

The SSGMP monitoring network within the Henretta Creek watershed consists of one well screened within native gravel and was intended to have been installed upgradient of spoils (FR_HMW5), and four wells completed within source areas including three completed within backfilled pits (FR_HMW1S/D and FR_HMW3) and one completed within spoils (FR_HMW2). Monitoring wells completed within the spoils and backfilled pits are expected to show mine-influence and were installed to monitor water quality in source areas.

Upstream of Henretta Spoils and Backfilled Pits

Concentrations of all parameters in all samples collected from FR_HMW5 (screened in gravel between 7.3 and 10.4 m below ground surface [bgs]) in 2021 were less than the primary screening criteria except for dissolved lithium. Concentrations of sulphate and selenium in 2021 were similar to those in recent years, and generally elevated compared to historical results between 2012 and 2016 (Figures FR-02 and FR-03). Mann-Kendall trend analyses also indicated increasing trends of these constituents. Nitrate was also detected at low concentrations (< 0.1 mg/L) in all four samples collected in 2021, after being less than the method detection limit (MDL) of 0.005 mg/L in all but one historical sample.

Monitoring well FR_HMW5 was installed to evaluate groundwater quality upstream of mining activities in Henretta Valley. However, increasing concentrations of OC have been noted for several years. A review of water chemistry at nearby surface water station FR_HC3 completed for the 2021 SSGMP Update indicated that concentrations of OC in surface water were low and representative of natural waters (SNC-Lavalin, 2021a). Therefore, the source of the increasing OC concentrations at FR_HMW5 is inferred to originate from spoils rather than infiltration from Henretta Creek.

Monitoring well FR_HMW5 has been considered as mine-impacted since May 2016, this well has been removed from the background monitoring well network (SNC-Lavalin, 2020a). Installation of a new background well in the Upper Fording River Valley was attempted in 2020 but could not be completed due to access limitations.

Henretta Spoils

Monitoring well FR_HMW2 was installed at the base of the spoil (between 43.3 to 46.3 mbgs) to monitor upland groundwater elevated in OC north of the Henretta reclaimed channel. The Mann-Kendall analysis indicates that the concentrations of dissolved selenium at FR_HMW2 are increasing. However, the dissolved selenium concentrations in 2021 (262 to 385 µg/L) and Q4 of 2020 (376 µg/L) were the lowest measured since 2014 and appear to be declining (Figure FR-02). Sulphate concentrations (1,230 to 1,420 mg/L) were also generally lower in 2021 than recent historical results (Figure FR-03). The Mann--Kendall analysis indicates that sulphate concentrations are stable, and the temporal plot indicates visually that sulphate concentrations have been decreasing since 2018 (Figure FR-03). Nitrate-N concentrations remain greater than the primary screening criteria; however, Mann-Kendall results indicate a decreasing trend which is also evident on the temporal plot (Figure FR-04). This trend continued in 2021, with nitrate-N concentrations between 44.6 and 49.2 mg/L, and the lowest concentrations measured in Q2 (47.8 mg/L) and Q3 (44.6 mg/L) since monitoring began in 2012. The decreasing trend in nitrate-N concentrations may be due the depletion of the nitrate source in the spoil, which has been measured at other spoils across the valley (Teck, 2018). Groundwater quality results at well FR_HMW2 in 2021 indicate that the spoil is an ongoing source of OC to valley bottom groundwater. However, OC concentrations in surface water downstream of Henretta Lake (FR_HC1) are low relative to those measured in groundwater.

Henretta Backfilled Pits

Monitoring wells FR_HMW1S and FR_HMW1D were installed in backfilled pits (between 29.9 and 32.9 mbgs and between 51.2 and 54.3 mbgs, respectively) between the Henretta reclaimed channel and the spoils to the north. Dissolved selenium concentrations at FR_HMW1S in 2021 (194 to 234 µg/L) were visually similar to those in recent years (Figure FR-02), and the Mann-Kendall analysis indicates an increasing trend for dissolved selenium at this well. The dissolved selenium concentrations in 2021 at FR_HMW1D ranged from 6.08 µg/L in Q3 to 52.1 µg/L in Q1, similar to those detected in 2019 and 2020 and generally lower than the historical results between 2013 and 2018 (Figure FR-02). The Mann-Kendall statistical analyses for dissolved selenium at FR_HMW1D indicate a decreasing trend. The dissolved selenium concentrations exhibit a more pronounced seasonal effect at FR_HMW1D than FR_HMW1S, with higher concentrations in Q1 (Figure FR-02).

Sulphate concentrations at FR_HMW1D were higher than at FR_HMW1S in each quarter in 2021 by between 80 to 130 mg/L, similar to previous years. Sulphate concentrations have been increasing at both wells, as indicated by both the temporal plot (Figure FR-03) and the Mann-Kendall analyses. Mann-Kendall analyses of nitrate-N concentrations indicate decreasing trends at both wells, and the concentrations detected at each well in 2021 were generally lower than all previous years except Q1 and Q4 2020. Like FR_HMW2, decreasing nitrate-N may be a result of the depletion of nitrate-N at the source (Teck, 2018).

Monitoring well FR_HMW3 (screened between 16.7 and 19.7 mbgs) monitors groundwater in backfilled pits in the eastern portion of the former South Henretta Pit. Dissolved selenium concentrations at FR_HMW3 in 2021 ranged from 59.8 to 98.0 µg/L, which is generally elevated compared to historical results and the concentration detected in Q2 was the highest since monitoring began in 2012 (Figure FR-02). The Mann--Kendall analysis and temporal plot indicates an increasing trend in the concentrations of dissolved selenium (Figure FR-02). Sulphate concentrations ranged between 276 to 353 mg/L and were higher in

2021 than in recent years, although the concentrations were within the historical range and the Mann-Kendall analysis indicates that sulphate concentrations are stable. Sulphate concentrations generally display similar seasonality as observed in surface water at FR_HC1, although concentrations are typically higher in groundwater (Figure FR-03). Nitrate-N concentrations ranged from 8.43 to 13.6 mg/L in 2021, and the Mann-Kendall analysis indicates a decreasing trend. The nitrate-N concentrations in 2021 were similar to recent years (Figure FR-04) and have been lower since Q2 of 2017 compared to earlier results. This decrease may be attributed to depletion of nitrate-N at the source.

Mine-Influence and Transport Pathways in Henretta Creek Valley

Figure FR-05 shows the ratios of Se:SO_4 (S) for groundwater in the Henretta Creek Valley and surface water at FR_HC1 in 2021, as well as the historical ratios between 2011 and 2016 at surface water station FR_HC2 (no longer monitored). The Se:SO_4 (S) ratios plotted on Figure FR-05 indicate that groundwater in the spoil at FR_HMW2 and shallow groundwater in the backfilled pits at FR_HMW1S are influenced by spoils (as expected in the source areas), while deeper groundwater in the backfilled pits at FR_HMW1D is likely undergoing attenuation by microbial reduction. Deep groundwater in the backfilled pits may also be influenced by bedrock, as evidenced by the upward vertical gradient.

The Se:SO_4 (S) ratios in surface water at FR_HC1 and FR_HC2 plot along the mixing line between natural and mine-influenced waters, with more natural influence during freshet and more mine-influence during low flow periods. The ratios of groundwater at FR_HMW3 (completed in the backfilled pits) and the Q1 sample from FR_HMW5 (upgradient of the spoils) also plot along this mixing line, with more mining influence in groundwater at FR_HMW3 and more natural water influence at FR_HMW5. The remainder of the samples collected from FR_HMW5 in 2021 plot within the zone representative of non-contact water.

OC concentrations at downstream surface water station FR_HC1 are generally lower than concentrations measured at monitoring wells FR_HMW1S/D, FR_HMW2 and FR_HMW3, and are historically similar to concentrations measured at surface water station FR_HC2 upstream of Henretta Lake (Figures FR-02 to FR-04). This suggests that there is minimal loading to Henretta Creek from groundwater around the backfilled pits, and that loading to Henretta Creek occurs above FR_HC2. Elevated OC concentrations at FR_HENSEEP3 (dissolved selenium between 524 µg/L and 608 µg/L in 2021), located at the base on Henretta spoil upgradient of Henretta Lake, suggest that it may be a source of OC upstream of FR_HC2. Alternatively, there may be mine-influenced groundwater discharge at the base of Henretta Lake causing stratification of OC in the water column since the inferred groundwater flow direction from the source areas is towards the lake, with higher concentrations at depth. Samples were collected from Henretta Lake in vertical profiles in 2021 and further sampling is planned for 2022; the data will be evaluated once this ongoing investigation is complete.

It may also be possible that groundwater from the backfilled pits bypasses Henretta Lake and flows toward the Fording River Valley (SNC-Lavalin, 2019).

Newly installed monitoring wells FR_MW-HC1A/B, FR_MW-HC2A/B, and FR_MW-HC3A/B will be evaluated for possible inclusion in the SSGMP when sufficient data are available.

1.4 Fording River Valley Watershed and Study Area 1

The ensuing results and discussion of the Fording River Valley Watershed and Study Area 1 have been structured according to the following geographical areas:

- **Upgradient of the STP Area:**
  - Turnbull Bridge Spoil and Potable Wells Area;
  - Clode Creek Ponds;
  - Downgradient of Lake Mountain Creek; and
  - NTP.
- **Study Area 1:**
  - Downgradient of the STP and Kilmarnock Area;
  - South Kilmarnock Phase 2 Secondary Settling Pond (SKP2) and Greenhouse Areas; and
  - Compliance Point (Chauncey Creek Area).

A summary of 2021 groundwater monitoring and sampling results for the Fording River Valley watershed and Study Area 1 is presented in Table E with references to supporting information (Drawings, Figures, Tables, and Appendices).

Table E: Summary of 2021 Groundwater Monitoring and Sampling Results for Fording River Valley Watershed and Study Area 1

Hydrogeological Information		Description	Reference
Upgradient of South Tailings Pond			
Monitoring Locations	Relevant FRO SSGMP Wells	**Turnbull Bridge Spoil:** FR_TBSSMW-1, FR_TBSSMW-2 **Potable Wells Area:** FR_POTWELLS **Clode Creek Ponds:** FR_GCMW-1B, FR_GCMW-2 **Downgradient of Lake Mountain Creek:** FR_MW-1B **NTP:** FR_MW_NTPSE	Drawings FR-01, FR-02 Table FR-01
	Relevant Monitoring Wells from Other Programs[a]	FR_MW-TB1A/B, FR_MW-TB2A/B/C, FR_MW-TB3A/B/C, FR_MW-TB5A/B, FR_MW-TB6A/B, FR_MW-TB8A/B, FR_MW-TB9A/B, FR_LMA-1, FR_LMA-2, FR_LMA-3, FR_GCMW-3A/B/C, FR_GCMW-4A/B/C, FR_GCMW-5A/B/C, FR_MW-EC1A/B, FR_MW-EC2A/B, FR_MW-EC3A/B, FR_MW-EC4A/B	
	Relevant Surface Water Monitoring Stations[b]	FR_FR1, FR_FRNTP, FR_FR2, FR_CC1	
	Relevant Seep Monitoring Locations[b]	FR_CCSEEPE1, FR_CCSEEPSE5	
Physical Hydrogeology	Groundwater Elevation Trends	› **Turnbull Bridge Spoil:** – Groundwater elevations fluctuated seasonally by approximately 1.2 m at FR_TBSSMW-2, with lows in late February and early March and highs in late May and early June. There are no continuous water level data for monitoring well FR_TBSSMW-1 between May and October 2021, although the groundwater elevations at FR_TBSSMW-1 typically mirror those in shallow well FR_TBSSMW-2, which was again the case in 2021 prior to May. › **Clode Creek Ponds:** – Groundwater levels adjacent to the Clode Creek ponds in monitoring wells FR_GCMW-1B and FR_GCMW-2 were highest in May and June and lowest between July and October, with annual fluctuations of approximately 0.3 m. The water levels in the adjacent Clode Creek Secondary Settling Pond were stable and varied by less than 0.1 m throughout 2021, and the presence of the ponds likely has a moderating effect on groundwater levels at FR_GCMW-1B and FR_GCMW-2. › **Downgradient of Lake Mountain Creek:** – Groundwater elevations at FR_MW-1B fluctuated seasonally by approximately 0.9 m, with highs in late May and early June and lows in late February and early March. The continuous water level data is correlated with discharge in the Fording River at FR_FRNTP, indicating a hydraulic connection between the river and aquifer at this location. › **NTP:** – Groundwater elevations at FR_MW_NTPSE fluctuated by approximately 0.6 m with lows in early February and highs in late May and early June, although continuous or manual data after June 9, 2021 were not available as the well was not recommended to be added to the SSGMP until Q4.	Table FR-02 Drawing FR-03 Figures FR-06, FR-07, FR-09, FR-10
	Hydraulic Gradients and Flow Direction	› **Vertical Hydraulic Gradient:** – **Turnbull Bridge Spoil** – FR_TBSSMW-1 and FR_TBSSMW-2 – 0.02 to 0.03 m/m downward. – **Clode Creek Ponds** – FR_GCMW-1B and FR_GCMW-2 – 0.01 to 0.03 m/m downward. › **Lateral Hydraulic Gradient:** – Monitoring wells included in the SSGMP upgradient of the STP are located linearly along the Fording River; therefore, the spatial distribution is insufficient for triangulation of groundwater elevations. However, groundwater flow is inferred to be to the south following the Fording River Valley.	
	Groundwater Withdrawals	› **Potable Wells Area:** – The average cumulative daily pumping rate from the six supply wells was 162 m^3/hr (cubic metres per hour) in 2021, ranging between 8 m^3/hr and 227 m^3/hr.	Figure FR-08

Table E (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Fording River Valley Watershed and Study Area 1

Hydrogeological Information		Description	Reference
Upgradient of South Tailings Pond (Cont'd)			
Chemistry	2021 SSGMP/RGMP Order Constituents Results	› **Turnbull Bridge Spoil:** – Concentrations greater than primary screening criteria: ▪ Dissolved Selenium – shallow well FR_TBSSMW-2 (Q1 to Q4) › **Potable Wells Area:** – Concentrations greater than primary screening criteria: ▪ Dissolved Selenium – FR_POTWELLS (Q1 to Q4). › **Clode Creek Ponds:** – Concentrations greater than primary screening criteria: ▪ Dissolved Selenium – shallow well FR_GCMW-2 (primary and secondary screening criteria, Q1 to Q4). ▪ Nitrate-N – shallow well FR_GCMW-2 (Q1 to Q4). ▪ Sulphate – shallow well FR_GCMW-2 (Q1 and Q4). › **Downgradient of Lake Mountain Creek:** – Concentrations greater than primary screening criteria: – Dissolved Selenium – FR_MW-1B (Q1 to Q4). – Nitrate-N – FR_MW-1B (Q1 to Q4). › All other OC concentrations were less than the primary screening criteria in 2021.	Table F Tables FR-03 to FR-05 Drawings FR-13 to FR-16 Figures FR-11 to FR-14
	Non-Order Mine-Related and Naturally Occurring Constituents	› **Concentrations Greater than Primary Screening Criteria:** – Lithium – All samples collected from all wells, except those from FR_POTWELLS in Q2, Q3, and Q4. – Fluoride – FR_GCMW-1B (Q1 to Q4). – Barium – FR_TBSSMW-1 (Q1 to Q4). – Molybdenum – FR_TBSSMW-1 and FR_GCMW-1B (Q1 to Q4). – Manganese – FR_GCMW-1B (Q1, Q3, Q4) and FR_MW_NTPSE (Q1). – Iron – FR_MW_NTPSE (Q1). › The concentrations are consistent with historic results. › Lithium, fluoride, barium, molybdenum, and manganese were concluded to be non-mining related in the BGA (SNC-Lavalin, 2020a). › The elevated iron and manganese concentrations at FR_MW_NTPSE are inferred to be due to reductive dissolution of minerals caused by the presence of the NTP, which is located immediately upgradient. › All other constituents were less than primary screening criteria.	Tables FR-03 and FR-04
	Mann-Kendall Trend Analysis	› **Potable Wells Area:** – Concentrations of sulphate are probably increasing. › **Clode Creek Ponds:** – An increasing trend was identified for nitrate-N at FR_GCMW-1B and a probably increasing trend was identified for sulphate at FR_GCMW-2. Nitrate concentrations at FR_GCMW-1B are low, and the highest concentration in 2021 (0.0566 mg/L) was approximately 200 times lower than the most stringent primary screening criteria (the CSR DW standard of 10 mg/L). › **Downstream of Lake Mountain Creek:** – Increasing trends were identified for nitrate-N, sulphate, and dissolved selenium at FR_MW-1B. › Results of all other Mann-Kendall analyses were either decreasing, stable, or non-trending.	Table G Attachment III

Table E (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Fording River Valley Watershed and Study Area 1

Hydrogeological Information		Description	Reference
Downgradient of the STP and Kilmarnock Creek Area			
Monitoring Locations	Relevant FRO SSGMP	**Downgradient of the STP:** FR_09-04-A/B **Kilmarnock Creek Alluvial Fan:** FR-KB-1, FR-KB-2, FR-KB-3A/B	Drawings FR-01 and FR-02 Table FR-01
	Relevant Monitoring Wells from Other Programs[a]	FR_KB-10MW, FR_KB-11MW, FR_KB-13A/B, FR_KB-14MW, FR_KB-15MW, FR_KB-16MW, FR_KB-17MW, FR_KB-18MW, FR_KB-19MW, FR_KB-20MW	
	Relevant Surface Water Monitoring Stations[b]	FR_FR2, FR_FRNTP, FR_KC1, FR_KC_DS_TOE	
	Relevant Seep Monitoring Locations[b]	FR_BLAINESEEP5, FR_STPWSEEP, FR_STPSWSEEP	
Physical Hydrogeology	Groundwater Elevation Trends	› **Downgradient of the STP:** – Groundwater elevations varied little seasonally adjacent to the STP at monitoring wells FR_09-04A (fluctuating by approximately 0.1 m in the continuous data and 0.5 m in the manual measurements) and FR_09-04B (0.7 m in the manual measurements). › **Kilmarnock Creek Alluvial Fan:** – Seasonal changes in groundwater elevations in the Kilmarnock alluvial fan varied between approximately 1.7 m (at FR_KB-2) to 3.6 m (at FR_KB-3B), with highest water levels in early June and the lowest in late February and March.	Table FR-02 Drawing FR-04 Figures FR-15 and FR-16
	Hydraulic Gradients and Flow Direction	› **Vertical Hydraulic Gradient:** – **Downgradient of the STP** – FR_09-04-A/B – 0.02 to 0.4 m/m downward. – **Kilmarnock Creek Alluvial Fan** – FR_KB-3A/B – 0.02 to 0.08 m/m downward. › **Lateral Hydraulic Gradient:** – Groundwater flow in the Kilmarnock Creek area was directed towards the southwest under a lateral gradient of approximately 0.09 m/m in Q4 of 2021 (calculated between wells FR_KB-1, FR_KB-2, and FR_KB-3B), which dissipated across the alluvial fan to approximately 0.02 m/m (calculated between monitoring wells FR_KB-3B, FR_09-01-A, and FR_MW-SK1A), directed south. These observations are consistent with previous results.	
Chemistry	2021 SSGMP/RGMP Order Constituents Results	› **Downgradient of the STP:** – Concentrations of OC were less than the primary screening criteria. › **Kilmarnock Creek Alluvial Fan:** – Concentrations greater than primary screening criteria: ▪ Dissolved Selenium – greater than the primary and secondary screening criteria in all samples from all wells. ▪ Nitrate-N – greater than the primary screening criteria in all samples from all wells. ▪ Sulphate – FR_KB-1 (Q1, Q4), FR_KB-2 (Q1, Q4), FR_KB-3A (Q1 to Q4), FR_KB-3B (Q1, Q2, Q4). › All other OC concentrations were less than the primary screening criteria in 2021.	Table F Tables FR-03 to FR-05 Drawings FR-17 to FR-20 Figures FR-17 to FR-20
	Non-Order Mine-Related and Naturally Occurring Constituents	› **Concentrations Greater than Primary Screening Criteria:** – Lithium – All samples collected from all wells. – Manganese – FR_09-04-A/B (Q1 to Q4). – Uranium – FR_KB-1 (Q1 and Q4), FR_KB-2 (Q1 and Q4). – Nitrite-N – FR_KB-3A (Q2). › The concentrations are consistent with historic results. › Lithium and manganese were concluded to be non-mining related in the BGA (SNC-Lavalin, 2020a). › Uranium was concluded to be an indication of mine-influence in the BGA completed in the 2020 RGMP Update (SNC-Lavalin, 2020a) and the source is inferred to be the Kilmarnock spoil. › The elevated dissolved manganese concentrations at FR_09-04-A/B are inferred to be a result of the reductive dissolution of soil minerals due to the presence of the STP, located immediately upgradient of these wells. › All other constituents were less than primary screening criteria.	Tables FR-03 and FR-04

Table E (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Fording River Valley Watershed and Study Area 1

Hydrogeological Information		Description	Reference
Downgradient of the STP and Kilmarnock Creek Area (Cont'd)			
Chemistry (Cont'd)	Mann-Kendall Trend Analysis	› **Downgradient of the STP:** – Increasing trends were identified for dissolved cadmium at FR_09-04A/B. The highest dissolved cadmium concentrations are four times less than the upper limit of the CSR AW standard. › **Kilmarnock Creek Alluvial Fan:** – Increasing trends were identified for dissolved cadmium at FR_KB-1 and FR_KB-3A, as well as increasing or probably increasing trends in the concentrations of nitrate-N and sulphate at FR_KB-3A. › Results of all other Mann-Kendall analyses were either decreasing, stable, or non-trending.	Table G Attachment III
South Kilmarnock Phase 2 Secondary Settling Pond (SKP2) and Greenhouse Areas			
Monitoring Locations	Relevant FRO SSGMP/RGMP Wells (Study Area 1)	**SKP2 Area:** FR_MW-SK1A/B, FR_09-01-A/B, FR_09-02A/B **Greenhouse Area:** FR_GH_WELL4	Drawings FR-01 and FR-02 Table FR-01
	Relevant Monitoring Wells from Other Programs[a]	RG_MW_FR1A/B/C, RG_MW_FR2A/B, RG_MW_FR3A/B, RG_MW_FR4A/B, RG_MW_FR5A/B/C, RG_MW_FR6A/B, FR_MW_FR7A/B, RG_MW_FR8A/B/C, FR_MW_FRRD1, GH_MW-PC	
	Relevant Surface Water Monitoring Stations[b]	FR_FR2, FR_FRNTP, FR_FRCP1, FR_FRRD, FR_KC1, FR_KC_DS_TOE	
	Relevant Seep Monitoring Locations[b]	n/a	
Physical Hydrogeology	Groundwater Elevation Trends	› **SKP2 Area:** – Groundwater elevations at FR_09-01-A/B and FR_09-02-A/B fluctuated seasonally with the highest groundwater elevations recorded in late May and early June and the lowest elevations measured in February. The magnitudes of the seasonal fluctuations recorded by the dataloggers were approximately 5.5 m at FR_09-01-A, 5.6 m at FR_09-01-B, and 5.8 m at FR_09-02-A. The manual water levels measured at FR_09-02-B in Q2 were approximately 4.0 m higher than those measured in Q1. – Groundwater elevations fluctuated seasonally by approximately 7.0 m at FR_MW-SK1A and 6.4 m at FR_MW-SK1B, with highs in late May and early June and lows between January and March. – FR_MW-09-01-A/B, FR_MW-09-02-A/B and FR_MW-SK1A/B are downgradient or cross-gradient from the unlined South Kilmarnock Phase 2 Secondary Settling Pond.	Table FR-02 Drawing FR-04 Figure FR-21
	Hydraulic Gradients and Flow Direction	› **Vertical Hydraulic Gradient (SKP2 Area):** – FR_09-01-A/B – 0.06 to 0.07 m/m downward. – FR_09-02-A/B – 0.07 to 0.1 m/m downward. – FR_MW-SK1A/B – 0.01 to 0.02 m/m upward. › **Lateral Hydraulic Gradient:** – Groundwater flow between the SKP2 and Greenhouse areas is inferred to be down-valley (south) at a gradient calculated to be 0.007 m/m in Q4 (calculated between FR_09-01-A, FR_09-02-A, and RG_MW_FR1C).	
Chemistry	2021 SSGMP/RGMP Order Constituents Results	› **SKP2 Area:** – Concentrations greater than primary screening criteria: ▪ Dissolved Selenium – FR_MW-SK1A (primary and secondary screening criteria in Q1 to Q4), FR_MW-SK1B (primary screening criteria in Q1 to Q4), FR_09-01A (primary screening criteria in Q1 to Q4 and secondary screening criteria in Q2, Q3, and Q4), FR_09-01B (primary screening criteria in Q1 to Q4 and secondary screening criteria in Q3 and Q4), FR_09-02A (primary screening criteria in Q1 to Q4 and secondary screening criteria in Q1), FR_09-02B (primary screening criteria in Q1 to Q4). ▪ Nitrate-N – FR_09-01-A/B, FR_09-02-A/B, FR_MW-SK1A (Q1 to Q4), and FR_MW-SK1B (Q4). ▪ Sulphate – FR_09-01-A (Q2) and FR_MW-SK1A (Q1 and Q2).	Table F Tables FR-03 to FR-05 Drawings FR-17 to FR-20 Figures FR-22 to FR-25

Table E (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Fording River Valley Watershed and Study Area 1

Hydrogeological Information		Description	Reference
South Kilmarnock Phase 2 Secondary Settling Pond (SKP2) and Greenhouse Areas (Cont'd)			
Chemistry (Cont'd)	2021 SSGMP/RGMP Order Constituents Results (Cont'd)	› **Greenhouse Area:** – Concentrations greater than primary screening criteria: ▪ Dissolved Selenium – FR_GH_WELL4 (primary and secondary screening criteria, Q1 to Q4). ▪ Nitrate-N – FR_GH_WELL4 (Q1 to Q4). › All other OC concentrations were less than the primary screening criteria in 2021.	
	Non-Order Mine-Related and Naturally Occurring Constituents	› **Concentrations Greater than Primary Screening Criteria:** – Lithium – All samples collected from all wells. – Manganese – FR_MW-SK1B (Q1 to Q4). – Nitrite-N – FR_GH_WELL4 (Q3). › The concentrations are consistent with historic results. › Lithium and manganese were concluded to be non-mining related in the BGA (SNC-Lavalin, 2020a). › Elevated dissolved manganese concentrations at FR_MW-SK1B are inferred to be due to reducing conditions (field measured dissolved oxygen (DO) values ranging from 0.12 to 0.72 mg/L) and naturally occurring due to limited interaction with the atmosphere (screened 65.5 to 67.0 mbgs, just above bedrock) and upward gradients. › All other constituents were less than primary screening criteria.	Tables FR-03 and FR-04
	Mann-Kendall Trend Analysis	› **SKP2 Area:** – Increasing trends were identified for dissolved selenium at FR_09-01-A/B and FR_09-02-A/B, while sulphate was probably increasing at FR_09-02-A and FR_MW-SK1A. – An increasing trend was identified for dissolved cadmium at FR_MW-SK1A. The dissolved cadmium concentrations remain low and less than the primary screening criteria. – Increasing trends were identified for all OC at FR_MW-SK1B. › **Greenhouse Area:** – Increasing trends were identified for dissolved selenium and sulphate at FR_GH_WELL4.	Table G Attachment III
Compliance Point (Chauncey Creek Area)			
Monitoring Locations	Relevant FRO SSGMP/RGMP Wells (Study Area 1)	› RG_MW_FR10A/B/C	Drawing FR-02 Table FR-01
	Relevant Monitoring Wells from Other Programs[a]	› FR_MW_CH1-A, FR_MW_CH2	
	Relevant Surface Water Monitoring Stations[b]	› FR_FRCP1, FR_FRABCH, FR_FRRD	
	Relevant Seep Monitoring Locations[b]	› GH_SEEP_12	
Physical Hydrogeology	Groundwater Elevation Trends	› Groundwater elevations fluctuated seasonally by approximately 3.7 m at RG_MW_FR10B, with peak elevations in early June and lower elevations in October. However, continuous data are not available prior to June 2 at RG_MW_FR10B or prior to August 27 at RG_MW_FR10A and RG_MW_FR10C. There were seasonal fluctuations of approximately 1.3 m at RG_MW_FR10C and 3.1 m at RG_MW_FR10A in the manual measurements, with highs on May 18 and lows on August 27 at RG_MW_FR10C and on November 1 at RG_MW_FR10A.	Table FR-02 Drawing FR-04 Figure FR-26
	Hydraulic Gradients and Flow Direction	› **Vertical Hydraulic Gradient (SKP2 Area):** – RG_MW_FR10A/B – 0.05 m/m (Q2) and 0.005 m/m (Q3) upward, and 0.001 m/m downward in Q4. – RG_MW_FR10B/C – 0.1 to 0.2 m/m downward. › **Lateral Hydraulic Gradient:** – Groundwater flow between the Regional Groundwater Discharge Zone and the compliance point is inferred to be down-valley (south) at a gradient calculated to be 0.004 m/m in Q4 (calculated between RG_MW_FR7B, RG_MW_FR8B, and FR_MW_FR10B).	

Table E (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Fording River Valley Watershed and Study Area 1

Hydrogeological Information		Description	Reference
Compliance Point (Chauncey Creek Area) (Cont'd)			
Chemistry	2021 SSGMP/RGMP Order Constituents Results	› Concentrations greater than primary screening criteria: – Dissolved Selenium – RG_MW_FR10B (Q2, Q3, Q4). › All other OC concentrations were less than the primary screening criteria in 2021.	Table F Tables FR-03 to FR-05 Drawings FR-17 to FR-20 Figures FR-27 to FR-30
	Non-Order Mine-Related and Naturally Occurring Constituents	› **Concentrations Greater than Primary Screening Criteria:** – Lithium – RG_MW_FR10A (Q2, Q3, Q4), RG_MW_FR10B (Q2). – Manganese – RG_MW_FR10A (Q3 and Q4), RG_MW_FR10C (Q2, Q3, Q4). – Molybdenum – RG_MW_FR10A (Q2 and Q4). › Lithium, manganese and molybdenum were concluded to be non-mining related in the BGA (SNC-Lavalin, 2020a). › All other constituents were less than primary screening criteria.	Tables FR-03 and FR-04
	Mann-Kendall Trend Analysis	› Trend analyses have not been completed since threshold of seven sampling events has not been reached yet.	Table G Attachment II

Notes:
[a] – Relevant monitoring wells from other programs are those in the area that are under evaluation for potential inclusion in the SSGMP and/or RGMP.
[b] – Relevant surface water stations and seep monitoring locations are as determined in the 2021 SSGMP Update (SNC-Lavalin, 2021a), and represent a sub-set of the surface water and seepage monitoring locations present at FRO and within Study Area 1.

A summary of OC compared to primary screening criteria for the wells located in the Fording River Valley watershed and Study Area 1 is presented below in Table F.

Table F: FRO – Summary of OC Compared to Primary Screening Criteria in Fording River Valley Watershed and Study Area 1

Parameter[1,2] / Well ID	Nitrate-N (mg/L)				Sulphate (mg/L)				Dissolved Cadmium (µg/L)				Dissolved Selenium (µg/L)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Upgradient of South Tailings Pond																
FR_TBSSMW-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_TBSSMW-2	-	-	-	-	-	-	-	-	-	-	-	-	***39.0***	***20.5***	10.1	18.7
FR_POTWELLS	-	-	-	-	-	-	-	-	-	-	-	-	***37.6***	11.0	12.5	***24.9***
FR_GCMW-1B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_GCMW-2	57.2	45.2	49.1	64.0	557	-	-	-	-	-	-	-	***145***	***110***	***93.9***	***126***
FR_MW-1B	20.3	12.3	14.8	20.2	-	-	-	-	-	-	-	-	***72.6***	***35.4***	***47.8***	***56.6***
FR_MW_NTPSE	-	NS	NS	NS	-	NS	NS	NS	-	NS	NS	NS	-	NS	NS	NS
Study Area 1: Downgradient of the STP and Kilmarnock Creek Area																
FR_09-04-A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_09-04-B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
FR_KB-1	102	42.2	45.6	89.6	881	-	-	715	-	-	-	-	***312***	***181***	***186***	***280***
FR_KB-2	99.3	39.8	46.6	84.8	782	-	-	664	-	-	-	-	***292***	***152***	***185***	***258***
FR_KB-3A	71.4	74.6	72.2	64.5	591	617	606	554	-	-	-	-	***203***	***276***	***230***	***227***
FR_KB-3B	88.0	69.4	55.6	62.4	672	526	-	523	-	-	-	-	***269***	***225***	***210***	***225***
Study Area 1: SKP2 and Greenhouse Areas																
FR_MW-SK1A	72.7	78.3	43.7	49.4	549	636	-	-	-	-	-	-	***272***	***270***	***166***	***192***
FR_MW-SK1B	-	-	-	10.2	-	-	-	-	-	-	-	-	10.9	11.1	11.3	12.3
FR_09-01-A	21.6	59.0	30.8	44.6	-	513	-	-	-	-	-	-	***71.6***	***205***	***123***	***178***
FR_09-01-B	24.2	24.9	28.2	31.6	-	-	-	-	-	-	-	-	***78.7***	***77.8***	***111***	***121***

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Table F (Cont'd): FRO – Summary of OC Compared to Primary Screening Criteria in Fording River Watershed and Study Area 1

Parameter[1,2] / Well ID	Nitrate-N (mg/L)				Sulphate (mg/L)				Dissolved Cadmium (µg/L)				Dissolved Selenium (µg/L)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Study Area 1: SKP2 and Greenhouse Areas (Cont'd)																
FR_09-02-A	23.2	21.6	12.0	15.7	-	-	-	-	-	-	-	-	***114***	***67.8***	***46.2***	***64.7***
FR_09-02-B	22.4	22.7	12.2	14.3	-	-	-	-	-	-	-	-	***80.8***	***69.1***	***47.8***	***47.7***
FR_GH_WELL4	48.0	55.5	45.0	39.4	-	-	-	-	-	-	-	-	***153***	***163***	***117***	***142***
Study Area 1: Compliance Point (Chauncey Creek Area)																
RG_MW_FR10A	NS	-	-	-	NS	-	-	-	NS	-	-	-	NS	-	-	-
RG_MW_FR10B	NS	-	-	-	NS	-	-	-	NS	-	-	-	NS	***28.1***	19.6	***27.1***
RG_MW_FR10C	NS	-	-	-	NS	-	-	-	NS	-	-	-	NS	-	-	-
CSR AW	400				1,280 – 4,290[4]				0.5 – 4[4]				20			
CSR IW	n/a				n/a				5				20			
CSR LW	100				1,000				80				30			
CSR DW	10				500				5				10			

Notes:

[1] Primary screening criteria: CSR standards for **Aquatic Life (AW)**, Drinking Water (DW), Livestock (LW) and *Irrigation (IW)*.

[2] '–' denotes result is below primary screening criteria.

[3] Where a duplicate was collected, or if more than one sample was collected in a quarter, the higher concentration is provided.

[4] Standard varies with hardness.

Mann-Kendall trend analyses were completed for OC from wells in the Fording River Valley and Study Area 1 with seven or more sampling events and summarized in Table G (Appendix XI).

Table G: FRO – Summary of Mann-Kendall Trend Analysis for OC in Fording River Valley Watershed and Study Area 1

Parameter[1] / Well ID	Nitrate-N	Sulphate	Dissolved Cadmium	Dissolved Selenium
Upgradient of South Tailings Pond (STP)				
FR_TBSSMW-1	No trend	Decreasing	Stable	No trend
FR_TBSSMW-2	No trend	No trend	No trend	***Stable***
FR_POTWELLS	Decreasing	Probably Increasing	-	***No trend***
FR_GCMW-1B	Increasing	Probably Decreasing	Stable	Stable
FR_GCMW-2	***No trend***	***Probably Increasing***	No trend	***No trend***
FR_MW-1B	***Increasing***	Increasing	-	***Increasing***
FR_MW_NTPSE	Stable	Decreasing	No trend	Stable
Study Area 1: Downgradient of the STP and Kilmarnock Creek Area				
FR_09-04-A	Probably Decreasing	Stable	Increasing	Decreasing
FR_09-04-B	Decreasing	No trend	Increasing	Decreasing
FR_KB-1	***No trend***	***No trend***	Increasing	***No trend***
FR_KB-2	***No trend***	***No trend***	No trend	***No trend***
FR_KB-3A	***Probably Increasing***	***Increasing***	Increasing	***Stable***
FR_KB-3B	***No trend***	***No trend***	Stable	***Stable***
Study Area 1: SKP2 and Greenhouse Areas				
FR_MW-SK1A	***No trend***	***Probably Increasing***	Increasing	***No trend***
FR_MW-SK1B	***Increasing***	Increasing	Increasing	***Increasing***
FR_09-01-A	***No trend***	No trend	No trend	***Increasing***
FR_09-01-B	***No trend***	No trend	Probably Decreasing	***Increasing***
FR_09-02-A	***No trend***	Probably Increasing	Decreasing	***Increasing***
FR_09-02-B	***No trend***	No Trend	Decreasing	***Increasing***
FR_GH_WELL4	***Stable***	Increasing	Stable	***Increasing***

Notes:

[1] Where OC were measured above primary screening criteria in 2021, the trend result is ***italics***. Where the OC were measured above secondary screening criteria for selenium during at least one event in 2021, the result is ***shaded and italics***. Where increasing trends are noted, the cell is shaded yellow.

'-' denotes trend analysis was not completed as concentrations of parameter have consistently been less than, or marginally greater than, the detection limit.

1.4.1 Discussion

1.4.1.1 Upgradient of South Tailings Pond

Turnbull Bridge Spoil and Potable Wells Area

Monitoring wells FR_TBSSMW-1 and FR_TBSSMW-2 were installed downgradient of the confluence of Henretta Creek and the Fording River in 2017 and included in the SSGMP beginning in 2019 (Drawing FR-01). The wells monitor groundwater quality in the Fording River Valley bottom adjacent to the Turnbull Spoil and downgradient of Henretta Valley. Dissolved selenium concentrations in shallow well FR_TBSSMW-2 (screened in gravel between 6.8 m to 8.3 mbgs) are greater than the applicable primary screening criteria, ranging from 10.1 µg/L to 39.0 µg/L in 2021, and reflect surface water concentrations and seasonal variation in the Fording River at downgradient surface water monitoring station FR_FR1 (Figure FR-11). Sulphate and nitrate-N concentrations in this well are also similar to those measured in the Fording River (FR_FR1; Figures FR-12 and -13), providing further evidence of a surface water-groundwater interaction at this location. In contrast, deeper well FR_TBSSMW-1 (screened in silty sand and gravel just above bedrock between 20.9 mbgs to 22.4 mbgs) had OC concentrations less than the primary screening criteria and, in some cases, less than the detection limit (Figures FR-11 to FR-13; Tables FR-03 and FR-04). Therefore, there is inferred to be minimal surface water influence on groundwater quality at FR_TBSSMW-1.

The plot of Se:SO_4 (S) ratios in monitoring wells and surface water north of the STP further supports the interpretation above. Both surface water at FR_FR1 and groundwater at FR_TBSSMW-2 plot along the mixing line between natural and mine-influenced waters, while groundwater from FR_TBSSMW-1 is interpreted to be naturally sourced and exhibit minimal mine influence (Figure FR-14). Concentrations of molybdenum greater than the primary screening criteria at FR_TBSSMW-1 are therefore inferred to be natural. Although molybdenum may be a mine-related constituent related to antiscalant dosing (Azimuth, 2021), no antiscalant dosing occurs upgradient of FR_TBSSMW-1, and the BGA concluded that molybdenum was also naturally elevated in the Elk Valley (SNC-Lavalin, 2020a).

Farther downstream, groundwater quality is also monitored in the Fording River Valley bottom downgradient of the Turnbull Bridge Spoil and Henretta Valley at the FR_POTWELLS production wells. Water quality at this monitoring location is an aggregate of water collected from the well field and determining constituent concentrations and water levels at individual supply wells is not possible. Dissolved selenium concentrations in FR_POTWELLS ranged between 11.0 and 37.6 µg/L in 2021 and were similar to concentrations measured in previous years (Figure FR-11). Dissolved selenium, sulphate, and nitrate-N concentrations in FR_POTWELLS also closely follow seasonal variations and concentrations measured in the Fording River at FR_FR1, similar to FR_TBSSMW-2 (Figures FR-11 to FR-13). The Se:SO_4 (S) ratios of FR_POTWELLS groundwater also plot along the mixing line between natural waters and mine-influenced waters along with surface water at FR_FR1 (Figure FR-14). The Mann-Kendall analyses indicate that concentrations of sulphate at the FR_POTWELLS are probably increasing, which may reflect increasing concentrations in Fording River surface water, since sulphate concentrations in groundwater at the FR_POTWELLS are similar to those in the Fording River at FR_FR1 (Figure FR-12).

The similarity in magnitude and seasonal variation of dissolved selenium concentrations as well as the similarities in Se:SO_4 (S) ratios in shallow groundwater wells FR_TBSSMW-2 and FR_POTWELLS and surface water in the Fording River at FR_FR1 suggests a strong surface water and shallow groundwater connection. Hence, the dominant transport pathway for OC is likely via surface water.

Additional drilling in the vicinity of FR_POTWELLS was recommended in the 2021 SSGMP Update in order to investigate the hydraulic connection between the Fording River and FR_POTWELLS. An additional 16 monitoring wells (at 7 locations) have also recently been installed downgradient of the Turnbull Bridge Spoil farther down-valley than FR_TBSSMW-1 and FR_TBSSMW-2 to investigate potential loading to the Fording River Valley bottom aquifer from the spoil (Drawing FR-01). These wells will be evaluated for possible inclusion in the SSGMP when sufficient data are available.

Clode Creek Ponds

Monitoring wells FR_GCMW-1B and FR_GCMW-2 were installed adjacent to the Clode Settling Ponds in 2017 and added to the SSGMP in 2019 (Drawing FR-01). These wells monitor groundwater quality directly downgradient of the Clode Creek Settling Ponds, which receive mine-influenced drainage from the Clode Creek watershed as well as treated effluent from the FRO-North Saturated Rock Fill (FRO_N SRF). Dissolved selenium, sulphate, and nitrate-N concentrations in deeper well FR_GCMW-1B (screened 14.4 mbgs to 15.9 mbgs) were less than primary screening criteria and have remained low after initially higher concentrations in 2017 and 2018, with occasional results less than the MDL since 2019 (Table FR-03 and FR-04; Figures FR-11 to FR-13). OC concentrations in groundwater at FR_GCMW-1B are less than those measured in Fording River surface water at upstream and downstream monitoring locations FR_FR1 and FR_FR2, respectively, as well as less than the concentrations measured in the adjacent Clode Settling Ponds (FR_CC1). In contrast, shallow well FR_GCMW-2 (screened 7.6 mbgs to 9.1 mbgs) has dissolved selenium, sulphate, and nitrate-N concentrations greater than the primary screening criteria and several orders of magnitude greater than groundwater in FR_GCMW-1B (Figures FR-11 to FR-13). OC concentrations in FR_GCMW-2 are also greater than surface water in the Fording River (FR_FR1 and FR_FR2; Figures FR-11 to FR-13) but are similar to and slightly less than concentrations in the Clode Settling Ponds (FR_CC1).

Selenium to sulphate ratios of groundwater at FR_GCMW-1B and FR_GCMW-2 and surface water of the Clode Settling ponds are plotted on Figure FR-14. The Se:SO_4 (S) ratios indicate that surface water in the Clode Settling Ponds (FR_CC1) and shallow groundwater at FR_GCMW-2 are mine-influenced, while deeper groundwater at FR_GCMW-1B are more representative of natural waters (Figure FR-14). There is also a significant difference in major ion chemistry between wells FR_GCMW-1B and FR_GCMW-2, with significantly higher bicarbonate and sodium and significantly lower sulphate and magnesium in FR_GCMW-1B than FR_GCMW-2 (Tables FR-03 and FR-04). It is inferred from the above that OC are low or absent at the depth in the valley bottom aquifer and that groundwater at FR_GCMW-1B is naturally sourced, while shallow groundwater at FR_GCMW-2 is influenced by seepage from the Clode Settling ponds. OC that were detected in early groundwater samples at FR_GCMW-1B may be attributable to a stronger downward vertical gradient in 2018 (Figure FR-07). The reason for this is unclear but it may have been a historic recharge event associated with higher than average runoff in 2017 and 2018, as seen in the FR_FRNTP hydrograph (Figure FR-09). Alternatively, the elevated early OC concentrations may be an artefact of drilling if surface water entered the well before the bentonite seal had hydrated.

Molybdenum concentrations greater than the primary screening criteria at FR_GCMW-1B are also concluded to be naturally sourced considering the evidence outlined above, as well as the fact that antiscalant dosing does not occur upgradient of this location,

Additional monitoring wells have recently been installed in this area south of the Clode Creek Settling ponds in order to investigate a potential bedrock pathway from the E4 pit to the Fording River Valley bottom, as well as to investigate a potential gradient reversal from the Fording River to Lake Mountain Pit during mining operations (Drawing FR-01). These wells will be evaluated for possible inclusion in the SSGMP when sufficient data are available.

Downgradient of Lake Mountain Creek

Farther downgradient, well FR_MW-1B monitors groundwater in the Fording River Valley bottom from upgradient spoils, Turnbull Pit, Clode Creek, and the Lake Mountain Settling Ponds (Drawing FR-01). This shallow well (screened 5.2 mbgs to 8.2 mbgs) has dissolved selenium and nitrate-N concentrations greater than the primary screening criteria (Tables FR-03 and FR-04; Figures FR-11 to FR-13). OC concentrations were generally higher in 2021 than previous years, and the Mann-Kendall analyses indicate increasing trends in the concentrations of dissolved selenium, nitrate-N, and sulphate. These increasing concentrations may be a result of corresponding increasing concentrations in the Fording River, since OC concentrations at FR_MW-1B are of similar magnitude and follow seasonal variation in the Fording River at FR_FR2 (Figures FR-11 to FR-13). The $Se:SO_4$ (S) ratios of both the groundwater samples collected at FR_MW-1B and the surface water samples collected at FR_FR2 in 2021 plot along the mixing line between natural and mine-influenced waters. This suggests that this well is hydraulically connected to the Fording River and is influenced by surface water.

Monitoring wells have recently been installed down-valley from FR_MW-1B in the vicinity of the Eagle Ponds to investigate potential seepage from the ponds (Drawing FR-01). These wells will be evaluated for possible inclusion in the SSGMP when sufficient data are available.

North Tailings Pond

Monitoring well FR_NTPSE was installed in 2018 and recommended to be added to the SSGMP in the 2021 SSGMP Update (SNC-Lavalin, 2021a). FR_NTPSE is screened in sand and gravel (9.2 to 10.1 mbgs) and monitors potential seepage from the NTP, located immediately upgradient. Only one sample was collected from FR_NTPSE in 2021 as it was recommended to be added to the SSGMP in Q4 while monitoring as part of the STP flood widening (STPFW) program ceased in Q2. Concentrations of OC in Q1 of 2021 were consistent with historical results, and the concentrations of dissolved selenium and nitrate-N are very low compared to concentrations of sulphate (Figures FR-11 to FR-13). The $Se:SO_4$ (S) ratios suggest that selenium and nitrate-N at this location are being attenuated by microbial reduction (Figure FR-14). Selenium and nitrate-N attenuation in groundwater is expected in tailings ponds and underlying aquifers due to reduction caused by the consumption of oxygen (SRK Consulting Inc. (SRK), 2018). Selenium attenuation is expected to initiate as soon as nitrate-N begins to reduce via denitrification (SRK, 2018). Anoxic conditions associated with the presence of the NTP (evidenced by the low field measured DO and oxidation-reduction potential (ORP)) are also likely causing the elevated concentrations of iron and manganese at FR_NTPSE through reductive dissolution of iron and manganese oxyhydroxides.

1.4.1.2 Study Area 1

There are inferred to be two primary transport mechanisms for mining-influenced water to reach the Fording River Valley bottom aquifer in Study Area 1; surface water infiltration of the Fording River; and surface water infiltration of Kilmarnock Creek over the alluvial fan. Other sources may include groundwater flow from the north as well as contributions from other mine-influenced tributaries (ie. Swift Creek, Cataract Creek, and Porter Creek). Flow accretion studies completed in support of the AWTF-S application (Teck, 2019) and the MBI program (SNC-Lavalin, 2020b; 2020c; 2021c) identified that Kilmarnock Creek loses over the alluvial fan, and that the Fording River loses along a stretch in Study Area 1 from approximately FR_FR2 to the confluence with the Greenhouse Side Channel (Drawing FR-04). The flow accretion studies completed in support of the MBI also identified a zone of regionally significant groundwater discharge between confluence with the Greenhouse Side Channel and the Fording River main stem on the east side of the valley to approximately the confluence with the Oxbow Channel (SNC-Lavalin, 2020b;

2020c; 2021c). Three transport pathways of mine-influenced groundwater in Study Area 1 have been identified in the Fording River valley bottom within Study Area 1 as described in the 2020 RGMP Update (SNC-Lavalin, 2020a), including:

i. Groundwater recharged by Kilmarnock Creek over the alluvial fan that flows down-valley along the eastern side of the valley and discharges in the Greenhouse Side Channel;

ii. Groundwater recharged by Kilmarnock Creek that travels cross-valley along a preferential pathway inferred to be associated with pre-development channels, that seasonally discharges to the Fording River along a bend between FR_FR4 and FR_FRCP1; and

iii. Groundwater recharged by the Fording River between FR_FR2 and the confluence with the Greenhouse Side channel that flows down-valley and discharges in the groundwater discharge zone.

These pathways and the regional discharge zone are illustrated on the Block Diagram included as Attachment II - Diagram FR-02. The results of the 2021 SSGMP and RGMP are discussed below by area in the context these transport pathways.

Downgradient of the South Tailings Pond and Kilmarnock Creek Area

FR_09-04-A and FR_09-04-B are shallow monitoring wells (screened between 1.14 and 4.66 mbgs and between 5.10 and 6.62 mbgs, respectively) installed directly downgradient of the STP to monitor seepage from the STP to the valley bottom aquifer (Drawing FR-02). Concentrations of dissolved selenium and nitrate-N in these wells remain low and below the primary screening criteria (Tables FR-03 and FR-04; Figures FR-17 and FR-19). Mann-Kendall analyses indicate decreasing or probably decreasing trends for both nitrate and dissolved selenium, and stable or no trend for sulphate. The selenium and nitrate concentrations in samples collected from these wells in 2021 were similar to those measured between 2014 and 2018, after a temporary increase of up to one order of magnitude in 2019. Field-measured concentrations of DO at these wells are consistently low which likely reflects reducing conditions within the STP and underlying aquifer where OC are inferred to be attenuated by microbial reduction, which is supported by the Se:SO4 (S) ratios (Figure FR-20). Elevated concentrations of manganese are also inferred to be the result of mineral dissolution caused by the reducing conditions within and beneath the STP.

Monitoring wells FR_KB-1, FR_KB-2, and FR_KB-3A/B were installed in 2018 as part of the AWTF-S investigations and incorporated into the SSGMP in 2019 (Drawing FR-02). The wells are completed in the Kilmarnock alluvial fan and monitor groundwater quality in the alluvial sediments where Kilmarnock Creek loses to ground (Golder, 2019). Well FR_KB-1 is screened 5.2 mbgs to 8.2 mbgs in silty gravel, sand, and bedrock; FR_KB-2 is screened 13.1 mbgs to 16.2 mbgs in silty sand and bedrock; FR_KB-3A is screened 35.4 mbgs to 38.4 mbgs in sand above bedrock; and FR_KB-3B is screened 18.3 mbgs to 21.3 mbgs in sand. Dissolved selenium and nitrate-N concentrations were greater than the primary screening criteria in each well in each quarter (Tables FR-03 and FR-04 and Figures FR-17 and FR-19). Sulphate concentrations were also greater than the primary screening criteria in select quarters of each well (Table FR-03 and Figure FR-18). The Mann-Kendall analyses indicate that concentrations of nitrate-N and sulphate are increasing or probably increasing at FR_KB-3A. The Se:SO_4 (S) ratios indicate that Kilmarnock Creek surface water and all groundwater within the alluvial fan is influenced by the spoils deposited in the Kilmarnock Creek valley (Figure FR-20).

The concentrations of dissolved selenium (152 to 312 µg/L), nitrate-N (39.8 to 102 mg/L), and sulphate (302 to 881 mg/L) in wells FR_KB-1, FR_KB-2, and FR_KB-3A/B are the highest amongst any wells in the SSGMP or RGMP network within the Fording River Valley (Tables FR-03 to FR-05) and reflect the untreated water quality in the Kilmarnock Creek watershed, which is a source of mine-related constituents to the

Fording River Valley bottom in Study Area 1. The AWTF-S and Kilmarnock Clean Water Diversion (KCWD) were commissioned in Q4 of 2021 and may improve groundwater quality in the Kilmarnock Creek alluvial fan and downgradient in time by reducing loading of OC to the aquifer over the Kilmarnock Creek alluvial fan. Untreated water quality in Kilmarnock Creek is reflected by the concentrations at FR_KC_DS_TOE and FR_KC1 prior to October 2021, while the concentrations at FR_KC1 in Q4 reflect water quality of the KCWD (Figures FR-17 to FR-19).

Numerous wells were recently installed in the Kilmarnock Creek alluvial fan in order to investigate potential bypass of the AWTF-S intake and the extent of fluvial gravel channel deposits in the area. These wells will be evaluated for possible inclusion in the SSGMP when sufficient data are available.

SKP2 and Greenhouse Areas

Monitoring wells FR_MW_SK1A/B were installed adjacent to the SKP2 pond in late 2018 and incorporated into the SSGMP in 2019 (Drawing FR-02). The wells are located along the down-valley transport pathway between the Kilmarnock Creek alluvial fan and regional groundwater discharge zone (Diagram FR-02 of Attachment II) and were installed to confirm the presence of this pathway and monitor groundwater quality along it, delineate the vertical extent of the aquifer, and increase lateral coverage in the southern area at FRO.

In shallow well FR_MW-SK1A (screened approximately 15.0 mbgs to 16.5 mbgs in sand and gravel), concentrations of dissolved selenium and nitrate-N were greater than the primary screening criteria (Tables FR-03 and FR-04). OC concentrations were similar to (but slightly less than) those of samples collected from wells installed in the Kilmarnock Creek alluvial fan, and fluctuated seasonally (Figures FR-22 to FR-24). The $Se:SO_4$ (S) ratios show that shallow groundwater at FR_MW-SK1A is mine-influenced and similar to untreated water in Kilmarnock Creek (Figure FR-25).

OC concentrations were at least an order of magnitude lower in deep well FR_MW-SK1B (screened 65.5 mbgs to 67.0 mbgs in sand and gravel above bedrock) than those of shallow well FR_MW-SK1A. However, concentrations of nitrate in Q4 and of dissolved selenium in all samples collected in 2021 were marginally greater than the primary screening criteria (Table FR-04), and the Mann-Kendall analyses (Table G) and temporal plots (Figures FR-22 to FR-24) indicate that concentrations of dissolved selenium, sulphate, and nitrate-N are increasing. The $Se:SO_4$ (S) ratios suggest that the deep groundwater at FR_MW-SK1B appears to have mixed mining and natural sources that have undergone some microbial reduction (Figure FR-25). Field measured DO concentrations at this location have been less than 1 mg/L in all events since 2019, supporting the existence of conditions conducive to microbial reduction. The $Se:SO_4$ (S) ratios and increasing OC concentrations suggest that mine-influenced waters may extend to the base of the aquifer in this area and that the mine-influence is increasing at depth. The influence is likely vertically stratified with more impacted, Kilmarnock-influenced waters near surface and less impacted waters of unknown mine-influence at depth. Upward vertical gradients at FR_MW-SK1A/B preclude downward migration at this location and are an indication that the source is not direct from above. An additional well (or wells) installed in bedrock will help to assess mine-influence at depth in the valley-bottom aquifer, as FR_MW-SK1B is screened near the bedrock interface.

Monitoring wells FR_09-01-A (screened between 3.8 and 6.9 mbgs) and FR_09-01-B (screened between 17.2 and 18.7 mbgs) are located south of SKP2 pond along the inferred pathway between the Kilmarnock Creek alluvial fan and the Fording River (Drawing FR-02; Diagram FR-02 of Attachment II). Monitoring wells FR_09-02-A (screened between 8.3 and 11.4 mbgs) and FR_09-02-B (screened between 20.8 and 22.3 mbgs) are also located south of SKP2, west of FR_09-01-A/B and closer to the Fording River. The

Se:SO_4 (S) ratios indicate that each of the four wells are mine-influenced (Figure FR-25). Dissolved selenium concentrations were greater than the primary screening criteria in all four wells in all quarters in 2021 (Table FR-04). The selenium concentration of the sample collected from shallow well FR_09-01A in Q2 (205 µg/L) was the highest since monitoring began, and the Mann-Kendall results for dissolved selenium indicate increasing trends in all four wells. Nitrate-N concentrations in both nested well pairs were also greater than the primary screening criteria in all samples collected in 2021 (Table FR-03). However, the nitrate-N concentrations were within the range of historical results and the Mann-Kendall analyses indicated a stable trend or no trend for each well. Sulphate concentrations were less than the primary screening criteria in all samples except the sample collected from FR_09-01-A in Q2 (513 mg/L; Table FR-03). The sulphate concentrations in the samples collected FR_09-01-A in Q2 and from FR_09-02-A/B in Q1 were the highest since monitoring began. Mann-Kendall results indicated a probably increasing trend for sulphate at FR_09-02-A, and no trend for the remaining three wells.

Monitoring wells FR_09-01-A/B are inferred to be influenced by Kilmarnock Creek based on OC concentrations that are consistently higher than in Fording River surface water at FR_FR2 (Figures FR-22 to 24), reflecting their locations along an inferred pathway between the Kilmarnock Creek alluvial fan and Fording River. In contrast, OC concentrations and seasonality in FR_09-02-A/B are generally more reflective of concentrations in the Fording River (FR_FR2), except during Q2 at FR_09-02-B and select other quarters in recent years at FR_09-02-A, when OC concentrations are typically higher than those measured in the Fording River. Wells FR_09-02-A/B are inferred to be both seasonally influenced by Kilmarnock Creek as water in the SKP2 infiltrates to ground, and by the adjacent Fording River which is losing over this reach. Aside from these wells, there are no other monitoring wells currently in the SSGMP or RGMP along the inferred transport pathway from the Fording River to the regional groundwater discharge zone.

Concentrations of molybdenum in monitoring wells FR_09-2-A/B (0.638 to 2.18 µg/L), which are the nearest monitoring wells inferred to be downgradient of antiscalant dosing that occurs at FR_SCOUT, are approximately 5 to 16 times lower than the most conservative primary screening criteria (CSR IW of 10 µg/L).

In the area of the Greenhouse supply wells, FR_GH_WELL4 is inferred to be located along the same pathway between the Kilmarnock Creek alluvial fan and the Greenhouse Side Channel as FR_MW-SK1A (Drawing FR-02; Diagram FR-02 of Attachment II). In 2021, the concentrations of dissolved selenium and nitrate-N at FR_GH_WELL4 in 2021 were greater than the primary screening criteria in all quarters (Tables FR-03 and FR-04; Drawings FR-17 and FR-20). However, the OC concentrations in this area were generally lower than in the wells installed in the Kilmarnock Creek alluvial fan and FR_MW-SK1A, which is located further upgradient along the same inferred transport pathway (Tables FR-03 and FR-04). Mann-Kendall results indicate increasing trends for sulphate and dissolved selenium. OC concentrations at FR_GH_WELL4 are similar to and occasionally higher than those in the Fording River downstream of this pathway's inferred discharge zone in the Greenhouse Side Channel (FR_FRRD).

Monitoring wells installed in the Greenhouse Area and regional groundwater discharge zone in support of the MBI will be evaluated for potential inclusion in the SSGMP and/or RGMP following the collection of sufficient baseline data and the completion of the interpretive report currently being prepared.

Compliance Point (Chauncey Creek Area)

Monitoring wells RG_MW_FR10A (screened between 30.1 and 31.6 mbgs), RG_MW_FR10B (screened between 16.5 to 18.0 mbgs), and RG_MW_FR10C (screened between 4.2 to 5.8 mbgs) were installed in support of the MBI program in April 2021. These wells were recommended for inclusion in the RGMP in the 2021 SSGMP Update in order to monitor groundwater in vicinity of the water quality compliance point at FR_FRABCH (SNC-Lavalin, 2021a). Concentrations of OC in shallow well RG_MW_FR10C and deep well

RG_MW_FR10A were low compared to surface water at FR_FRABCH and less than the primary screening criteria (Tables FR-03 and FR-04; Figures FR-27 to FR-29). The Se:SO_4 (S) ratios suggest that shallow groundwater at RG_MW_FR10C may be naturally sourced or may be mixed mine-influenced and naturally sourced waters that have undergone some microbial reduction (Figure FR-30). The well is located in a wetted, lowland area, screened in sand and gravel underlying organic silty soils (Drawing FR-09), the field measurements are indicative of reducing conditions (DO range of 0.34 to 0.49 mg/L), and the vertical gradients between RG_MW_FR10C and RG_MW_FR10B are downward (Table FR-02). Therefore, the shallow groundwater may be representative of mine-influenced water from upgradient and/or recharged by the Fording River that has undergone microbial reduction, as well as mixing with natural waters from precipitation and the wetlands. The elevated concentrations of dissolved manganese at RG_MW-FR10C are also likely attributable to reductive dissolution.

The Se:SO_4 (S) ratios also suggest that deep groundwater at RG_MW_FR10A is either naturally sourced or is perhaps representative of mixed waters that have undergone microbial reduction. However, considering RG_MW_FR10A is partially completed within bedrock (Drawing FR-09) and that the vertical gradients between RG_MW-FR10B and RG_MW-FR10A are either upward or neutral (Table FR-02), it is concluded that the deep groundwater is likely naturally sourced. It is also inferred that manganese and molybdenum are naturally elevated as this well is located approximately 7 kilometers downgradient of the antiscalant dosing that occurs at FR_SCOUT. As mentioned above, concentrations immediately downgradient of the antiscalant dosing at FR_09-02-A/B are up to 25 times lower than in deep well RG_MW-FR10A.

Concentrations of dissolved selenium at intermediate well RG_MW-FR10B, screened in the sand and gravel valley bottom aquifer, ranged from 19.6 to 28.1 µg/L and were greater than the primary screening criteria in each sample collected in 2021 (Table FR-03). The Se:SO_4 (S) ratios indicate that the groundwater at this depth is mine-influenced (Figure FR-30), and the source is inferred to be upgradient mine-influenced tributaries and the Fording River over the losing reaches upstream. The concentrations are significantly lower than those in groundwater upgradient in the Kilmarnock Creek alluvial fan, SKP2, or Greenhouse areas, which may reflect a combination of mass loss in the regional groundwater discharge zone to surface water, as well as mixing with recharging water along the flowpath and within the Chauncey Creek alluvial fan.

1.5 Swift Creek Watershed

A summary of 2021 groundwater monitoring and sampling results for the Swift Creek watershed is presented in Table H with references to supporting information (Drawings, Figures, Tables, and Appendices).

Table H: Summary of 2021 Groundwater Monitoring and Sampling Results for Swift Creek Watershed

Hydrogeological Information		Description	Reference
Monitoring Locations	Relevant FRO SSGMP	FR_MW18-02	Drawing FR-02 Table FR-01
	Relevant Monitoring Wells from Other Programs[a]	FR_MW20-01S/D, FR_MW20-02S/D, FR_MW20-03S/D	
	Relevant Surface Water Monitoring Stations[b]	GH_SC1H, FR_SCOUT	
	Relevant Seep Monitoring Locations[b]	FR_SCRDSSEEP1	
Physical Hydrogeology	Groundwater Elevation Trends	› Groundwater elevations exhibit minimal seasonality and fluctuated by approximately 0.4 m in 2021.	Table FR-02 Drawing FR-04 Figure FR-31
	Hydraulic Gradients and Flow Direction	› The SSGMP network in the Swift Creek watershed currently consists of a single monitoring well. Therefore, there are insufficient data to assess vertical and lateral gradients. However, the lateral gradient is inferred to be directed east-northeast, towards the Fording River Valley bottom.	
Chemistry	2021 SSGMP/RGMP Order Constituents Results	› Dissolved Selenium – greater than the primary and secondary screening criteria in each sample. › Nitrate-N and Sulphate – greater than the primary screening criteria in each sample.	Table I Tables FR-03 to FR-05 Drawings FR-17 to FR-20 Figures FR-32 to FR-35
	Non-Order Mine-Related and Naturally Occurring Constituents	› **Concentrations greater than primary screening criteria:** – Lithium – greater than the primary screening criteria in each sample. › Lithium was concluded to be unrelated to mining in the BGA completed for the 2020 RGMP Update (SNC-Lavalin, 2020a). › All other constituents were less than primary screening criteria.	Tables FR-03 and FR-04
	Mann-Kendall Trend Analysis	› There is insufficient dataset to evaluate trends via Mann-Kendall Analyses.	Not Applicable

Notes:
[a] – Relevant monitoring wells from other programs are those in the area that are under evaluation for potential inclusion in the SSGMP and/or RGMP.
[b] – Relevant surface water stations and seep monitoring locations are as determined in the 2021 SSGMP Update (SNC-Lavalin, 2021a), and represent a sub-set of the surface water and seepage monitoring locations present at FRO and within Study Area 1.

A summary of OC compared to primary screening criteria for the wells in the Swift Creek watershed is presented below in Table I.

Table I: FRO – Summary of OC compared to Primary Groundwater Screening Criteria in the Swift Creek Watershed

Parameter[1,2,3] / Well ID	Nitrate-N (mg/L)				Sulphate (mg/L)				Dissolved Cadmium (µg/L)				Dissolved Selenium (µg/L)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
FR_MW18-02	NS	17.1	23.0	116	NS	1,240	1,390	1,190	NS	-	-	-	NS	***345***	***282***	***226***
CSR AW	400				1,280 – 4,290[4]				0.5 – 4[4]				20			
CSR IW	n/a				n/a				5				20			
CSR LW	100				1,000				80				30			
CSR DW	10				500				5				10			

Notes:
[1] Primary screening criteria: CSR standards for **Aquatic Life (AW)**, Drinking Water (DW), Livestock (LW) and *Irrigation (IW)*.
[2] '–' denotes result is below primary screening criteria.
[3] Where a duplicate was collected, or if more than one sample was collected in a quarter, the higher concentration is provided.
[4] Standard varies with hardness.
'NS' denotes sample not collected.

Mann-Kendall trend analyses were not completed for monitoring well FR_MW18-02 since the seven samples threshold to complete the analyses has not yet been met.

1.5.1 Discussion

Monitoring well FR_MW18-02 was installed in 2018 and recommended to be added to the SSGMP in the 2021 SSGMP Update to monitor the potential loading of OC to the Fording River Valley bottom from the Swift Creek sediment ponds (SNC-Lavalin, 2021a). It is screened between 3.6 and 5.1 mbgs and completed within till or fill comprising re-worked till. The well was selected over other wells recently installed in the vicinity of the ponds (FR_MW20-01S/D, FR_MW20-02S/D, FR_MW20-03S/D) due to higher concentrations in the groundwater sample collected in December 2020, the only available data at the time. Concentrations of dissolved selenium, nitrate-N, and sulphate remained elevated and greater than the primary screening criteria in 2021, and the concentrations of selenium and sulphate are higher than in any wells included in the SSGMP or RGMP except for those screened in source areas in Henretta Creek (Tables FR-03 and FR-04; Figures FR-32 to FR-34). The concentrations in groundwater were lower than in the Swift Creek Sediment Ponds and at the outlet to the Fording River (FR_SCOUT), except in June when the surface waters may have been diluted post-freshet. The Se:SO_4 (S) ratios indicate the groundwater is influenced by spoils, similar to the surface water in the ponds and outlet (Figure FR-35).

The monitoring results indicate there is likely infiltration from the ponds to groundwater, which is supported by the water levels (the elevations in the adjacent Primary Sediment Ponds are approximately 3 m higher than those at FR_MW18-02). A study is currently underway to quantify seepage losses from the pond toward the Fording River, and the recently installed monitoring wells in the area will be evaluated for potential inclusion in the SSGMP when that study has concluded.

The Swift Creek sediment ponds also receive mine-influenced drainage from the Cataract Creek watershed, which was diverted to Swift Creek in August 2019. Potential seepage to groundwater and transport to the Fording River Valley bottom from the Cataract Creek Sediment pond is also currently being investigated.

2 Recommendations

New recommendations identified in the SSGMP for FRO and the RGMP Study Area 1 are presented in Table J below, and existing recommendations are presented in Table K. Appendix II of the main report provides recommendations related to FRO from the 2020 RGMP Update (SNC-Lavalin, 2020a) and the 2020 Annual Report (SNC-Lavalin, 2021b).

Table J: Summary of New Recommendations for FRO SSGMPs and RGMP Study Area 1

Program	Recommendation
Site-Specific Groundwater Monitoring Programs	
FRO SSGMP	A local background well should be installed at FRO to replace the mine-influenced FR_HMW5 if a suitable location can be identified.
	An attempt should be made to retrieve the tubing that is stuck in monitoring well FR_HMW2. If this is not possible, the well should be decommissioned and a new well installed within spoils in the Henretta Creek watershed to replace it.
	An attempt should be made to complete another hydraulic conductivity test at monitoring well FR_HMW1S, where recovery was too rapid and there was insufficient displacement for analysis in 2011.
	A datalogger should be re-installed in monitoring well FR_MW_NTPSE, which had it's datalogger pulled when monitoring ceased as part of the previous program.
	Consideration should be given to the need for installing new monitoring wells within overburden and bedrock in Study Area 1 once recently installed monitoring wells have been evaluated for inclusion in the FRO SSGMP and/or RGMP.
	Monitoring wells RG_MW_FR1A/B/C should be incorporated into the SSGMP and RGMP to eventually replace supply well FR_GH_WELL4. Addition of these new wells will provide water quality and groundwater elevation data over the entire overburden thickness in the Fording River valley-bottom. However, sampling of monitoring well FR_GH_WELL4 should continue for a period of time until a relationship between the water quality at FR_GH_WELL4 and RG_MW_FR10A/B/C is established.
Regional Groundwater Monitoring Program	
Study Area 1	Add monitoring wells RG_FR7A/B and RG_FR8A/B/C to the RGMP as they are located along the inferred flow paths between source areas (Kilmarnock Alluvial fan and Fording River) and the regional groundwater discharge zone.

Table K: Summary of Existing Recommendations for FRO SSGMP and RGMP Study Area 1

Program	Recommendation
Site-Specific Groundwater Monitoring Programs	
FRO SSGMP	Nested monitoring wells should be installed in the Henretta Creek Valley bottom west of Henretta Lake to investigate a potential down-valley pathway of mine-influenced groundwater sourced from the spoils and backfilled pits that may bypass the lake and creek, as well as the hydrogeologic conditions in bedrock in the Henretta Creek Valley.
	Review findings of the ongoing investigation, once completed, to understand potential stratification of OC in Henretta Lake.
	Additional monitoring wells should be installed in the area of FR_POTWELLS and instrumented with dataloggers to investigate the hydraulic connection between the supply wells and the Fording River.
	Monitoring wells should be installed in the area between FR_POTWELLS and Clode Creek and in the area west of the Clode Creek ponds, where groundwater quality is unknown.
	Historic monitoring wells FR_BH-03-16, FR_BH-04-16, and FR_09-03-A/B south of the STP should be assessed for suitability of monitoring and sampling. If the wells are in good condition, FR_BH-03-16 and FR_BH-04-16 should be monitored and sampled to assess the source of OC in this area, while wells FR_09-03-A/B should be monitored and sampled to assess whether OC are similarly attenuated immediately downgradient of the STP east of FR_09-04-A/B.
	Monitoring wells recently installed in the Henretta Creek Valley, Turnbull Bridge Spoil area, Clode Creek area, Lake Mountain Creek area, Eagle pond area, Kilmarnock Creek area, Swift Creek and Cataract Creek Sediment Pond areas, and downgradient of the FRO operational area (MBI wells) should be evaluated for potential inclusion in the SSGMP once interpretation of the data have been published.
Regional Groundwater Monitoring Program	
Study Area 1	Potential inclusion of wells installed in support of the MBI other than RG_MW_FR1A/B/C, RG_MW_FR7A/B and RG_MW_FR8A/B/C (newly recommended to be added) should be assessed once the interpretive reporting for that program has been completed.

3 References

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SNC-Lavalin Inc. 2021c. Mass Balance Investigation Hypothesis 1 Status Update and Findings to Date. Prepared for Teck Coal Limited. January 28, 2021.

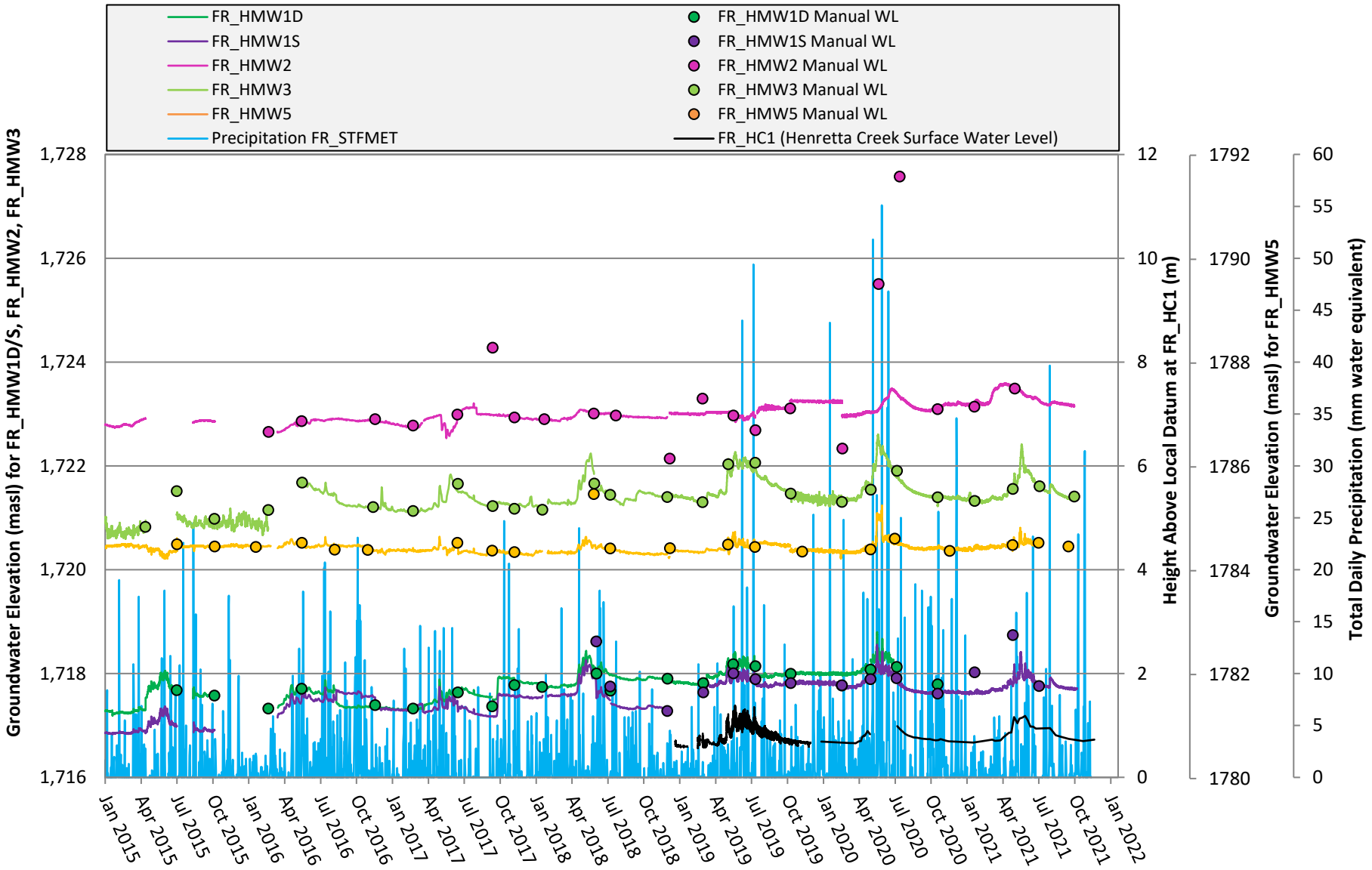
SRK Consulting Inc., 2018. Work Plan for the Evaluation of Main Stem Nitrate and Selenium Mass Reduction Mechanisms in the Fording and Elk Rivers. Memorandum prepared for Teck Coal Limited. Dated May 14, 2018.

Teck Coal Limited. 2018. Presentation: Modelling Nitrate release in the Elk Valley. Dated November 28, 2018.

Teck Coal Limited. 2019. Operations Application, Fording River Operations, Active Water Treatment Facility South. Application submitted to Ministry of Energy, Mines and Petroleum Resources and Ministry of Environment and Climate Change Strategy. Dated November 2019.

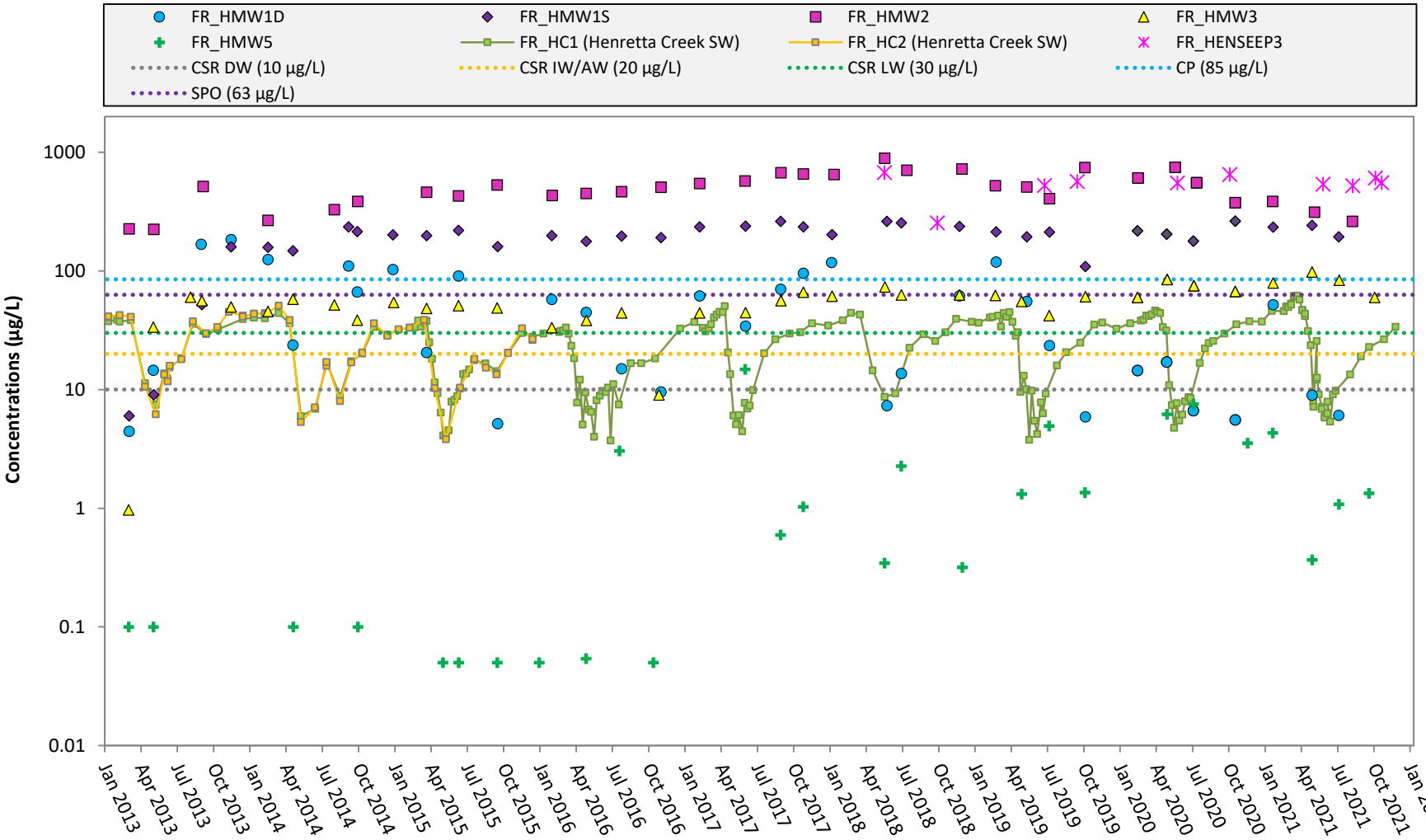
Figures:

Figure FR-01: Henretta Creek Valley - Hydrograph



Notes: Discrepancy between manual water level measurements and datalogger data. Water levels for FR_HMW1D/S, FR_HMW2 and FR_HMW3 were taken daily after May 2016 as opposed to hourly measurements prior to February 2016. Continuous water level data was compensated using barologger installed at STPSW Baro.

Figure FR-02: Henretta Creek Valley - Dissolved Selenium



Note: For concentrations measured below the method detection limit, the method detection limit (0.05 µg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure FR-03: Henretta Creek Valley - Sulphate

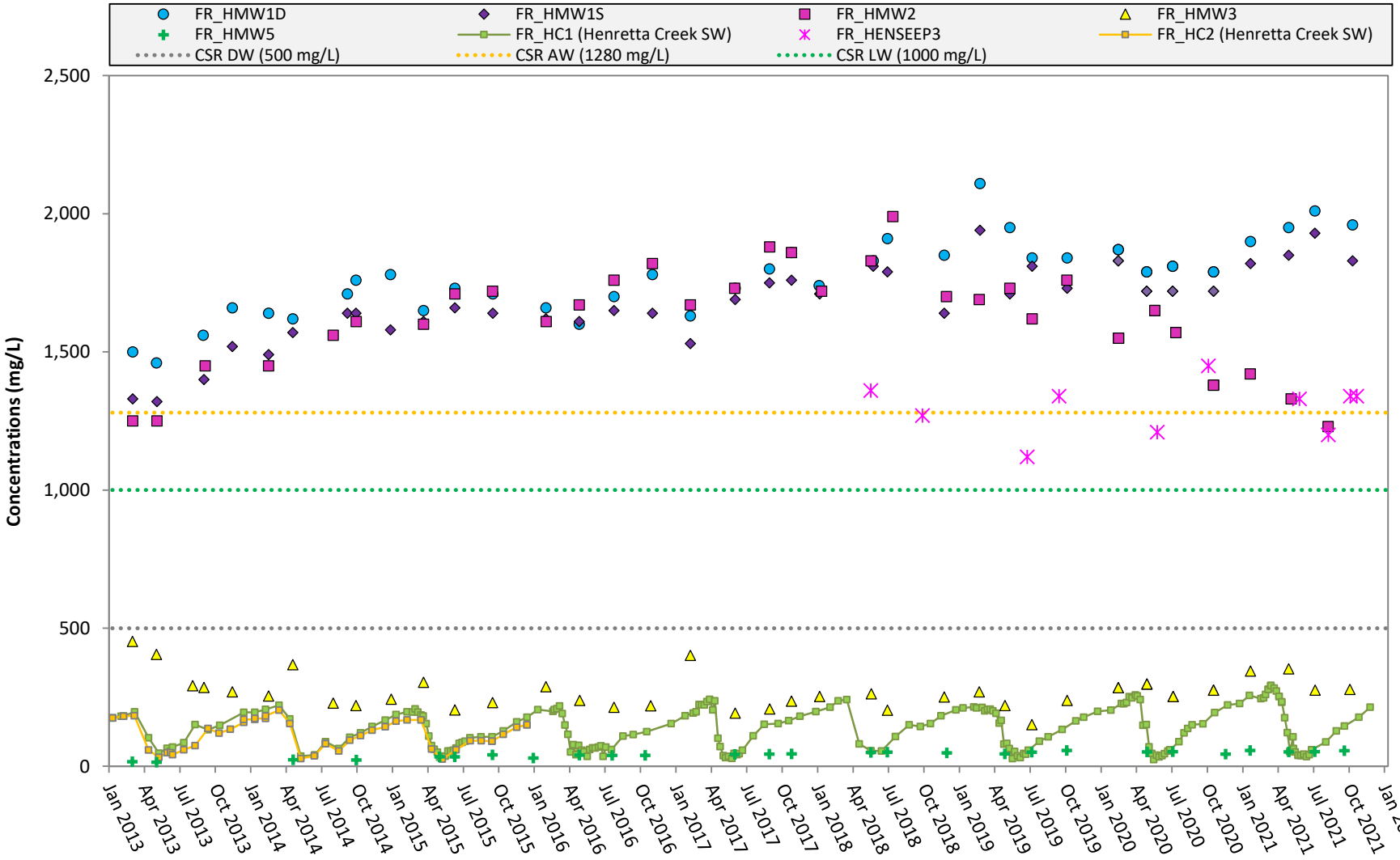
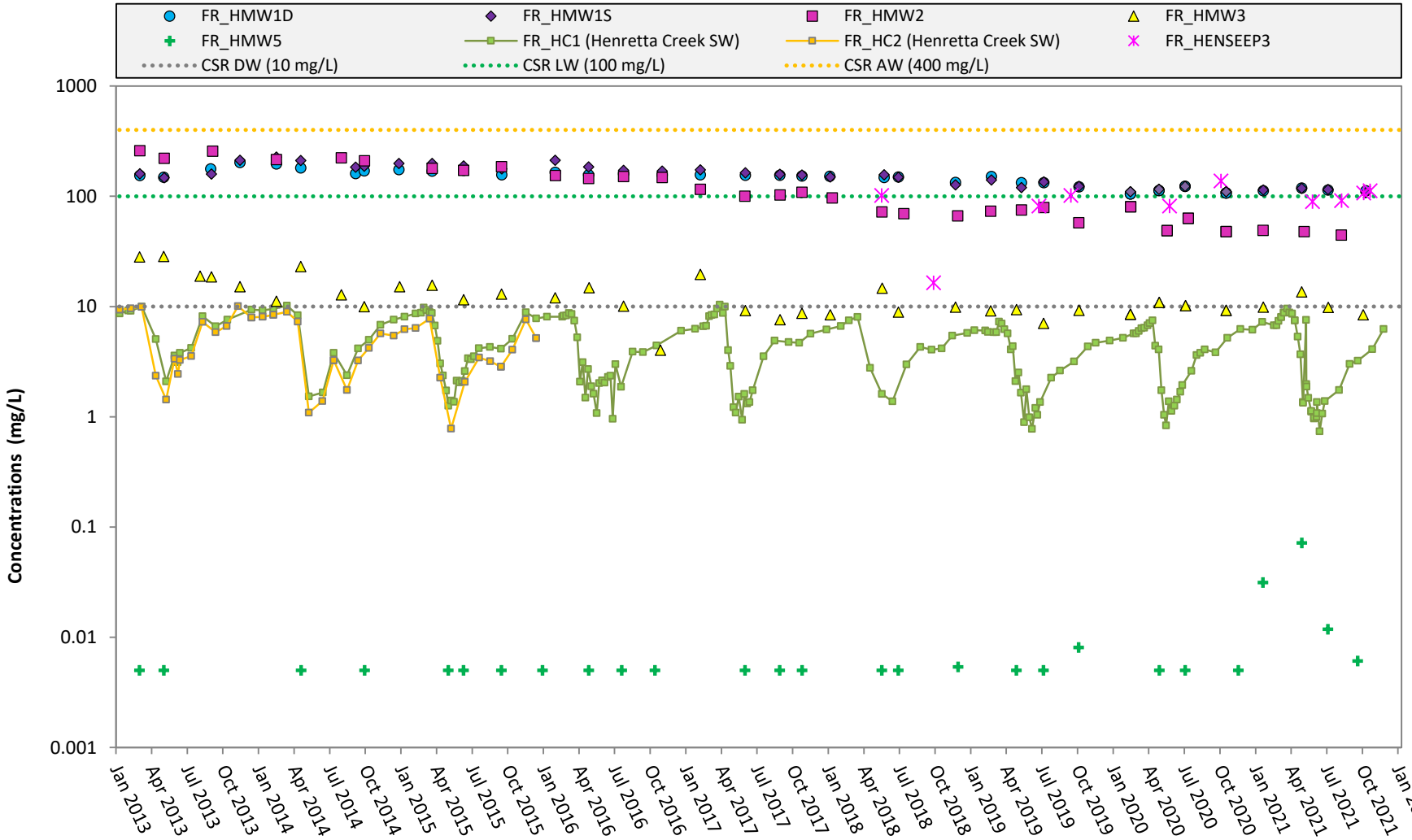


Figure FR-04: Henretta Creek Valley - Nitrate-N



Note: For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure FR-05: Henretta Creek Valley - Se:SO_4 (S)

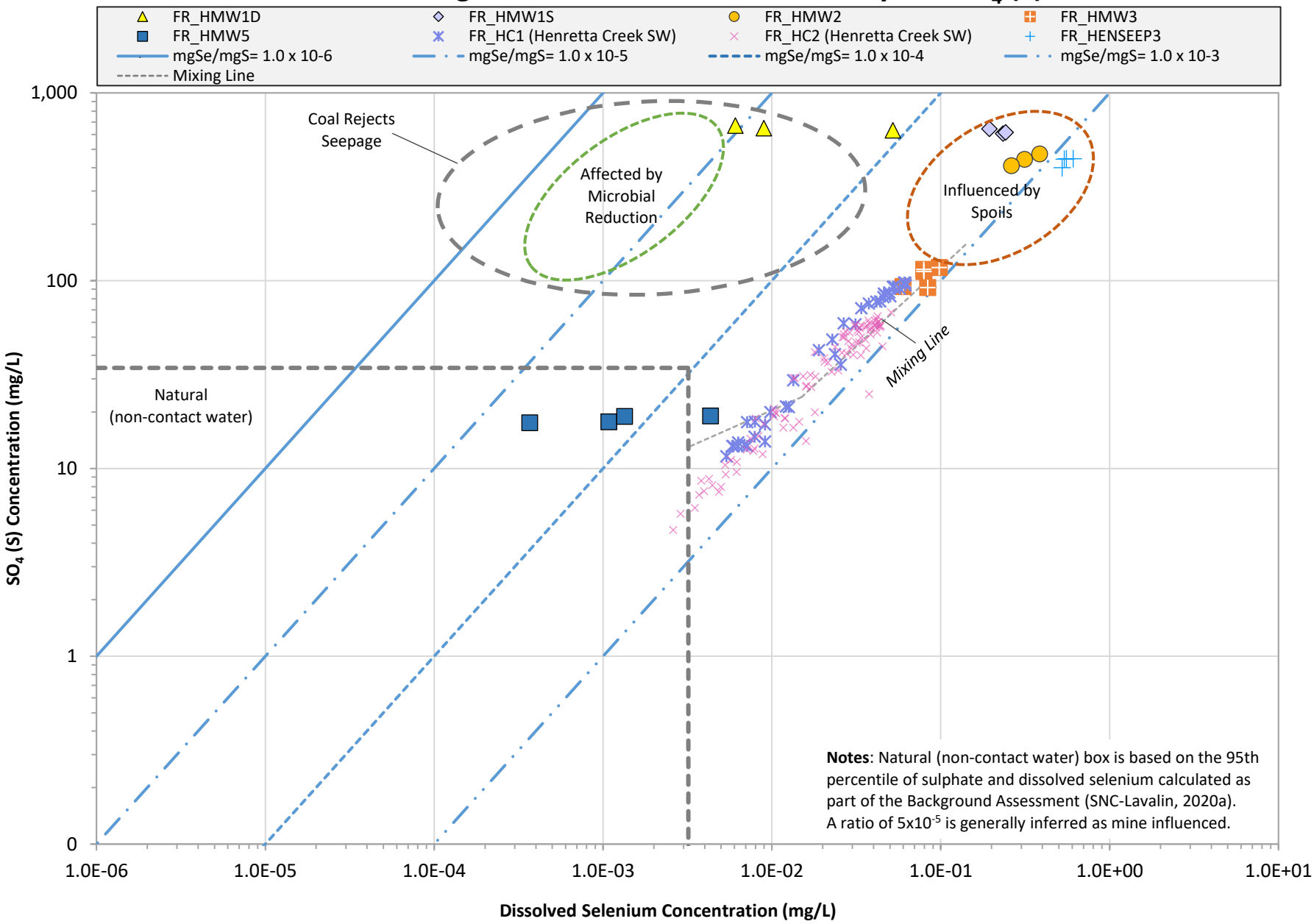
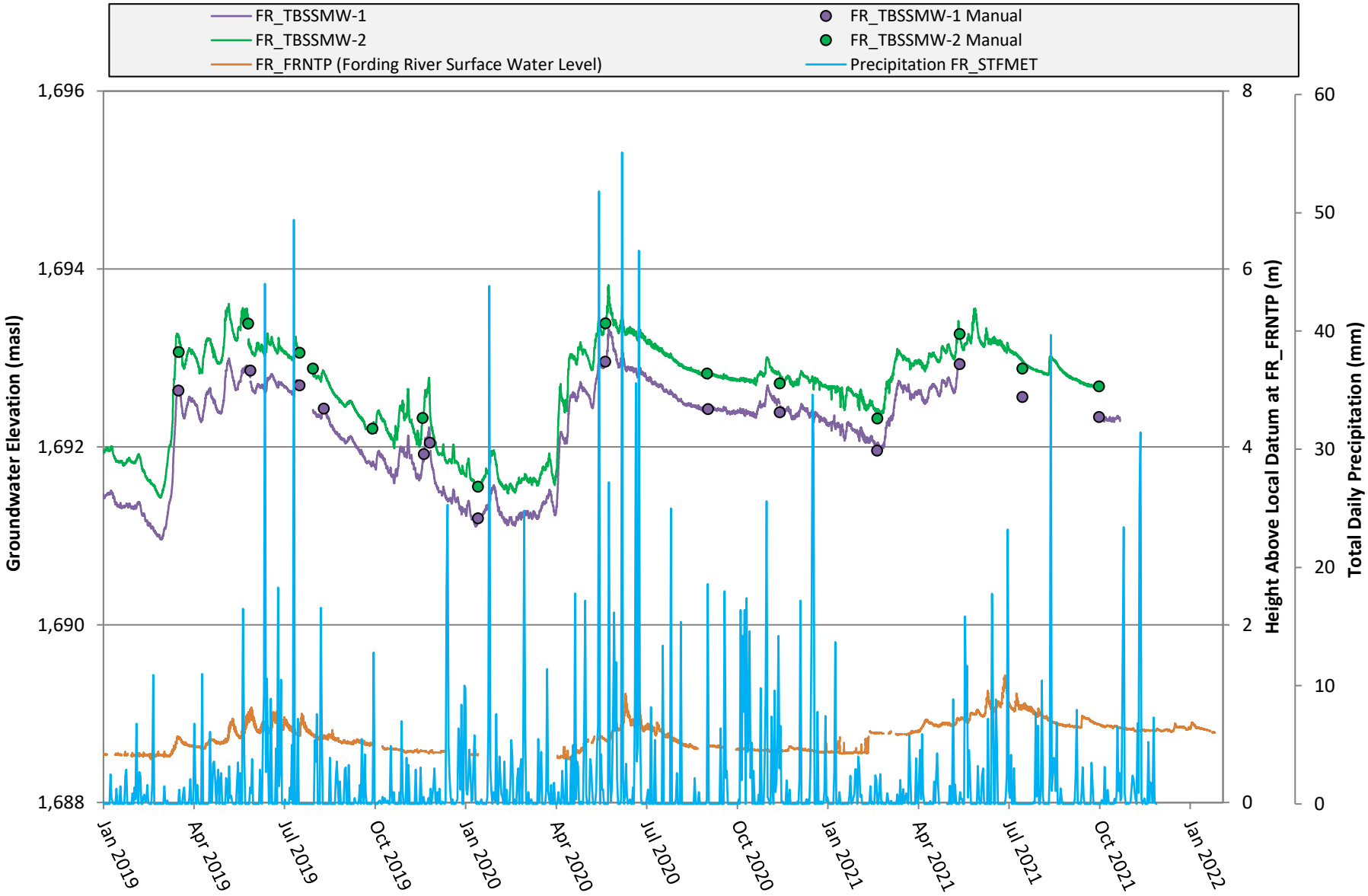
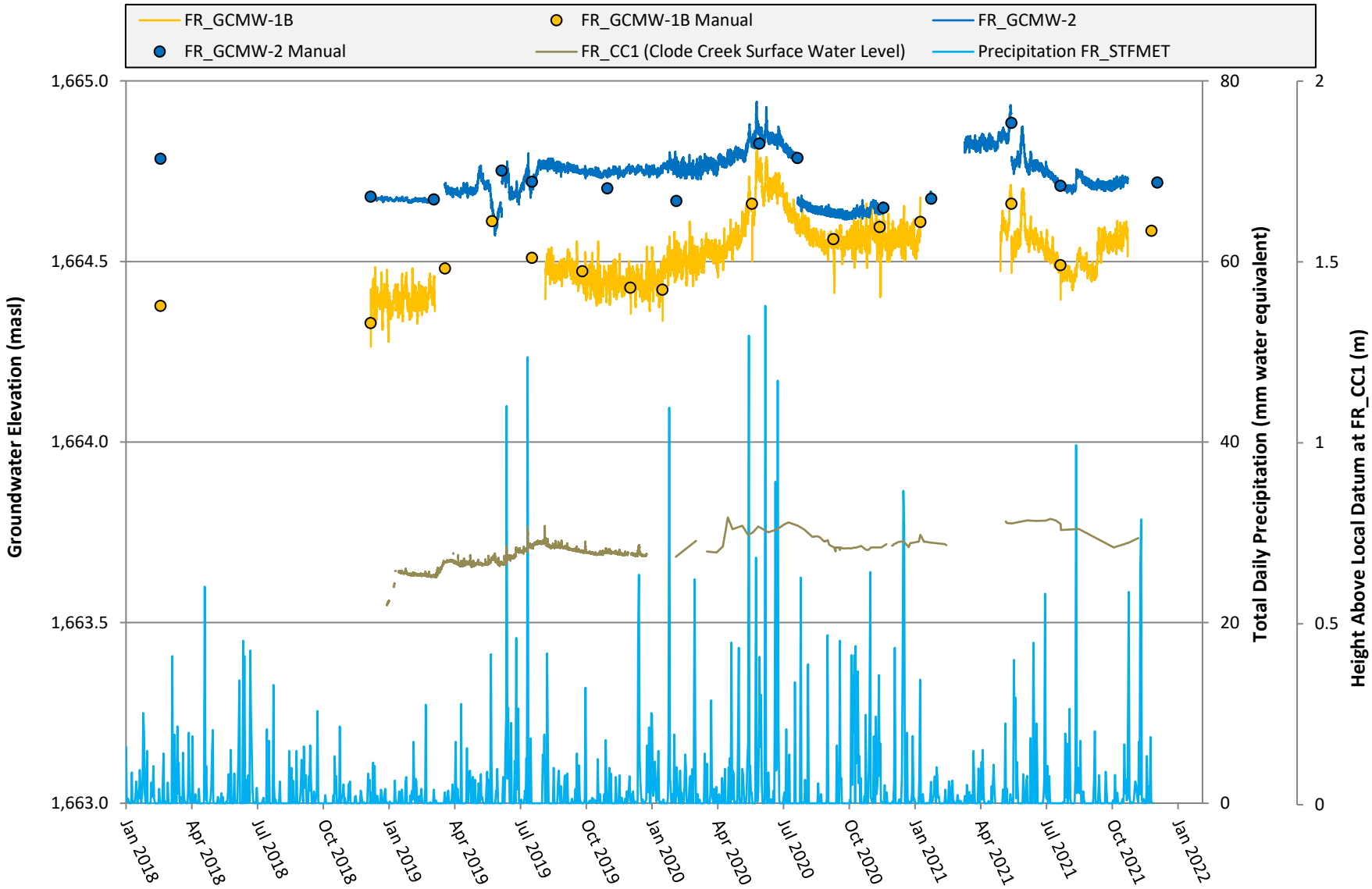


Figure FR-06: Fording River Valley Near Turnbull Bridge Spoil - Hydrograph



Notes: Continuous water level data was compensated using barologger installed at STPSW Baro.
The FR_FRNTP staff gauge was damaged in 2020 and the offset between 2021 and historical data is due to the difference in elevation between the old and new staff gauges.

Figure FR-07: Fording River Valley Near Clode Creek Ponds - Hydrograph



Note: Select data points were removed in winter months where values were not considered to be representative of actual conditions. Continuous water level data was compensated using barologger installed at STPSW Baro.

Figure FR-08: Pumping Rates for FR_POTWELLS

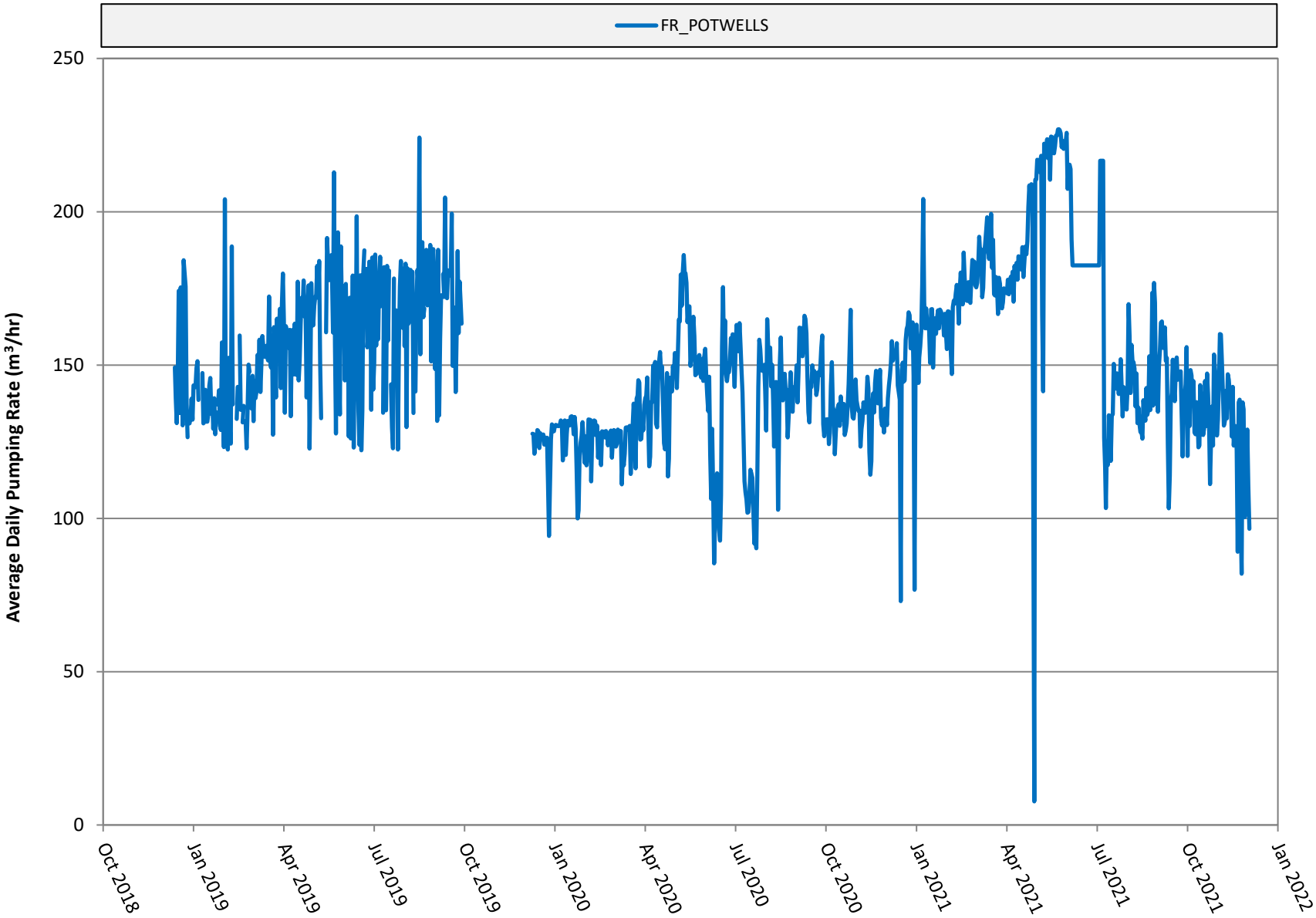
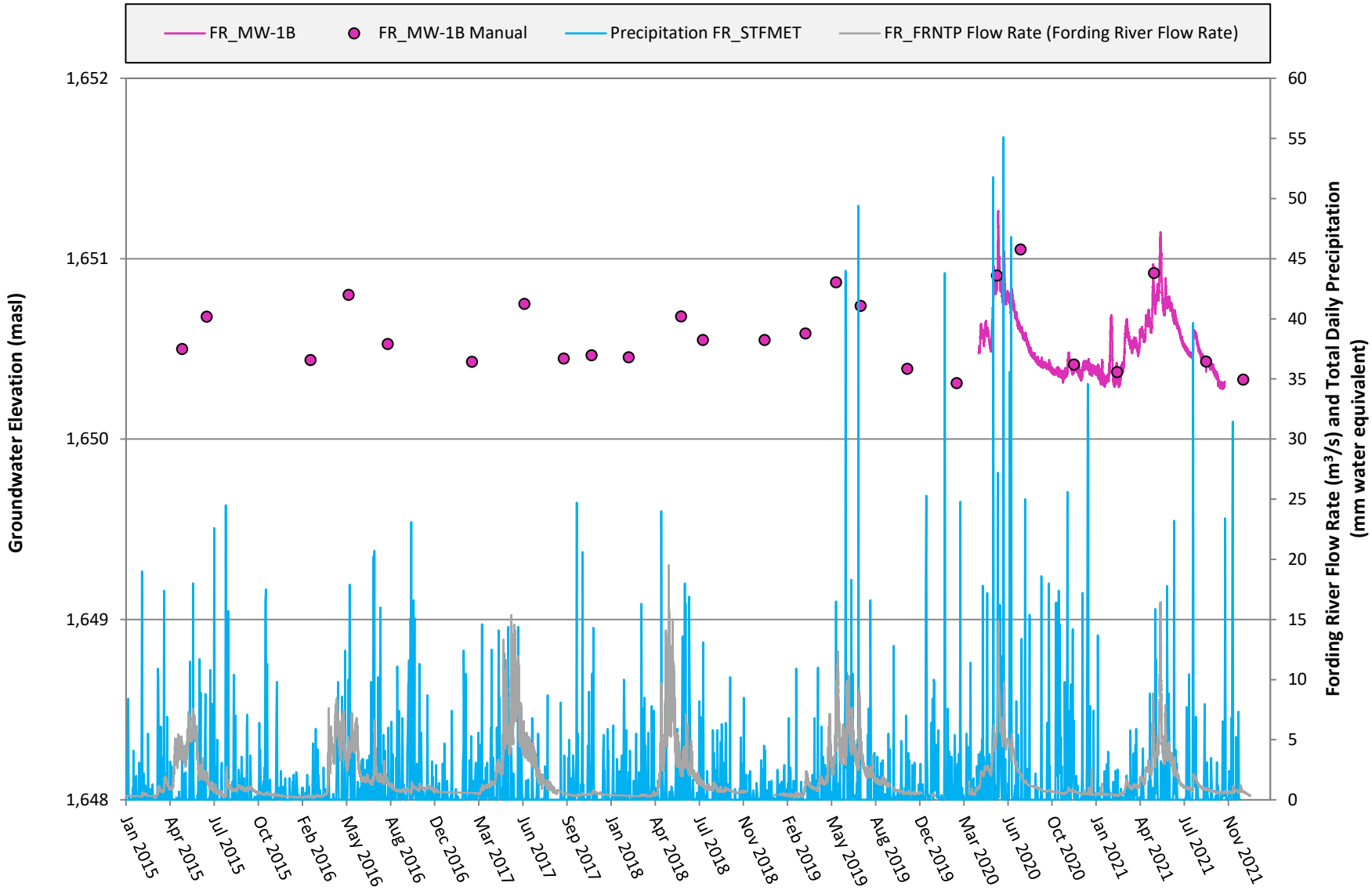
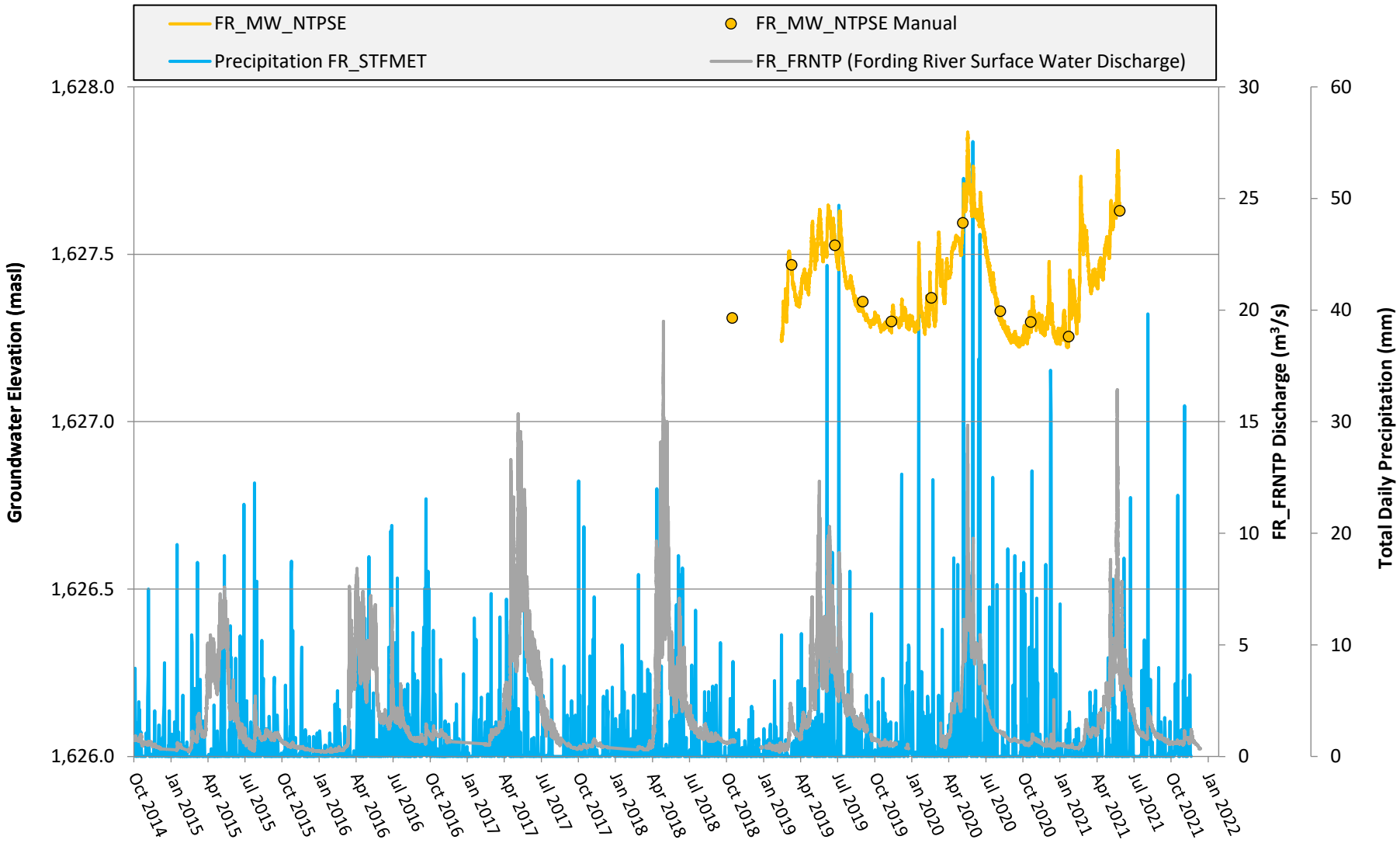


Figure FR-09: Fording River Valley Downstream of Lake Mountain Creek - Hydrograph



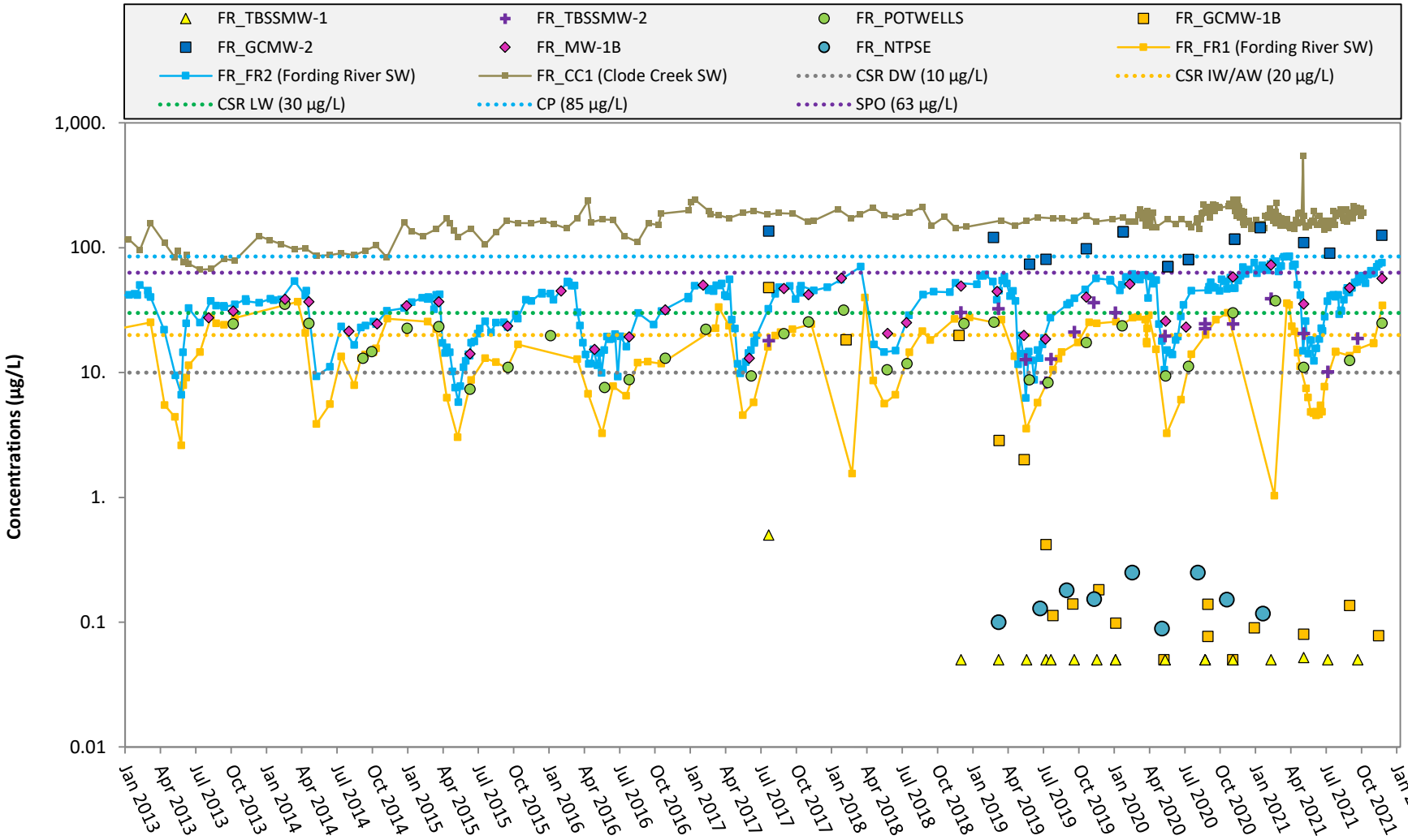
Note: Select data points were removed in winter months where values were not considered to be representative of actual conditions. Continuous water level data was compensated using barologger installed at STPSW Baro.

Figure 10: Fording River Valley Southeast of NTP - Hydrograph



Note: Select data points were removed in winter months where values were not considered to be representative of actual conditions.
Continuous water level data was compensated using barologger installed at STPSW Baro.

Figure FR-11: Fording River Valley North of STP - Dissolved Selenium



Note: For concentrations measured below the method detection limit, the method detection limit (0.05 µg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure FR-12: Fording River Valley North of STP - Sulphate

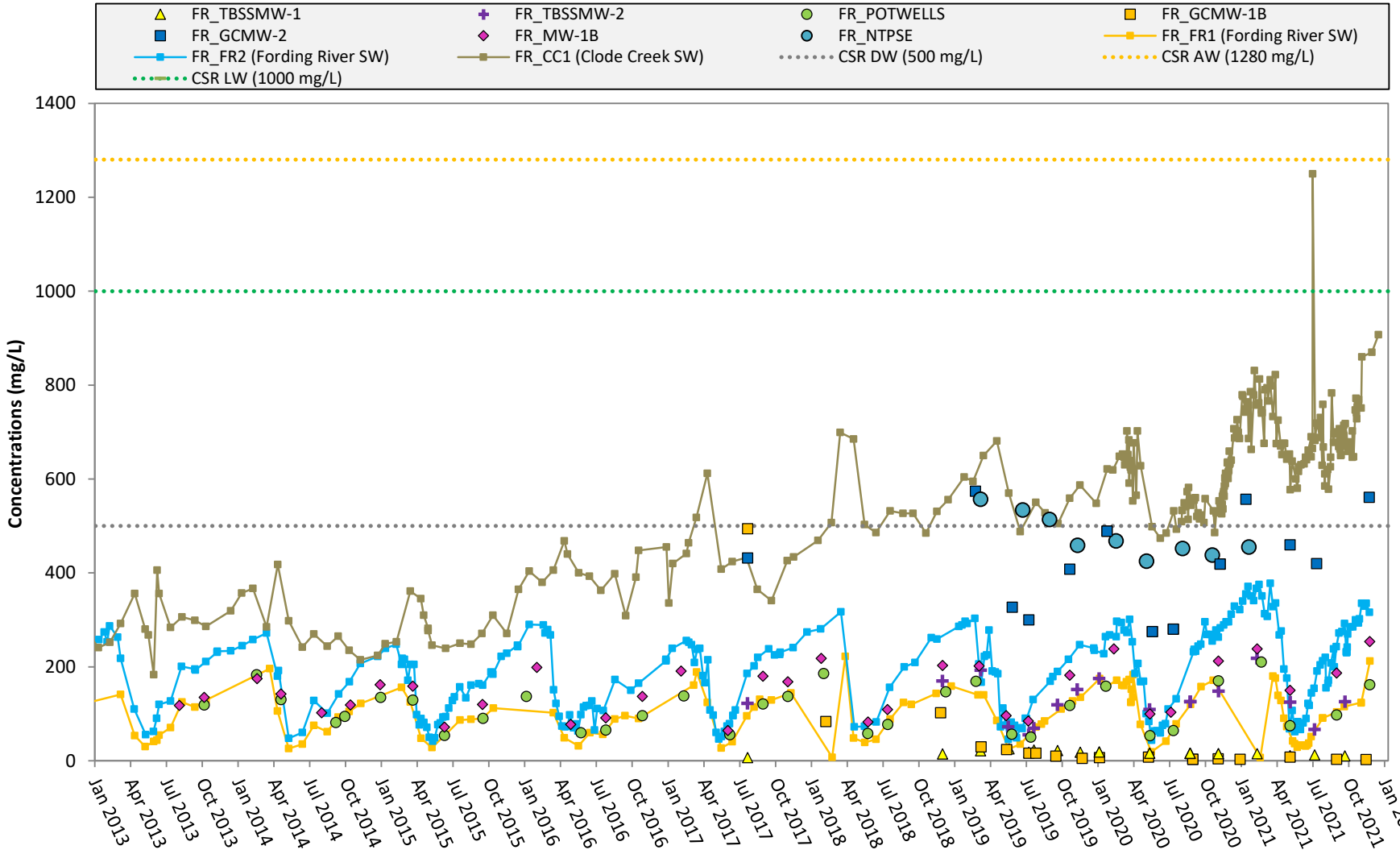
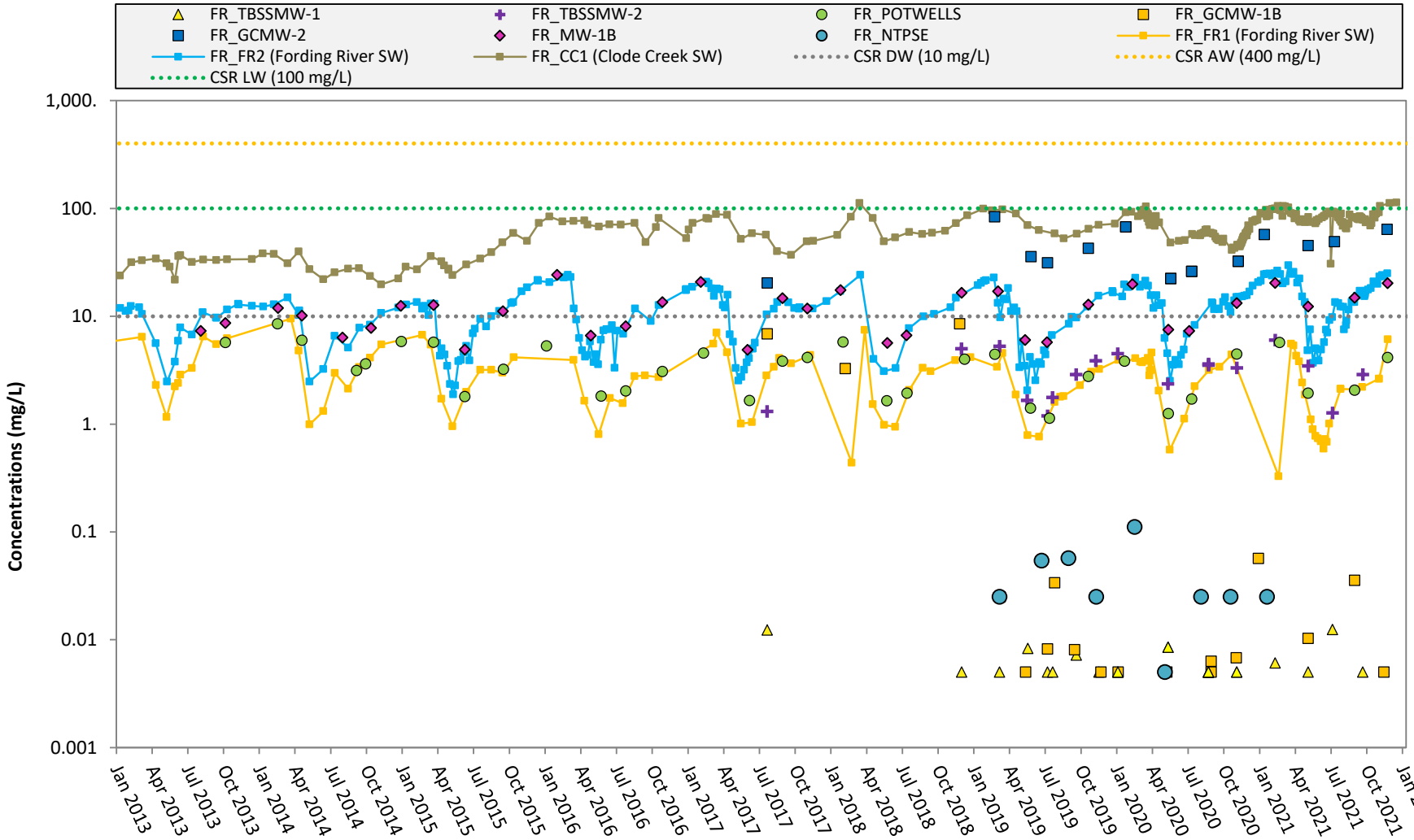


Figure FR-13: Fording River Valley North of STP - Nitrate-N



Note: For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure FR-14: Fording River Valley North of STP - Se:SO_4 (S)

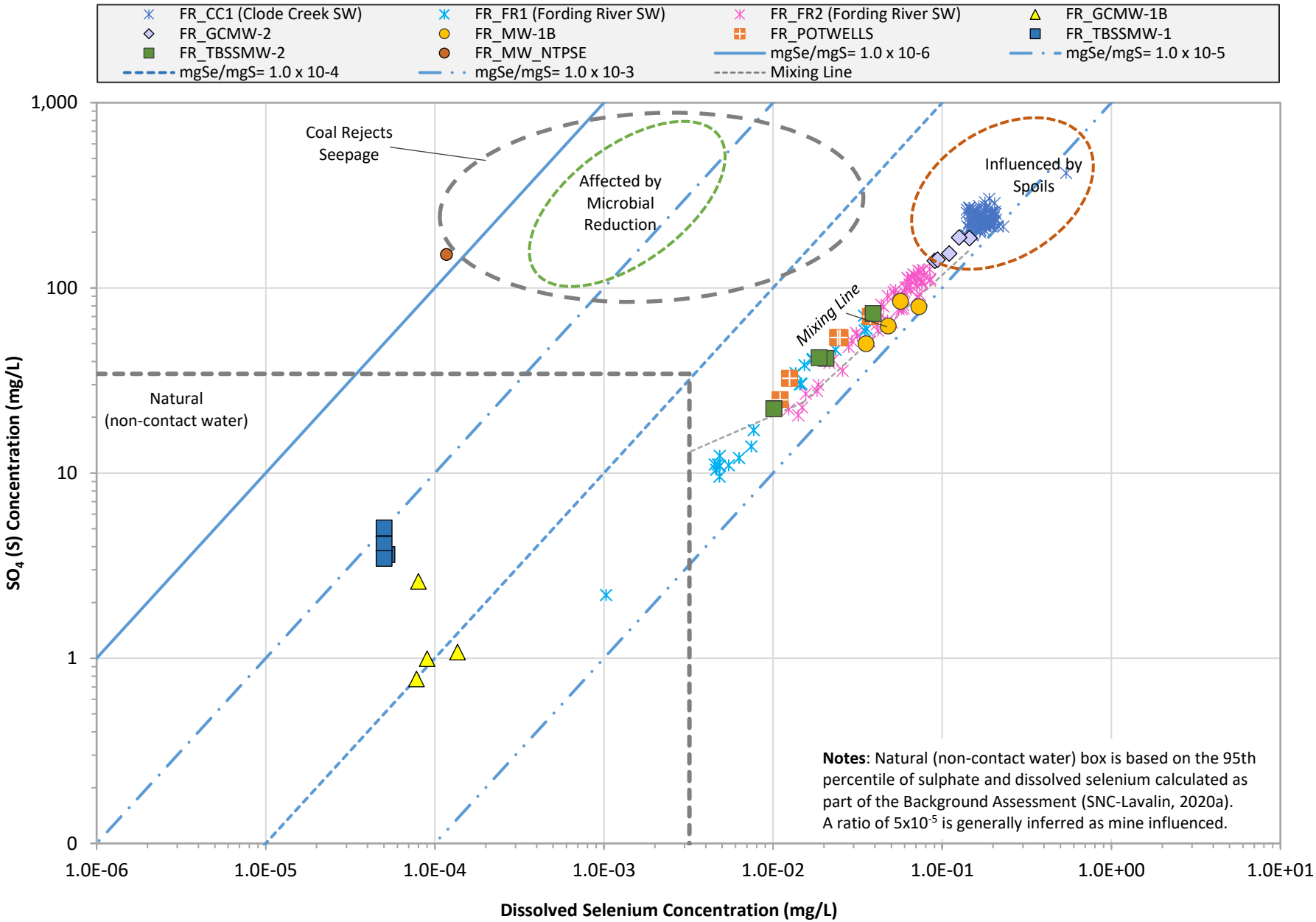
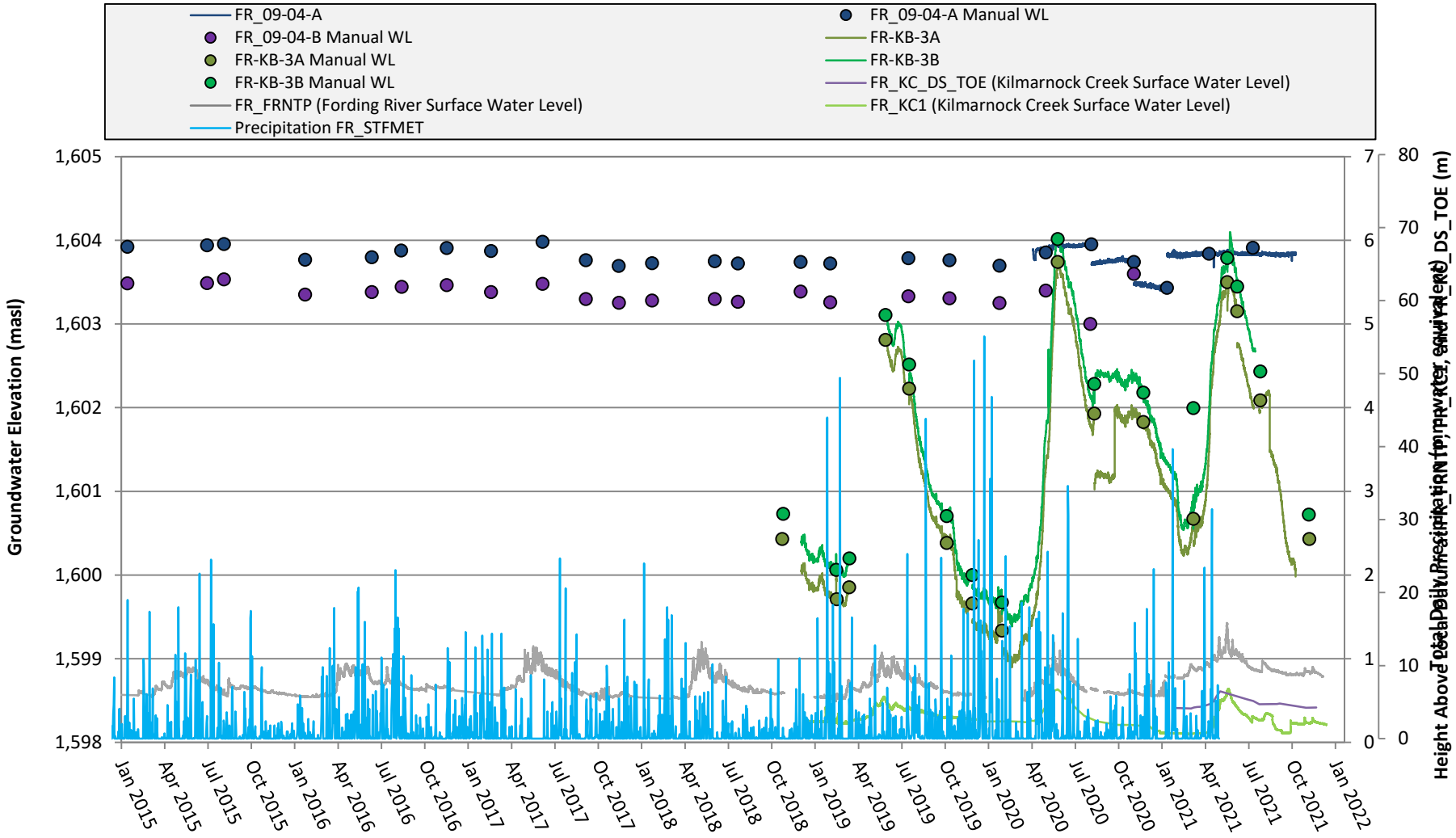
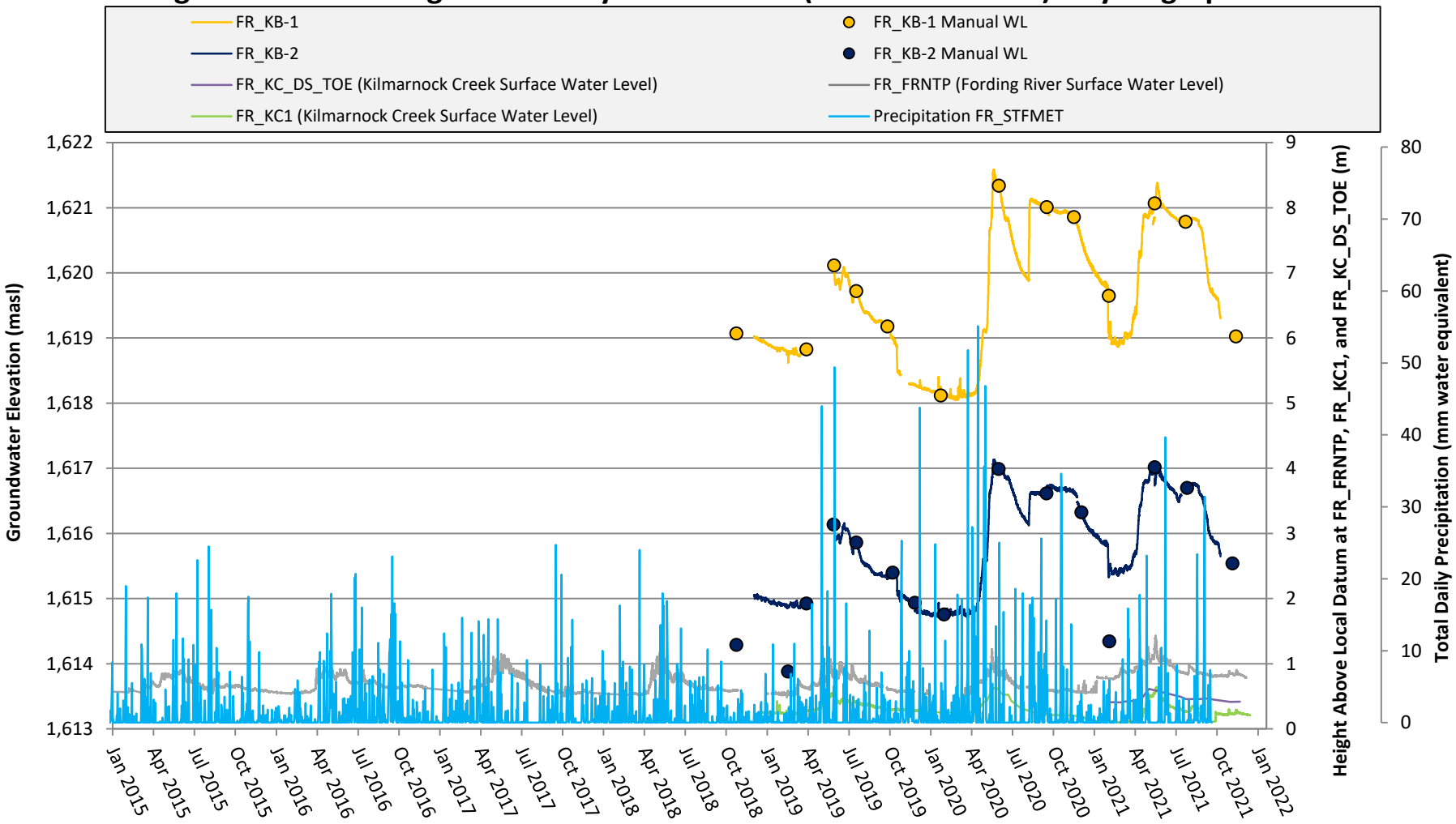


Figure FR-15: Fording River Valley Downgradient of STP - Hydrograph



Note: Select data points were removed in winter months where values were not considered to be representative of actual conditions. Continuous water level data was compensated using barologger installed at STPSW Baro. The FR_FRNTP staff gauge was damaged in 2020 and the offset between 2021 and historical data is due to the difference in elev ation between the old and new staff gauges.

Figure FR-16: Fording River Valley South of STP (Kilmarnock Area) - Hydrograph



Note: Select data points were removed in winter months where values were not considered to be representative of actual conditions. Continuous water level data was compensated using barologger installed at STPSW Baro. The FR_FRNTP staff gauge was damaged in 2020 and the offset between 2021 and historical data is due to the difference in elevation between the old and new staff gauges.

Figure FR-17: Fording River Valley South of STP (Kilmarnock Area) - Dissolved Selenium

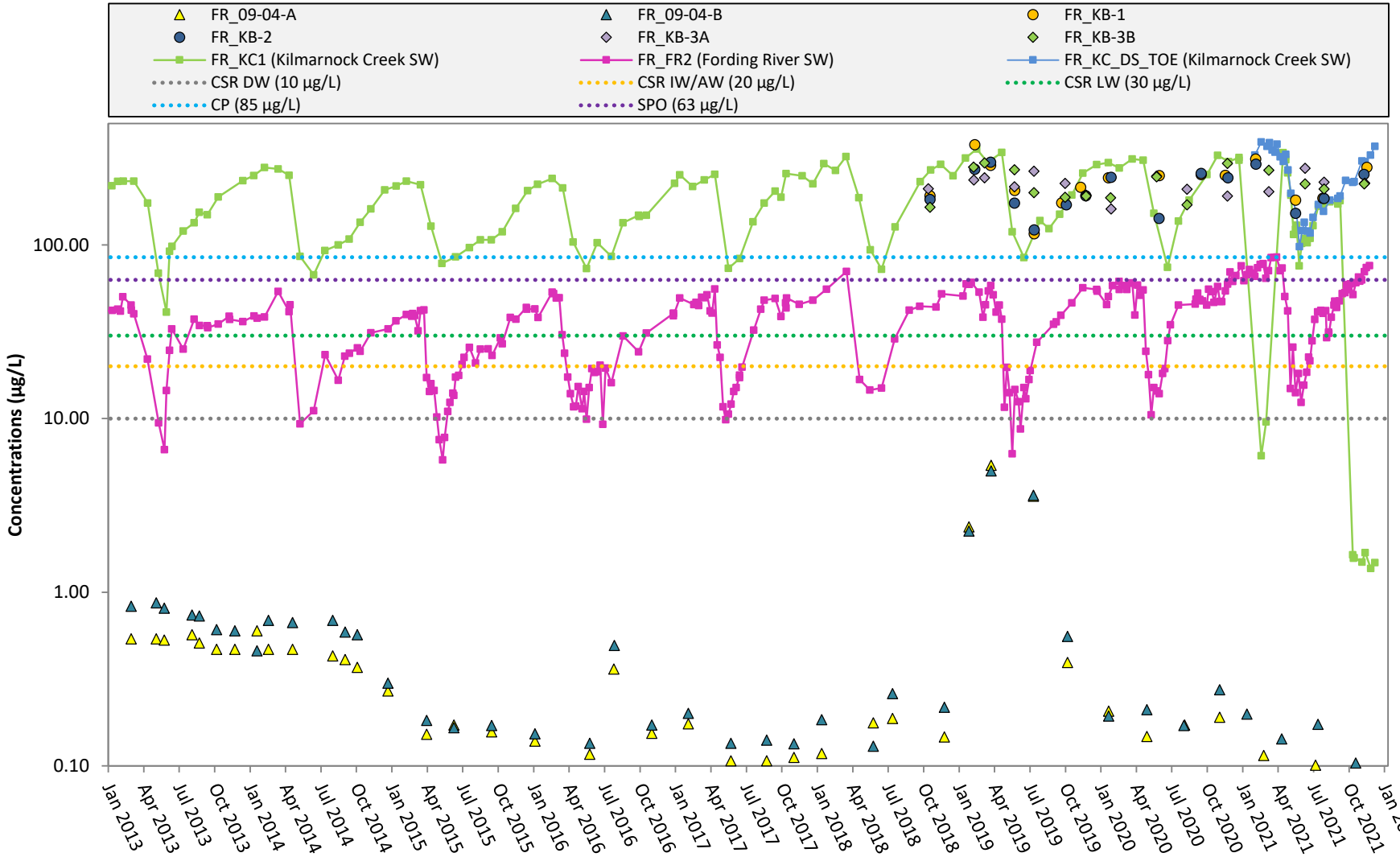


Figure FR-18: Fording River Valley South of STP (Kilmarnock Area) - Sulphate

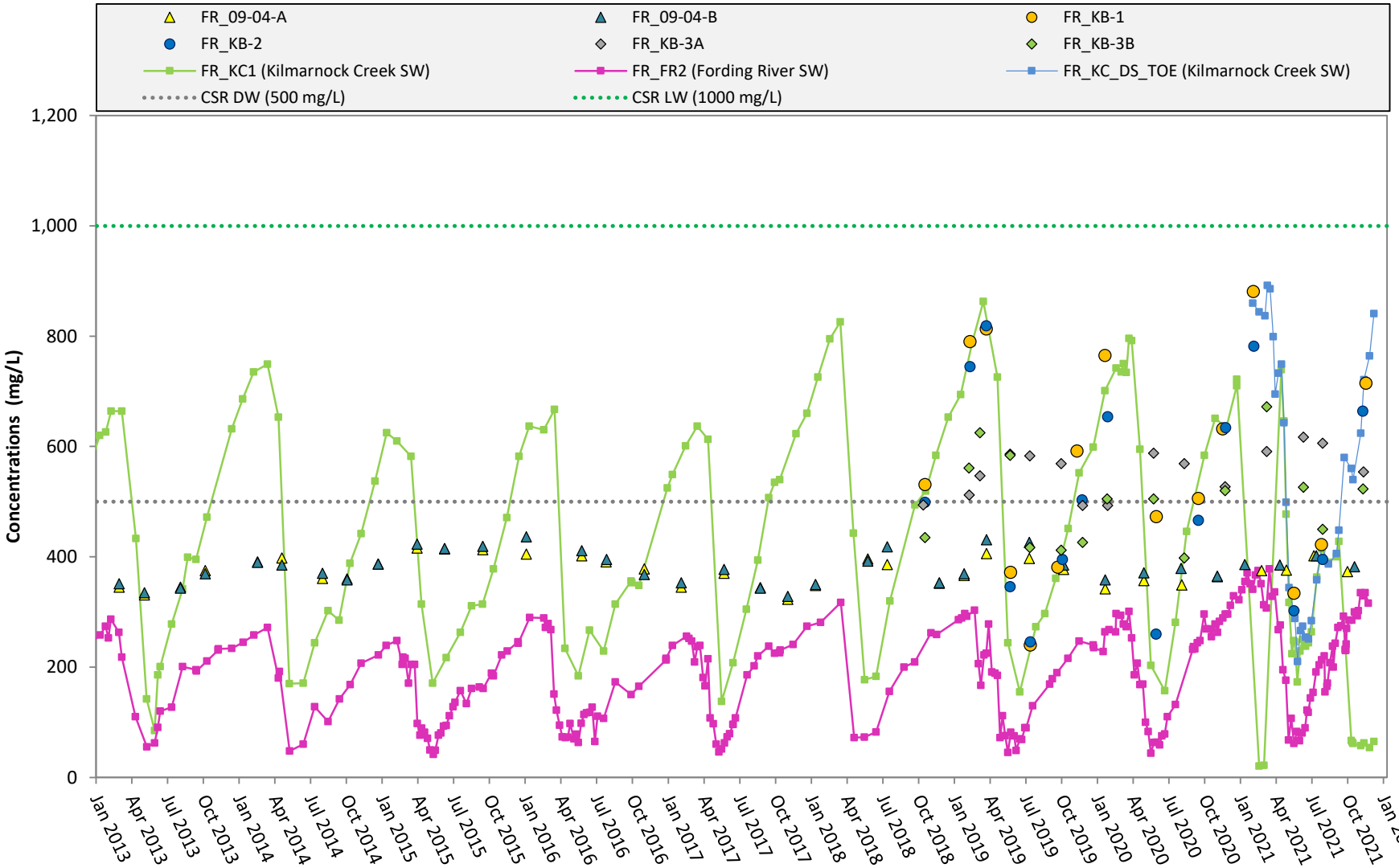
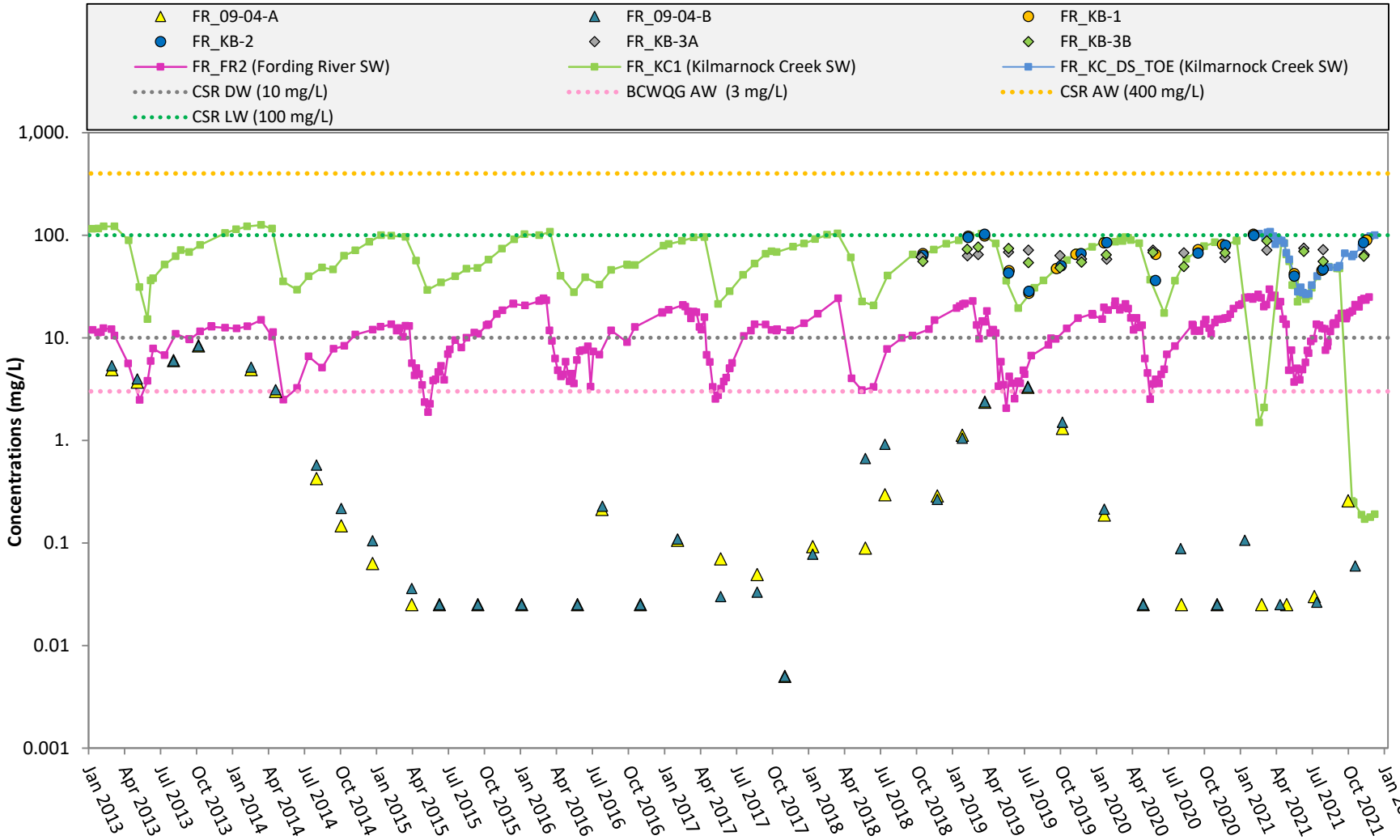


Figure FR-19: Fording River Valley South of STP (Kilmarnock Area) - Nitrate-N



Note: For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes.

Figure FR-20: Fording River Valley South of STP (Kilmarnock Area) - Se:SO_4 (S)

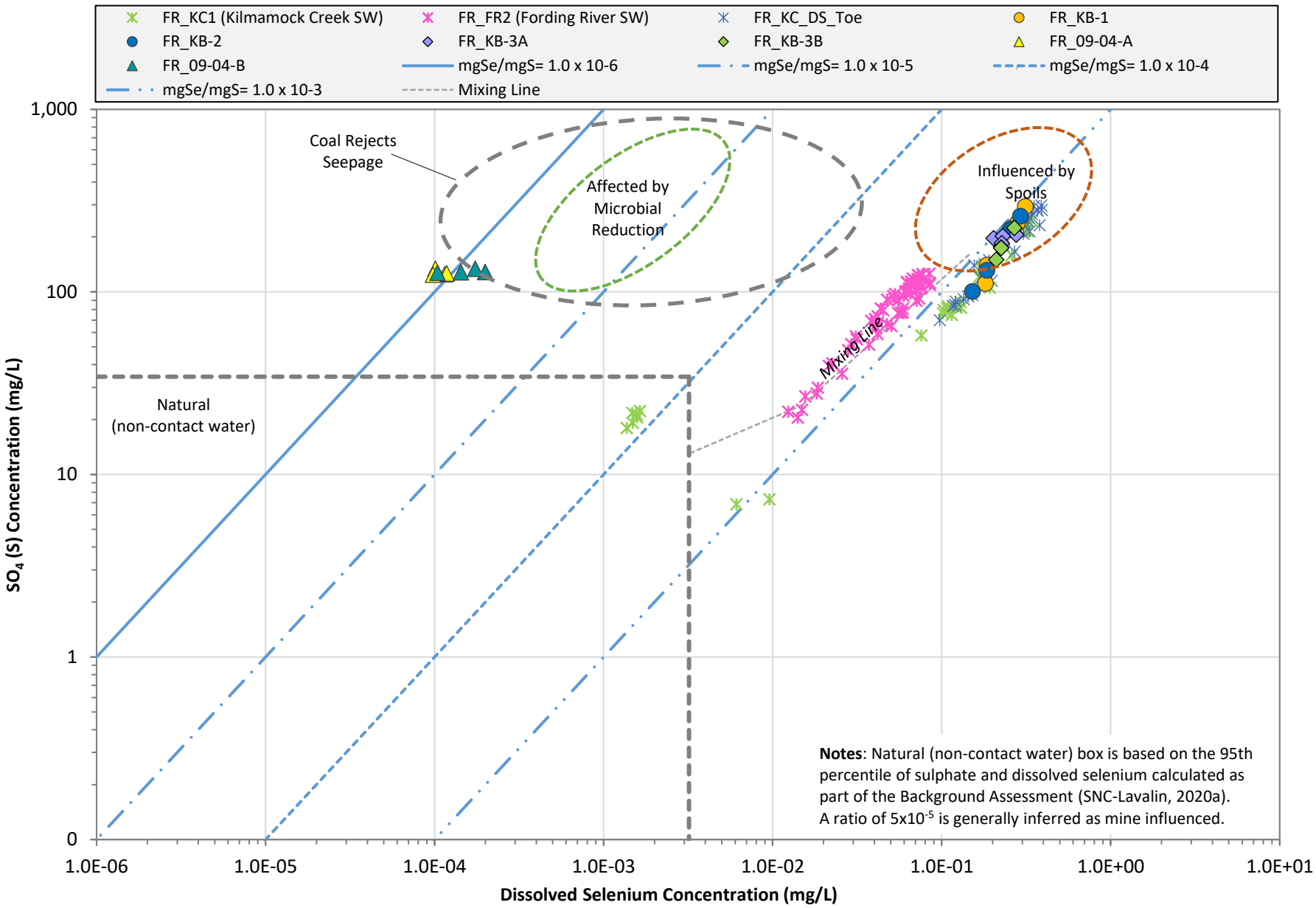
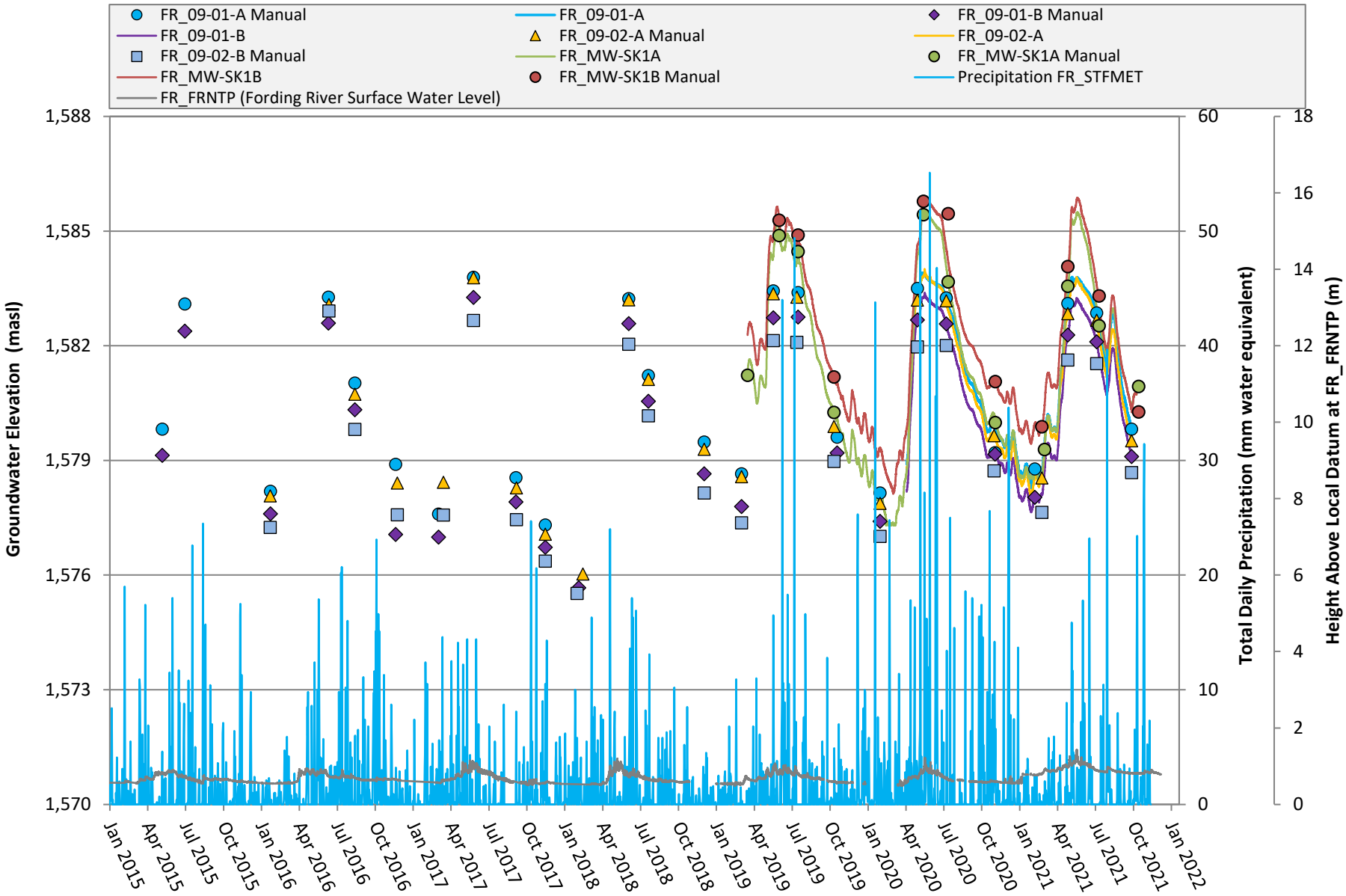


Figure FR-21: Fording River Valley SKP2 Area - Hydrograph



Note: Continuous water level data was compensated using barologger installed at STPSW Baro. 2021 data for FR_FRNTP are preliminary. The FR_FRNTP staff gauge was damaged in 2020 and the offset between 2021 and historical data is due to the difference in elevation between the old and new staff gauges.

Figure FR-22: Fording River Valley SKP2 And Greenhouse Areas - Dissolved Selenium

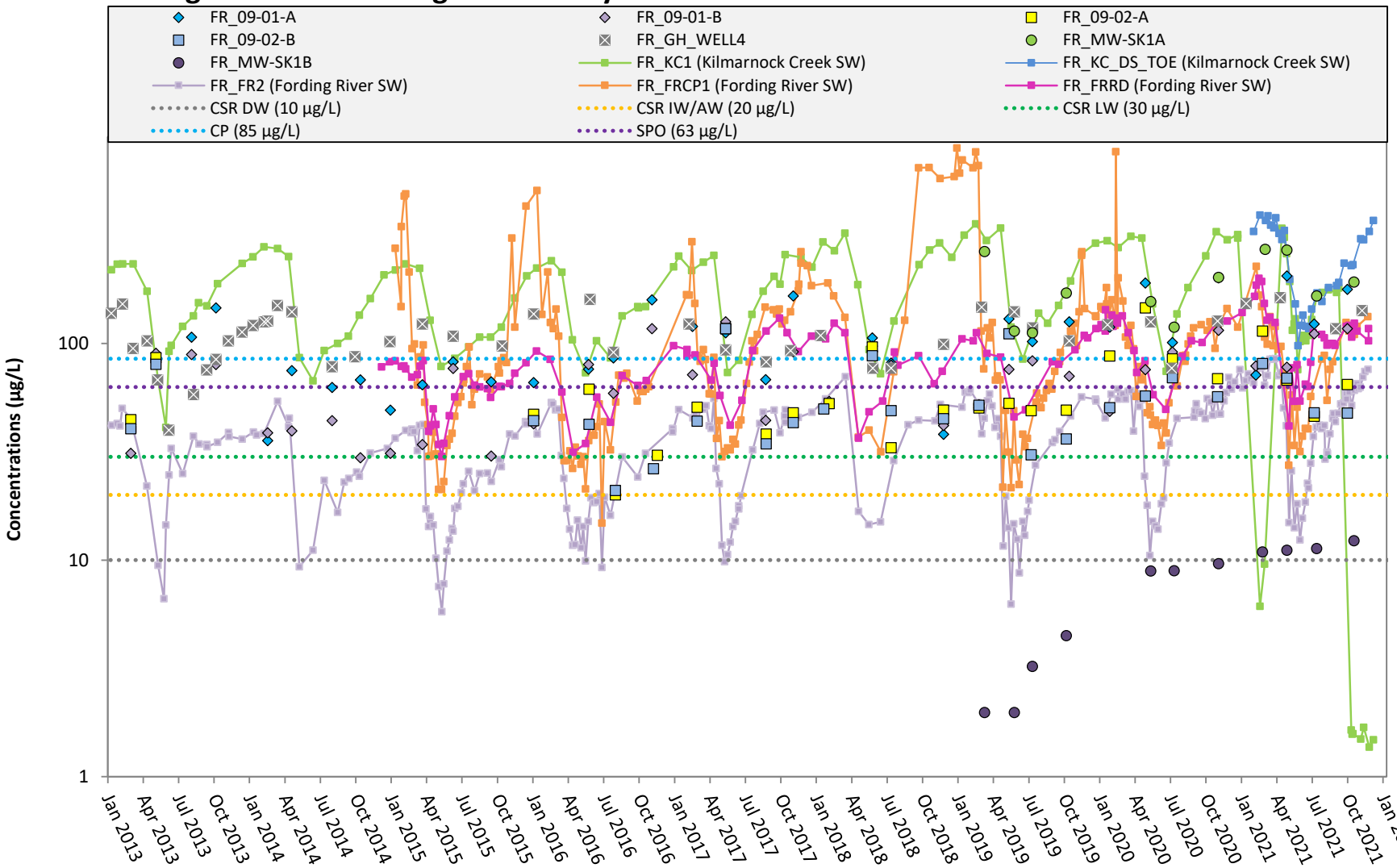


Figure FR-23: Fording River Valley SKP2 And Greenhouse Areas - Sulphate

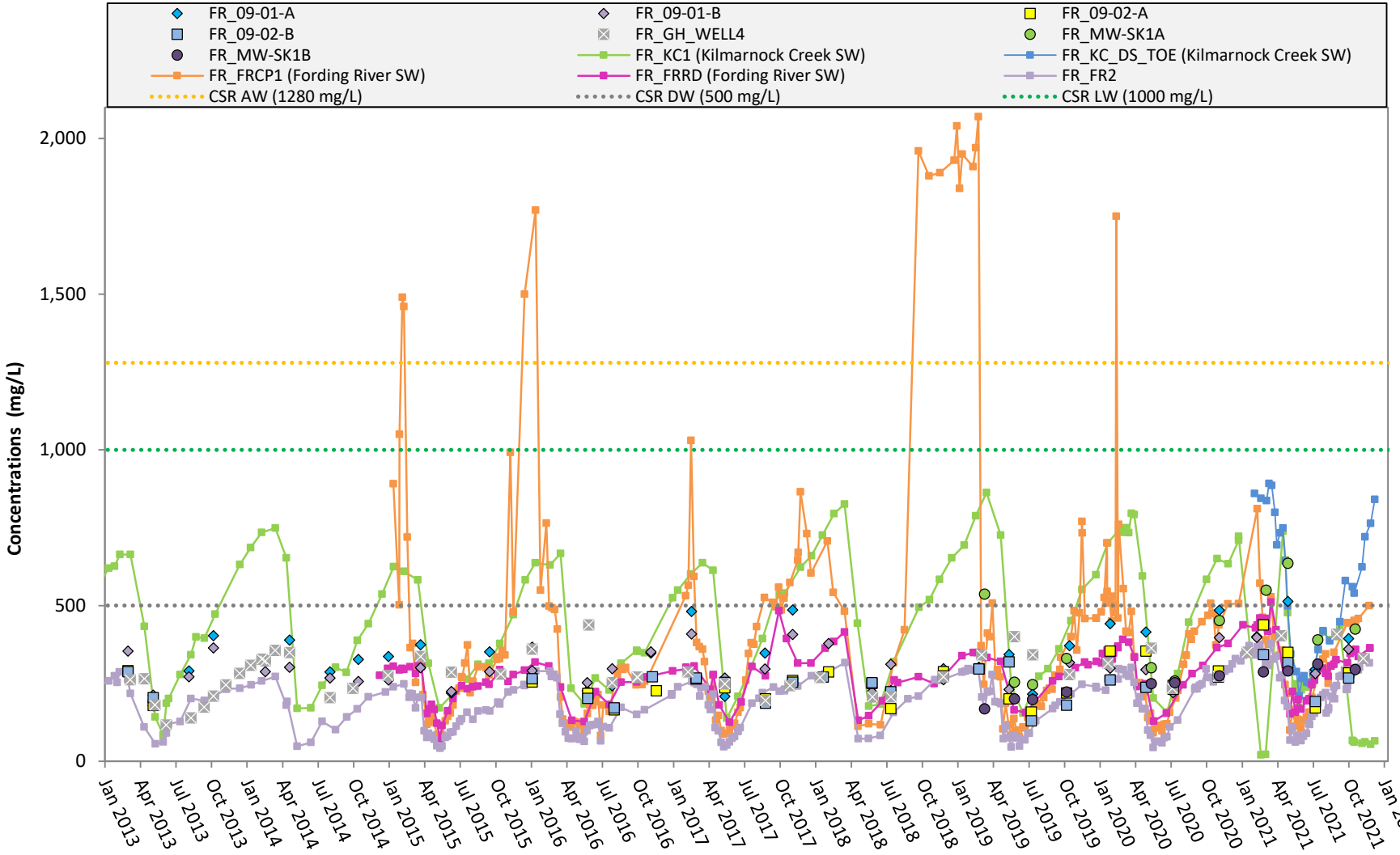


Figure FR-24: Fording River Valley SKP2 And Greenhouse Areas - Nitrate-N

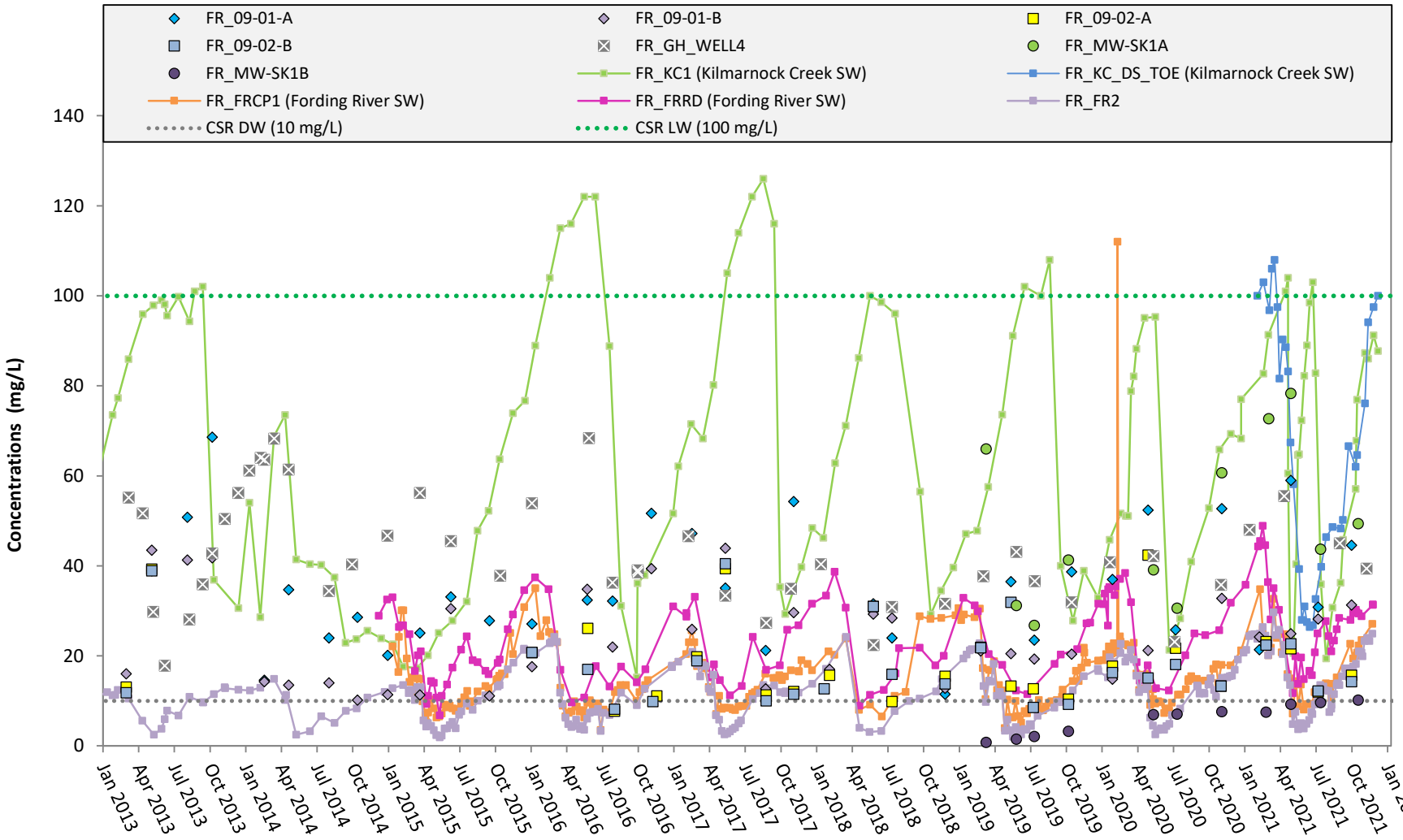


Figure FR-25: Fording River Valley SKP2 And Greenhouse Ares - Se:SO4 (S)

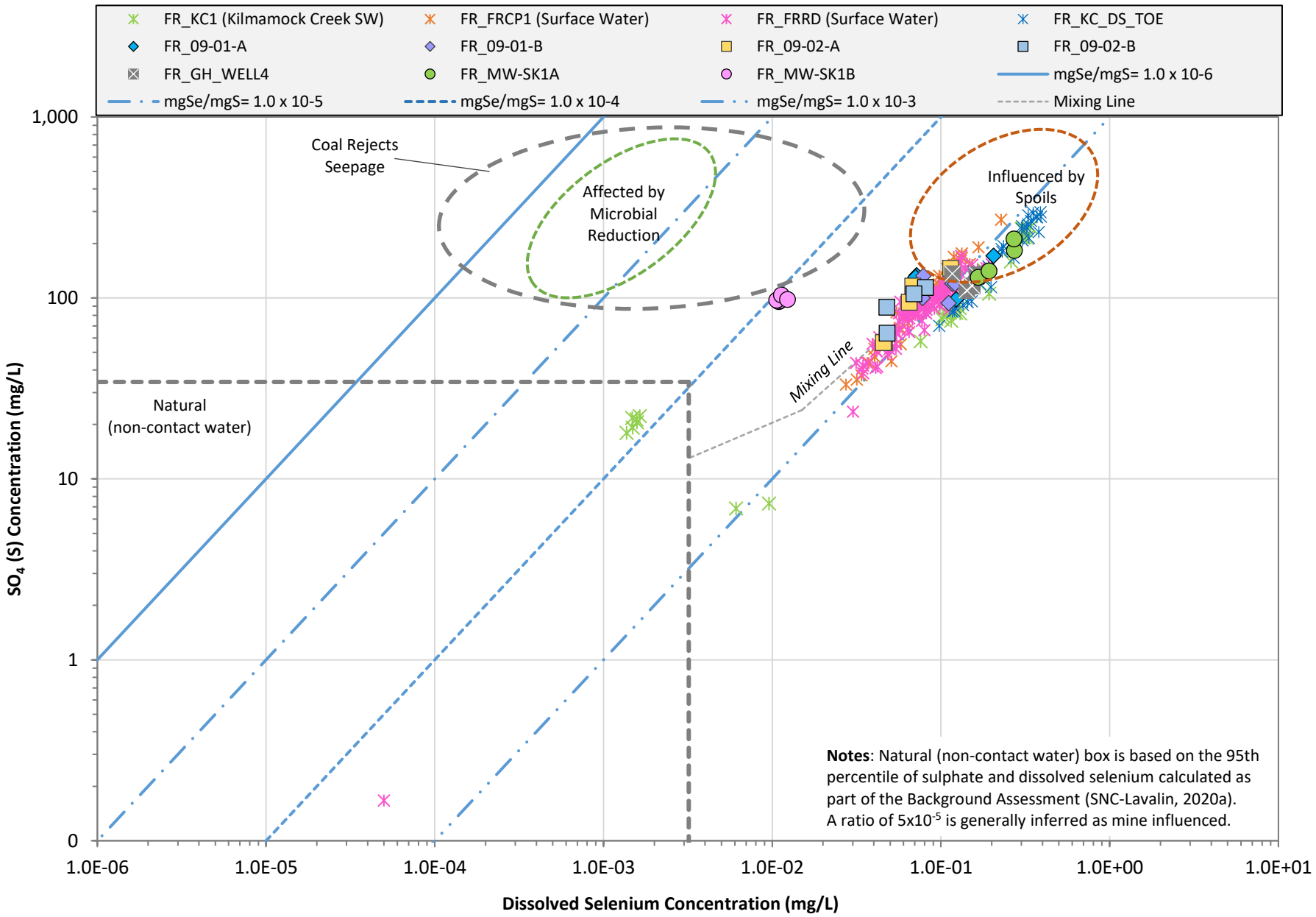
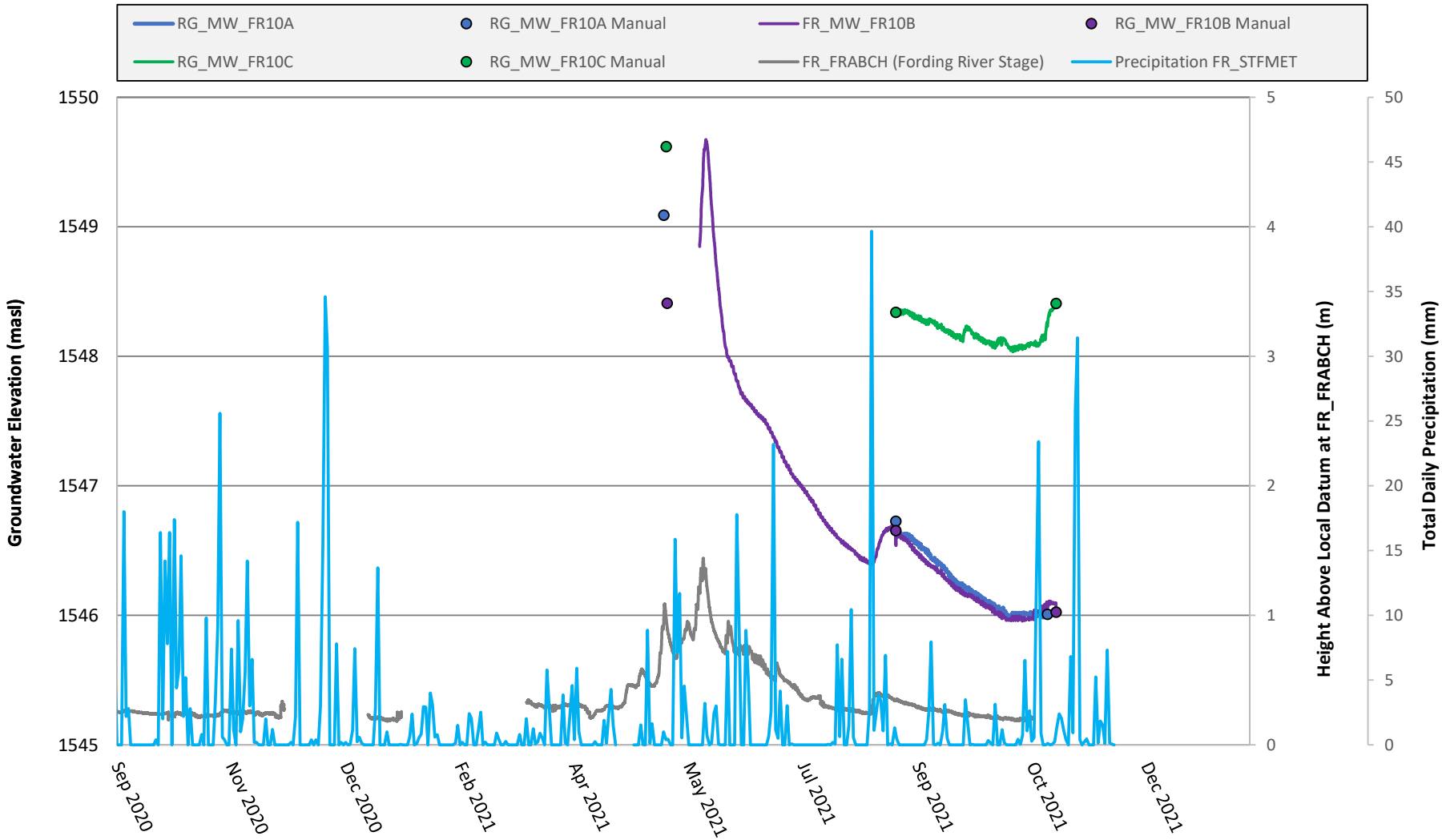


Figure FR-26: Fording River Valley Compliance Point (Chauncey Creek Area) - Hydrograph



Note: Continuous water level data was compensated using barologger installed at STPSW Baro.

Figure FR-27: Fording River Valley Compliance Point (Chauncey Creek Area) - Dissolved Selenium

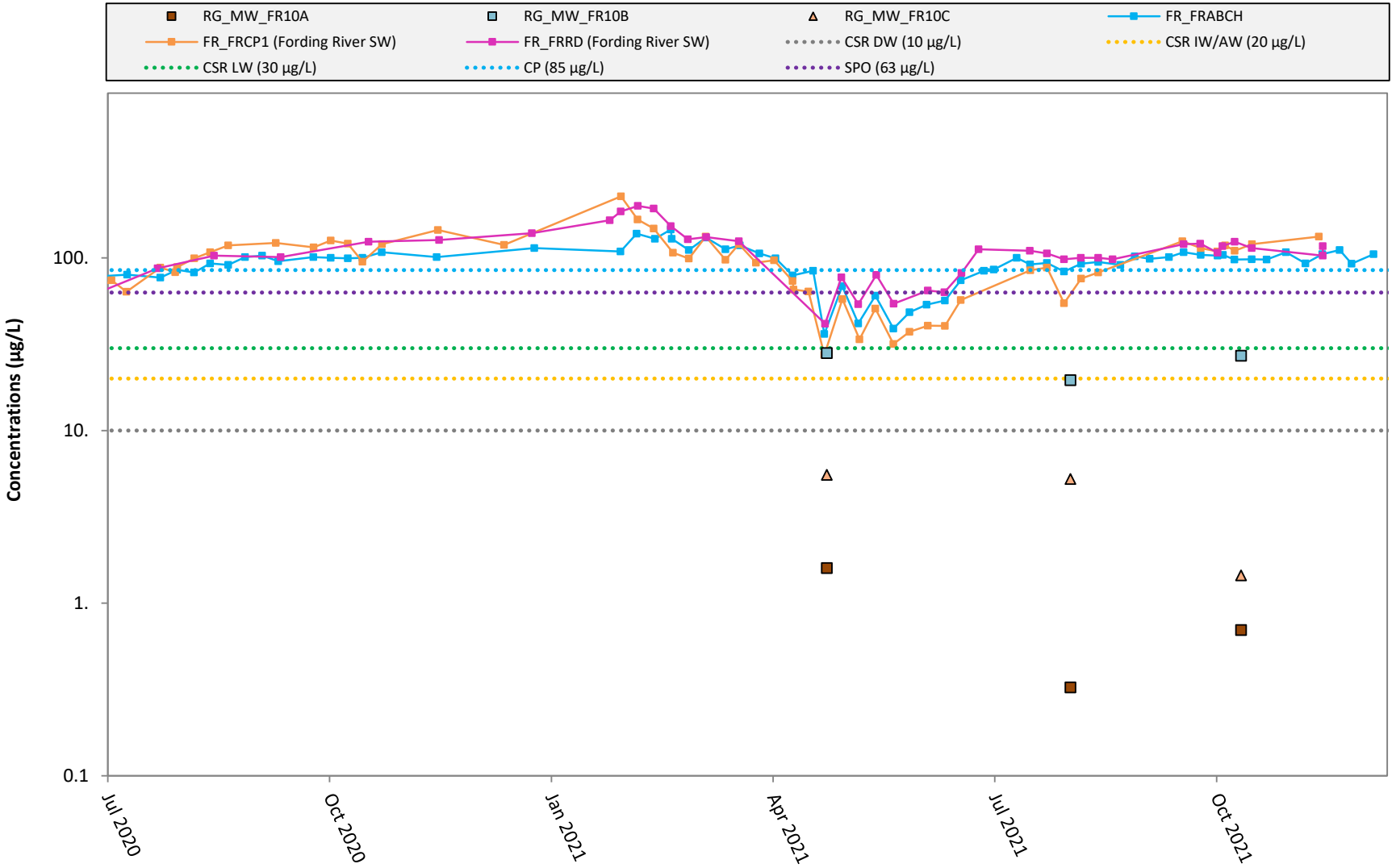


Figure FR-28: Fording River Valley Compliance Point (Chauncey Creek Area) - Sulphate

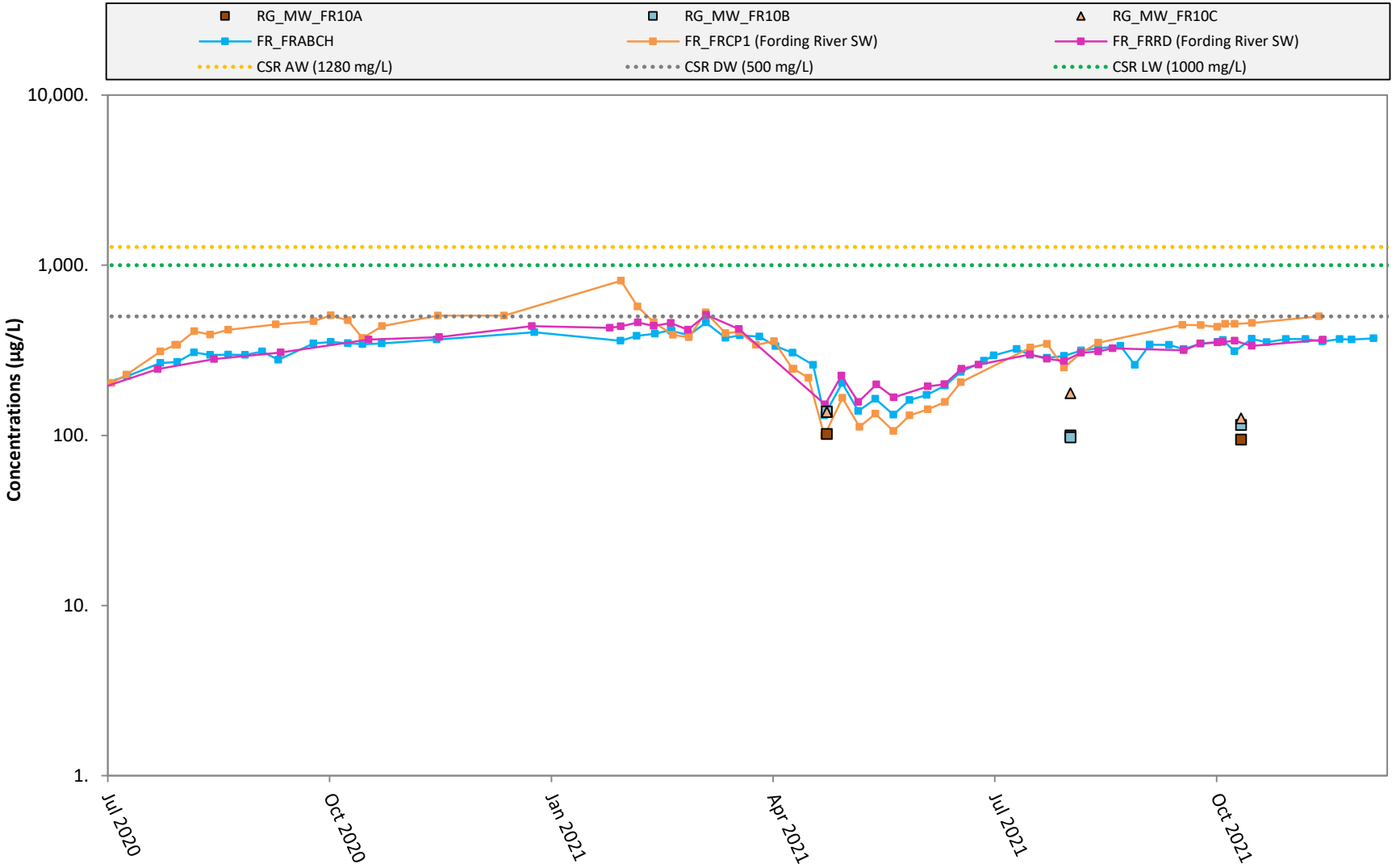


Figure FR-29: Fording River Valley Compliance Point (Chauncey Creek Area) - Nitrate-N

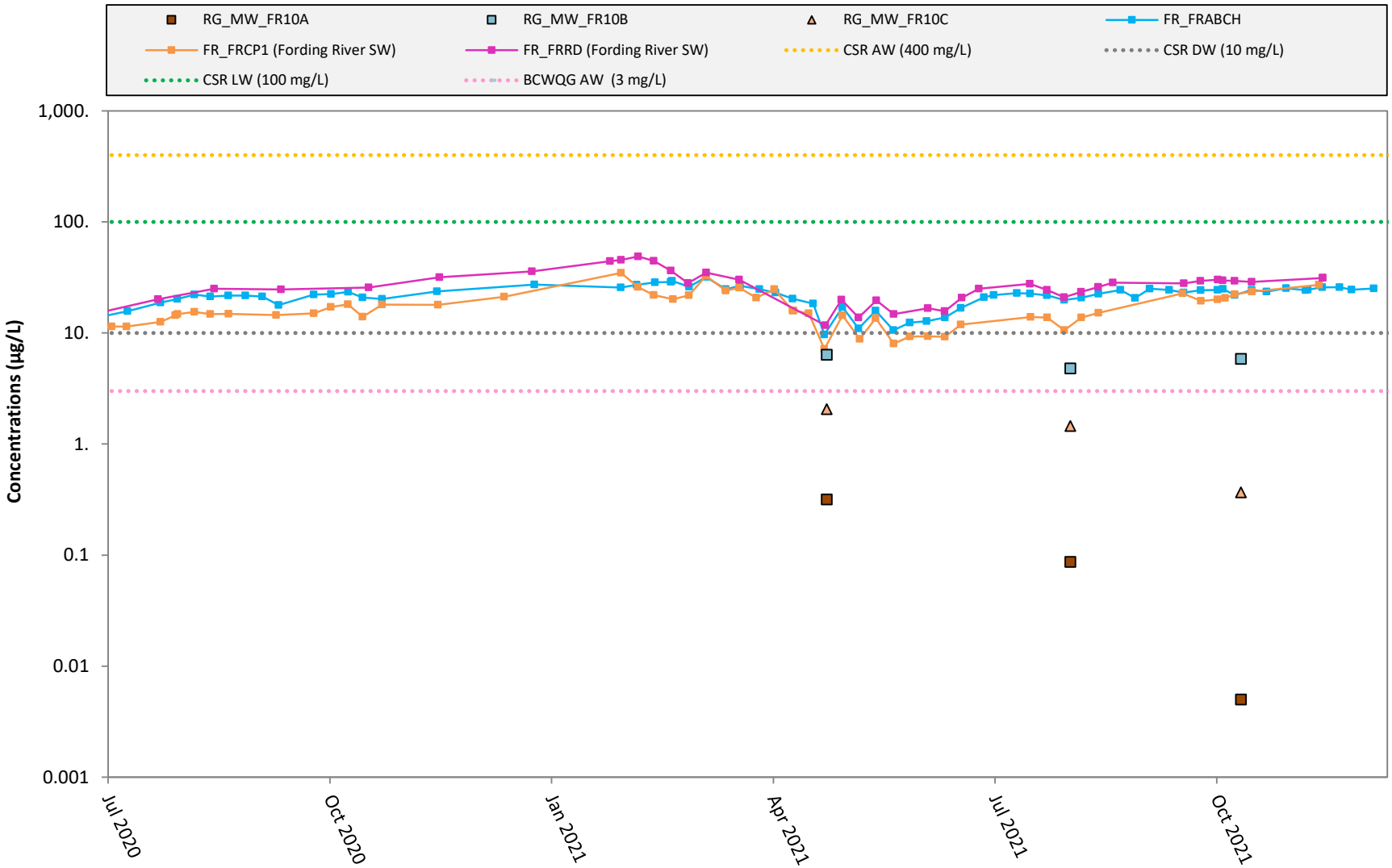


Figure FR-30: Fording River Valley Compliance Point (Chauncey Creek Area) - Se:SO4 (S)

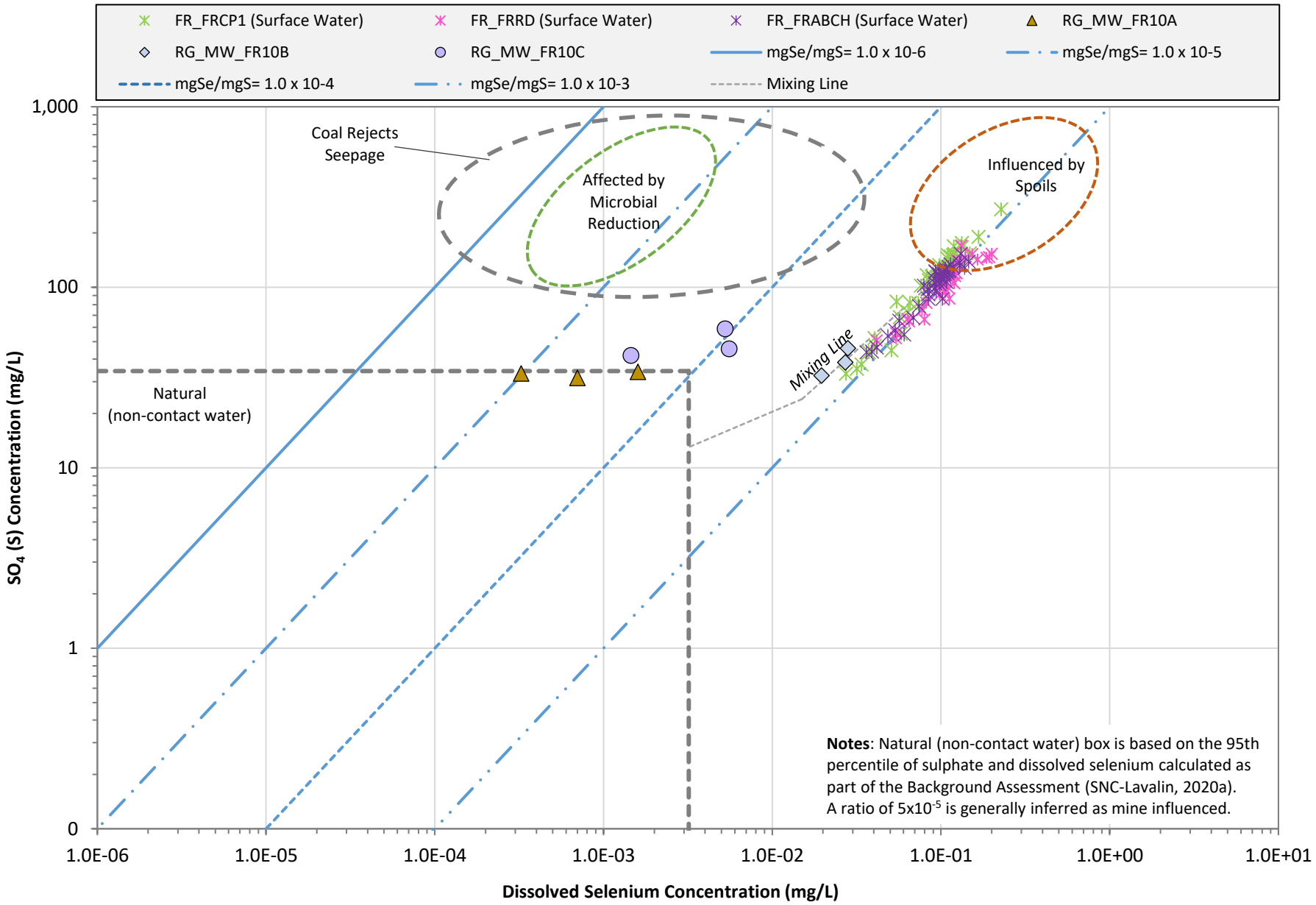


Figure FR-31: Swift Creek Watershed - Hydrograph

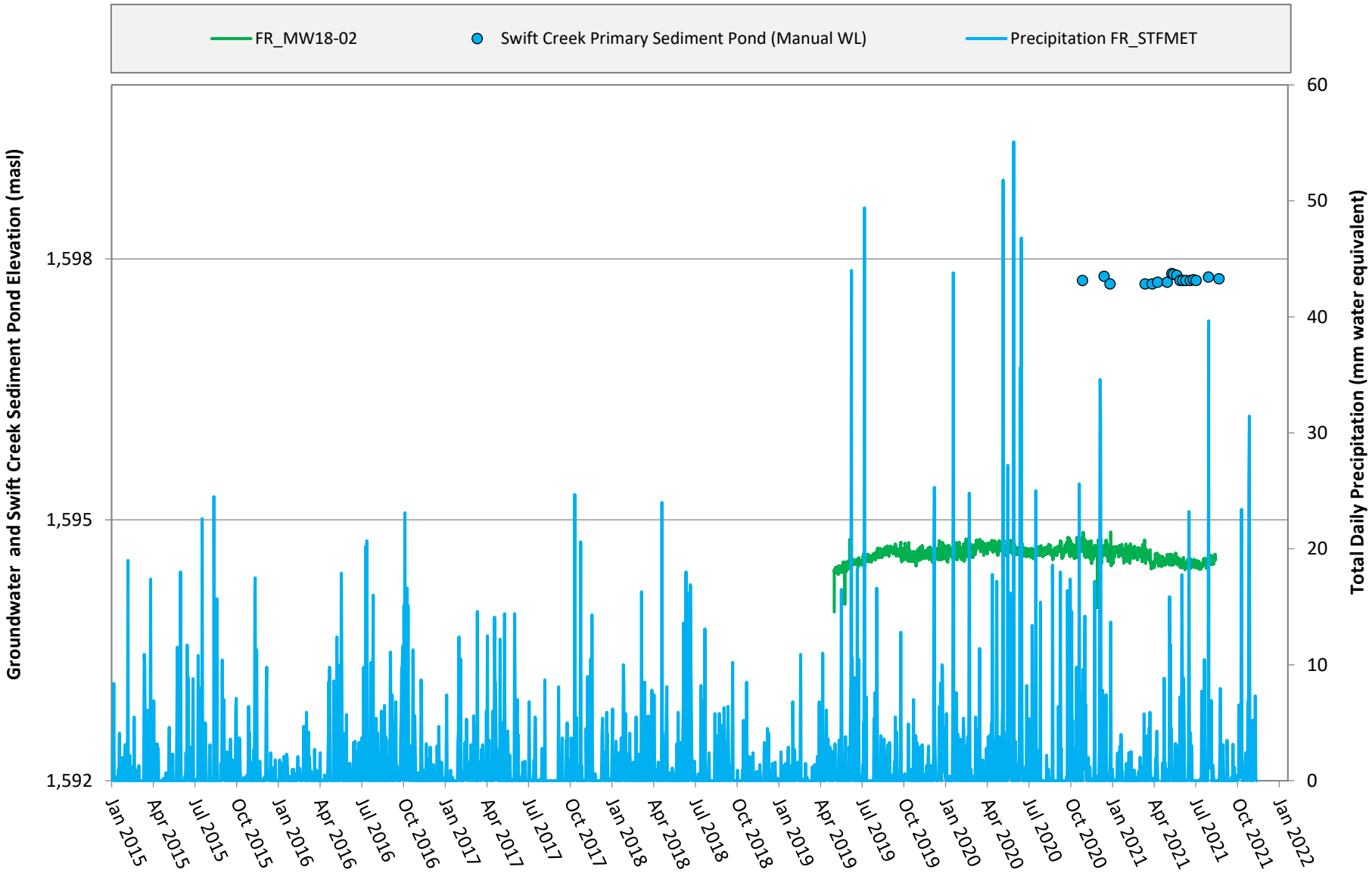


Figure FR-32: Swift Creek Watershed - Dissolved Selenium

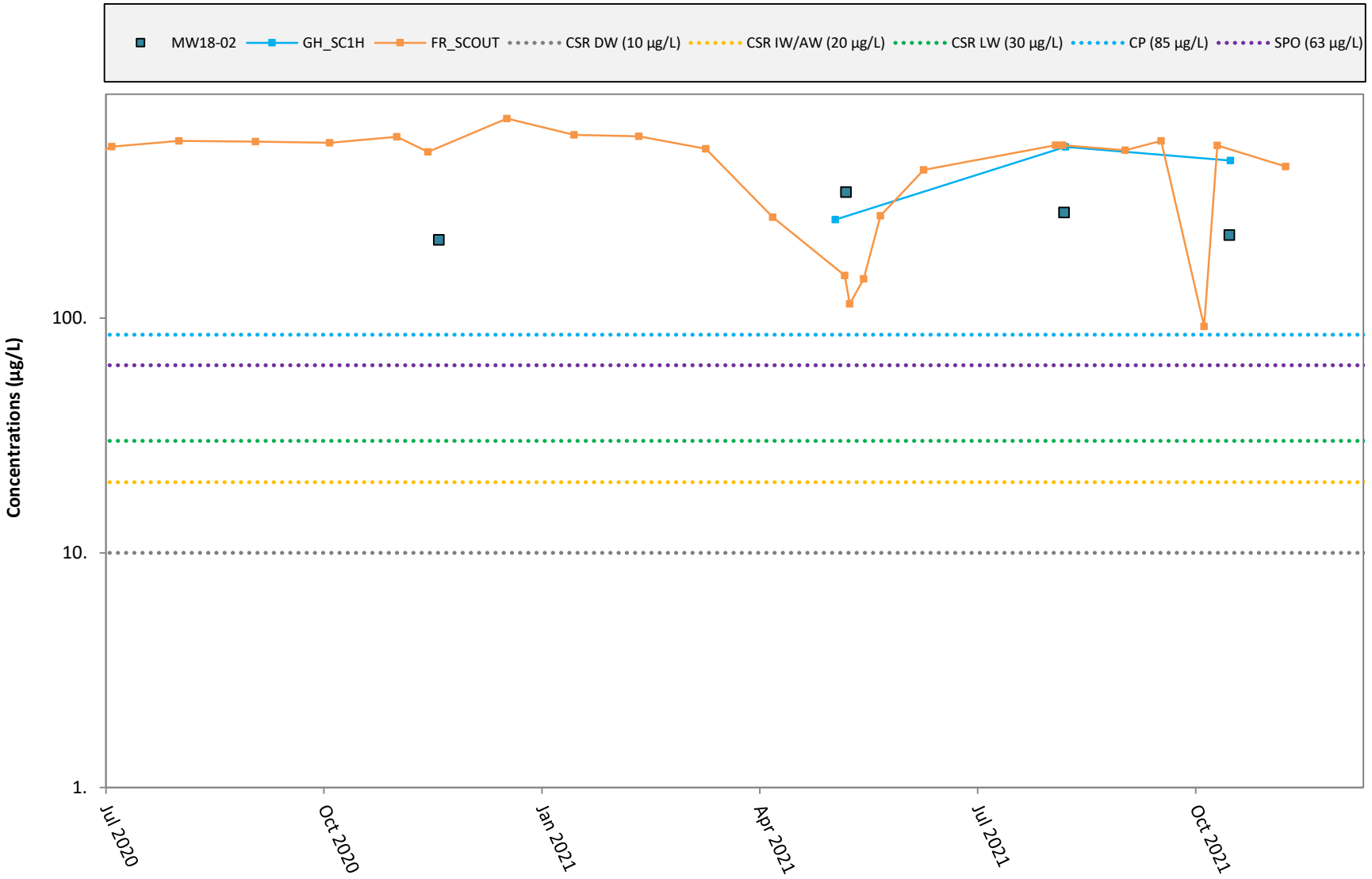


Figure FR-33: Swift Creek Watershed - Sulphate

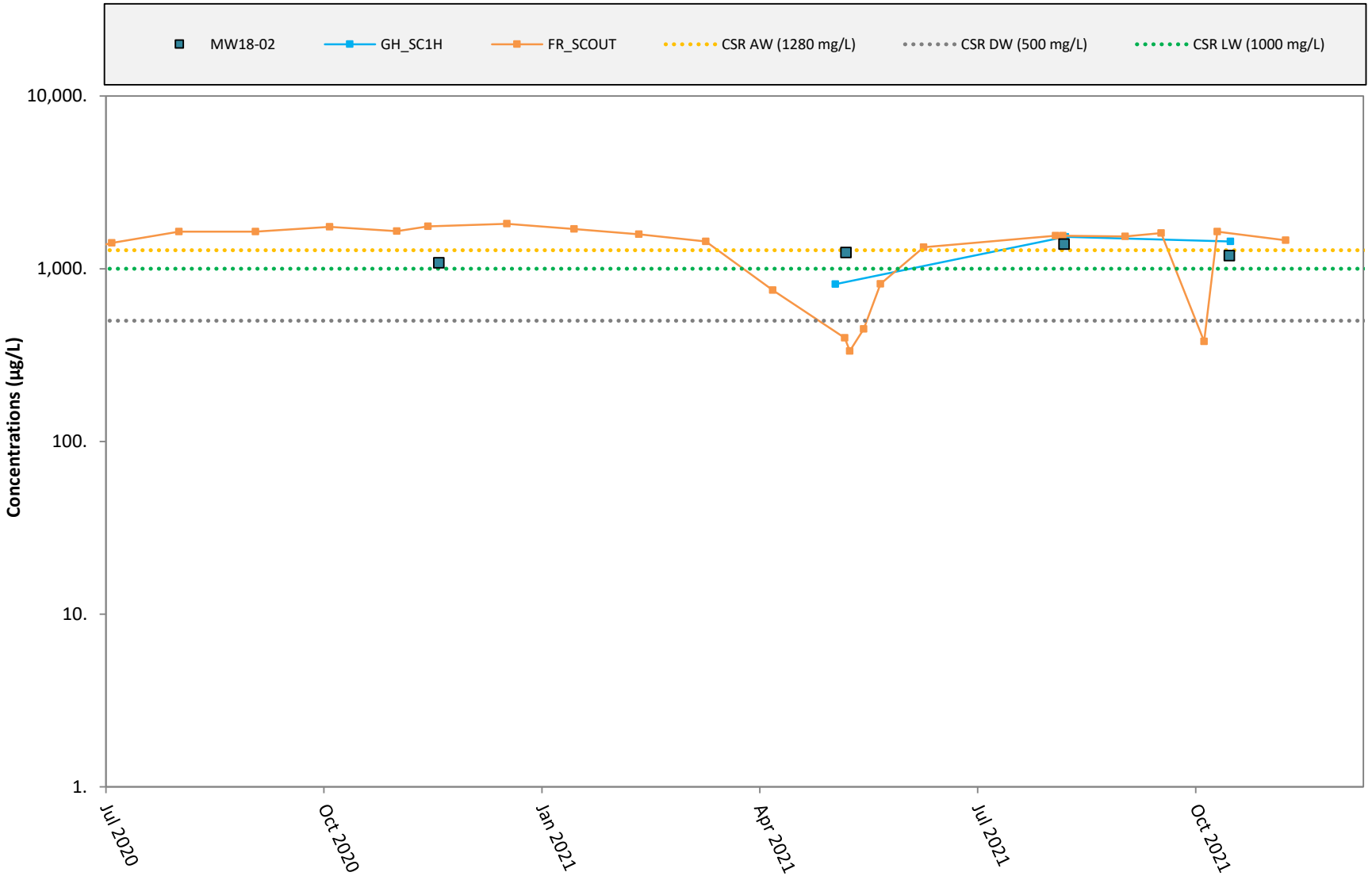


Figure FR-34: Swift Creek Watershed - Nitrate-N

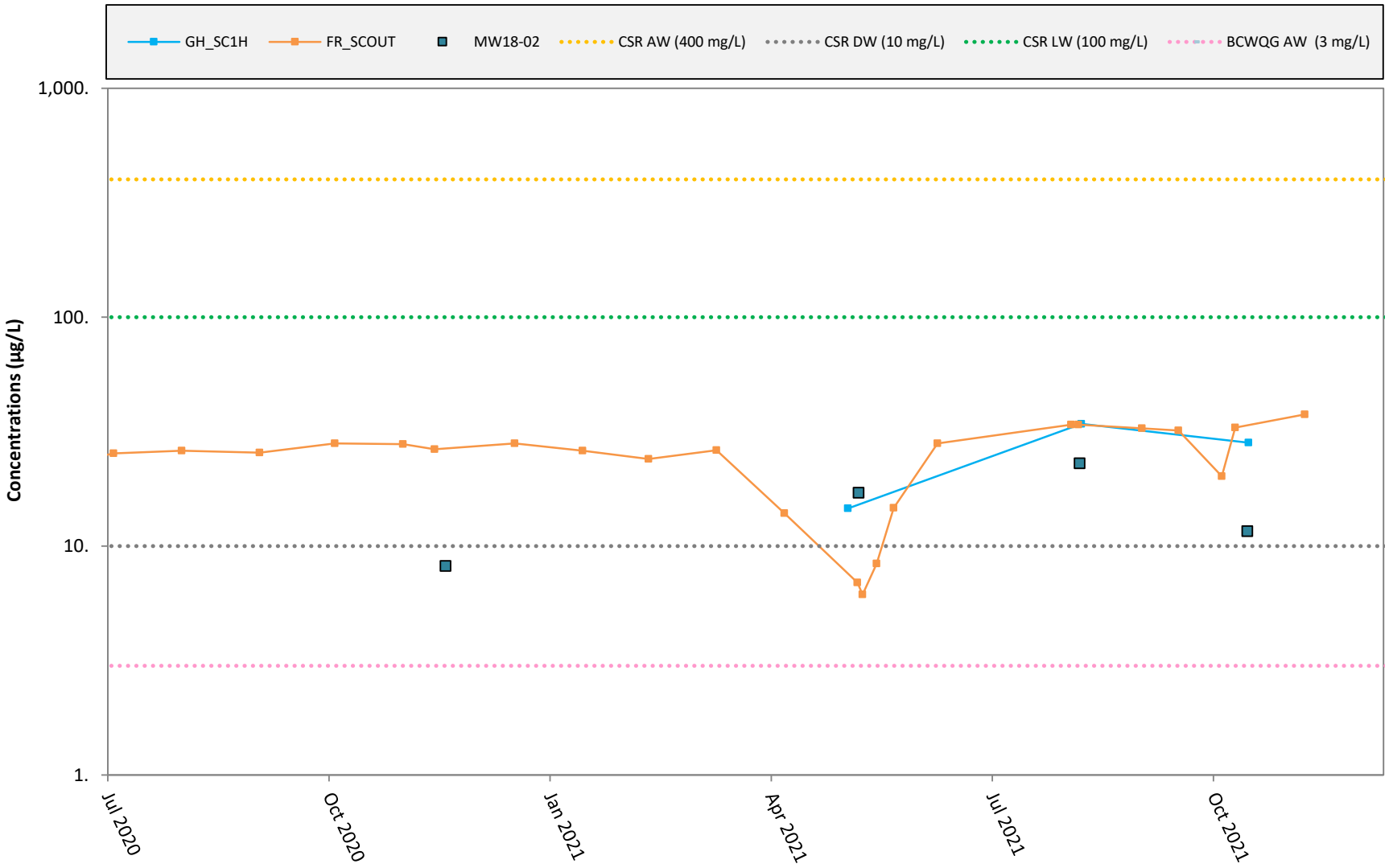
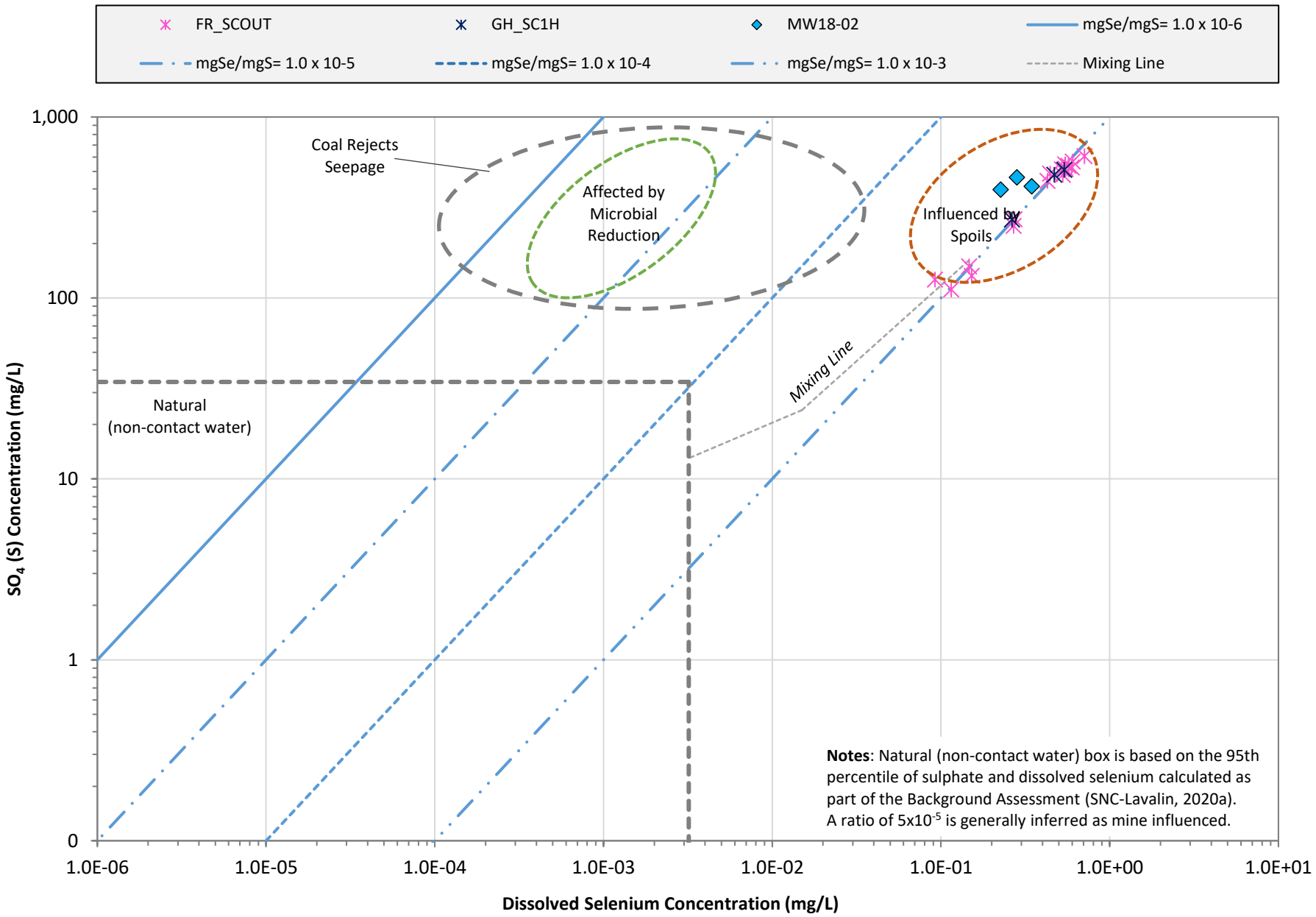


Figure FR-35: Swift Creek Watershed - Se:SO4 (S)



Tables:

TABLE FR-01: Summary of Well Installation Details and Hydrogeological Information (FRO)

Area	Well ID	Monitoring Program[a]	Well Type	Logs (Y/N)	Coordinates (UTM NAD 83)		Ground Elevation	TOC Elevation	Stick Up Height	Drilled Depth	Well Diameter	Top of Screen Depth	Bottom of Screen Depth	Screened Formation	Depth to Bedrock	Hydraulic Conductivity
					Easting	Northing	masl	masl	m	mbgs	mm	mbgs	mbgs		mbgs	m/s
Henretta Creek Watershed	FR_HMW1D	SSGMP	Monitoring	Y	652437	5566516	1732.20	1732.97	0.77	54.3	51	51.2	54.3	Gravel (Backfill) / Coal / Bedrock	53.9	1.0E-04
	FR_HMW1S	SSGMP	Monitoring	Y	652441	5566518	1732.30	1733.02	0.72	33.5	51	29.9	32.9	Gravel (Backfill)	33.5	-
	FR_HMW2	SSGMP	Monitoring	Y	652666	5566634	1767.30	1768.04	0.74	48.8	51	43.3	46.3	Spoils	47.7	3.0E-03
	FR_HMW3	SSGMP	Monitoring	Y	652810	5566540	1728.20	1729.01	0.81	22.6	51	16.7	19.7	Silty Gravel (Backfill)	22.6	7.0E-04
	FR_HMW5[d]	SSGMP	Monitoring	Y	655476	5567514	1785.20	1786.03	0.83	12.6	51	7.3	10.4	Gravel	10.7	8.0E-03
																9.0E-05
Fording River Watershed	FR_TBSSMW-1	SSGMP	Monitoring	Y	651603	5565868	1697.04	1697.98	0.94	25.5	51	20.9	22.4	Silty Gravel with sand, containing cobbles and boulders	22.5	1.0E-05
	FR_TBSSMW-2	SSGMP	Monitoring	Y	651605	5565866	1697.03	1697.95	0.92	9.0	51	6.8	8.3	Gravel with sand	-	1.5E-03
	FR_POTWELLS[b]	SSGMP	Supply	N	651152	5565133	-	-	-	-	-	-	-	-	-	-
	FR_GCMW-1B	SSGMP	Monitoring	Y	650966	5563998	1670.64	1671.29	0.65	24.1	51	14.4	15.9	Cobbles and Boulders with a silty gravel matrix	-	1.6E-06
	FR_GCMW-2	SSGMP	Monitoring	Y	650965	5564000	1670.44	1671.34	0.90	11.0	51	7.6	9.1	Sandy Gravel	-	3.0E-04
	FR_MW-1B	SSGMP	Monitoring	Y	650966	5563112	1652.00	1652.67	0.67	8.2	51	5.2	8.2	Clay / Bedrock	7.3	4.0E-04
	FR_MW_NTPSE	SSGMP[e]	Monitoring	Y	650855	5561252	1635.40	1636.40	1.00	12.5	51	9.2	10.1	Fine to coarse sand, gravel, trace silt	11.4	4.8E-05
	FR_09-04-A	SSGMP	Monitoring	Y	652107	5559996	1604.98	1605.89	0.91	5.0	51	1.1	4.7	Sandy Gravel	-	3.0E-03
	FR_09-04-B	SSGMP	Monitoring	Y	652107	5559996	1604.75	1605.57	0.82	7.0	51	5.1	6.6	Gravel	6.5	9.6E-05
	FR_KB-1	SSGMP	Monitoring	Y	652722	5559851	1622.37	1623.36	0.99	8.2	51	5.2	8.2	Silty Gravel/Gravel Sand/Bedrock	8.2	3.E-04
	FR_KB-2	SSGMP	Monitoring	Y	652743	5559721	1625.48	1626.64	1.16	16.8	51	13.1	16.2	Silty Sand/bedrock	15.5	6.E-06
	FR_KB-3A	SSGMP	Monitoring	Y	652600	5559641	1616.11	1617.07	0.96	41.5	51	35.4	38.4	Sand	39.3	3.E-04
	FR_KB-3B	SSGMP	Monitoring	Y	652597	5559641	1616.13	1617.08	0.95	21.3	51	18.3	21.3	Sand	-	3.E-04
	FR_MW-SK1A	SSGMP	Monitoring	Y	652681	5558635	1586.48	1587.429	0.95	16.8	51	15.0	16.5	Sand and Gravel	-	9.3E-04
	FR_MW-SK1B	SSGMP	Monitoring	Y	652681	5558637	1586.48	1587.54	1.06	69.3	51	65.5	67.0	Sand and Gravel, Silty	68.0	4.4E-05
	FR_09-01-A	SSGMP, RGMP	Monitoring	Y	652601	5558300	1584.17	1584.95	0.78	8.4	51	3.8	6.9	Sandy Gravel	-	1.0E-03
	FR_09-01-B	SSGMP, RGMP	Monitoring	Y	652601	5558300	1584.15	1584.86	0.71	29.0	51	17.2	18.7	Gravel	-	1.5E-04
	FR_09-02-A	SSGMP	Monitoring	Y	652482	5558261	1584.74	1585.51	0.77	11.5	51	8.3	11.4	Sandy Gravel	-	1.0E-03
	FR_09-02-B	SSGMP	Monitoring	Y	652480	5558261	1584.71	1585.40	0.69	30.0	51	20.8	22.3	Gravel	-	9.9E-05

Notes:

a: SSGMP denotes FRO Site-Specific Groundwater Monitoring Program; RGMP denotes Regional Groundwater Monitoring Program.

b: FR_POTWELLS consists of six wells (FR_PW91, FR_PW92, FR_PW93, FR_PW94, FR_PW95, FR_PW96). Details for for FR_PW91 are provided above.

c: As a recommendation of the hydrogeological assessment, monitoring of a dedicated well from FR_GHHW (FR_GH_WELL4) began in Q4 2017. Details for FR_GH_WELL4 are provided above.

d: Analytical data prior to May 2016 were used as part of the RGMP Background Assessment; however, since May 2016 this well appears to be impacted and has been included as part of the FRO Site-specific monitoring.

e: Well recommended to be added to the SSGMP in the 2021 SSGMP Update but has not yet been approved.

f: Well recommended to be added to the RGMP in the 2021 SSGMP Update but has not yet been approved.

masl denotes metres above sea level.

mbgs denotes metres below ground surface.

TOC denotes top of pipe casing.

"-" denotes data not available.

TABLE FR-01: Summary of Well Installation Details and Hydrogeological Information (FRO)

Area	Well ID	Monitoring Program[a]	Well Type	Logs (Y/N)	Coordinates (UTM NAD 83)		Ground Elevation	TOC Elevation	Stick Up Height	Drilled Depth	Well Diameter	Top of Screen Depth	Bottom of Screen Depth	Screened Formation	Depth to Bedrock	Hydraulic Conductivity
					Easting	Northing	masl	masl	m	mbgs	mm	mbgs	mbgs		mbgs	m/s
Fording River Watershed	FR_GH_WELL4[c]	SSGMP, RGMP	Supply	Y	653150	5557337	1575.80	-	-	29.0	-	25.9	29.0	Sand and Gravel	-	-
	RG_MW_FR10A	RGMP[f]	Monitoring	Y	655324	5552812	1551.37	1552.66	1.29	32.9	50	30.1	31.6	Till/Bedrock	30.2	-
	RG_MW_FR10B	RGMP[f]	Monitoring	Y	655323	5552813	1551.30	1552.55	1.25	19.2	50	16.5	18.0	Sand and Gravel	-	-
	RG_MW_FR10C	RGMP[f]	Monitoring	Y	655323	5552814	1551.30	1552.58	1.28	7.1	50	4.2	5.8	Sand and Gravel	-	-
Swift Creek	FR_MW18-02	SSGMP[e]	Monitoring	Y	652259	5558163.4	1598.67	1599.81	1.14	7.6	-	3.6	5.1	Clay and Silt with Sand	4.9	7.7E-08

Notes:

a: SSGMP denotes FRO Site-Specific Groundwater Monitoring Program; RGMP denotes Regional Groundwater Monitoring Program.

b: FR_POTWELLS consists of six wells (FR_PW91, FR_PW92, FR_PW93, FR_PW94, FR_PW95, FR_PW96). Details for for FR_PW91 are provided above.

c: As a recommendation of the hydrogeological assessment, monitoring of a dedicated well from FR_GHHW (FR_GH_WELL4) began in Q4 2017. Details for FR_GH_WELL4 are provided above.

d: Analytical data prior to May 2016 were used as part of the RGMP Background Assessment; however, since May 2016 this well appears to be impacted and has been included as part of the FRO Site-specific monitoring.

e: Well recommended to be added to the SSGMP in the 2021 SSGMP Update but has not yet been approved.

f: Well recommended to be added to the RGMP in the 2021 SSGMP Update but has not yet been approved.

masl denotes metres above sea level.

mbgs denotes metres below ground surface.

TOC denotes top of pipe casing.

"-" denotes data not available.

TABLE FR-02: Summary of Groundwater Levels and Sampling Information (FRO)

Area	Well ID	Ground Elevation	TOC Elevation	Stick Up Height	Date of Static Water Level Measurement	Depth to Water	Potentiometric Elevation	Well Pairs	Date of Static Water Level Measurement	Calculated Vertical Gradient		Continuous Water Level Monitoring	Purging / Sampling Methodology
		masl	masl	m	yyyy-mm-dd	mbtoc	masl		yyyy-mm-dd	m/m	Direction	Quarter	
Henretta Creek Watershed	FR_HMW1D	1732.20	1732.97	0.77	2021-02-05	15.20	1717.77	FR_HMW1D and FR_HMW1S	2021-02-05	-0.012	Downward	-	Inertial
					2021-05-14	15.30	1717.67		2021-05-14	-0.049	Downward		
					2021-07-22	14.47	1718.50		2021-07-22	0.034	Upward		
					2021-10-25	13.59	1719.38		2021-10-25	0.000	Upward		
	FR_HMW1S	1732.30	1733.02	0.72	2021-02-05	15.00	1718.02	-	-	-	-	Q1, Q2, Q3, Q4	Inertial
					2021-05-14	14.28	1718.74						
					2021-07-20	15.26	1717.76						
					2021-10-25	13.65	1719.37						
	FR_HMW2	1767.30	1768.04	0.74	2021-02-04	44.90	1723.14	-	-	-	-	Q1, Q2, Q3, Q4	Q1, Q2: Inertial Q3: GeoSub
					2021-05-19	44.55	1723.49						
	FR_HMW3	1728.20	1729.01	0.81	2021-02-05	7.69	1721.32	-	-	-	-	Q1, Q2, Q3, Q4	Inertial
					2021-05-14	7.46	1721.56						
					2021-07-21	7.40	1721.61						
					2021-10-18	7.60	1721.41						
	FR_HMW5	1785.20	1786.03	0.83	2021-02-04	10.62[a]	1775.42	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-05-14	1.54	1784.50						
					2021-07-20	1.49	1784.54						
					2021-10-04	1.56	1784.47						
Fording River Watershed	FR_TBSSMW-1	1697.04	1697.98	0.94	2021-02-25	6.02	1691.96	FR_TBSSMW-1 and FR_TBSSMW-2	2021-02-25	-0.026	Downward	Q1, Q2, Q3, Q4	Peristaltic
					2021-05-19	5.05	1692.93		2021-05-19	-0.024	Downward		
					2021-07-21	5.42	1692.56		2021-07-21	-0.023	Downward		
					2021-10-06	5.65	1692.34		2021-10-06	-0.025	Downward		
	FR_TBSSMW-2	1697.03	1697.95	0.92	2021-02-25	5.63	1692.32	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-05-19	4.68	1693.27						
					2021-07-21	5.07	1692.88						
					2021-10-06	5.27	1692.68						
	FR_POTWELLS	-	-	-	-	-	-	-		-	-	-	Tap
	FR_GCMW-1B	1670.64	1671.29	0.65	2021-01-13	6.68	1664.61	FR_GCMW-1B and FR_GCMW-2	2021-01-13	-0.010	Downward	Q1, Q2, Q3, Q4	Q1: Peristaltic Q2: Peristaltic Q3: Inertial Q4: Peristaltic
					2021-05-19	6.63	1664.66		2021-05-19	-0.034	Downward		
					2021-07-26	6.80	1664.49		2021-07-26	-0.034	Downward		
					2021-11-29	6.71	1664.59		2021-11-29	-0.020	Downward		
	FR_GCMW-2	1670.44	1671.34	0.90	2021-01-28	6.67	1664.67	-	-	-	-	Q1, Q2, Q3, Q4	Q1: Peristaltic Q2: Peristaltic Q3: Inertial Q4: Peristaltic
					2021-05-19	6.46	1664.88						
					2021-07-26	6.63	1664.71						
					2021-12-07	6.62	1664.72						
	FR_MW-1B	1652.00	1652.67	0.67	2021-02-25	2.30	1650.37	-	-	-	-	Q2, Q3, Q4	Q1: Inertial Q2: Peristaltic Q3: Peristaltic Q4: Peristaltic
					2021-05-20	1.75	1650.92						
					2021-09-15	2.24	1650.43						
					2021-12-08	3.32	1649.35						
	FR_MW_NTPSE	1635.40	1636.40	1.00	2021-02-04	9.14	1603.89	-	-	-	-	Q1, Q2	Geosub
					2021-06-09	8.77	1627.63						
	FR_09-04-A	1604.98	1605.89	0.91	2021-01-27	2.46	1603.43	FR_09-04-A and FR_09-04-B	2021-01-27	-0.019	Downward	Q2, Q3, Q4	Q1: Peristaltic Q2: Peristaltic Q3: Peristaltic Q4: Inertial
					2021-04-26	2.05	1603.84		2021-04-26	-0.146	Downward		
					2021-07-28	1.98	1603.91		2021-07-28	-0.373	Downward		
					2021-11-02	2.00	1603.89		2021-11-02	-0.132	Downward		
	FR_09-04-B	1604.75	1605.57	0.82	2021-01-27	2.20	1603.37	-	-	-	-	-	Peristaltic
					2021-04-26	2.19	1603.38						
					2021-07-28	2.85	1602.72						
					2021-11-02	2.10	1603.47						

Notes:

a: Water level measurement considered erroneous.

TOC denotes top of pipe casing.

masl denotes metres above sea level.

mbtoc denotes metres below top of casing.

"-" denotes data not available.

Quarter is represented as Q1, Q2, Q3, Q4.

TABLE FR-02: Summary of Groundwater Levels and Sampling Information (FRO)

Area	Well ID	Ground Elevation	TOC Elevation	Stick Up Height	Date of Static Water Level Measurement	Depth to Water	Potentiometric Elevation	Well Pairs	Date of Static Water Level Measurement	Calculated Vertical Gradient		Continuous Water Level Monitoring	Purging / Sampling Methodology
		masl	masl	m	yyyy-mm-dd	mbtoc	masl		yyyy-mm-dd	m/m	Direction	Quarter	
Fording River Valley	FR_KB-1	1622.37	1623.36	0.99	2021-02-18	3.71	1619.65	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-06-01	2.29	1621.07						
					2021-08-10	2.58	1620.78						
					2021-12-01	4.34	1619.03						
	FR_KB-2	1625.48	1626.64	1.16	2021-02-19	12.30	1614.34	-	-	-	-	Q1, Q2, Q3, Q4	Bladder
					2021-06-01	9.62	1617.02						
					2021-08-13	9.94	1616.70						
					2021-11-23	11.10	1615.54						
	FR_KB-3A	1616.11	1617.07	0.96	2021-03-24	16.40	1600.67	FR_KB-3A and FR_KB-3B	2021-03-24	-0.077	Downward	Q1, Q2, Q3, Q4	Bladder
					2021-06-04	13.57	1603.50		2021-06-04	-0.017	Downward		
					2021-08-13	14.98	1602.09		2021-08-13	-0.020	Downward		
					2021-11-25	16.64	1600.43		2021-11-25	-0.017	Downward		
	FR_KB-3B	1616.13	1617.08	0.95	2021-03-24	15.09	1602.00	-	-	-	-	Q1, Q2, Q3, Q4	Bladder
					2021-06-04	13.29	1603.79						
					2021-08-13	14.65	1602.43						
					2021-11-24	16.36	1600.72						
	FR_MW-SK1A	1586.48	1587.429	0.95	2021-03-18	8.15	1579.28	FR_MW-SK1A and FR_MW-SK1B	2021-03-18	0.012	Upward	Q1, Q2, Q3, Q4	Q1: Peristaltic Q2: Peristaltic Q3: Peristaltic Q4: Inertial
					2021-05-13	3.87	1583.56		2021-05-13	0.010	Upward		
					2021-07-28	4.91	1582.52		2021-07-28	0.015	Upward		
					2021-11-01	7.27	1580.16		2021-11-01	0.018	Upward		
	FR_MW-SK1B	1586.48	1587.54	1.06	2021-03-11	7.66	1579.88	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-05-13	3.47	1584.07						
					2021-07-28	4.24	1583.30						
					2021-11-01	6.49	1581.05						
	FR_09-01-A	1584.14	1584.95	0.78	2021-02-22	6.18	1578.77	FR_MW-09-01-A and FR_MW-09-01-B	2021-02-22	-0.063	Downward	Q2, Q3, Q4	Q1: Peristaltic Q2: Peristaltic Q3: Inertial Q4: Peristaltic
					2021-05-13	1.85	1583.11		2021-05-13	-0.066	Downward		
					2021-07-22	2.09	1582.86		2021-07-22	-0.061	Downward		
					2021-10-15	5.13	1579.82		2021-10-15	-0.059	Downward		
	FR_09-01-B	1584.15	1584.86	0.71	2021-02-22	6.82	1578.04	-	-	-	-	Q2, Q3, Q4	Inertial
					2021-05-13	2.58	1582.28						
					2021-07-22	2.76	1582.10						
					2021-10-15	5.76	1579.10						
	FR_09-02-A	1584.74	1585.51	0.77	2021-03-11	6.97	1578.54	FR_MW-09-02-A and FR_MW-09-02-B	2021-03-11	-0.076	Downward	Q2, Q3, Q4	Inertial
					2021-05-13	2.67	1582.84		2021-05-13	-0.103	Downward		
					2021-07-22	2.84	1582.67		2021-07-22	-0.097	Downward		
					2021-10-15	6.00	1579.51		2021-10-15	-0.070	Downward		
	FR_09-02-B	1584.71	1585.4	0.69	2021-03-11	7.76	1577.64	-	-	-	-	-	Inertial
					2021-05-13	3.78	1581.63						
					2021-07-22	3.87	1581.53						
					2021-10-15	6.72	1578.68						
	RG_MW_FR10A	1551.37	1552.66	1.29	2021-05-18	3.57	1549.09	RG_MW_FR10A and RG_MW_FR10B	2021-05-18	0.050	Upward	Q3, Q4	Q2: Hydrosleeve Q3: Peristaltic Q4: Bladder
					2021-08-27	5.93	1546.73		2021-08-27	0.005	Upward		
					2021-11-01	6.65	1546.01		2021-11-01	-0.001	Downward		
	RG_MW_FR10B	1551.30	1552.55	1.25	2021-05-19	4.14	1548.41	RG_MW_FR10B and RG_MW_FR10C	2021-05-19	-0.099	Downward	Q2, Q3, Q4	Peristaltic
					2021-08-27	5.90	1546.65		2021-08-27	-0.138	Downward		
					2021-11-05	6.53	1546.02		2021-11-05	-0.195	Downward		
	RG_MW_FR10C	1551.30	1552.58	1.29	2021-05-19	2.96	1549.62	-	-	-	-	Q3, Q4	Peristaltic
					2021-08-27	4.24	1548.34						
					2021-11-05	4.17	1548.41						
Swift Creek	FR_MW18-02	1598.67	1599.81	1.14	2021-06-02	5.34	1594.47	-	-	-	-	Q1, Q2, Q3	Peristaltic
					2021-09-01	5.27	1594.54						
					2021-11-09	5.19	1594.62						

Notes:
a: Water level measurement considered erroneous.
TOC denotes top of pipe casing.
masl denotes metres above sea level.
mbtoc denotes metres below top of casing.
"-" denotes data not available.
Quarter is represented as Q1, Q2, Q3, Q4.

TABLE FR-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Organics, Nutrient and Organics in Groundwater (FRO)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature	pH (field)	Dissolved Oxygen	Field Conductivity	Field ORP	pH	Hardness	Conductivity	Total Suspended Solids	Total Dissolved Solids	Turbidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Bromide	Chloride	Fluoride	Sulphate	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Kjeldahl Nitrogen-N	Ortho-Phosphate	Phosphorus, Total	Total Organic Carbon	Dissolved Organic Carbon
			C	pH	mg/L	µS/cm	mV	pH	mg/L	µS/cm	mg/L	mg/L	ntu	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Henretta Creek Valley																													
FR_HMW1D	FR_HMW1D_QTR_2021-01-04_N	2021 02 05	3.8	6.75	0.1	4,000	173.1	7.22	2,890	3,590	4.4	3,510	1.67	484	590	< 1.0	< 1.0	< 0.250	2.26	0.152	1,900	0.0372	112	0.0246	< 0.050	0.0032	0.0050	1.29	1.69
	FR_HMW1D_QTR_2021-04-05_N	2021 05 14	4.8	6.95	1.61	3,850	1,214	7.83	2,730	3,110	5.5	4,000	1.32	328	400	< 1.0	< 1.0	< 0.250	2.15	0.169	1,950	0.0278	119	0.0263	< 0.050	0.0033	0.0045	2.14	2.64
	FR_HMW1D_QTR_2021-07-05_N	2021 07 20	4.7	6.8	0.11	4,016	113.4	7.81	2,610	3,740	5.2	3,910	0.71	403	491	< 1.0	< 1.0	< 0.250	2.27	0.155	2,010	0.0145	114	0.0330	< 0.050	0.0024	< 0.0020	1.09	0.84
	FR_HMW1D_QTR_2021-10-04_N	2021 10 25	4.1	6.78	0.99	4,015	196.6	7.80	2,590	3,750	2.8	3,410	1.04	460	562	< 1.0	< 1.0	< 0.500	2.81	0.265	1,960	0.0158	112	0.178	< 0.050	0.0038	0.0035	1.55	2.28
FR_HMW1S	FR_HMW1S_QTR_2021-01-04_N	2021 02 05	3.5	6.8	1.3	3,884	165.2	7.27	2,820	3,490	1.5	3,580	0.67	422	514	< 1.0	< 1.0	< 0.250	2.04	0.245	1,820	0.661	114	< 0.0050	< 0.050	0.0012	< 0.0020	1.02	< 0.50
	FR_HMW1S_QTR_2021-04-05_N	2021 05 14	5.4	7.04	4.57	5,836	110.9	7.89	2,600	3,040	6.7	3,210	1.26	313	382	< 1.0	< 1.0	< 0.250	1.95	0.184	1,850	0.584	118	< 0.0050	< 0.050	< 0.0010	0.0026	1.38	1.40
	FR_HMW1S_QTR_2021-07-05_N	2021 07 20	4.2	6.82	0.45	3,914	54.4	7.88	2,550	3,630	5.5	3,520	0.30	387	472	< 1.0	< 1.0	< 0.250	2.16	0.179	1,930	0.595	115	< 0.0050	< 0.050	0.0022	0.0047	2.09	1.06
	FR_HMW1S_QTR_2021-10-04_N	2021 10 25	3.8	6.83	1.1	3,849	197.9	8.00	2,380	3,670	1.0	3,330	< 0.10	416	507	< 1.0	< 1.0	< 0.250	2.27	0.268	1,830	0.624	108	< 0.0050	0.311	0.0011	< 0.0020	0.59	< 0.50
	FR_DC2_QTR_2021-10-04_N	Duplicate	-	-	-	-	-	8.01	2,380	3,640	< 1.0	3,440	< 0.10	422	515	< 1.0	< 1.0	< 0.250	2.94	0.284	1,780	0.593	107	0.0102	0.527	0.0014	< 0.0020	1.14	1.36
	QA/QC RPD%		-	-	-	-	-	0	0	1	*	3	*	1	2	*	*	*	26	6	3	5	1	*	52	*	*	*	*
FR_HMW2	FR_HMW2_QTR_2021-01-04_N	2021 02 04	3.5	6.85	7.73	3,037	212.1	7.51	2,040	2,760	7.2	2,700	4.15	419	511	< 1.0	< 1.0	< 0.250	0.95	0.127	1,420	< 0.0050	49.2	0.0156	< 0.050	0.0072	0.0120	< 0.50	< 0.50
	FR_HMW2_QTR_2021-04-05_N	2021 05 20	2	6.97	5.15	2,884	168.4	7.91	1,950	2,710	15.4	2,490	6.50	412	502	< 1.0	< 1.0	< 0.250	0.81	0.173	1,330	0.0732	47.8	0.0059	< 0.050	0.0058	0.0148	5.20	0.69
	FR_HMW2_HLS_WG_20210823_NP	2021 08 23	6.7	6.88	2.01	2,589	224.9	7.41	1,730	2,520	1.6	2,340	1.10	412	612	< 1.0	< 1.0	< 0.500	1.27	< 0.200	1,230	< 0.0050	44.6	0.0196	< 0.050	0.0091	0.0090	1.01	1.08
FR_HMW3	FR_HMW3_QTR_2021-01-04_N	2021 02 05	1.7	7.3	4.28	1,017	102.3	7.66	630	927	3.2	716	3.10	221	269	< 1.0	< 1.0	< 0.250	0.53	0.269	345	0.141	9.88	< 0.0050	0.109	0.0021	0.0060	0.91	1.59
	FR_DC2_QTR_2021-01-04_N	Duplicate	-	-	-	-	-	7.65	611	938	4.4	718	3.67	214	261	< 1.0	< 1.0	< 0.250	0.79	0.270	336	0.140	9.36	0.0080	< 0.050	0.0020	0.0065	1.00	1.46
	QA/QC RPD%		-	-	-	-	-	0	3	1	*	0	17	3	3	*	*	*	39	0	3	1	5	*	*	*	*	*	*
	FR_HMW3_QTR_2021-04-05_N	2021 05 14	3.9	7.41	3.58	1,088	8.27	8.24	612	953	9.6	873	4.16	194	236	< 1.0	< 1.0	< 0.050	1.56	0.209	353	0.0650	13.6	0.0097	< 0.050	0.0031	0.0067	1.10	1.20
	FR_HMW3_QTR_2021-07-05_N	2021 07 21	4.7	7.26	2.07	914	80.4	8.27	478	847	1.0	628	2.29	199	243	< 1.0	< 1.0	< 0.050	0.42	0.241	276	0.0632	9.83	0.0043	< 0.050	0.0033	0.0064	1.27	2.35
	FR_HMW3_QTR_2021-10-18_N	2021 10 18	6	7.21	0.88	947	82.7	8.12	525	877	2.3	696	1.49	215	262	< 1.0	< 1.0	< 0.250	0.80	0.337	279	0.121	8.43	0.0076	0.470	0.0065	0.0073	1.30	1.12
FR_HMW5	FR_HMW5_QTR_2021-01-04_N	2021 02 04	3.1	8.2	10.5	380.2	-179.5	8.30	188	353	< 1.0	208	< 0.10	145	173	2.3	< 1.0	< 0.050	0.34	0.395	57.3	0.128	0.0314	0.0016	0.176	0.0211	0.0177	1.63	1.43
	FR_DC3_QTR_2021-01-04_N	Duplicate	-	-	-	-	-	8.20	190	349	< 1.0	208	< 0.10	147	179	< 1.0	< 1.0	< 0.050	0.39	0.378	59.0	0.0522	0.0779	0.0014	< 0.050	0.0169	0.0153	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	1	1	1	*	0	*	1	3	*	*	*	*	4	3	84	85	*	*	22	15	*	*
	FR_HMW5_QTR_2021-04-05_N	2021 05 14	3	8.22	1	3.74	-266.3	8.23	175	333	1.0	212	0.15	144	176	< 1.0	< 1.0	< 0.050	1.72	0.436	52.6	0.0801	0.0719	0.0011	0.134	0.0178	0.0149	0.59	0.73
	FR_HMW5_QTR_2021-07-05_N	2021 07 20	3.9	8.12	0.11	383.7	269.6	8.27	168	366	3.7	223	0.28	144	175	< 1.0	< 1.0	< 0.050	0.79	0.466	53.3	0.0666	0.0118	< 0.0010	0.110	0.0182	0.0195	< 0.50	< 0.50
	FR_HMW5_QTR_2021-10-04_N	2021 10 04	4.4	8.11	1.63	373.9	-210.3	8.22	182	367	< 1.0	216	0.32	145	177	< 1.0	< 1.0	< 0.050	0.39	0.377	56.9	0.0596	0.0061	< 0.0010	0.063	0.0201	0.0182	0.87	0.94
Fording River Valley																													
FR_TBSSMW-1	FR_TBSSMW-1_QTR_2021-01-04_N	2021 02 25	1.6	8.22	0.48	327.6	-170.5	8.18	143	299	< 1.0	146	1.14	168	205	< 1.0	< 1.0	< 0.050	0.29	0.435	15.2	2.94	0.0061	< 0.0010	2.70	< 0.0010	< 0.0020	0.92	0.77
	FR_TBSSMW-1_QTR_2021-04-05_N	2021 05 20	4.7	8.23	0.48	344.6	-165.2	8.17	162	347	1.7	181	2.05	194	237	< 1.0	< 1.0	< 0.050	0.29	0.420	10.9	3.40	< 0.0050	< 0.0010	3.31	< 0.0010	< 0.0020	0.98	1.07
	FR_TBSSMW-1_QTR_2021-07-05_N	2021 07 21	7.2	8.07	0.33	363.1	-149.3	8.46	148	341	10.1	174	1.69	187	220	4.1	< 1.0	< 0.050	0.23	0.300	12.4	3.16	0.0124	< 0.0010	4.24	< 0.0010	0.0065	1.02	1.51
	FR_TBSSMW-1_QTR_2021-10-04_N	2021 10 06	5.2	7.76	0.08	380	-90.3	8.40	147	362	< 1.0	187	0.29	193	223	6.0	< 1.0	< 0.050	0.25	0.320	10.4	3.80	< 0.0050	< 0.0010	3.40	< 0.0010	0.0044	0.69	1.12
FR_TBSSMW-2	FR_TBSSMW-2_QTR_2021-01-04_N	2021 02 25	0.4	7.8	10.72	751	99.3	7.99	435	686	< 1.0	469	0.25	154	188	< 1.0	< 1.0	< 0.050	0.47	0.196	218	< 0.0050	6.00	< 0.0010	0.113	0.0017	< 0.0020	< 0.50	< 0.50
	FR_TBSSMW-2_QTR_2021-04-05_N	2021 05 20	3.5	7.42	9.82	527	143.2	8.07	296	514	< 1.0	332	0.12	154	188	< 1.0	< 1.0	< 0.050	0.22	0.204	125	< 0.0050	3.46	< 0.0010	0.144	< 0.0010	< 0.0020	0.84	1.13
	FR_TBSSMW-2_QTR_2021-07-05_N	2021 07 21	8.8	7.78	7.43	385.2	157.2	8.30	190	362	< 1.0	232	< 0.10	131	159	< 1.0	< 1.0	< 0.050	0.33	0.197	66.9	0.0158	1.27	< 0.0010	0.082	0.0024	< 0.0020	1.14	0.72
	FR_DC1_QTR_2021-07-05_N	Duplicate	-	-	-	-	-	8.28	197	362	< 1.0	232	0.20	137	167	< 1.0	< 1.0	< 0.050	0.15	0.194	66.8	0.0074	1.27	< 0.0010	0.292	0.0018	< 0.0020	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	0	4	0	*	0	*	4	5	*	*	*	*	2	0	*	0	*	*	*	*	*	*
	FR_TBSSMW-2_QTR_2021-10-04_N	2021 10 06	7.7	7.54	8.08	548	210.3	8.26	263	518	4.6	350	0.74	138	169	< 1.0	< 1.0	< 0.050	0.24	0.223	126	< 0.0050	2.88	< 0.0010	0.180	0.0016	0.0025	1.06	0.59

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

TABLE FR-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Organics, Nutrient and Organics in Groundwater (FRO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Parameters: Field Temperature C	Field Parameters: pH (field) pH	Field Parameters: Dissolved Oxygen mg/L	Field Parameters: Field Conductivity µS/cm	Field Parameters: Field ORP mV	Physical Parameters: pH pH	Physical Parameters: Hardness mg/L	Physical Parameters: Conductivity µS/cm	Physical Parameters: Total Suspended Solids mg/L	Physical Parameters: Total Dissolved Solids mg/L	Physical Parameters: Turbidity ntu	Dissolved Inorganics: Total Alkalinity mg/L	Dissolved Inorganics: Bicarbonate mg/L	Dissolved Inorganics: Carbonate mg/L	Dissolved Inorganics: Hydroxide mg/L	Dissolved Inorganics: Bromide mg/L	Dissolved Inorganics: Chloride mg/L	Dissolved Inorganics: Fluoride mg/L	Dissolved Inorganics: Sulphate mg/L	Nutrients: Ammonia Nitrogen mg/L	Nutrients: Nitrate Nitrogen mg/L	Nutrients: Nitrite Nitrogen mg/L	Nutrients: Kjeldahl Nitrogen-N mg/L	Nutrients: Ortho-Phosphate mg/L	Nutrients: Phosphorus, Total mg/L	Organics: Total Organic Carbon mg/L	Organics: Dissolved Organic Carbon mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Fording River Valley																													
FR_POTWELLS	FR_POTWELLS_QTR_2021-01-04_N	2021 03 08	2.3	7.67	15.17	686	111.5	8.14	410	662	< 1.0	490	0.15	160	196	< 1.0	< 1.0	< 0.250	0.96	0.192	210	< 0.0050	5.69	0.0085	0.569	0.0024	< 0.0020	0.60	0.60
	FR_POTWELLS_QTR_2021-04-05_N	2021 05 20	4	8.13	13.37	389.2	142.6	7.95	208	389	< 1.0	251	< 0.10	141	172	< 1.0	< 1.0	< 0.050	0.16	0.214	74.6	0.0143	1.93	< 0.0010	0.371	< 0.0010	< 0.0020	0.95	0.88
	FR_POTWELLS_QTR_2021-07-05_N	2021 09 15	9	8.03	12.6	417.7	139.9	8.30	225	446	< 1.0	256	< 0.10	141	172	< 1.0	< 1.0	< 0.050	0.22	0.224	97.6	0.0123	2.06	< 0.0010	0.244	0.0022	< 0.0020	< 0.50	< 0.50
	FR_POTWELLS_QTR_2021-10-04_N	2021 12 08	3.7	7.26	11.86	90.1	183.5	8.01	302	583	2.3	364	< 0.10	143	174	< 1.0	< 1.0	< 0.050	0.29	0.165	162	< 0.0050	4.15	< 0.0010	0.295	0.0019	0.0021	0.83	0.54
	FR_DC3_QTR_2021-10-04_N	Duplicate	-	-	-	-	-	7.91	310	577	< 1.0	356	< 0.10	155	189	< 1.0	< 1.0	< 0.050	0.28	0.160	162	< 0.0050	4.15	< 0.0010	0.294	0.0021	0.0024	0.82	0.59
	QA/QC RPD%		-	-	-	-	-	1	3	1	*	2	*	8	8	*	*	*	*	3	0	*	0	*	0	*	*	*	*
FR_GCMW-1B	FR_GCMW-1B-2021-01-13	2021 01 13	-	-	-	-	-	8.60	61.8	770	3.6	490	5.20	432	499	13.6	< 1.0	0.108	20.6	*1.65*	2.98	0.192	0.0566	0.0010	0.303	0.0141	0.0246	6.66	6.64
	FR_GCMW-1B_QTR_2021-04-05_N	2021 05 20	6.1	8.35	1.07	753	-178.8	8.50	56.3	741	6.6	455	11.1	410	468	16.1	< 1.0	0.052	19.1	*1.88*	7.80	0.279	0.0103	< 0.0010	0.344	0.0053	0.0273	3.21	3.90
	FR_GCMW-1B_2021-09-15	2021 09 15	-	-	-	-	-	8.56	69.1	747	3.4	453	8.17	395	454	13.7	< 1.0	0.075	15.5	*1.45*	3.24	0.118	0.0355	0.0022	0.346	< 0.0010	0.0129	7.55	7.70
	FR_GCMW-1B_2021-11-29	2021 11 29	5.74	8.44	0.34	740.82	-197.4	8.49	73.0	711	3.4	449	6.82	403	467	11.8	< 1.0	0.069	13.5	*1.34*	2.32	0.129	< 0.0050	0.0017	0.410	0.0032	0.0154	9.77	9.41
FR_GCMW-2	FR_GCMW-2_QTR_2021-01-04_N	2021 01 28	4.2	7.23	3.29	1,700	164.2	8.02	995	1,580	1.7	1,320	0.46	232	283	< 1.0	< 1.0	< 0.250	2.04	0.121	557	0.0224	57.2	0.0065	< 0.050	0.0020	< 0.0020	0.91	1.09
	FR_GCMW-2_QTR_2021-04-05_N	2021 05 20	4.9	7.43	4.68	1,483	139.9	8.13	879	1,430	2.2	1,130	0.48	237	289	< 1.0	< 1.0	< 0.250	2.44	0.177	460	0.0144	45.2	< 0.0050	< 0.050	< 0.0010	< 0.0020	1.08	2.28
	FR_GCMW-2_QTR_2021-07-05_N	2021 07 26	10.8	7.25	2.02	1,440	181.9	8.18	747	1,360	3.7	1,120	0.18	226	276	< 1.0	< 1.0	< 0.250	1.82	0.167	420	0.0054	49.1	0.0133	< 0.050	< 0.0010	0.0031	0.84	0.76
	FR_DC3_QTR_2021-07-05_N	Duplicate	-	-	-	-	-	8.14	763	1,360	4.2	1,090	0.20	236	287	< 1.0	< 1.0	< 0.250	2.57	0.170	426	0.0102	48.5	0.0107	< 0.050	< 0.0010	0.0023	2.19	2.39
	QA/QC RPD%		-	-	-	-	-	0	2	0	*	3	*	4	4	*	*	*	34	2	1	*	1	22	*	*	*	*	*
	FR_GCMW-2_QTR_2021-12-07_N	2021 12 07	5.8	6.89	3.25	1,831	198.3	7.67	1,010	1,610	3.7	1,310	1.51	268	326	< 1.0	< 1.0	< 0.250	3.40	0.190	561	0.0271	64.0	0.0071	< 0.050	0.0023	0.128	6.15	1.66
FR_MW-1B	FR_MW-1B_QTR_2021-01-04_N	2021 02 25	2.8	7.68	8.76	1,084	132.5	7.95	616	996	2.1	702	1.06	190	232	< 1.0	< 1.0	< 0.250	2.33	0.118	238	< 0.0050	20.3	0.0059	< 0.050	0.0024	< 0.0020	< 0.50	< 0.50
	FR_MW-1B_QTR_2021-04-05_N	2021 05 20	3.3	7.83	8.76	709	133.6	8.06	334	635	2.2	446	2.24	164	201	< 1.0	< 1.0	< 0.050	0.57	0.171	150	< 0.0050	12.3	< 0.0010	< 0.050	< 0.0010	0.0147	1.02	1.03
	FR_MW-1B_QTR_2021-07-05_N	2021 09 15	7.8	7.65	6.25	751	131.2	8.30	383	724	< 1.0	482	0.57	173	207	2.0	< 1.0	< 0.050	0.71	0.170	187	0.0125	14.8	< 0.0010	0.150	0.0030	0.0099	0.73	< 0.50
	FR_MW-1B_QTR_2021-10-04_N	2021 12 08	5.4	7.17	8.64	948	183.6	7.92	478	887	1.1	608	1.51	189	230	< 1.0	< 1.0	< 0.250	0.95	0.129	254	0.0067	20.2	< 0.0050	0.300	0.0026	0.0042	0.60	0.53
FR_MW_NTPSE	FR_MW_NTPSE_WG_2021_02_04_NP	2021 02 04	7.3	7.17	1.61	1,595	-106.7	8.08	1,040	1,560	117	1,190	273	643	784	< 5.0	< 5.0	< 0.25	6.08	0.15	455	0.749	< 0.025	< 0.0050	0.544	< 0.0010	0.268	12.0	6.05
FR_09-04-A	FR_09-04-A_QTR_2021-01-04_N	2021 01 27	3.1	7.07	-0.13	1,251	173.6	8.07	750	1,180	< 1.0	876	< 0.10	371	453	< 1.0	< 1.0	< 0.250	7.63	0.261	375	0.0076	< 0.0250	< 0.0050	< 0.050	0.0041	< 0.0020	< 0.50	< 0.50
	FR_09-04-A_QTR_2021-04-05_N	2021 04 26	8.9	7.16	3.4	1,252	147.4	8.18	687	1,220	1.7	894	< 0.10	378	462	< 1.0	< 1.0	< 0.250	7.99	0.299	376	0.0116	< 0.0250	< 0.0050	< 0.050	< 0.0010	< 0.0020	1.24	1.32
	FR_DC1_QTR_2021-04-05_N	Duplicate	-	-	-	-	-	8.17	707	1,210	1.0	802	< 0.10	375	457	< 1.0	< 1.0	< 0.250	8.07	0.296	379	0.0092	0.0642	0.0057	0.058	< 0.0010	< 0.0020	1.30	2.04
	QA/QC RPD%		-	-	-	-	-	0	3	1	*	11	*	1	1	*	*	*	1	1	1	*	*	*	*	*	*	*	*
	FR_09-04-A_QTR_2021-07-05_N	2021 07 28	11.5	7.06	0.65	128.6	143.4	7.99	717	1,140	< 1.0	936	0.81	329	401	< 1.0	< 1.0	< 0.250	7.95	0.258	402	0.0221	0.0300	< 0.0050	< 0.050	0.0021	0.0028	3.56	3.61
	FR_09-04-A_QTR_2021-10-04_N	2021 11 02	8.5	6.91	0.07	1,428	206.2	7.43	701	1,210	1.1	870	< 0.10	381	464	< 1.0	< 1.0	< 0.250	9.69	0.367	373	0.0209	0.257	< 0.0050	0.080	0.0044	0.0042	0.91	0.97
FR_09-04-B	FR_09-04-B_QTR_2021-01-04_N	2021 01 27	8.3	7.09	0.31	1,277	204.5	7.98	786	1,190	33.9	916	7.92	362	441	< 1.0	< 1.0	< 0.250	8.30	0.232	386	0.0773	0.106	< 0.0050	0.073	0.0042	0.0654	1.99	1.94
	FR_09-04-B_QTR_2021-04-05_N	2021 04 26	8.9	7.13	3.9	1,264	158.8	8.15	707	1,230	< 1.0	846	0.14	369	450	< 1.0	< 1.0	< 0.250	8.16	0.287	385	0.0055	< 0.0250	< 0.0050	0.062	0.0011	< 0.0020	1.22	1.60
	FR_09-04-B_QTR_2021-07-05_N	2021 07 28	9.7	7.07	0.29	1,289	164.5	8.13	702	1,180	< 1.0	944	0.50	357	436	< 1.0	< 1.0	< 0.250	7.44	0.231	402	0.0243	0.0264	< 0.0050	< 0.050	0.0013	0.0030	3.28	3.85
	FR_09-04-B_QTR_2021-10-04_N	2021 11 02	8.5	6.95	0.01	1,446	204.3	7.44	718	1,240	1.4	886	< 0.10	379	462	< 1.0	< 1.0	< 0.250	9.99	0.352	382	0.0219	0.0595	< 0.0050	0.067	0.0044	0.0047	0.93	1.04
FR_KB-1	FR_KB-1A_2021-02-18	2021 02 18	1.72	7.53	8.94	3,110.8	108.1	7.49	1,560	2,320	< 1.0	2,060	0.10	410	500	< 1.0	< 1.0	< 0.250	1.80	0.126	881	0.0114	102	< 0.0050	< 0.050	0.0012	< 0.0020	< 0.50	< 0.50
	FR_KB-1_WG_2021-06_NP	2021 06 01	6.96	6.3	7.57	1,500.2	148.3	7.91	742	1,300	< 1.0	916	< 0.10	304	371	< 1.0	< 1.0	< 0.250	1.01	0.130	334	< 0.0050	42.2	< 0.0050	< 0.050	0.0013	< 0.0020	0.57	1.10
	FR_KB-1_WG_2021-08_NP	2021 08 10	5.36	7.12	7.46	1,685.1	98.4	8.02	970	1,540	< 1.0	1,270	0.16	385	469	< 1.0	< 1.0	< 0.250	1.10	0.141	422	0.0146	45.6	< 0.0050	0.231	0.0022	0.0052	0.82	0.88
	FR_KB-1_WG_2021-11_NP	2021 12 01	4.39	7.15	8.45	2,450.4	146.4	7.85	1,430	2,350	1.5	1,820	< 0.10	481	586	< 1.0	< 1.0	< 0.250	1.69	0.184	715	< 0.0050	89.6	< 0.0050	< 0.050	0.0031	0.0027	0.58	0.72

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

TABLE FR-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Organics, Nutrient and Organics in Groundwater (FRO)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature	pH (field)	Dissolved Oxygen	Field Conductivity	Field ORP	pH	Hardness	Conductivity	Total Suspended Solids	Total Dissolved Solids	Turbidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Bromide	Chloride	Fluoride	Sulphate	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Kjeldahl Nitrogen-N	Ortho-Phosphate	Phosphorus, Total	Total Organic Carbon	Dissolved Organic Carbon
			C	pH	mg/L	µS/cm	mV	pH	mg/L	µS/cm	mg/L	mg/L	ntu	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Fording River Valley																													
FR_KB-2	FR_KB-2_2021-02-19	2021 02 19	1.38	7.35	8.31	3,056	108.4	7.43	1,440	2,310	3.2	1,940	12.2	400	488	< 1.0	< 1.0	< 0.250	1.45	0.100	782	0.0071	99.3	< 0.0050	< 0.050	0.0021	0.0138	< 0.50	< 0.50
	FR_KB-2_WG_2021-06_NP	2021 06 01	6.01	6.64	7.46	1,454.3	132.9	7.83	704	1,250	4.6	968	13.4	299	365	< 1.0	< 1.0	< 0.250	0.89	0.132	302	0.186	39.8	< 0.0050	< 0.050	0.0013	0.0130	0.62	1.12
	FR_KB-2_WG_2021-08_NP	2021 08 13	8.19	7.07	6.25	1,680.5	92.5	7.75	919	1,460	3.2	1,270	6.76	383	468	< 1.0	< 1.0	< 0.250	0.84	0.140	395	0.0059	46.6	< 0.0050	0.387	0.0012	0.0113	0.83	0.62
	FR_KB-2_WG_2021-11_NP	2021 11 23	3.68	6.92	7.91	2,268.5	190.7	7.48	1,320	2,180	< 1.0	1,780	0.44	459	560	< 1.0	< 1.0	< 0.250	1.78	0.184	664	< 0.0050	84.8	< 0.0050	< 0.050	0.0022	0.0034	< 0.50	0.62
	FR_DC1_WG_2021-11_NP	Duplicate	-	-	-	-	-	7.58	1,330	2,170	< 1.0	1,780	0.75	459	560	< 1.0	< 1.0	< 0.250	1.64	0.171	658	< 0.0050	84.0	< 0.0050	< 0.050	0.0020	0.0050	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	1	1	0	*	0	*	0	0	*	*	*	8	7	1	*	1	*	*	*	*	*	*
FR_KB-3A	FR_KB-3A_2021-03-24	2021 03 24	3.07	7.15	4.79	2,027.6	106.5	7.74	1,210	1,970	3.6	1,620	0.63	399	486	< 1.0	< 1.0	< 0.250	1.86	< 0.100	591	0.0065	71.4	0.0118	< 0.050	0.0012	0.0028	0.80	< 0.50
	FR_KB-3A_WG_2021-06-25_NP	2021 06 25	8.00	6.37	3.46	2,154	168.1	7.88	1,160	1,930	5.7	1,750	2.85	332	406	< 1.0	< 1.0	< 0.050	1.44	0.077	617	0.0473	74.6	**0.219**	< 0.050	< 0.0010	0.0055	1.07	1.20
	FR_KB-3A_WG_2021-08_NP	2021 08 13	6.79	7.14	2.77	2,113.7	117.3	7.85	1,180	1,860	11.4	1,620	2.88	370	451	< 1.0	< 1.0	< 0.250	1.28	< 0.100	606	0.0262	72.2	0.0466	< 0.500	0.0041	0.0156	0.69	0.57
	FR_KB-3A_WG_2021-11_NP	2021 11 25	2.89	7.01	3.83	1,969.8	140.5	7.60	1,130	1,920	< 1.0	1,420	0.28	412	412	< 1.0	< 1.0	< 0.250	1.48	< 0.100	554	0.0075	64.5	0.0142	< 0.050	0.0014	0.0022	< 0.50	< 0.50
FR_KB-3B	FR_KB-3B_2021-03-24	2021 03 24	2.81	7.15	7.46	2,236.21	115.2	7.76	1,340	2,200	5.2	1,810	1.38	388	473	< 1.0	< 1.0	< 0.250	2.59	< 0.100	672	0.194	88.0	0.0055	< 0.050	0.0011	0.0039	1.36	1.04
	FR_KB-3B_WG_2021-06-25_NP	2021 06 25	6.22	6.74	6.96	1,954.9	167.4	7.82	981	1,730	1.3	1,500	1.20	328	400	< 1.0	< 1.0	< 0.250	1.48	< 0.100	526	0.0063	69.4	< 0.0050	< 0.050	0.0016	< 0.0020	0.92	1.05
	FR_KB-3B_WG_2021-08_NP	2021 08 13	6.45	7.2	6.17	1,733.1	91.4	7.82	962	1,560	3.5	1,330	1.45	363	443	< 1.0	< 1.0	< 0.250	0.86	< 0.100	450	0.0635	55.6	< 0.0050	2.96	0.0010	0.0032	< 0.50	0.62
	FR_KB-3B_WG_2021-11_NP	2021 11 24	3.13	6.99	6.57	1,924.4	157.1	7.72	1,090	1,810	2.6	1,660	1.12	422	515	< 1.0	< 1.0	< 0.250	0.92	< 0.100	523	< 0.0050	62.4	< 0.0050	< 0.050	0.0016	0.0034	< 0.50	< 0.50
FR_MW-SK1A	FR_MW-SK1A_QTR_2021-01-04_N	2021 03 18	4.6	7.08	7.19	1,968	186.2	7.38	1,160	1,830	< 1.0	1,440	< 0.10	358	436	< 1.0	< 1.0	< 0.250	2.58	0.106	549	< 0.0050	72.7	< 0.0050	< 0.050	0.0016	< 0.0020	< 0.50	0.87
	FR_MW-SK1A_QTR_2021-04-05_N	2021 05 13	5	7.18	8.92	2,052	123.9	8.06	1,180	1,980	2.3	1,530	0.15	328	400	< 1.0	< 1.0	0.331	5.60	< 0.100	636	0.0128	78.3	< 0.0050	< 0.050	0.0023	0.0044	1.18	3.06
	FR_MW-SK1A_QTR_2021-07-05_N	2021 07 28	7.5	7.37	7	1,538	155.8	7.97	842	1,350	< 1.0	1,160	0.52	281	343	< 1.0	< 1.0	< 0.250	1.64	0.126	390	0.0204	43.7	< 0.0050	< 0.050	0.0029	0.0028	2.69	3.03
	FR_MW-SK1A_QTR_2021-10-04_N	2021 11 01	5	7	6.55	1,712	245.8	7.88	1,040	1,590	1.2	1,290	< 0.10	421	421	< 1.0	< 1.0	< 0.250	1.42	< 0.100	424	< 0.0050	49.4	0.0058	< 0.050	0.0035	0.0033	1.03	1.14
FR_MW-SK1B	FR_MW-SK1B_QTR_2021-01-04_N	2021 03 11	4.8	7.28	0.12	1,041	149.3	7.97	571	965	1.0	664	0.74	288	352	< 1.0	< 1.0	< 0.250	5.13	0.137	287	< 0.0050	7.49	0.108	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	FR_MW-SK1B_QTR_2021-04-05_N	2021 05 13	4.9	7.42	0.72	1,043	114.8	7.99	571	980	1.5	749	0.60	247	301	< 1.0	< 1.0	< 0.250	4.40	0.103	290	0.0306	9.27	0.0579	< 0.050	< 0.0010	< 0.0020	0.85	1.26
	FR_DC3_QTR_2021-04-05_N	Duplicate	-	-	-	-	-	8.06	568	977	2.8	710	0.40	260	318	< 1.0	< 1.0	< 0.250	4.46	0.104	292	0.0352	9.12	0.0607	< 0.050	< 0.0010	< 0.0020	0.90	1.00
	QA/QC RPD%		-	-	-	-	-	1	1	0	*	5	*	5	5	*	*	*	1	1	1	14	2	5	*	*	*	*	*
	FR_MW-SK1B_QTR_2021-07-05_N	2021 07 28	7.3	7.41	0.44	1,083	148.4	8.18	571	980	< 1.0	785	0.49	255	311	< 1.0	< 1.0	< 0.250	4.00	0.100	312	0.0269	9.61	0.0557	0.139	< 0.0010	< 0.0020	2.36	1.74
	FR_MW-SK1B_QTR_2021-10-04_N	2021 11 01	5.1	7.23	0.46	1,074	240.1	7.83	621	1,030	< 1.0	777	0.17	311	311	< 1.0	< 1.0	< 0.250	3.91	< 0.100	295	< 0.0050	10.2	0.0611	0.103	0.0014	0.0020	0.94	0.84
FR_09-01-A	FR_09-01-A_QTR_2021-01-04_N	2021 02 22	5.4	7.09	0.35	1,360	219.8	7.81	824	1,270	< 1.0	980	< 0.10	315	385	< 1.0	< 1.0	< 0.250	4.66	0.105	400	< 0.0050	21.4	< 0.0050	< 0.050	0.0038	0.0307	< 0.50	< 0.50
	FR_DC1_QTR_2021-01-04_N	Duplicate	-	-	-	-	-	7.77	844	1,260	< 1.0	1,020	< 0.10	318	388	< 1.0	< 1.0	< 0.250	3.64	< 0.100	391	0.0119	21.6	< 0.0050	< 0.050	0.0036	0.0036	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	1	2	1	*	4	*	1	1	*	*	*	25	*	2	*	1	*	*	*	*	*	*
	FR_09-01-A_QTR_2021-04-05_N	2021 05 13	5.5	7.24	9.6	1,726	134	8.10	977	1,650	2.3	1,340	< 0.10	289	353	< 1.0	< 1.0	< 0.250	2.08	0.105	513	< 0.0050	59.0	< 0.0050	< 0.050	0.0011	< 0.0020	1.36	2.90
	FR_09-01-A_QTR_2021-07-05_N	2021 07 22	10.4	7.49	8.44	1,316	156.9	8.12	705	1,220	< 1.0	963	0.14	345	421	< 1.0	< 1.0	< 0.250	1.35	0.216	295	< 0.0050	30.8	< 0.0050	0.074	< 0.0010	0.0027	1.99	1.51
	FR_09-01-A_QTR_2021-10-04_N	2021 10 15	6.9	7.23	8.19	1,667	186.6	8.05	926	1,510	< 1.0	1,220	< 0.10	366	446	< 1.0	< 1.0	< 0.250	1.49	< 0.100	394	0.0050	44.6	< 0.0050	< 0.050	0.0038	0.0065	< 0.50	< 0.50
FR_09-01-B	FR_09-01-B_QTR_2021-01-04_N	2021 02 22	5.7	7.15	69	8.62	217	7.87	835	1,290	1.5	1,020	0.82	296	361	< 1.0	< 1.0	< 0.250	3.99	0.131	398	< 0.0050	24.2	0.0051	< 0.050	0.0095	0.0071	< 0.50	< 0.50
	FR_09-01-B_QTR_2021-04-05_N	2021 05 13	6.7	7.39	8.05	5.4	157.8	8.31	547	584	13.5	730	4.70	152	183	< 1.0	< 1.0	< 0.250	1.43	0.155	300	0.0082	24.9	0.0053	< 0.050	0.0026	0.0096	1.44	1.53
	FR_09-01-B_QTR_2021-07-05_N	2021 07 22	6.6	7.23	8.73	1,234	154.6	7.97	657	1,140	< 1.0	923	0.48	313	382	< 1.0	< 1.0	< 0.250	1.15	0.152	281	0.0168	28.2	< 0.0050	< 0.050	< 0.0010	< 0.0020	1.00	1.03
	FR_09-01-B_QTR_2021-10-04_N	2021 10 15	7.7	7.3	6.52	1,429	172.1	7.89	788	1,260	1.7	1,020	3.28	273	333	< 1.0	< 1.0	< 0.250	2.46	0.153	360	0.0065	31.3	< 0.0050	< 0.050	0.0035	0.0042	0.54	< 0.50
	FR_DC1_QTR_2021-10-04_N	Duplicate	-	-	-	-	-	7.85	808	1,250	1.1	1,050	2.78	300	366	< 1.0	< 1.0	< 0.250	2.44	0.148	359	< 0.0050	30.6	< 0.0050	< 0.050	0.0036	0.0042	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	1	3	1	*	3	17	9	9	*	*	*	1	3	0	*	2	*	*	*	*	*	*

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QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE FR-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Organics, Nutrient and Organics in Groundwater (FRO)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature	pH (field)	Dissolved Oxygen	Field Conductivity	Field ORP	pH	Hardness	Conductivity	Total Suspended Solids	Total Dissolved Solids	Turbidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Bromide	Chloride	Fluoride	Sulphate	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Kjeldahl Nitrogen-N	Ortho-Phosphate	Phosphorus, Total	Total Organic Carbon	Dissolved Organic Carbon
			C	pH	mg/L	µS/cm	mV	pH	mg/L	µS/cm	mg/L	mg/L	ntu	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Fording River Valley																													
FR_09-02-A	FR_09-02-A_QTR_2021-01-04_N	2021 03 11	2	7.58	11.17	1,346	151.1	8.02	756	1,240	24.8	941	15.4	250	304	< 1.0	< 1.0	< 0.250	4.08	0.183	438	0.0050	23.2	< 0.0050	< 0.050	0.0024	0.0318	< 0.50	< 0.50
	FR_09-02-A_QTR_2021-04-05_N	2021 05 13	3.8	7.83	8.92	1,037	133.9	8.04	650	1,140	7.1	854	1.53	246	300	< 1.0	< 1.0	< 0.250	3.22	0.129	350	0.0077	21.6	< 0.0050	< 0.050	0.0025	0.0060	1.22	1.18
	FR_09-02-A_QTR_2021-07-05_N	2021 07 22	8.3	7.63	5.63	853	126.5	8.13	446	794	8.2	595	6.57	250	306	< 1.0	< 1.0	< 0.050	0.93	0.191	171	0.0083	12.0	< 0.0010	0.151	< 0.0010	0.0123	1.66	1.71
	FR_DC2_QTR_2021-07-05_N	Duplicate	-	-	-	-	-	8.05	444	781	6.7	576	8.64	238	290	< 1.0	< 1.0	< 0.050	0.97	0.188	170	0.0158	11.8	< 0.0010	< 0.050	0.0012	0.0110	1.56	1.74
	QA/QC RPD%		-	-	-	-	-	1	0	2	20	3	27	5	5	*	*	*	4	2	1	*	2	*	*	*	11	*	*
	FR_09-02-A_QTR_2021-10-04_N	2021 10 15	10.4	7.54	7.74	1,017	169	8.04	546	950	7.5	714	9.98	208	253	< 1.0	< 1.0	< 0.250	1.68	0.142	284	< 0.0050	15.7	< 0.0050	0.092	0.0044	0.0126	0.73	0.81
FR_09-02-B	FR_09-02-B_QTR_2021-01-04_N	2021 03 11	3.2	7.52	7.6	1,022	142.4	8.04	653	1,110	12.8	848	3.00	236	287	< 1.0	< 1.0	< 0.250	3.64	0.178	343	0.0244	22.4	< 0.0050	< 0.050	0.0017	0.0037	< 0.50	< 0.50
	FR_09-02-B_QTR_2021-04-05_N	2021 05 13	3.7	7.66	9.83	1,062	144.2	8.17	565	1,020	5.2	758	2.04	199	243	< 1.0	< 1.0	< 0.250	2.22	0.107	317	< 0.0050	22.7	< 0.0050	< 0.050	0.0012	0.0045	1.51	2.47
	FR_09-02-B_QTR_2021-07-05_N	2021 07 22	5.8	7.49	6.59	917	135.4	8.18	483	851	1.3	634	0.47	260	317	< 1.0	< 1.0	< 0.050	1.39	0.166	192	< 0.0050	12.2	< 0.0010	< 0.050	< 0.0010	0.0024	1.76	2.02
	FR_09-02-B_QTR_2021-10-04_N	2021 10 15	9.8	7.51	6.15	985	169.8	8.20	510	921	1.2	659	0.44	220	269	< 1.0	< 1.0	< 0.250	2.06	0.159	267	0.0053	14.3	< 0.0050	0.102	0.0037	0.0116	< 0.50	< 0.50
FR_GH_WELL4	FR_GH_WELL4_QTR_2021-01-04_N	2021 01 28	5.9	7.22	5.14	1,437	131.7	8.12	829	1,330	< 1.0	1,060	0.30	303	370	< 1.0	< 1.0	< 0.250	1.58	< 0.100	350	0.0531	48.0	0.0267	< 0.050	0.0010	< 0.0020	3.26	1.53
	FR_GH_WELL4_QTR_2021-04-05_N	2021 04 26	6.1	7.29	2.76	1,473	97	8.12	838	1,560	1.8	1,190	1.05	321	391	< 1.0	< 1.0	< 0.250	2.30	< 0.100	403	0.188	55.5	0.321	< 0.050	< 0.0010	0.0026	1.28	1.27
	FR_GH_WELL4_QTR_2021-07-05_N	2021 09 15	8.2	7.3	5.49	1,227	113.6	8.13	628	1,180	< 1.0	821	0.95	298	364	< 1.0	< 1.0	< 0.250	3.59	0.125	408	0.121	45.0	**0.561**	< 0.050	< 0.0010	0.0039	1.51	1.40
	FR_GH_WELL4_QTR_2021-10-04_N	2021 11 22	6.9	7.27	5.59	1,370	110.4	7.81	721	1,290	< 1.0	964	1.21	323	394	< 1.0	< 1.0	< 0.250	2.47	0.109	330	0.194	39.4	0.0477	< 0.050	0.0015	< 0.0020	0.91	1.04
RG_MW_FR10A	RG_MW_FR10A_WG_2021_05_19_NP	2021 05 19	6.1	6.2	6.6	337.4	117	8.20	253	512	29.0	333	33.7	191	233	< 5.0	< 5.0	< 0.050	2.06	0.222	102	0.149	0.316	0.0034	< 0.20	< 0.0010	0.0278	6.63	0.97
	RG_MW_FR10A_WG_2021_08_27_NP	2021 08 27	6.2	7.78	1.61	505	112	8.01	284	498	581	404	622	171	208	< 5.0	< 5.0	< 0.050	1.58	0.219	100	0.103	0.0867	0.0040	0.497	< 0.0010	0.466	1.34	1.58
	RG_MW_FR10A_WG_2021_11_05_NP	2021 11 05	3.8	7.55	4.39	554	-55.8	8.19	265	554	15,400	452	100,000	206	252	< 5.0	< 5.0	< 0.050	2.08	0.235	94.4	0.226	< 0.0050	< 0.0010	6.6	< 0.0010	17.4	310	0.94
RG_MW_FR10B	RG_MW_FR10B_WG_2021_05_19_NP	2021 05 19	4.2	7.41	3.48	621	53.6	7.96	394	629	5.0	469	8.28	215	262	< 5.0	< 5.0	< 0.050	1.03	0.085	138	0.0086	6.35	0.0222	< 0.20	< 0.0010	0.0128	< 0.50	< 0.50
	RG_MW_FR10B_WG_2021_08_27_NP	2021 08 27	4.2	7.41	3.72	595.4	94.5	7.88	355	561	3.4	417	5.71	185	226	< 5.0	< 5.0	< 0.050	1.01	0.110	97.3	< 0.0050	4.79	0.0043	0.286	0.0038	0.0105	1.20	1.20
	RG_MW_FR10B_WG_2021_11_05_NP	2021 11 05	3.4	7.37	4.77	683	100.3	8.14	359	680	< 1.0	444	0.15	238	290	< 5.0	< 5.0	< 0.050	1.13	0.082	115	0.0114	5.83	0.0036	< 0.050	0.0023	0.0055	0.78	0.83
RG_MW_FR10C	RG_MW_FR10C_WG_2021_05_19_NP	2021 05 19	5.6	7.09	0.34	552	206	8.15	316	537	1.6	372	1.29	177	216	< 5.0	< 5.0	< 0.050	0.73	0.107	137	< 0.0050	2.06	0.0370	0.32	0.0029	0.0053	< 0.50	< 0.50
	RG_MW_MC10A_WG_2021_05_19_NP	Duplicate	-	-	-	-	-	8.16	305	528	1.7	368	1.55	170	208	< 5.0	< 5.0	< 0.050	0.73	0.107	137	0.0093	2.09	0.0384	< 0.20	0.0024	0.0097	1.71	0.65
	QA/QC RPD%		-	-	-	-	-	0	4	2	*	1	18	4	4	*	*	*	0	0	0	*	1	4	*	*	*	*	*
	RG_MW_FR10C_WG_2021_08_27_NP	2021 08 27	4.8	7.43	0.4	638	162.4	8.20	389	645	< 1.0	467	0.38	162	197	< 5.0	< 5.0	< 0.050	1.01	0.103	177	< 0.0050	1.45	0.0042	0.106	0.0046	0.0038	1.08	1.02
	RG_MW_FR10C_WG_2021_11_05_NP	2021 11 05	4	7.5	0.49	585	-9.3	8.17	316	595	58.7	397	12.8	191	232	< 5.0	< 5.0	< 0.050	0.68	0.111	126	< 0.0050	0.366	0.0011	0.197	< 0.0010	0.0936	1.24	1.28
	RG_MW_MC11A_WG_2021_11_05_NP	Duplicate	-	-	-	-	-	8.18	316	596	43.3	391	13.8	204	249	< 5.0	< 5.0	< 0.050	0.81	0.136	158	< 0.0050	0.420	0.0044	0.148	< 0.0010	0.0852	1.52	1.41
	QA/QC RPD%		-	-	-	-	-	0	0	0	30	2	8	7	7	*	*	*	17	20	23	*	14	*	*	*	9	*	*
Swift Creek																													
FR_MW18-02	FR_MW18-02_2021-06-02_NP	2021 06 02	13.5	7.38	5.19	2,442	176.6	8.00	1,540	2,210	13.1	2,210	8.30	308	-	-	-	< 0.250	3.58	0.117	1,240	0.0077	17.1	0.0295	< 0.050	0.0010	0.0131	2.20	5.73
	FR_MW18-02_WG_2021_09_01_NP	2021 09 01	11.0	5.78	4.11	2,025	62	7.88	1,540	2,590	8.6	2,670	3.05	378	462	< 1.0	< 1.0	< 0.250	3.08	< 0.100	1,390	< 0.0050	23.0	0.0081	< 0.050	0.0028	0.0114	1.43	2.51
	FR_MW18-02_WG_2021_11_09_NP	2021 11 09	3.6	7.3	3.730	2,265	105.3	7.64	1,640	2,120	1.7	1,970	0.69	348	348	< 1.0	< 1.0	< 0.250	5.26	0.123	1,190	< 0.0050	11.6	< 0.0050	< 0.050	0.0032	0.0050	3.44	3.66
Blanks																													
Field Blanks																													
FR_HMW1S	FR_FLD_QTR_2021-01-04_N	2021 02 05	-	-	-	-	-	5.58	< 0.60	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
FR_MW-SK1B	FR_FLD_QTR_2021-04-05_N	2021 05 13	-	-	-	-	-	5.51	< 0.50	< 2.0	< 1.0	< 10	< 0.10	1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
FR_09-02-B	FR_FLD_QTR_2021-07-05_N	2021 07 22	-	-	-	-	-	5.58	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
RG_MW_FR10B	RG_MW_MC10B_WG_2021_08_27_NP	2021 08 27	-	-	-	-	-	5.28	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	0.0061	0.0438	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
FR_09-02-A	FR_FLD_QTR_2021-10-04_N	2021 10 15	-	-	-	-	-	4.62	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
RG_MW_FR10B	RG_MW_MC10B_WG_2021_11_05_NP	2021 11 05	-	-	-	-	-	5.62	20.2	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
FR_KB-2	FR_FLD1_WG_2021-11_NP	2021 11 23	-	-	-	-	-	6.53	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE FR-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Organics, Nutrient and Organics in Groundwater (FRO)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature	pH (field)	Dissolved Oxygen	Field Conductivity	Field ORP	pH	Hardness	Conductivity	Total Suspended Solids	Total Dissolved Solids	Turbidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Bromide	Chloride	Fluoride	Sulphate	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Kjeldahl Nitrogen-N	Ortho-Phosphate	Phosphorus, Total	Total Organic Carbon	Dissolved Organic Carbon
			C	pH	mg/L	µS/cm	mV	pH	mg/L	µS/cm	mg/L	mg/L	ntu	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Blanks																													
Trip Blanks																													
	FR_TRP_QTR_2021-01-04_N	2021 02 04	-	-	-	-	-	5.50	< 0.60	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	0.0367	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	FR_TRP_QTR_2021-04-05_N	2021 04 26	-	-	-	-	-	5.45	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	0.0279	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	FR_TRP_QTR_2021-07-05_N	2021 07 21	-	-	-	-	-	5.51	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	FR_TRP_QTR_2021-10-04_N	2021 10 15	-	-	-	-	-	4.60	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	0.0261	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	RG_MW_MC10C_WG_2021_05_19_NP	2021 05 19	-	-	-	-	-	5.70	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.20	< 0.0010	< 0.0020	< 0.50	< 0.50
	RG_MW_MC10C_WG_2021_08_27_NP	2021 08 27	-	-	-	-	-	5.29	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	RG_MW_MC10C_WG_2021_11_05_NP	2021 11 05	-	-	-	-	-	5.44	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	0.0073	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	1.52	1.45
	FR_TRP2_WG_2021-11_NP	2021 12 01						5.33	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	-

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RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

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SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE FR-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (FRO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness mg/L	Dissolved Metals																														
				Aluminum µg/L	Antimony µg/L	Arsenic µg/L	Barium µg/L	Beryllium µg/L	Bismuth µg/L	Boron µg/L	Cadmium µg/L	Calcium mg/L	Chromium µg/L	Cobalt µg/L	Copper µg/L	Iron µg/L	Lead µg/L	Lithium µg/L	Magnesium mg/L	Manganese µg/L	Mercury µg/L	Molybdenum µg/L	Nickel µg/L	Potassium mg/L	Selenium µg/L	Silver µg/L	Sodium mg/L	Strontium µg/L	Thallium µg/L	Tin µg/L	Titanium µg/L	Uranium µg/L	Vanadium µg/L	Zinc[f] µg/L
BC Standard																																		
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Henretta Creek Valley																																		
FR_HMW1D	FR_HMW1D_QTR_2021-01-04_N	2021 02 05	2,890	< 5.0	< 0.50	< 0.50	10.7	< 0.100	< 0.250	51	0.101	610	< 0.50	5.10	< 1.00	< 50	< 0.250	91.1	333	*751*	< 0.0050	0.714	35.3	5.82	***52.1***	< 0.050	2.14	335	< 0.050	< 0.50	< 1.50	*12.8*	< 2.50	11.6
	FR_HMW1D_QTR_2021-04-05_N	2021 05 14	2,730	4.9	0.35	< 0.20	12.3	< 0.040	< 0.100	50	0.0974	566	< 0.20	4.64	< 0.40	< 20	< 0.100	91.6	319	*764*	< 0.0050	0.668	30.1	6.77	8.96	< 0.020	2.36	332	< 0.020	< 0.20	< 0.60	*12.2*	< 1.00	9.8
	FR_HMW1D_QTR_2021-07-05_N	2021 07 20	2,610	< 5.0	< 0.50	< 0.50	12.1	< 0.100	< 0.250	< 50	0.0946	518	< 0.50	4.95	1.13	< 50	< 0.250	80.4	320	*725*	< 0.0050	0.720	31.5	6.36	6.08	< 0.050	2.28	328	< 0.050	< 0.50	< 1.50	*12.1*	< 2.50	9.3
	FR_HMW1D_QTR_2021-10-04_N	2021 10 25	2,590	-	-	-	-	-	-	-	-	525	-	-	-	-	-	-	311	-	< 0.0050	-	-	6.11	-	-	2.32	-	-	-	-	-	-	-
FR_HMW1S	FR_HMW1S_QTR_2021-01-04_N	2021 02 05	2,820	< 5.0	< 0.50	< 0.50	9.76	< 0.100	< 0.250	< 50	0.131	590	< 0.50	4.13	< 1.00	< 50	< 0.250	92.7	326	*350*	< 0.0050	0.931	44.9	6.51	***234***	< 0.050	2.02	313	< 0.050	< 0.50	< 1.50	*12.5*	< 2.50	6.2
	FR_HMW1S_QTR_2021-04-05_N	2021 05 14	2,600	2.1	0.30	< 0.20	11.0	< 0.040	< 0.100	44	0.123	522	< 0.20	3.82	< 0.40	< 20	< 0.100	90.4	316	*342*	< 0.0050	0.913	40.0	7.77	***242***	< 0.020	2.29	305	< 0.020	< 0.20	< 0.60	*12.0*	< 1.00	7.4
	FR_HMW1S_QTR_2021-07-05_N	2021 07 20	2,550	< 5.0	< 0.50	< 0.50	10.5	< 0.100	< 0.250	< 50	0.137	505	< 0.50	3.95	< 1.00	< 50	< 0.250	82.2	314	*337*	< 0.0050	0.876	41.2	7.24	***194***	< 0.050	2.22	312	< 0.050	< 0.50	< 1.50	*12.2*	< 2.50	6.4
	FR_HMW1S_QTR_2021-10-04_N	2021 10 25	2,380	-	-	-	-	-	-	-	-	472	-	-	-	-	-	-	292	-	< 0.0050	-	-	6.75	-	-	2.35	-	-	-	-	-	-	-
	FR_DC2_QTR_2021-10-04_N	Duplicate	2,380	-	-	-	-	-	-	-	-	471	-	-	-	-	-	-	293	-	< 0.0050	-	-	6.86	-	-	2.45	-	-	-	-	-	-	-
	QA/QC RPD%		0	-	-	-	-	-	-	-	-	0	-	-	-	-	-	-	0	-	*	-	-	2	-	-	4	-	-	-	-	-	-	-
FR_HMW2	FR_HMW2_QTR_2021-01-04_N	2021 02 04	2,040	4.0	< 0.20	< 0.20	12.3	< 0.040	< 0.100	48	0.299	412	< 0.20	0.22	4.96	< 20	< 0.100	132	246	186	< 0.0050	0.374	12.5	6.96	***385***	< 0.020	2.47	246	0.045	< 0.20	< 0.60	9.02	< 1.00	19.7
	FR_HMW2_QTR_2021-04-05_N	2021 05 20	1,950	< 2.0	< 0.20	< 0.20	11.3	< 0.040	< 0.100	48	0.282	396	< 0.20	0.25	2.49	< 20	< 0.100	128	233	176	< 0.0050	0.449	11.9	6.56	***313***	< 0.020	2.32	234	0.039	< 0.20	< 0.60	8.84	< 1.00	10.9
	FR_HMW2_HLS_WG_20210823_NP	2021 08 23	1,730	< 2.0	< 0.20	< 0.20	12.0	< 0.040	< 0.100	49	0.270	356	< 0.20	< 0.20	< 0.40	< 20	< 0.100	127	204	118	< 0.0050	0.493	10.2	6.19	***262***	< 0.020	2.05	207	0.047	< 0.20	< 0.60	7.39	< 1.00	7.5
FR_HMW3	FR_HMW3_QTR_2021-01-04_N	2021 02 05	630	3.7	0.15	0.12	41.4	< 0.0200	< 0.050	16	0.0595	151	< 0.10	0.19	0.42	124	< 0.050	33.0	61.5	139	< 0.0050	0.930	1.69	1.99	***79.2***	< 0.010	1.27	147	0.014	< 0.10	< 0.30	2.44	< 0.50	3.9
	FR_DC2_QTR_2021-01-04_N	Duplicate	611	4.1	0.16	0.12	41.5	< 0.0200	< 0.050	16	0.0542	148	0.10	0.20	0.78	124	< 0.050	32.6	58.7	141	< 0.0050	0.928	1.68	1.96	***79.4***	< 0.010	1.25	148	0.013	< 0.10	< 0.30	2.31	< 0.50	3.2
	QA/QC RPD%		3	*	*	*	0	*	*	*	9	2	*	*	*	0	*	1	5	1	*	0	*	2	0	*	2	1	*	*	*	5	*	*
	FR_HMW3_QTR_2021-04-05_N	2021 05 14	612	1.3	0.15	< 0.10	42.7	< 0.020	< 0.050	16	0.0482	138	< 0.10	< 0.10	0.37	< 10	< 0.050	33.1	64.9	89.0	< 0.0050	0.861	1.65	2.19	***98.0***	< 0.010	1.14	145	< 0.010	< 0.10	< 0.30	2.36	< 0.50	3.9
	FR_HMW3_QTR_2021-07-05_N	2021 07 21	478	1.1	0.19	0.11	33.2	< 0.020	< 0.050	18	0.0329	108	< 0.10	< 0.10	0.33	< 10	< 0.050	29.8	50.5	52.4	< 0.0050	0.961	0.89	2.00	***83.7***	< 0.010	1.04	116	0.011	< 0.10	< 0.30	1.94	< 0.50	1.9
	FR_HMW3_QTR_2021-10-18_N	2021 10 18	525	1.2	0.18	0.11	37.6	< 0.020	< 0.050	19	0.0428	122	< 0.10	0.18	1.53	26	0.060	38.5	53.5	102	< 0.0050	1.00	1.41	2.21	***59.8***	< 0.010	1.33	132	0.014	< 0.10	< 0.30	2.09	< 0.50	2.2
FR_HMW5	FR_HMW5_QTR_2021-01-04_N	2021 02 04	188	5.8	< 0.10	< 0.10	227	< 0.020	< 0.050	26	< 0.0050	42.2	< 0.10	< 0.10	< 0.20	< 10	< 0.050	128	20.0	51.9	< 0.0050	< 0.050	< 0.50	0.715	4.32	< 0.010	4.59	416	< 0.010	< 0.10	< 0.30	0.023	< 0.50	< 1.0
	FR_DC3_QTR_2021-01-04_N	Duplicate	190	5.1	< 0.10	< 0.10	219	< 0.020	< 0.050	26	< 0.0050	43.3	< 0.10	< 0.10	< 0.20	< 10	< 0.050	129	20.0	51.4	< 0.0050	< 0.050	< 0.50	0.695	4.00	< 0.010	4.66	421	< 0.010	< 0.10	< 0.30	0.023	< 0.50	< 1.0
	QA/QC RPD%		1	13	*	*	4	*	*	*	*	3	*	*	*	*	*	1	0	1	*	*	*	3	8	*	2	1	*	*	*	*	*	*
	FR_HMW5_QTR_2021-04-05_N	2021 05 14	175	4.7	< 0.10	< 0.10	214	< 0.020	< 0.050	37	< 0.0050	39.3	< 0.10	< 0.10	< 0.20	< 10	< 0.050	172	18.6	46.8	< 0.0050	< 0.050	< 0.50	0.731	0.367	< 0.010	8.84	399	< 0.010	< 0.10	< 0.30	0.014	< 0.50	< 1.0
	FR_HMW5_QTR_2021-07-05_N	2021 07 20	168	4.8	< 0.10	< 0.10	209	< 0.020	< 0.050	40	< 0.0050	36.9	< 0.10	< 0.10	< 0.20	< 10	< 0.050	167	18.5	48.4	< 0.0050	< 0.050	< 0.50	0.706	1.08	< 0.010	10.0	388	< 0.010	< 0.10	< 0.30	0.012	< 0.50	< 1.0
	FR_HMW5_QTR_2021-10-04_N	2021 10 04	182	5.0	< 0.10	0.10	199	< 0.020	< 0.050	25	< 0.0050	41.0	< 0.10	< 0.10	< 0.20	11	< 0.050	126	19.4	57.5	< 0.0050	< 0.050	< 0.50	0.686	1.34	< 0.010	4.51	379	< 0.010	< 0.10	< 0.30	0.020	< 0.50	1.3
Fording River Valley																																		
FR_TBSSMW-1	FR_TBSSMW-1_QTR_2021-01-04_N	2021 02 25	143	8.3	< 0.10	1.18	2,000	< 0.0200	< 0.050	< 10	< 0.00500	11.4	< 0.10	< 0.100	< 0.20	251	< 0.050	212	27.9	27.4	< 0.0050	*16.0*	< 0.50	6.90	< 0.0500	< 0.010	9.95	217	< 0.010	< 0.10	< 0.30	0.100	< 0.50	1.6
	FR_TBSSMW-1_QTR_2021-04-05_N	2021 05 20	162	2.7	< 0.10	1.22	3,370	< 0.020	< 0.050	19	< 0.0100	16.6	< 0.10	< 0.10	< 0.20	354	< 0.050	225	29.4	42.1	< 0.0050	*13.6*	< 0.50	7.96	0.052	< 0.010	10.8	285	< 0.010	< 0.10	< 0.30	0.167	< 0.50	3.1
	FR_TBSSMW-1_QTR_2021-07-05_N	2021 07 21	148	2.8	< 0.10	1.19	2,890	< 0.020	< 0.050	21	< 0.0050	14.9	< 0.10	< 0.10	< 0.20	303	< 0.050	227	26.8	40.8	< 0.0050	*13.8*	< 0.50	6.79	< 0.050	< 0.010	10.1	260	< 0.010	< 0.10	< 0.30	0.150	< 0.50	2.0
	FR_TBSSMW-1_QTR_2021-10-04_N	2021 10 06	147	1.8	< 0.10	1.06	3,350	< 0.020	< 0.050	20	< 0.0050	16.0	< 0.10	< 0.10	0.36	380	< 0.050	226	26.1	43.1	< 0.0050	*12.9*	< 0.50	7.15	< 0.050	< 0.010	9.75	282	< 0.010	< 0.10	< 0.30	0.152	< 0.50	2.5
FR_TBSSMW-2	FR_TBSSMW-2_QTR_2021-01-04_N	2021 02 25	435	1.2	< 0.10	0.10	85.2	< 0.0200	< 0.050	< 10	0.0103	108	0.10	< 0.100	0.95	< 10	< 0.050	11.2	40.1	< 0.10	< 0.0050	0.867	< 0.50	0.812	***39.0***	< 0.010	0.816	173	< 0.010	< 0.10	< 0.30	1.70	< 0.50	1.5
	FR_TBSSMW-2_QTR_2021-04-05_N	2021 05 20	296	1.2	< 0.10	< 0.10	69.3	< 0.020	< 0.050	< 10	0.0146	73.2	0.11	< 0.10	0.56	< 10	< 0.050	9.2	27.5	< 0.10	< 0.0050	0.851	< 0.50	0.804	***20.5***	< 0.010	0.706	122	< 0.010	< 0.10	< 0.30	1.13	< 0.50	1.8
	FR_TBSSMW-2_QTR_2021-07-05_N	2021 07 21	190	< 1.0	< 0.10	< 0.10	48.0	< 0.020	< 0.050	< 10	0.0096	47.9	< 0.10	< 0.10	0.42	< 10	< 0.050	7.5	17.2	0.12	< 0.0050	0.894	< 0.50	0.747	10.1	< 0.010	0.567	84.4	< 0.010	< 0.10	< 0.30	0.720	< 0.50	1.6
	FR_DC1_QTR_2021-07-05_N	Duplicate	197	1.8	0.12	0.10	52.0	< 0.020	< 0.050	< 10	0.0093	49.8	0.12	< 0.10	1.44	< 10	< 0.050	8.4	17.7	0.20	< 0.0050	0.952	< 0.50	0.774	10.1	< 0.010	0.595	87.0	< 0.010	< 0.10	< 0.30	0.740	< 0.50	3.0
	QA/QC RPD%		4	*	*	*	8	*	*	*	*	4	*	*	*	*	*	11	3	*	*	6	*	4	0	*	5	3	*	*	*	3	*	*
	FR_TBSSMW-2_QTR_2021-10-04_N	2021 10 06	263	2.3	< 0.10	< 0.10	71.4	< 0.020	< 0.050	< 10	0.0102	64.6	0.11	< 0.10	2.84	< 10	0.078	8.4	24.6	0.20	< 0.0050	0.956	< 0.50	0.827	18.7	< 0.010	0.616	115	< 0.010	< 0.10	< 0.30	1.06	< 0.50	7.8

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE FR-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (FRO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																												
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
			mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Fording River Valley																																
FR_POTWELLS	FR_POTWELLS_QTR_2021-01-04_N	2021 03 08	410	< 1.0	< 0.10	< 0.10	89.2	< 0.020	< 0.050	< 10	0.0114	106	< 0.10	< 0.10	0.52	< 10	0.059	9.6	35.2	0.19	< 0.0050	0.624	< 0.50	0.691	***37.6***	< 0.010	0.767	166	< 0.010	< 0.10	< 0.30	1.33	< 0.50	3.7
	FR_POTWELLS_QTR_2021-04-05_N	2021 05 20	208	1.1	< 0.10	< 0.10	50.5	< 0.020	< 0.050	< 10	0.0078	53.2	0.12	< 0.10	1.50	< 10	0.080	5.7	18.2	0.21	< 0.0050	0.728	< 0.50	0.610	11.0	< 0.010	0.580	93.8	< 0.010	< 0.10	< 0.30	0.783	< 0.50	6.8
	FR_POTWELLS_QTR_2021-07-05_N	2021 09 15	225	< 1.0	< 0.10	< 0.10	60.6	< 0.020	< 0.050	< 10	0.0117	56.4	0.12	< 0.10	1.33	< 10	< 0.050	7.0	20.5	0.18	< 0.0050	0.808	< 0.50	0.694	12.5	< 0.010	0.648	106	< 0.010	< 0.10	< 0.30	0.875	< 0.50	3.3
	FR_POTWELLS_QTR_2021-10-04_N	2021 12 08	302	1.9	< 0.10	< 0.10	65.8	< 0.020	< 0.050	< 10	0.0106	73.9	0.11	< 0.10	0.61	12	0.165	7.2	28.5	0.45	< 0.0050	0.683	< 0.50	0.647	***24.9***	< 0.010	0.730	137	< 0.010	< 0.10	< 0.30	1.13	< 0.50	4.3
	FR_DC3_QTR_2021-10-04_N	Duplicate	310	< 1.0	< 0.10	< 0.10	66.8	< 0.020	< 0.050	< 10	0.0102	79.3	< 0.10	< 0.10	0.57	< 10	0.059	7.7	27.3	0.38	< 0.0050	0.643	< 0.50	0.641	***24.1***	< 0.010	0.752	134	< 0.010	< 0.10	< 0.30	1.20	< 0.50	3.0
	QA/QC RPD%		3	*	*	*	2	*	*	*	*	7	*	*	*	*	*	7	4	*	*	6	*	1	3	*	3	2	*	*	*	6	*	*
FR_GCMW-1B	FR_GCMW-1B-2021-01-13	2021 01 13	61.8	6.2	< 0.10	2.29	134	< 0.0200	< 0.050	124	0.0104	17.5	< 0.10	0.14	< 0.20	364	< 0.050	200	4.39	*246*	< 0.0050	*42.3*	0.90	1.40	0.090	< 0.010	177	125	< 0.010	< 0.10	< 0.30	0.239	< 0.50	< 1.0
	FR_GCMW-1B_QTR_2021-04-05_N	2021 05 20	56.3	7.3	< 0.10	2.29	149	< 0.020	< 0.050	154	< 0.0150	15.3	< 0.10	0.13	0.58	224	0.065	253	4.39	179	< 0.0050	*37.6*	0.81	1.62	0.080	< 0.010	180	123	< 0.010	< 0.10	< 0.30	0.931	< 0.50	2.5
	FR_GCMW-1B_2021-09-15	2021 09 15	69.1	9.5	< 0.10	1.76	148	< 0.020	< 0.050	88	0.0052	18.5	0.20	0.18	0.45	117	< 0.050	123	5.57	*222*	< 0.0050	*35.8*	1.42	1.58	0.136	< 0.010	164	116	< 0.010	< 0.10	< 0.30	0.341	< 0.50	< 1.0
	FR_GCMW-1B_2021-11-29	2021 11 29	73.0	9.2	< 0.10	2.06	164	< 0.020	< 0.050	71	< 0.0050	19.5	< 0.10	0.18	< 0.20	233	< 0.050	85.0	5.91	*226*	< 0.0050	*36.5*	1.46	1.62	0.078	< 0.010	159	131	< 0.010	< 0.10	< 0.30	0.258	< 0.50	< 1.0
FR_GCMW-2	FR_GCMW-2_QTR_2021-01-04_N	2021 01 28	995	< 1.0	0.41	< 0.10	71.7	< 0.0200	< 0.050	19	0.0625	222	< 0.10	< 0.100	0.33	< 10	< 0.050	198	107	1.62	< 0.0050	1.95	3.24	3.84	***145***	< 0.010	4.24	350	< 0.010	< 0.10	< 0.30	8.73	< 0.50	2.8
	FR_GCMW-2_QTR_2021-04-05_N	2021 05 20	879	1.0	0.40	< 0.10	64.4	< 0.020	< 0.050	19	0.0576	198	0.13	< 0.10	0.87	< 10	< 0.050	210	93.3	0.19	< 0.0050	2.04	2.81	4.03	***110***	< 0.010	5.97	307	< 0.010	< 0.10	< 0.30	7.97	< 0.50	3.8
	FR_GCMW-2_QTR_2021-07-05_N	2021 07 26	747	1.2	0.48	< 0.10	67.5	< 0.020	< 0.050	22	0.0522	165	0.11	< 0.10	1.78	< 10	< 0.050	191	81.4	0.12	< 0.0050	2.09	2.69	4.11	***90.5***	< 0.010	5.30	264	< 0.010	< 0.10	< 0.30	7.41	< 0.50	8.2
	FR_DC3_QTR_2021-07-05_N	Duplicate	763	< 1.0	0.48	< 0.10	67.7	< 0.020	< 0.050	22	0.0580	167	0.12	< 0.10	1.65	< 10	< 0.050	186	84.1	0.10	< 0.0050	2.06	2.74	4.19	***93.9***	< 0.010	5.46	270	< 0.010	< 0.10	< 0.30	7.61	< 0.50	8.5
	QA/QC RPD%		2	*	*	*	0	*	*	*	11	1	*	*	8	*	*	3	3	*	*	1	2	2	4	*	3	2	*	*	*	3	*	4
	FR_GCMW-2_QTR_2021-12-07_N	2021 12 07	1,010	4.5	0.41	< 0.10	64.3	< 0.020	< 0.050	19	0.0667	227	0.10	< 0.10	0.75	< 10	< 0.050	242	107	6.75	< 0.0050	1.83	3.53	4.10	***126***	< 0.010	6.99	343	< 0.010	< 0.10	< 0.30	8.32	< 0.50	6.7
FR_MW-1B	FR_MW-1B_QTR_2021-01-04_N	2021 02 25	616	< 1.0	0.21	0.10	164	< 0.0200	< 0.050	< 10	0.0207	153	0.12	0.11	< 0.20	< 10	0.060	46.0	56.7	< 0.10	< 0.0050	1.24	< 0.50	1.52	***72.6***	< 0.010	2.27	233	< 0.010	< 0.10	< 0.30	3.48	< 0.50	< 1.0
	FR_MW-1B_QTR_2021-04-05_N	2021 05 20	334	11.7	0.26	< 0.10	96.2	< 0.020	< 0.050	< 10	0.0160	83.3	0.16	< 0.10	0.48	< 10	< 0.050	29.6	30.5	0.76	< 0.0050	1.07	< 0.50	1.22	***35.4***	< 0.010	1.32	140	< 0.010	< 0.10	0.32	1.73	< 0.50	1.0
	FR_MW-1B_QTR_2021-07-05_N	2021 09 15	383	11.4	0.18	< 0.10	125	< 0.020	< 0.050	< 10	0.0150	94.6	0.11	< 0.10	1.03	< 10	< 0.050	34.0	35.6	0.11	< 0.0050	1.18	< 0.50	1.40	***47.8***	< 0.010	1.58	158	< 0.010	< 0.10	0.39	2.05	< 0.50	1.0
	FR_MW-1B_QTR_2021-10-04_N	2021 12 08	478	< 1.0	0.19	< 0.10	131	< 0.020	< 0.050	< 10	0.0198	115	< 0.10	< 0.10	0.31	< 10	< 0.050	37.9	46.3	< 0.10	< 0.0050	1.12	< 0.50	1.41	***56.6***	< 0.010	1.88	202	< 0.010	< 0.10	< 0.30	2.64	< 0.50	1.5
FR_MW_NTPSE	FR_MW_NTPSE_WG_2021_02_04_NP	2021 02 04	1,040	5.2	< 0.10	2.86	98.0	< 0.020	< 0.050	10	0.0060	220	0.22	1.59	< 0.20	*22,700*	< 0.050	26.1	120	*2,980*	< 0.0050	2.37	8.41	2.27	0.117	< 0.010	6.95	262	0.026	< 0.10	0.30	1.07	0.54	10.3
FR_09-04-A	FR_09-04-A_QTR_2021-01-04_N	2021 01 27	750	< 1.0	0.10	< 0.10	98.7	< 0.0200	< 0.050	30	0.951	161	< 0.10	0.98	0.83	< 10	< 0.050	96.2	84.6	*1,360*	< 0.0050	1.86	8.13	5.57	0.115	< 0.020	7.75	248	0.058	< 0.10	< 0.30	7.00	< 0.50	4.4
	FR_09-04-A_QTR_2021-04-05_N	2021 04 26	687	2.5	0.11	< 0.10	105	< 0.020	< 0.050	33	0.840	145	< 0.10	0.86	0.35	< 10	< 0.050	97.5	79.0	*1,340*	< 0.0050	1.89	8.14	5.44	0.099	< 0.010	7.52	235	0.062	< 0.10	< 0.30	6.79	< 0.50	4.9
	FR_DC1_QTR_2021-04-05_N	Duplicate	707	3.1	0.11	< 0.10	110	< 0.020	< 0.050	36	0.829	152	< 0.10	0.90	0.41	< 10	< 0.050	98.4	79.6	*1,420*	< 0.0050	1.95	8.39	5.66	0.118	< 0.010	7.60	248	0.062	< 0.10	< 0.90	7.06	< 0.50	5.1
	QA/QC RPD%		3	*	*	*	5	*	*	*	1	5	*	5	*	*	*	1	1	6	*	3	3	4	*	*	1	5	0	*	*	4	*	*
	FR_09-04-A_QTR_2021-07-05_N	2021 07 28	717	< 1.0	0.14	< 0.10	110	< 0.020	< 0.050	31	0.802	144	< 0.10	0.77	2.12	< 10	0.077	86.0	86.9	*1,370*	< 0.0050	1.96	7.93	5.93	0.101	< 0.010	7.38	234	0.065	< 0.10	< 0.30	6.35	< 0.50	6.4
	FR_09-04-A_QTR_2021-10-04_N	2021 11 02	701	1.1	0.10	< 0.10	92.6	< 0.020	< 0.050	29	0.686	150	< 0.10	0.71	1.07	< 10	< 0.050	90.2	79.2	*1,300*	< 0.0050	1.89	7.32	5.24	0.098	< 0.010	6.86	227	0.061	< 0.10	< 0.30	6.39	< 0.50	5.2
FR_09-04-B	FR_09-04-B_QTR_2021-01-04_N	2021 01 27	786	1.5	0.10	< 0.10	90.9	< 0.0200	< 0.050	30	0.901	169	< 0.10	0.96	2.17	< 10	< 0.050	101	88.3	*1,480*	< 0.0050	1.74	9.05	5.55	0.199	< 0.010	7.82	241	0.057	0.11	< 0.30	6.66	< 0.50	7.1
	FR_09-04-B_QTR_2021-04-05_N	2021 04 26	707	2.1	0.13	< 0.10	109	< 0.020	< 0.050	33	0.804	151	< 0.10	0.84	1.18	< 10	< 0.050	96.1	80.1	*1,430*	< 0.0050	1.78	8.45	5.30	0.143	< 0.010	7.53	242	0.060	< 0.10	< 0.30	6.48	< 0.50	5.9
	FR_09-04-B_QTR_2021-07-05_N	2021 07 28	702	1.8	0.14	0.10	98.2	< 0.020	< 0.050	33	0.688	152	< 0.10	0.68	2.23	< 10	0.071	91.3	78.4	*1,320*	< 0.0050	1.73	7.71	5.44	0.174	< 0.010	7.14	221	0.060	< 0.10	< 0.30	6.34	< 0.50	5.8
	FR_09-04-B_QTR_2021-10-04_N	2021 11 02	718	1.2	0.11	0.10	90.5	< 0.020	< 0.050	28	0.647	153	< 0.10	0.63	0.81	< 10	< 0.050	86.6	81.7	*1,340*	< 0.0050	1.84	7.32	5.20	0.104	< 0.010	6.85	233	0.062	< 0.10	< 0.30	6.19	< 0.50	4.2
FR_KB-1	FR_KB-1A_2021-02-18	2021 02 18	1,560	< 5.0	0.55	< 0.50	45.7	< 0.100	< 0.250	< 50	0.875	369	< 0.50	< 0.500	< 1.00	< 50	< 0.250	172	156	< 0.50	< 0.0050	1.58	44.1	5.21	***312***	< 0.050	7.92	339	< 0.050	< 0.50	< 1.50	*14.9*	< 2.50	17.0
	FR_KB-1_WG_2021-06_NP	2021 06 01	742	< 1.0	0.49	< 0.10	21.8	< 0.020	< 0.050	23	0.486	175	< 0.10	< 0.10	0.31	< 10	< 0.050	96.6	74.2	< 0.10	-	2.25	19.8	3.61	***181***	< 0.010	4.04	162	0.014	< 0.10	< 0.30	6.56	< 0.50	11.8
	FR_KB-1_WG_2021-08_NP	2021 08 10	970	< 1.0	0.58	< 0.10	35.7	< 0.020	< 0.050	29	0.636	224	< 0.10	< 0.10	0.25	< 10	< 0.050	117	99.8	< 0.10	-	1.79	25.2	4.51	***186***	< 0.010	4.87	224	0.019	< 0.10	< 0.30	8.68	< 0.50	14.0
	FR_KB-1_WG_2021-11_NP	2021 12 01	1,430	< 2.0	0.50	< 0.20	45.9	< 0.040	< 0.100	32	0.684	321	< 0.20	< 0.20	< 0.40	< 20	< 0.100	163	153	< 0.20	-	1.56	30.3	5.40	***280***	< 0.020	7.57	311	< 0.020	< 0.20	< 0.60	*13.1*	< 1.00	13.0

All terms defined within the body of SNC-Lavalin's report.
< Denotes concentration less than indicated detection limit.
- Denotes analysis not conducted.
n/a Denotes no applicable standard/guideline.
QA/QC RPD Denotes quality assurance/quality control relative percent difference
* RPDs are not calculated where one or more concentrations are less than five times RDL.
RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.
[b] Standard varies with Hardness.
[c] Standard varies with pH.
[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.
[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).
[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.
[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

TABLE FR-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (FRO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																														
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
			mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																		
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Fording River Valley																																		
FR_KB-2	FR_KB-2_2021-02-19	2021 02 19	1,440	7.4	< 0.50	< 0.50	65.0	< 0.100	< 0.250	< 50	0.169	330	< 0.50	< 0.500	< 1.00	< 50	< 0.250	154	150	< 0.50	< 0.0050	1.48	8.70	4.30	***292***	< 0.050	7.21	303	< 0.050	< 0.50	< 1.50	*13.3*	< 2.50	6.0
	FR_KB-2_WG_2021-06_NP	2021 06 01	704	22.9	0.36	< 0.10	32.7	< 0.020	< 0.050	23	0.0904	168	0.10	< 0.10	0.21	11	< 0.050	89.0	69.2	2.09	-	4.90	4.12	3.40	***152***	< 0.010	3.79	148	< 0.010	< 0.10	0.54	5.33	< 0.50	2.4
	FR_KB-2_WG_2021-08_NP	2021 08 13	919	< 1.0	0.40	< 0.10	44.0	< 0.020	< 0.050	28	0.146	207	< 0.10	< 0.10	< 0.20	< 10	< 0.050	105	97.6	0.18	-	1.34	6.58	4.18	***185***	< 0.010	4.62	196	< 0.010	< 0.10	< 0.30	8.51	< 0.50	5.0
	FR_KB-2_WG_2021-11_NP	2021 11 23	1,320	2.7	0.40	< 0.20	60.9	< 0.040	< 0.100	27	0.194	305	< 0.20	< 0.20	< 0.40	< 20	< 0.100	148	137	< 0.20	-	1.47	8.63	4.66	***255***	< 0.020	6.80	296	< 0.020	< 0.20	< 0.60	*12.5*	< 1.00	4.4
	FR_DC1_WG_2021-11_NP	Duplicate	1,330	4.9	0.40	< 0.20	60.7	< 0.040	< 0.100	26	0.211	303	< 0.20	< 0.20	< 0.40	< 20	< 0.100	145	140	< 0.20	-	1.44	8.58	4.63	***258***	< 0.020	6.82	295	< 0.020	< 0.20	< 0.60	*12.0*	< 1.00	4.5
	QA/QC RPD%		1	*	*	*	0	*	*	*	8	1	*	*	*	*	*	2	2	*	-	2	1	1	1	*	0	0	*	*	*	4	*	*
FR_KB-3A	FR_KB-3A_2021-03-24	2021 03 24	1,210	< 5.0	< 0.50	< 0.50	58.3	< 0.100	< 0.250	< 50	0.0440	288	< 0.50	0.88	< 1.00	< 50	< 0.250	44.7	119	< 0.50	< 0.0050	0.269	< 2.50	1.97	***203***	< 0.050	4.14	332	< 0.050	< 0.50	< 1.50	6.24	< 2.50	< 5.0
	FR_KB-3A_WG_2021-06-25_NP	2021 06 25	1,160	1.8	0.27	< 0.10	60.3	< 0.020	< 0.050	18	0.0587	262	0.14	0.73	1.42	< 10	0.059	43.4	124	17.3	-	0.421	1.21	2.25	***276***	< 0.010	4.80	333	< 0.010	< 0.10	< 0.30	5.88	< 0.50	12.0
	FR_KB-3A_WG_2021-08_NP	2021 08 13	1,180	< 1.0	0.44	0.11	52.0	< 0.020	< 0.050	19	0.0919	288	0.12	0.88	2.20	10	0.053	45.5	112	19.1	-	0.590	6.06	2.03	***230***	< 0.010	4.33	324	< 0.010	0.17	< 0.30	6.07	< 0.50	16.7
	FR_KB-3A_WG_2021-11_NP	2021 11 25	1,130	< 1.0	0.13	< 0.10	49.0	< 0.020	< 0.050	17	0.0327	273	0.16	0.68	0.93	< 10	< 0.050	46.5	110	1.10	-	0.456	0.55	1.97	***227***	< 0.010	4.50	289	< 0.010	< 0.10	< 0.30	5.76	< 0.50	3.9
FR_KB-3B	FR_KB-3B_2021-03-24	2021 03 24	1,340	22.9	< 0.50	< 0.50	71.1	< 0.100	< 0.250	< 50	0.0534	304	< 0.50	< 0.50	< 1.00	< 50	< 0.250	92.6	142	1.54	< 0.0050	0.456	< 2.50	3.12	***269***	< 0.050	5.25	309	< 0.050	< 0.50	< 1.50	9.56	< 2.50	< 5.0
	FR_KB-3B_WG_2021-06-25_NP	2021 06 25	981	1.3	0.13	< 0.10	61.3	< 0.020	< 0.050	20	0.0278	218	0.10	< 0.10	0.36	< 10	< 0.050	75.4	106	0.53	-	0.481	< 0.50	2.95	***225***	< 0.010	4.92	242	< 0.010	< 0.10	< 0.30	6.74	< 0.50	1.2
	FR_KB-3B_WG_2021-08_NP	2021 08 13	962	< 1.0	0.12	< 0.10	54.0	< 0.020	< 0.050	21	0.0195	225	0.11	< 0.10	< 0.20	< 10	< 0.050	72.8	97.1	0.10	-	0.463	< 0.50	2.79	***210***	< 0.010	4.24	210	< 0.010	< 0.10	< 0.30	6.93	< 0.50	1.2
	FR_KB-3B_WG_2021-11_NP	2021 11 24	1,090	1.9	0.12	< 0.10	58.3	< 0.020	< 0.050	21	0.0250	255	0.18	< 0.10	0.22	< 10	< 0.050	82.5	110	0.23	-	0.444	< 0.50	2.89	***225***	< 0.010	4.92	238	< 0.010	< 0.10	< 0.30	8.16	< 0.50	1.2
FR_MW-SK1A	FR_MW-SK1A_QTR_2021-01-04_N	2021 03 18	1,160	< 1.0	0.11	< 0.10	73.9	< 0.020	< 0.050	18	0.0494	269	0.11	0.16	1.99	< 10	< 0.050	75.3	119	0.16	< 0.0050	0.412	< 0.50	2.92	***272***	< 0.010	6.21	264	< 0.010	< 0.10	< 0.30	6.30	< 0.50	3.2
	FR_MW-SK1A_QTR_2021-04-05_N	2021 05 13	1,180	< 1.0	0.16	< 0.10	73.1	< 0.020	< 0.050	19	0.0544	273	< 0.10	< 0.10	< 0.20	< 10	< 0.050	93.1	122	0.11	< 0.0050	0.540	< 0.50	3.35	***270***	< 0.010	5.91	261	< 0.010	< 0.10	< 0.30	8.27	< 0.50	1.2
	FR_MW-SK1A_QTR_2021-07-05_N	2021 07 28	842	< 1.0	0.30	< 0.10	70.9	< 0.020	< 0.050	24	0.0375	200	0.13	0.13	1.27	< 10	0.058	67.9	83.2	0.58	< 0.0050	1.17	< 0.50	3.45	***166***	< 0.010	4.70	185	< 0.010	< 0.10	< 0.30	6.09	< 0.50	2.0
	FR_MW-SK1A_QTR_2021-10-04_N	2021 11 01	1,040	< 1.0	0.16	< 0.10	85.1	< 0.020	< 0.050	20	0.0453	243	< 0.10	0.10	4.03	< 10	0.113	89.5	105	< 0.10	< 0.0050	0.524	< 0.50	3.02	***192***	< 0.010	5.82	247	< 0.010	< 0.10	< 0.30	6.28	< 0.50	1.9
FR_MW-SK1B	FR_MW-SK1B_QTR_2021-01-04_N	2021 03 11	571	< 1.0	0.43	0.17	36.0	< 0.020	< 0.050	13	0.0371	152	< 0.10	1.10	1.40	< 10	< 0.050	11.3	46.5	*509*	< 0.0050	0.436	3.90	1.23	10.9	< 0.010	4.55	248	0.018	< 0.10	< 0.30	4.83	< 0.50	3.4
	FR_MW-SK1B_QTR_2021-04-05_N	2021 05 13	571	< 1.0	0.38	0.14	32.4	< 0.020	< 0.050	15	0.0676	154	< 0.10	0.96	0.96	< 10	0.086	11.4	45.2	*498*	< 0.0050	0.404	3.42	1.15	11.1	< 0.010	4.57	245	0.017	< 0.10	< 0.30	4.41	< 0.50	3.7
	FR_DC3_QTR_2021-04-05_N	Duplicate	568	< 1.0	0.35	< 0.10	32.7	< 0.020	< 0.050	14	0.0329	152	< 0.10	0.96	< 0.20	< 10	< 0.050	11.3	45.8	*512*	< 0.0050	0.390	3.39	1.17	10.6	< 0.010	4.62	250	0.017	< 0.10	< 0.30	4.52	< 0.50	3.1
	QA/QC RPD%		1	*	*	*	1	*	*	*	69	1	*	0	*	*	*	1	1	3	*	4	1	2	5	*	1	2	*	*	*	2	*	*
	FR_MW-SK1B_QTR_2021-07-05_N	2021 07 28	571	1.3	0.40	0.13	32.6	< 0.020	< 0.050	15	0.0354	154	< 0.10	1.14	0.83	< 10	< 0.050	12.0	45.2	*529*	< 0.0050	0.391	4.02	1.28	11.3	< 0.010	4.48	241	0.019	< 0.10	< 0.30	5.11	< 0.50	2.2
	FR_MW-SK1B_QTR_2021-10-04_N	2021 11 01	621	1.0	0.41	0.11	34.5	< 0.020	< 0.050	14	0.0339	166	< 0.10	1.24	< 0.20	< 10	< 0.050	12.0	50.2	*530*	0.0058	0.386	4.46	1.24	12.3	< 0.010	4.80	270	0.021	< 0.10	< 0.30	4.92	< 0.50	1.7
FR_09-01-A	FR_09-01-A_QTR_2021-01-04_N	2021 02 22	824	< 1.0	0.25	< 0.10	92.3	< 0.0200	< 0.050	21	0.0492	189	< 0.10	0.31	0.51	< 10	< 0.050	70.0	85.4	0.16	< 0.0050	0.559	1.82	3.50	***71.6***	< 0.010	4.83	230	< 0.010	0.11	< 0.30	4.65	< 0.50	1.8
	FR_DC1_QTR_2021-01-04_N	Duplicate	844	< 1.0	0.23	< 0.10	92.9	< 0.0200	< 0.050	21	0.0586	197	< 0.10	0.29	0.44	< 10	< 0.050	69.9	85.5	0.14	< 0.0050	0.524	1.75	3.49	***70.5***	< 0.010	4.67	221	< 0.010	< 0.10	< 0.30	4.51	< 0.50	2.1
	QA/QC RPD%		2	*	*	*	1	*	*	*	17	4	*	*	*	*	*	0	0	*	*	6	*	0	2	*	3	4	*	*	*	3	*	*
	FR_09-01-A_QTR_2021-04-05_N	2021 05 13	977	< 1.0	0.21	< 0.10	117	< 0.020	< 0.050	20	0.0489	218	< 0.10	0.10	0.24	< 10	< 0.050	89.3	105	< 0.10	< 0.0050	0.521	0.88	3.79	***205***	< 0.010	5.40	264	< 0.010	< 0.10	< 0.30	5.83	< 0.50	1.3
	FR_09-01-A_QTR_2021-07-05_N	2021 07 22	705	< 1.0	0.40	< 0.10	82.0	< 0.020	< 0.050	25	0.0299	158	< 0.10	< 0.10	0.76	< 10	0.184	74.3	75.4	< 0.10	< 0.0050	2.17	< 0.50	3.77	***123***	< 0.010	3.92	169	< 0.010	< 0.10	< 0.30	6.76	< 0.50	1.2
	FR_09-01-A_QTR_2021-10-04_N	2021 10 15	926	< 1.0	0.33	< 0.10	100	< 0.020	< 0.050	25	0.0523	211	0.12	< 0.10	2.55	< 10	0.081	98.2	97.0	< 0.10	< 0.0050	0.680	0.87	3.93	***178***	< 0.010	5.40	242	< 0.010	< 0.10	< 0.30	6.03	< 0.50	2.4
FR_09-01-B	FR_09-01-B_QTR_2021-01-04_N	2021 02 22	835	< 1.0	0.16	< 0.10	136	< 0.0200	< 0.050	20	0.0393	193	0.17	0.28	2.77	< 10	0.094	64.9	85.7	0.18	< 0.0050	0.818	1.45	3.43	***78.7***	< 0.010	4.36	239	< 0.010	< 0.10	< 0.30	5.03	< 0.50	4.6
	FR_09-01-B_QTR_2021-04-05_N	2021 05 13	547	1.2	0.22	0.11	123	< 0.020	< 0.050	< 10	0.0218	120	0.12	< 0.10	1.11	< 10	< 0.050	46.9	60.1	0.24	< 0.0050	1.76	< 0.50	1.77	***77.8***	< 0.010	2.82	172	< 0.010	< 0.10	< 0.30	3.46	< 0.50	3.1
	FR_09-01-B_QTR_2021-07-05_N	2021 07 22	657	< 1.0	0.14	< 0.10	112	< 0.020	< 0.050	18	0.0251	147	< 0.10	< 0.10	< 0.20	< 10	< 0.050	73.9	70.5	< 0.10	< 0.0050	0.982	< 0.50	2.94	***111***	< 0.010	3.97	188	< 0.010	< 0.10	< 0.30	5.32	< 0.50	< 1.0
	FR_09-01-B_QTR_2021-10-04_N	2021 10 15	788	5.0	0.16	< 0.10	122	< 0.020	< 0.100	22	0.0348	187	< 0.10	0.13	0.26	< 10	< 0.050	82.9	78.0	0.11	< 0.0050	1.03	0.77	3.43	***117***	< 0.010	4.53	230	< 0.010	< 0.10	< 0.30	6.16	< 0.50	< 1.0
	FR_DC1_QTR_2021-10-04_N	Duplicate	808	6.1	0.18	< 0.10	134	< 0.020	< 0.050	21	0.0291	183	0.12	0.15	3.88	< 10	0.112	82.2	85.2	0.18	< 0.0050	1.05	0.78	3.65	***121***	< 0.010	4.97	237	< 0.010	< 0.10	< 0.30	6.24	< 0.50	2.8
	QA/QC RPD%		3	20	*	*	9	*	*	*	18	2	*	*	*	*	*	1	9	*	*	2	*	6	3	*	9	3	*	*	*	1	*	*

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE FR-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (FRO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																														
				Aluminum µg/L	Antimony µg/L	Arsenic µg/L	Barium µg/L	Beryllium µg/L	Bismuth µg/L	Boron µg/L	Cadmium µg/L	Calcium mg/L	Chromium µg/L	Cobalt µg/L	Copper µg/L	Iron µg/L	Lead µg/L	Lithium µg/L	Magnesium mg/L	Manganese µg/L	Mercury µg/L	Molybdenum µg/L	Nickel µg/L	Potassium mg/L	Selenium µg/L	Silver µg/L	Sodium mg/L	Strontium µg/L	Thallium µg/L	Tin µg/L	Titanium µg/L	Uranium µg/L	Vanadium µg/L	Zinc[f] µg/L
BC Standard																																		
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Fording River Valley																																		
FR_09-02-A	FR_09-02-A_QTR_2021-01-04_N	2021 03 11	756	< 1.0	0.20	0.13	154	< 0.020	< 0.050	< 10	0.0302	166	0.10	< 0.10	0.80	< 10	< 0.050	54.5	82.9	0.83	< 0.0050	1.97	< 0.50	1.96	***114***	< 0.010	3.28	234	< 0.010	< 0.10	< 0.30	4.65	< 0.50	1.2
	FR_09-02-A_QTR_2021-04-05_N	2021 05 13	650	< 1.0	0.15	< 0.10	105	< 0.020	< 0.050	15	0.0302	145	< 0.10	0.19	1.28	< 10	0.052	55.4	69.8	0.24	< 0.0050	0.638	0.86	2.76	***67.8***	< 0.010	4.29	185	< 0.010	< 0.10	< 0.30	3.63	< 0.50	3.7
	FR_09-02-A_QTR_2021-07-05_N	2021 07 22	446	1.1	0.30	< 0.10	115	< 0.020	< 0.050	19	0.0207	99.9	< 0.10	< 0.10	< 0.20	< 10	< 0.050	56.0	47.8	< 0.10	< 0.0050	2.15	< 0.50	2.38	***46.2***	< 0.010	3.00	131	< 0.010	< 0.10	< 0.30	3.82	< 0.50	< 1.0
	FR_DC2_QTR_2021-07-05_N	Duplicate	444	< 1.0	0.32	< 0.10	120	< 0.020	< 0.050	20	0.0222	101	< 0.10	< 0.10	< 0.20	< 10	< 0.050	58.8	46.6	< 0.10	< 0.0050	2.18	< 0.50	2.60	***45.4***	< 0.010	2.97	143	< 0.010	< 0.10	< 0.30	4.12	< 0.50	< 1.0
	QA/QC RPD%		0	*	*	*	4	*	*	*	*	1	*	*	*	*	*	5	3	*	*	1	*	9	2	*	1	9	*	*	*	8	*	*
	FR_09-02-A_QTR_2021-10-04_N	2021 10 15	546	1.0	0.27	< 0.10	156	< 0.020	< 0.050	15	0.0255	129	0.13	< 0.10	< 0.20	< 10	< 0.050	45.3	54.4	< 0.10	< 0.0050	1.30	< 0.50	2.92	***64.7***	< 0.010	2.38	167	< 0.010	< 0.10	< 0.30	3.38	< 0.50	< 1.0
FR_09-02-B	FR_09-02-B_QTR_2021-01-04_N	2021 03 11	653	5.5	0.12	0.12	176	< 0.020	< 0.050	< 10	0.0224	152	0.15	0.11	2.29	< 10	0.072	41.2	66.4	0.38	< 0.0050	1.02	0.50	2.00	***80.8***	< 0.010	2.87	226	< 0.010	< 0.10	< 0.30	3.69	< 0.50	2.1
	FR_09-02-B_QTR_2021-04-05_N	2021 05 13	565	< 1.0	< 0.10	< 0.10	150	< 0.020	< 0.050	< 10	0.0179	129	< 0.10	< 0.10	< 0.20	< 10	< 0.050	46.4	59.0	< 0.10	< 0.0050	0.926	< 0.50	1.74	***69.1***	< 0.010	3.23	191	< 0.010	< 0.10	< 0.30	3.07	< 0.50	1.1
	FR_09-02-B_QTR_2021-07-05_N	2021 07 22	483	1.2	0.13	< 0.10	138	< 0.020	< 0.050	12	0.0196	110	< 0.10	< 0.10	0.39	< 10	< 0.050	56.9	50.5	< 0.10	< 0.0050	1.29	< 0.50	1.88	***47.8***	< 0.010	3.31	164	< 0.010	< 0.10	< 0.30	3.63	< 0.50	< 1.0
	FR_09-02-B_QTR_2021-10-04_N	2021 10 15	510	1.1	0.18	< 0.10	154	< 0.020	< 0.050	16	0.0197	123	0.16	< 0.10	2.99	< 10	0.100	53.8	49.4	< 0.10	< 0.0050	1.35	0.69	2.21	***47.7***	< 0.010	2.67	190	< 0.010	< 0.10	< 0.30	3.41	< 0.50	2.3
FR_GH_WELL4	FR_GH_WELL4_QTR_2021-01-04_N	2021 01 28	829	< 1.0	< 0.10	< 0.10	102	< 0.0200	< 0.050	12	0.0478	193	0.14	< 0.100	0.94	12	< 0.050	37.7	84.2	1.97	< 0.0050	0.360	< 0.50	1.86	***153***	< 0.010	3.60	254	< 0.010	< 0.10	< 0.30	4.37	< 0.50	20.6
	FR_GH_WELL4_QTR_2021-04-05_N	2021 04 26	838	1.7	< 0.10	< 0.10	70.9	< 0.020	< 0.050	12	0.0577	202	< 0.10	< 0.10	8.77	18	0.060	35.2	80.9	6.60	< 0.0050	0.318	< 0.50	1.65	***163***	< 0.010	3.49	262	< 0.010	< 0.10	< 0.30	4.70	< 0.50	140
	FR_GH_WELL4_QTR_2021-07-05_N	2021 09 15	628	< 1.0	< 0.10	< 0.10	64.2	< 0.020	< 0.050	11	0.0427	145	0.10	< 0.10	1.34	22	< 0.050	33.7	64.6	3.62	< 0.0050	0.311	< 0.50	1.43	***117***	< 0.010	3.05	182	< 0.010	< 0.10	< 0.30	3.56	< 0.50	30.7
	FR_GH_WELL4_QTR_2021-10-04_N	2021 11 22	721	< 1.0	< 0.10	< 0.10	75.8	< 0.020	< 0.050	12	0.0443	171	< 0.10	< 0.10	1.72	29	< 0.050	38.2	71.4	7.11	< 0.0050	0.342	< 0.50	1.75	***142***	< 0.010	3.48	212	< 0.010	< 0.10	< 0.30	4.22	< 0.50	38.4
RG_MW_FR10A	RG_MW_FR10A_WG_2021_05_19_NP	2021 05 19	253	8.2	1.28	1.08	110	< 0.020	< 0.050	22	0.0245	63.5	< 0.10	0.42	0.46	16	0.067	17.5	22.8	177	< 0.0050	*16.3*	0.90	2.49	1.60	< 0.010	29.0	325	0.022	0.68	< 0.30	1.44	0.65	3.4
	RG_MW_FR10A_WG_2021_08_27_NP	2021 08 27	284	35.3	0.25	1.05	99.7	< 0.020	< 0.050	20	0.0174	70.3	0.10	0.39	0.28	84	0.106	9.8	26.5	*293*	< 0.0050	7.60	0.97	1.92	0.325	< 0.010	11.6	298	0.012	< 0.10	0.99	0.834	< 0.50	2.3
	RG_MW_FR10A_WG_2021_11_05_NP	2021 11 05	265	< 1.0	0.78	0.61	187	< 0.020	< 0.050	22	0.0419	65.7	< 0.10	0.93	0.23	< 10	< 0.050	13.2	24.6	*328*	< 0.0050	*12.5*	2.79	2.71	0.700	< 0.010	16.2	317	0.028	< 0.10	< 0.30	1.18	< 0.50	1.8
RG_MW_FR10B	RG_MW_FR10B_WG_2021_05_19_NP	2021 05 19	394	1.3	< 0.10	0.15	154	< 0.020	< 0.050	14	0.0223	102	0.11	< 0.10	< 0.20	< 10	< 0.050	8.2	34.0	32.9	< 0.0050	1.25	< 0.50	1.16	***28.1***	< 0.010	3.95	209	< 0.010	< 0.10	< 0.30	1.18	< 0.50	1.4
	RG_MW_FR10B_WG_2021_08_27_NP	2021 08 27	355	< 1.0	< 0.10	0.14	124	< 0.020	< 0.050	13	0.0094	90.7	0.12	< 0.10	< 0.20	< 10	< 0.050	7.2	31.2	1.92	< 0.0050	0.771	0.51	1.02	19.6	< 0.010	2.98	170	< 0.010	< 0.10	< 0.30	0.688	< 0.50	< 1.0
	RG_MW_FR10B_WG_2021_11_05_NP	2021 11 05	359	< 1.0	< 0.10	0.14	146	< 0.020	< 0.050	13	0.0271	93.1	0.13	< 0.10	< 0.20	< 10	< 0.050	7.9	30.7	2.04	< 0.0050	0.793	< 0.50	1.08	***27.1***	< 0.010	3.27	183	< 0.010	< 0.10	< 0.30	0.720	< 0.50	3.1
RG_MW_FR10C	RG_MW_FR10C_WG_2021_05_19_NP	2021 05 19	316	1.6	< 0.10	0.16	108	< 0.020	< 0.050	< 10	0.0247	98.2	< 0.10	0.16	0.29	< 10	< 0.050	2.8	17.3	*354*	< 0.0050	0.696	< 0.50	0.90	5.55	< 0.010	2.26	153	< 0.010	< 0.10	< 0.30	1.05	< 0.50	1.4
	RG_MC10A_WG_2021_05_19_NP	Duplicate	305	< 1.0	< 0.10	0.13	82.1	< 0.020	< 0.050	< 10	0.0226	96.6	< 0.10	0.14	0.26	< 10	< 0.050	2.4	15.4	*331*	< 0.0050	0.560	< 0.50	0.77	5.75	< 0.010	2.06	132	< 0.010	< 0.10	< 0.30	0.884	< 0.50	1.2
	QA/QC RPD%		4	*	*	*	27	*	*	*	*	2	*	*	*	*	*	*	12	7	*	22	*	16	4	*	9	15	*	*	*	17	*	*
	RG_MW_FR10C_WG_2021_08_27_NP	2021 08 27	389	2.1	< 0.10	0.15	95.6	< 0.020	< 0.050	< 10	0.0247	120	< 0.10	0.17	< 0.20	< 10	< 0.050	2.8	21.4	*710*	< 0.0050	0.440	0.84	0.91	5.25	< 0.010	1.43	171	< 0.010	< 0.10	< 0.30	1.64	< 0.50	< 1.0
	RG_MW_FR10C_WG_2021_11_05_NP	2021 11 05	316	< 1.0	< 0.10	0.17	78.1	< 0.020	< 0.050	< 10	0.0104	97.9	< 0.10	0.18	< 0.20	128	< 0.050	2.8	17.4	*618*	< 0.0050	0.454	0.60	0.87	1.45	< 0.010	1.29	148	< 0.010	< 0.10	< 0.30	1.61	< 0.50	< 1.0
	RG_MW_MC11A_WG_2021_11_05_NP	Duplicate	316	< 1.0	< 0.10	0.17	77.6	< 0.020	< 0.050	< 10	0.0105	98.0	< 0.10	0.18	< 0.20	133	< 0.050	2.9	17.3	*620*	< 0.0050	0.467	0.62	0.86	1.39	< 0.010	1.26	149	< 0.010	< 0.10	< 0.30	1.62	< 0.50	< 1.0
	QA/QC RPD%		0	*	*	*	1	*	*	*	*	0	*	*	*	4	*	*	1	0	*	3	*	1	4	*	2	1	*	*	*	1	*	*
Swift Creek																																		
FR_MW18-02	FR_MW18-02_2021-06-02_NP	2021 06 02	1,540	< 2.0	< 0.20	0.21	17.7	< 0.040	< 0.100	< 20	0.0446	303	< 0.20	< 0.20	1.93	< 20	< 0.100	38.9	191	35.4	< 0.0050	1.78	2.00	1.90	***345***	< 0.020	7.98	190	0.088	< 0.20	< 0.60	8.54	< 1.00	4.8
	FR_MW18-02_WG_2021_09_01_NP	2021 09 01	1,540	< 2.0	< 0.20	0.20	30.6	< 0.040	< 0.100	< 20	0.0424	324	0.33	< 0.20	0.47	< 20	< 0.100	38.4	178	19.4	< 0.0050	2.17	1.44	3.14	***282***	< 0.020	16.1	216	0.132	< 0.20	< 0.60	7.92	< 1.00	2.6
	FR_MW18-02_WG_2021_11_09_NP	2021 11 09	1,640	2.6	< 0.20	0.25	34.9	< 0.040	< 0.100	< 20	0.0352	333	0.58	< 0.20	0.74	< 20	< 0.100	27.6	196	9.82	< 0.0050	2.22	1.64	3.70	***226***	< 0.020	16.0	236	0.110	< 0.20	< 0.60	7.53	< 1.00	3.1
Blanks																																		
Field Blanks																																		
FR_HMW1S	FR_FLD_QTR_2021-01-04_N	2021 02 05	< 0.60	< 1.0	< 0.10	< 0.10	< 0.10	< 0.0200	< 0.050	< 10	< 0.00500	< 0.050	< 0.10	< 0.100	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.0500	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
FR_MW-SK1B	FR_FLD_QTR_2021-04-05_N	2021 05 13	< 0.50	< 1.0	< 0.10	< 0.10	0.20	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	0.0069	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
FR_09-02-B	FR_FLD_QTR_2021-07-05_N	2021 07 22	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
RG_MW_FR10B	RG_MW_MC10B_WG_2021_08_27_NP	2021 08 27	< 0.50	< 1.0	< 0.10	< 0.10	0.16	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	0.50	< 10	< 0.050	< 1.0	0.0052	0.13	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	1.7
FR_09-02-A	FR_FLD_QTR_2021-10-04_N	2021 10 15	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
RG_MW_FR10B	RG_MW_MC10B_WG_2021_11_05_NP	2021 11 05	20.2	2.0	< 0.10	< 0.10	0.67	< 0.020	< 0.050	< 10	< 0.0050	7.89	1.20	< 0.10	0.39	15	0.065	< 1.0	0.126	1.11	< 0.0050	< 0.050	0.63	< 0.10	< 0.050	< 0.010	0.413	4.51	< 0.010	0.15	< 0.30	< 0.010	< 0.50	2.5
FR_KB-2	FR_FLD1_WG_2021-11_NP	2021 11 23	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	-	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0

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[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE FR-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (FRO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																														
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																		
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Blanks																																		
Trip Blanks																																		
	FR_TRP_QTR_2021-01-04_N	2021 02 04	< 0.60	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	FR_TRP_QTR_2021-04-05_N	2021 04 26	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	FR_TRP_QTR_2021-07-05_N	2021 07 21	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	FR_TRP_QTR_2021-10-04_N	2021 10 15	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	RG_MW_MC10C_WG_2021_05_19_NP	2021 05 19	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	1.2
	RG_MW_MC10C_WG_2021_08_27_NP	2021 08 27	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	RG_MW_MC10C_WG_2021_11_05_NP	2021 11 05	< 0.50	< 1.0	< 0.10	< 0.10	0.12	< 0.020	< 0.050	< 10	< 0.0050	0.119	< 0.10	< 0.10	1.26	< 10	< 0.050	< 1.0	< 0.0050	0.13	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	1.9
	FR_TRP2_WG_2021-11_NP	2021 12 01	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	-	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0

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RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
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UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE FR-05: Summary of Analytical Results Compared to Secondary Screening Criteria for Selenium (FRO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	SPO/Compliance Point	Selenium µg/L
Groundwater Quality Benchmarks				
SPO			Fording River [GH_FR1 (0200378)]	63
Compliance Point			Fording River [FR_FRABCH (EMS E223753)]	85
Henretta Creek Valley				
FR_HMW1D	FR_HMW1D_QTR_2021-01-04_N	2021 02 05	FR_FRABCH (EMS E223753)	52.1
FR_HMW1S	FR_HMW1S_QTR_2021-01-04_N	2021 02 05	FR_FRABCH (EMS E223753)	234
	FR_HMW1S_QTR_2021-04-05_N	2021 05 14	FR_FRABCH (EMS E223753)	242
	FR_HMW1S_QTR_2021-07-05_N	2021 07 20	FR_FRABCH (EMS E223753)	194
FR_HMW2	FR_HMW2_QTR_2021-01-04_N	2021 02 04	FR_FRABCH (EMS E223753)	385
	FR_HMW2_QTR_2021-04-05_N	2021 05 20	FR_FRABCH (EMS E223753)	313
	FR_HMW2_HLS_WG_20210823_NP	2021 08 23	FR_FRABCH (EMS E223753)	262
FR_HMW3	FR_HMW3_QTR_2021-01-04_N	2021 02 05	FR_FRABCH (EMS E223753)	79.2
	FR_DC2_QTR_2021-01-04_N	Duplicate	FR_FRABCH (EMS E223753)	79.4
	QA/QC RPD%			0
	FR_HMW3_QTR_2021-04-05_N	2021 05 14	FR_FRABCH (EMS E223753)	98.0
	FR_HMW3_QTR_2021-07-05_N	2021 07 21	FR_FRABCH (EMS E223753)	83.7
	FR_HMW3_QTR_2021-10-18_N	2021 10 18	FR_FRABCH (EMS E223753)	59.8
Fording River Valley				
FR_TBSSMW-2	FR_TBSSMW-2_QTR_2021-01-04_N	2021 02 25	FR_FRABCH (EMS E223753)	39.0
	FR_TBSSMW-2_QTR_2021-04-05_N	2021 05 20	FR_FRABCH (EMS E223753)	20.5
	FR_TBSSMW-2_QTR_2021-07-05_N	2021 07 21	FR_FRABCH (EMS E223753)	10.1
	FR_DC1_QTR_2021-07-05_N	Duplicate	FR_FRABCH (EMS E223753)	10.1
	QA/QC RPD%			0
	FR_TBSSMW-2_QTR_2021-10-04_N	2021 10 06	FR_FRABCH (EMS E223753)	18.7
FR_POTWELLS	FR_POTWELLS_QTR_2021-01-04_N	2021 03 08	FR_FRABCH (EMS E223753)	37.6
	FR_POTWELLS_QTR_2021-04-05_N	2021 05 20	FR_FRABCH (EMS E223753)	11.0
	FR_POTWELLS_QTR_2021-07-05_N	2021 09 15	FR_FRABCH (EMS E223753)	12.5
	FR_POTWELLS_QTR_2021-10-04_N	2021 12 08	FR_FRABCH (EMS E223753)	24.9
	FR_DC3_QTR_2021-10-04_N	Duplicate	FR_FRABCH (EMS E223753)	24.1
	QA/QC RPD%			3
FR_GCMW-2	FR_GCMW-2_QTR_2021-01-04_N	2021 01 28	FR_FRABCH (EMS E223753)	145
	FR_GCMW-2_QTR_2021-04-05_N	2021 05 20	FR_FRABCH (EMS E223753)	110
	FR_GCMW-2_QTR_2021-07-05_N	2021 07 26	FR_FRABCH (EMS E223753)	90.5
	FR_DC3_QTR_2021-07-05_N	Duplicate	FR_FRABCH (EMS E223753)	93.9
	QA/QC RPD%			4
	FR_GCMW-2_QTR_2021-12-07_N	2021 12 07	FR_FRABCH (EMS E223753)	126
FR_MW-1B	FR_MW-1B_QTR_2021-01-04_N	2021 02 25	FR_FRABCH (EMS E223753)	72.6
	FR_MW-1B_QTR_2021-04-05_N	2021 05 20	FR_FRABCH (EMS E223753)	35.4
	FR_MW-1B_QTR_2021-07-05_N	2021 09 15	FR_FRABCH (EMS E223753)	47.8
	FR_MW-1B_QTR_2021-10-04_N	2021 12 08	FR_FRABCH (EMS E223753)	56.6
FR_KB-1	FR_KB-1A_2021-02-18	2021 02 18	FR_FRABCH (EMS E223753)	312
	FR_KB-1_WG_2021-06_NP	2021 06 01	FR_FRABCH (EMS E223753)	181
	FR_KB-1_WG_2021-08_NP	2021 08 10	FR_FRABCH (EMS E223753)	186
	FR_KB-1_WG_2021-11_NP	2021 12 01	FR_FRABCH (EMS E223753)	280
FR_KB-2	FR_KB-2_2021-02-19	2021 02 19	FR_FRABCH (EMS E223753)	292
	FR_KB-2_WG_2021-06_NP	2021 06 01	FR_FRABCH (EMS E223753)	152
	FR_KB-2_WG_2021-08_NP	2021 08 13	FR_FRABCH (EMS E223753)	185
	FR_KB-2_WG_2021-11_NP	2021 11 23	FR_FRABCH (EMS E223753)	255
	FR_DC1_WG_2021-11_NP	Duplicate	FR_FRABCH (EMS E223753)	258
	QA/QC RPD%			1
FR_KB-3A	FR_KB-3A_2021-03-24	2021 03 24	FR_FRABCH (EMS E223753)	203
	FR_KB-3A_WG_2021-06-25_NP	2021 06 25	FR_FRABCH (EMS E223753)	276
	FR_KB-3A_WG_2021-08_NP	2021 08 13	FR_FRABCH (EMS E223753)	230
	FR_KB-3A_WG_2021-11_NP	2021 11 25	FR_FRABCH (EMS E223753)	227
FR_KB-3B	FR_KB-3B_2021-03-24	2021 03 24	FR_FRABCH (EMS E223753)	269
	FR_KB-3B_WG_2021-06-25_NP	2021 06 25	FR_FRABCH (EMS E223753)	225
	FR_KB-3B_WG_2021-08_NP	2021 08 13	FR_FRABCH (EMS E223753)	210
	FR_KB-3B_WG_2021-11_NP	2021 11 24	FR_FRABCH (EMS E223753)	225
FR_MW-SK1A	FR_MW-SK1A_QTR_2021-01-04_N	2021 03 18	FR_FRABCH (EMS E223753)	272
	FR_MW-SK1A_QTR_2021-04-05_N	2021 05 13	FR_FRABCH (EMS E223753)	270
	FR_MW-SK1A_QTR_2021-07-05_N	2021 07 28	FR_FRABCH (EMS E223753)	166
	FR_MW-SK1A_QTR_2021-10-04_N	2021 11 01	FR_FRABCH (EMS E223753)	192
FR_MW-SK1B	FR_MW-SK1B_QTR_2021-01-04_N	2021 03 11	FR_FRABCH (EMS E223753)	10.9
	FR_MW-SK1B_QTR_2021-04-05_N	2021 05 13	FR_FRABCH (EMS E223753)	11.1
	FR_DC3_QTR_2021-04-05_N	Duplicate	FR_FRABCH (EMS E223753)	10.6
	QA/QC RPD%			5
	FR_MW-SK1B_QTR_2021-07-05_N	2021 07 28	FR_FRABCH (EMS E223753)	11.3
	FR_MW-SK1B_QTR_2021-10-04_N	2021 11 01	FR_FRABCH (EMS E223753)	12.3
FR_09-01-A	FR_09-01-A_QTR_2021-01-04_N	2021 02 22	FR_FRABCH (EMS E223753)	71.6
	FR_DC1_QTR_2021-01-04_N	Duplicate	FR_FRABCH (EMS E223753)	70.5
	QA/QC RPD%			2
	FR_09-01-A_QTR_2021-04-05_N	2021 05 13	FR_FRABCH (EMS E223753)	205
	FR_09-01-A_QTR_2021-07-05_N	2021 07 22	FR_FRABCH (EMS E223753)	123
	FR_09-01-A_QTR_2021-10-04_N	2021 10 15	FR_FRABCH (EMS E223753)	178
FR_09-01-B	FR_09-01-B_QTR_2021-01-04_N	2021 02 22	FR_FRABCH (EMS E223753)	78.7
	FR_09-01-B_QTR_2021-04-05_N	2021 05 13	FR_FRABCH (EMS E223753)	77.8
	FR_09-01-B_QTR_2021-07-05_N	2021 07 22	FR_FRABCH (EMS E223753)	111
	FR_09-01-B_QTR_2021-10-04_N	2021 10 15	FR_FRABCH (EMS E223753)	117
	FR_DC1_QTR_2021-10-04_N	Duplicate	FR_FRABCH (EMS E223753)	121
	QA/QC RPD%			3
FR_09-02-A	FR_09-02-A_QTR_2021-01-04_N	2021 03 11	FR_FRABCH (EMS E223753)	114
	FR_09-02-A_QTR_2021-04-05_N	2021 05 13	FR_FRABCH (EMS E223753)	67.8
	FR_09-02-A_QTR_2021-07-05_N	2021 07 22	FR_FRABCH (EMS E223753)	46.2
	FR_DC2_QTR_2021-07-05_N	Duplicate	FR_FRABCH (EMS E223753)	45.4
	QA/QC RPD%			2
	FR_09-02-A_QTR_2021-10-04_N	2021 10 15	FR_FRABCH (EMS E223753)	64.7
FR_09-02-B	FR_09-02-B_QTR_2021-01-04_N	2021 03 11	FR_FRABCH (EMS E223753)	80.8
	FR_09-02-B_QTR_2021-04-05_N	2021 05 13	FR_FRABCH (EMS E223753)	69.1
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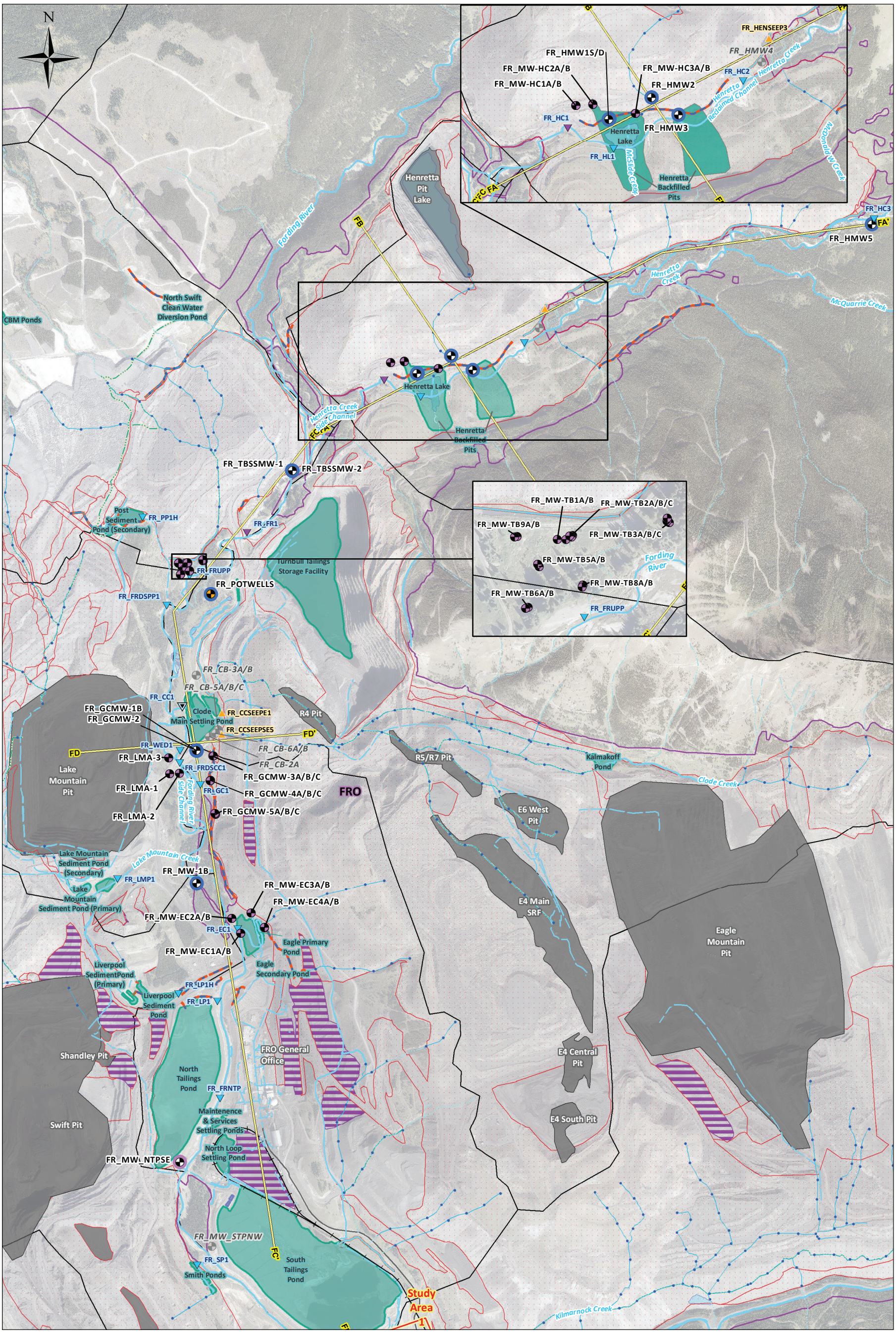
FR_GH_WELL4	FR_GH_WELL4_QTR_2021-01-04_N	2021 01 28	GH_FR1 (0200378)	153
	FR_GH_WELL4_QTR_2021-04-05_N	2021 04 26	GH_FR1 (0200378)	163
	FR_GH_WELL4_QTR_2021-07-05_N	2021 09 15	GH_FR1 (0200378)	117
	FR_GH_WELL4_QTR_2021-10-04_N	2021 11 22	GH_FR1 (0200378)	142
RG_MW_FR10B	RG_MW_FR10B_WG_2021_05_19_NP	2021 05 19	FR_FRABCH (EMS E223753)	28.1
	RG_MW_FR10B_WG_2021_08_27_NP	2021 08 27	FR_FRABCH (EMS E223753)	19.6
	RG_MW_FR10B_WG_2021_11_05_NP	2021 11 05	FR_FRABCH (EMS E223753)	27.1
Swift Creek				
FR_MW18-02	FR_MW18-02_2021-06-02_NP	2021 06 02	FR_FRABCH (EMS E223753)	345
	FR_MW18-02_WG_2021_09_01_NP	2021 09 01	FR_FRABCH (EMS E223753)	282
	FR_MW18-02_WG_2021_11_09_NP	2021 11 09	FR_FRABCH (EMS E223753)	226

All terms defined within the body of SNC-Lavalin's report.
n/a Denotes no applicable standard/guideline.
QA/QC RPD Denotes quality assurance/quality control relative percent difference
* RPDs are not calculated where one or more concentrations are less than five times RDL.
RDL Denotes reported detection limit.

SHADED Concentration greater than SPO by Area/Compliance Point by Area

Drawings:

FR-01: Sample Location Plan – Fording Creek Operations (North)
FR-02: Sample Location Plan – Fording Creek Operations (South)
FR-03: Groundwater Elevations from Q4 2021 and Inferred Groundwater Flow Direction (North)
FR-04: Groundwater Elevations from Q4 2021 and Inferred Groundwater Flow Direction (South)
FR-05: Fording River Operations – Inferred Geological Cross Section FA-FA'
FR-06: Fording River Operations – Inferred Geological Cross Section FB-FB'
FR-07: Fording River Operations – Inferred Geological Cross Section FC-FC'
FR-08: Fording River Operations – Inferred Geological Cross Section FD-FD'
FR-09: Fording River Operations – Inferred Geological Cross Section FE-FE'
FR-10: Fording River Operations – Inferred Geological Cross Section FF-FF'
FR-11: Fording River Operations – Inferred Geological Cross Section FG-FG'
FR-12: Fording River Operations – Inferred Geological Cross Section FH-FH'
FR-13: Fording River Operations – Spatial Distribution of Nitrate Nitrogen in Groundwater (North)
FR-14: Fording River Operations – Spatial Distribution of Sulphate in Groundwater (North)
FR-15: Fording River Operations – Spatial Distribution of Dissolved Cadmium in Groundwater (North)
FR-16: Fording River Operations – Spatial Distribution of Dissolved Selenium in Groundwater (North)
FR-17: Fording River Operations and Study Area 1 – Spatial Distribution of Nitrate Nitrogen in Groundwater (South)
FR-18: Fording River Operations and Study Area 1 – Spatial Distribution of Sulphate in Groundwater (South)
FR-19: Fording River Operations and Study Area 1 – Spatial Distribution of Dissolved Cadmium in Groundwater (South)
FR-20: Fording River Operations and Study Area 1 – Spatial Distribution of Dissolved Selenium in Groundwater (South)



Legend

Groundwater Stations[4]
- Monitoring Well
- Supply Well
- Well included in the SSGMP
- New SSGMP Well
- Monitoring Well (Other Programs)
- Monitoring Wells to be Considered for Inclusion in SSGMP and/or RGMP

Surface Water Stations
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Geological Cross Section
- Study Areas

- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Pit
- Stockpiles
- Waste Dump (Spoils)
- Watersheds
- Mine Permitted Areas

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:25000 Scale)

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.

References:
1. Information provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

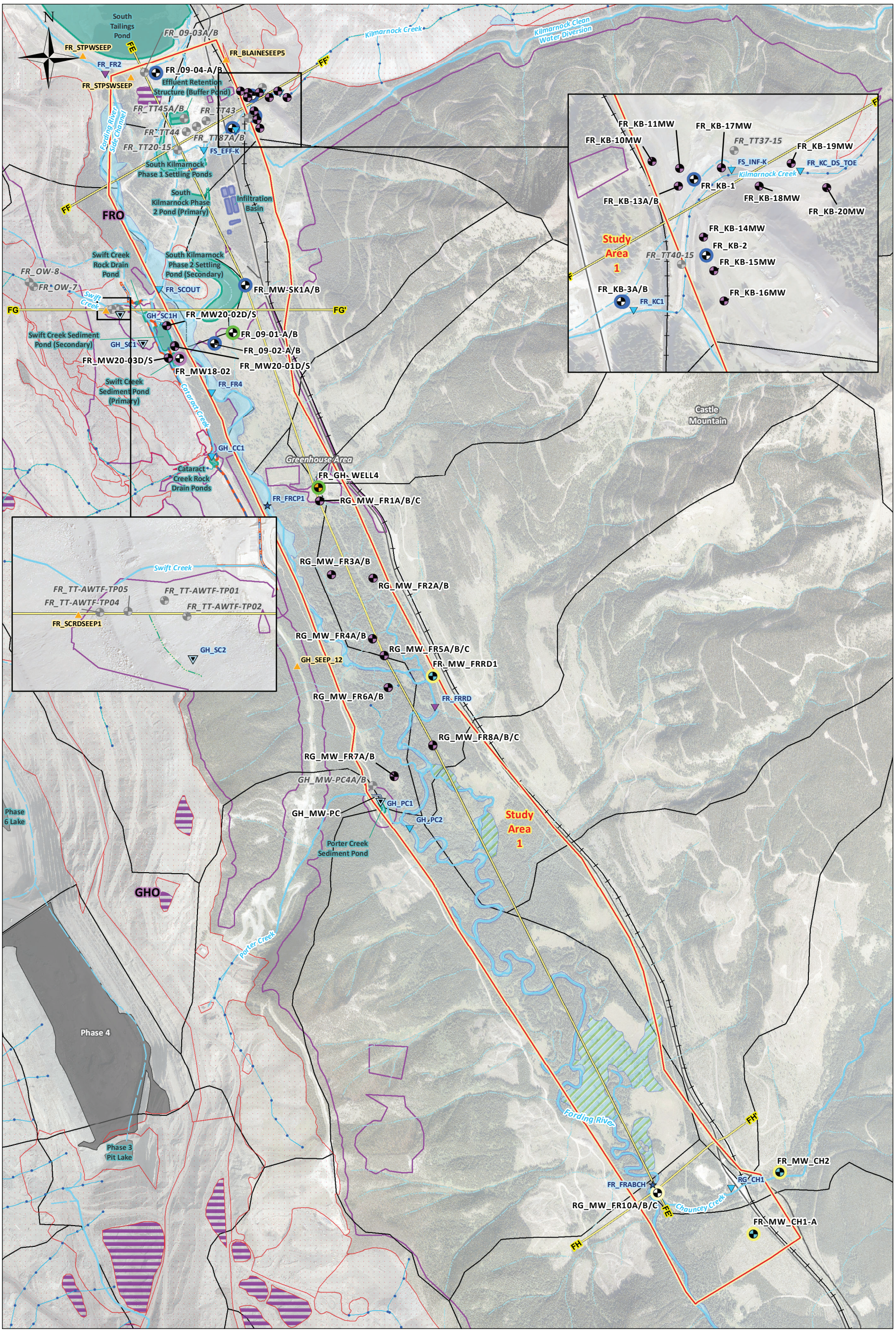
SNC·LAVALIN

Sample Location Plan - Fording River Operations (North)

CHK'D: RS	DATE: 2022-03-15	SCALE: 1:25,000	Ref Num:
BY: CW	COORD SYS: NAD 1983 UTM Zone 11N		DRAWING FR-01

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-13-LocPlan_FRO_North.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Legend

Groundwater Stations
- Monitoring Well
- Background well included in the RGMP
- Supply Well
- Well included in the RGMP
- Well included in the SSGMP
- Well included in both the RGMP and the SSGMP
- New RGMP Well
- New SSGMP Well
- Monitoring Well (Other Programs)
- Monitoring Wells to be Considered for Inclusion in SSGMP and/or RGMP

Surface Water Stations
- Compliance Point
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Geological Cross Section
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Pit
- Stockpiles
- Waste Dump (Spoils)
- Watersheds
- Mine Permitted Areas

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:24000 Scale)

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.

References:
1. Information provided by Teck Coal Limited.

0 100 200 400 600 800 1,000 Meters

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

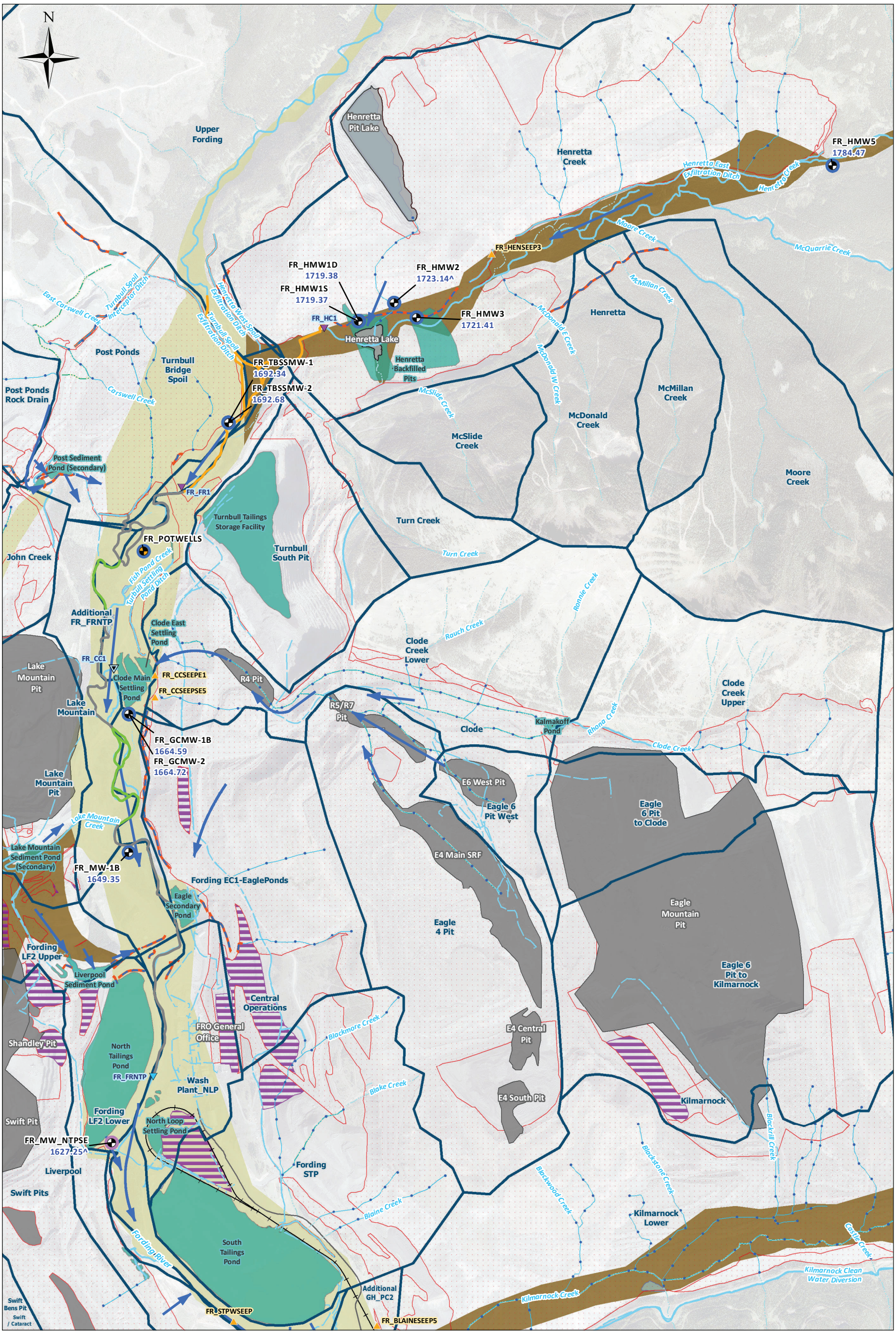
SNC·LAVALIN

Sample Location Plan - Fording River Operations (South)

CHK'D: RS	DATE: 2022-03-15	SCALE: 1:24,000	Ref Num:
BY: CW	COORD SYS: NAD 1983 UTM Zone 11N		DRAWING FR-02

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-14-LocPlan_FRO_South.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Legend

Groundwater Stations
- Monitoring Well
- Supply Well
- New SSGMP Well
- Well included in the SSGMP

Surface Water Stations
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Flow Accretion
- Gaining
- Losing
- No Change

Site Features
- Secondary Road
- Rails
- Interpreted GW flow direction
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake

- Interpreted Tributary Valley-bottom Extent
- Interpreted Main Valley-bottom Extent
- Watersheds
- Pit
- Stockpiles
- Waste Dump (Spoils)

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Lake/River Bed

1692.39 Water level (masl) measured during Q4 2021
1692.39^ Water level (masl) measured during Q1 2021

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.

References:
1. Information provided by Teck Coal Limited.
2. Flow accretion study completion dates:
- Fording River: September 2019 (Golder Associates Ltd.)

0 250 500 1,000 Meters

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

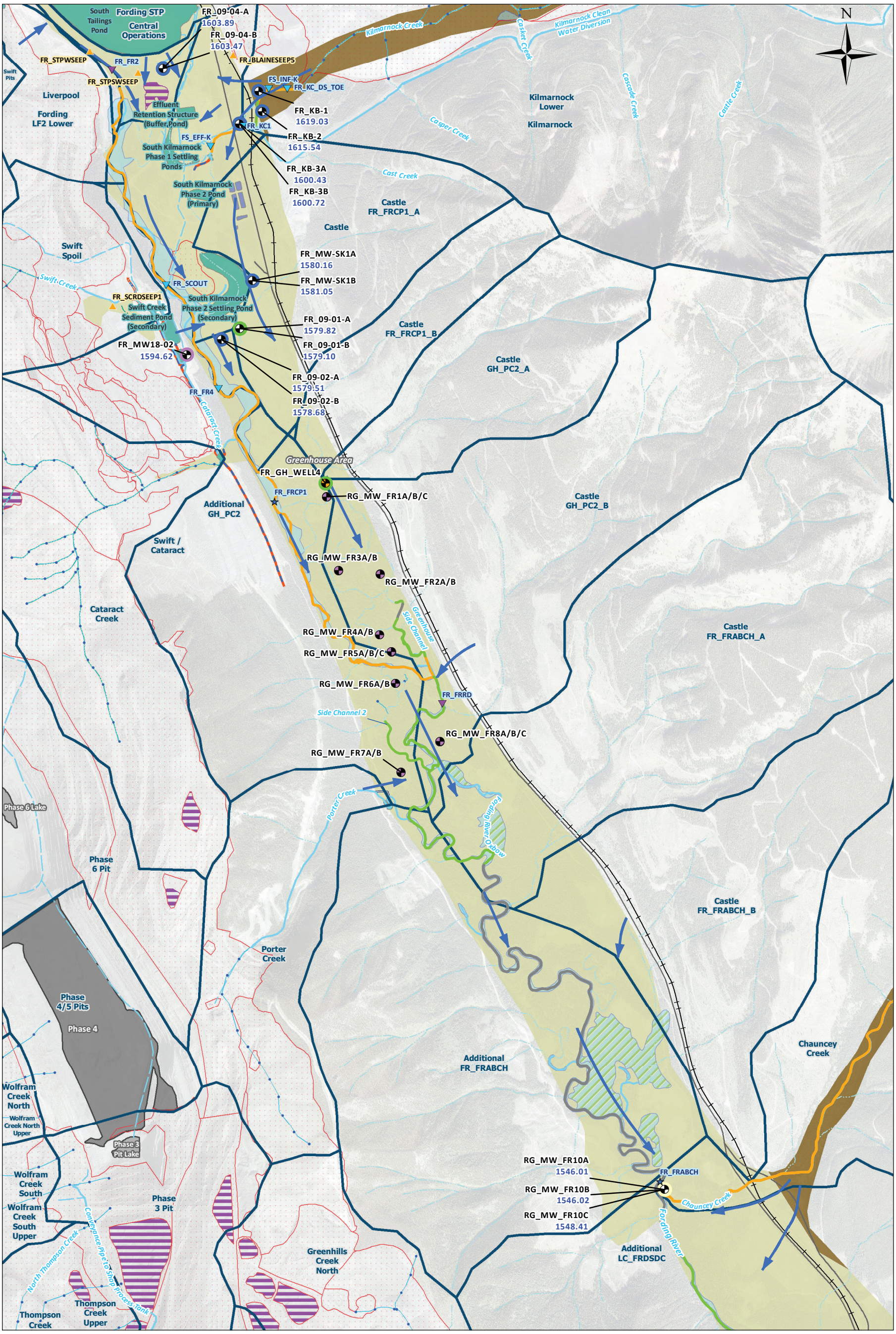
SNC·LAVALIN

Groundwater Elevations from Q4 2021 and Inferred Groundwater Flow Direction (North)

CHK'D: RS | BY: CW | DATE: 2022-03-15 | SCALE: 1:24,000 | COORD SYS: NAD 1983 UTM Zone 11N | Ref Num: DRAWING FR-03

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GISMap Series\635544_2021 RGMP SSGMP Annual Report\635544-15-GWElevN_FRO.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Legend

Groundwater Stations
- Monitoring Well
- Supply Well
- Well included in the SSGMP
- Well included in both the RGMP and the SSGMP
- New RGMP Well
- New SSGMP Well
- Monitoring Wells to be Considered for Inclusion in SSGMP and/or RGMP

Surface Water Stations
- Compliance Point
- Receiving Environment
- Monitoring
- Seep

Flow Accretion
- Gaining
- Losing
- No Change

Site Features
- Secondary Road
- Rails

- Interpreted GW flow direction
- Interpreted Tributary Valley-bottom Extent
- Interpreted Main Valley-bottom Extent
- Watersheds
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Pit
- Stockpiles
- Waste Dump (Spoils)

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/ Diversion Channel
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:24000 Scale)

1692.39 Water level (masl) measured during Q4 2021

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.

References:
1. Information provided by Teck Coal Limited.
2. Flow accretion studies completion date:
- Fording River: October 2019 (SNC-Lavalin)
- Greenhouse Side Channel: February 2020 (SNC-Lavalin)
- Kilmarnock Creek: May 2019 (Golder)
- Chauncey Creek: November 2020 (SNC-Lavalin)

0 100 200 400 600 800 Meters

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

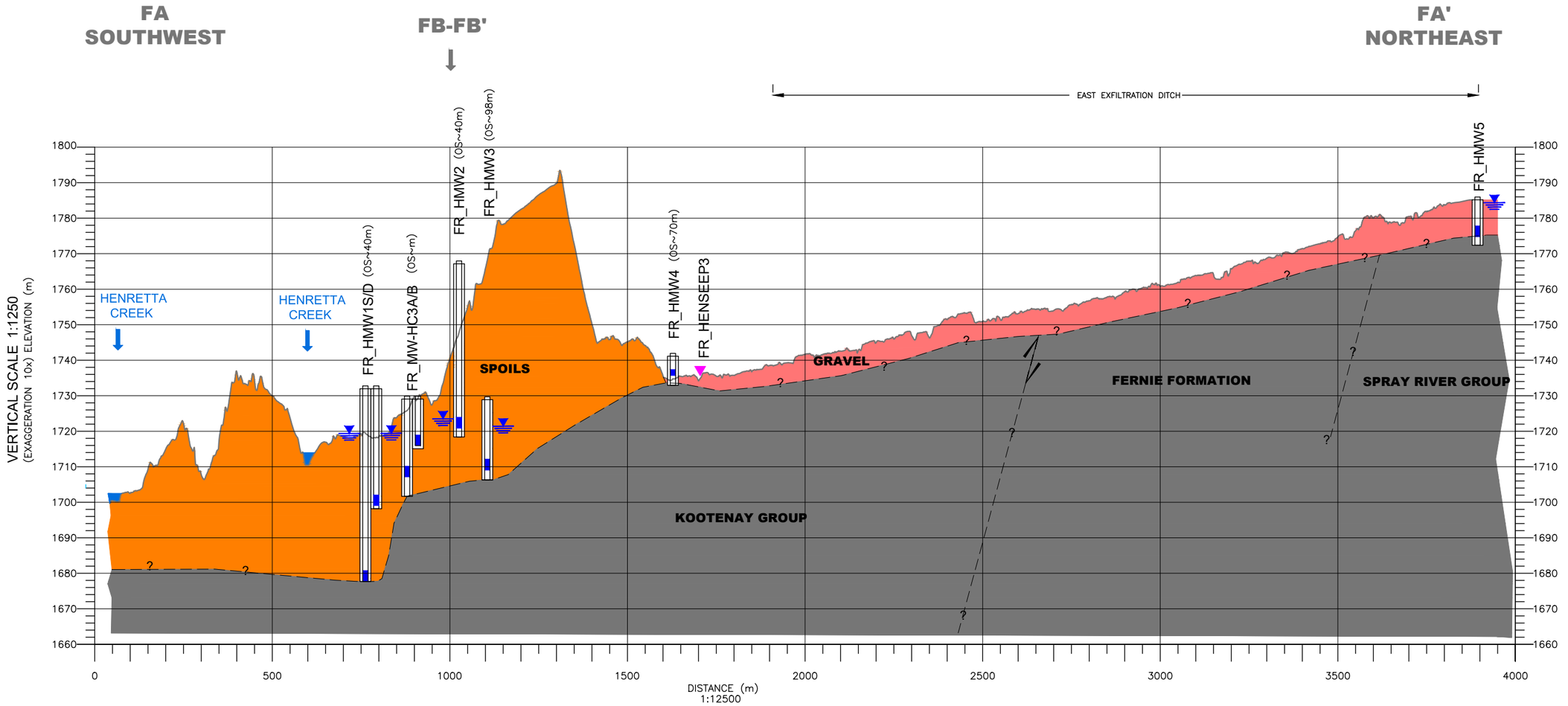
SNC·LAVALIN

Groundwater Elevations from Q4 2021 and Inferred Groundwater Flow Direction (South)

CHK'D: RS	DATE: 2022-03-15	SCALE: 1:24,000	Ref Num:
BY: CW	COORD SYS: NAD 1983 UTM Zone 11N		DRAWING FR-04

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

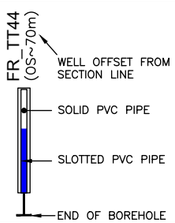
MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-16-GWElevS_FRO.mxd



LEGEND

- GRAVEL (SPOILS)
- GRAVEL (FLUVIAL)
- BEDROCK
- INFERRED STRATIGRAPHIC BOUNDARY
- GROUNDWATER ELEVATION (2021 Q4)
- NORMAL FAULT

BOREHOLE LEGEND



NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83.)

REFERENCE DRAWINGS

–	–	–
DWG. NO.	DATE	DESCRIPTION

REVISIONS

0	2022-02-24	ISSUED TO CLIENT	AJK	CH
REV.	DATE	DESCRIPTION	BY	CHK

CLIENT NAME:
TECK COAL LIMITED
–

PROJECT LOCATION:
FORDING RIVER OPERATIONS
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
FORDING RIVER OPERATIONS -
INFERRED GEOLOGICAL CROSS SECTION FA-FA'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: KMC	PLOT: 20220301.0937	CADFILE: 635544-X2R18	**DRAWING FR-05**

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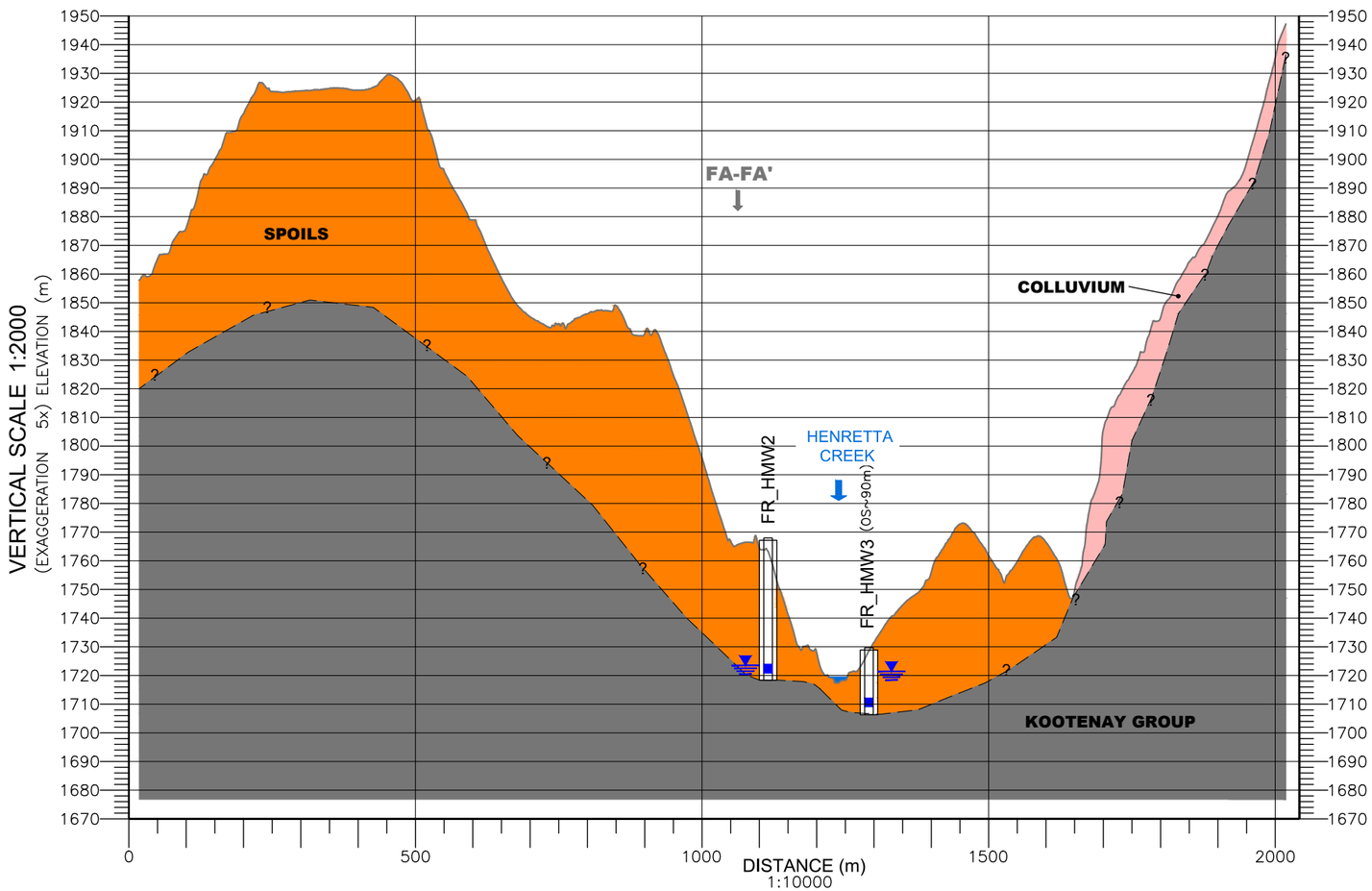

LEGEND

- GRAVEL (SPOILS)
- GRAVEL (COLLUVIUM)
- BEDROCK
- INFERRED STRATIGRAPHIC BOUNDARY
- GROUNDWATER ELEVATION (2021 Q4)

BOREHOLE LEGEND

FR_TT44 (OS~70m)

- WELL OFFSET FROM SECTION LINE
- SOLID PVC PIPE
- SLOTTED PVC PIPE
- END OF BOREHOLE

NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83.)

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
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REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-02-24	ISSUED TO CLIENT	AJK	CH

CLIENT NAME:
TECK COAL LIMITED
–

PROJECT LOCATION:
FORDING RIVER OPERATIONS
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
FORDING RIVER OPERATIONS -
INFERRED GEOLOGICAL CROSS SECTION FB-FB'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: KMC	PLOT: 20220224.1516	CADFILE: 635544-X2R18	**DRAWING FR-06**

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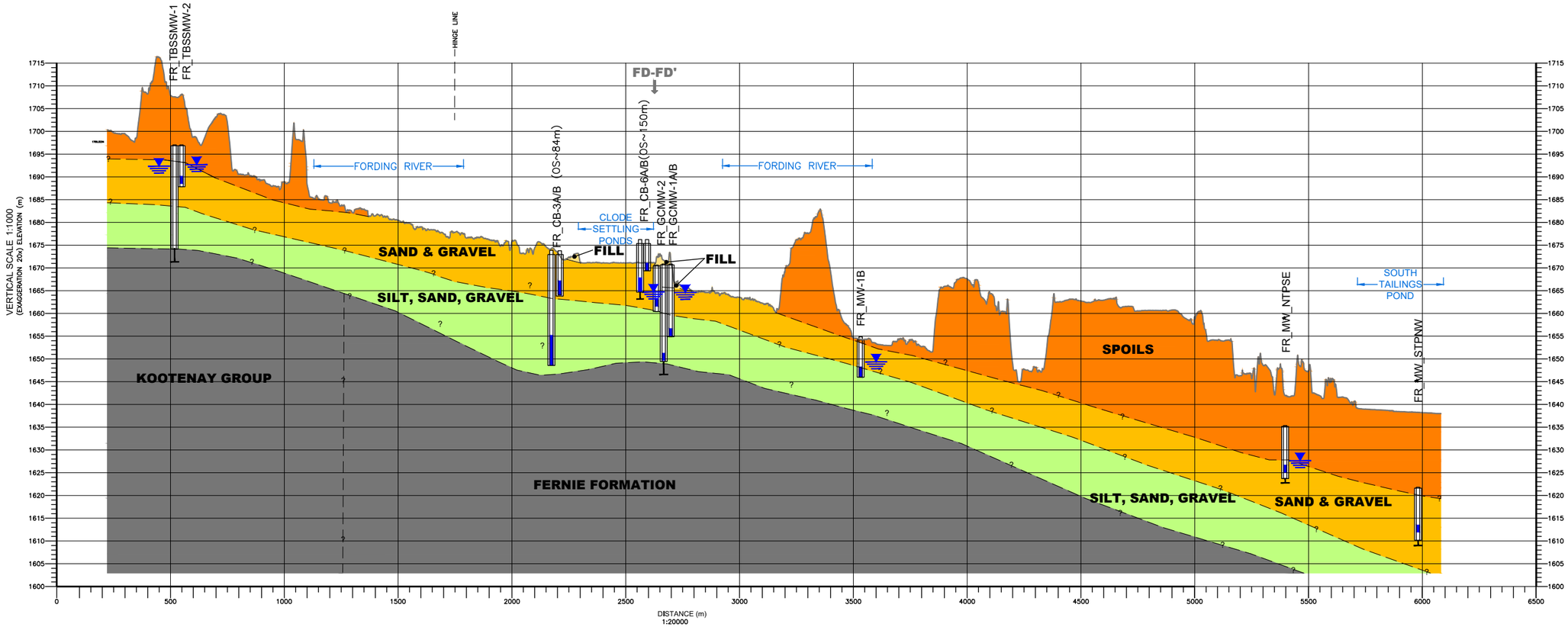
FC
NORTH

FC'
SOUTH



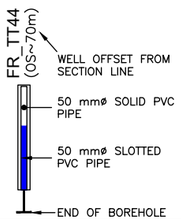
LEGEND

- GRAVEL (SPOILS)
- GRAVEL (FLUVIAL)
- SAND
- SILT
- SILT, SAND, GRAVEL (TILL)
- BEDROCK

– – – – INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4)

BOREHOLE LEGEND



NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83.)

REFERENCE DRAWINGS

–	–	–
DWG. NO.	DATE	DESCRIPTION

REVISIONS

0	2022-02-24	ISSUED TO CLIENT	AJK	CH
REV.	DATE	DESCRIPTION	BY	CHK

CLIENT NAME:
TECK COAL LIMITED
–

PROJECT LOCATION:
FORDING RIVER OPERATIONS
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
FORDING RIVER OPERATIONS -
INFERRED GEOLOGICAL CROSS SECTION FC-FC'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: KMC	PLOT: 20220301.0946	CADFILE: 635544-X2R18	**DRAWING FR-07**

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FD
WEST

FD'
EAST

FC-FC'

VERTICAL SCALE 1:1250
(EXAGGERATION 4x) ELEVATION (m)

1850
1825
1800
1775
1750
1725
1700
1675
1650
1625

LAKE MOUNTAIN PIT

CLODE
SETTLING
PONDS

FORDING
RIVER

WEST
FILTRATION
DITCH

FR_GCMW-2
FR_GCMW-1A/B

FR_CB-2A (OS~34m)

FR_CB-6A/B (OS~50m)
FR_CB-5A/B/C (OS~72m)

SPOILS

COLLUVIUM

FERNIE FORMATION

KOOTENAY GROUP

SILT, SAND, GRAVEL

BEDROCK

ERICKSON FAULT

0
500
1000
1500

DISTANCE (m)
1:5000

LEGEND

- GRAVEL (SPOILS)
- GRAVEL (COLLUVIUM)
- GRAVEL (FLUVIAL)
- SAND
- SILT, SAND, GRAVEL (TILL)
- SILT
- BEDROCK

INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4)

BOREHOLE LEGEND

FR_TT44
(OS~70m)

WELL OFFSET FROM SECTION LINE

50 mmø SOLID PVC PIPE

50 mmø SLOTTED PVC PIPE

END OF BOREHOLE

NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83.)

REFERENCE DRAWINGS

–	–	–
DWG. NO.	DATE	DESCRIPTION

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-02-24	ISSUED TO CLIENT	AJK	CH

CLIENT NAME:
TECK COAL LIMITED
–

PROJECT LOCATION:
FORDING RIVER OPERATIONS
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
FORDING RIVER OPERATIONS -
INFERRED GEOLOGICAL CROSS SECTION FD-FD'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: KMC	PLOT: 20220224.1520	CADFILE: 635544-X2R18	**DRAWING FR-08**

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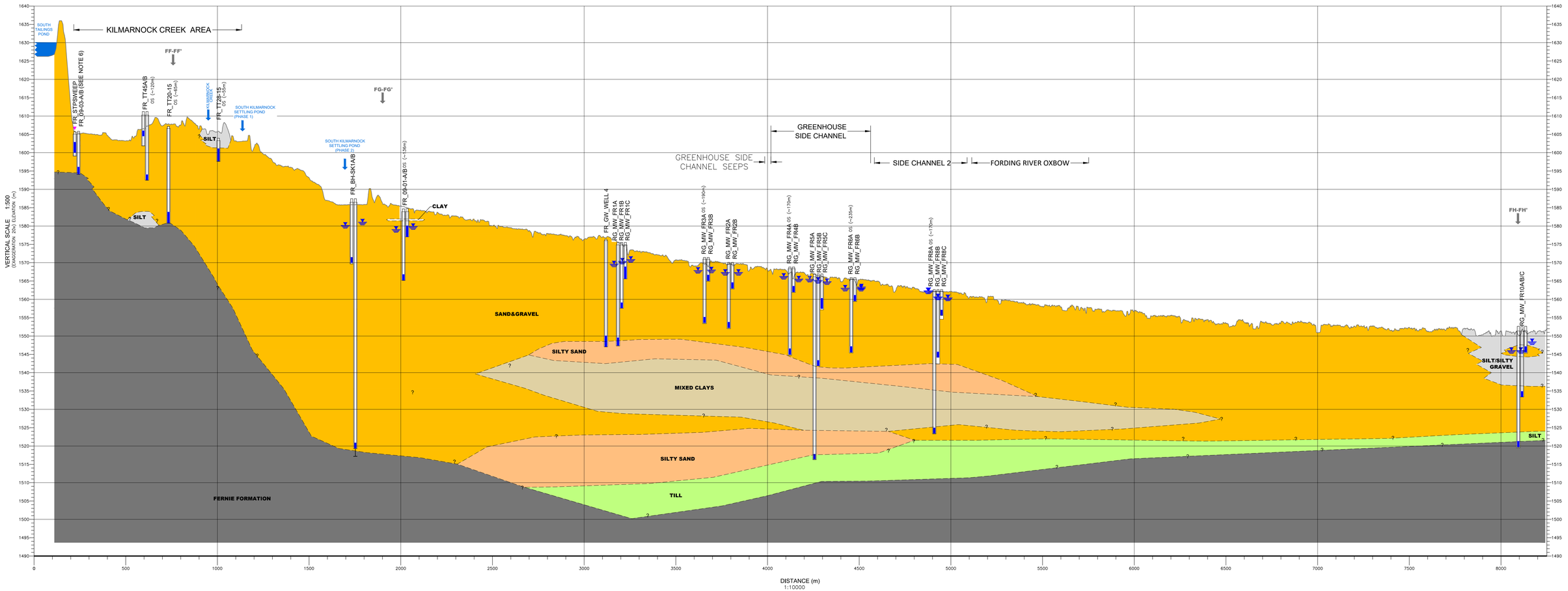
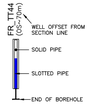


LEGEND

- SAND
- SILT
- SAND & GRAVEL
- MIXED CLAYS (SILTY CLAY/GRAVELLY CLAY)
- TILL
- BEDROCK

- INFERRED STRATIGRAPHIC BOUNDARY
- GROUNDWATER ELEVATION (2021 Q4)
- SEEP
- INFERRED GROUNDWATER FLOW DIRECTION



NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IS IN COLOUR.
4. ALL WELL AND GROUNDWATER ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83.
5. 2018 Q4 GROUNDWATER ELEVATIONS WERE ONLY AVAILABLE FOR SELECT WELLS AS SHOWN ON DRAWING.
6. MONITORING WELLS FR_09-03A/B ARE LOCATED ADJACENT TO FR_09-04A/B. INSTALLATION DETAILS AND BEDROCK CONTACT DEPICTED ON THE CROSS-SECTION REPRESENT FR_09-03A/B.
7. 2020 Q3 GROUNDWATER ELEVATIONS SHOWN FOR WELLS INSTALLED AS PART OF THE MBI PROGRAM, AND REPORTED IN SNC-LAVALIN (2020).

REFERENCE DRAWINGS

No.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-02-24	ISSUED TO CLIENT	AJK	CH

CLIENT NAME:
TECK COAL LIMITED
–

PROJECT LOCATION:
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
FORDING RIVER OPERATIONS
INFERRED GEOLOGICAL CROSS SECTION FE-FE'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-05-14	DWG No: **DRAWING FR-09** REV.: **0**
CHK'D: CH	PLOT: 20220302.0936	CADFILE:635544-X2R18	

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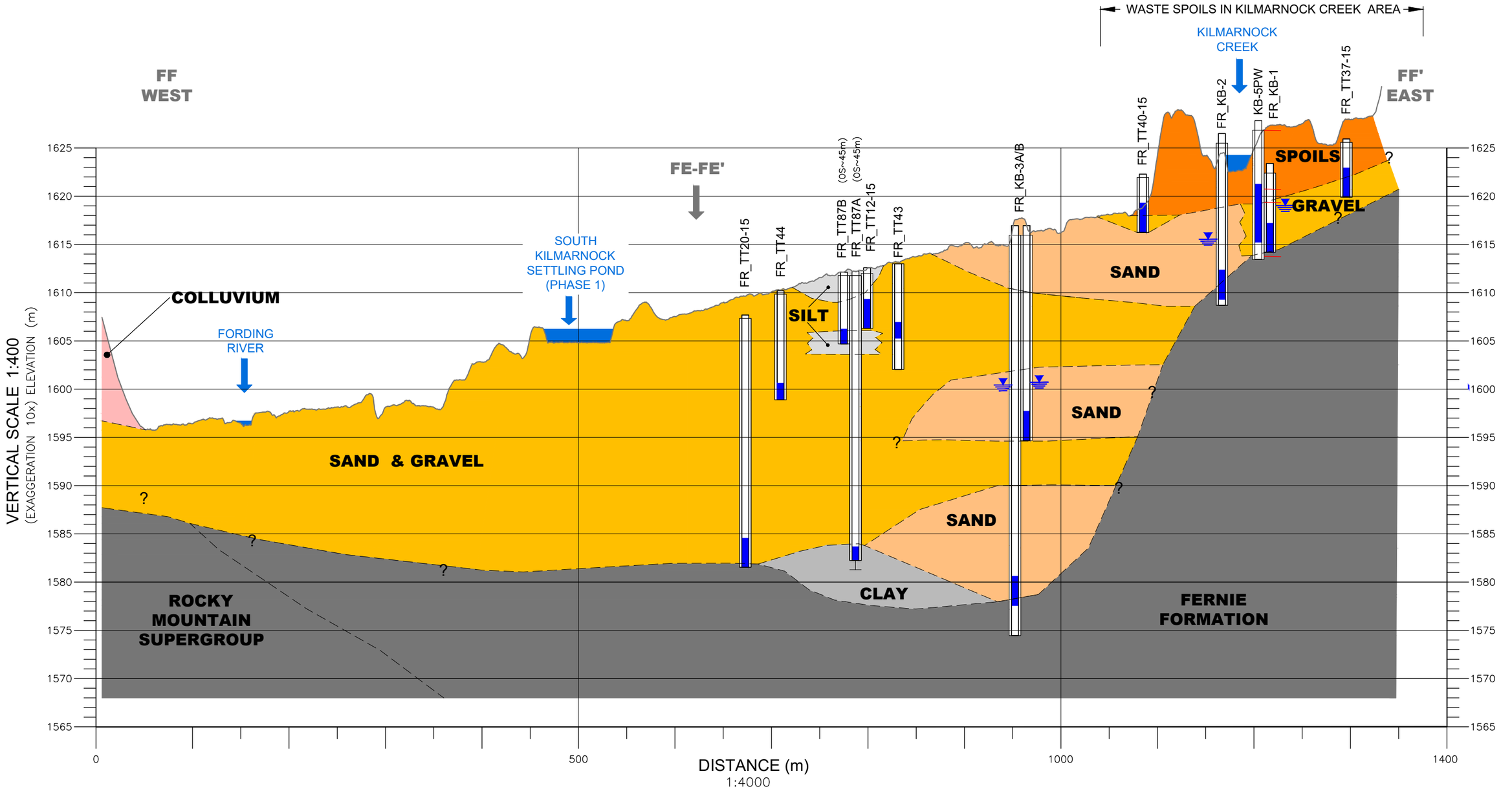


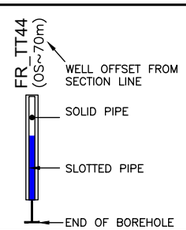
LEGEND

- GRAVEL (SPOILS)
- GRAVEL (COLLUVIUM)
- SAND & GRAVEL
- SAND
- SILT
- CLAY
- BEDROCK

INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4)

BOREHOLE LEGEND



NOTES

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2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83.)

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-02-24	ISSUED TO CLIENT	AJK	CH

CLIENT NAME:
TECK COAL LIMITED
–

PROJECT LOCATION:
FORDING RIVER OPERATIONS
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
FORDING RIVER OPERATIONS
INFERRED GEOLOGICAL CROSS SECTION FF-FF'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: KMC	PLOT: 20220224.1524	CADFILE:635544-X2R18	**DRAWING FR-10**

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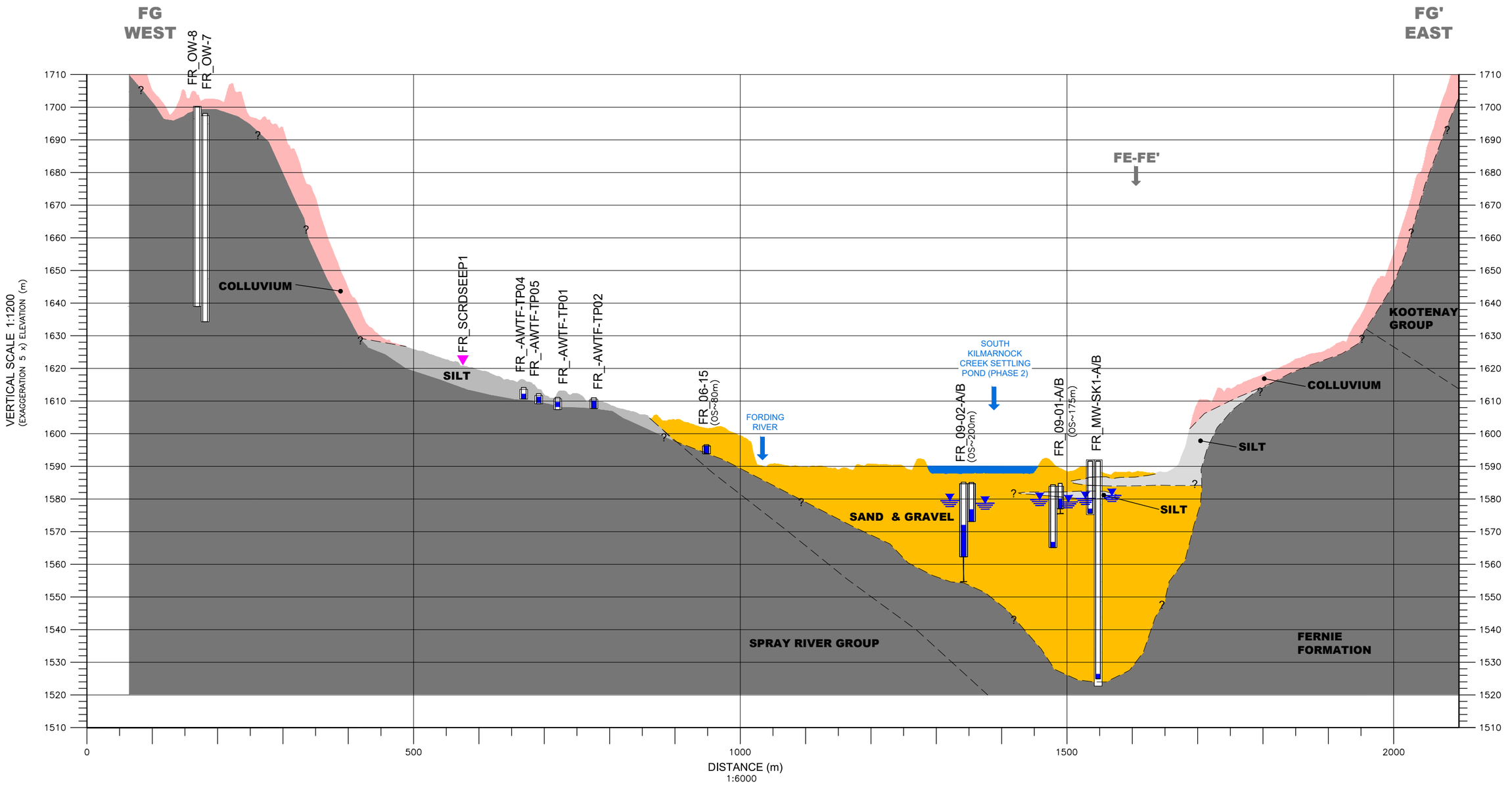
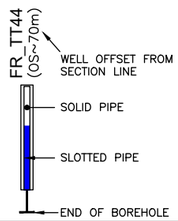


LEGEND

- GRAVEL (COLLUVIUM)
- SAND & GRAVEL
- SILT
- BEDROCK

- INFERRED STRATIGRAPHIC BOUNDARY
- SEEP
- GROUNDWATER ELEVATION (2021 Q4)

BOREHOLE LEGEND



NOTES

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2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83.)

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-02-24	ISSUED TO CLIENT	AJK	CH

CLIENT NAME:
TECK COAL LIMITED
–

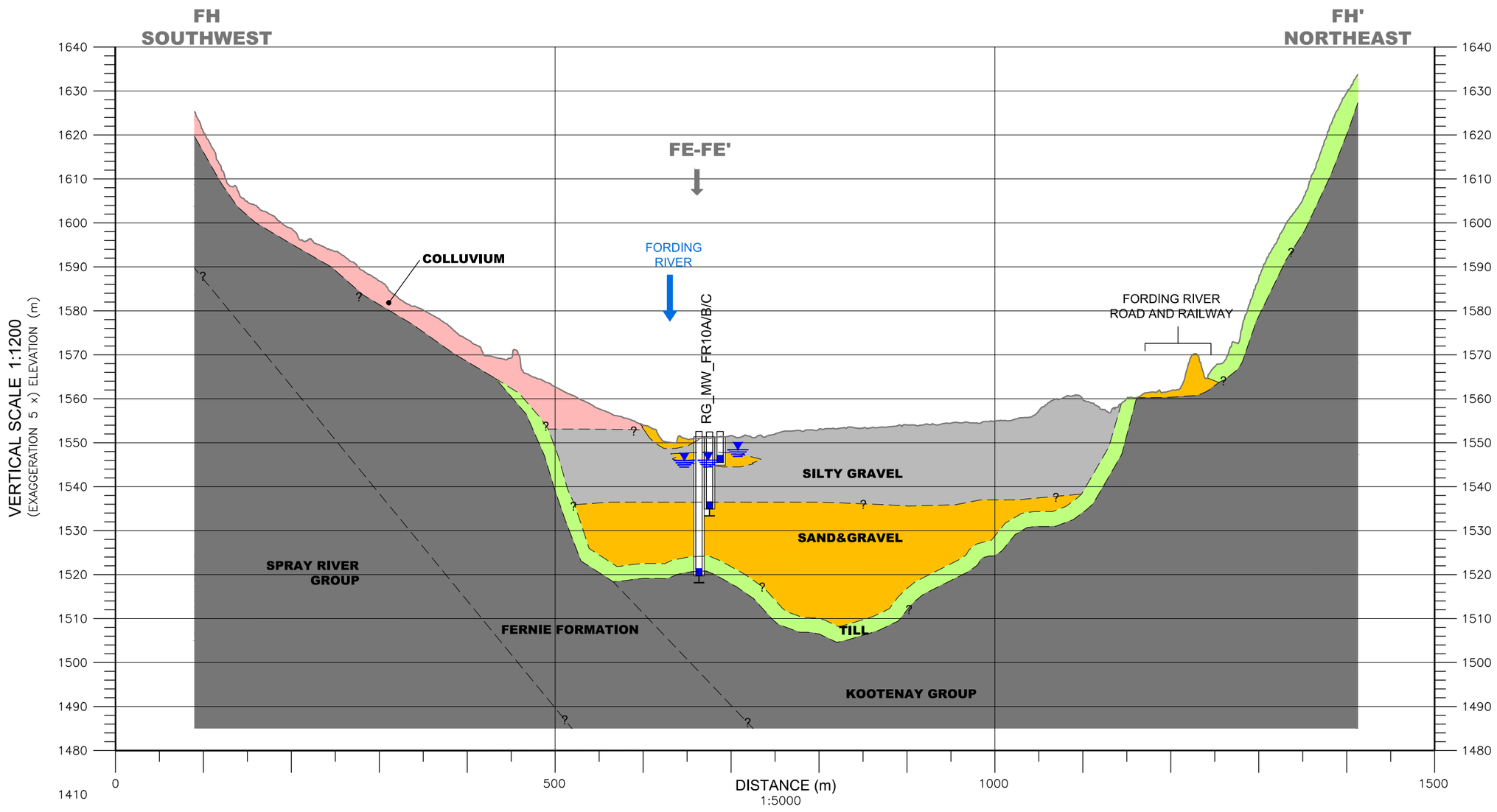
PROJECT LOCATION:
FORDING RIVER OPERATIONS
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
FORDING RIVER OPERATIONS
INFERRED GEOLOGICAL CROSS SECTION FG-FG'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: KMC	PLOT: 20220301.0948	CADFILE: 635544-X2R18	**DRAWING FR-11**

PATH: P:\CURRENT PROJECTS\TECK COAL LTD\SPO\635544\4.0 EXECUTION\4.5 GIS AND DRAWINGS\CAD\635544-X2R18.DWG

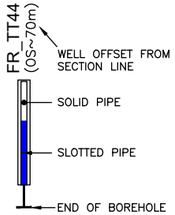


LEGEND

- GRAVEL (COLLUVIUM)
- SAND & GRAVEL
- SILTY GRAVEL
- TILL
- BEDROCK

- INFERRED STRATIGRAPHIC BOUNDARY
- SEEP
- GROUNDWATER ELEVATION (2021 Q4)

BOREHOLE LEGEND



NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83.)

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-02-24	ISSUED TO CLIENT	AJK	CH

CLIENT NAME:
TECK COAL LIMITED
–

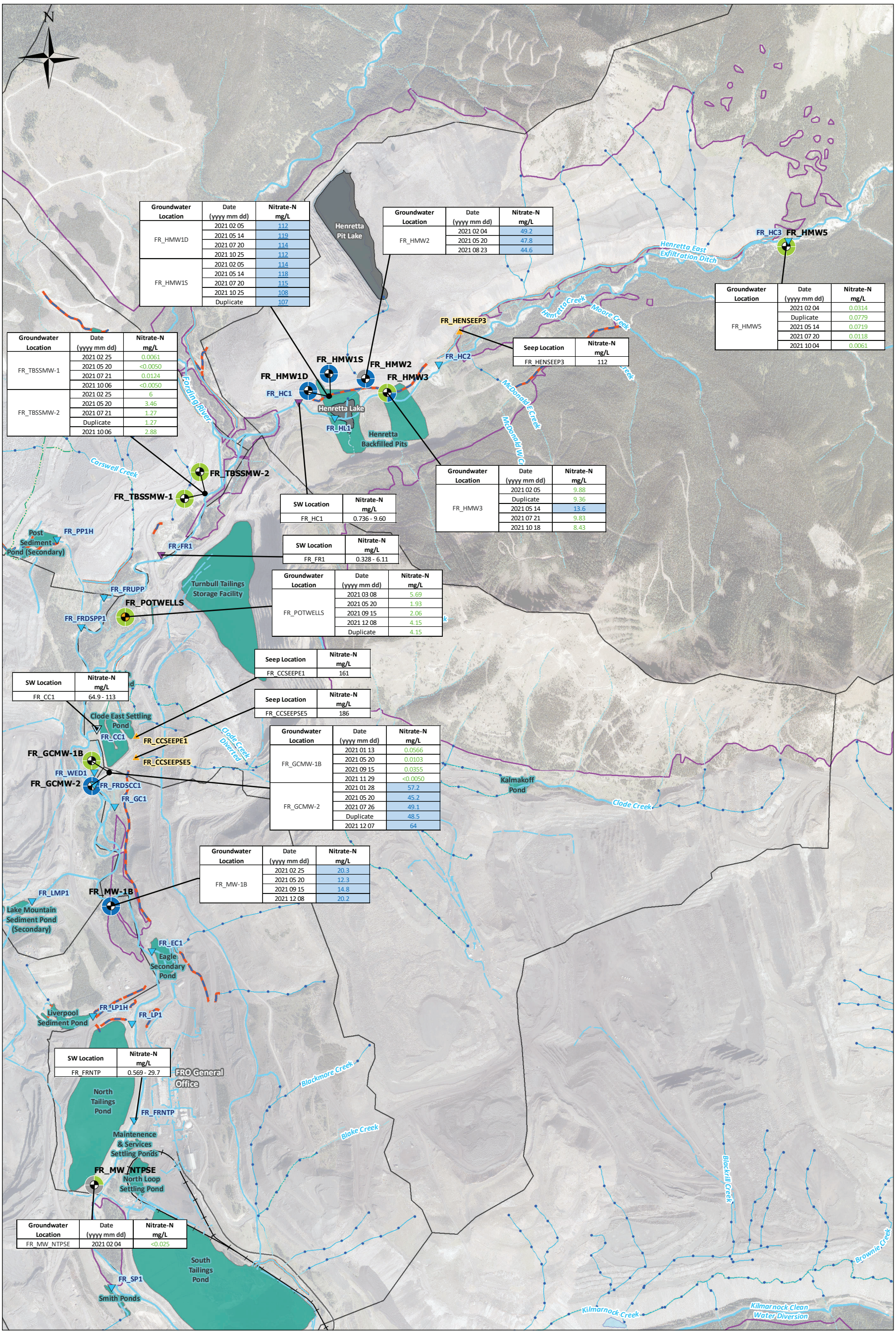
PROJECT LOCATION:
FORDING RIVER OPERATIONS
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
FORDING RIVER OPERATIONS
INFERRED GEOLOGICAL CROSS SECTION FH-FH'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: KMC	PLOT: 20220301.0949	CADFILE:635544-X2R18	**DRAWING FR-12**

PATH: P:\CURRENT PROJECTS\TECK COAL LTD\SPO\635544\4.0 EXECUTION\4.5 GIS AND DRAWINGS\CAD\635544-X2R18.DWG



Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_HMW1D	2021 02 05	112
	2021 05 14	119
	2021 07 20	114
	2021 10 25	112
FR_HMW1S	2021 02 05	114
	2021 05 14	118
	2021 07 20	115
	2021 10 25	108
	Duplicate	107

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_HMW2	2021 02 04	49.2
	2021 05 20	47.8
	2021 08 23	44.6

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_HMW5	2021 02 04	0.0314
	Duplicate	0.0779
	2021 05 14	0.0719
	2021 07 20	0.0118
	2021 10 04	0.0061

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_TBSSMW-1	2021 02 25	0.0061
	2021 05 20	<0.0050
	2021 07 21	0.0124
	2021 10 06	<0.0050
FR_TBSSMW-2	2021 02 25	6
	2021 05 20	3.46
	2021 07 21	1.27
	Duplicate	1.27
	2021 10 06	2.88

Seep Location	Nitrate-N mg/L
FR_HENSEEP3	112

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_HMW3	2021 02 05	9.88
	Duplicate	9.36
	2021 05 14	13.6
	2021 07 21	9.83
	2021 10 18	8.43

SW Location	Nitrate-N mg/L
FR_HC1	0.736 - 9.60

SW Location	Nitrate-N mg/L
FR_FR1	0.328 - 6.11

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_POTWELLS	2021 03 08	5.69
	2021 05 20	1.93
	2021 09 15	2.06
	2021 12 08	4.15
	Duplicate	4.15

SW Location	Nitrate-N mg/L
FR_CC1	64.9 - 113

Seep Location	Nitrate-N mg/L
FR_CCSEEPE1	161

Seep Location	Nitrate-N mg/L
FR_CCSEEPSE5	186

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_GCMW-1B	2021 01 13	0.0566
	2021 05 20	0.0103
	2021 09 15	0.0355
	2021 11 29	<0.0050
FR_GCMW-2	2021 01 28	57.2
	2021 05 20	45.2
	2021 07 26	49.1
	Duplicate	48.5
	2021 12 07	64

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_MW-1B	2021 02 25	20.3
	2021 05 20	12.3
	2021 09 15	14.8
	2021 12 08	20.2

SW Location	Nitrate-N mg/L
FR_FRNTP	0.569 - 29.7

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_MW_NTPSE	2021 02 04	<0.025

Legend

Groundwater Stations [4]
- Monitoring
- Supply

Surface Water Stations
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Lake/River Bed

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Nitrate-N mg/L
CSR Aquatic Life	400
CSR Irrigation Watering	n/a
CSR Livestock Watering	100
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. Nitrate-N = Nitrate Nitrogen

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

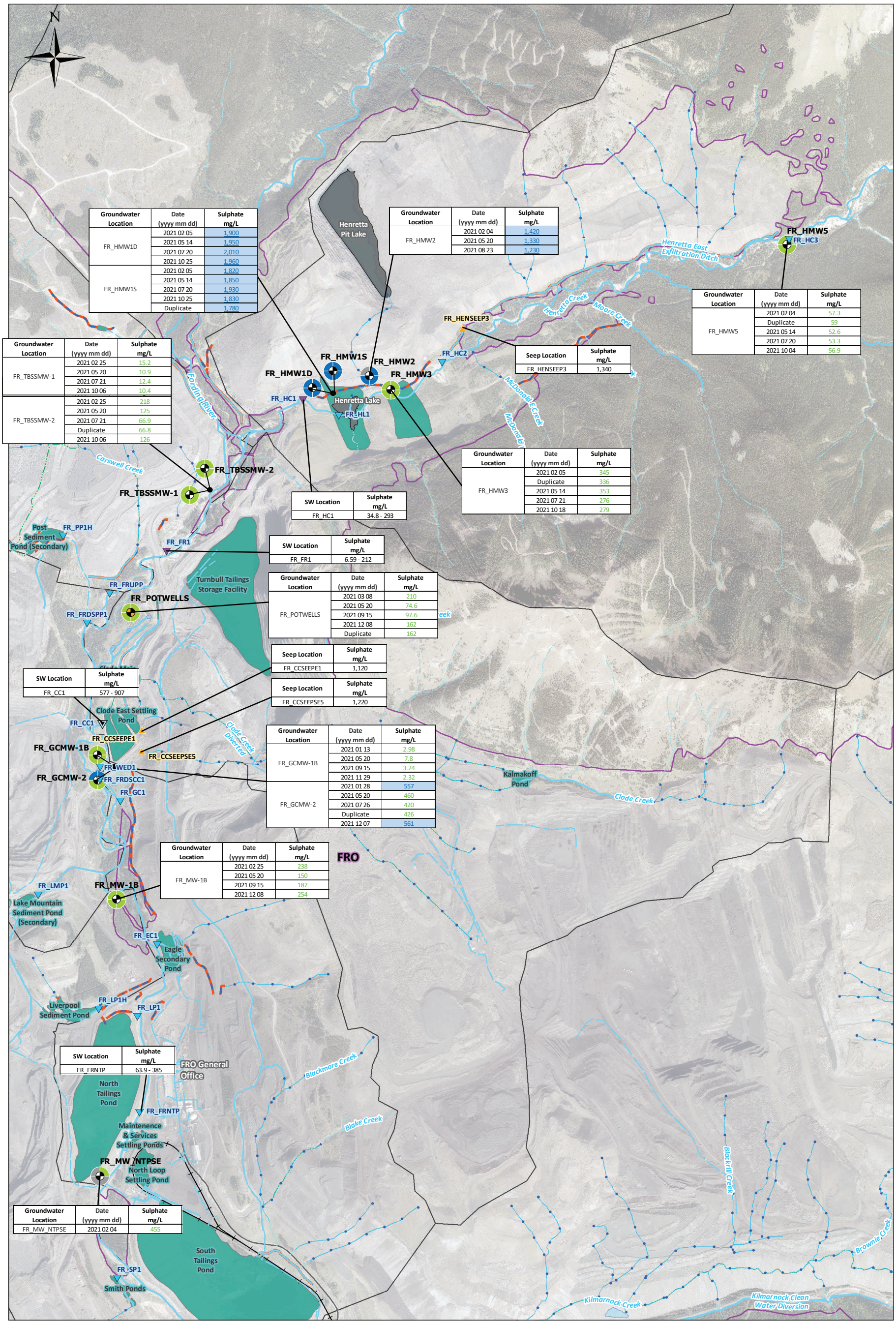
Fording River Operations - Spatial Distribution of Nitrate Nitrogen in Groundwater (North)

CHK'D: RS | DATE: 2022-03-15 | SCALE: 1:25,000
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N

Ref Num: **DRAWING FR-13**

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-27-SpatialDist_N_FRO_North.mxd



Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_HMW1D	2021 02 05	1,900
	2021 05 14	1,950
	2021 07 20	2,010
	2021 10 25	1,960
FR_HMW1S	2021 02 05	1,820
	2021 05 14	1,850
	2021 07 20	1,930
	2021 10 25	1,830
	Duplicate	1,780

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_HMW2	2021 02 04	1,420
	2021 05 20	1,330
	2021 08 23	1,230

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_HMW5	2021 02 04	57.3
	Duplicate	59
	2021 05 14	52.6
	2021 07 20	53.3
	2021 10 04	56.9

Seep Location	Sulphate mg/L
FR_HENSEEP3	1,340

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_TBSSMW-1	2021 02 25	15.2
	2021 05 20	10.9
	2021 07 21	12.4
	2021 10 06	10.4
FR_TBSSMW-2	2021 02 25	218
	2021 05 20	125
	2021 07 21	66.9
	Duplicate	66.8
	2021 10 06	126

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_HMW3	2021 02 05	345
	Duplicate	336
	2021 05 14	353
	2021 07 21	276
	2021 10 18	279

SW Location	Sulphate mg/L
FR_HC1	34.8 - 293

SW Location	Sulphate mg/L
FR_FR1	6.59 - 212

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_POTWELLS	2021 03 08	210
	2021 05 20	74.6
	2021 09 15	97.6
	2021 12 08	162
	Duplicate	162

Seep Location	Sulphate mg/L
FR_CCSEEPE1	1,120

Seep Location	Sulphate mg/L
FR_CCSEEPSE5	1,220

SW Location	Sulphate mg/L
FR_CC1	577 - 907

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_GCMW-1B	2021 01 13	2.98
	2021 05 20	7.8
	2021 09 15	3.24
	2021 11 29	2.32
FR_GCMW-2	2021 01 28	557
	2021 05 20	460
	2021 07 26	420
	Duplicate	426
	2021 12 07	561

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_MW-1B	2021 02 25	238
	2021 05 20	150
	2021 09 15	187
	2021 12 08	254

SW Location	Sulphate mg/L
FR_FRNTP	63.9 - 385

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_MW_NTPSE	2021 02 04	455

Legend

Groundwater Stations[4]
- Monitoring
- Supply

Surface Water Stations
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Lake/River Bed

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Green below the applicable screening criteria
Blue above the applicable screening criteria
Grey no sample collected

Primary Screening Criteria	Sulphate mg/L
CSR Aquatic Life	1,280-4,290
CSR Irrigation Watering	n/a
CSR Livestock Watering	1,000
CSR Drinking Water	500

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

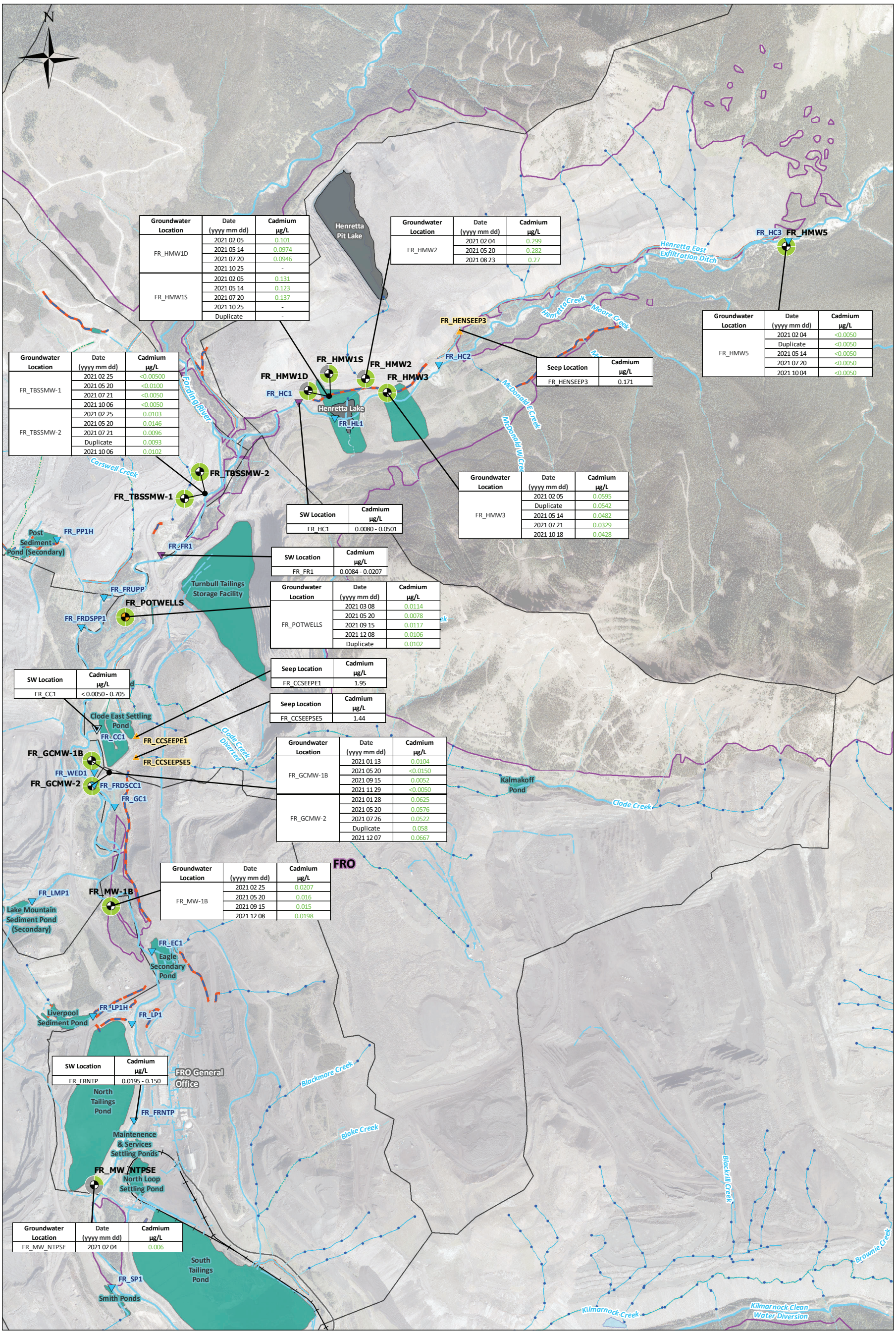
SNC·LAVALIN

Fording River Operations - Spatial Distribution of Sulphate in Groundwater (North)

CHK'D: RS | DATE: 2022-03-15 | SCALE: 1:25,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING FR-14

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-28-SpatialDist_SO4_FRO_North.mxd



Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_HMW1D	2021 02 05	0.101
	2021 05 14	0.0974
	2021 07 20	0.0946
	2021 10 25	-
FR_HMW1S	2021 02 05	0.131
	2021 05 14	0.123
	2021 07 20	0.137
	2021 10 25	-
	Duplicate	-

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_HMW2	2021 02 04	0.299
	2021 05 20	0.282
	2021 08 23	0.27

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_HMW5	2021 02 04	<0.0050
	Duplicate	<0.0050
	2021 05 14	<0.0050
	2021 07 20	<0.0050
	2021 10 04	<0.0050

Seep Location	Cadmium µg/L
FR_HENSEEP3	0.171

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_TBSSMW-1	2021 02 25	<0.00500
	2021 05 20	<0.0100
	2021 07 21	<0.0050
	2021 10 06	<0.0050
FR_TBSSMW-2	2021 02 25	0.0103
	2021 05 20	0.0146
	2021 07 21	0.0096
	Duplicate	0.0093
	2021 10 06	0.0102

SW Location	Cadmium µg/L
FR_HC1	0.0080 - 0.0501

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_HMW3	2021 02 05	0.0595
	Duplicate	0.0542
	2021 05 14	0.0482
	2021 07 21	0.0329
	2021 10 18	0.0428

SW Location	Cadmium µg/L
FR_FR1	0.0084 - 0.0207

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_POTWELLS	2021 03 08	0.0114
	2021 05 20	0.0078
	2021 09 15	0.0117
	2021 12 08	0.0106
	Duplicate	0.0102

SW Location	Cadmium µg/L
FR_CC1	< 0.0050 - 0.705

Seep Location	Cadmium µg/L
FR_CCSEEPE1	1.95

Seep Location	Cadmium µg/L
FR_CCSEEPSE5	1.44

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_GCMW-1B	2021 01 13	0.0104
	2021 05 20	<0.0150
	2021 09 15	0.0052
	2021 11 29	<0.0050
FR_GCMW-2	2021 01 28	0.0625
	2021 05 20	0.0576
	2021 07 26	0.0522
	Duplicate	0.058
	2021 12 07	0.0667

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_MW-1B	2021 02 25	0.0207
	2021 05 20	0.016
	2021 09 15	0.015
	2021 12 08	0.0198

SW Location	Cadmium µg/L
FR_FRNTP	0.0195 - 0.150

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_MW_NTPSE	2021 02 04	0.006

Legend

Groundwater Stations [4]
- Monitoring
- Supply

Surface Water Stations
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Lake/River Bed

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

^ Dissolved phase of the parameter is shown in the spatial plot.

Primary Screening Criteria	Cadmium^ µg/L
CSR Aquatic Life	0.5-4
CSR Irrigation Watering	5
CSR Livestock Watering	80
CSR Drinking Water	5

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

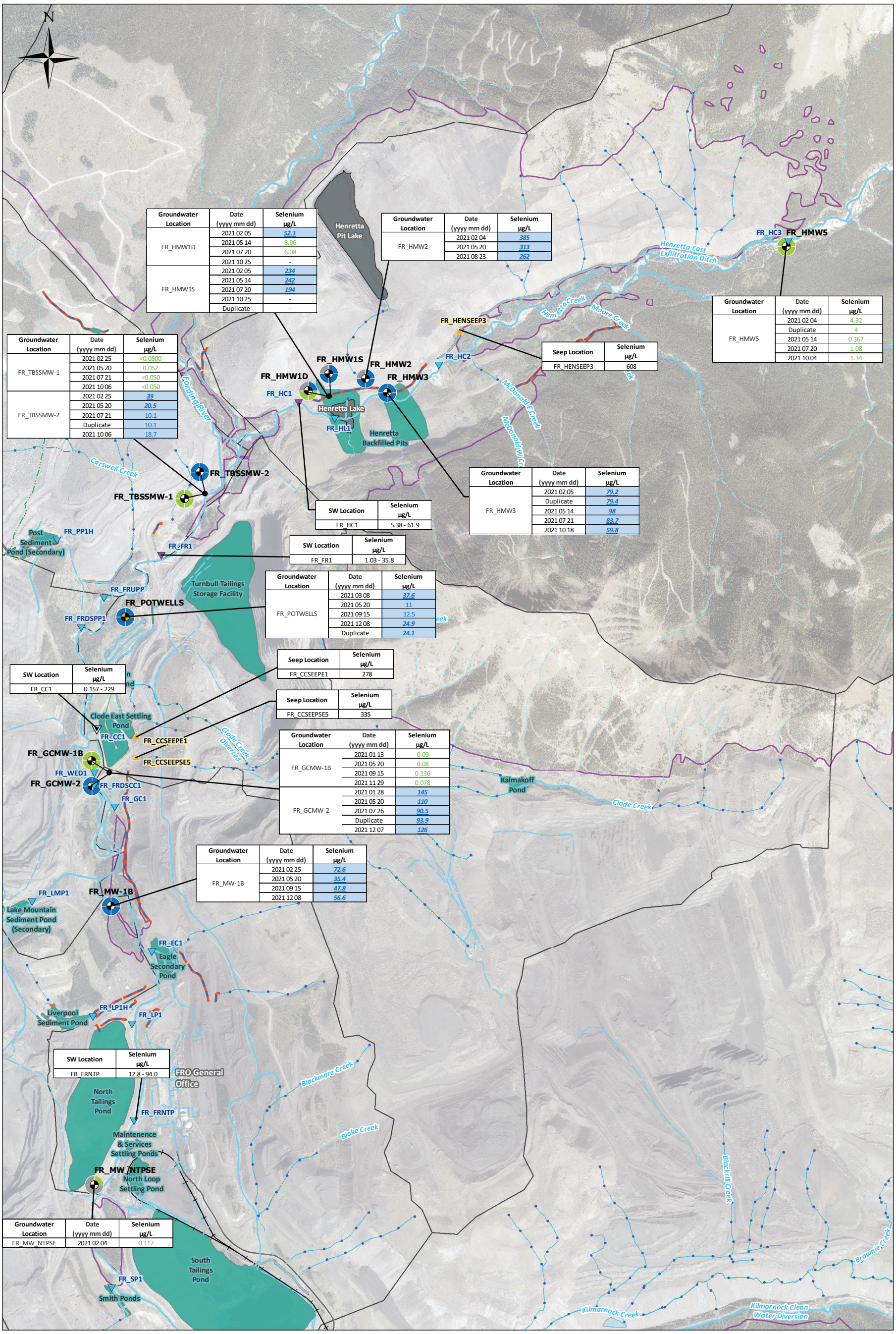
Fording River Operations - Spatial Distribution of Dissolved Cadmium in Groundwater (North)

CHK'D: RS | DATE: 2022-03-15 | SCALE: 1:25,000
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N

Ref Num: **DRAWING FR-15**

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-29-SpatialDist_Cd_FRO_North.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_HMW1D	2021 02 05	*52.1*
	2021 05 14	8.96
	2021 07 20	6.08
	2021 10 25	-
FR_HMW1S	2021 02 05	*234*
	2021 05 14	*242*
	2021 07 20	*194*
	2021 10 25	-
	Duplicate	-

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_HMW2	2021 02 04	*385*
	2021 05 20	*313*
	2021 08 23	*262*

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_HMW5	2021 02 04	4.32
	Duplicate	4
	2021 05 14	0.367
	2021 07 20	1.08
	2021 10 04	1.34

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_TBSSMW-1	2021 02 25	<0.0500
	2021 05 20	0.052
	2021 07 21	<0.050
	2021 10 06	<0.050
FR_TBSSMW-2	2021 02 25	*39*
	2021 05 20	*20.5*
	2021 07 21	10.1
	Duplicate	10.1
	2021 10 06	18.7

Seep Location	Selenium µg/L
FR_HENSEEP3	608

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_HMW3	2021 02 05	*79.2*
	Duplicate	*79.4*
	2021 05 14	*98*
	2021 07 21	*83.7*
	2021 10 18	*59.8*

SW Location	Selenium µg/L
FR_HC1	5.38 - 61.9

SW Location	Selenium µg/L
FR_FR1	1.03 - 35.8

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_POTWELLS	2021 03 08	*37.6*
	2021 05 20	11
	2021 09 15	12.5
	2021 12 08	*24.9*
	Duplicate	*24.1*

SW Location	Selenium µg/L
FR_CC1	0.157 - 229

Seep Location	Selenium µg/L
FR_CCSEEPE1	278

Seep Location	Selenium µg/L
FR_CCSEEPSE5	335

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_GCMW-1B	2021 01 13	0.09
	2021 05 20	0.08
	2021 09 15	0.136
	2021 11 29	0.078
FR_GCMW-2	2021 01 28	*145*
	2021 05 20	*110*
	2021 07 26	*90.5*
	Duplicate	*93.9*
	2021 12 07	*126*

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_MW-1B	2021 02 25	*72.6*
	2021 05 20	*35.4*
	2021 09 15	*47.8*
	2021 12 08	*56.6*

SW Location	Selenium µg/L
FR_FRNTP	12.8 - 94.0

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_MW_NTPSE	2021 02 04	0.117

Legend

Groundwater Stations [4]
- Monitoring
- Supply

Surface Water Stations
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Lake/River Bed

Green below the applicable screening criteria
Blue above the applicable screening criteria
Grey no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

^ Dissolved phase of the parameter is shown in the spatial plot.

Primary Screening Criteria	Selenium^ µg/L
CSR Aquatic Life	20
CSR Irrigation Watering	20
CSR Livestock Watering	30
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

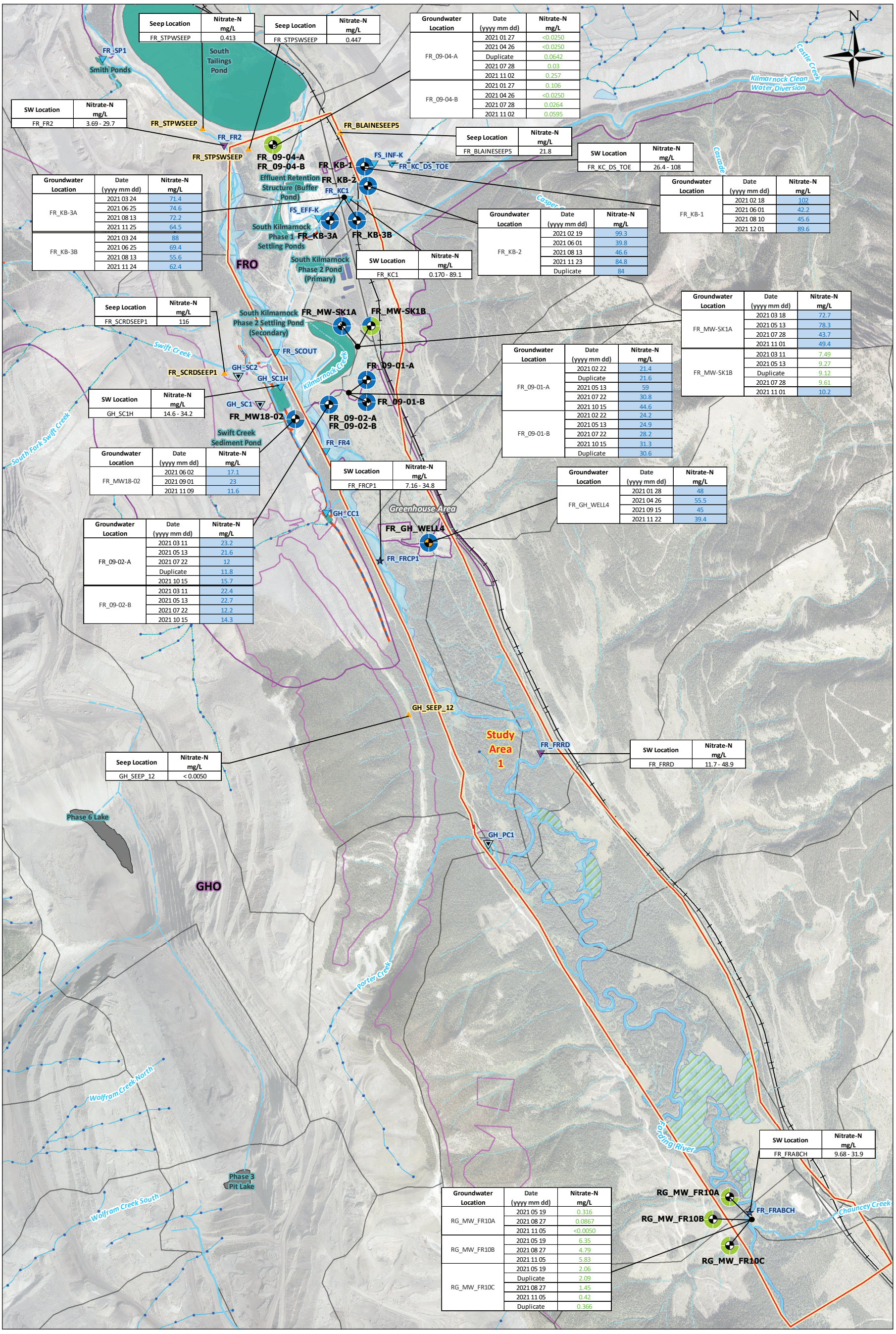
Fording River Operations - Spatial Distribution of Dissolved Selenium in Groundwater (North)

CHK'D: RS | DATE: 2022-03-15 | SCALE: 1:25,000
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N

Ref Num: **DRAWING FR-16**

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-30-SpatialDist_Se_FRO_North.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Seep Location	Nitrate-N mg/L
FR_STPWSEEP	0.413

Seep Location	Nitrate-N mg/L
FR_STPSWSEEP	0.447

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_09-04-A	2021 01 27	<0.0250
	2021 04 26	<0.0250
	Duplicate	0.0642
	2021 07 28	0.03
	2021 11 02	0.257
FR_09-04-B	2021 01 27	0.106
	2021 04 26	<0.0250
	2021 07 28	0.0264
	2021 11 02	0.0595

SW Location	Nitrate-N mg/L
FR_FR2	3.69 - 29.7

Seep Location	Nitrate-N mg/L
FR_BLAINESEEP5	21.8

SW Location	Nitrate-N mg/L
FR_KC_DS_TOE	26.4 - 108

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_KB-3A	2021 03 24	71.4
	2021 06 25	74.6
	2021 08 13	72.2
	2021 11 25	64.5
FR_KB-3B	2021 03 24	88
	2021 06 25	69.4
	2021 08 13	55.6
	2021 11 24	62.4

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_KB-1	2021 02 18	102
	2021 06 01	42.2
	2021 08 10	45.6
	2021 12 01	89.6

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_KB-2	2021 02 19	99.3
	2021 06 01	39.8
	2021 08 13	46.6
	2021 11 23	84.8
	Duplicate	84

SW Location	Nitrate-N mg/L
FR_KC1	0.170 - 89.1

Seep Location	Nitrate-N mg/L
FR_SCRDSEEP1	116

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_MW-SK1A	2021 03 18	72.7
	2021 05 13	78.3
	2021 07 28	43.7
	2021 11 01	49.4
FR_MW-SK1B	2021 03 11	7.49
	2021 05 13	9.27
	Duplicate	9.12
	2021 07 28	9.61
	2021 11 01	10.2

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_09-01-A	2021 02 22	21.4
	Duplicate	21.6
	2021 05 13	59
	2021 07 22	30.8
	2021 10 15	44.6
FR_09-01-B	2021 02 22	24.2
	2021 05 13	24.9
	2021 07 22	28.2
	2021 10 15	31.3
	Duplicate	30.6

SW Location	Nitrate-N mg/L
GH_SC1H	14.6 - 34.2

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_MW18-02	2021 06 02	17.1
	2021 09 01	23
	2021 11 09	11.6

SW Location	Nitrate-N mg/L
FR_FRCP1	7.16 - 34.8

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_GH_WELL4	2021 01 28	48
	2021 04 26	55.5
	2021 09 15	45
	2021 11 22	39.4

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
FR_09-02-A	2021 03 11	23.2
	2021 05 13	21.6
	2021 07 22	12
	Duplicate	11.8
	2021 10 15	15.7
FR_09-02-B	2021 03 11	22.4
	2021 05 13	22.7
	2021 07 22	12.2
	2021 10 15	14.3

Seep Location	Nitrate-N mg/L
GH_SEEP_12	< 0.0050

SW Location	Nitrate-N mg/L
FR_FRRD	11.7 - 48.9

SW Location	Nitrate-N mg/L
FR_FRABCH	9.68 - 31.9

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
RG_MW_FR10A	2021 05 19	0.316
	2021 08 27	0.0867
	2021 11 05	<0.0050
RG_MW_FR10B	2021 05 19	6.35
	2021 08 27	4.79
	2021 11 05	5.83
RG_MW_FR10C	2021 05 19	2.06
	Duplicate	2.09
	2021 08 27	1.45
	2021 11 05	0.42
	Duplicate	0.366

Legend

Groundwater Stations [4]
- Monitoring
- Supply

Surface Water Stations
- Compliance Point
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:25000 Scale)

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Nitrate-N mg/L
CSR Aquatic Life	400
CSR Irrigation Watering	n/a
CSR Livestock Watering	100
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. Nitrate-N = Nitrate Nitrogen

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

Fording River Operations and Study Area 1 - Spatial Distribution of Nitrate Nitrogen in Groundwater (South)

CHK'D: RS | DATE: 2022-03-15 | SCALE: 1:25,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING FR-17

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-31-SpatialDist_N_FRO_South.mxd

Seep Location	Sulphate mg/L
FR_STPWSEEP	352

Seep Location	Sulphate mg/L
FR_STPSWSEEP	358

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_09-04-A	2021 01 27	375
	2021 04 26	376
	Duplicate	379
	2021 07 28	402
	2021 11 02	373
FR_09-04-B	2021 01 27	386
	2021 04 26	385
	2021 07 28	402
	2021 11 02	382

SW Location	Sulphate mg/L
FR_FR2	61.5 - 378

Seep Location	Sulphate mg/L
FR_BLAINESEEP5	2,470

SW Location	Sulphate mg/L
FR_KC_DS_TOE	210 - 892

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_KB-3A	2021 03 24	591
	2021 06 25	617
	2021 08 13	606
	2021 11 25	554
FR_KB-3B	2021 03 24	672
	2021 06 25	526
	2021 08 13	450
	2021 11 24	523

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_KB-2	2021 02 19	782
	2021 06 01	302
	2021 08 13	395
	2021 11 23	664
	Duplicate	658

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_KB-1	2021 02 18	881
	2021 06 01	334
	2021 08 10	422
	2021 12 01	715

SW Location	Sulphate mg/L
FR_KC1	20.6 - 739

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_MW-SK1A	2021 03 18	549
	2021 05 13	636
	2021 07 28	390
	2021 11 01	424
FR_MW-SK1B	2021 03 11	287
	2021 05 13	290
	Duplicate	292
	2021 07 28	312
	2021 11 01	295

Seep Location	Sulphate mg/L
FR_SCRDSEEP1	504

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_09-01-A	2021 02 22	400
	Duplicate	391
	2021 05 13	513
	2021 07 22	295
	2021 10 15	394
FR_09-01-B	2021 02 22	398
	2021 05 13	300
	2021 07 22	281
	2021 10 15	360
	Duplicate	359

SW Location	Sulphate mg/L
GH_SC1H	814 - 1,530

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_MW18-02	2021 06 02	1,240
	2021 09 01	1,390
	2021 11 09	1,190

SW Location	Sulphate mg/L
FR_FRCP1	99.5 - 811

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_GH_WELL4	2021 01 28	350
	2021 04 26	403
	2021 09 15	408
	2021 11 22	330

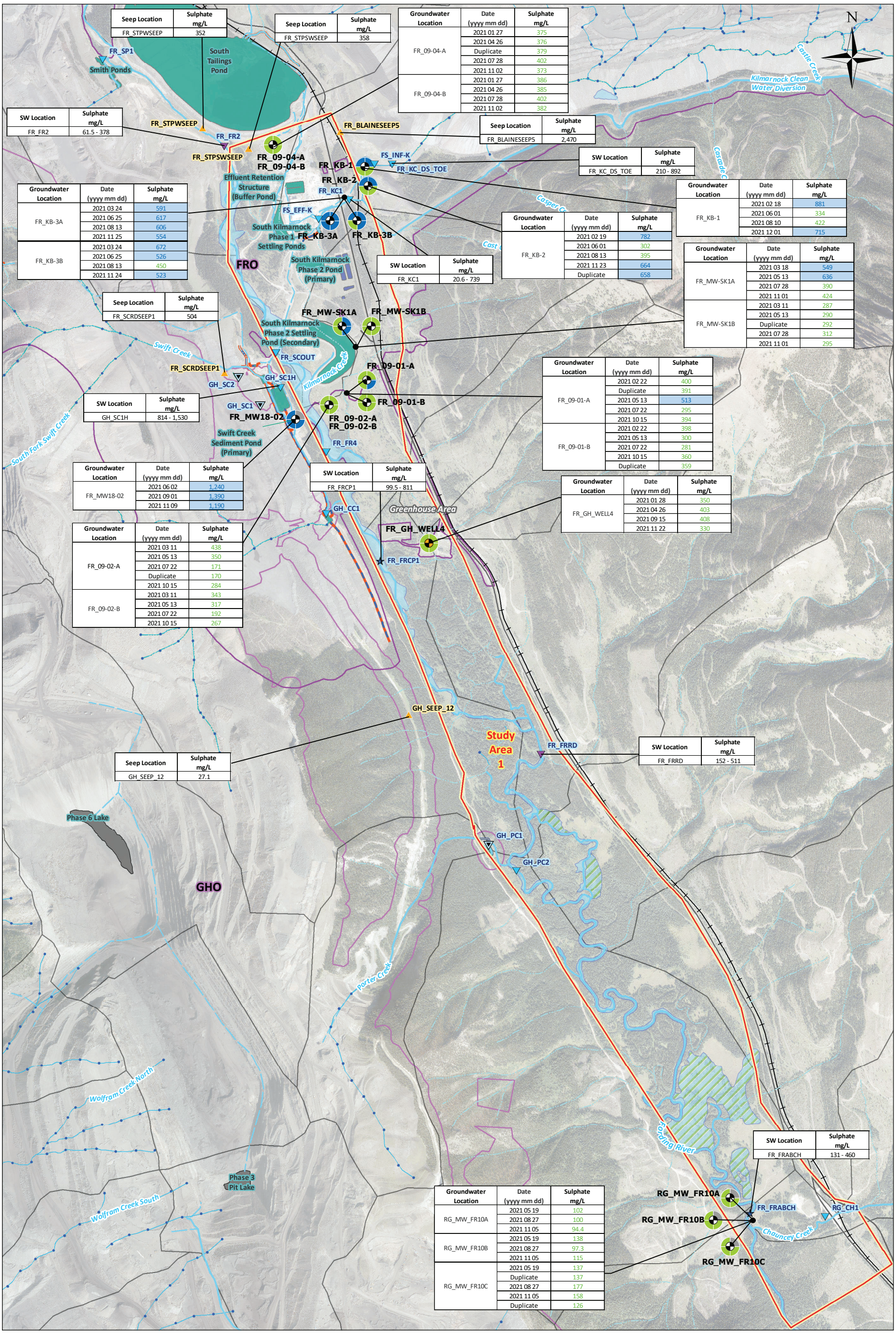
Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
FR_09-02-A	2021 03 11	438
	2021 05 13	350
	2021 07 22	171
	Duplicate	170
	2021 10 15	284
FR_09-02-B	2021 03 11	343
	2021 05 13	317
	2021 07 22	192
	2021 10 15	267

Seep Location	Sulphate mg/L
GH_SEEP_12	27.1

SW Location	Sulphate mg/L
FR_FRRD	152 - 511

SW Location	Sulphate mg/L
FR_FRABCH	131 - 460

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
RG_MW_FR10A	2021 05 19	102
	2021 08 27	100
	2021 11 05	94.4
RG_MW_FR10B	2021 05 19	138
	2021 08 27	97.3
	2021 11 05	115
RG_MW_FR10C	2021 05 19	137
	Duplicate	137
	2021 08 27	177
	2021 11 05	158
	Duplicate	126



Legend

Groundwater Stations [4]
- Monitoring
- Supply

Surface Water Stations
- Compliance Point
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:25000 Scale)

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Sulphate mg/L
CSR Aquatic Life	1,280-4,290
CSR Irrigation Watering	n/a
CSR Livestock Watering	1,000
CSR Drinking Water	500

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

Fording River Operations and Study Area 1 - Spatial Distribution of Sulphate in Groundwater (South)

CHK'D: RS | DATE: 2022-03-02 | SCALE: 1:25,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING FR-18

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-32-SpatialDist_SO4_FRO_South.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

Seep Location	Cadmium µg/L
FR_STPWSEEP	0.473

Seep Location	Cadmium µg/L
FR_STPSWSEEP	0.226

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_09-04-A	2021 01 27	0.951
	2021 04 26	0.84
	Duplicate	0.829
	2021 07 28	0.802
	2021 11 02	0.686
FR_09-04-B	2021 01 27	0.901
	2021 04 26	0.804
	2021 07 28	0.688
	2021 11 02	0.647

SW Location	Cadmium µg/L
FR_FR2	0.0231 - 0.138

Seep Location	Cadmium µg/L
FR_BLAINESEEP5	0.0740

SW Location	Cadmium µg/L
FR_KC_DS_TOE	0.571 - 1.50

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_KB-3A	2021 03 24	0.044
	2021 06 25	0.0587
	2021 08 13	0.0919
	2021 11 25	0.0327
FR_KB-3B	2021 03 24	0.0534
	2021 06 25	0.0278
	2021 08 13	0.0195
	2021 11 24	0.025

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_KB-1	2021 02 18	0.875
	2021 06 01	0.486
	2021 08 10	0.636
	2021 12 01	0.684

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_KB-2	2021 02 19	0.169
	2021 06 01	0.0904
	2021 08 13	0.146
	2021 11 23	0.194
	Duplicate	0.211

SW Location	Cadmium µg/L
FR_KC1	0.0146 - 0.913

Seep Location	Cadmium µg/L
FR_SCRDSEEP1	0.292

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_MW-SK1A	2021 03 18	0.0494
	2021 05 13	0.0544
	2021 07 28	0.0375
	2021 11 01	0.0453
FR_MW-SK1B	2021 03 11	0.0371
	2021 05 13	0.0676
	Duplicate	0.0329
	2021 07 28	0.0354
	2021 11 01	0.0339

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_09-01-A	2021 02 22	0.0492
	Duplicate	0.0586
	2021 05 13	0.0489
	2021 07 22	0.0299
	2021 10 15	0.0523
FR_09-01-B	2021 02 22	0.0393
	2021 05 13	0.0218
	2021 07 22	0.0251
	2021 10 15	0.0348
	Duplicate	0.0291

SW Location	Cadmium µg/L
GH_SC1H	0.613 - 1.22

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_MW18-02	2021 06 02	0.0446
	2021 09 01	0.0424
	2021 11 09	0.0352

SW Location	Cadmium µg/L
FR_FRCP1	0.0310 - 0.166

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_GH_WELL4	2021 01 28	0.0478
	2021 04 26	0.0577
	2021 09 15	0.0427
	2021 11 22	0.0443

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
FR_09-02-A	2021 03 11	0.0302
	2021 05 13	0.0302
	2021 07 22	0.0207
	Duplicate	0.0222
	2021 10 15	0.0255
FR_09-02-B	2021 03 11	0.0224
	2021 05 13	0.0179
	2021 07 22	0.0196
	2021 10 15	0.0197

Seep Location	Cadmium µg/L
GH_SEEP_12	0.0165

SW Location	Cadmium µg/L
FR_FRRD	0.0303 - 0.0852

SW Location	Cadmium µg/L
FR_FRABCH	0.0296 - 0.0671

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
RG_MW_FR10A	2021 05 19	0.0245
	2021 08 27	0.0174
	2021 11 05	0.0419
RG_MW_FR10B	2021 05 19	0.0223
	2021 08 27	0.0094
	2021 11 05	0.0271
RG_MW_FR10C	2021 05 19	0.0247
	Duplicate	0.0226
	2021 08 27	0.0247
	2021 11 05	0.0105
	Duplicate	0.0104

Legend

Groundwater Stations [4]
- Monitoring
- Supply

Surface Water Stations
- Compliance Point
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:25000 Scale)

Q4 | Q1 / Q3 | Q2

symbol locations have been adjusted relative to well locations for visibility

Green below the applicable screening criteria
Blue above the applicable screening criteria
Grey no sample collected

^ Dissolved phase of the parameter is shown in the spatial plot.

Primary Screening Criteria	Cadmium^ µg/L
CSR Aquatic Life	0.5-4
CSR Irrigation Watering	5
CSR Livestock Watering	80
CSR Drinking Water	5

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

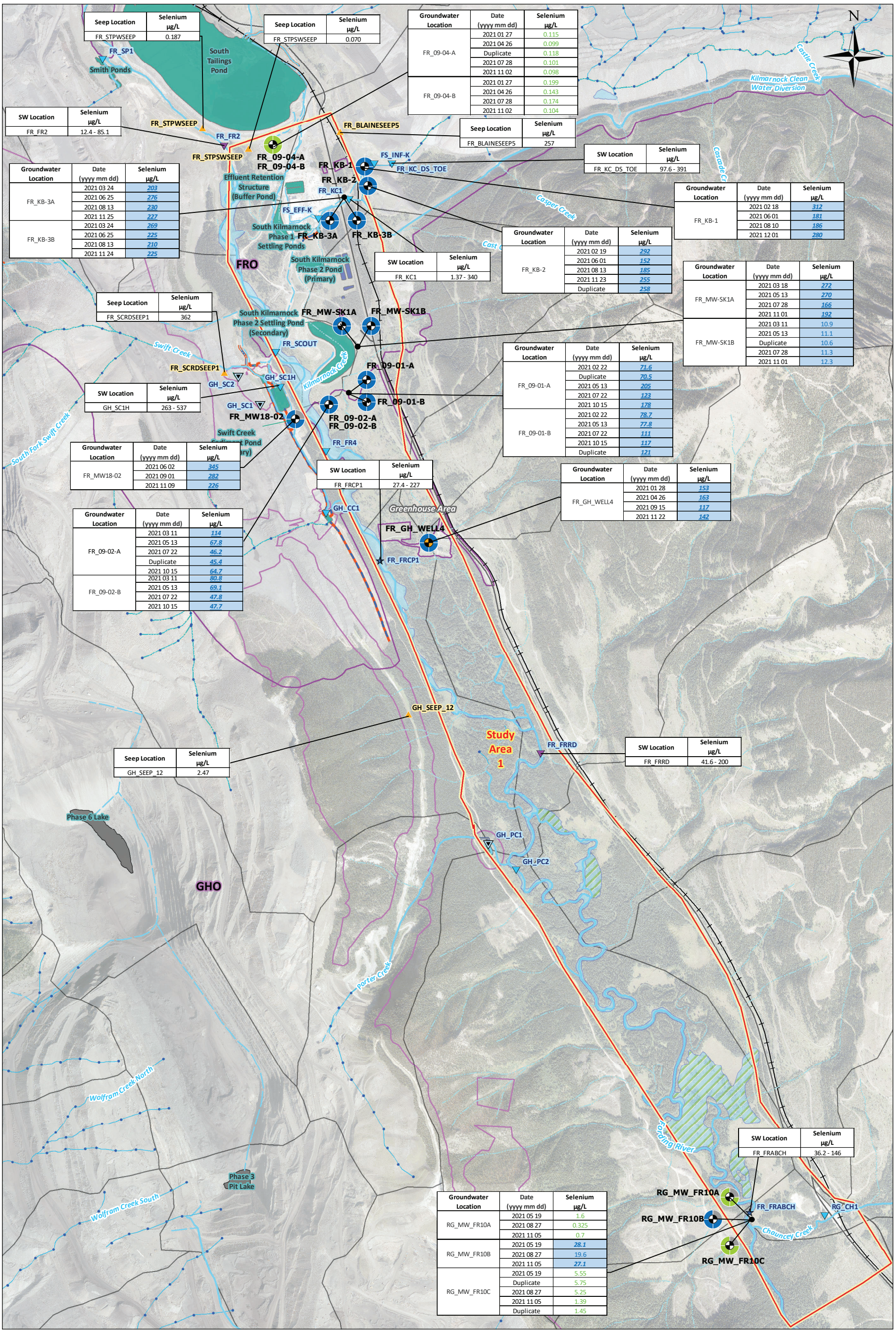
SNC·LAVALIN

Fording River Operations and Study Area 1 - Spatial Distribution of Dissolved Cadmium in Groundwater (South)

CHK'D: RS | DATE: 2022-03-02 | SCALE: 1:25,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING FR-19

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-33-SpatialDist_Cd_FRO_South.mxd



Seep Location	Selenium µg/L
FR_STPWSEEP	0.187

Seep Location	Selenium µg/L
FR_STPSWSEEP	0.070

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_09-04-A	2021 01 27	0.115
	2021 04 26	0.099
	Duplicate	0.118
	2021 07 28	0.101
	2021 11 02	0.098
FR_09-04-B	2021 01 27	0.199
	2021 04 26	0.143
	2021 07 28	0.174
	2021 11 02	0.104

SW Location	Selenium µg/L
FR_FR2	12.4 - 85.1

Seep Location	Selenium µg/L
FR_BLAINESEEP5	257

SW Location	Selenium µg/L
FR_KC_DS_TOE	97.6 - 391

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_KB-3A	2021 03 24	203
	2021 06 25	276
	2021 08 13	230
	2021 11 25	227
FR_KB-3B	2021 03 24	269
	2021 06 25	225
	2021 08 13	210
	2021 11 24	225

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_KB-1	2021 02 18	312
	2021 06 01	181
	2021 08 10	186
	2021 12 01	280

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_KB-2	2021 02 19	292
	2021 06 01	152
	2021 08 13	185
	2021 11 23	255
	Duplicate	258

SW Location	Selenium µg/L
FR_KC1	1.37 - 340

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_MW-SK1A	2021 03 18	272
	2021 05 13	270
	2021 07 28	166
	2021 11 01	192
FR_MW-SK1B	2021 03 11	10.9
	2021 05 13	11.1
	Duplicate	10.6
	2021 07 28	11.3
	2021 11 01	12.3

Seep Location	Selenium µg/L
FR_SCRDSEEP1	362

SW Location	Selenium µg/L
GH_SC1H	263 - 537

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_09-01-A	2021 02 22	71.6
	Duplicate	70.5
	2021 05 13	205
	2021 07 22	123
	2021 10 15	178
FR_09-01-B	2021 02 22	78.7
	2021 05 13	77.8
	2021 07 22	111
	2021 10 15	117
	Duplicate	121

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_MW18-02	2021 06 02	345
	2021 09 01	282
	2021 11 09	226

SW Location	Selenium µg/L
FR_FRCP1	27.4 - 227

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_GH_WELL4	2021 01 28	153
	2021 04 26	163
	2021 09 15	117
	2021 11 22	142

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
FR_09-02-A	2021 03 11	114
	2021 05 13	67.8
	2021 07 22	46.2
	Duplicate	45.4
	2021 10 15	64.7
FR_09-02-B	2021 03 11	80.8
	2021 05 13	69.1
	2021 07 22	47.8
	2021 10 15	47.7

Seep Location	Selenium µg/L
GH_SEEP_12	2.47

SW Location	Selenium µg/L
FR_FRRD	41.6 - 200

SW Location	Selenium µg/L
FR_FRABCH	36.2 - 146

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
RG_MW_FR10A	2021 05 19	1.6
	2021 08 27	0.325
	2021 11 05	0.7
RG_MW_FR10B	2021 05 19	28.1
	2021 08 27	19.6
	2021 11 05	27.1
RG_MW_FR10C	2021 05 19	5.55
	Duplicate	5.75
	2021 08 27	5.25
	2021 11 05	1.39
	Duplicate	1.45

Legend

Groundwater Stations [4]
- Monitoring
- Supply

Surface Water Stations
- Compliance Point
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:25000 Scale)

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

^ Dissolved phase of the parameter is shown in the spatial plot.

Primary Screening Criteria	Selenium^ µg/L
CSR Aquatic Life	20
CSR Irrigation Watering	20
CSR Livestock Watering	30
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

Fording River Operations and Study Area 1 - Spatial Distribution of Dissolved Selenium in Groundwater (South)

CHK'D: RS | DATE: 2022-03-02 | SCALE: 1:25,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING FR-20

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-34-SpatialDist_Se_FRO_South.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

Attachment I: Borehole Logs

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW1D

SHEET 1 OF 4

LOCATION: See Location Plan

BORING DATE: August 10, 2011

DATUM: Geodetic

N: 652437 E: 5566516

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		Ground Surface		1732.20							
	Barber Rig H24 Air Rotary BECK Drilling & Environmental Services Ltd.	Very loose, non-plastic, non-cohesive, dry to slightly damp, grey to black, variable grain size, mainly coarse grain to cobbles WASTE ROCK, covered in clay and sand matrix, black to dark brown, slightly cohesive with silt.		0.00	1	GRAB					
1											
2											
3											
4											
5											
6											
7											
8					2	GRAB					
9											
10											
11		Very hard layer, no returns		1721.50 10.70							
12					3	GRAB					
		COAL LENS		1719.70 12.50							
13		Very hard layer, no returns		1719.40							
		Increase in matrix material, fine to coarse grained and cobble sized clay returns		13.10							
14					4	GRAB					
				1717.60 14.60							13 Aug 2011 ▽
15		CONTINUED NEXT PAGE									

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: TC

CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW1D

SHEET 2 OF 4

LOCATION: See Location Plan

BORING DATE: August 10, 2011

DATUM: Geodetic

N: 652437 E: 5566516

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
15	Barber Rig H24 Air Rotary BECK Drilling & Environmental Services Ltd.	Very loose, non-plastic, non-cohesive, dry to slightly damp, grey to black, variable grain size, mainly coarse grained to cobbles WASTE ROCK, covered in clay and sand matrix, black to dark brown, slightly cohesive with silt *(continued)*									
16											
17					5	GRAB					
18											
19		--- Moisture content increases from 19.0 to 20.1 m									
20				1712.10							
		Hard layer, no returns		20.10							
21											
				1710.30							
22		Very loose, non-plastic, non-cohesive, dry to slightly damp, grey to black, variable grain size, mainly coarse grained to cobbles WASTE ROCK, covered in clay and sand matrix, black to dark brown, slightly cohesive with silt		21.90	6	GRAB					
				1700.30							
23		Massive, grey, very coarse grained to cobble sized, angular to sub-rounded GRAVEL		22.90							
24				1707.80							
		Soft, plastic, cohesive, brown CLAY, little returns		24.40							
25											
26											
27					7	GRAB					
28											
29											
				1702.30							
30					8	GRAB					
		CONTINUED NEXT PAGE									

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: TC

CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW1D

SHEET 3 OF 4

LOCATION: See Location Plan

BORING DATE: August 10, 2011

DATUM: Geodetic

N: 652437 E: 5566516

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
30	Barber Rig H24 Air Rotary BECK Drilling & Environmental Services Ltd.	Massive, grey, very loose grained to cobble sized GRAVEL, angular to sub-rounded *(continued)*		29.90							
31											
32											
33					8	GRAB					
				1698.70							
		Hard layer, no returns		33.50							
34											
35											
36											
				1695.60							
		Massive, grey, very loose grained to cobble sized GRAVEL, angular to sub-rounded		36.60							
37											
38											
39											
40											
41					9	GRAB					
42											
43											
44											
45											
		CONTINUED NEXT PAGE									

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: TC

CHECKED: JW

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW1D

SHEET 4 OF 4

LOCATION: See Location Plan

BORING DATE: August 10, 2011

DATUM: Geodetic

N: 652437 E: 5566516

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
45	Barber Rig H24 Air Rotary BECK Drilling & Environmental Services Ltd.	Massive, grey, very loose grained to cobble sized GRAVEL, angular to sub-rounded *(continued)*									
46											
47											
48											
49					10	GRAB					
50											
51											
52				1680.10							
		Black, broken COAL		52.10							
					11	GRAB					
53				1679.20							
		Massive, grey, very loose grained to cobble sized GRAVEL, angular to sub-rounded		53.00							
					12	GRAB					
				1678.30							
54		Massive, grey BEDROCK		53.90							
				1677.90	13	GRAB					
		End of BOREHOLE.		54.30							
55											
56											
57											
58											
59											
60											

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DEPTH SCALE
1 : 75

Golder Associates

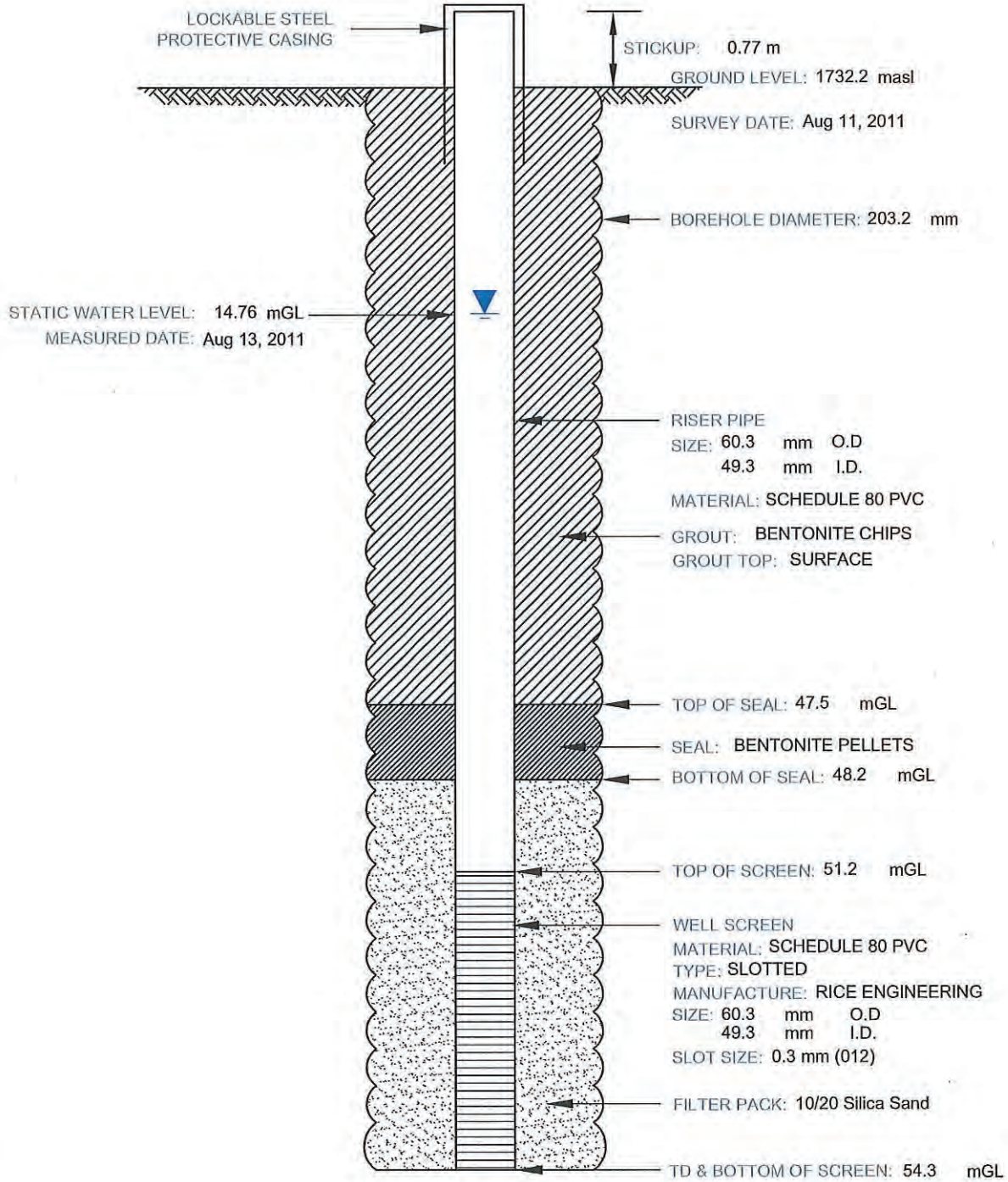
LOGGED: TC
CHECKED: JW

MONITORING WELL CONSTRUCTION DETAILS

Short Well ID	Well Owner: Teck Coal Fording River Operations	Spud Date: Aug 10, 2011
H1D		Project Short Title: Teck Coal FRO - Henretta
	Well Name: GA-HMW1D	Project Number: 11.1348.0020-1000-2000
		Site Geologist: T.Crowell

Drilling Method:	Development:	
Air Rotary	Method: Air Lift	Duration: 1.25 Hours

SCHEMATIC ONLY–NOT TO SCALE



NOTES:
1. masl – metres above sea level
2. mGL – metres below ground level
3. TD – Total Depth

Golder Associates

File Path: R:\Active_2011\1348\11-1348-0020 Teck Coal Henretta Ridge Assessment\Phase 2000 Drilling Report\Final

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW1S

SHEET 1 OF 3

LOCATION: See Location Plan

BORING DATE: August 11, 2011

DATUM: Geodetic

N: 652441 E: 5566518

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		Ground Surface		1732.30							
	Barber Rig H24 Air Rotary BECK Drilling & Environmental Services Ltd.	Samples are not logged		0.00							
1					1	GRAB					
2											
3											
4											
5											
6											
7					2	GRAB					
8											
9											
10											
11											
12					3	GRAB					
13											
14											
15		*CONTINUED NEXT PAGE*									

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: TC
CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW1S

SHEET 2 OF 3

LOCATION: See Location Plan

BORING DATE: August 11, 2011

DATUM: Geodetic

N: 652441 E: 5566518

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
15	Barber Rig H24 Air Rotary, BECK Drilling & Environmental Services Ltd.	Samples are not logged *(continued)*									13 Aug 2011
16											
17											
18					4	GRAB					
19											
20											
21				1711.00							
22		Very loose, non-plastic, non-cohesive, dry to slightly damp, grey to black, coarse grained to cobbles sized, WASTE ROCK, covered in clay and sand matrix, matrix is black, slightly cohesive, silty		21.30							
23											
24					5	GRAB					
25											
26											
27				1704.90							
28		Massive, grey, very coarse grained to cobble sized GRAVEL, angular to sub-rounded		27.40							
29					6	GRAB					
30		*CONTINUED NEXT PAGE*									

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: TC
CHECKED: JW

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW1S

SHEET 3 OF 3

LOCATION: See Location Plan

BORING DATE: August 11, 2011

DATUM: Geodetic

N: 652441 E: 5566518

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
30	Barber Rig H24 Air Rotary BECK Drilling & Environmental Services Ltd.	Massive, grey, very coarse grained to cobble sized GRAVEL, angular to sub-rounded *(continued)* --- Gravel is very large in size (inches across)									
31											
32					6	GRAB					
33				1698.80							
		BEDROCK End of BOREHOLE.		33.50							
34											
35											
36											
37											
38											
39											
40											
41											
42											
43											
44											
45											

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: TC
CHECKED: JW

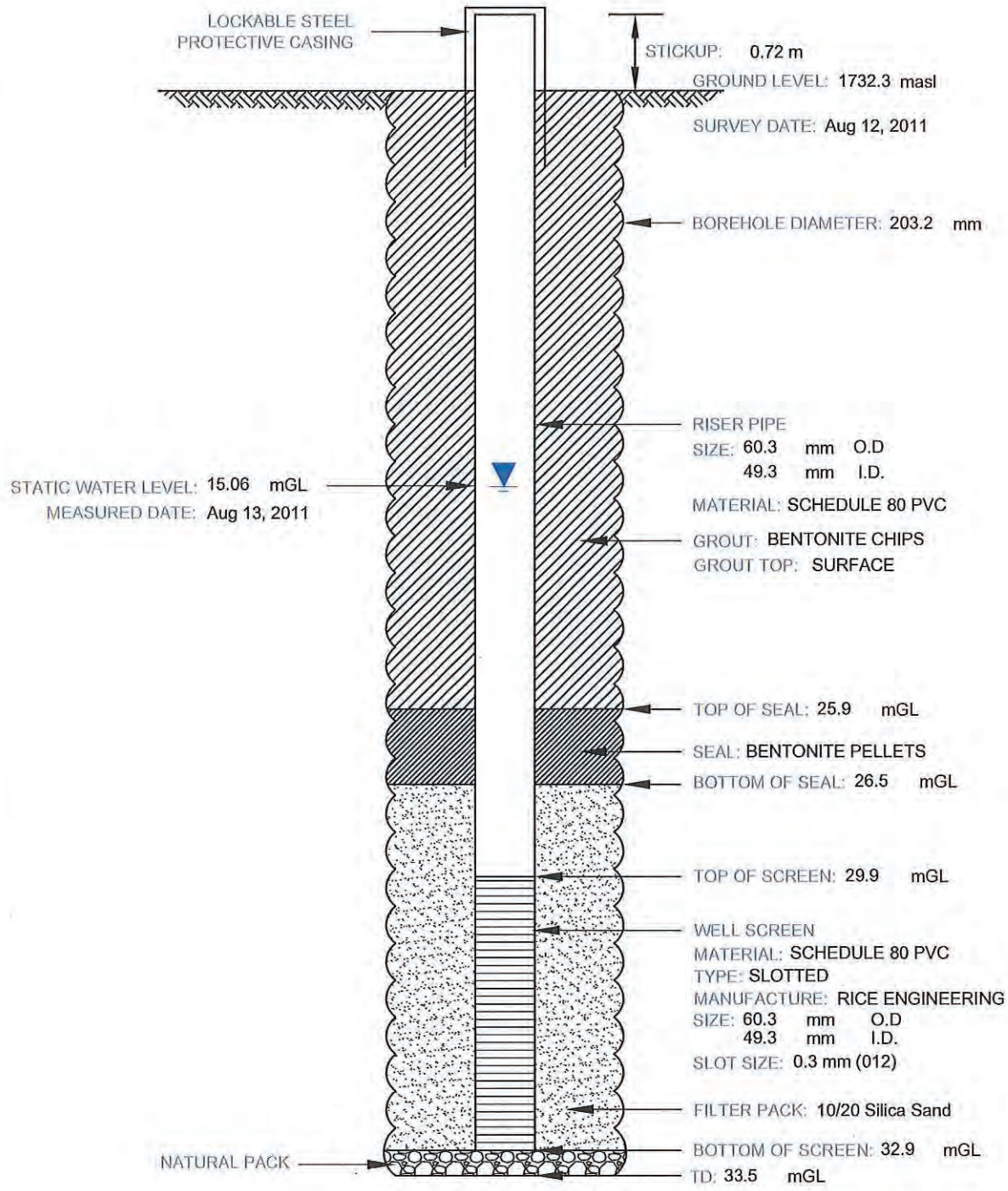
BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

MONITORING WELL CONSTRUCTION DETAILS

Short Well ID	Well Owner: Teck Coal Fording River Operations	Spud Date: Aug 11, 2011
H1S		Project Short Title: Teck Coal FRO - Henretta
	Well Name: GA-HMW1S	Project Number: 11.1348.0020-1000-2000
		Site Geologist: T.Crowell

Drilling Method:	Development:	
Air Rotary	Method: Air Lift	Duration: 1.25 Hours

SCHEMATIC ONLY–NOT TO SCALE



NOTES:
1. masl – metres above sea level
2. mGL – metres below ground level
3. TD – Total Depth

Golder Associates

File Path: R:\Active_2011\1348\11-1348-0020 Teck Coal Henretta Ridge Assessment\Phase 2000 Drilling Report\Final

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW2

SHEET 1 OF 4

LOCATION: See Location Plan

BORING DATE: August 09, 2011

DATUM: Geodetic

N: 652666 E: 5566634

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wi (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		Ground Surface		1767.30							
		Compacted road materials									
		Dry, grey to black, angular, coarse grained to cobble sized SPOILS, covered in clay and sand matrix, cohesive to plastic, dark brown to black, silty		0.30							
1					1	GRAB					
2											
3											
4											
5											
6											
7					2	GRAB					
8											
9											
10											
11											
12					3	GRAB					
13											
14											
15											
		CONTINUED NEXT PAGE									

Barber Rig H24 Air Rotary

BECK Drilling & Environmental Services Ltd.

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: TC

CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DATA ENTRY: V1

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW2

SHEET 2 OF 4

LOCATION: See Location Plan

BORING DATE: August 09, 2011

DATUM: Geodetic

N: 652666 E: 5566634

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
15		Dry, grey to black, angular, coarse grained to cobble sized SPOILS, covered in clay and sand matrix, cohesive to plastic, dark brown to black, silty *(continued)*											
16													
17					4	GRAB							
18													
19													
20													
21													
22					5	GRAB							
23													
24													
25													
26													
27					6	GRAB							
				1739.90									
		Black, broken COAL LENS		27.40									
28													
				1738.40									
29		Dry, grey to black, angular, coarse grained to cobble sized SPOILS, covered in clay and sand matrix, cohesive to plastic dark brown to black, silty		28.90	7	GRAB							
30													
		CONTINUED NEXT PAGE											

Barber Rig H24 Air Rotary

BECK Drilling & Environmental Services Ltd.

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: TC

CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW2

SHEET 3 OF 4

LOCATION: See Location Plan

BORING DATE: August 09, 2011

DATUM: Geodetic

N: 652666 E: 5566634

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
30				1736.82							
		Dry, grey to black, angular, coarse grained to cobble sized SPOILS, covered in clay and sand matrix, cohesive to plastic dark brown to black, silty, smaller fragments		30.48							
31											
					8	GRAB					
32											
				1734.40							
33		Dry, grey to black, angular, coarse grained to cobble sized SPOILS, covered in clay and sand matrix, cohesive to plastic dark brown to black, silty		32.90							
34											
35											
					9	GRAB					
36											
37	Barber Rig H24 Air Rotary BECK Drilling & Environmental Services Ltd.										
38											
39											
40											
					10	GRAB					
41											
42											
43											
				1723.80							
		COAL LENS		43.50							
44											
					11	GRAB					13 Aug 2011 ▽
45		*CONTINUED NEXT PAGE*									

DEPTH SCALE
1 : 75

Golder Associates

LOGGED: TC
CHECKED: JW

BOREHOLE - EXPANDED ADD_LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW2

SHEET 4 OF 4

LOCATION: See Location Plan

BORING DATE: August 09, 2011

DATUM: Geodetic

N: 652666 E: 5566634

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
45	Barber Rig H24 Air Rotary BECK Drilling & Environmental Services Ltd.	COAL LENS *(continued)*									
46					11	GRAB					
47				1719.60							
48		BEDROCK, clay fragments trending into grey massive sample		47.70	12	GRAB					
				1718.60							
49		End of BOREHOLE.		48.70							
50											
51											
52											
53											
54											
55											
56											
57											
58											
59											
60											

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: TC

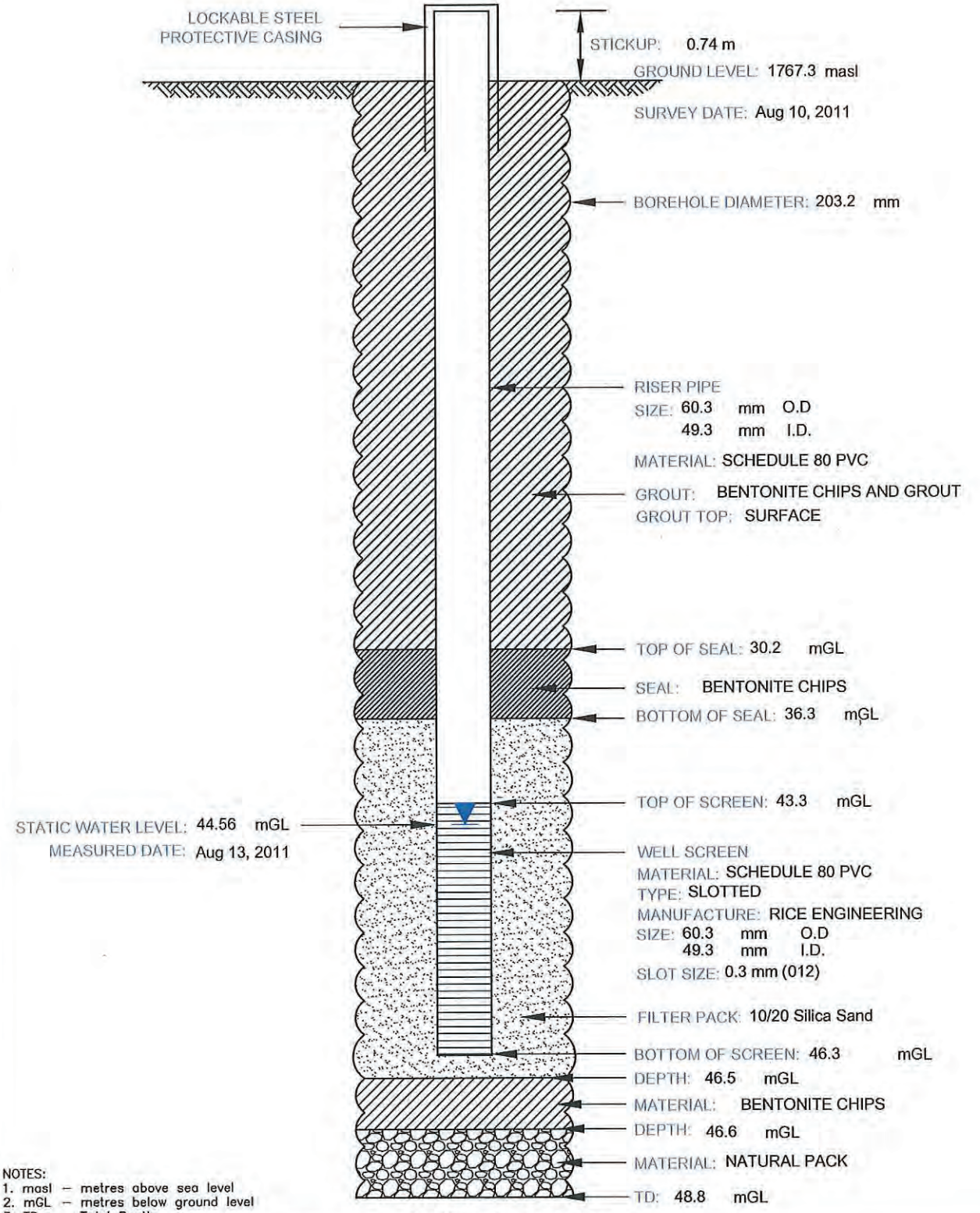
CHECKED: JW

MONITORING WELL CONSTRUCTION DETAILS

Short Well ID	Well Owner: Teck Coal Fording River Operations	Spud Date: Aug 9, 2011
H2		Project Short Title: Teck Coal FRO - Henretta
	Well Name: GA-HMW2	Project Number: 11.1348.0020-1000-2000
		Site Geologist: T.Crowell

Drilling Method:	Development:	
Air Rotary	Method: Waterra Tubing	Duration: 1 Hour

SCHEMATIC ONLY–NOT TO SCALE



NOTES:
1. masl – metres above sea level
2. mGL – metres below ground level
3. TD – Total Depth

Golder Associates

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DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW3

SHEET 1 OF 2

LOCATION: See Location Plan

BORING DATE: August 12, 2011

DATUM: Geodetic

N: 652810 E: 5566540

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		Ground Surface		1728.20							
		Compacted road materials									
		Brown and grey, cobble size WASTE ROCK with sandy clay matrix, rock is sub-rounded to subangular, matrix is soft, damp, non-plastic, cohesive, silty, with some very fine grains		0.30							
1											
2											
3					1	GRAB					
4											
5											
				1722.40							
6		Hard layer, ROP low, no returns		5.80							
				1721.60							
		Brown and grey, cobble size WASTE ROCK with sandy clay matrix, rock is sub-rounded to subangular, matrix is soft, dry, non-plastic, cohesive, silty, with some very fine grains		6.40							
7											13 Aug 2011 ▽
8											
9					2	GRAB					
10											
11											
12				1716.00							
		Wet, white to grey and brown, cobble size to very coarse grained, round to sub-angular GRAVEL, brown clay matrix, silty		12.20							
13											
14					3	GRAB					
15											
		CONTINUED NEXT PAGE									

Barber Rig H24 Air Rotary

BECK Drilling & Environmental Services Ltd.

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: TC

CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW3

SHEET 2 OF 2

LOCATION: See Location Plan

BORING DATE: August 12, 2011

DATUM: Geodetic

N: 652810 E: 5566540

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
15	Barber Rig H24 Air Rotary BECK Drilling & Environmental Services Ltd.	Wet, white to grey and brown, cobble size to very coarse grained, round to sub-angular GRAVEL, brown clay matrix, silty *(continued)*									
16					3	GRAB					
17											
18											
19					4	GRAB					
20											
21											
22					5	GRAB					
		Massive, grey BEDROCK, small drill-broken fragments		1705.60							
		End of BOREHOLE.		22.60							
23											
24											
25											
26											
27											
28											
29											
30											

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020_2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: TC

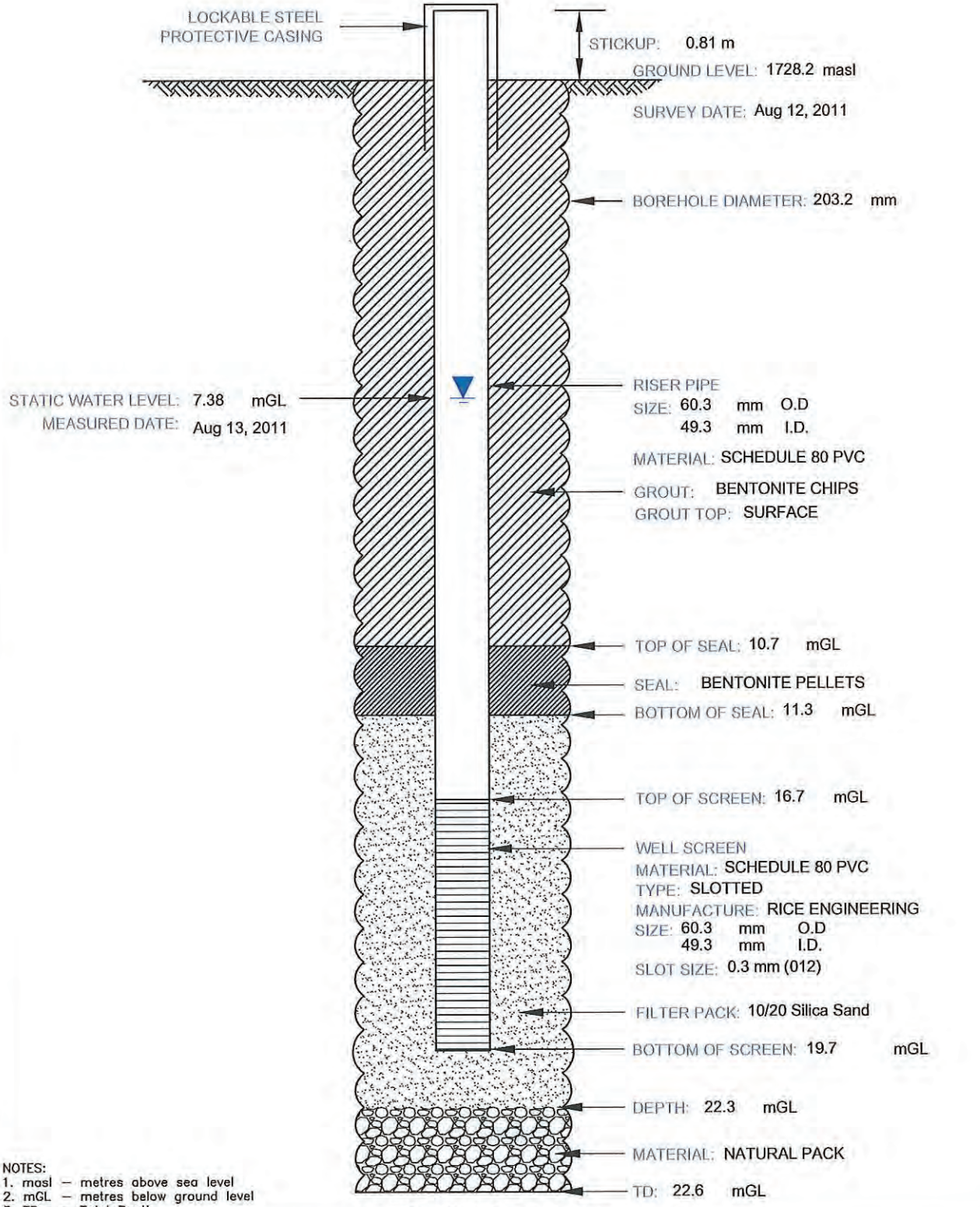
CHECKED: JW

MONITORING WELL CONSTRUCTION DETAILS

Short Well ID	Well Owner: Teck Coal Fording River Operations	Spud Date: Aug 12, 2011
H3		Project Short Title: Teck Coal FRO - Henretta
	Well Name: GA-HMW3	Project Number: 11.1348.0020-1000-2000
		Site Geologist: T.Crowell

Drilling Method:	Development:	
Air Rotary	Method: Air Lift	Duration: 1 Hour

SCHEMATIC ONLY–NOT TO SCALE



NOTES:
1. masl – metres above sea level
2. mGL – metres below ground level
3. TD – Total Depth

Golder Associates

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DATA ENTRY: VI

PROJECT No.: 11.1348.0020.2000

RECORD OF BOREHOLE: GA-HMW5

SHEET 1 OF 1

LOCATION: See Location Plan

BORING DATE: August 09, 2011

DATUM: Geodetic

N: 655476 E: 5567514

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		Ground Surface		1785.20							
0	Barber Rig H24 Air Rotary, BECK Drilling & Environmental Services Ltd.	Very loose, non-plastic, dry, grey to brown, loose grained to cobble size GRAVEL, non-cohesive with some medium grained, angular to subangular, (with little matrix) (ALLUVIUM)		0.00							
1					1	GRAB					13 Aug 2011 ▽
2											
3											
4		--- Soft, low plasticity, damp, non-cohesive, with more grey CLAY									
5					2	GRAB					
6											
				1778.50							
7		Hard layer, angular fragments, low returns GRAVEL		6.90							
		Very loose, low plasticity, damp, grey to brown, loose grained to cobble size GRAVEL, non-cohesive with some medium grained, angular to subangular (with little matrix) (ALLUVIUM)									
8					3	GRAB					
9											
		--- Clay becomes dark brown, damp, cohesive and very dense									
10					4	GRAB					
				1774.50							
11		Very loose fragments (drill cut-up), wet, massive, light to dark grey, angular BEDROCK		10.70							
12					5	GRAB					
				1772.40							
13		End of BOREHOLE.		12.80							
14											
15											

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1348.0020 2000 BH LOGS.GPJ CALGARY.GDT 12/15/11

DEPTH SCALE

1 : 75

Golder Associates

LOGGED: TC

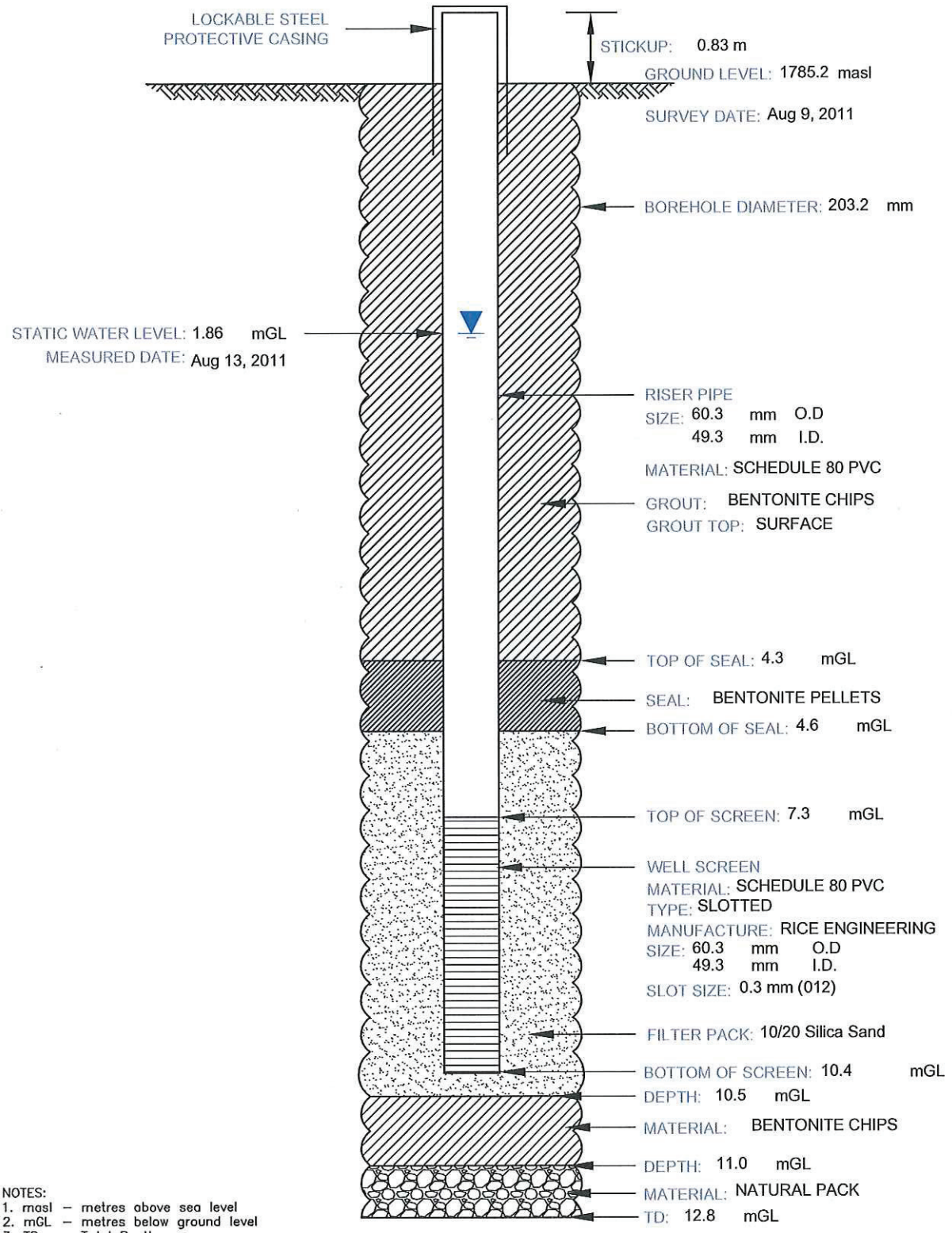
CHECKED: JW

MONITORING WELL CONSTRUCTION DETAILS

Short Well ID	Well Owner: Teck Coal Fording River Operations	Spud Date: Aug 9, 2011
H5		Project Short Title: Teck Coal FRO - Henretta
	Well Name: GA-HMW5	Project Number: 11.1348.0020-1000-2000
		Site Geologist: T.Crowell

Drilling Method:	Development:	
Air Rotary	Method: Air Lift	Duration: 1.75 Hours

SCHEMATIC ONLY–NOT TO SCALE



NOTES:
1. masl – metres above sea level
2. mGL – metres below ground level
3. TD – Total Depth

Golder Associates

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FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Turnbull, Elkford, BC

Borehole No. : FR_TBSSMW-1

PAGE 1 OF 3

Drilling Contractor	Foraco International SA	Date Monitored	2017 08 08	Project Number:	648811
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1697.039	Borehole Logged By:	SC
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1697.969	Date Drilled:	2017 08 02
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565868.179	Easting: 651603.747	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale
Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: TBSSMW-1

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	COBBLES and BOULDERS (SPOIL), angular, with silt, sand and gravel matrix, grey-black.					
3	GRAVEL (NATIVE), with sand, contains cobbles.			1-1		
				1-2		
5	SILT, with sand, with gravel.			1-3		
6	GRAVEL, silty, brown.					
7	GRAVEL, sandy, with silt, brown.			1-4		
9	GRAVEL, silty, brown.			1-5		
10						

SAND

BENTONITE

NOTES
150 mm steel casing to 5.0 m.
Bolded sample denotes sample analyzed.

SC 2017 09 19 Print Date:2017-12-19

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Turnbull, Elkford, BC

Borehole No. : FR_TBSSMW-1

PAGE 2 OF 3

Drilling Contractor	Foraco International SA	Date Monitored	2017 08 08	Project Number:	648811
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1697.039	Borehole Logged By:	SC
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1697.969	Date Drilled:	2017 08 02
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565868.179	Easting: 651603.747	Log Typed By:	VL

Drilling Legend
Sample Interval
Air Rotary

Water/NAPL Levels
Water Level 1
Water Level 2
NAPL
NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: TBSSMW-1

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	GRAVEL, silty, brown. *(continued)*						
	GRAVEL, with silt, contains cobbles, brown.						
11							
12				1-6			
13	BOULDER, grey-black.			1-7			
	GRAVEL (TILL), silty, with sand, contains cobbles and boulders, dense, brown.			1-8			
14							
15							
16							
17							
18	BOULDER.						
	GRAVEL (TILL), silty, with sand, contains cobbles and boulders, dense, brown.			1-9			
19							
20							

BENTONITE
SLOUGH
BENTONITE
SLOUGH
BENTONITE
SLOUGH
BENTONITE

NOTES
150 mm steel casing to 5.0 m.
Bolded sample denotes sample analyzed.

SC 2017 09 19 Print Date:2017-12-19

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Turnbull, Elkford, BC

Borehole No. : FR_TBSSMW-1

PAGE 3 OF 3

Drilling Contractor	Foraco International SA	Date Monitored	2017 08 08	Project Number:	648811
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1697.039	Borehole Logged By:	SC
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1697.969	Date Drilled:	2017 08 02
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565868.179	Easting: 651603.747	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: TBSSMW-1

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
20	GRAVEL (TILL), silty, with sand, contains cobbles and boulders, dense, brown. *(continued)*						
21				1-10			
22	GRAVEL, sandy.			1-11			
	BEDROCK, fresh, SILT/SANDSTONE, grey to black.						
23				1-12			
24							
25				1-13			
	Bottom of hole at 25.5 m.						
26							
27							
28							
29							
30							

BENTONITE
TBSSMW-1
SAND
BENTONITE

NOTES
150 mm steel casing to 5.0 m.
Bolded sample denotes sample analyzed.

SC 2017 09 19 Print Date:2017-12-19

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Turnbull, Elkford, BC

Borehole No. : FR_TBSSMW-2

PAGE 1 OF 1

Drilling Contractor	Foraco International SA	Date Monitored	2017 08 08	Project Number:	648811
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1697.026	Borehole Logged By:	RSW
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1697.949	Date Drilled:	2017 08 03
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5565866.323	Easting: 651604.803	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: TBSSMW-2

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	COBBLES and BOULDERS (SPOIL), angular, with silt, sand and gravel matrix, grey-black.						
3	GRAVEL (NATIVE), with sand, vari-coloured, contains cobbles.						
8	GRAVEL (NATIVE), with sand, with silt, contains cobbles.						
9	Bottom of hole at 9.0 m.						
10							

SAND
BENTONITE
TBSSMW-2
SAND

NOTES
150 mm steel casing to 4.6 m.
Bolded sample denotes sample analyzed.

SC 2017 09 19 Print Date:2017-12-19

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Turnbull, Elkford, BC

Borehole No. : FR_GCMW-1A/B

PAGE 1 OF 3

Drilling Contractor	Foraco International SA	Date Monitored	2017 08 08	Project Number:	648811
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1670.643	Borehole Logged By:	SC
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1671.355 1671.293	Date Drilled:	2017 08 01
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5564000.572	Easting: 650964.694	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GCMW-1A
Well Name 2: GCMW-1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	GRAVEL (SPOIL), silty, with sand, contains cobbles and boulders, grey-black.						
1			1-1				
2							
3							
4	GRAVEL (FILL), silty, with sand, contains cobbles and boulders, brown.						
5							
6	GRAVEL (NATIVE), subrounded, with silt, with sand, contains cobbles, brown.		1-2				B A
7							
8			1-3				
9	SAND (NATIVE), silty, brown.						
10							

SAND

BENTONITE

NOTES
150 mm steel casing to 10.5 m.
Bolded sample denotes sample analyzed.

SC 2017 09 19 Print Date:2017-12-19

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Turnbull, Elkford, BC

Borehole No. : FR_GCMW-1A/B

PAGE 2 OF 3

Drilling Contractor	Foraco International SA	Date Monitored	2017 08 08	Project Number:	648811
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1670.643	Borehole Logged By:	SC
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1671.355 1671.293	Date Drilled:	2017 08 01
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5564000.572	Easting: 650964.694	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Depth in Metres | Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GCMW-1A
Well Name 2: GCMW-1B

10 GRAVEL, with sand, with silt.

11 1-4

COBBLES and BOULDERS (TILL), with silty gravel matrix.

12

13 1-5

14

15 1-6

16

17 1-7

18

19

20

BENTONITE
GCMW-1B
SAND
BENTONITE
SAND
GCMW-1A

NOTES
150 mm steel casing to 10.5 m.
Bolded sample denotes sample analyzed.

SC 2017 09 19 Print Date:2017-12-19

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Turnbull, Elkford, BC

Borehole No. : FR_GCMW-1A/B

PAGE 3 OF 3

Drilling Contractor	Foraco International SA	Date Monitored	2017 08 08	Project Number:	648811
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1670.643	Borehole Logged By:	SC
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1671.355 1671.293	Date Drilled:	2017 08 01
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5564000.572	Easting: 650964.694	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

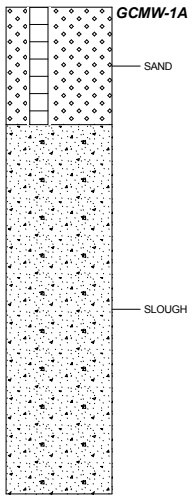
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GCMW-1A
Well Name 2: GCMW-1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
20	COBBLES and BOULDERS (TILL), with silty gravel matrix. *(continued)*						
21	BEDROCK, fresh, SILT/SANDSTONE, grey to black.			1-8			
22							
23							
24	Bottom of hole at 24.1 m.						
25							
26							
27							
28							
29							
30							



NOTES
150 mm steel casing to 10.5 m.
Bolded sample denotes sample analyzed.

SC 2017 09 19 Print Date:2017-12-19

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Turnbull, Elkford, BC

Borehole No. : FR_GCMW-2

PAGE 1 OF 2

Drilling Contractor	Foraco International SA	Date Monitored	2017 08 08	Project Number:	648811
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1670.444	Borehole Logged By:	RSW
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1671.342	Date Drilled:	2017 08 02
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5563998.165	Easting: 650966.068	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GCMW-2

Depth in Metres	Soil Description	Sample Number
0	GRAVEL (SPOIL), silty, with sand, contains cobbles and boulders, grey-black.	
4.6	GRAVEL (NATIVE), sandy, with silt, light grey to dark grey, brown, black (vari-coloured).	2-1
		2-2
		2-3
		2-4
9.1	SAND (NATIVE), gravelly, with silt, brown.	2-5
10		

SAND
BENTONITE
GCMW-2
SAND
BENTONITE

NOTES
150 mm steel casing to 4.9 m.
Bolded sample denotes sample analyzed.

SC 2017 09 19 Print Date:2017-12-19

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Turnbull, Elkford, BC

Borehole No. : FR_GCMW-2

PAGE 2 OF 2

Drilling Contractor	Foraco International SA	Date Monitored	2017 08 08	Project Number:	648811
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1670.444	Borehole Logged By:	RSW
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1671.342	Date Drilled:	2017 08 02
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5563998.165	Easting: 650966.068	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GCMW-2

Depth in Metres	Soil Description	Sample Number	Well
10	SAND (NATIVE), gravelly, with silt, brown. *(continued)*	2-6	BENTONITE
11	Bottom of hole at 11.0 m.		
12			
13			
14			
15			
16			
17			
18			
19			
20			

NOTES
150 mm steel casing to 4.9 m.
Bolded sample denotes sample analyzed.

SC 2017 09 19 Print Date:2017-12-19

DATA ENTRY: KJM

PROJECT No.: 09-1349-1007.3102

RECORD OF BOREHOLE: GA-MW-1B

SHEET 1 OF 1

LOCATION: See Location Plan

BORING DATE: September 08, 2010

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (10 20 30 40) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Becker Hammer Beck Drilling and Environmental Services Ltd.	Ground Surface									
		Soil Materials		0.0							
1		Soil Materials with light grey gravel		0.9							
2		Loose, dry, dark brown, coarse-grained GRAVEL AND COBBLES, unconsolidated (TILL)		1.8							
3											
4											
5											
		Loose to dense, wet, dark brown, non-plastic CLAY, large gravel grain-size (TILL)		5.5							
6											
		Soft, dry, light to medium, brown, weakly plastic, MUDSTONE		6.4							
7											
		Hard, dry, black, very fine-grained SHALE, no fractures or planes		7.3							
8											
		End of BOREHOLE.		8.2							
9											
10											

BOREHOLE 09-1349-1007.3102_LOGS.GPJ CALGARY.GDT 06/21/11

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: TC

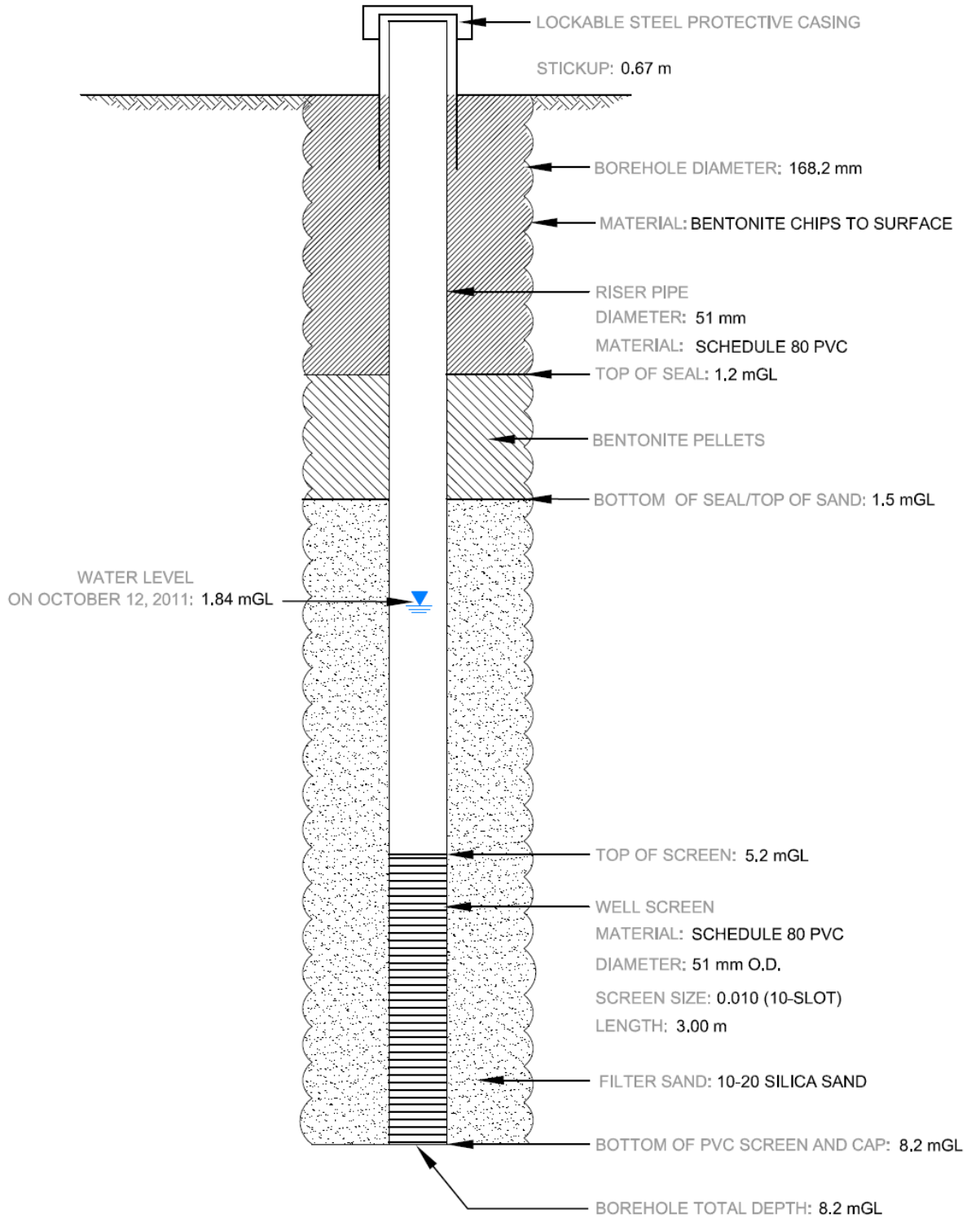
CHECKED:

MONITORING WELL CONSTRUCTION DETAILS

Short Well ID	Well Owner:	Date:
GA-MW-1B	Teck Coal - Fording River Operations	08 Sept. 2010
		Project Short Title: FORDING RIVER
		Project Number: 0913491007
		Site Geologist: Tim Crowell

Drilling Method:	Development:
Becker Hammer	Method: Baller

SCHEMATIC ONLY-NOT TO SCALE
ALL DEPTHS AND VALVES ARE ESTIMATE



NOTES:
1. masl - metres above sea level
2. mGL - metres below ground level

Golder Associates

L:\2009\1349\09-1349-1007\3102\Report B (3003)\ Drawing file: Fig 1 09134910073102B001 GA-MW-1B.dwg Nov 15, 2011 - 9:55am

FINAL

SNC·LAVALIN

Client
Teck Coal Ltd.

Location
Fording River Operations, Elkford, BC

Borehole No. : FR_BH_NTPSE

PAGE 1 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2018 09 24	Project Number:	656139
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1635.398	Borehole Logged By:	BH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1636.398	Date Drilled:	2018 09 26
Pipe/Slotted Pipe Dia. (m)	none/none	Northing: 5561252.280	Easting: 650855.432	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/ Levels
- Water Level 1
- Water Level 2

Depth in Metres | Soil Description | Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery | Soil Vapour (ppm) | Well Name 1: FR_MW_NTPSE

Soil Vapour (ppm): ○ Reading within indicated scale; ● Reading outside indicated scale; 10^1 10^2 10^3 10^4

Well Name 1: FR_MW_NTPSE: Solid PVC; Slotted PVC

Depth (m)	Soil Description
0	SAND and GRAVEL (FILL), fine to coarse grained, fine to coarse subangular to angular gravel (up to 60 mm), silty, black, loose to medium dense, coarse coal rejects.
7	At 7.0 m - moist to wet
	SILT, GRAVEL and ORGANICS, fine to coarse subrounded gravel (up to 15 mm), some sand, fine to coarse grained, non-plastic, black, soft, moist to wet, woody debris.
9	SAND and GRAVEL, fine to coarse grained sand, fine to coarse angular gravel (up to 20 mm cuttings), trace silt, brown-grey, dense, wet.
10	

BENTONITE

FR_MW_NTPSE

SAND

NOTES

QA/QC: BH 2018 12 04 Print Date:2020-04-29

FINAL

SNC·LAVALIN

Client
Teck Coal Ltd.

Borehole No. : FR_BH_NTPSE

Location
Fording River Operations, Elkford, BC

PAGE 2 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2018 09 24	Project Number:	656139
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1635.398	Borehole Logged By:	BH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1636.398	Date Drilled:	2018 09 26
Pipe/Slotted Pipe Dia. (m)	none/none	Northing: 5561252.280	Easting: 650855.432	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/ Levels
- Water Level 1
- Water Level 2

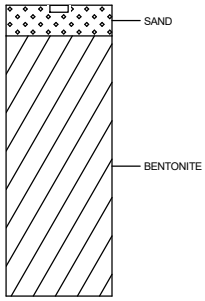
Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm)
10	SAND, fine to coarse grained, some fine angular gravel (up to 5 mm), silty, medium dense, dark grey, moist.						
11	SAND and GRAVEL, fine to coarse grained sand, fine subangular to angular gravel (up to 10 mm), silty, grey, dense.						
12	BEDROCK, siltstone, dark grey, fresh, weak. Between 11.4 m and 11.5 m - wet						
	Bottom of hole at 12.5 m.						
13							
14							
15							
16							
17							
18							
19							
20							

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: FR_MW_NTPSE



NOTES

QA/QC: BH 2018 12 04 Print Date:2020-04-29

DATA ENTRY: KJM

PROJECT No.: 09-1324-1039

RECORD OF MONITORING WELL: 09-04A

SHEET 1 OF 1

LOCATION: South Taillings Pond - West (non-channel)

BORING DATE: October 16, 2009

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		Ground Surface		1605.0							Stickup =0.91 m
0	Barber Rig - DR-24 - 9" Hole Diameter; Beck Drilling and Environmental Services Ltd.	Silty SAND, some gravel, medium grain sand, loose, slightly moist, dark brown		0.0							Bentonite; Slough; Bentonite
				1603.5							
2		Sandy GRAVEL, trace silt, medium gravel, loose, moist, medium brown --- Coarse to medium gravel from 2.5 to 3.0 m --- Very moist from 3.5 to 4.0 m		1.5							Slotted Section
4				1600.0							Slough
		End of MONITORING WELL.		5.0							
6											
8											
10											
12											
14											
16											
18											
20											

BOREHOLE 09-1324-1039_LOGS.GPJ CALGARY.GDT 1/11/16

DEPTH SCALE

1 : 100

Golder Associates

LOGGED: EA

CHECKED: MB

DATA ENTRY: KJM

PROJECT No.: 09-1324-1039

RECORD OF MONITORING WELL: 09-04B

SHEET 1 OF 1

LOCATION: South Taillings Pond - West (non-channel)

BORING DATE: October 15, 2009

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (10 20 30 40) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (10 20 30 40) Wp W Wl	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		Ground Surface		1605.0							Stickup =0.64 m
0	Barber Rig - DR-24 - 9" Hole Diameter Beck Drilling and Environmental Services Ltd.	Silty SAND, some gravel, medium grain sand, loose, slightly moist, dark brown		0.0 1603.5							Bentonite
2		Sandy GRAVEL, trace silt, medium gravel, loose, moist, medium brown --- Coarse to medium gravel from 2.5 to 3.0 m --- Very moist from 3.5 to 4.0 m		1.5 1599.5							Slough Bentonite Granular Filter
4		GRAVEL, medium to coarse gravel, loose, saturated, light grey to brown		5.5 1599.0							Slotted Section
6		Sandy GRAVEL, loose, saturated, medium brown		6.0 1598.5							
		BEDROCK, loose, dark grey		6.5 1598.0							Slough
		End of MONITORING WELL.		7.0							
8											
10											
12											
14											
16											
18											
20											

BOREHOLE 09-1324-1039_LOGS.GPJ CALGARY.GDT 1/11/16

DEPTH SCALE

1 : 100

Golder Associates

LOGGED: EA

CHECKED: MB

Teck

WELL ID: FR-KB-1A

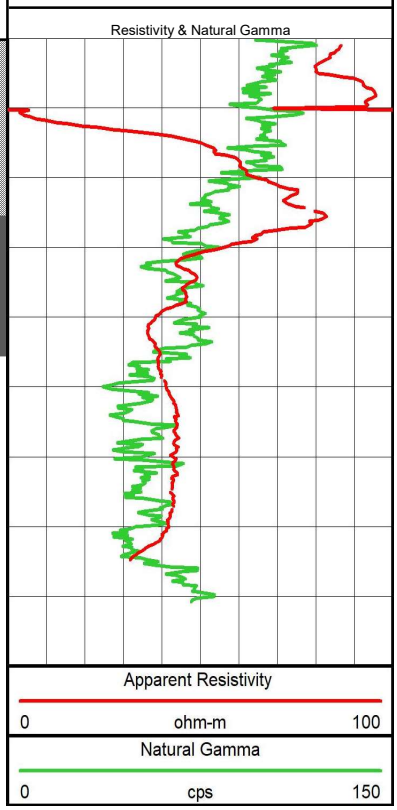
Depth (mGL)	Lithological Description
0	0-3.0mGL: **SPOILS** (SM) SILTY SAND
1	
2	
3	3.0-4.6mGL: **SPOILS** (GM) SILTY GRAVEL
4	
5	4.6-6.1mGL: **(GM) SILTY GRAVEL** Water from discharge hose during welding of 15-20' section
6	6.1-7.6mGL: **(GW) GRAVEL**
7	7.6-8.2mGL: **(SW) SAND**
	TD @ 8.2mGL: **BEDROCK** - grey shale (Fernie Fm)

Lithology

Well

04-Nov-18

Geophysical Logs



Legend
Fill/Spoil
Clay
Silty-Clay
Clayey Silt
Clayey Sand
Sand
Silty Gravel
Sand & Gravel
Gravel
Bedrock

Teck

WELL ID: FR-KB-2A

Depth (mGL)	Lithological Description
0	0-6.7mGL: **SPOILS** - Dark grey to black, angular, coaly and dry.
1	
2	
3	
4	
5	
6	
7	6.7-12.2mGL: (**SW) SAND**, sub-angular to sub-rounded, silt - fine gravels grey-brown, dry; producing water from discharge line @8.5mGL
8	
9	
10	
11	
12	12.2-13.7mGL: **(SW) SAND**, sub-angular to sub-rounded, fine to coarse sand brown, moist.
13	
14	13.7-15.5mGL: **(SM) SILTY SAND**, sub-angular to sub-rounded, silt to fine gravels brown, moist.
15	15.5 -16.8mGL: **BEDROCK** - Dark grey shale (Fernie Fm)
16	TD @16.8mGL

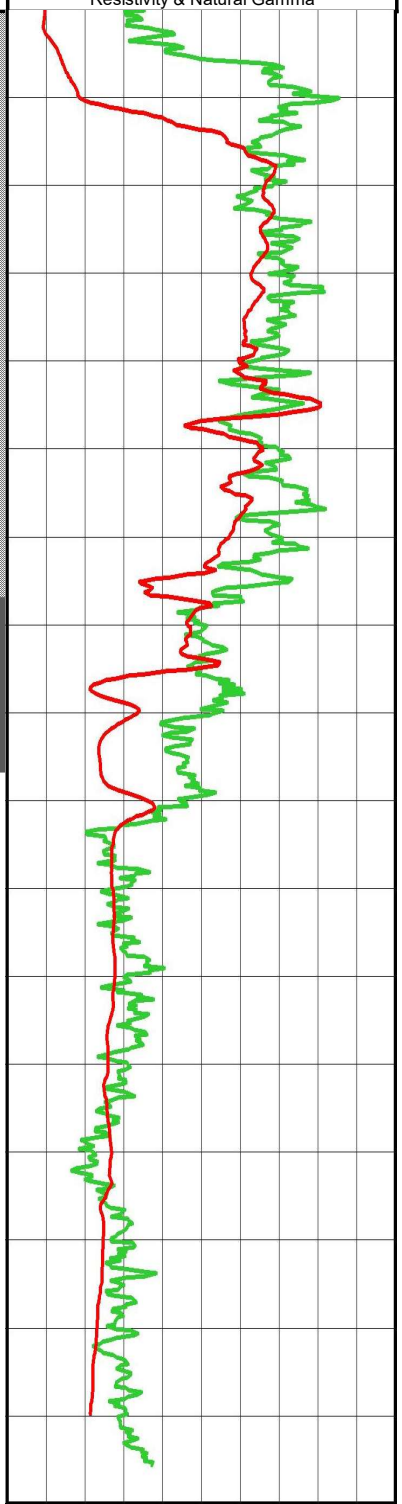
Lithology

Well

04-Nov-18

Geophysical Logs

Resistivity & Natural Gamma



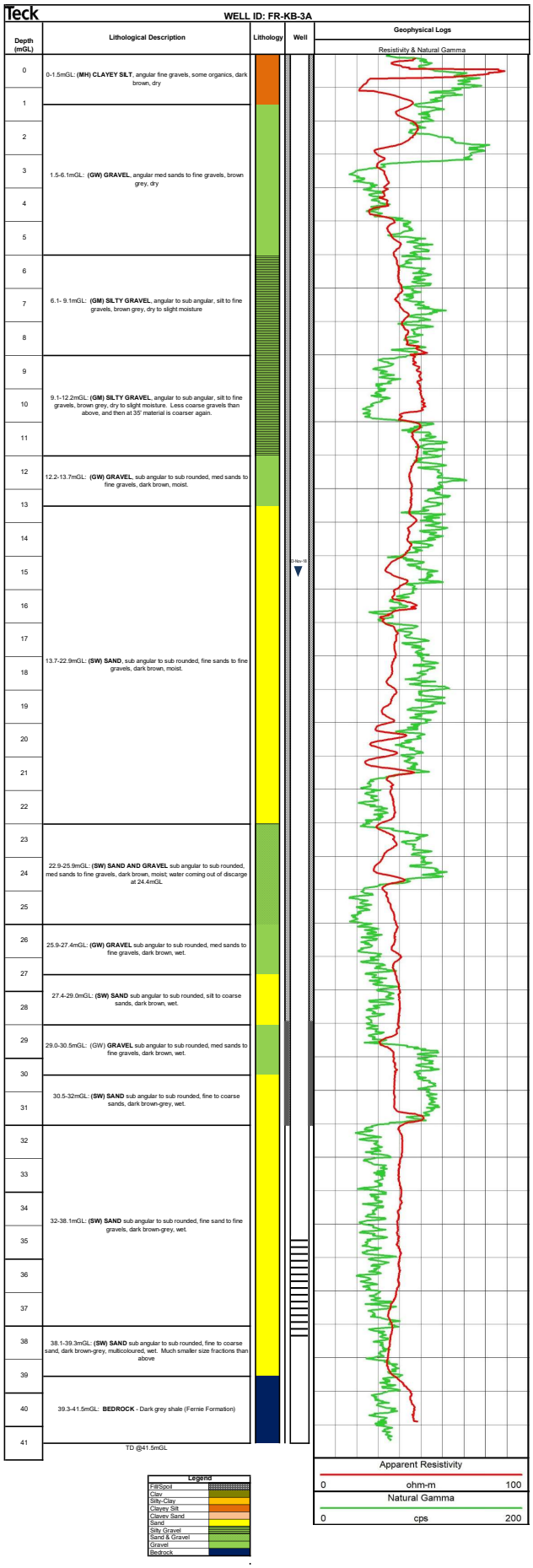
Apparent Resistivity

0 ohm-m 200

Natural Gamma

0 cps 200

Legend
Fill/Spoil
Clay
Silty-Clay
Clayey Silt
Silty Sand
Sand
Silty Gravel
Sand & Gravel
Gravel
Bedrock


Teck
WELL ID: FR-KB-3A
Depth (mGL)
Lithological Description
Lithology
Well
Geophysical Logs
Resistivity & Natural Gamma
0-1.5mGL: (MH) CLAYEY SILT, angular fine gravels, some organics, dark brown, dry
1.5-6.1mGL: (GW) GRAVEL, angular med sands to fine gravels, brown grey, dry
6.1- 9.1mGL: (GM) SILTY GRAVEL, angular to sub angular, silt to fine gravels, brown grey, dry to slight moisture
9.1-12.2mGL: (GM) SILTY GRAVEL, angular to sub angular, silt to fine gravels, brown grey, dry to slight moisture. Less coarse gravels than above, and then at 35' material is coarser again.
12.2-13.7mGL: (GW) GRAVEL, sub angular to sub rounded, med sands to fine gravels, dark brown, moist.
13.7-22.9mGL: (SW) SAND, sub angular to sub rounded, fine sands to fine gravels, dark brown, moist.
22.9-25.9mGL: (SW) SAND AND GRAVEL sub angular to sub rounded, med sands to fine gravels, dark brown, moist; water coming out of discarge at 24.4mGL
25.9-27.4mGL: (GW) GRAVEL sub angular to sub rounded, med sands to fine gravels, dark brown, wet.
27.4-29.0mGL: (SW) SAND sub angular to sub rounded, silt to coarse sands, dark brown, wet.
29.0-30.5mGL: (GW) GRAVEL sub angular to sub rounded, med sands to fine gravels, dark brown, wet.
30.5-32mGL: (SW) SAND sub angular to sub rounded, fine to coarse sands, dark brown-grey, wet.
32-38.1mGL: (SW) SAND sub angular to sub rounded, fine sand to fine gravels, dark brown-grey, wet.
38.1-39.3mGL: (SW) SAND sub angular to sub rounded, fine to coarse sand, dark brown-grey, multicoloured, wet. Much smaller size fractions than above
39.3-41.5mGL: BEDROCK - Dark grey shale (Fernie Formation)
TD @41.5mGL
Legend
Fill/Spoil
Clay
Silty-Clay
Clayey Silt
Clayey Sand
Sand
Silty Gravel
Sand & Gravel
Gravel
Bedrock
Apparent Resistivity
0
ohm-m
100
Natural Gamma
0
cps
200

Teck

WELL ID: FR-KB-3B

Depth (mGL)	Lithological Description
0	0 - 1.5mGL: **(MH) CLAYEY SILT**
1	
2	1.5 - 6.1mGL: **(SW) SAND**
3	
4	
5	
6	6.1 - 10.7mGL: (**GM) SILTY GRAVEL;** Water from discharge hose @ 10.1mGL
7	
8	
9	
10	10.7 - 12.2mGL - **(SW) SAND**
11	
12	12.2 - 15.2mGL: **(GW) GRAVEL**
13	
14	
15	15.2 - 21.3mGL: **(SW) SAND**
16	
17	
18	
19	
20	
21	TD @ 21.3mGL

Lithology

Well

05-Nov-18

Legend	
Fill/Spoil	
Clay	
Silty-Clay	
Clayey Silt	
Clayey Sand	
Sand	
Silty Gravel	
Sand & Gravel	
Gravel	
Bedrock	

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH-SK1A

PAGE 1 OF 2

Drilling Contractor	JR Drilling	Date Monitored	2019 03 28	Project Number:	631283
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1586.479	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1587.429	Date Drilled:	2018 12 21
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5558635.101	Easting: 652680.685	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW-SK1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND, fine to medium grained, silty, some fine to coarse gravel, contains cobbles, subrounded, brown, medium dense, damp.						
1	SILT, sandy, fine grained sand, trace fine gravel, subangular to subrounded, dark brown to black, medium firm, damp.						
2	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, silty, contains cobbles, subangular to subrounded, brown, loose to medium dense, damp.						
3	At 3.7 m - increased gravel with depth						
4	SILT, sandy, fine to medium grained, trace fine to coarse gravel, trace cobbles, dark brown, soft, damp.						
5							
6	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, some cobbles, subangular to subrounded, brown, dense, damp to moist.						
7	At 7.8 m - increased moisture with depth						
8	Between 8.5 m and 9.1 m - saturated At 8.7 m - increased gravel with depth						
9							
10							

BENTONITE/SLOUGH

NOTES

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH-SK1A

PAGE 2 OF 2

Drilling Contractor	JR Drilling	Date Monitored	2019 03 28	Project Number:	631283
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1586.479	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1587.429	Date Drilled:	2018 12 21
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5558635.101	Easting: 652680.685	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW-SK1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, some cobbles, subangular to subrounded, brown, dense, damp to moist. *(continued)*						
	At 10.7 m - saturated						
11							
12	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, some silt, subangular to subrounded, brown, medium dense to loose, saturated.						
13	At 12.3 m - decreased silt with depth						
14							
15	At 14.9 m - trace silt, loose, saturated						
16							
17	Bottom of hole at 16.8 m.						
18							
19							
20							

BENTONITE/SLOUGH
BENTONITE
FR_MW-SK1A
SAND

NOTES

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH-SK1B

PAGE 1 OF 7

Drilling Contractor	JR Drilling	Date Monitored	2019 03 28	Project Number:	631283
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1586.478	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1587.540	Date Drilled:	2018 12 18
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5558637.329	Easting: 652680.728	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Depth in Metres | Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Well Name 1: FR_MW-SK1B
- Solid PVC
- Slotted PVC

0 SAND, fine to medium grained, silty, some fine to coarse gravel, contains cobbles, subrounded, brown, medium dense, damp.

1

SILT, sandy, fine grained sand, trace fine gravel, subangular to subrounded, dark brown to black, medium firm, damp.

2

SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, silty, contains cobbles, subangular to subrounded, brown, loose to medium dense, damp.

3

At 3.7 m - increased gravel with depth

4

SILT, sandy, fine to medium grained, trace fine to coarse gravel, trace cobbles, dark brown, soft, damp.

5

6

SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, some cobbles, subangular to subrounded, brown, dense, damp to moist.

7

At 7.8 m - increased moisture with depth

8

At 8.7 m - increased gravel with depth

9

10

SAND

BENTONITE

BENTONITE/SLOUGH

NOTES

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH-SK1B

PAGE 2 OF 7

Drilling Contractor	JR Drilling	Date Monitored	2019 03 28	Project Number:	631283
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1586.478	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1587.540	Date Drilled:	2018 12 18
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5558637.329	Easting: 652680.728	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW-SK1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, some cobbles, subangular to subrounded, brown, dense, damp to moist. *(continued)*						
	At 10.7 m - saturated						
11							
12	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, some silt, subangular to subrounded, brown, medium dense to loose, saturated.						
13	At 12.3 m - decreased silt with depth						
14							
15							BENTONITE/SLOUGH
16	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, subrounded, poorly graded, brown, medium dense, loose, saturated.						
17							
18	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, contains cobbles, trace silt, subangular to subrounded, trace rounded, poorly graded, brown, dense, saturated.						
19							
20							

NOTES

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH-SK1B

PAGE 3 OF 7

Drilling Contractor	JR Drilling	Date Monitored	2019 03 28	Project Number:	631283
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1586.478	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1587.540	Date Drilled:	2018 12 18
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5558637.329	Easting: 652680.728	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: FR_MW-SK1B

Depth in Metres

20 At 20.0 m - decreased silt, increased coarse gravels with depth SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, contains cobbles, trace silt, subangular to subrounded, trace rounded, poorly graded, brown, dense, saturated. *(continued)*

21

22

23

24

25 At 25.3 m - increased fine to coarse gravel, moderately graded

26

27

28

29

30

BENTONITE/SLOUGH

NOTES

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH-SK1B

PAGE 4 OF 7

Drilling Contractor	JR Drilling	Date Monitored	2019 03 28	Project Number:	631283
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1586.478	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1587.540	Date Drilled:	2018 12 18
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5558637.329	Easting: 652680.728	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW-SK1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
30	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, contains cobbles, trace silt, subangular to subrounded, trace rounded, poorly graded, brown, dense, saturated. *(continued)*						
31	At 30.1 m - subrounded, medium dense						
32							
33							
34							
35							BENTONITE/SLOUGH
36							
37							
38	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, contains cobbles, subrounded, moderately to poorly graded, brown, medium dense, saturated.						
39							
40							

NOTES

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH-SK1B

PAGE 5 OF 7

Drilling Contractor	JR Drilling	Date Monitored	2019 03 28	Project Number:	631283
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1586.478	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1587.540	Date Drilled:	2018 12 18
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5558637.329	Easting: 652680.728	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: FR_MW-SK1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
40	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, contains cobbles, subrounded, moderately to poorly graded, brown, medium dense, saturated. *(continued)*						
41							
42							
43							
44							
45							
46							
47							
48							
49	At 48.9 m - increased silt with depth						
50							

BENTONITE/SLOUGH

NOTES

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH-SK1B

PAGE 6 OF 7

Drilling Contractor	JR Drilling	Date Monitored	2019 03 28	Project Number:	631283
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1586.478	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1587.540	Date Drilled:	2018 12 18
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5558637.329	Easting: 652680.728	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

- Solid PVC
- Slotted PVC

Well Name 1: FR_MW-SK1B

Depth in Metres	Soil Description
50	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, contains cobbles, subrounded, moderately to poorly graded, brown, medium dense, saturated. *(continued)*
51	
52	
53	
54	
55	At 55.0 m - subrounded to subangular, some rounded, no cobbles, moderately graded, dense
56	
57	
58	
59	
60	

BENTONITE/SLOUGH

NOTES

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : FR_BH-SK1B

PAGE 7 OF 7

Drilling Contractor	JR Drilling	Date Monitored	2019 03 28	Project Number:	631283
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1586.478	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1587.540	Date Drilled:	2018 12 18
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5558637.329	Easting: 652680.728	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC
Slotted PVC

Well Name 1: FR_MW-SK1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
60	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, contains cobbles, subrounded, moderately to poorly graded, brown, medium dense, saturated. *(continued)*						
61	GRAVEL, silty, possible boulders, subangular to angular, brown, dense, moist to wet.						
62	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, silty, subrounded, moderately graded, brown medium dense, saturated.						
63							
64							
65							
66							
67							
68	BEDROCK, fine grained siltstone/shale-like, dark grey/black, appears weathered (soft).						
69							
70	Bottom of hole at 69.3 m.						

BENTONITE/SLOUGH
BENTONITE
FR_MW-SK1B
SAND

NOTES

DATA ENTRY: KJM

PROJECT No.: 09-1324-1039

RECORD OF MONITORING WELL: 09-01A

SHEET 1 OF 1

LOCATION: East of Old Stream Bed Kilmarnock Alluvium

BORING DATE: October 14, 2009

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp ⊖ W I WI) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		Ground Surface		1584.1							Stickup =0.85 m
0	Barber Rig - DR-24 - 9" Hole Diameter Beck Drilling and Environmental Services Ltd.	Silty SAND, trace gravel, loose, dry, light brown		0.0 1583.6							
		Sandy GRAVEL, trace silt, loose, moist, medium brown		0.5 1582.1							Bentonite
2		Clayey SILT, some sand and gravel, soft, low to medium plasticity, moist, medium brown		2.0 1581.6							
		Sandy GRAVEL, loose, moist, medium brown		2.5							Granular Filter
4											Slotted Section
6											Oct. 16, 2009 ▽
8				1575.7							Slough
		End of MONITORING WELL.		8.4							
10											
12											
14											
16											
18											
20											

DEPTH SCALE

1 : 100

Golder Associates

LOGGED: EA

CHECKED: MB

BOREHOLE 09-1324-1039_LOGS.GPJ CALGARY.GDT 1/11/16

DATA ENTRY: KJM

PROJECT No.: 09-1324-1039

RECORD OF MONITORING WELL: 09-01B

SHEET 1 OF 2

LOCATION: East of Old Stream Bed Kilmarnock Alluvium

BORING DATE: October 14, 2009

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		Ground Surface		1584.1							Stickup =0.76 m
0	Barber Rig - DR-24 - 9" Hole Diameter Beck Drilling and Environmental Services Ltd.	Silty SAND, trace gravel, loose, dry, light brown		0.0 1583.6							
		Sandy GRAVEL, trace silt, loose, moist, medium brown		0.5 1582.1							
2		Clayey SILT, some sand and gravel, soft, low to medium plasticity, moist, medium brown		2.0 1581.6							
		Sandy GRAVEL, loose, moist, medium brown		2.5							Bentonite
4											
6											Oct 16, 2009 ▽
8											
				1574.1							
10		Coarse GRAVEL, trace sand, loose, saturated, grey to medium brown		10.0							Slough
12		--- Some silty sand from 12.5 to 13.0 m									
14											
16											Bentonite
											Slotted Section
18		--- Medium to coarse gravel, light grey to brown from 18.0 to 23.0 m									
											Slough
20		*CONTINUED NEXT PAGE*									

BOREHOLE 09-1324-1039_LOGS.GPJ CALGARY.GDT 1/11/16

DEPTH SCALE

1 : 100

Golder Associates

LOGGED: EA

CHECKED: MB

DATA ENTRY: KJM

PROJECT No.: 09-1324-1039

RECORD OF MONITORING WELL: 09-01B

SHEET 2 OF 2

LOCATION: East of Old Stream Bed Kilmarnock Alluvium

BORING DATE: October 14, 2009

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20	Barber Rig - DR-24 - 9" Hole Diameter Beck Drilling and Environmental Services Ltd.	Coarse GRAVEL, trace sand, loose, saturated, grey to medium brown *(continued)*									Slough
22											
24											
26											
28		--- Silty sand, saturated, medium brown from 28.5 to 29.0 m		1555.1							
		End of MONITORING WELL.		29.0							
30											
32											
34											
36											
38											
40											

BOREHOLE 09-1324-1039_LOGS.GPJ CALGARY.GDT 1/11/16

DEPTH SCALE

1 : 100

Golder Associates

LOGGED: EA

CHECKED: MB

DATA ENTRY: KJM

PROJECT No.: 09-1324-1039

RECORD OF MONITORING WELL: 09-02A

SHEET 1 OF 1

LOCATION: West of Old Stream Bed Kilmarnock Alluvium

BORING DATE: October 15, 2009

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		Ground Surface		1584.7							Stickup =0.82 m
0	Barber Rig - DR-24 - 9" Hole Diameter Beck Drilling and Environmental Services Ltd.	Sandy GRAVEL, coarse gravel, medium grain sand, loose, slightly moist, medium grown --- Increasing sand content from 1.0 to 1.5 m		0.0							
2		--- Decreasing sand content from 3.0 to 3.5 m									Bentonite
4		--- Moist, some silt from 4.5 to 5.0 m									Slough
6		--- Trace silt from 6.5 yo 7.0 m									Bentonite
8		--- Coarse to medium gravel, increasing moisture content at 8.0 m									Oct. 16, 2009 ▽
10											Slotted Section
				1573.2							Slough
		End of MONITORING WELL.		11.5							
12											
14											
16											
18											
20											

BOREHOLE 09-1324-1039_LOGS.GPJ CALGARY.GDT 1/11/16

DEPTH SCALE

1 : 100

Golder Associates

LOGGED: EA

CHECKED: MB

DATA ENTRY: KJM

PROJECT No.: 09-1324-1039

RECORD OF MONITORING WELL: 09-02B

SHEET 1 OF 2

LOCATION: West of Old Stream Bed Kilmarnock Alluvium

BORING DATE: October 15, 2009

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		Ground Surface		1584.7							Stickup =0.67 m
0	Barber Rig - DR-24 - 9" Hole Diameter Beck Drilling and Environmental Services Ltd.	Sandy GRAVEL, coarse gravel, medium grain sand, loose, slightly moist, medium brown		0.0							
		--- Increasing sand content from 1.0 to 1.5 m									
2											
		--- Decreasing sand content from 3.0 to 3.5 m									
4											Bentonite
		--- Moist, some silt from 4.5 to 5.0 m									
6											
		--- Trace silt from 6.5 to 7.0 m									
8											Oct 16, 2009 ▽
		--- Coarse to medium gravel, increasing moisture content at 8.0 m									
10											Slough
				1573.2							
		GRAVEL, trace sand, coarse to medium gravel, loose, saturated, light grey to brown		11.5							
12				1572.2							Bentonite
		Sandy GRAVEL, trace silt, medium to coarse gravel, medium grain sand, loose, saturated, medium brown		12.5 1571.7							
		GRAVEL, trace sand, coarse gravel, loose, saturated, light grey to brown		13.0							
14											
16											
18											
20		*CONTINUED NEXT PAGE*									

BOREHOLE 09-1324-1039_LOGS.GPJ CALGARY.GDT 1/11/16

DEPTH SCALE

1 : 100

Golder Associates

LOGGED: EA

CHECKED: MB

DATA ENTRY: KJM

PROJECT No.: 09-1324-1039

RECORD OF MONITORING WELL: 09-02B

SHEET 2 OF 2

LOCATION: West of Old Stream Bed Kilmarnock Alluvium

BORING DATE: October 15, 2009

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (10 20 30 40)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp W Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20	Barber Rig - DR-24 - 9" Hole Diameter Beck Drilling and Environmental Services Ltd.			1564.2							
		Sandy GRAVEL, some silt, coarse gravel, loose, saturated, medium brown		20.5 1563.7							
		GRAVEL, trace sand, medium to coarse gravel, loose, saturated, light grey to brown		21.0							Slotted Section Sand
22											
24											
26											Slough
28											
30				1554.7							
		End of MONITORING WELL.		30.0							
32											
34											
36											
38											
40											

BOREHOLE 09-1324-1039_LOGS.GPJ CALGARY.GDT 1/11/16

DEPTH SCALE

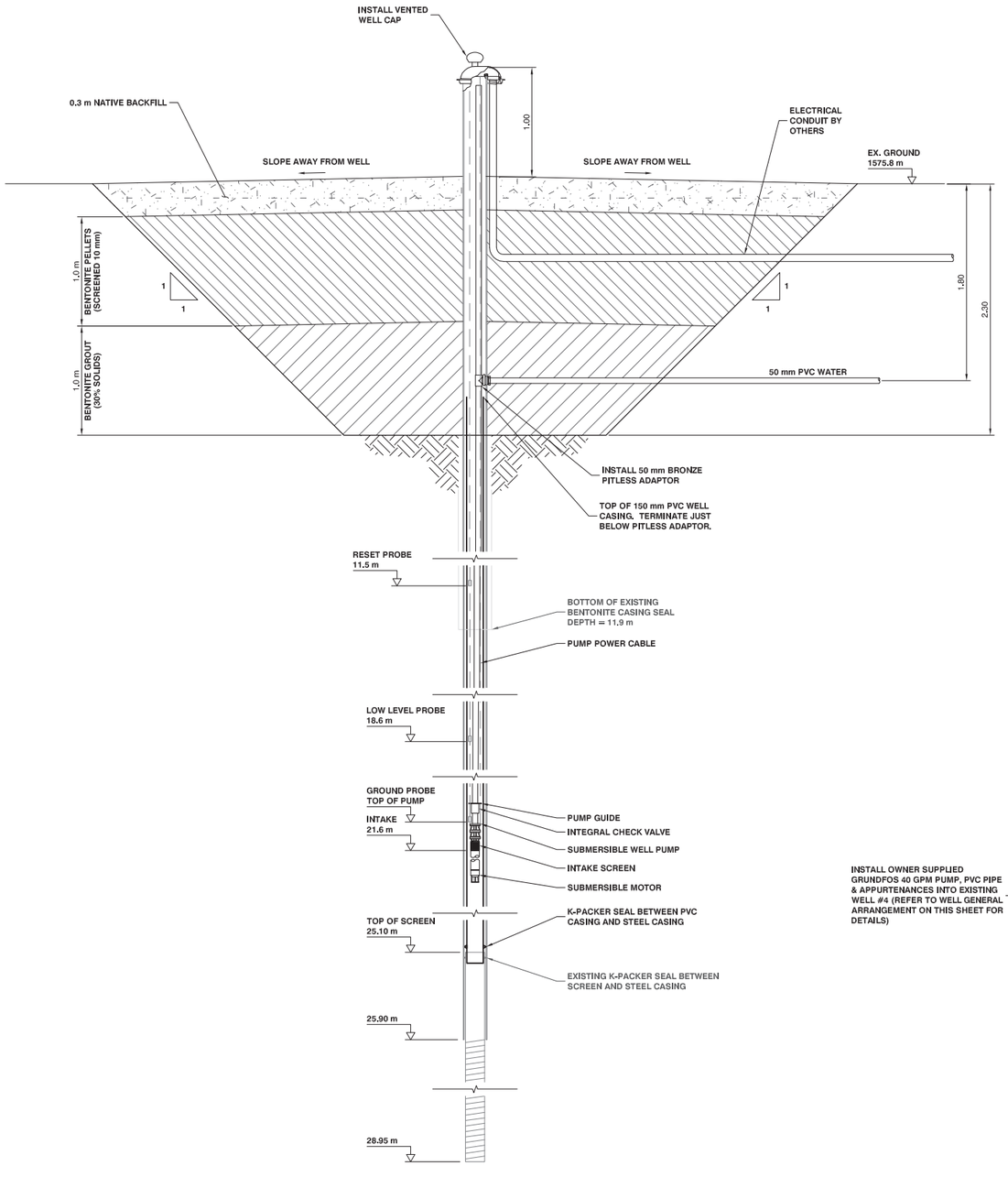
1 : 100

Golder Associates

LOGGED: EA

CHECKED: MB

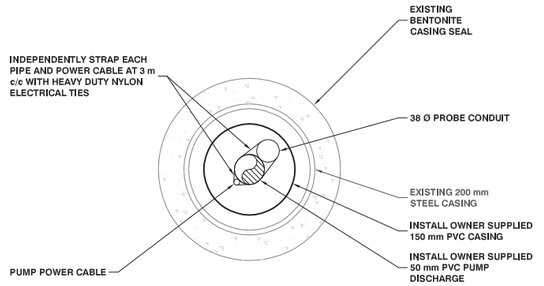
AT FULL SIZE THIS BAR MEASURES 100mm. ALL SCALES REFERENCED TO FULL SIZE.



0 0.2 (1:25) 1m

WELL GENERAL ARRANGEMENT

Scale: 1:25



TYPICAL WELL SECTION

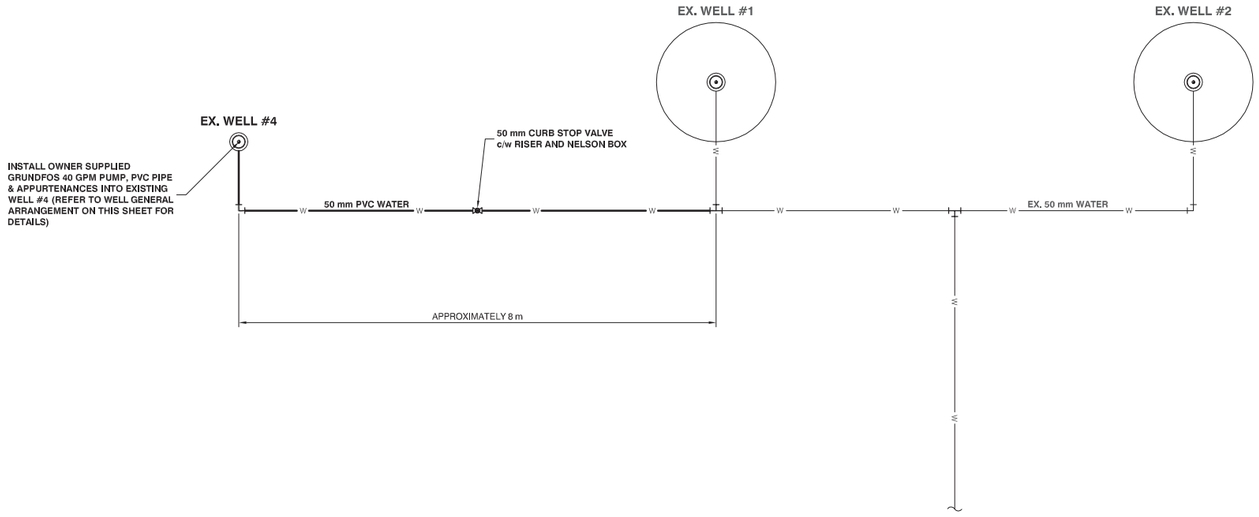
Scale: 1:5

SUMMARY OF WELL LOG

ELEVATION (m GEODETIC)		DEPTH BELOW GROUND (m)		DESCRIPTION OF MATERIAL
FROM	TO	FROM	TO	
1575.8	1572.8	0	3	BROWN ORGANIC SAND, SILT & CLAY (MOIST)
1572.8	1563.6	3	12.2	BROWN SAND w/ PLASTIC CLAY & SILT (MOIST/WET)
1563.6	1560.6	12.2	15.2	BROWN FINE TO MED. GRAIN SAND (WATER BEARING)
1560.6	1557.5	15.2	18.3	BROWN MED. TO COARSE GRAIN SAND (WATER BEARING)
1557.5	1554.5	18.3	21.3	BROWN MED. TO COARSE GRAIN SAND (MOIST, NO FLOW)
1554.5	1551.4	21.3	24.4	BROWN SAND w/ SOME GRAVEL, WATER BEARING (GOOD YIELD)
1551.4	1548.4	24.4	27.4	BROWN SAND, WATER BEARING (GOOD YIELD)
1548.4	1546.85	27.4	28.95	BROWN SAND w/ SOME GRAVEL, WATER BEARING (GOOD YIELD)

NOTES:

1. WELL DISCHARGE PIPNG TO BE FULLY RESTRAINED (EVERY JOINT) BETWEEN PITLESS ADAPTER UNIT AND SUPPLYMAIN.
2. ALL PIPING TO HAVE 1.8m COVER FOR FROST PROTECTION.



PLAN

Scale: 1:50

ISSUED INFORMATION	Issued for	Issue	Date	Issued By
	Reference			
	Approvals			
	Tender	T0	JAN.11/13	MHF
	Permits			
	Construction			
	Record Drawings			

REVISION INFORMATION	Rev. No.	Date	Designed	Drawn	Checked	Description of Revision
	0	JAN.11/13	MHF	MRM		ISSUED FOR TENDER

Rev. No.	Date	Designed	Drawn	Checked	Description of Revision

Seal

KERR WOOD LEIDAL consulting engineers

FORDING RIVER OPERATIONS
GREEN HOUSE WATER SUPPLY
WELL #4

KWL Project No.: 008-172 Scale: AS SHOWN

Sheet: 1 of 1 Rev. No.: 0

SW1 Drawing Number

Client: TECH COAL LTD.

SAVED 2013-01-11 12:06:50 PM
O:\0000-0099\008-172\500-Drawings\008-172 Well Design.dwg

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR10A

PAGE 1 OF 4

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2021 05 06	Project Number:	666653
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1551.374	Borehole Logged By:	MM/GG
Borehole Dia. (m)	0.10	Top of Casing Elev. (m)	1552.660	Date Drilled:	2021 04 21
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552811.914	Easting: 655324.144	Log Typed By:	VL

Drilling Legend: Sample Interval; Vibrasonic

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC; Slotted PVC

Well Name 1: RG_MW_FR10A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	SILT, some sand, fine grained, some clay, brown, soft, non-plastic, moist, contains organics (roots, grass).					100
1	Below 0.9 m - wet.			10A-01		
2						
3				10A-02		90
4	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, some silt, well graded, brown/grey, loose, wet.					
5						
6	At 5.8 m - 0.15 m thick layer of sand. SILTY GRAVEL, fine to coarse gravel, subrounded to rounded, some sand, fine to coarse grained, well graded, brown/grey, medium dense, wet.					90
7	At 7.0 m - 0.15 m thick layer of sand.			10A-03		
8	At 8.2 m - 0.15 m thick layer of sand.					
9						100
10	SILT, some sand, fine grained, some clay, dark grey, soft, low plasticity, layers of clay with medium plasticity.					

CONCRETE

BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2021 05 19 Print Date:2021-09-14

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR10A

PAGE 2 OF 4

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2021 05 06	Project Number:	666653
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1551.374	Borehole Logged By:	MM/GG
Borehole Dia. (m)	0.10	Top of Casing Elev. (m)	1552.660	Date Drilled:	2021 04 21
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552811.914	Easting: 655324.144	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale
Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR10A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
10	SILT, some sand, fine grained, some clay, dark grey, soft, low plasticity, layers of clay with medium plasticity. *(continued)*			10A-04		
11						
12	SILTY GRAVEL, fine to coarse gravel, subangular, some sand, fine to coarse grained, containing cobbles (70-120 mm), brown, dense, non-plastic, wet.				50	
13						
14				10A-05		
15	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, angular to subrounded, some silt, containing cobbles, brown, loose, wet.				10	
16						
17						
18	Between 18.0 m and 21.0 m - limited recovery, washed gravel and cobbles returned.				10	
19						
20						

BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2021 05 19 Print Date:2021-09-14

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR10A

PAGE 3 OF 4

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2021 05 06	Project Number:	666653
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1551.374	Borehole Logged By:	MM/GG
Borehole Dia. (m)	0.10	Top of Casing Elev. (m)	1552.660	Date Drilled:	2021 04 21
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552811.914	Easting: 655324.144	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR10A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
20	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, angular to subrounded, some silt, containing cobbles, brown, loose, wet. *(continued)*						
21	Between 21.0 m and 24.1 m - limited recovery, washed gravel and cobbles, sand, medium to coarse grained.					10	
22							
23							
24	Between 24.1 m and 27.1 m - no recovery.					0	
25							
26							
27	At 27.1 m - subangular, grey, medium dense.			10A-06			
	SILT, some gravel, fine to coarse, angular, trace sand, dark grey, dense, non-plastic, damp.						
28							
29							
30							

BENTONITE

SAND

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2021 05 19 Print Date:2021-09-14

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR10A

PAGE 4 OF 4

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2021 05 06	Project Number:	666653
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1551.374	Borehole Logged By:	MM/GG
Borehole Dia. (m)	0.10	Top of Casing Elev. (m)	1552.660	Date Drilled:	2021 04 21
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552811.914	Easting: 655324.144	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

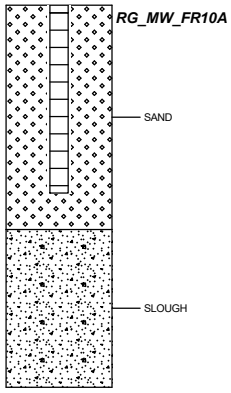
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR10A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
30	BEDROCK, sandstone, fine, grey, competent, soft-medium.					70	
31							
32							
33	Bottom of hole at 33.2 m.						
34							
35							
36							
37							
38							
39							
40							



NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2021 05 19 Print Date:2021-09-14

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR10B

PAGE 1 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2021 05 06	Project Number:	666653
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1551.296	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1552.549	Date Drilled:	2021 04 22
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552813.242	Easting: 655323.432	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR10B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SILT, some sand, fine grained, trace clay, dark brown, soft, non-plastic, moist, contains organics (roots).					100	
1	Below 0.9 m - wet.						
2							
3						70	
4	Below 3.7 m - some gravel, fine to coarse, subrounded, very soft/loose.						
5	SAND and GRAVEL, fine to coarse grained sand, fine gravel, subrounded to rounded, some silt, brown, loose, wet.						
6	SILTY GRAVEL, fine to coarse gravel, subrounded to rounded, some sand, fine to coarse grained, well graded, brown/grey, medium dense, wet.					90	
7							
8							
9	SILT, some sand, fine grained, some clay, dark grey, soft, low plasticity, layers of clay with medium plasticity.					100	
10							

CONCRETE

BENTONITE

NOTES

QA/QC: LLH 2021 05 19 Print Date:2021-09-14

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR10B

PAGE 2 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2021 05 06	Project Number:	666653
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1551.296	Borehole Logged By:	GG
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1552.549	Date Drilled:	2021 04 22
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552813.242	Easting: 655323.432	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale
Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR10B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
10	SILT, some sand, fine grained, some clay, dark grey, soft, low plasticity, layers of clay with medium plasticity. *(continued)*					
11	SILTY GRAVEL, fine to coarse gravel, subangular to subrounded, some sand, fine to coarse grained, containing cobbles, dark brown, medium dense, wet.					
12						80
13						
14						
15	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, angular to subrounded, some silt, containing cobbles, brown, loose, wet.					20
16						
17						
18	Bottom of hole at 18.0 m.					
19						
20						

BENTONITE
RG_MW_FR10B
SAND

NOTES

QA/QC: LLH 2021 05 19 Print Date:2021-09-14

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR10C

PAGE 1 OF 1

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2021 05 06	Project Number:	666653
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1551.296	Borehole Logged By:	MM
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1552.583	Date Drilled:	2021 04 22
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552814.132	Easting: 655322.955	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR10C

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SILT, some sand, fine grained, trace clay, brown, soft, non-plastic, moist, contains organics.					75	
4.3	SAND and GRAVEL, fine to coarse grained sand, fine gravel, subrounded to rounded, some silt, brown, loose, wet.						
6.4	Bottom of hole at 6.4 m.						

CONCRETE
BENTONITE
RG_MW_FR10C
SAND
BENTONITE

NOTES

QA/QC: LLH 2021 05 19 Print Date:2021-09-14

wood.

TEL: FAX:

BOREHOLE NO: **MW18-02**

PROJECT NO: CW231201

CLIENT: Teck Fording River Operations	CONTRACTOR: Val's Drilling Ltd.
PROJECT NAME: Teck FRO-SP2 Swift- Primary & Secondary Ponds	DRILL RIG: Mobile B54
PROJECT LOCATION: Elkford BC	DRILL METHOD / DIA.: Odex (Air Rotary) / 6.25"

NORTHING: 5558163.4	DATUM: NAD 83 UTM Zone 11	GROUND ELEV.: *not surveyed*
EASTING: 652258.9	STICKUP HEIGHT: 1.14 m	CASING ELEV.: 1599.81 m

SAMPLE TYPES: Shelby Tube; No Recovery; SPT Test (N); Grab Sample; Split-Pen; Core

BACKFILL TYPES: Bentonite; Pea Gravel; Slough; Grout; Drill Cuttings; Sand

Depth (m)	SOIL DESCRIPTION	SAMPLE TYPE	SAMPLE NO
0	CLAY and Silt with some fine Sand and minor Gravel (CL/ML), low plasticity, dry, brown		
1.52 m	CLAY and GRAVEL, with some Silt (GC-CL), low plasticity, dry, brown		
2.74 m	CLAY and SILT (low plasticity) with some fine Sand and Gravel (angular - 20%) (GC/GM), damp, dark brown		
4.88 m	BEDROCK		
7.62 m	**End of Borehole @ 7.62m**		

INSTALLATION OR BACKFILL DETAILS / NOTES

Stick Up

Grout/cement

Bentonite

Fines blown out of sample bucket. Soil description accounted for blown out fines.

Sand

Screen

Bentonite chips hydrated

Switched to 3.25" drill bit for rock.

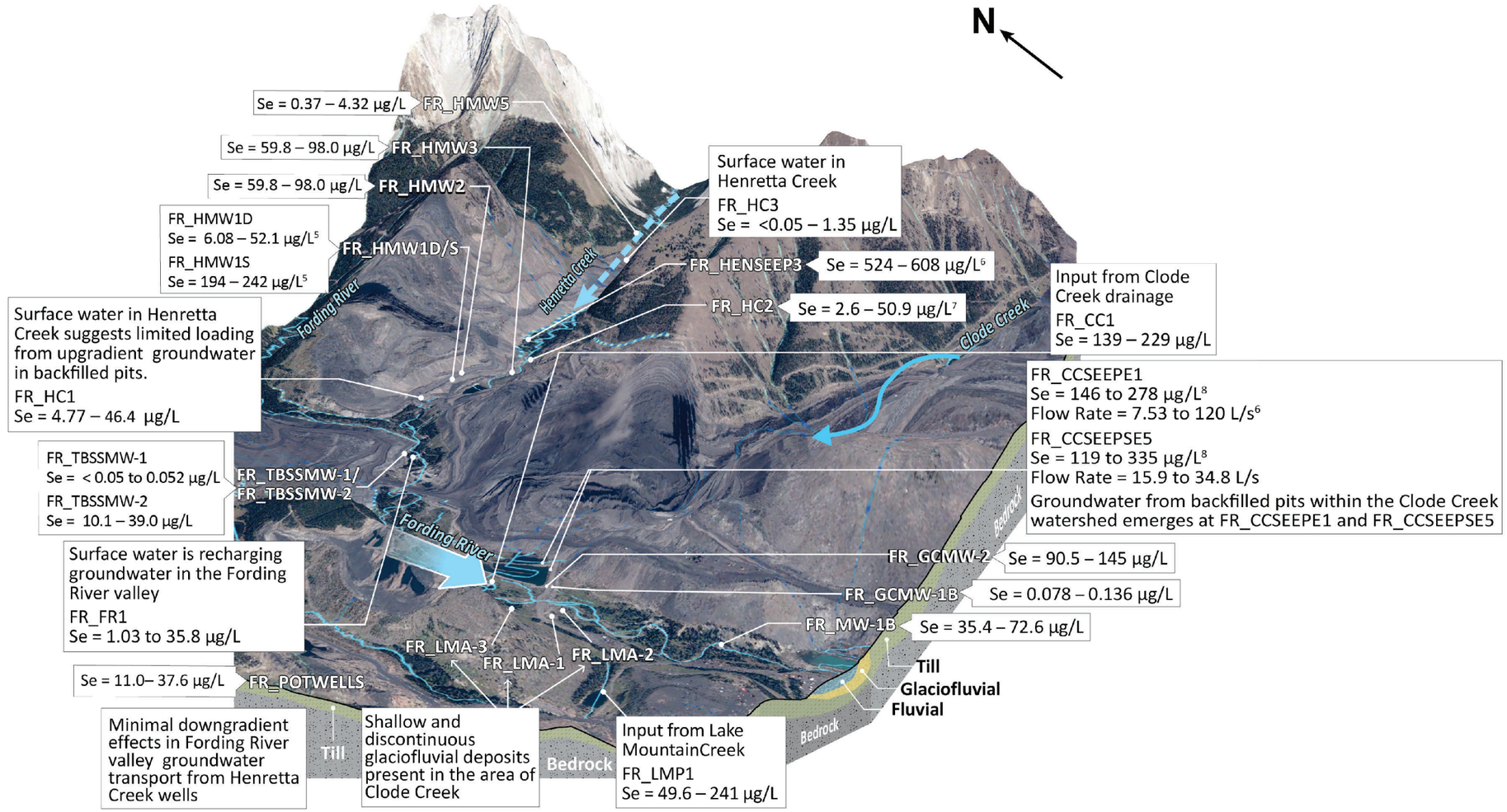
ENTERED BY: JD	COMPLETION DEPTH: 7.6 m
LOGGED BY: JD	DRILL DATE: 01-Nov-2018
REVIEWED BY:	

Attachment II: Block Diagrams

Diagram FR-01: Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways of Order Constituents at FRO – Lower Fording River and Henretta Creek

Diagram FR-02: Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways of Order Constituents at FRO – Lower Fording River and Study Area 1

Diagram FR-03: Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways of Order Constituents at FRO – Fording River, Porter Creek and Study Area 1



Flow Legend

- Main Stem Down-Valley Groundwater
- Upland or Tributary Groundwater
- Surface Water

NOTES:
1. Original in colour.
2. All concentrations and flow rates shown are for range observed in 2021 unless otherwise stated.
3. Subsurface geology is not to scale.
4. Vertical exaggeration 2x for topographic profile.
5. Not sampled in Q4 2021.
6. Range based on two wevents in 2021.
7. Range based on samples collected between 2011 and 2016.
8. Removed anomalous result May 20, 2021.

References:
1. Graphics from Brick Tudor Studios, LLC.
2. Bedrock geology derived from Monahan, 2000, BC Government.

Revisions:
0 - CW - 20220225 - DRAFT - CH

CLIENT: Teck Coal Limited

PROJECT LOCATION: Elk Valley, BC

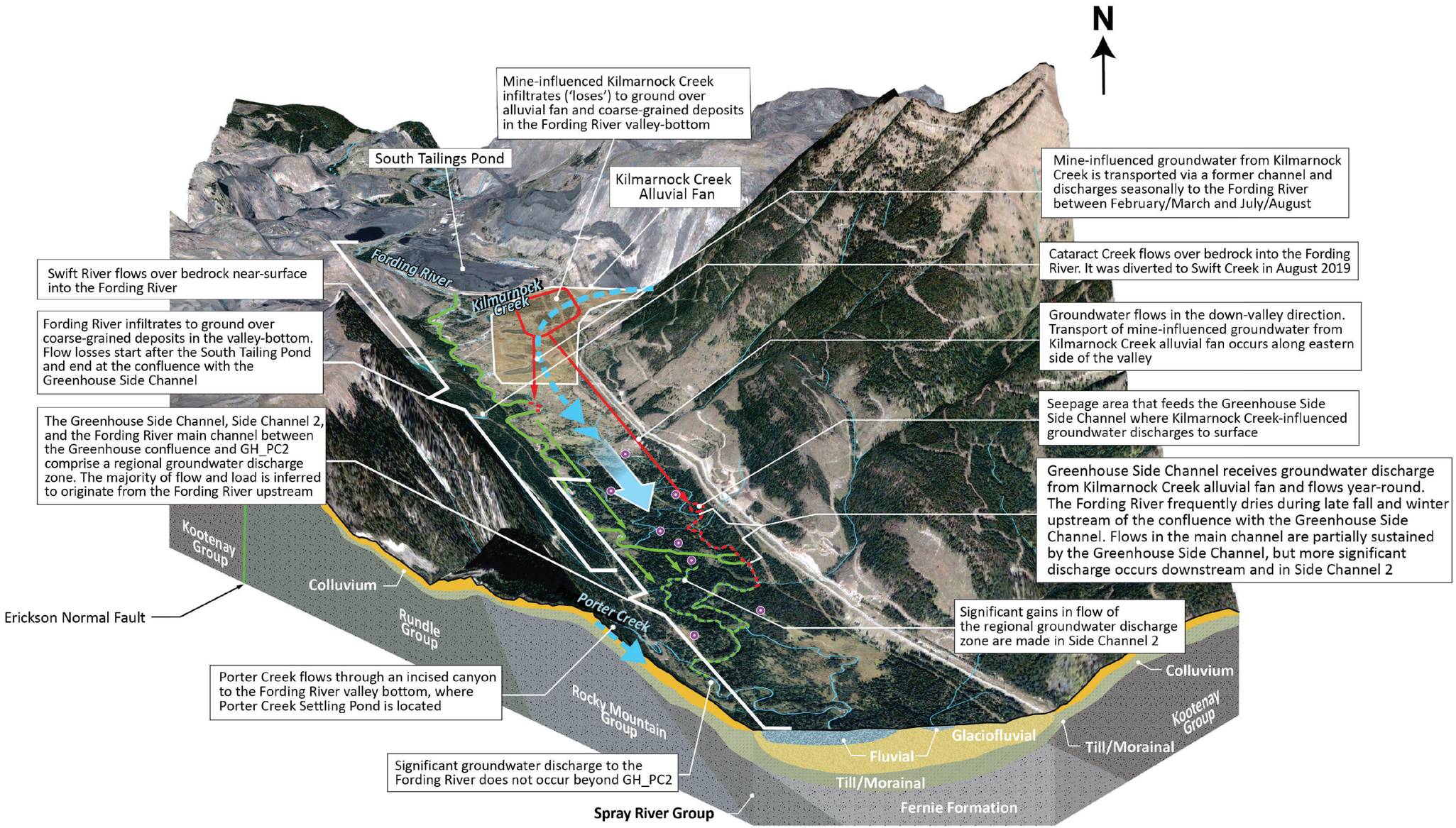
SNC·LAVALIN

Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways of Order Constituents at FRO - Lower Fording River and Henretta Creek

BY: CW	SCALE:	DATE: 2022-03-02	REF No:
CHK'D: CH	Proj Coord Sys:		**DIAGRAM FR-01**

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-BlockDiagram_FR1.mxd



Flow Legend

- Main Stem Down-Valley Groundwater
- Upland or Tributary Groundwater
- Inferred Transport Pathway of Kilmarnock-Influenced Groundwater
- Inferred Transport Pathway of Fording-Influenced Groundwater
- Kilmarnock Creek Recharge Zone
- Kilmarnock Creek Discharge Zone
- Fording River Recharge Zone
- Fording River Discharge Zone
- Nested Monitoring Well (2021 MBI)

NOTES:
1. Original in colour.
2. Subsurface geology is not to scale.
3. Vertical exaggeration 2x for topographic profile.
4. Groundwater transport pathways are conceptual only.

References:
1. Graphics from Brick Tudor Studios, LLC.
2. Bedrock geology derived from Monahan, 2000, BC Government.

Revisions:
0 - CW - 20220225 - DRAFT - CH
1 - CW - 20220315 - FINAL- CH

CLIENT: Teck Coal Limited

PROJECT LOCATION: Elk Valley, BC

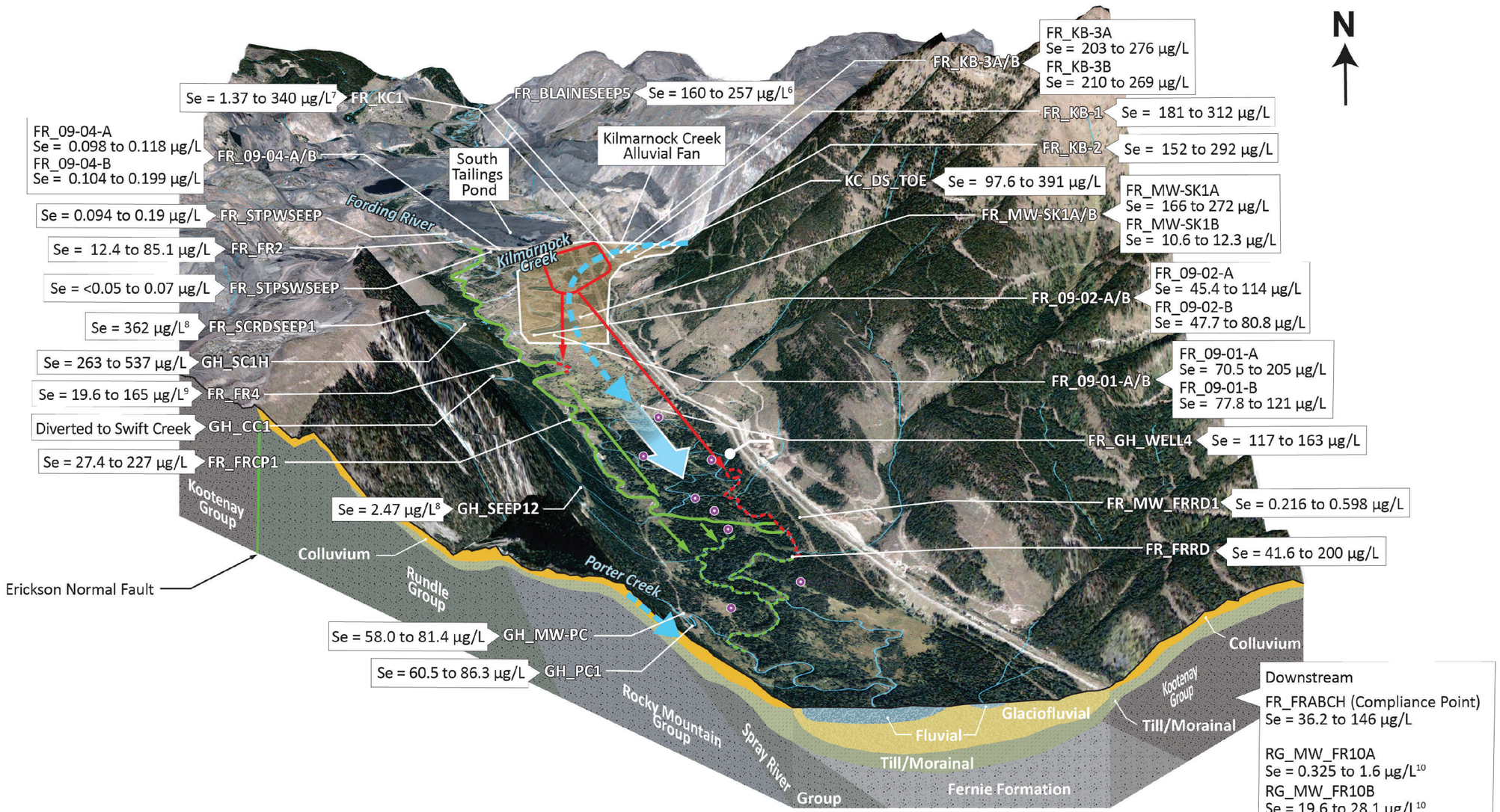
SNC·LAVALIN

Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways at FRO - Lower Fording River and Study Area 1

BY: CW	SCALE:	DATE: 2022-03-15	REF No:
CHK'D: CH	Proj Coord Sys:		**DIAGRAM FR-02**

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-BlockDiagram_FR02.mxd



Flow Legend

- Main Stem Down-Valley Groundwater
- Upland or Tributary Groundwater
- Nested Monitoring Well (2021 MBI)
- Inferred Transport Pathway of Kilmarnock-Influenced Groundwater
- Inferred Transport Pathway of Fording-Influenced Groundwater
- Kilmarnock Creek Recharge Zone
- Kilmarnock Creek Discharge Zone
- Fording River Recharge Zone
- Fording River Discharge Zone

NOTES:
1. Original in colour.
2. All concentrations shown are for 2021 minimum and maximum unless otherwise stated.
3. Subsurface geology is not to scale.
4. Vertical exaggeration 2x for topographic profile.
5. Groundwater transport pathways are conceptual only.
6. Range based on two events in 2021.
7. AWTF and CWD commissioned in Q4 2021.
8. Only one sample collected in 2021.
9. Removed anomalous result Nov 12, 2021.
10. Not sampled in Q1 2021.

References:
1. Graphics from Brick Tudor Studios, LLC.
2. Bedrock geology derived from Monahan, 2000, BC Government.

Revisions:
0 - CW - 20220225 - DRAFT - CH
1 - CW - 20220315 - FINAL- CH

CLIENT: Teck Coal Limited

PROJECT LOCATION: Elk Valley, BC

SNC·LAVALIN

Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways of Order Constituents at GHO - Fording River, Porter Creek, and Study Area 1

BY: CW	SCALE:	DATE: 2022-03-15	REF No:
CHK'D: CH	Proj Coord Sys:		DIAGRAM FR-03

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

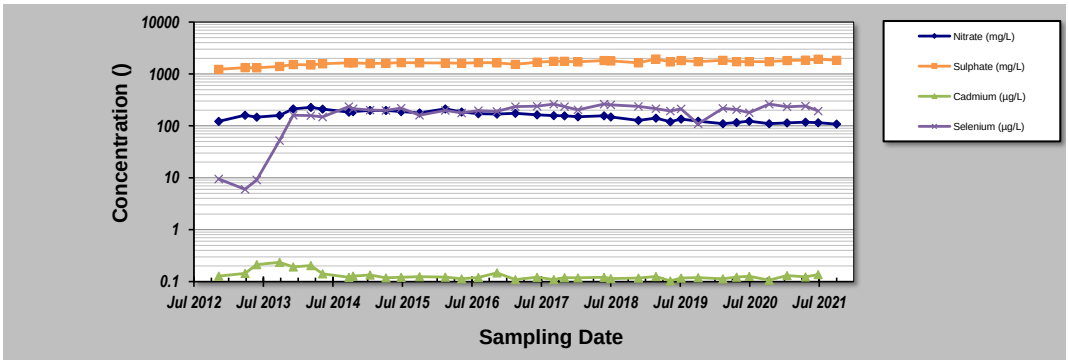
MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-BlockDiagram_FR03.mxd

Attachment III: Mann-Kendall Analyses

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	01-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_HMW1S
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_HMW1S CONCENTRATION						
1	9-Nov-12	122	1230	0.128	9.51			
2	28-Mar-13	160	1330	0.144	6			
3	29-May-13	147	1320	0.213	9.07			
4	27-Sep-13	159	1400	0.235	51.9			
5	9-Dec-13	212	1520	0.192	160			
6	12-Mar-14	227	1490	0.203	158			
7	13-May-14	211	1570	0.141	149			
8	30-Sep-14	184	1640	0.121	236			
9	22-Oct-14	188	1640	0.128	215			
10	19-Jan-15	199	1580	0.134	202			
11	14-Apr-15	199	1610	0.118	199			
12	3-Jul-15	189	1660	0.121	220			
13	9-Oct-15	177	1640	0.124	161			
14	22-Feb-16	212	1620	0.122	199			
15	18-May-16	185	1610	0.113	178			
16	15-Aug-16	172	1650	0.12	197			
17	22-Nov-16	169	1640	0.147	191			
18	27-Feb-17	174	1530	0.109	236			
19	22-Jun-17	163	1690	0.121	239			
20	18-Sep-17	158	1750	0.109	262			
21	14-Nov-17	156	1760	0.119	236			
22	25-Jan-18	150	1710	0.118	203			
23	12-Jun-18	157	1810	0.121	262			
24	18-Jul-18	149	1790	0.114	255			
25	11-Dec-18	127	1640	0.117	238			
26	13-Mar-19	141	1940	0.125	214			
27	29-May-19	120	1710	0.103	194			
28	25-Jul-19	135	1810	0.117	213			
29	23-Oct-19	123	1730	0.119	109			
30	2-Mar-20	110	1830	0.113	218			
31	14-May-20	116	1720	0.122	205			
32	20-Jul-20	123	1720	0.126	179			
33	2-Nov-20	110	1720	0.107	263			
34	5-Feb-21	114	1820	0.131	234			
35	14-May-21	118	1850	0.123	242			
36	20-Jul-21	115	1930	0.137	194			
37	25-Oct-21	108	1830					
38								
39								
40								
Coefficient of Variation:		0.22	0.10	0.23	0.37			
Mann-Kendall Statistic (S):		-428	479	-205	236			
Confidence Factor:		>99.9%	>99.9%	99.8%	99.9%			
Concentration Trend:		Decreasing	Increasing	Decreasing	Increasing			



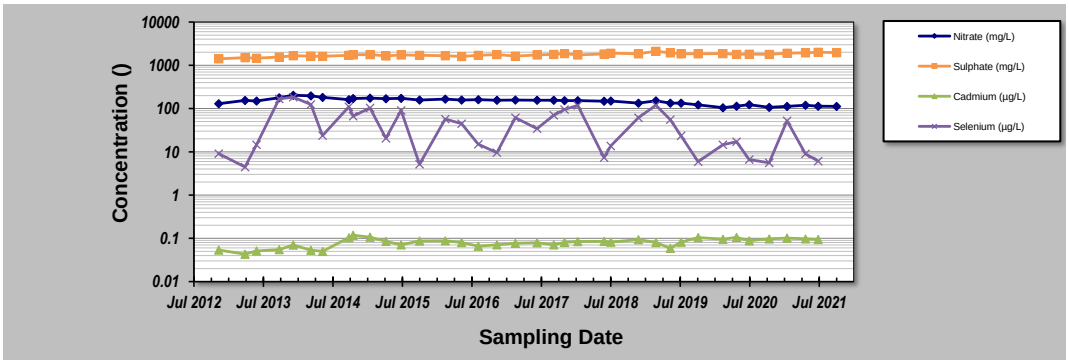
Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	01-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_HMW1D
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_HMW1D CONCENTRATION						
1	9-Nov-12	129	1410	0.054	9.1			
2	28-Mar-13	154	1500	0.043	4.46			
3	28-May-13	149	1460	0.051	14.6			
4	25-Sep-13	177	1560	0.055	168			
5	9-Dec-13	203	1660	0.07	184			
6	12-Mar-14	197	1640	0.053	125			
7	13-May-14	181	1620	0.05	23.8			
8	30-Sep-14	161	1710	0.103	110			
9	22-Oct-14	170	1760	0.118	66.5			
10	19-Jan-15	175	1780	0.107	103			
11	14-Apr-15	169	1650	0.085	20.5			
12	3-Jul-15	172	1730	0.071	90.7			
13	9-Oct-15	157	1710	0.087	5.17			
14	22-Feb-16	165	1660	0.088	57.5			
15	18-May-16	157	1600	0.08	44.8			
16	15-Aug-16	160	1700	0.066	15			
17	22-Nov-16	156	1780	0.071	9.55			
18	27-Feb-17	157	1630	0.0769	61.5			
19	22-Jun-17	155	1730	0.079	34.3			
20	18-Sep-17	155	1800	0.071	70.1			
21	14-Nov-17	153	1860	0.081	95.6			
22	24-Jan-18	152	1740	0.084	118			
23	12-Jun-18	148	1830	0.085	7.31			
24	18-Jul-18	150	1910	0.082	13.7			
25	11-Dec-18	134	1850	0.0934	61.7			
26	13-Mar-19	151	2110	0.08	119			
27	29-May-19	133	1950	0.059	55.4			
28	25-Jul-19	133	1840	0.082	23.5			
29	23-Oct-19	122	1840	0.104	5.91			
30	2-Mar-20	105	1870	0.095	14.5			
31	14-May-20	113	1790	0.105	17.1			
32	20-Jul-20	123	1810	0.088	6.65			
33	2-Nov-20	107	1790	0.097	5.56			
34	5-Feb-21	112	1900	0.101	52.1			
35	14-May-21	119	1,950	0.0974	8.96			
36	20-Jul-21	114	2010	0.0946	6.08			
37	25-Oct-21	112	1960					
38								
39								
40								
Coefficient of Variation:		0.17	0.09	0.23	0.97			
Mann-Kendall Statistic (S):		-458	447	269	-156			
Confidence Factor:		>99.9%	>99.9%	>99.9%	98.3%			
Concentration Trend:		Decreasing	Increasing	Increasing	Decreasing			



Notes:

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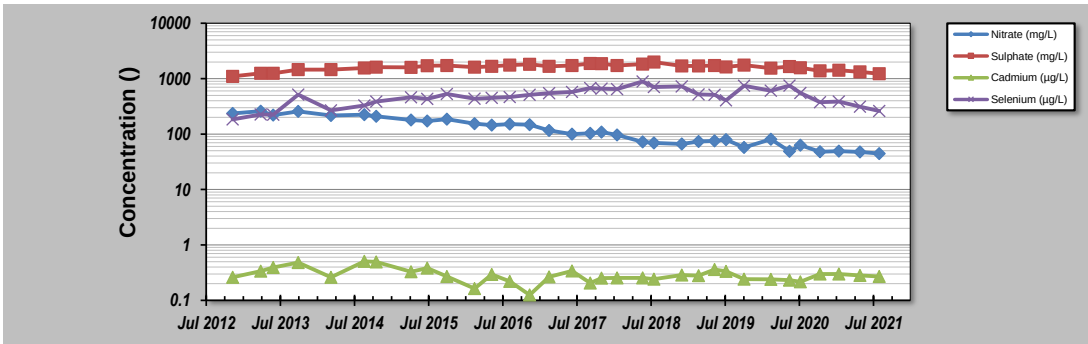
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	01-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_HMW2
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_HMW2 CONCENTRATION						
1	9-Nov-12	236	1100	0.26	184			
2	28-Mar-13	259	1250	0.338	226			
3	29-May-13	221	1250	0.392	224			
4	30-Sep-13	257	1450	0.48	516			
5	12-Mar-14	216	1450	0.261	267			
6	25-Aug-14	224	1560	0.506	329			
7	23-Oct-14	210	1610	0.492	385			
8	14-Apr-15	179	1600	0.327	461			
9	3-Jul-15	172	1710	0.384	430			
10	8-Oct-15	186	1720	0.27	530			
11	23-Feb-16	154	1610	0.164	434			
12	18-May-16	145	1670	0.295	451			
13	15-Aug-16	151	1760	0.22	465			
14	22-Nov-16	148	1820	0.125	509			
15	27-Feb-17	116	1670	0.265	547			
16	21-Jun-17	100	1730	0.339	574			
17	19-Sep-17	103	1880	0.205	674			
18	14-Nov-17	109	1860	0.252	657			
19	30-Jan-18	96.5	1720	0.254	650			
20	6-Jun-18	72	1830	0.254	891			
21	1-Aug-18	69.5	1990	0.241	705			
22	17-Dec-18	66.5	1700	0.287	725			
23	11-Mar-19	73.3	1690	0.28	522			
24	29-May-19	75.2	1730	0.36	510			
25	25-Jul-19	79.3	1620	0.334	407			
26	22-Oct-19	57.5	1760	0.241	745			
27	3-Mar-20	80.5	1550	0.239	607			
28	4-Jun-20	48.9	1650	0.232	747			
29	28-Jul-20	63.2	1570	0.216	554			
30	2-Nov-20	47.9	1380	0.298	376			
31	4-Feb-21	49.2	1420	0.299	385			
32	20-May-21	47.8	1330	0.282	313			
33	23-Aug-21	44.6	1230	0.27	262			
34								
35								
Coefficient of Variation:		0.55	0.13	0.29	0.35			
Mann-Kendall Statistic (S):		-458	51	-107	163			
Confidence Factor:		>99.9%	78.0%	95.0%	99.5%			
Concentration Trend:		Decreasing	No Trend	Prob. Decreasing	Increasing			



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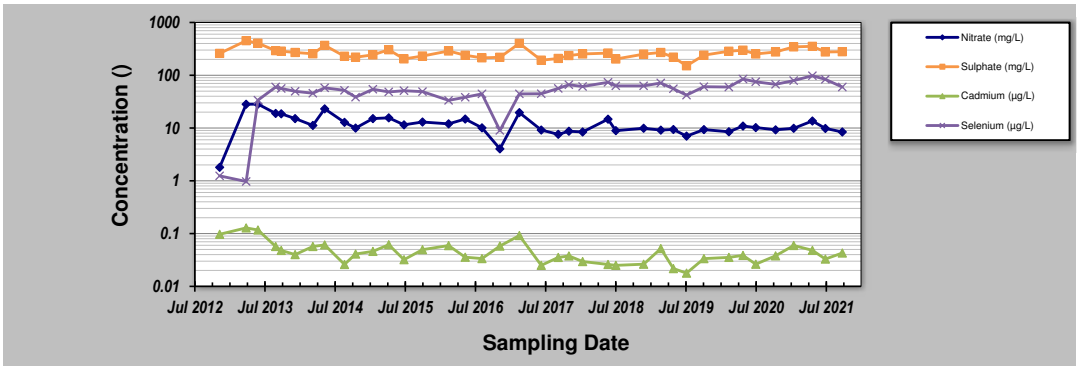
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	01-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_HMW3
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_HMW3 CONCENTRATION						
1	8-Nov-12	1.8	259	0.097	1.24			
2	27-Mar-13	28.2	452	0.128	0.97			
3	28-May-13	28.4	405	0.117	33.7			
4	29-Aug-13	18.9	292	0.057	60			
5	27-Sep-13	18.6	286	0.048	56.2			
6	9-Dec-13	15.1	270	0.04	49.7			
7	12-Mar-14	11.2	255	0.057	45.7			
8	13-May-14	23.1	368	0.061	57.8			
9	25-Aug-14	12.8	229	0.026	51.8			
10	22-Oct-14	9.98	220	0.041	38.5			
11	21-Jan-15	15.1	243	0.046	54.4			
12	14-Apr-15	15.6	304	0.0615	48.3			
13	3-Jul-15	11.5	204	0.032	50.9			
14	8-Oct-15	13	231	0.0496	48.9			
15	22-Feb-16	12	288	0.0592	33.4			
16	19-May-16	14.8	239	0.0357	38.3			
17	15-Aug-16	10.1	214	0.0336	44.4			
18	17-Nov-16	4.03	219	0.058	9.01			
19	27-Feb-17	19.6	402	0.0918	44.4			
20	22-Jun-17	9.17	193	0.025	44.6			
21	19-Sep-17	7.6	208	0.0353	56.3			
22	14-Nov-17	8.7	236	0.0377	66.1			
23	25-Jan-18	8.43	253	0.0295	61.2			
24	7-Jun-18	14.7	263	0.026	73.5			
25	18-Jul-18	8.92	203	0.025	62.9			
26	11-Dec-18	9.9	251	0.0263	62.9			
27	11-Mar-19	9.13	270	0.052	71.3			
28	16-May-19	9.38	220	0.0217	55.5			
29	24-Jul-19	7.02	151	0.0178	42			
30	23-Oct-19	9.33	240	0.0335	60.6			
31	2-Mar-20	8.5	285	0.0354	59.9			
32	15-May-20	10.9	298	0.0386	84.7			
33	21-Jul-20	10.2	253	0.0263	75.2			
34	2-Nov-20	9.25	276	0.0379	67.3			
35	5-Feb-21	9.88	345	0.0595	79.2			
36	14-May-21	13.6	353	0.0482	98			
37	21-Jul-21	9.83	276	0.0329	83.7			
39	18-Oct-21	8.43	279	0.0428	59.8			
40								
Coefficient of Variation:		0.46	0.23	0.53	0.39			
Mann-Kendall Statistic (S):		-259	-29	-221	337			
Confidence Factor:		>99.9%	63.7%	99.7%	>99.9%			
Concentration Trend:		Decreasing	Stable	Decreasing	Increasing			



Notes:

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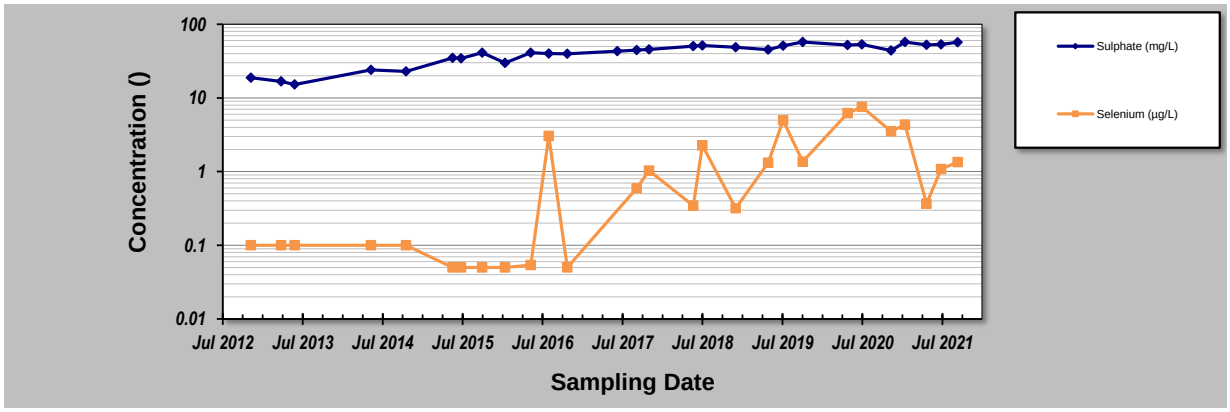
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 01-Feb-22
Facility Name: Teck Coal Regional Groundwater - FRO
Conducted By: AP

Job ID: 635544
Location FR_HMW5

Parameter (units)	Sulphate (mg/L)	Selenium (µg/L)					
Sampling Event	Sampling Date	FR_HMW5 CONCENTRATION					
1	8-Nov-12	18.8	0.1				
2	27-Mar-13	16.7	0.1				
3	28-May-13	15.2	0.1				
4	14-May-14	24	0.1				
5	23-Oct-14	22.9	0.1				
6	25-May-15	34.8	0.05				
7	3-Jul-15	34.5	0.05				
8	8-Oct-15	41.2	0.05				
9	21-Jan-16	29.8	0.05				
10	18-May-16	41	0.054				
11	10-Aug-16	40	3.04				
12	3-Nov-16	39.8	0.05				
13	21-Jun-17	43.2					
14	18-Sep-17	44.5	0.595				
15	14-Nov-17	45.4	1.03				
16	6-Jun-18	50.3	0.345				
17	18-Jul-18	51.4	2.27				
18	18-Dec-18	48.7	0.318				
19	16-May-19	45.2	1.32				
20	24-Jul-19	51.1	4.95				
21	22-Oct-19	57.4	1.36				
22	15-May-20	52.3	6.21				
23	20-Jul-20	53.1	7.55				
24	2-Dec-20	44.1	3.53				
25	4-Feb-21	57.3	4.32				
26	14-May-21	52.6	0.367				
27	20-Jul-21	53.3	1.08				
28	4-Oct-21	56.9	1.34				
29							
30							
Coefficient of Variation:		0.30	1.39				
Mann-Kendall Statistic (S):		296	167				
Confidence Factor:		>99.9%	>99.9%				
Concentration Trend:		Increasing	Increasing				



Notes:

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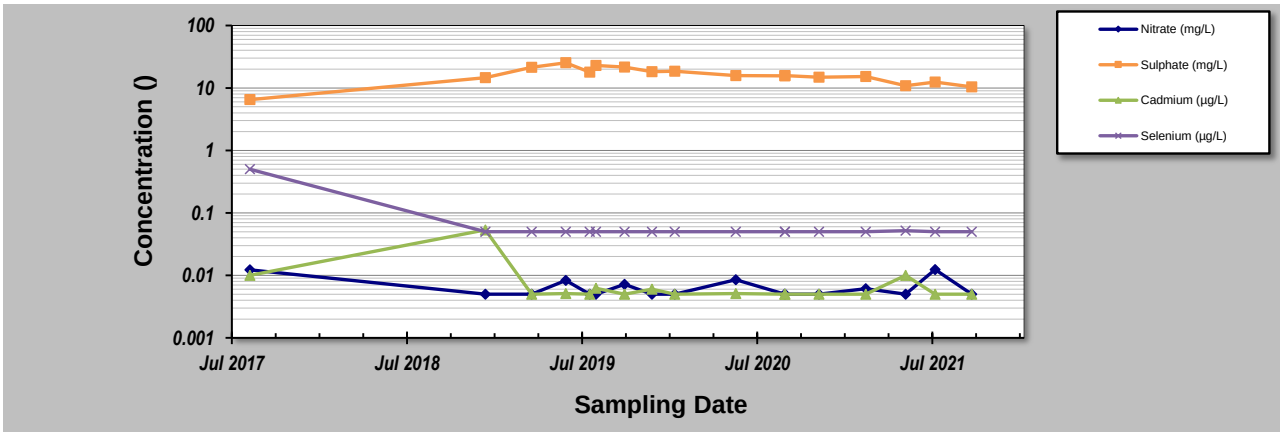
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_TBSSMW-1
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_TBSSMW-1 CONCENTRATION						
1	11-Aug-17	0.0123	6.5	0.01	0.5			
2	19-Dec-18	0.005	14.6	0.0535	0.05			
3	26-Mar-19	0.005	21.4	0.005	0.05			
4	6-Jun-19	0.0083	25.3	0.0051	0.05			
5	26-Jul-19	0.005	18	0.005	0.05			
6	8-Aug-19	0.005	22.9	0.0062	0.05			
7	7-Oct-19	0.0072	21.6	0.005	0.05			
8	4-Dec-19	0.005	18.2	0.006	0.05			
9	21-Jan-20	0.005	18.6	0.005	0.05			
10	28-May-20	0.0085	15.8	0.0051	0.05			
11	8-Sep-20	0.005	15.7	0.005	0.05			
12	8-Sep-20	0.005	15.8	0.005	0.05			
13	19-Nov-20	0.005	14.9	0.005	0.05			
14	25-Feb-21	0.0061	15.2	0.005	0.05			
15	20-May-21	0.005	10.9	0.01	0.052			
16	21-Jul-21	0.0124	12.4	0.005	0.05			
17	6-Oct-21	0.005	10.4	0.005	0.05			
18								
19								
20								
Coefficient of Variation:		0.40	0.18	0.30	0.01			
Mann-Kendall Statistic (S):		3	-29	-1	4			
Confidence Factor:		58.0%	100.0%	50.0%	61.9%			
Concentration Trend:		No Trend	Decreasing	Stable	No Trend			



Notes:

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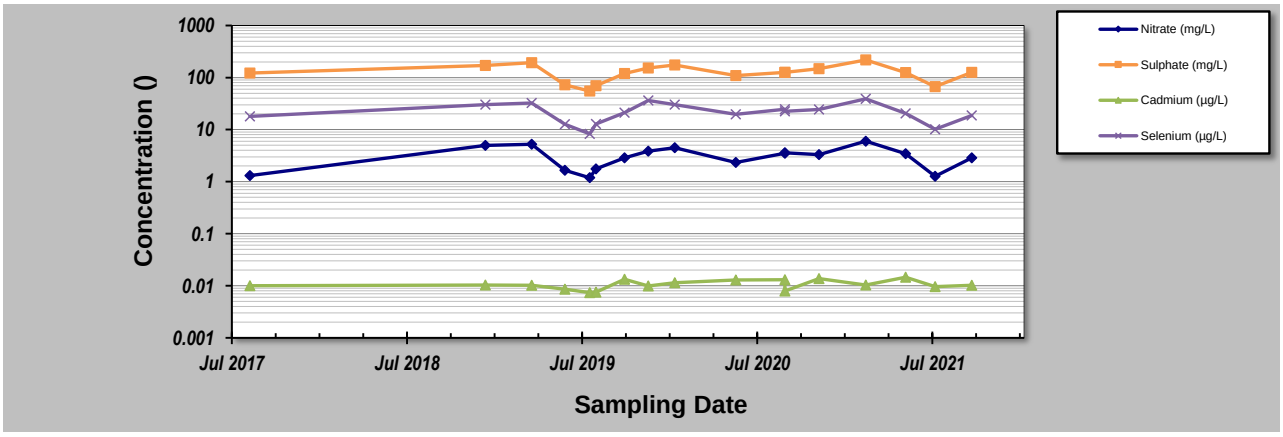
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_TBSSMW-2
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			

Sampling Event	Sampling Date	FR_TBSSMW-2 CONCENTRATION						
1	11-Aug-17	1.31	122	0.01	18			
2	19-Dec-18	4.98	170	0.0103	30.3			
3	26-Mar-19	5.25	193	0.0102	32.4			
4	4-Jun-19	1.66	72.4	0.0086	12.7			
5	26-Jul-19	1.19	55	0.0074	8.28			
6	8-Aug-19	1.76	69.4	0.0075	12.8			
7	7-Oct-19	2.88	119	0.0133	21.1			
8	26-Nov-19	3.86	152	0.0099	36.3			
9	21-Jan-20	4.49	175	0.0114	30.2			
10	28-May-20	2.35	109	0.013	19.6			
11	8-Sep-20	3.5	126	0.0131	24.6			
12	8-Sep-20	3.6	126	0.0079	22.5			
13	19-Nov-20	3.32	148	0.0137	24.5			
14	25-Feb-21	6	218	0.0103	39			
15	20-May-21	3.46	125	0.0146	20.5			
16	21-Jul-21	1.27	66.9	0.0096	10.1			
17	6-Oct-21	2.88	126	0.0102	18.7			
18								
19								
20								
Coefficient of Variation:		0.46	0.36	0.21	0.40			
Mann-Kendall Statistic (S):		9	7	30	0			
Confidence Factor:		62.7%	59.6%	88.2%	48.4%			
Concentration Trend:		No Trend	No Trend	No Trend	Stable			



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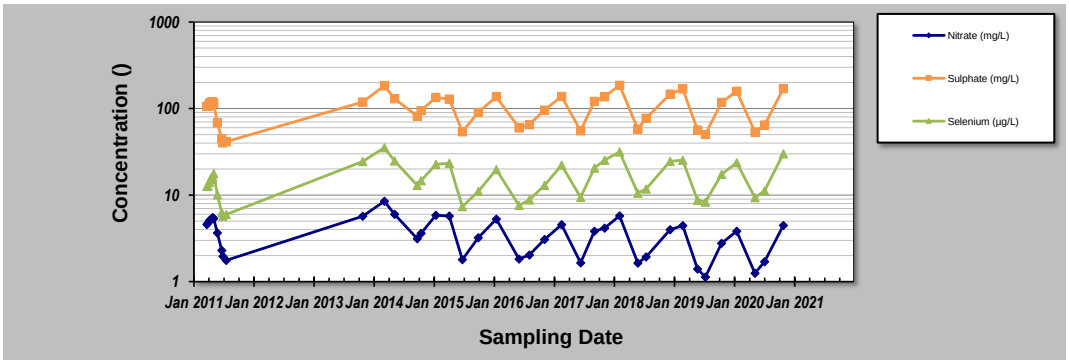
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	01-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_POTWELLS
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Selenium (µg/L)				

Sampling Event	Sampling Date	FR_POTWELLS CONCENTRATION						
1	18-Apr-11	5.32	119	15.9				
2	26-Apr-11	5.51	120	16.2				
3	2-May-11	5.37	114	17.7				
4	24-May-11	3.66	68.4	10.1				
5	20-Jun-11	2.3	44.6	6.29				
6	27-Jun-11	1.96	40.2	5.69				
7	18-Jul-11	1.76	41.3	5.97				
8	31-Oct-13	5.7	119	24.5				
9	13-Mar-14	8.48	183	35.3				
10	14-May-14	5.99	130	24.8				
11	30-Sep-14	3.14	81.6	13				
12	23-Oct-14	3.62	94.6	14.7				
13	22-Jan-15	5.84	135	22.6				
14	14-Apr-15	5.74	129	23.3				
15	3-Jul-15	1.8	53.9	7.34				
16	9-Oct-15	3.21	90.4	11				
17	27-Jan-16	5.29	137	19.7				
18	14-Jun-16	1.82	59.7	7.6				
19	16-Aug-16	2.03	65.2	8.78				
20	17-Nov-16	3.07	96.1	13				
21	2-Mar-17	4.55	138	22.2				
22	27-Jun-17	1.65	55.3	9.4				
23	19-Sep-17	3.82	121	20.5				
24	21-Nov-17	4.15	137	25.4				
25	20-Feb-18	5.75	186	31.6				
26	12-Jun-18	1.64	58.1	10.5				
27	2-Aug-18	1.93	77.2	11.8				
28	27-Dec-18	3.99	147	24.6				
29	14-Mar-19	4.44	169	25.4				
30	13-Jun-19	1.4	56.5	8.73				
31	31-Jul-19	1.13	50.2	8.32				
32	7-Nov-19	2.77	118	17.4				
33	7-Feb-20	3.83	159	23.7				
34	29-May-20	1.25	53.4	9.37				
35	27-Jul-20	1.7	64.5	11.2				
36	19-Nov-20	4.46	170	30				
37	8-Mar-21	5.69	210	37.6				
38	20-May-21	1.93	74.6	11				
39	15-Sep-21	2.06	97.6	12.5				
40	8-Dec-21	4.15	162	24.9				
Coefficient of Variation:		0.49	0.44	0.50				
Mann-Kendall Statistic (S):		-164	116	109				
Confidence Factor:		97.1%	90.9%	89.5%				
Concentration Trend:		Decreasing	Prob. Increasing	No Trend				



Notes:

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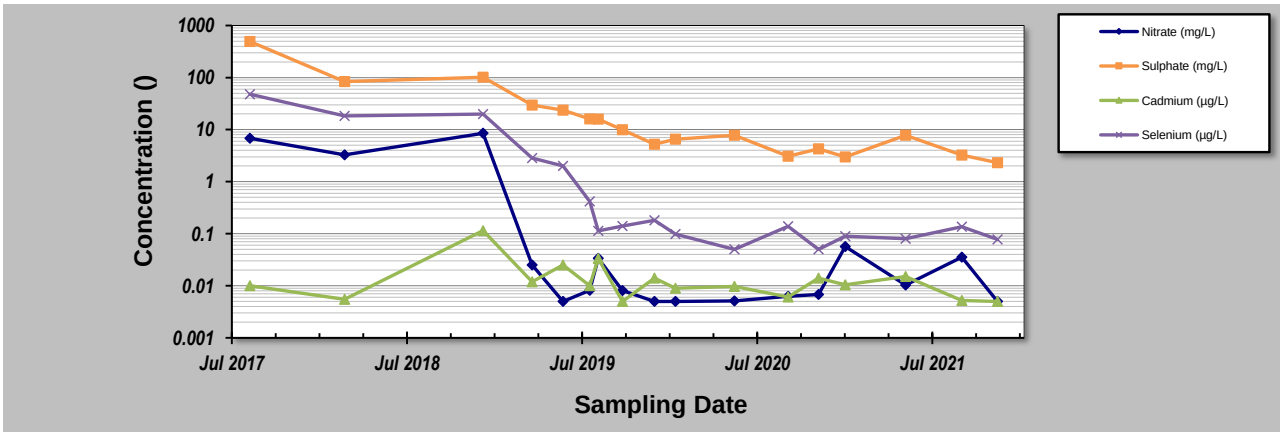
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_GCMW-1B
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_GCMW-1B CONCENTRATION						
1	11-Aug-17	6.84	494	0.01	47.9			
2	26-Feb-18	3.27	83.5	0.0055	18.3			
3	14-Dec-18	8.5	102	0.115	19.8			
4	27-Mar-19	0.025	29.5	0.0119	2.85			
5	31-May-19	0.005	23.6	0.025	2			
6	26-Jul-19	0.0082	16	0.01	0.419			
7	13-Aug-19	0.0338	15.9	0.0334	0.113			
8	3-Oct-19	0.0081	9.91	0.005	0.14			
9	9-Dec-19	0.005	5.25	0.0141	0.182			
10	22-Jan-20	0.005	6.58	0.009	0.098			
11	25-May-20	0.0051	7.82	0.0097	0.05			
12	15-Sep-20	0.0063	3.09	0.0061	0.139			
13	18-Nov-20	0.0068	4.26	0.0141	0.05			
14	13-Jan-21	0.0566	2.98	0.0104	0.09			
15	20-May-21	0.0103	7.8	0.015	0.08			
16	15-Sep-21	0.0355	3.24	0.0052	0.136			
17	29-Nov-21	0.005	2.32	0.005	0.078			
18								
19								
20								
Coefficient of Variation:		1.22	0.44	0.40	0.44			
Mann-Kendall Statistic (S):		17	-14	-9	-9			
Confidence Factor:		95.1%	91.0%	79.2%	79.2%			
Concentration Trend:		Increasing	Prob. Decreasing	Stable	Stable			



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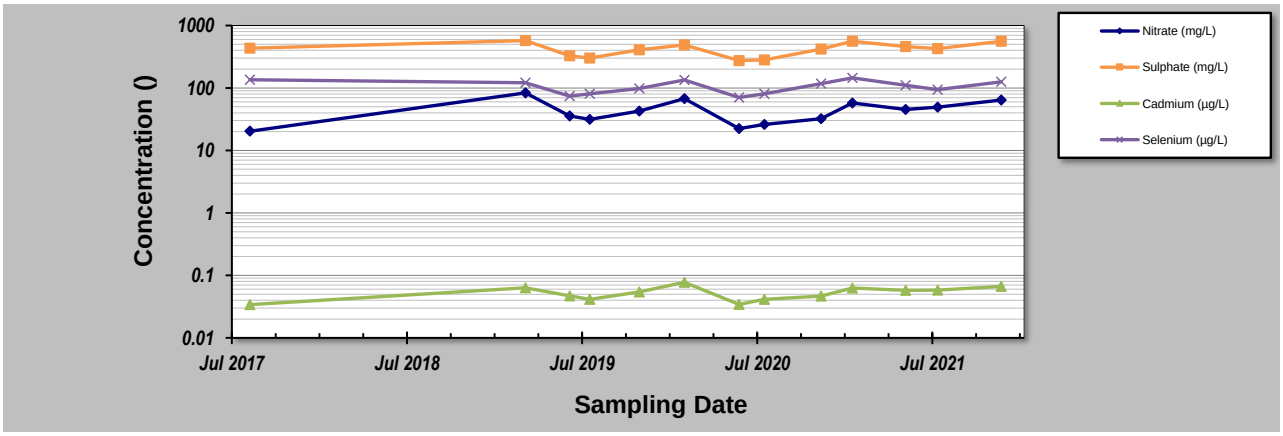
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_GCMW-2
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			

Sampling Event	Sampling Date	FR_GCMW-2 CONCENTRATION						
1	11-Aug-17	20.3	432	0.034	136			
2	13-Mar-19	83.5	574	0.0634	121			
3	14-Jun-19	35.7	327	0.0471	73.8			
4	26-Jul-19	31.3	300	0.0412	80.6			
5	7-Nov-19	42.7	408	0.0541	97.9			
6	10-Feb-20	67.3	489	0.0774	134			
7	4-Jun-20	22.4	275	0.0344	70.4			
8	27-Jul-20	26	280	0.0415	80.5			
9	23-Nov-20	32.2	419	0.0466	117			
10	28-Jan-21	57.2	557	0.0625	145			
11	20-May-21	45.2	460	0.0576	110			
12	26-Jul-21	49.1	426	0.058	93.9			
13	7-Dec-21	64	561	0.0667	126			
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.38	0.25	0.25	0.24			
Mann-Kendall Statistic (S):		10	12	10	4			
Confidence Factor:		86.2%	91.1%	86.2%	64.0%			
Concentration Trend:		No Trend	Prob. Increasing	No Trend	No Trend			



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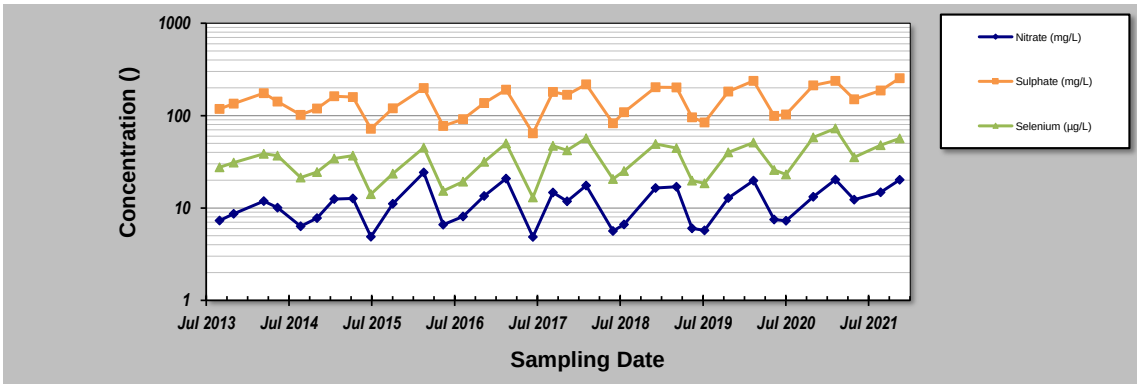
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 02-Feb-22
Facility Name: Teck Coal Regional Groundwater - FRO
Conducted By: AP

Job ID: 635544
Location FR_MW-1B

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Selenium (µg/L)				
Sampling Event	Sampling Date	FR_MW-1B CONCENTRATION						
1	29-Aug-13	7.3	118	27.5				
2	31-Oct-13	8.64	135	31				
3	14-Mar-14	11.9	175	38.6				
4	14-May-14	10.1	142	36.8				
5	25-Aug-14	6.33	102	21.4				
6	6-Nov-14	7.76	119	24.5				
7	21-Jan-15	12.5	162	34.3				
8	14-Apr-15	12.7	159	36.8				
9	3-Jul-15	4.89	71.8	14.1				
10	8-Oct-15	11.1	120	23.5				
11	23-Feb-16	24.2	199	45				
12	19-May-16	6.61	77.4	15.3				
13	16-Aug-16	8.08	91.4	19.3				
14	17-Nov-16	13.5	137	31.7				
15	23-Feb-17	20.8	191	50.2				
16	22-Jun-17	4.87	64.2	13				
17	19-Sep-17	14.7	180	47.1				
18	21-Nov-17	11.8	168	42				
19	14-Feb-18	17.5	218	57				
20	13-Jun-18	5.64	82.5	20.6				
21	1-Aug-18	6.65	109	25.1				
22	19-Dec-18	16.5	203	49.3				
23	22-Mar-19	17	202	44.6				
24	30-May-19	6.01	95.9	19.8				
25	25-Jul-19	5.73	84.5	18.5				
26	7-Nov-19	12.8	182	40.1				
27	27-Feb-20	19.8	238	51.1				
28	29-May-20	7.49	99.5	25.8				
29	21-Jul-20	7.29	103	23.1				
30	19-Nov-20	13.2	212	58.2				
31	25-Feb-21	20.3	238	72.6				
32	20-May-21	12.3	150	35.4				
33	15-Sep-21	14.8	187	47.8				
34	8-Dec-21	20.2	254	56.6				
35								
Coefficient of Variation:		0.45	0.36	0.42				
Mann-Kendall Statistic (S):		117	140	136				
Confidence Factor:		95.7%	98.1%	97.8%				
Concentration Trend:		Increasing	Increasing	Increasing				



Notes:

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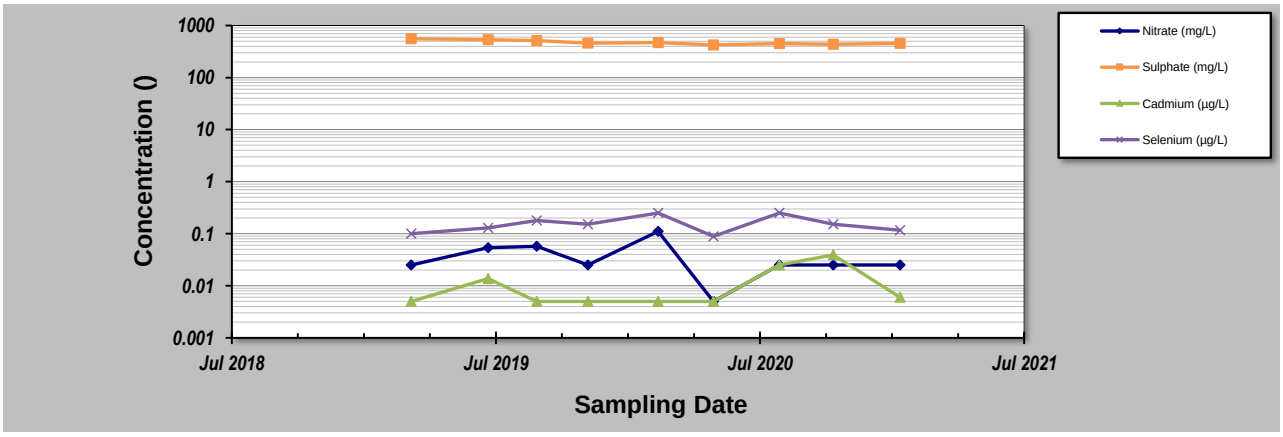
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_MW_NTPSE
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_MW_NTPSE CONCENTRATION						
1	26-Mar-19	0.0250	557.0	0.0050	0.100			
2	11-Jul-19	0.0540	534.0	0.0138	0.129			
3	17-Sep-19	0.0570	514.0	0.0050	0.180			
4	27-Nov-19	0.0250	459.0	0.0050	0.153			
5	4-Mar-20	0.1110	468.0	0.0050	0.250			
6	20-May-20	0.0050	425.0	0.0050	0.089			
7	20-Aug-20	0.0250	452.0	0.0250	0.250			
8	3-Nov-20	0.0250	438.0	0.0392	0.152			
9	4-Feb-21	0.0250	455.0	0.0060	0.117			
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.81	0.08	0.98	0.36			
Mann-Kendall Statistic (S):		-8	-16	8	-3			
Confidence Factor:		80.1%	96.9%	80.1%	59.4%			
Concentration Trend:		Stable	Decreasing	No Trend	Stable			



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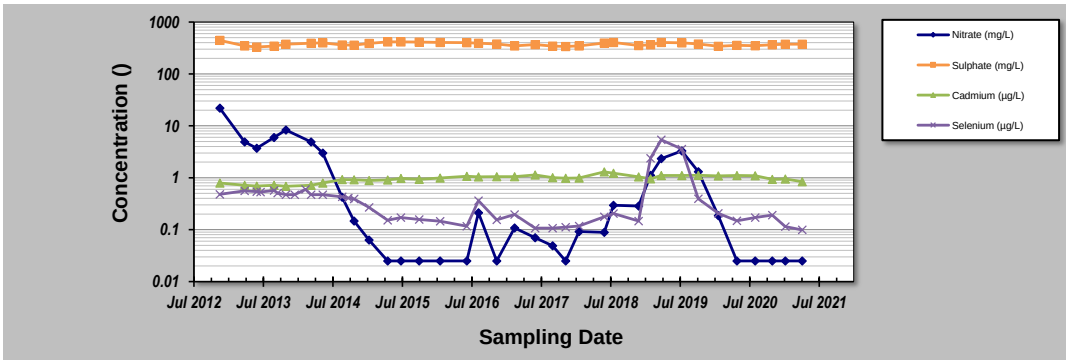
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_09-04-A
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_09-04-A CONCENTRATION						
1	29-May-13	3.7	331	0.695	0.54			
2	19-Jun-13				0.53			
3	29-Aug-13	5.99	345	0.719	0.57			
4	17-Sep-13				0.51			
5	31-Oct-13	8.34	375	0.686	0.47			
6	17-Dec-13				0.47			
7	12-Feb-14				0.6			
8	13-Mar-14	4.9	391	0.715	0.47			
9	14-May-14	2.99	398	0.794	0.47			
10	25-Aug-14	0.424	361	0.923	0.43			
11	26-Sep-14				0.41			
12	27-Oct-14	0.147	360	0.917	0.39			
13	14-Jan-15	0.063	387	0.884	0.27			
14	23-Apr-15	0.025	416	0.913	0.152			
15	2-Jul-15	0.025	414	0.975	0.172			
16	7-Oct-15	0.025	413	0.933	0.157			
17	26-Jan-16	0.025	405	0.991	0.146			
18	15-Jun-16	0.025	402	1.07	0.117			
19	16-Aug-16	0.212	391	1.04	0.361			
20	21-Nov-16	0.025	378	1.05	0.154			
21	23-Feb-17	0.108	347	1.05	0.197			
22	12-Jun-17	0.07	370	1.13	0.107			
23	12-Sep-17	0.049	344	1.01	0.107			
24	21-Nov-17	0.025	337	0.985	0.112			
25	31-Jan-18	0.0921	348	0.986	0.118			
26	13-Jun-18	0.089	396	1.3	0.177			
27	1-Aug-18	0.295	406	1.23	0.204			
28	12-Dec-18	0.286	352	1.04	0.147			
29	13-Feb-19	1.12	366	0.955	2.38			
30	11-Apr-19	2.35	406	1.11	5.38			
31	29-Jul-19	3.29	397	1.11	3.57			
32	24-Oct-19	1.31	377	1.12	0.395			
33	7-Feb-20	0.187	342	1.09	0.207			
34	15-May-20	0.025	357	1.11	0.148			
35	20-Aug-20	0.025	349	1.1	0.172			
36	18-Nov-20	0.025	364	0.936	0.191			
37	27-Jan-21	0.025	375	0.951	0.115			
38	26-Apr-21	0.025	376	0.84	0.099			
39	28-Jul-21	0.03	402	0.802	0.101			
40	2-Nov-21	0.257	373	0.686	0.098			
Coefficient of Variation:		1.90	0.07	0.16	1.88			
Mann-Kendall Statistic (S):		-117	-27	179	-348			
Confidence Factor:		95.0%	64.3%	99.5%	>99.9%			
Concentration Trend:		Prob. Decreasing	Stable	Increasing	Decreasing			



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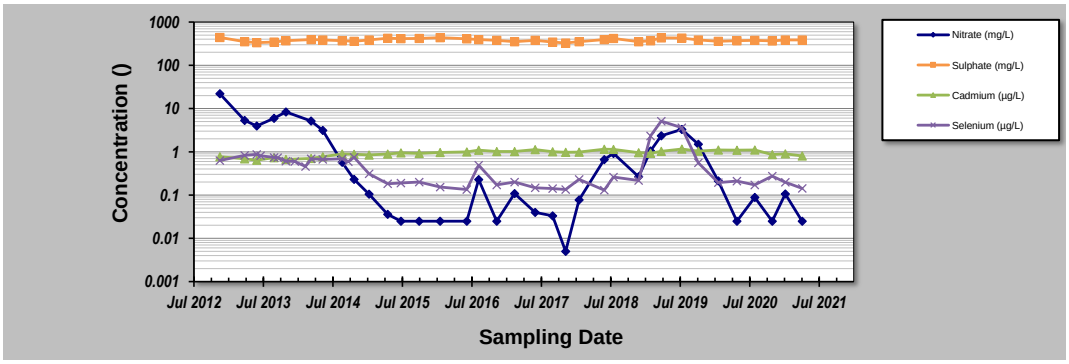
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_09-04-B
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_09-04-B CONCENTRATION						
1	29-May-13	3.96	335	0.641	0.87			
2	19-Jun-13				0.81			
3	29-Aug-13	5.95	343	0.736	0.74			
4	17-Sep-13				0.73			
5	31-Oct-13	8.34	369	0.67	0.61			
6	17-Dec-13				0.6			
7	12-Feb-14				0.46			
8	13-Mar-14	5.18	392	0.704	0.69			
9	14-May-14	3.12	385	0.772	0.67			
10	25-Aug-14	0.573	370	0.888	0.69			
11	26-Sep-14				0.59			
12	27-Oct-14	0.23	359	0.884	0.75			
13	14-Jan-15	0.105	387	0.849	0.31			
14	23-Apr-15	0.036	423	0.894	0.183			
15	2-Jul-15	0.025	416	0.946	0.191			
16	7-Oct-15	0.025	419	0.922	0.201			
17	26-Jan-16	0.025	436	0.966	0.154			
18	15-Jun-16	0.025	411	0.992	0.135			
19	17-Aug-16	0.228	395	1.09	0.494			
20	21-Nov-16	0.025	376	1.02	0.172			
21	23-Feb-17	0.109	353	1.02	0.201			
22	12-Jun-17	0.04	378	1.13	0.147			
23	12-Sep-17	0.033	343	1.01	0.141			
24	21-Nov-17	0.005	328	0.977	0.134			
25	31-Jan-18	0.0776	350	0.99	0.232			
26	13-Jun-18	0.664	392	1.15	0.13			
27	1-Aug-18	0.915	418	1.14	0.261			
28	12-Dec-18	0.266	353	0.957	0.218			
29	13-Feb-19	1.05	369	0.931	2.32			
30	11-Apr-19	2.36	431	1.03	5.13			
31	29-Jul-19	3.29	426	1.16	3.62			
32	24-Oct-19	1.5	385	1.04	0.557			
33	7-Feb-20	0.213	358	1.1	0.194			
34	15-May-20	0.025	371	1.09	0.211			
35	18-Aug-20	0.088	379	1.1	0.171			
36	18-Nov-20	0.025	365	0.867	0.275			
37	27-Jan-21	0.106	386	0.901	0.199			
38	26-Apr-21	0.025	385	0.804	0.143			
39	28-Jul-21	0.0264	402	0.688	0.174			
40	2-Nov-21	0.0595	382	0.647	0.104			
Coefficient of Variation:		1.81	0.07	0.16	1.58			
Mann-Kendall Statistic (S):		-125	42	178	-292			
Confidence Factor:		96.1%	71.9%	99.5%	>99.9%			
Concentration Trend:		Decreasing	No Trend	Increasing	Decreasing			



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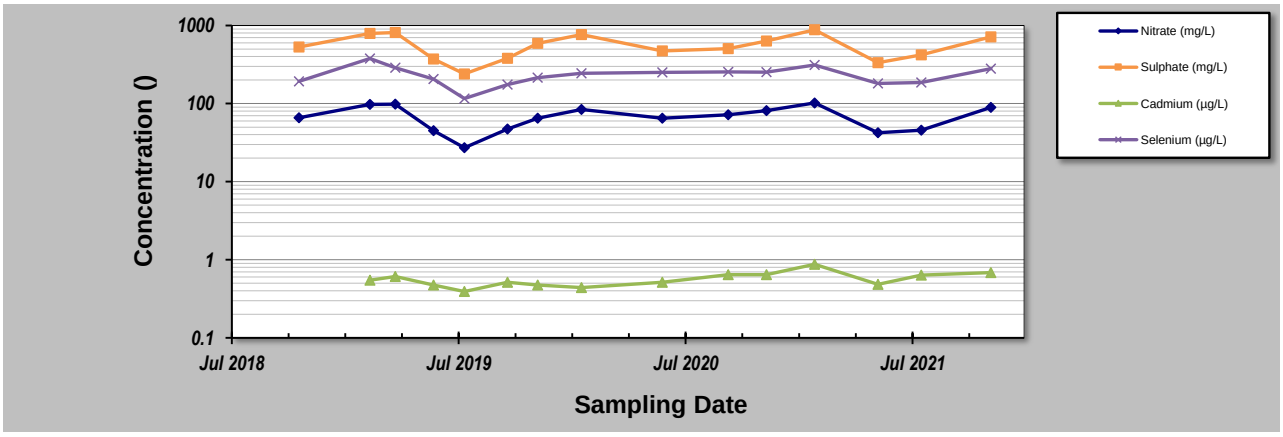
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_KB-1
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_KB-1 CONCENTRATION						
1	5-Nov-18	66	531		192			
2	28-Feb-19	97.5	790	0.547	378			
3	10-Apr-19	98.3	813	0.611	287			
4	11-Jun-19	45.1	372	0.476	206			
5	31-Jul-19	27.2	240	0.392	116			
6	9-Oct-19	47.3	381	0.514	175			
7	27-Nov-19	65.1	592	0.476	215			
8	6-Feb-20	84.3	765	0.439	244			
9	16-Jun-20	65.1	473	0.516	251			
10	1-Oct-20	72.1	506	0.645	254			
11	2-Dec-20	81.1	632	0.646	252			
12	18-Feb-21	102	881	0.875	312			
13	1-Jun-21	42.2	334	0.486	181			
14	10-Aug-21	45.6	422	0.636	186			
15	1-Dec-21	89.6	715	0.684	280			
16								
17								
18								
19								
20								
Coefficient of Variation:		0.34	0.35	0.22	0.27			
Mann-Kendall Statistic (S):		6	3	34	13			
Confidence Factor:		59.6%	53.9%	96.5%	72.1%			
Concentration Trend:		No Trend	No Trend	Increasing	No Trend			



Notes:

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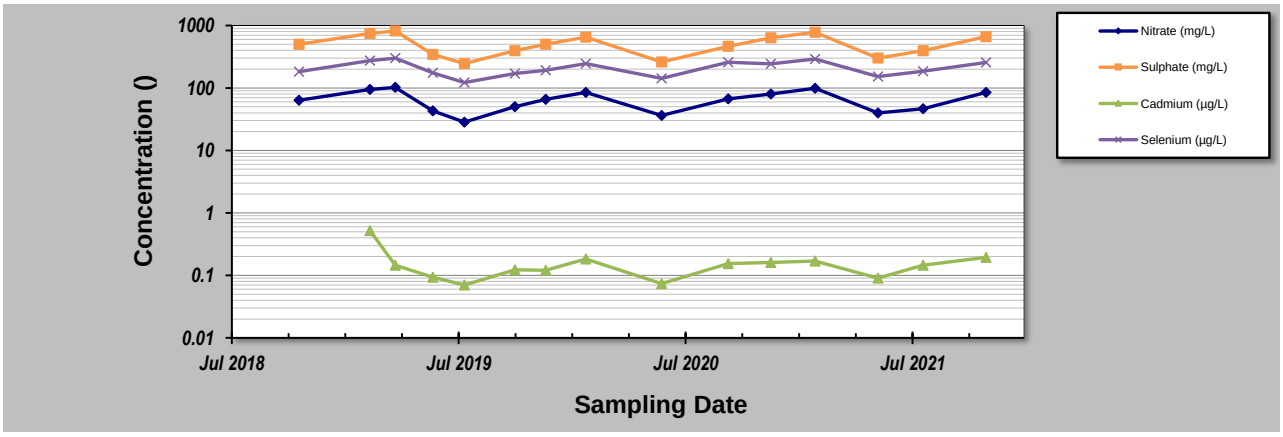
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_KB-2
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_KB-2 CONCENTRATION						
1	5-Nov-18	63.5	499		183			
2	28-Feb-19	95.2	745	0.521	273			
3	10-Apr-19	102	819	0.145	300			
4	10-Jun-19	42.9	346	0.0934	174			
5	31-Jul-19	28.4	246	0.07	122			
6	21-Oct-19	50.2	395	0.123	170			
7	10-Dec-19	66	503	0.121	192			
8	13-Feb-20	84.7	654	0.183	245			
9	15-Jun-20	36.2	260	0.0736	142			
10	1-Oct-20	66.9	466	0.154	258			
11	9-Dec-20	79.7	634	0.161	244			
12	19-Feb-21	99.3	782	0.169	292			
13	1-Jun-21	39.8	302	0.0904	152			
14	13-Aug-21	46.6	395	0.146	185			
15	23-Nov-21	84.8	664	0.194	255			
16								
17								
18								
19								
20								
Coefficient of Variation:		0.37	0.37	0.69	0.27			
Mann-Kendall Statistic (S):		5	2	13	5			
Confidence Factor:		57.7%	52.0%	74.1%	57.7%			
Concentration Trend:		No Trend	No Trend	No Trend	No Trend			



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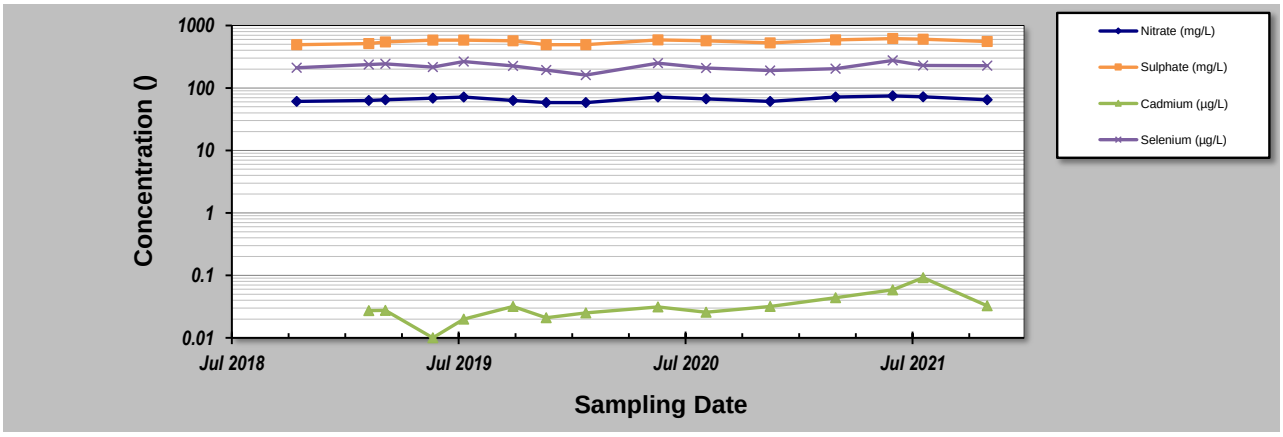
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_KB-3A
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_KB-3A CONCENTRATION						
1	1-Nov-18	61.1	494		211			
2	26-Feb-19	63.1	512	0.0273	237			
3	25-Mar-19	64.7	547	0.0275	244			
4	10-Jun-19	68.4	586	0.01	216			
5	30-Jul-19	71.4	583	0.0199	266			
6	18-Oct-19	63.3	569	0.0317	226			
7	11-Dec-19	58.6	493	0.021	194			
8	13-Feb-20	58.3	493	0.025	161			
9	9-Jun-20	71.6	588	0.0313	249			
10	26-Aug-20	67.2	569	0.0257	209			
11	8-Dec-20	60.7	527	0.0317	191			
12	24-Mar-21	71.4	591	0.044	203			
13	25-Jun-21	74.6	617	0.0587	276			
14	13-Aug-21	72.2	606	0.0919	230			
15	25-Nov-21	64.5	554	0.0327	227			
16								
17								
18								
19								
20								
Coefficient of Variation:		0.08	0.08	0.59	0.13			
Mann-Kendall Statistic (S):		30	37	54	-3			
Confidence Factor:		92.3%	96.3%	99.9%	53.9%			
Concentration Trend:		Prob. Increasing	Increasing	Increasing	Stable			



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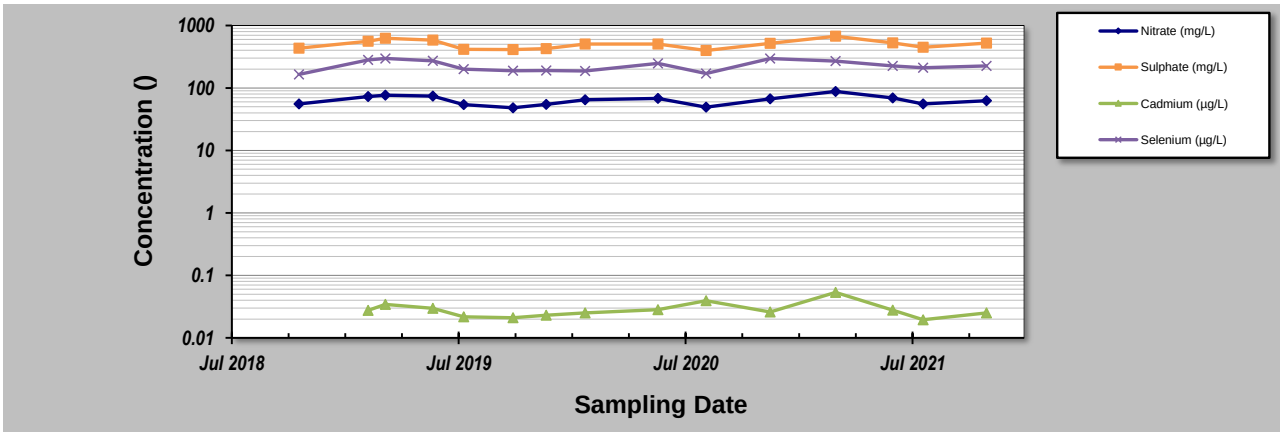
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_KB-3B
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_KB-3B CONCENTRATION						
1	5-Nov-18	55.5	435		165			
2	25-Feb-19	72.9	561	0.0275	281			
3	25-Mar-19	76.7	625	0.0343	297			
4	10-Jun-19	74.4	584	0.0296	271			
5	30-Jul-19	54	417	0.0217	200			
6	18-Oct-19	48.2	412	0.0209	188			
7	11-Dec-19	54.5	426	0.0231	191			
8	12-Feb-20	64.5	505	0.025	187			
9	9-Jun-20	67.8	505	0.0282	247			
10	26-Aug-20	49.3	398	0.0394	170			
11	8-Dec-20	67.1	520	0.0259	295			
12	24-Mar-21	88	672	0.0534	269			
13	25-Jun-21	69.4	526	0.0278	225			
14	13-Aug-21	55.6	450	0.0195	210			
15	24-Nov-21	62.4	523	0.025	225			
16								
17								
18								
19								
20								
Coefficient of Variation:		0.18	0.16	0.31	0.20			
Mann-Kendall Statistic (S):		1	6	-2	-4			
Confidence Factor:		50.0%	59.6%	52.2%	55.8%			
Concentration Trend:		No Trend	No Trend	Stable	Stable			



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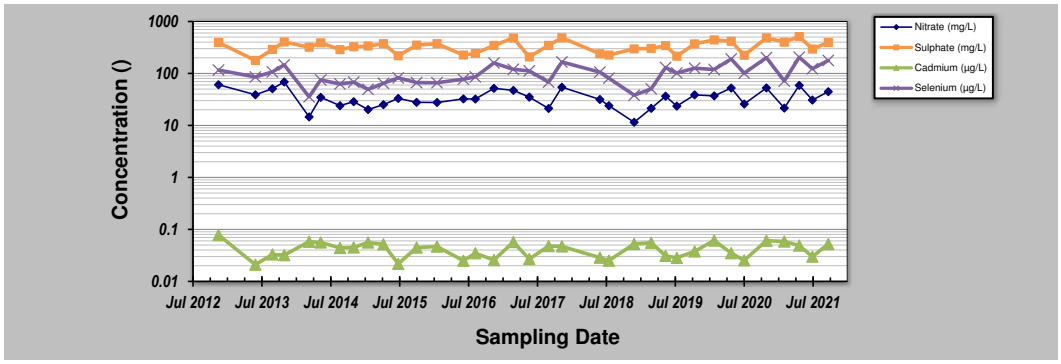
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 02-Feb-22
Facility Name: Teck Coal Regional Groundwater - FRO
Conducted By: AP

Job ID: 635544
Location FR_09-01-A

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_09-01-A CONCENTRATION						
1	14-Nov-12	60.6	395	0.078	116			
2	30-May-13	38.9	178	0.021	85.5			
3	29-Aug-13	50.8	290	0.033	107			
4	31-Oct-13	68.6	403	0.032	146			
5	13-Mar-14	14.6	320	0.058	35.6			
6	14-May-14	34.7	389	0.056	75			
7	25-Aug-14	24	287	0.044	62.7			
8	6-Nov-14	28.6	327	0.045	68			
9	22-Jan-15	20.2	337	0.056	49.3			
10	14-Apr-15	25.1	374	0.0517	64.5			
11	2-Jul-15	33.1	219	0.0217	82.2			
12	8-Oct-15	27.8	351	0.0447	66.6			
13	25-Jan-16	27.6	374	0.0468	66.3			
14	14-Jun-16	32.4	226	0.025	77.5			
15	17-Aug-16	32.2	242	0.0348	85.7			
16	24-Nov-16	51.7	347	0.0257	159			
17	8-Mar-17	47.2	481	0.0571	120			
18	1-Jun-17	35.1	208	0.0269	112			
19	12-Sep-17	21.2	347	0.0478	68.1			
20	22-Nov-17	54.3	486	0.0471	166			
21	13-Jun-18	31.6	239	0.0286	106			
22	31-Jul-18	24	226	0.0251	81.2			
23	13-Dec-18	11.5	297	0.0525	38.1			
24	14-Mar-19	21.3	302	0.0553	50.5			
25	30-May-19	36.5	343	0.031	130			
26	29-Jul-19	23.5	215	0.0284	102			
27	1-Nov-19	38.7	371	0.0377	126			
28	13-Feb-20	37	442	0.0612	119			
29	14-May-20	52.4	415	0.0349	190			
30	23-Jul-20	25.8	224	0.0254	101			
31	18-Nov-20	52.7	485	0.0607	201			
32	22-Feb-21	21.6	400	0.0586	71.6			
33	13-May-21	59	513	0.0489	205			
34	22-Jul-21	30.8	295	0.0299	123			
35	15-Oct-21	44.6	394	0.0523	178			
36								
37								
38								
39								
40								
Coefficient of Variation:		0.39	0.27	0.34	0.44			
Mann-Kendall Statistic (S):		14	84	26	189			
Confidence Factor:		57.3%	88.0%	63.8%	99.7%			
Concentration Trend:		No Trend	No Trend	No Trend	Increasing			



Notes:

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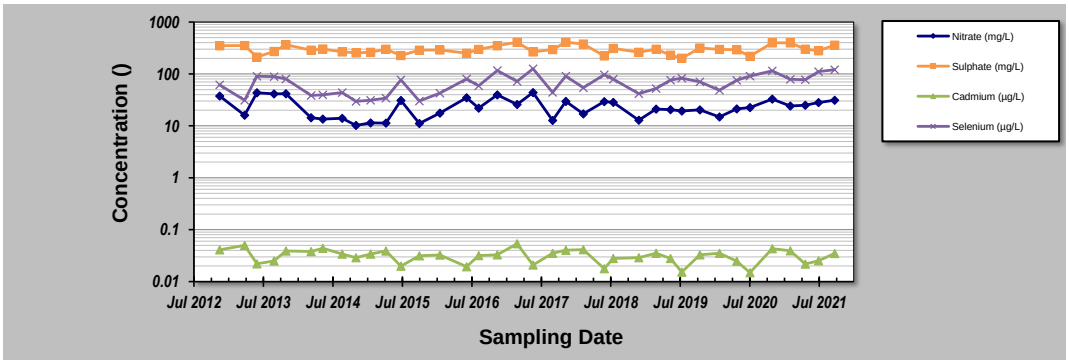
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_09-01-B
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			

Sampling Event	Sampling Date	FR_09-01-B CONCENTRATION						
1	14-Nov-12	37.6	350	0.041	61.5			
2	26-Mar-13	16	354	0.05	31.1			
3	30-May-13	43.5	212	0.022	90.2			
4	29-Aug-13	41.3	271	0.025	89			
5	31-Oct-13	41.8	364	0.039	79.9			
6	13-Mar-14	14.3	288	0.038	38.7			
7	14-May-14	13.5	302	0.044	39.5			
8	25-Aug-14	14	267	0.034	44			
9	6-Nov-14	10.2	256	0.029	29.7			
10	22-Jan-15	11.4	261	0.034	31.1			
11	14-Apr-15	11.3	300	0.039	34.2			
12	2-Jul-15	30.8	227	0.0199	76.8			
13	8-Oct-15	11.1	288	0.0314	30.2			
14	25-Jan-16	17.6	291	0.0325	42.6			
15	14-Jun-16	34.8	252	0.0194	79.9			
16	17-Aug-16	22	297	0.0316	58.9			
17	24-Nov-16	39.4	351	0.0328	117			
18	8-Mar-17	25.9	409	0.0536	71.8			
19	1-Jun-17	43.9	267	0.0209	126			
20	12-Sep-17	12.7	296	0.035	44.2			
21	22-Nov-17	29.6	407	0.0402	91.5			
22	22-Feb-18	17	378	0.0414	54.1			
23	13-Jun-18	29.3	222	0.0177	97.1			
24	31-Jul-18	28.4	311	0.0278	79.4			
25	13-Dec-18	12.8	262	0.0289	41.8			
26	14-Mar-19	21.1	300	0.0351	52.2			
27	30-May-19	20.5	230	0.028	76			
28	29-Jul-19	19.3	201	0.0153	83.2			
29	1-Nov-19	20.4	317	0.0327	70.7			
30	13-Feb-20	14.8	299	0.035	48.6			
31	14-May-20	21.2	294	0.0247	75.7			
32	23-Jul-20	22.6	220	0.0149	91.4			
33	18-Nov-20	32.8	397	0.043	115			
34	22-Feb-21	24.2	398	0.0393	78.7			
35	13-May-21	24.9	300	0.0218	77.8			
36	22-Jul-21	28.2	281	0.0251	111			
37	15-Oct-21	31.3	360	0.0348	121			
38								
39								
40								
Coefficient of Variation:		0.42	0.19	0.29	0.40			
Mann-Kendall Statistic (S):		40	45	-105	204			
Confidence Factor:		69.4%	71.7%	91.3%	99.6%			
Concentration Trend:		No Trend	No Trend	Prob. Decreasing	Increasing			



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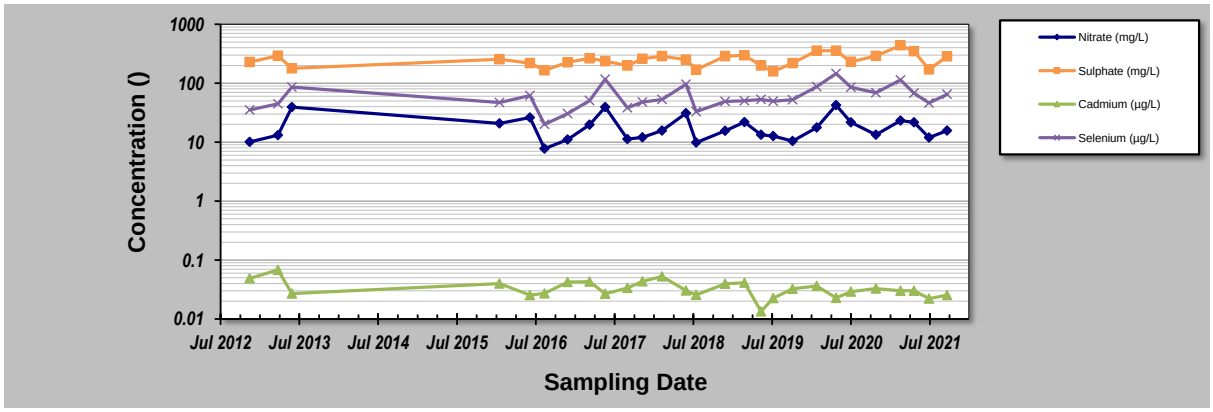
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_09-02-A
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_09-02-A CONCENTRATION						
1	14-Nov-12	10.1	229	0.049	35.2			
2	26-Mar-13	13.1	291	0.068	44.5			
3	30-May-13	39.3	179	0.027	85.9			
4	25-Jan-16	20.7	255	0.04	47.1			
5	15-Jun-16	26.1	218	0.0253	61.5			
6	22-Aug-16	7.74	165	0.0272	20			
7	8-Dec-16	11.1	226	0.0424	30.5			
8	20-Mar-17	19.8	264	0.0431	50.8			
9	1-Jun-17	39.4	236	0.0268	117			
10	13-Sep-17	11.3	200	0.0337	38.2			
11	22-Nov-17	12.1	259	0.0434	47.9			
12	22-Feb-18	15.7	287	0.0528	52.8			
13	13-Jun-18	31	250	0.0304	96.3			
14	31-Jul-18	9.87	169	0.0257	33			
15	13-Dec-18	15.5	288	0.0394	49.2			
16	14-Mar-19	21.9	296	0.0414	50.4			
17	30-May-19	13.3	200	0.0134	52.9			
18	26-Jul-19	12.7	158	0.0225	49.5			
19	24-Oct-19	10.4	219	0.0326	52.4			
20	13-Feb-20	17.7	354	0.0363	87.7			
21	14-May-20	42.4	354	0.0228	146			
22	23-Jul-20	21.7	231	0.029	84.9			
23	16-Nov-20	13.3	290	0.0328	68.9			
24	11-Mar-21	23.2	438	0.0302	114			
25	13-May-21	21.6	350	0.0302	67.8			
26	22-Jul-21	12	171	0.0222	46.2			
27	15-Oct-21	15.7	284	0.0255	64.7			
28								
29								
30								
Coefficient of Variation:		0.51	0.27	0.34	0.47			
Mann-Kendall Statistic (S):		29	79	-108	111			
Confidence Factor:		71.9%	94.8%	98.8%	99.0%			
Concentration Trend:		No Trend	Prob. Increasing	Decreasing	Increasing			



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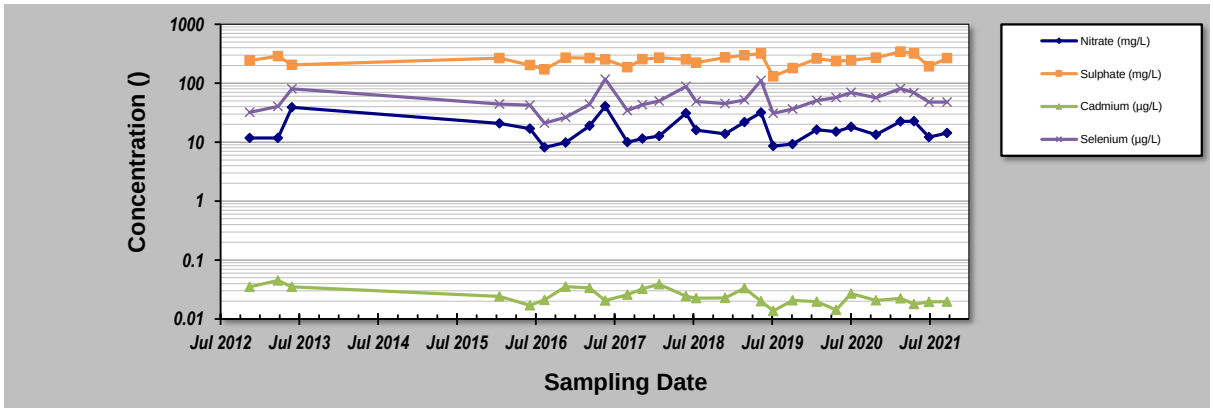
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_09-02-B
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	FR_09-02-B CONCENTRATION						
1	14-Nov-12	11.8	242	0.035	32.1			
2	26-Mar-13	11.8	288	0.045	40.4			
3	30-May-13	38.9	204	0.035	80.2			
4	25-Jan-16	20.8	265	0.0242	44.1			
5	15-Jun-16	17	202	0.017	42.4			
6	22-Aug-16	8.15	171	0.0211	21			
7	28-Nov-16	9.87	271	0.0355	26.4			
8	20-Mar-17	18.9	267	0.0335	43.8			
9	1-Jun-17	40.5	253	0.0205	117			
10	13-Sep-17	10	186	0.0259	34.4			
11	22-Nov-17	11.5	254	0.0326	43.1			
12	8-Feb-18	12.7	270	0.0387	49.9			
13	13-Jun-18	31	252	0.0243	87.8			
14	31-Jul-18	15.9	223	0.0225	49			
15	13-Dec-18	13.8	274	0.0228	45			
16	14-Mar-19	21.8	296	0.0334	51.8			
17	30-May-19	31.9	319	0.02	111			
18	26-Jul-19	8.56	130	0.0137	30.6			
19	24-Oct-19	9.24	180	0.0207	36.3			
20	13-Feb-20	16.3	261	0.0197	50.6			
21	14-May-20	15.1	237	0.0143	57.3			
22	23-Jul-20	18.1	244	0.027	69.5			
23	16-Nov-20	13.3	270	0.0208	56.8			
24	11-Mar-21	22.4	343	0.0224	80.8			
25	13-May-21	22.7	317	0.0179	69.1			
26	22-Jul-21	12.2	192	0.0196	47.8			
27	15-Oct-21	14.3	267	0.0197	47.7			
28								
29								
30								
Coefficient of Variation:		0.50	0.20	0.32	0.44			
Mann-Kendall Statistic (S):		24	43	-151	103			
Confidence Factor:		68.3%	80.8%	99.9%	98.4%			
Concentration Trend:		No Trend	No Trend	Decreasing	Increasing			



Notes:

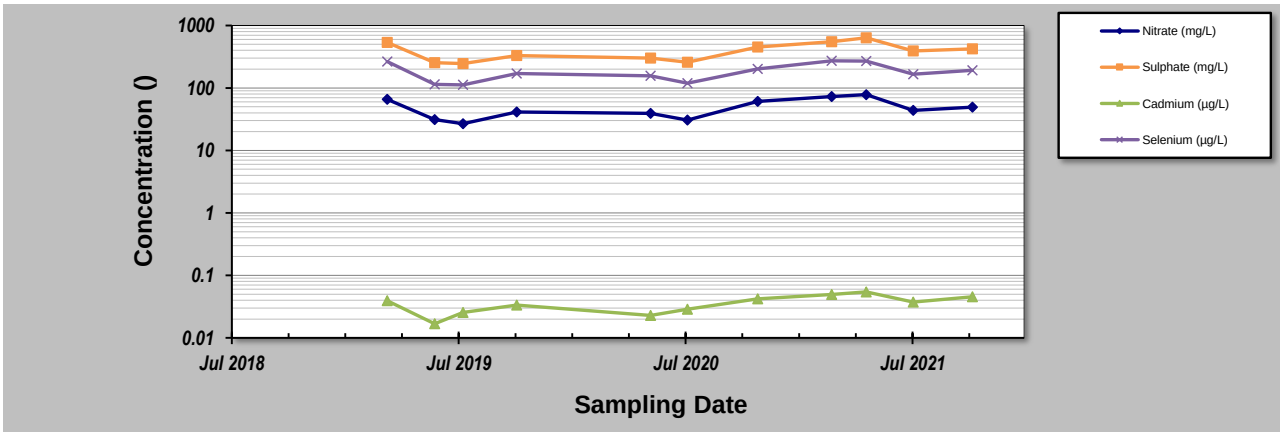
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	2022-02--2	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_MW-SK1A
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			

Sampling Event	Sampling Date	FR_MW-SK1A CONCENTRATION						
1	28-Mar-19	66	537	0.0392	266			
2	13-Jun-19	31.2	254	0.0168	114			
3	29-Jul-19	26.8	246	0.0254	112			
4	24-Oct-19	41.3	330	0.0336	171			
5	28-May-20	39.1	300	0.0228	156			
6	27-Jul-20	30.6	258	0.0287	119			
7	18-Nov-20	60.7	452	0.0421	202			
8	18-Mar-21	72.7	549	0.0494	272			
9	13-May-21	78.3	636	0.0544	270			
10	28-Jul-21	43.7	390	0.0375	166			
11	1-Nov-21	49.4	424	0.0453	192			
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.36	0.34	0.33	0.33			
Mann-Kendall Statistic (S):		17	19	27	15			
Confidence Factor:		89.1%	91.8%	98.0%	85.9%			
Concentration Trend:		No Trend	Prob. Increasing	Increasing	No Trend			



Notes:

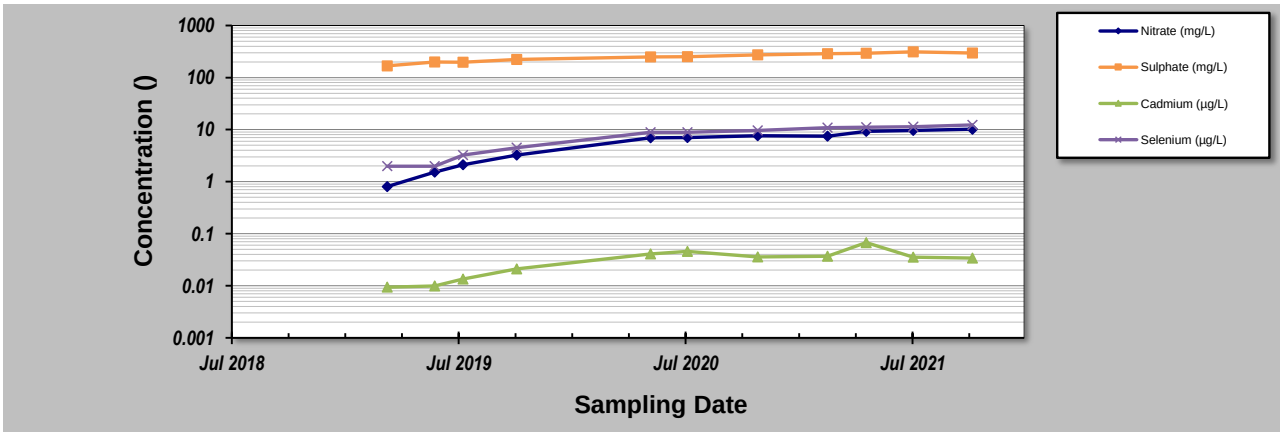
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_MW-SK1B
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			

Sampling Event	Sampling Date	FR_MW-SK1B CONCENTRATION						
1	28-Mar-19	0.805	168	0.0094	1.98			
2	13-Jun-19	1.52	200	0.0099	1.98			
3	29-Jul-19	2.11	198	0.0135	3.23			
4	24-Oct-19	3.23	222	0.021	4.48			
5	28-May-20	6.97	249	0.0409	8.9			
6	27-Jul-20	7.05	252	0.0456	8.93			
7	18-Nov-20	7.63	274	0.036	9.62			
8	11-Mar-21	7.49	287	0.0371	10.9			
9	13-May-21	9.27	292	0.0676	11.1			
10	28-Jul-21	9.61	312	0.0354	11.3			
11	1-Nov-21	10.2	295	0.0339	12.3			
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.57	0.19	0.55	0.52			
Mann-Kendall Statistic (S):		53	51	25	54			
Confidence Factor:		>99.9%	>99.9%	97.0%	>99.9%			
Concentration Trend:		Increasing	Increasing	Increasing	Increasing			



Notes:

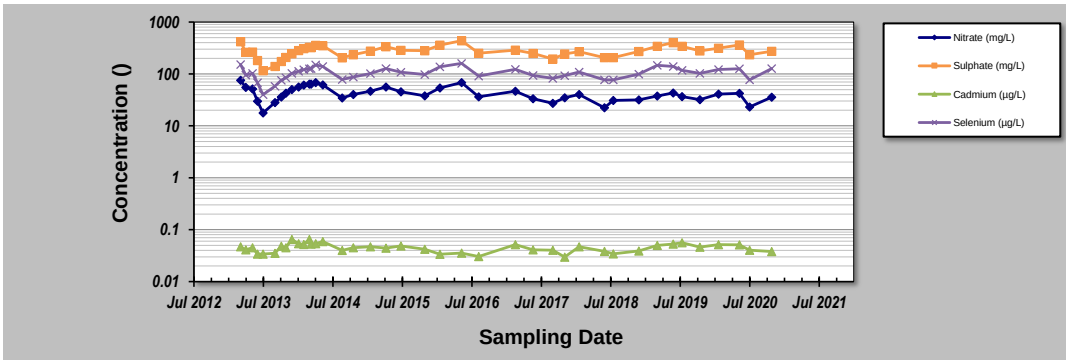
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	02-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - FRO	Location	FR_GH_WELL4
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			

Sampling Event	Sampling Date	FR_GH_WELL4 CONCENTRATION						
1	2-Jul-13	17.8	116	0.034	39.8			
2	3-Sep-13	28.1	139	0.035	58.1			
3	7-Oct-13	35.9	174	0.048	75.5			
4	31-Oct-13	42.8	209	0.045	84.5			
5	2-Dec-13	50.4	245	0.065	103			
6	6-Jan-14	56.2	282	0.054	113			
7	3-Feb-14	61.2	308	0.052	121			
8	4-Mar-14	64	328	0.065	126			
9	13-Mar-14	63.6	322	0.053	127			
10	7-Apr-14	68.3	356	0.054	150			
11	14-May-14	61.4	349	0.059	140			
12	25-Aug-14	34.4	204	0.04	78.3			
13	23-Oct-14	40.3	234	0.045	87			
14	21-Jan-15	46.7	276	0.047	102			
15	14-Apr-15	56.2	336	0.0441	127			
16	2-Jul-15	45.5	286	0.0486	108			
17	5-Nov-15	37.8	280	0.0421	97.5			
18	25-Jan-16	53.9	360	0.0336	137			
19	18-May-16	68.4	438	0.0353	160			
20	17-Aug-16	36.3	252	0.0305	91			
21	27-Feb-17	46.6	287	0.0515	123			
22	1-Jun-17	33.4	248	0.0408	93.5			
23	13-Sep-17	27.3	195	0.0403	82.2			
24	15-Nov-17	34.9	243	0.0297	92.8			
25	31-Jan-18	40.4	269	0.0468	109			
26	14-Jun-18	22.4	207	0.0382	77			
27	31-Jul-18	30.9	207	0.0342	76.9			
28	13-Dec-18	31.6	271	0.0388	99.2			
29	21-Mar-19	37.7	342	0.05	147			
30	13-Jun-19	43.1	400	0.0529	140			
31	30-Jul-19	36.7	342	0.0562	118			
32	1-Nov-19	31.9	278	0.0463	103			
33	7-Feb-20	40.8	314	0.0514	122			
34	28-May-20	42.2	363	0.0512	126			
35	21-Jul-20	23.1	234	0.0401	76.9			
36	16-Nov-20	35.8	273	0.038	127			
37	28-Jan-21	48	350	0.0478	153			
38	26-Apr-21	55.5	403	0.0577	163			
39	15-Sep-21	45	408	0.0427	117			
40	22-Nov-21	39.4	330	0.0443	142			
Coefficient of Variation:		0.30	0.26	0.19	0.26			
Mann-Kendall Statistic (S):		-105	229	-59	197			
Confidence Factor:		88.7%	99.6%	74.9%	98.9%			
Concentration Trend:		Stable	Increasing	Stable	Increasing			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

SNC·LAVALIN

SNC-Lavalin Inc.
#3 - 520 Lake Street
Nelson, British Columbia, Canada V1L 4C6
250.354.1664 604.515.5150
www.snclavalin.com

Appendix IX

Greenhills Operation 2021 SSGMP and RGMP Report

- Figures
- Tables
- Drawings
- Attachments
  - I. Borehole Logs
  - II. Block Diagrams
  - III. Mann-Kendall Analyses

1 Greenhills Operations SSGMP and RGMP Report

1.1 Overview

This report presents the results for the 2021 Greenhills Operation (GHO) Site-specific Groundwater Monitoring Program (SSGMP) and the 2021 Regional Groundwater Monitoring Program (RGMP) Study Areas 1, 3 and 4. The basis for the SSGMP and RGMP is the conceptual site model (CSM) presented in the approved 2018 SSGMP Update (SNC-Lavalin, 2019a), the 2020 RGMP Update (SNC-Lavalin, 2020a) and the 2021 SSGMP Update (SNC-Lavalin, 2021c).

The GHO SSGMP covers three primary surface water catchments, including Porter Creek, Greenhills Creek and the Elk River Valley. Groundwater in the tributary watersheds are monitored by the GHO SSGMP, while the valley bottoms of Elk River and Fording River are monitored by the RGMP.

Within the Greenhills Creek and the Elk River Valley catchments, monitoring wells are grouped based on sub-areas within three regional RGMP Study Areas adjacent to GHO: Study Areas 1, 3 and 4. The Study Areas are discussed in each of the three surface water catchment sections of this report (Drawing GH-01). Table A below presents the tributary watersheds assessed as part of the GHO SSGMP and linkages to Study Areas associated with the RGMP. The results and discussion presented in the following sections in this report are organized in accordance with these linkages.

Table A: GHO SSGMP and RGMP Watersheds and Sub-areas

Surface Water Catchments	Sub-areas	Study Area
Porter Creek		Study Area 1
Greenhills Creek	› Site A Rejects. › East and Hawk Spoils. › Tailings Storage Facility (TSF) and Site D/E Rejects. › Rail Loop Area.	-
	› Greenhills Creek Alluvial Fan.	Study Area 3
Elk River	› Mickelson Drainage. › Leask Drainage. › Wolfram Drainage. › Thompson Drainage. › Downgradient of Thompson Drainage.	Study Area 4

The RGMP Study Areas discussed in this report are described as follows:

- Study Area 1 is the focal point for most upland and tributary valley groundwater flow to the Fording River Valley bottom near the Fording River Operations (FRO) and GHO mine-permitted boundaries. The Porter Creek watershed is discussed in the GHO report, the remaining areas are discussed in the FRO report (Appendix VIII).
- Study Area 3 monitors potential sources (upland groundwater from GHO) as well as surface water and groundwater transport pathways that provided loading to the Fording River Valley bottom from the north (SNC-Lavalin, 2019a). Study Area 3 is downgradient from GHO, and Greenhills Creek is the main tributary that flows from the operation into the Fording River Valley bottom.
- Study Area 4 is downgradient from the west side of GHO and was monitored by the GHO SSGMP to understand potential transport pathways of mining related order constituents (OC) from the Mickelson, Leask, Wolfram, and Thompson Creek drainages into the Elk River Valley bottom.

Surficial geology at GHO is characteristic of a post-glacial cordilleran mountain setting. Colluvium covers the upland areas and thicker glaciofluvial and glaciolacustrine deposits are generally located in valley-bottoms (Drawing 4; SNC-Lavalin, 2020a). Anthropogenically derived materials including waste rock and coarse coal rejects (CCR) from mining operations are present in mining pits, waste spoils, valley flanks and valley-bottoms (SNC-Lavalin, 2021a).

Bedrock geology and key structural features at GHO are shown on Drawing 2. Bedrock in the area of GHO consists primarily of sandstones and finer grained clastic sedimentary rock. There are two major north-trending synclines present at GHO - the Greenhills and Alexander Creek synclines. The Erickson Fault runs along the eastern edge of GHO and is a west-dipping listric normal fault trending northwest to southeast along the eastern limb of the Greenhills syncline (Teck, 2020). The Bourgeau Thrust Fault is present west of GHO along the west side of the Elk River and intersects the river near the confluence with Leask Creek. In addition to the general northwest to southeast trend of the major regional thrust faults, normal faults, and synclines, the presence of transverse faults oriented approximately perpendicular to the trend of the major structures are also notable at GHO and are particularly prominent towards the north end of GHO. The locations of these structures often coincide with east-west trending steeply incised gullies.

The Mist Mountain Formation (Fm) of the Kootenay Group is the host of the economic coal seams and is underlain by the Moose Mountain Member and the Weary Ridge of the Morrissey Fm. Along the west side of GHO, the Kootenay Group is underlain by the Fernie Fm and the Spray River Group which extends down the valley flanks to the Elk River. In the southern portion of GHO, the Spray River Group outcrops on the west side of the Erickson Fault and the Rocky Mountain Group outcrops on the east side of the Erickson Fault (Cui et al. 2017). The Rocky Mountain Group extends north of the Porter Creek watershed where the Etherington Fm, part of the Rundle Group (limestone and dolomite), is exposed in the upper part of the Porter Creek watershed. A karst potential block (Cataract Block) was identified at GHO (SNC-Lavalin, 2020a) and approximately represents an area of exposed carbonate bedrock (Etherington Fm) in the upper part of Cataract Creek and Porter Creek watersheds.

Surficial geology at GHO is characteristic of a post-glacial cordilleran mountain setting. Generally, colluvium covers the upland areas below exposed bedrock, till is present on the side slopes with or without glaciofluvial and lacustrine sediments below and toward the valley bottoms, and thicker fluvial and unclassified sediments located in valley-bottoms (Drawing 4; SNC-Lavalin, 2020a). Anthropogenically derived materials including waste rock and CCR from mining operations are present in mining pits, waste spoils, valley flanks and valley-bottoms as well (SNC-Lavalin, 2021a).

1.2 Groundwater Monitoring Locations

The 2021 groundwater programs were sampled in accordance with the approved GHO SSGMP Update (SNC-Lavalin, 2019a) and RGMP Update (SNC-Lavalin, 2020a). The 2021 SSGMP Update (SNC-Lavalin, 2021c) recommended eight monitoring wells be added to the SSGMP (GH_MW_GHC_4A/B, GH_MW_RLP-2, RG_MW_LC3A/B, RG_MW_LCWC1, RG_MW_WC2A/B) and two monitoring wells be added to the RGMP (RG_MW_FR11A/B). The 2021 SSGMP Update also recommended the evaluation of data from other studies for possible inclusion of additional monitoring wells once sufficient data is available. The studies recommended for evaluation include:

- Monitoring wells installed within Study Area 4 boundaries as part of the Mass Balance Investigation (MBI).
- Monitoring wells installed within Study Area 3 boundaries as part of the Greenhills-Fording Aquifer Study.

Tables 1 and 3 in the main report provide a list of monitoring wells associated with each program, as well as monitoring and/or sampling rationale for each location. Drawing GH-01 shows the locations of monitoring wells relative to key surface water and mine site features. Additional information is provided in Table GH-01 and on borehole logs in Attachment I. Cross sections showing well installation, stratigraphy, and groundwater elevations are presented on Drawings GH-02 to -12; the cross-section locations are shown on Drawing GH-01. Block diagrams are provided in Attachment II (Diagrams GH-01 and -02).

1.3 Program Modifications

Table B provides a summary of modifications for the SSGMP and RGMP programs.

Table B: Summary of Program Modifications

Well ID	Program	Q[a]	Modification	Reason
GH_MW_PC4A/B	SSGMP	3	Nested well pair installed in 2021. Added to program in 2021 SSGMP Update	To assess potential OC transport through the alluvial fan and bedrock to the mainstem of the Fording River.
RG_MW_FR11A/B	RGMP	4	Nested well pair installed in 2021. Added to program in 2021 SSGMP Update	To assess potential groundwater pathway from Fording River Valley bottom to the Elk River watershed mapped along glaciofluvial sediments.
GH_MW-SITE-A	SSGMP	4	Decommissioned in 2021	Well was typically dry and does not serve the SSGMP monitoring purpose.
GH_MW-RLP-1D	SSGMP/ RGMP	4	Decommissioned in 2021	Well was found to not adequately monitor groundwater related to the rail loop area (SNC-Lavalin, 2019a).
GH_MW-UTC-A/B	SSGMP	4	Decommissioned in 2021	GH_MW_UTC-A was irreparably damaged. GH_MW-UTC-B did not intersect a mine-influenced pathway and was recommended to be decommissioned (SNC-Lavalin, 2021a).
GH_MW_GHC_4A/B	SSGMP	4	Existing nested well pair added to program in 2021 SSGMP Update	To monitor mining influence from the Hawk and East spoils in the Greenhills Creek alluvial fan. Monitoring only, no sampling at GH_MW_GHC-4A.
GH_MW_RLP-2	SSGMP	4	Existing well added to program in 2021 SSGMP Update	To monitor the potential shallower water bearing zone in the rail loop area.
RG_MW_LC3A/B	SSGMP	4	Existing nested well pair added to program in 2021 SSGMP Update	To monitor groundwater quality downgradient from Leask Creek and Leask Creek Settling Ponds (Leask Ponds).
RG_MW_LCWC1	SSGMP	4	Existing well added to program in 2021 SSGMP Update	To monitor groundwater quality between the Leask and Wolfram Creek drainages upgradient of Wolfram Creek Settling Ponds (Wolfram Ponds).
RG_MW_WC2A/B	SSGMP	4	Existing nested well pair added to program in 2021 SSGMP Update	To monitor groundwater quality downgradient of the Wolfram Ponds.

Notes:
[a] Q = Quarter (Q1, Q2, Q3, Q4).

1.4 Porter Creek Watershed and Study Area 1

A summary of 2021 groundwater monitoring and sampling results for Porter Creek Watershed and a portion of Study Area 1 is presented in Table C with references to supporting information (Drawings, Figures, Tables, and Attachments).

Table C: Summary of 2021 Groundwater Monitoring and Sampling Results for Porter Creek Watershed and Portion of Study Area 1

Hydrogeological Information		Description	Reference
Monitoring Location	Relevant GHO SSGMP/RGMP Wells (Study Area 1)	GH_MW-PC, GH_MW-PC4A/B	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	n/a	
	Relevant Surface Water Monitoring Stations[b]	GH_PC1	
	Relevant Seep Monitoring Locations[b]	n/a	
Physical Hydrogeology	Groundwater Elevation Trends	› Manual Groundwater Elevations: – GH_MW-PC: elevations varied by 0.8 m in 2021, consistent with historical results. – GH_MW_PC4A: measured in Q3 only. – GH_MW_PC4B: dry in Q3. › Continuous Groundwater Level Monitoring: – GH_MW-PC: Logger stopped working, Q3 data not recorded. – Loggers were installed in GH_MW_PC4A/B in 2021. – Logger data compensated using barologger at Porter Creek sedimentation pond (Porter Pond; GH_PC1).	Table GH-02 Figure GH-01
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – GH_MW_PC4B: dry in 2021, no vertical hydraulic gradient could be calculated. › Lateral Groundwater Velocity: – Insufficient monitoring wells in this area, no lateral gradient and groundwater velocity could be estimated. › Groundwater Flow Direction: – Inferred to be similar to the topographic profile.	Table GH-02 Drawing GH-13
Chemistry	2021 SSGMP/RGMP OC Results	› Dissolved Selenium: – GH_MW-PC: exceeded primary screening criteria (Q1 to Q4) and secondary screening criteria (Q1, Q2, Q4); consistent with historical results.	Table D Tables GH-03 to -05 Drawings GH-14 to -17 Figures GH-02 to -04
	Non-Order Mining Related and Naturally Occurring Constituents	› Dissolved Lithium: – GH_MW-PC: exceeded in Q3, consistent with historical results. – Based on the background assessment (BGA) completed for the 2020 RGMP Update, dissolved lithium was identified as not being related to mining. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04 SNC-Lavalin, 2020a
	Mann-Kendall Trend Analysis	› GH_MW-PC: decreasing, stable and/or no trend for OCs.	Table E Attachment III

Notes:
n/a denotes not applicable.
[a] – Other relevant monitoring wells are those in the area that have yet to be evaluated for inclusion in the SSGMP and/or RGMP.
[b] – Other relevant surface water stations and seep monitoring locations were determined in the 2021 SSGMP Update (SNC-Lavalin, 2021c), and represent a sub-set of the surface water and seepage monitoring locations present at GHO and within Study Area 1.

A summary of results for OCs compared to primary screening criteria is presented in Table D.

Table D: Summary of OC Compared to Primary Screening Criteria in the Porter Creek Watershed

Parameter[1,2,3] / Well ID	Nitrate-N (mg/L)				Sulphate (mg/L)				Dissolved Cadmium (µg/L)				Dissolved Selenium (µg/L)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
GH_MW-PC	-	-	-	-	-	-	-	-	-	-	-	-	***74***	***81.4***	***58***	***63.7***
GH_MW_PC4A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSR AW	400				1,280 – 4,290[4]				0.5 – 4[4]				20			
CSR IW	n/a				n/a				5				20			
CSR LW	100				1,000				80				30			
CSR DW	10				500				5				10			

Notes:
[1] Primary screening criteria are Contaminated Sites Regulation (CSR) standards for **Aquatic Life (AW),** Drinking Water (DW), Livestock (LW), and *Irrigation (IW)*.
[2] '–' denotes result below primary screening criteria for given constituents.
[3] Where a duplicate was collected, the higher concentration is provided in table. If more than one sample collected in a quarter, the higher of the two samples is provided in the table.
[4] Standard varies with hardness.

Mann-Kendall trend analysis was completed for OCs with more than seven sampling events and a summary of results is provided in Table E (Attachment III).

Table E: Summary of Mann-Kendall Trend Analysis for OC in the Porter Creek Watershed

Parameter[1] / Well ID	Nitrate-N	Sulphate	Dissolved Cadmium	Dissolved Selenium
GH_MW-PC	Decreasing	Decreasing	No Trend	***Stable***

Notes:
[1] Where OC were measured above primary screening criteria in 2021, the trend result is ***italics***. Where the OC were measured above secondary screening criteria for selenium during at least one event in 2021, the result is ***italics***. Where increasing trends are noted, the cell is shaded yellow.

1.4.1 Discussion

Spoils in the upper catchment of Porter Creek contribute OC to the creek, as indicated by elevated dissolved selenium above the British Columbia Water Quality Guidelines (BCWQG). Porter Creek flows through a rock drain under the spoil and along the valley flanks to unlined Porter Pond, where it likely loses to ground (SNC-Lavalin, 2019a) in the Fording River Valley.

In 2021, selenium (58.0 to 81.4 µg/L) was greater than primary (Q1 to Q4) and secondary (Q1, Q2 and Q4) screening criteria at GH_MW-PC. Mann-Kendall trend analysis indicates a decreasing trend in nitrate and sulphate concentrations at this well (Attachment II). Concentrations of sulphate and dissolved selenium in groundwater from GH_MW-PC continue to be the same order of magnitude as concentrations measured at the outlet of Porter Pond (GH_PC1) and follow similar seasonal trends indicating connectivity between groundwater and surface water (Figures GH-02 to -04). This is also supported by similar water types in both surface water and groundwater (magnesium-calcium-sulphate-bicarbonate; SNC-Lavalin, 2021a). The borehole log (Attachment I) for GH_MW-PC indicates that bedrock at this location is shallow

(limestone, 5.5 mbgs), with groundwater in the Porter drainage inferred to flow along the bedrock interface through shallow surficial deposits, generally following topography (Hemmera, 2017).

Preliminary results from the 2021 flow accretion study found that Porter Creek is gaining to approximately 270 m upstream of the settling pond in June and to approximately 430 m upstream of the settling pond in August, and then stable to downstream of the settling pond (Drawing GH-13). Mine-influenced groundwater daylights approximately 540 m and 430 m upstream of the settling pond. Assessment of flow and load results is still in progress. Transport of mining related constituents from GHO to the Fording River Valley bottom aquifer in this catchment is inferred to be primarily from Porter Creek surface water recharging groundwater.

GH_MW_PC is screened across the bedrock/surficial sediment contact (Drawing GH-02). The screen extends above the observed groundwater elevation in the well, it is located cross gradient of the Porter Pond and groundwater elevations are observed to be higher than those of the pond (Figure GH-01). These attributes limit the well's effectiveness at monitoring the potential solute transport from the Porter Pond to the mainstem of the Fording River.

A site reconnaissance indicated it was not feasible to install a nested well pair between the Porter Pond and the Fording River. Subsequently, a nested well pair (GH_MW-PC4A/B) was installed in the Porter Creek alluvial fan in August 2021 to determine if a preferential groundwater pathway exists from Porter Creek to the mainstem of the Fording River (Drawing GH-01). Deep well GH_MW-PC4A was installed in weathered siltstone bedrock, while GH_MW_PC4B was completed in sand and gravel alluvial sediments (Drawing GH-03). Wells GH_MW_PC4A/B were sampled in Q3 only but have been incorporated into the SSGMP and will be sampled quarterly in 2022. Well GH_MW_PC4B was dry in Q3 (Table GH-02). OC concentrations at GH_MW_PC4A were below applicable criteria for all OCs.

1.5 Greenhills Creek Watershed and Downgradient along the Fording River Valley Bottom (Study Area 3)

A summary of 2021 groundwater monitoring and sampling results for the Greenhills Creek Watershed and Study Area 3 is presented in Table F with references to supporting information (Drawings, Figures, Tables, and Attachments). This section has been structured along the following geographical areas:

- Site A Rejects;
- East and Hawk Spoils;
- Tailings Storage Facility (TSF) and Site D/E Rejects;
- Rail Loop Area; and
- Greenhills Creek Alluvial Fan and Fording River Valley Bottom (Study Area 3).

Table F: Summary of 2021 Monitoring and Sampling Results for Greenhills Creek Watershed and Study Area 3

Hydrogeological Information		Description	Reference
Site A Rejects			
Monitoring Locations	Relevant GHO SSGMP Monitoring Wells	GH_MW_GHC-1A/B	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	n/a	
	Relevant Surface Water Monitoring Stations[b]	GH_FR1, GH_GH1, GH_GC1	
	Relevant Seep Monitoring Locations[b]	GH_SEEP_26, GH_W-SEEP, GH_SEEP_22	
Physical Hydrogeology	Groundwater Elevation Trends	› Manual Groundwater Elevations: – GH_MW_GHC-1A (bedrock): elevations varied by up to 0.13 m in 2021, consistent with historical results. – GH_MW_GHC-1B (overburden): elevations varied by up to 2.54 m in 2021, consistent with historical results. › Continuous Groundwater Level Monitoring: – GH_MW_GHC-1B: logger stopped working, Q3 and Q4 data not recorded. – Logger data compensated using GH_GA_MW-2 barologger.	Table GH-02 Figure GH-05
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – GH_MW_GHC-1A/B: 0.4 to 0.48 m/m, downward › Lateral Groundwater Velocity: – Lateral groundwater velocity could not be calculated in this area due to insufficient monitoring wells. › Groundwater Flow Direction: – GH_MW_GHC-1A/B: inferred to be southeast toward Greenhills Creek from the Site A CCR towards the Fording River valley bottom in both the overburden and bedrock.	Table GH-02 Drawing GH-13 SNC-Lavalin, 2021
Chemistry	2021 SSGMP/RGMP OC Results	› Sulphate: – GH_MW_GHC-1B: exceeded primary screening criteria in Q1 to Q4, consistent with historical results.	Table G Tables GH-03 to -05 Drawings GH-14 to -17 Figures GH-06 to -08
	Non-Order Mining Related and Naturally Occurring Constituents	› Dissolved Lithium: – GH_MW_GHC-1A (bedrock) and GH_MW-GHC-1B (overburden): exceeded primary screening criteria in Q1 to Q4, consistent with historical results. › Dissolved Manganese: – GH_MW_GHC-1B: exceeded primary screening criteria in Q1, consistent with historical results. › Based on the BGA completed for the 2020 RGMP Update, dissolved lithium and manganese were identified as not being related to mining. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04 SNC-Lavalin, 2020a
	Mann-Kendall Trend Analysis	› Concentrations were stable and/or no trend for all OCs.	Table H Attachment III
East and Hawk Spoils			
Monitoring Location	Relevant GHO SSGMP Monitoring Wells	GH_MW_GHC-4A (water levels only), GH_MW_GHC-4B	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	n/a	

Table F (Cont'd): Summary of 2021 Monitoring and Sampling Results for Greenhills Creek Watershed and Study Area 3

Hydrogeological Information		Description	Reference
East and Hawk Spoils (Cont'd)			
Monitoring Location (Cont'd)	Relevant Surface Water Monitoring Stations[b]	GH_GH1, GH_FR1	
	Relevant Seep Monitoring Locations[b]	GH_SEEP_22	
Physical Hydrogeology	Groundwater Elevation Trends	› Manual Groundwater Elevations: – GH_MW_GHC-4A (bedrock): elevations varied by up to 1.02 m in 2021. – GH_MW_GHC-4B (overburden): elevations varied by up to 1.24 m in 2021. › Continuous Groundwater Level Monitoring: – Logger data compensated using GH_MW_FC2 barologger.	Table GH-02 Figure GH-05
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – GH_MW_GHC-4A/B: 0.16 to 0.20 m/m, downward › Lateral Groundwater Velocity: – Insufficient monitoring wells in this area, no lateral gradient and groundwater velocity could be calculated. › Groundwater Flow Direction: – Inferred to be similar to the topographic profile, with groundwater flowing approximately northeast to southwest.	Table GH-02 Drawing GH-13
Chemistry	2021 SSGMP/RGMP OC Results	› Sulphate: – GH_MW_GHC-4B: exceeded in Q3, consistent with Q2 and Q3 2020 results. › Dissolved Selenium: – GH_MW_GHC-4B: exceeded primary criteria (Q1 to Q4) and secondary criteria (Q3), consistent with 2020 (Q2, Q3).	Table G Tables GH-03 to -05 Drawings GH-14 to -17 Figures GH-06 to -08
	Non-Order Mining Related and Naturally Occurring Constituents	› Dissolved Lithium: – GH_MW_GHC-4B: exceeded in Q1, Q3, Q4. – Based on the BGA completed for the 2020 RGMP Update, dissolved lithium was identified as not being related to mining. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04 SNC-Lavalin, 2020a
	Mann-Kendall Trend Analysis	› GH_MW_GHC-4B: insufficient data points available to complete.	Table H Attachment III
Tailings Storage Facility and Site D/E Rejects			
Monitoring Locations	Relevant GHO SSGMP Monitoring Wells	GH_MW-TD	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	n/a	
	Relevant Surface Water Monitoring Stations[b]	GH_FR1, GH_GH1, GH_GC1	
	Relevant Seep Monitoring Locations[b]	GH_E1, GH_E2	
Physical Hydrogeology	Groundwater Elevation Trends	› Artesian conditions in 2021, consistent with historical results. › Logger is not installed in this well.	Table GH-02 Figure GH-05
	Hydraulic Gradients and Flow Direction	› No nested well pair to calculate vertical hydraulic gradient. › Insufficient monitoring wells in this area, no lateral gradient and groundwater velocity could be calculated.	Table GH-02 Drawing GH-13

Table F (Cont'd): Summary of 2021 Monitoring and Sampling Results for Greenhills Creek Watershed and Study Area 3

Hydrogeological Information		Description	Reference
Chemistry	2021 SSGMP/RGMP OC Results	› No OC concentration was greater than primary screening criteria in 2021.	Table G Tables GH-03 to -05 Drawings GH-14 to -17 Figures GH-06 to -08
	Non-Order Mining Related and Naturally Occurring Constituents	› Dissolved Lithium: – Exceeded primary screening criteria in Q1 to Q4, consistent with historical results. › Dissolved Manganese: – Exceeded primary screening criteria in Q1 to Q4, consistent with historical results. › Based on the BGA completed for the 2020 RGMP Update, dissolved lithium and manganese were identified as not being related to mining. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04 SNC-Lavalin, 2020a
	Mann-Kendall Trend Analysis	› Dissolved cadmium: increasing trend, concentrations remain two orders of magnitude below applicable criteria. › Concentrations were decreasing, stable and/or no trend for all other OCs.	Table H Attachment III
Rail Loop Area			
Monitoring Location	Relevant GHO SSGMP/RGMP Wells (Study Area 3)	GH_MW_RLP-2	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	n/a	
	Relevant Surface Water Monitoring Stations[b]	GH_FR1, GH_GH1, GH_RLP	
	Relevant Seep Monitoring Locations[b]	n/a	
Physical Hydrogeology	Groundwater Elevation Trends	› Manual groundwater elevations: elevations varied by up to 0.4 m in 2021. › No logger is installed in GH_MW_RLP-2	Table GH-02 Figure GH-05
	Hydraulic Gradients and Flow Direction	› No nested well pair to calculate vertical hydraulic gradient. › Insufficient monitoring wells in this area, no lateral gradient and groundwater velocity could be calculated.	Table GH-02 Drawing GH-13
Chemistry	2021 SSGMP/RGMP OC Results	› No OC was greater than primary screening criteria in 2021.	Table G Tables GH-03 to -05 Drawings GH-14 to -17 Figures GH-11 to -13
	Non-Order Mining Related and Naturally Occurring Constituents	› Dissolved Lithium: – Exceeded in Q1 to Q4, no historical data for comparison. › Dissolved Manganese: – Exceeded in primary screening criteria Q1 to Q4. › Based on the BGA completed for the 2020 RGMP Update, dissolved lithium and manganese were identified as not being related to mining. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04 SNC-Lavalin, 2020a
	Mann-Kendall Trend Analysis	› Insufficient data available to complete trend analysis.	Table H Attachment III

Table F (Cont'd): Summary of 2021 Monitoring and Sampling Results for Greenhills Creek Watershed and Study Area 3

Hydrogeological Information		Description	Reference
Greenhills Creek Alluvial Fan and Fording River Valley Bottom (Study Area 3)			
Monitoring Location	Relevant RGMP Wells (Study Area 3)	› GH_POTW09, GH_POTW10, GH_POTW15, GH_POTW17, RG_MW_FR11A/B	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	› GH_MW_FR1A/B, GH_MW_FR2/B, GH_MW_FR3A/B, GH_MW_FR4A/B, GH_M_FR5A/B, GH_MW_FR6, GH_MW_FR7, GH_MW_FR8A/B	
	Relevant Surface Water Monitoring Stations[b]	› GH_FR1, GH_GH1, GH_RLP	
	Relevant Seep Monitoring Locations[b]	› GH_E1, GH_SEEP_22	
Physical Hydrogeology	Groundwater Elevation Trends	› Manual Groundwater Elevations: – GH_POTWELLS09/10/15/17: groundwater elevations not measured in 2021. › RG_MW_FR11A/B: measured in Q3 only.	Table GH-02 Figure GH-05
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – RG_MW_FR11A/B: 0.96 m/m, downward (Q3). › Lateral groundwater flow velocity in the SSGMP Update in the alluvium ranged from 1,413 to 3,297 m/year. › Groundwater flow direction in this area is inferred to be similar to the topographic profile.	Table GH-02 Drawing GH-13 SNC-Lavalin, 2021c
	Groundwater Withdrawals	› Daily average pumping rate: – GH_POTW09: ranged from 22 to 67 m^3/hr – GH_POTW15: approximately 17 m^3/hr. – GH_POTW10: approximately 9 m^3/hr. – GH_POTW17: approximately 4 m^3/hr. › GH_POTW09 was pumped most of the year (except between June 12 to 16). Wells GH_POTW10, GH_POTW15 and GH_POTW17 were pumped at lower average daily rates and were not pumping on some days.	Figure GH-15
Chemistry	2021 SSGMP/RGMP OC Results	› Sulphate: – GH_POTW17: exceeded in Q1, consistent with historical results. › Dissolved Selenium: – GH_POTW17: exceeded in Q3 and Q4, consistent with historical results.	Table G Tables GH-03 to -05 Drawings GH-14 to -17 Figures GH-11 to -13
	Non-Order Mining Related and Naturally Occurring Constituents	› Dissolved Lithium: – GH_POTW09/10/15/17: exceeded Q1 to Q4, consistent with historical results. – RG_MW_FR11A/B: exceeded in Q3, no historical data for comparison. › Dissolved Manganese: – GH_POTW15: exceeded in Q2, consistent with historical results. › Based on the BGA completed for the 2020 RGMP Update, dissolved lithium and manganese were identified as not being related to mining. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04 SNC-Lavalin, 2020a
	Mann-Kendall Trend Analysis	› GH_POTW09: increasing trend in sulphate and dissolved selenium, concentrations below applicable criteria. › GH_POTW10: increasing trend in nitrate-N, sulphate and dissolved selenium, concentrations below applicable criteria. › GH_POTW15: probably increasing in sulphate, concentrations below applicable criteria. › RG_MW_FR11A/B: insufficient data points to complete trend analysis at this location. › Concentrations were decreasing, stable and/or no trend for all other OCs.	Table H Attachment III

Notes:
n/a denotes not applicable.
[a] – Other relevant monitoring wells are those in the area that have yet to be evaluated for inclusion in the SSGMP and/or RGMP.
[b] – Other relevant surface water stations and seep monitoring locations were determined in the 2021 SSGMP Update (SNC-Lavalin, 2021c), and represent a sub-set of the surface water and seepage monitoring locations present at GHO and Study Area 3.

A summary of results for OC compared to primary screening criteria is presented in Table G.

Table G: Summary of OC Compared to Primary Screening Criteria in the Greenhills Creek Watershed

Parameter[1,2,3] / Well ID	Nitrate-N (mg/L)				Sulphate (mg/L)				Dissolved Cadmium (µg/L)				Dissolved Selenium (µg/L)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Site A Rejects																
GH_MW-GHC-1A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GH_MW-GHC-1B	-	-	-	-	618	519	598	610	-	-	-	-	-	-	-	-
East and Hawk Spoils																
GH_MW-GHC-4B	-	-	-	-	-	-	543	-	-	-	-	-	13	***40***	***80.3***	***40.2***
Tailings Storage Facility and Site D/E Rejects																
GH_MW-TD	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rail Loop Area																
GH_MW_RLP_2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Greenhills Creek Alluvial Fan and Fording River Valley Bottom (Study Area 3)																
GH_POTW09	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GH_POTW10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GH_POTW15	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GH_POTW17	-	-	-	-	528	-	-	-	-	-	-	-	-	-	11.1	12.6
RG_MW_FR11A	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS	NS	-	NS
RG_MW_FR11B	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	-	NS	NS	NS	-	NS

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Table G (Cont'd): Summary of OC Compared to Primary Screening Criteria in the Greenhills Creek Watershed

Parameter[1,2,3] / Well ID	Nitrate-N (mg/L)				Sulphate (mg/L)				Dissolved Cadmium (µg/L)				Dissolved Selenium (µg/L)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
CSR AW	400				1,280 – 4,290[4]				0.5 – 4[4]				20			
CSR IW	n/a				n/a				5				20			
CSR LW	100				1,000				80				30			
CSR DW	10				500				5				10			

Notes:

[1] Primary screening criteria are CSR standards for **Aquatic Life (AW),** Drinking Water (DW), Livestock (LW), and *Irrigation (IW)*.

[2] '–' denotes result below primary screening criteria for given constituents.

[3] Where a duplicate was collected, the higher concentration is provided in table. If more than one sample collected in a quarter, the higher of the two samples is provided in the table.

[4] Standard varies with hardness.

NS – No sample.

A summary of the Mann-Kendall trend analysis is provided in Table H below (Attachment III).

Table H: Summary of Mann-Kendall Trend Analysis for OC in the Greenhills Creek Watershed

Parameter[1] / Well ID	Nitrate-N	Sulphate	Dissolved Cadmium	Dissolved Selenium
Site A Rejects				
GH_MW-GHC-1A	Stable	No Trend	No Trend	Stable
GH_MW-GHC-1B	-	***Stable***	-	-
Tailings Storage Facility and Site D/E Rejects				
GH_MW-TD	-	Decreasing	Increasing	-
Greenhills Creek Alluvial Fan and Fording River Valley Bottom (Study Area 3)				
GH_POTW09	-	Increasing	-	Increasing
GH_POTW10	Increasing	Increasing	-	Increasing
GH_POTW15	-	Probably Increasing	-	-
GH_POTW17	No Trend	***Stable***	Decreasing	***No Trend***

Notes:

[1] Where OC were measured above primary screening criteria in 2021, the trend result is ***italics***. Where the OC were measured above secondary screening criteria for dissolved selenium during at least one event in 2021, the result is ***italics***. Where increasing trends are noted, the cell is shaded yellow.

1.5.1 Discussion

Greenhills Creek and its tributary Gardine Creek generally flow in a southerly direction across till deposits. Greenhills Creek daylights at the toe of the East Spoil runout. Gardine Creek flows south adjacent to the Site B Rejects. Seeps daylight near the rejects and are inferred to report to Gardine and Greenhills Creeks. The spoils and the rejects are inferred to contribute OCs to surface water and the creeks are interpreted to be mine-influenced, as indicated by dissolved selenium and sulphate concentrations above the BCWQG aquatic life water use (AW; SNC-Lavalin, 2021b). Where the creeks converge, surface water flows towards the valley bottom and infiltrates the Greenhills Creek alluvial fan before joining the Fording River below the Greenhills Sedimentation Pond (SNC-Lavalin, 2019a).

Site A Rejects

In 2021, monitoring well GH_MW-SITE-A was decommissioned as it was typically dry. Neighbouring wells GH_MW-GHC-1A/B are downgradient along the flow path from Site A CCR and will continue to be monitored. GH_MW-GHC-1A, installed in sandstone bedrock, and GH_MW-GHC-1B, installed in low permeability till, are located along the toe of the Site A CCR downgradient of seeps GH_SEEP_26 and GH_W-SEEP. Groundwater is inferred to flow southeast towards Greenhills Creek from the Site A CCR. There is a possible secondary recharge flow path from Greenhills Creek flowing to the southeast at shallow well GH_MW_GHC-1B (SNC-Lavalin, 2021b).

Field and laboratory analytical parameters at shallow well GH_MW-GHC-1B (completed in low permeability till), such as low nitrate-N concentrations (Figure GH-08), low DO (less than 1 mg/L), low oxidation-reduction potential (ORP) values (-24.1 to 35.8 mV), and measurable dissolved iron and manganese (greater than 100 µg/L), indicate reducing conditions are present.

Concentrations of dissolved selenium have consistently been greater at bedrock well GH_MW_GHC-1A (2.94 to 4.89 µg/L) compared to overburden well GH_MW_GHC-1B (<0.050 to 0.389 µg/L; Figure GH-06). Conversely, sulphate concentrations at GH_MW_GHC-1B (571 to 618 mg/L) have historically been greater than concentrations measured at GH_MW_GHC-1A (287 to 410 mg/L; Figure GH-07). The Se:SO_4 (S) plot indicates both GH_MW-GHC-1A/B are influenced by CCR and may have undergone microbial reduction at GH_MW-GHC-1B (Figure GH-09). Deep well GH_MW-GHC-1A may also be influenced by waste rock from Hawk and East spoils via Greenhills Creek, as indicated by the greater dissolved selenium concentrations than shallow well GH_MW_GHC-1B (SNC-Lavalin, 2021b).

Surface water interaction with groundwater is variable across the Greenhills Catchment. Dissolved selenium concentrations in Greenhills Creek (GH_GH1) have consistently been one to three orders of magnitude higher than in groundwater at GH_MW_GHC-1A/B (Figure GH-06).

A Schoeller plot shows GH_MW_GHC-1A could be influenced by a mix of GH_SEEP_26 and Greenhills Creek (GH_GH1) in Q1/Q4 and by GH_W-SEEP and Gardine Creek (GH_GC1) in Q2/Q3 (Figure GH-10). Shallow well GH_MW-GHC-1B does not appear to have the same influence from surface water in 2021. Downward gradients were consistently measured at this location in 2021 (Table GH-02).

East and Hawk Spoils

Nested well pair GH_MW_GHC-4A/B was installed to monitor mining influence from waste rock sources (Hawk and East spoils) in groundwater in the Greenhills Creek alluvial sediments and bedrock (Drawing GH-05; Diagram GH-01). GH_MW_GHC-4A is monitored for water level only as part of the 2021 SSGMP Update.

In 2021 in the Greenhills Creek Watershed, the highest concentrations of sulphate, nitrate-N and dissolved selenium were measured at GH_MW_GHC-4B. This may be indicative of influence from the Hawk and East spoils and infiltration from the Greenhills Creek to the underlying alluvium (Table GH-03 and -04). In addition, the Se:SO_4 (S) plot shows that GH_MW_GHC-4B is generally influenced by CCR seepage (Figure GH-09). The water type in both of these wells is calcium-magnesium-sulphate-bicarbonate. A Schoeller plot (Figure GH-10) compares 2021 data at GH_MW_GHC-4B with Gardine Creek (GH_GC1), Greenhills Creek (GH_GH1), GH_W-SEEP, and GH_SEEP_26. Results indicate groundwater could have been influenced more by Gardine Creek in Q3/Q4 (Figure GH-09).

Tailings Storage Facility and Site D/E Rejects

Monitoring well GH_MW-TD is a deep artesian well completed at the base of a thick (35 m) layer of till, in materials consistent with the transitional zone between a dense till and siltstone. This well is located in the upland area downgradient and south of the TSF and the Site D/E Rejects (Diagram GH-01) and is inferred to intercept the deeper groundwater flow system (SNC-Lavalin, 2019a). In 2021, dissolved selenium and sulphate at GH_MW-TD did not display significant variability and remained below the relevant primary screening criteria (Figures GH-06 to -08). There is inferred to be reducing conditions present at GH_MW-TD, indicative of the potential for selenium attenuation in groundwater in the deeper groundwater south of the TSF (SNC-Lavalin, 2021c). The Se:SO_4 (S) plot for GH_MW-TD indicate natural non-contact water and the water type is calcium-magnesium-bicarbonate-sulphate. Mann-Kendall trend analysis indicates an increasing trend in dissolved cadmium which may be related to the evolving redox conditions in the near-well formation since cadmium may be mobilized from solids under iron reducing conditions. Dissolved cadmium concentrations at this location remained below primary screening criteria in 2021.

Seeps at the toe of the Site D/E Rejects (GH_E3 and GH_E1) are interpreted to be representative of shallow groundwater downgradient of the TSF (SNC-Lavalin, 2019a). Concentrations of OCs from seep GH_E1 in 2019 were greater than concentrations measured in monitoring well GH_MW-TD, indicative that deep groundwater is not hydraulically connected to the shallow groundwater system. Based on previous studies, seeps in this area also contain concentrations of sulphate greater than surface water from the TSF, and the overlying rejects may be influencing the seep water and therefore groundwater chemistry in this area (SNC-Lavalin, 2019a).

Rail Loop Area

Monitoring well GH_MW-RLP-1D was inferred to be hydraulically isolated from shallow mine-influenced groundwater and was decommissioned in 2021. GH_MW_RLP_2 was installed adjacent to the Rail Loop Sediment Pond (Rail Loop Pond) in December 2020 to target the shallower water bearing zone (Drawing GH-04). Quarterly sampling at GH_MW_RLP_2 was initiated in Q1 2021.

Field and analytical parameters, such as low nitrate-N concentrations (Figure GH-13) and DO (less than 1 mg/L) and ORP values (-39.2 to 28.2 mV), and high concentrations of dissolved iron and manganese (greater than 500 µg/L), indicates reducing conditions are present at GH_MW_RLP_2. The Se:SO_4 (S) plot indicates GH_MW-RLP-2 is influenced by the CCR and may have undergone microbial reduction (Figure GH-14). This suggests potential surface water influence from the pond on groundwater, where a reducing environment with the pond sediments is possible.

Greenhill Creek Alluvial Fan and Fording River Valley Bottom (Study Area 3)

The four supply wells installed within the Greenhills Creek alluvial fan are connected to glaciofluvial channel deposits along the Fording River Valley bottom. These wells include GH_POTW09 – located east of the Rail Loop Pond; GH_POTW17 – downgradient (south) of the Greenhills sedimentation ponds (Greenhills Ponds); and GH_POTW10 and GH_POTW15 – between the two ponds to the west (Drawings GH-04 and -05).

At GH_POTW09, groundwater flow is to the northeast and is inferred to be sourced from infiltration from the Rail Loop Pond and down-valley flow in Fording River Valley bottom (SNC-Lavalin, 2021b). In 2021, Q3/Q4 concentrations of dissolved selenium (1.18 to 2.03 ug/L) and sulphate (183 to 219 mg/L) were consistent with those measured in the Rail Loop Pond (GH_RLP; Figure GH-11 and -12). Wells in the Greenhills Creek area have sulphate concentrations above background concentrations due to the influence of TSF, CCR, and spoils sources. The Se:SO_4 (S) plot indicates GH_POTW09 is a mix between CCR influence and natural non-contact water (Figure GH-14). In addition, Mann-Kendall trend analysis (Table H) indicates that sulphate and dissolved selenium concentrations are increasing; however, concentrations remain below screening criteria.

The highest concentrations of dissolved selenium at GH_POTW17 generally occur in Q2/Q3 (June to August) when pumping rates were highest. The dissolved selenium exceedances are interpreted to be related to the higher pumping rates influencing the groundwater flow regime in the Greenhills Creek alluvial fan. Groundwater extraction is interpreted to induce downward vertical hydraulic gradients that may result in surface water infiltration from Greenhills Creek or a stronger hydraulic connection with shallow groundwater. A lower permeability silty clay unit overlies the lower portions of the fan and likely impedes downward migration in these areas (Drawing GH-05). The primary source of mine related constituents is inferred to be the sediment pond and the losing reach identified directly above the pond through flow accretion studies (SNC-Lavalin, 2020a), where the soils data from drilling indicate the alluvial sediments are unconfined (Drawing GH-04). Based on Se:SO_4 (S) plot, water from GH_POTW17 is a mix of CCR

influence and GH_RLP (Q3 and Q4) and CCR influence (Q1 and Q2; Figure GH-14). Mann-Kendall trend analysis indicates concentrations at this location are either stable or do not exhibit a trend.

At GH_POTW10, Mann-Kendall trend analysis indicates increasing trends of sulphate, dissolved selenium and nitrate-N, while at GH_POTW15 sulphate concentrations are probably increasing (Attachment II). The Se:SO_4 (S) plot shows both GH_POTW10 and GH_POTW15 groundwater is a mix between CCR influence and non-mine influence (Figure GH-14).

Idealized capture zones were calculated for the GH_POTW-series wells (SNC-Lavalin, 2020a), which indicated that water flowing down through the silt and clay layer below the Rail Loop Pond is inferred to report, at least in part, to GH_POTW09. Wells GH_POTW10 and GH_POTW15 are inferred to receive groundwater flowing down the main stem valley bottom along the Fording River. Flow from the north reporting to GH_POTW17 and GH_POTW15 is further supported by sulphate concentrations in these wells exceeding Fording River annual mean (SNC-Lavalin, 2020a). An aquifer sustainability is being completed in 2021 in this area and will be considered for the 2022 annual report.

The GH_POTW-series wells plot on the area of the Se:SO_4 (S) graph between natural non-contact water, water influenced by spoils, coal rejects seepage and water affected by microbial reduction (Figure GH-14). Based on the presence of iron and manganese, and relatively lower DO and ORP values measured (Tables 4c and 4d in the main report), biogeochemical attenuation is occurring in these wells.

Seepage from the TSF and CCR is expected to occur downstream of GH_FR1 under both pumping and non-pumping flow regimes. A continuous silt and clay-rich layer has been indicated to overlie the glaciofluvial channel deposits along the valley bottom around the Greenhills Creek confluence (Drawing GH-04) and would be expected to limit exchange between the river and the high permeability materials.

RG_MW-FR11A/B

A new RGMP nested monitoring well pair was installed in September 2021 near Josephine Falls (RG_MW_FR11A/B) to assess the potential of a groundwater pathway from the Fording River Valley bottom to the Elk River watershed along mapped glaciofluvial sediments.

One sampling event occurred in 2021; however, routine parameters could not be analyzed at that time due to issues with the lab. In Q3, dissolved cadmium and dissolved selenium concentrations at these wells was two orders of magnitude below the relevant primary screening criteria and surface water station GH_FR1. Quarterly sampling at this well will began in Q1 2022. More analysis of groundwater conditions at this location will be provided in future annual report.

1.6 Elk River Valley Watershed and Study Area 4

A summary of 2021 groundwater monitoring and sampling results for the Elk Valley Watershed and Study Area 4 is presented in Table I with references to supporting information (Drawings, Figures, Tables, and Attachments). This section has been structured along the following geographical areas:

- Mickelson Drainage;
- Leask Drainage;
- Wolfram Drainage;
- Thompson Drainage;
- Downgradient of Thompson Drainage (Study Area 4); and
- Elk River Valley Downgradient of GHO (Study Area 4).

Table I: Summary of 2021 Groundwater Monitoring and Sampling Results for Elk River Valley Watershed and Study Area 4

Hydrogeological Information		Description	Reference
Mickelson Creek Drainage			
Monitoring Locations	Relevant GHO SSGMP/RGMP Wells (Study Area 4)	GH_MW-MC-1S/D, GH_MW-MC-2S/D	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	n/a	
	Relevant Surface Water Monitoring Stations[b]	GH_ER2, GH_MC1	
	Relevant Seep Monitoring Locations[b]	n/a	
Physical Hydrogeology	Groundwater Elevation Trends	› Manual Groundwater Elevations: – Groundwater elevations in shallow groundwater (GH_MW-MC-1S and GH_MW-MC-2S) varied by up to 1.06 m (at GH_MW-MC-1S) – Groundwater elevations in deep groundwater (GH_MW-MC-1D and GH_MW-MC-2D) varied by up to 0.91 m (at GH_MW-MC-1D). – Water levels at all wells were consistent with historical results at all wells. › Continuous Groundwater Level Monitoring: – Logger data compensated using GH_Baro barologger at RG_MW_LC3A/B.	Table GH-02 Figure GH-16
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – GH_MW-MC-1S/D: 0.001 to 0.02 m/m, slightly downward to slightly upward. – GH_MW-MC-2S/D: 0.2 to 0.28 m/m, upward. › Groundwater flow is inferred to be west/southwest toward the Elk River.	Table GH-02 Drawing GH-18
Chemistry	2021 SSGMP/RGMP OC Results	› Dissolved Selenium: – GH_MW_MC-2D: exceeded primary criteria (Q1) and secondary criteria (Q1), consistent with historical results.	Table J Tables GH-03 to -05 Drawings GH-19 to -22 Figures GH-17 to -19
	Non-Order Mining Related and Naturally Occurring Constituents	› Dissolved Boron: – GH_MW_MC-2D: exceeded in Q1 to Q4, consistent with historical results. › Dissolved Fluoride: – GH_MW_MC-2D: exceeded in Q1 to Q4, consistent with historical results. › Dissolved Lithium: – GH_MW-MC-1D: exceeded in Q1 to Q4, consistent with historical results. – GH_MW-MC-2S/D: exceeded in Q1 to Q4, consistent with historical results. › Based on the BGA completed for the 2020 RGMP Update, dissolved boron, fluoride, and lithium were identified as not being related to mining. › Dissolved Chloride: – GH_MW_MC-2D: exceeded in Q1 to Q4, consistent with historical results. › Dissolved Sodium: – GH_MW_MC-2D: exceeded in Q1 to Q4, consistent with historical results. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04 SNC-Lavalin, 2020a
	Mann-Kendall Trend Analysis	› Stable, decreasing and/or no trend for OCs.	Table K Attachment III

Table I (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Elk River Valley Watershed and Study Area 4

Hydrogeological Information		Description	Reference
Leask and Wolfram Creeks Drainages			
Monitoring Locations	Relevant GHO SSGMP/RGMP Wells (Study Area 4)	Leask Drainage: GH_GA-MW-4, RG_MW_LC3A/B Wolfram Drainage: GH_GA-MW-2, RG_MW_WC2A/B, RG_MW_LCWC1	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	RG_MW_ER9A/B	
	Relevant Surface Water Monitoring Stations[b]	GH_ER1A, GH_ER2, GH_LC2, GH_WC1, GH_WC2, GH_LC3	
	Relevant Seep Monitoring Locations[b]	GH_SEEP_76, GH_SEEP_77	
Physical Hydrogeology	Groundwater Elevation Trends	› Manual Groundwater Elevations: – Leask Drainage: ▪ GH_GA_MW-4: elevations varied by up to 2.52 m in 2021, consistent with historical results. ▪ RG_MW_LC3A/B: elevations varied by up to 2.36 m in 2021, consistent with historical results. – Wolfram Drainage: ▪ GH_GA-MW-2: elevations varied by up to 1.68 m in 2021, consistent with historical results. ▪ RG_MW_WC2A/B: elevations varied by up to 1.5 m in 2021, consistent with historical results. ▪ RG_MW_LCWC1: elevations varied by up to 1.48 m in 2021, consistent with historical results. ▪ The Wolfram drainage is farther down the Elk River Valley than the Leask drainage and groundwater elevations in this drainage were approximately 4.5 m lower than at Leask drainage. › Continuous Groundwater Level Monitoring: – Logger data from both the Leask and Wolfram Drainages were compensated using GH_GA-MW-2 barologger. – Leask Drainage: ▪ RG_MW_LC3A: water level was below the logger in Q1. ▪ RG_MW_LC3B: water level fell below the logger hanging depth in Q1 and Q3.	Table GH-02 Figure GH-23
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – Leask Drainage: ▪ GH_MW_LC3A/B: 0.19 to 0.35, downward. – Wolfram Drainage: ▪ RG_MW_WC2A/B: 0.01, downward. › Lateral Groundwater Velocity: – Insufficient monitoring wells in this area, no lateral gradient and groundwater velocity could be calculated. – Groundwater flow is inferred to be west/southwest toward the Elk River.	Table GH-02 Drawing GH-18

Table I (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Elk River Valley Watershed and Study Area 4

Hydrogeological Information		Description	Reference
Leask and Wolfram Creeks Drainages (Cont'd)			
Chemistry	2021 SSGMP/RGMP OC Results	› Leask Drainage: – Sulphate: ▪ RG_MW_LC3B: exceeded in Q3 to Q4, consistent with historical results. – Nitrate-N: ▪ RG_MW_LC3A: exceeded in Q2 and Q3, consistent with historical results. ▪ RG_MW_LC3B: exceeded in Q2 to Q4, consistent with historical results. – Dissolved Selenium: ▪ GH_GA-MW-4: exceeded in Q2, consistent with historical results. ▪ RG_MW_LC3A: exceeded primary criteria (Q1 to Q4) and secondary criteria (Q1 to Q4), consistent with historical results. ▪ RG_MW_LC3B: exceeded primary criteria (Q1 to Q4) and secondary criteria (Q2 to Q4), consistent with historical results. ▪ Concentrations were decreasing, stable and/or no trend for all other OCs.	Table J Tables GH-03 to -05 Drawings GH-19 to -22 Figures GH-24 to -26
	2021 SSGMP/RGMP OC Results (Cont'd)	› Wolfram Drainage: – Sulphate: ▪ GH_GA-MW-2: exceeded in Q2 to Q4, consistent with historical results. – Nitrate-N ▪ GH_GA-MW-2: exceeded in Q1, Q2 and Q4, consistent with historical results. ▪ RG_MW_WC2B: exceeded in Q1 to Q4, consistent with historical results. ▪ RG_MW_LCWC1: exceeded in Q1 to Q4, consistent with historical results. – Dissolved Selenium: ▪ GH_GA-MW-2: exceeded primary criteria (Q1 to Q4) and secondary criteria (Q1 to Q4), consistent with historical results. ▪ RG_MW_WC2A/B: exceeded primary criteria (Q1 to Q4) and secondary criteria (Q1 to Q4), consistent with historical results. ▪ RG_MW_LCWC1: primary criteria (Q1 to Q4) and secondary criteria (Q1 to Q4), consistent with historical results.	Table J Tables GH-03 to -05 Drawings GH-19 to -22 Figures GH-24 to -26
	Non-Order Mining Related and Naturally Occurring Constituents	› Leask Drainage: – Dissolved Lithium: ▪ GH_GA-MW-4: exceeded in Q1 to Q4, consistent with historical results. ▪ RG_MW_LC3A/B: exceeded in Q1 to Q4, consistent with historical results. – Dissolved Molybdenum: ▪ GH_GA-MW-4: exceeded in Q1, consistent with historical results. ▪ RG_MW_LC3B: exceeded in Q2, consistent with historical results. › Wolfram Drainage: – Dissolved Lithium: ▪ GH_GA-MW-2: exceeded in Q1 to Q4, consistent with historical results. ▪ RG_MW_WC2A/B: exceeded in Q1 to Q4, consistent with historical results. ▪ RG_MW_LCWC1: exceeded in Q1 to Q4, consistent with historical results. – Dissolved Molybdenum: ▪ GH_GA-MW-02: exceeded in Q1 to Q4, consistent with historical results. › Based on the BGA completed for the 2020 RGMP Update, dissolved lithium was identified as not being related to mining. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04 SNC-Lavalin, 2020a

Table I (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Elk River Valley Watershed and Study Area 4

Hydrogeological Information		Description	Reference
Leask and Wolfram Creeks Drainages (Cont'd)			
Chemistry (Cont'd)	Mann-Kendall Trend Analysis	› Leask Drainage: – Mann-Kendall trend analysis indicates stable, decreasing and/or no trend. › Wolfram Drainage: – GH_GA-MW-2: increasing trend in all OCs, cadmium concentrations are up to two orders of magnitude lower than applicable primary screening criteria – Trend analysis indicates stable, decreasing and/or no trend for all OCs at RG_MW_WC2A/B and RG_MW_LCWC1. – Concentrations were decreasing, stable and/or no trend for all other OCs.	Table K Attachment III
Thompson Creek Drainage			
Monitoring Locations	Relevant GHO SSGMP/RGMP Wells (Study Area 4)	GH_GA-MW-3	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	RG_MW_ER3A/B	
	Relevant Surface Water Monitoring Stations[b]	GH_ER1A, GH_ERC, GH_TC2, GH_TC1, GH_ER2	
	Relevant Seep Monitoring Locations[b]	GH_SEEP_46, GH_SEEP_60	
Physical Hydrogeology	Groundwater Elevation Trends	› Manual Groundwater Elevations: – GH_GA_MW-3: elevations varied by up to 2.52 m in 2021, consistent with historical results. › Continuous Groundwater Level Monitoring: – Logger data compensated using GH_GA-MW-2 barologger.	Table GH-02 Figure GH-31
	Hydraulic Gradients and Flow Direction	› No nested well pair to calculate vertical hydraulic gradient. › Insufficient monitoring wells in this area, no lateral gradient and groundwater velocity could be calculated. › Groundwater flows south along the Elk River valley bottom	Table GH-02 Drawing GH-18
Chemistry	2021 SSGMP/RGMP OC Results	› No OC was greater than primary screening criteria in 2021.	Table J Tables GH-03 to -05 Drawings GH-19 to -22 Figures GH-32 to -34
	Non-Order Mining Related and Naturally Occurring Constituents	› Dissolved lithium: exceeded in Q1 to Q4, consistent with historical results. › Based on the BGA completed for the 2020 RGMP Update, dissolved lithium was identified as not being related to mining. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04 SNC-Lavalin, 2020a
	Mann-Kendall Trend Analysis	› Mann-Kendall trend analysis indicates OCs were probably decreasing (nitrate-N) and/or no trend. › Concentrations were decreasing, stable and/or no trend for all other OCs.	Table K Attachment III
Downgradient of Thompson Creek Drainage			
Monitoring Locations	Relevant GHO SSGMP/RGMP Wells (Study Area 4)	GH_MW-ERSC-1	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	RG_MW_ER1A/B, RG_MW_ER2A/B, RG_MW_ER5A/B, RG_MW_ER6A/B, RG_MW_ER7A/B, RG_MW_ER8, RG_MW_ER10A/B, RG_MW_ER11A/B	
	Relevant Surface Water Monitoring Stations[b]	GH_ER1A, GH_ERC, GH_TC2, GH_ERSC2	
	Relevant Seep Monitoring Locations[b]	GH_SEEP_46, GH_SEEP_60	

Table I (Cont'd): Summary of 2021 Groundwater Monitoring and Sampling Results for Elk River Valley Watershed and Study Area 4

Hydrogeological Information		Description	Reference
Physical Hydrogeology	Groundwater Elevation Trends	› Manual Groundwater Elevations: – GH_MW-ERSC-1: elevations varied by up to 0.19 m in 2021, consistent with historical results. › Continuous Groundwater Level Monitoring: – Logger data compensated using GH_GA-MW-2 barologger.	Table GH-02 Figure GH-31
	Hydraulic Gradients and Flow Direction	› No nested well pair to calculate vertical hydraulic gradient. › Insufficient monitoring wells in this area, no lateral gradient and groundwater velocity could be calculated.	Table GH-02 Drawing GH-18
Chemistry	SSGMP/RGMP OC Results	› Nitrate-N: exceeded in Q1, consistent with historical results. › Dissolved Selenium: exceeded primary criteria (Q1, Q3, Q4) and secondary criteria (Q1, Q3, Q4), consistent with historical results.	Table J Tables GH-03 to -05 Drawings GH-19 to -22 Figures GH-32 to -34
	Non-Order Mining Related and Naturally Occurring Constituents	› Dissolved Lithium: – Exceeded in Q1 to Q4, consistent with historical results. › Based on the BGA completed for the 2020 RGMP Update, dissolved lithium was identified as not being related to mining. › All other constituents were less than primary screening criteria.	Tables GH-03 and -04
	Mann-Kendall Trend Analysis	› Trend Analysis Indicates: – increasing trend in nitrate-N and dissolved selenium concentrations. – probably increasing trend in sulphate concentrations, however, these remained lower than applicable primary screening criteria in 2021. – Concentrations were decreasing, stable and/or no trend for all other OCs.	Table K Attachment III
Elk River Valley Downgradient of GHO (Study Area 4)			
Monitoring Locations	Relevant GHO RGMP Wells (Study Area 4)	RG_DW-01-03 (District of Elkford Municipal Supply Well), GH_MW_EF1A/B	Drawing GH-01 Table GH-01 Attachment I
	Relevant Monitoring Wells from Other Programs[a]	n/a	
	Relevant Surface Water Monitoring Stations[b]	GH_ERC, GH_ER1	
	Relevant Seep Monitoring Locations[b]	n/a	
Physical Hydrogeology	Groundwater Elevation Trends	› Manual Groundwater Elevations: – GH_MW_EF1A: elevations varied by up to 0.38 m in 2021. – GH_MW_EF1B: elevations varied by up to 0.41 m in 2021. › Continuous Groundwater Level Monitoring: – Logger data compensated using GH_Barologger at RG_MW_LC3A/B.	Table GH-02 Figure GH-39
	Hydraulic Gradients and Flow Direction	› Vertical Hydraulic Gradient: – GH_MW-EF1A/B: 0.003 to 0.005 m/m, downward.	Table GH-02 Drawing GH-18

Table I (Cont'd): Summary of 2020 Groundwater Monitoring and Sampling Results for Elk River Valley Watershed and Study Area 4

Hydrogeological Information		Description	Reference
Chemistry	2021 SSGMP/RGMP OC Results	› No OC exceeded any primary screening levels in 2021.	Table J Tables GH-03 to -05 Drawings GH-19 to -22 Figures GH-40 to -42
	Non-Order Mining Related and Naturally Occurring Constituents	› No OC mining related constituents exceeded any primary screening levels in 2021.	Tables GH-03 and -04
	Mann-Kendall Trend Analysis	› RG_DW-01-03: – Increasing trend in nitrate-N, sulphate and dissolved selenium. – Concentrations of all three parameters were at least an order of magnitude lower than applicable primary screening criteria. – Concentrations were decreasing, stable and/or no trend for all other OCs. › GH_MW_EF1A/B: – Insufficient data to complete Mann-Kendall analysis.	Table K Attachment III

Notes:
n/a denotes not applicable.
[a] – Other relevant monitoring wells are those in the area that have yet to be evaluated for inclusion in the SSGMP and/or RGMP.
[b] – Other relevant surface water stations and seep monitoring locations were determined in the 2021 SSGMP Update (SNC-Lavalin, 2021c), and represent a sub-set of the surface water and seepage monitoring locations present at GHO and Study Area 4.

A summary of results for OC compared to primary screening criteria is presented in Table J below.

Table J: Summary of OC compared to Primary Screening Criteria in the Elk River Watershed

Parameter[1,2,3] / Well ID	Nitrate-N (mg/L)				Sulphate (mg/L)				Dissolved Cadmium (µg/L)				Dissolved Selenium (µg/L)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Mickelson Drainage																
GH_MW-MC-1D	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GH_MW-MC-1S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GH_MW-MC-2D	-	-	-	-	-	-	-	-	-	-	-	-	***88.5***	-	-	-
GH_MW-MC-2S	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Leask Drainage																
GH-GA-MW-4	-	-	-	-	-	-	-	-	-	-	-	-	-	14.4	-	-
RG_MW_LC3A	-	11.3	20.3	-	-	-	-	-	-	-	-	-	***21.7***	***58.3***	***105***	***46.6***
RG_MW_LC3B	-	12.3	35.7	29.5	-	-	574	510	-	-	-	-	14.6	***61.2***	***176***	***158***
Wolfram Drainage																
GH_GA-MW-2	10.6	12.4	-	11	-	504	513	519	-	-	-	-	***32.4***	***36.5***	18.8	***33.2***
RG_MW_LCWC1	-	-	-	-	14.9	18.5	22.6	17.6					***54.3***	***79.3***	***117***	***87***
RG_MW_WC2A	-	-	-	-	-	-	-	-	-	-	-	-	***36.5***	***37.5***	***33.7***	***25.8***
RG_MW_WC2B	14.1	-	-	10.3	-	-	-	-	-	-	-	-	***52.9***	***44.1***	***36***	***49***
Thompson Drainage																
GH_GA-MW-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

[1] Primary screening criteria are CSR standards for **Aquatic Life (AW),** Drinking Water (DW), Livestock (LW), and *Irrigation (IW)*.

[2] '–' denotes result below primary screening criteria for given constituents.

[3] Where a duplicate was collected, the higher concentration is provided in table. If more than one sample collected in a quarter, the higher of the two samples is provided in the table.

[4] Standard varies with hardness.

'NS' denotes no sample.

Table J (Cont'd): Summary of OC compared to Primary Groundwater Screening Criteria in the Elk River Watershed

Parameter[1,2,3] / Well ID	Nitrate-N (mg/L)				Sulphate (mg/L)				Dissolved Cadmium (µg/L)				Dissolved Selenium (µg/L)			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Downgradient of Thompson Drainage																
GH_MW-ERSC-1	-	-	-	-	10.7	-	-	-	-	-	-	-	***62.8***	-	***27.4***	***32***
Elk River Valley Downgradient of GHO																
GH_MW_EF1A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
GH_MW_EF1B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
RG_DW-01-03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CSR AW	400				1,280 – 4,290[4]				0.5 – 4[4]				20			
CSR IW	n/a				n/a				5				20			
CSR LW	100				1,000				80				30			
CSR DW	10				500				5				10			
BCWQG (Long-term Average)	3,000				309 – 429[3]				n/a				2			
BCWQG (Short-term Average)	32,800				n/a				n/a				n/a			

Notes:

[1] Primary screening criteria are CSR standards for **Aquatic Life (AW),** Drinking Water (DW), Livestock (LW), and *Irrigation (IW)*.

[2] '–' denotes result below primary screening criteria for given constituents.

[3] Where a duplicate was collected, the higher concentration is provided in table. If more than one sample collected in a quarter, the higher of the two samples is provided in the table.

[4] Standard varies with hardness.

'NS' denotes no sample.

Mann-Kendall trend analyses were completed for OC at wells where sufficient data and summarized in Table K below (Attachment III).

Table K: Summary of Mann-Kendall Trend Analysis for OC in the Leask and Wolfram Drainages of the Elk River Watershed

Parameter[1] / Well ID	Nitrate-N	Sulphate	Dissolved Cadmium	Dissolved Selenium
Mickelson Drainage				
GH_MW_MC1D	-	Decreasing	-	-
GH_MW_MC1S	No Trend	Stable	Stable	-
GH_MW_MC2D	-	Probably Decreasing	No Trend	-
GH_MW_MC2S	Probably Decreasing	Decreasing	Stable	Decreasing
Leask Drainage				
GH_GA-MW-4	Decreasing	Decreasing	-	***Probably Decreasing***
RG_MW_LC3A	***No Trend***	No Trend	Stable	***No Trend***
RG_MW_LC3B	***No Trend***	***No Trend***	No Trend	***No Trend***
Wolfram Drainage				
GH_GA-MW-2	***Increasing***	***Increasing***	Increasing	***Increasing***
RG_MW_LCWC1	Probably Decreasing	***No Trend***	Stable	***Stable***
RG_MW_WC2A	Probably Decreasing	Stable	-	***Stable***
RG_MW_WC2B	***No Trend***	Stable	No Trend	***No Trend***
Thompson Drainage				
GH_GA-MW-3	Probably Decreasing	No Trend	-	No Trend
Downgradient of Thompson Drainage				
GH_MW-ERSC-1	***Increasing***	***Probably Increasing***	No Trend	***Increasing***
Elk River Valley Downgradient of GHO				
RG_DW-01-03	Increasing	Increasing	-	Increasing

Notes:
[1] Where OC were measured above primary screening criteria in 2021, the trend result is ***italics***. Where the OC were measured above secondary screening criteria for dissolved selenium during at least one event in 2021, the result is ***italics***. Where increasing trends are noted, the cell is shaded yellow.

1.6.1 Discussion

Mickelson Creek Drainage

Nested monitoring wells GH_MW-MC-1S/D and GH_MW-MC-2S/D were installed near Mickelson sedimentation ponds (Mickelson Ponds) to monitor the groundwater quality near the sedimentation ponds and to evaluate connectivity to surface water and shallow groundwater. Currently, there are no spoils in the Mickelson Creek drainage; however, cast over material is present in the upper flanks. Based on the GHO

Pit Drainage and Pumping Management Plan future pumping from Phase 6 Pit may be periodically directed into Mickelson Creek (Teck, 2018); however, no pit water has been directed to the creek since 2015. Surface water at Mickelson Creek flows over till/morainal materials and loses to ground on the upper valley flanks over debris flow materials (SNC-Lavalin, 2019a).

GH_MW-MC-1S/D

Mickelson Ponds are unlined and surface water from the ponds is inferred to infiltrate into the ground in the area. Nested well pair GH_MW-MC-1S/D is located downgradient from the Mickelson settling pond towards the Elk River (Drawing GH-01).

In 2021, dissolved selenium and sulphate concentrations at GH_MW-MC-1S had similar OC concentrations measured in the Elk River (GH_ER2), while nitrate-N concentrations (0.0804 to 0.17 mg/L) were slightly greater than at GH_ER2 (Figures GH-17 and -19). Concentrations of all OCs at GH_MW-MC-1S were below primary screening criteria. Concentrations of OCs at deep well GH_MW-MC-1D were frequently below the method detection limit (MDL) in 2021 (Tables GH-03 and -04). Mann-Kendall trend analysis indicates OC concentrations are decreasing, stable or not trending (Attachment III).

The Se:SO_4 (S) plot suggests that groundwater from GH_MW-MC-1S is non-contact water similar to the Elk River at GH_ER2, while groundwater from GH_MW-MC-1D is non-contact water with sulphate concentrations at or close to the MDL (Figure GH-20). The water type at GH_MW-MC-1S was calcium-magnesium-bicarbonate and was sodium-calcium-magnesium-bicarbonate at GH_MW-MC-1D (Figure GH-21).

A Schoeller plot indicates 2021 data at GH_MW-MC-1D had higher proportions of sodium and chloride than at GH_MW-MC-1S, Mickelson Creek or the Elk River (Figure GH-22). GH_MW-MC-1D is a deep well (screened between 30.4 to 31.9 mbgs) installed in sand and gravel overlying bedrock (Attachment I). The hydraulic conductivity at this well is 3 x 10^{-4} m/s and a slightly upward vertical gradient is apparent (Table GH-02). Elevated sodium and chloride from natural sources have been previously identified in groundwater overlying or within bedrock (SNC-Lavalin, 2017). In addition, sodium enrichment in groundwater relative to calcium and magnesium is typical of the evolution of groundwater along a longer flow path due to cation exchange (SNC-Lavalin, 2017). Isotope sampling (sulphate, ^{18}O-H_2O, ^{2}H-H_2O, tritium) will be conducted to further assess the groundwater pathway.

GH_MW-MC-2S/D

Nested well pair GH_MW-MC-2S/D is farther upgradient in the Mickelson Creek drainage and historically has higher concentrations of OCs than at GH_MW-MC-1S/D. In 2021, concentrations of OCs in shallow well GH_MW-MC-2S were generally consistent with concentrations measured in Mickelson Creek (GH_MC1) in Q2 to Q4 (Figures GH-17 to -19). Deep monitoring well GH_MW-MC-2D contained the highest measured concentrations of dissolved selenium in the Mickelson drainage (88.5 µg/L in Q1), with values greater than concentrations measured in Mickelson Creek in Q1, Q3 and Q4 (Figure GH-17). Conversely, sulphate concentrations (3.8 to 20.1 mg/L) at GH_MW-MC-2D were less than Mickelson Creek in all four quarters and Elk River in Q1 and Q3 (Figure GH-18). Mann-Kendall trend analysis indicates OC concentrations are decreasing, stable or not trending (Attachment II).

The Se:SO_4 (S) plot suggests that groundwater from GH_MW-MC-2S was not mine-influenced in 2021 (Figure GH-20). The water type at GH_MW-MC-2S was calcium-magnesium-bicarbonate in all four quarters with the exception of Q3 which had a calcium-magnesium-bicarbonate-sulphate water type

(Figure GH-21). The water type at GH_MW-MC-2D was sodium-bicarbonate-chloride in 2021 and historically (Figure GH-21).

Based on studies completed by SRK Consulting Inc. (SRK), spoils contact water is characterized by a $Se:SO_4$ (S) ratio of approximately 5×10^{-4} or higher (SRK, 2018a; SRK, 2018b). Groundwater from GH_MW-MC-2D has $Se:SO_4$ (S) ratio greater than 5×10^{-4} but the data does not fall along the mixing line between natural non-contact water and spoils influenced water (Figure GH-20). The elevated concentrations of dissolved selenium at GH_MW-MC-2D are not well understood.

The Schoeller plot for GH_MW-MC-2S indicates that major ion concentrations were similar to Mickelson Creek (GH_MC1) in 2021 (Figure GH-21). At GH_MW-MC-2D, the Schoeller plot indicates that groundwater from this well had higher concentrations of sodium and chloride compared to other wells, Mickelson Creek (GH_MC1) and the Elk River (GH_ER2) in 2021 (Figure GH-21). This well is installed in a sand and gravel unit directly above the bedrock contact. According to the mapped bedrock geology (Drawing 2) GH_MW-MC-2D is installed near the contact between the Fernie Fm and the Spray River Group. Elevated sodium and chloride from natural sources and have previously been identified in groundwater overlying or within bedrock from the Fernie Fm (SNC-Lavalin, 2017). In addition, sodium enrichment in groundwater relative to calcium and magnesium is typical of the evolution of groundwater along a longer flow path due to cation exchange (SNC-Lavalin, 2017).

It is not certain whether this well is influenced by bedrock groundwater or if it is mine-influenced. Isotope sampling (sulphate, $^{18}O\text{-}H_2O$, $^{2}H\text{-}H_2O$, tritium) will be conducted to further assess the groundwater pathway.

Leask Drainage

The West Spoil is within the upper catchment of Leask Creek. Dewatering activities from the Phase 6 Pit are directed to Leask Creek and contribute OC to surface water. Water from Wolfram Creek and Mickelson Creek are also diverted to the Leask Ponds when the infiltration capacities at Wolfram and Mickelson have been exceeded (Hemmera, 2014). In 2021, Teck recorded that water from the Phase 6 Pit was discharged to Leask Creek between January 1 and April 26, at rates up to 5,102 cubic metres per day (m^3/day).

Leask Creek flows over an alluvial fan into the unlined Leask Ponds where it is interpreted to be mine-influenced as indicated by elevated concentrations of OC above BCWQG in the Leask Ponds (GH_LC1). Surface water in the ponds is inferred to lose water into the ground (SNC-Lavalin, 2019c). Leask Ponds decants to the main stem of the Elk River. Personal communication with Minnow Environmental Inc. (Minnow; Minnow, 2020), indicated overland flow from Leask Ponds to the Elk River was observed seasonally in 2019, but was not observed in 2017 or 2018 (Minnow and Lotic, 2018), which may be indicative that Leask Ponds has high infiltration capacity. In 2020, overland flow was observed between Leask Ponds and the Elk River in June (Lotic, 2021).

GH_GA-MW-4

Monitoring well GH_GA-MW-4 is downgradient of Leask Creek, near Leask Ponds. In 2021, OC concentrations exceeded primary screening criteria in Q2 (Figures GH-24 to -26). Mann-Kendall analyses indicate OCs are decreasing (nitrate-N, sulphate) or probably decreasing (dissolved selenium; Attachment III).

The Se:SO_4 (S) plot shows that groundwater from GH_GA-MW-4 was non-contact water (Q3, Q4) and mixing with spoils influenced water (Q1, Q2; Figure GH-27). The water type at this well varied in 2021, calcium-magnesium-sulphate-bicarbonate (Q1, Q2) and calcium-magnesium-bicarbonate (Q3, Q4; Figure GH-28).

A Schoeller plot of GH_GA-MW-4 from 2018 to 2021 compares data for this well to data from Leask Ponds (GH_LC2) and the Elk River (GH_ER2). In 2021, major ion concentrations were similar to the Leask Ponds in Q1 and Q2, compared with Q3 and Q4, when the Elk River has a greater influence on groundwater (Figure GH-29).

Wells RG_MW_LC3A/B are within 250 m of GH_GA-MW-4 and in a more representative location downstream of Wolfram Ponds proximal to GH_LC1. In the 2021 SSGMP Update (SNC-Lavalin, 2021c), it is recommended that after sufficient data is collected at RG_MW_LC3A/B that GH_GA-MW-4 be considered for decommissioning.

RG_MW_LC3A/B

Monitoring wells RG_MW_LC3A/B were originally installed as part of the MBI to obtain a better understanding of groundwater quality and groundwater-surface water interaction in the area and were added to the SSGMP in the 2021 SSGMP Update (SNC-Lavalin, 2021c). Wells RG_MW_LC3A/B monitor groundwater quality downgradient from Leask Creek and Leask Ponds but upgradient of Wolfram Creek and ponds.

In 2021, concentrations greater than primary and secondary (for dissolved selenium only) screening criteria were measured at RG_MW_LC3A for nitrate-N (5.55 to 20.3 mg/L) and dissolved selenium (21.7 to 105 µg/L), as well as sulphate (154 to 574 mg/L), nitrate-N (3.59 to 35.7 mg/L), and dissolved selenium (14.6 to 176 µg/L) concentrations at RG_MW_LC3B. Concentrations of all OCs were below those measured in surface water at Leask Ponds (GH_LC2; Figure GH-24 to -26). Mann-Kendall trend analyses indicates concentrations are stable or not trending (Attachment III).

The Se:SO_4 (S) plot suggests that non-contact groundwater from RG_MW_LC3A/B is mixing with spoils influenced water from Leask Ponds (Figure GH-27). In 2021, the water type was calcium-magnesium-sulphate-bicarbonate in all four quarters.

Wolfram Drainage

The unlined Wolfram Primary and Secondary Sedimentation Ponds are located at the base of Wolfram Creek and are constructed on glaciofluvial deposits. Surface water from Wolfram Creek flows from spoils over bedrock and/or till in the upper parts of the catchment and over alluvial deposits in the lower part of the catchment. Waste rock from the West Spoil is present in the upper catchment of Wolfram Creek watershed. Occasionally, water is pumped from the Leask Ponds to the Wolfram Ponds (and vice versa) to improve water management, facilitate sediment removal, manage fish access to ponds, control total suspended solids (TSS) in either creek or to manage upset conditions. Phase 3 and 4 pit water may be discharged to the Wolfram Creek System or conveyed to the adjacent Phase 6 pits for longer term storage on site or to be pumped to the Leask/Mickelson System.

In 2021, Teck did not discharge any water from Phase 3 Pit to Wolfram Creek. In 2020, overland flow was observed between Wolfram Ponds and the Elk River in June and July (Lotic, 2021). No overland flow was observed at this location between May 2017 and March 2018 (Minnow and Lotic, 2018).

GH_GA-MW-2

Well GH_GA-MW-2 is located on the east side of the Wolfram secondary pond (Drawing GH-01) to monitor groundwater in the valley bottom associated with waste spoils in Wolfram Creek Drainage and ponds at the base of the drainage system. Based on the expected lithology, surface infiltration from the pond in the vicinity of GH_GA-MW-2 is expected.

In 2021, concentrations of sulphate (481 to 519 mg/L), nitrate-N (8.91 to 12.4 mg/L) and dissolved selenium (18.8 to 36.5 µg/L) exceeded primary criteria and secondary criteria for dissolved selenium (Table GH-03 to -05). Consistent with previous years, OC concentrations remain lower than those measured at Wolfram Ponds (GH_WC1, GH_WC2; Figures GH-24 to -26). Mann-Kendall trend analyses indicate all OCs are increasing (Attachment II).

The Se:SO_4 (S) plot suggests that non-contact groundwater from GH_GA-MW-2 is mixing with CCR seepage influenced water (Figure GH-27). Until 2017, groundwater at GH_GA-MW-2 had been predominantly calcium-bicarbonate type water (similar to Elk River). However, increases in sulphate concentrations over time have shifted the water type to calcium-magnesium-sulphate-bicarbonate (Figure GH-28). This shift, along with higher concentrations of OC, suggest that groundwater in the area over time is more influenced by mine-influenced surface water from Wolfram Creek and ponds than in previous years. In addition, the Schoeller plot indicates major ion concentrations at GH_GA-MW-2 were similar to Wolfram Ponds (GH_WC1) with higher proportions of sulphate and lower proportions of bicarbonate (Figure GH-30).

Wells RG_MW_WC2A/B are within 90 m of GH_GA-MW-2 and is more representative of shallow groundwater conditions as it is located at the outflow of the Wolfram Ponds proximal to GH_WC1. In the 2021 SSGMP Update (SNC-Lavalin, 2021c), it was recommended that after sufficient data is collected at RG_MW_WC2A/B that GH_GA-MW-2 be considered for decommissioning.

RG_MW_WC2A/B

In Q4 of 2019, nested monitoring wells RG_MW_WC2A/B were installed downgradient of Wolfram Ponds as part of the MBI and were added to the SSGMP in the 2021 SSGMP Update (SNC-Lavalin, 2021c). The wells are located near the outflow of the Wolfram Ponds (GH_WC1) to monitor groundwater quality in the Wolfram Creek Drainage, downgradient of the ponds (Drawing GH-01).

In 2021, concentrations of dissolved selenium (25.8 to 37.5 µg/L) at RG_MW_WC2A and nitrate-N (6.59 to 14.3 mg/L) and dissolved selenium (36 to 52.9 µg/L) at RG_MW_WC2B were greater than primary screening criteria (Figure GH-24 to -26) and secondary screening criteria for dissolved selenium. However, Mann-Kendall trend analyses indicates concentrations of all OCs are stable or not trending (Attachment III). Concentrations of all OCs were below those measured in the Wolfram Ponds (GH_WC1).

The Se:SO_4 (S) plot suggests non-contact groundwater from RG_MW_WC2A/B is mixing with spoils influenced water (Figure GH-27). The water type at RG_MW_WC2A/B is calcium-magnesium-sulphate-bicarbonate supporting the inference that groundwater is mixing with mine-influenced water (Figure GH-28).

RG_MW_LCWC1

Monitoring well RG_MW_LCWC1 was originally installed as part of the MBI to obtain a better understanding of groundwater quality and groundwater-surface water interaction in the area and was added to the SSGMP in the 2021 SSGMP Update (SNC-Lavalin, 2021c). The well is located downgradient of Leask Creek and

Leask Ponds but upgradient of Wolfram Creek and Wolfram Ponds (Drawing GH-01). The nearest surface water station is in Wolfram Creek (GH_WC2), approximately 150 m from RG_MW_LCWC1.

In 2021, concentrations of nitrate-N (14.9 to 22.6 mg/L) and dissolved selenium (54.3 to 117 µg/L) were greater than primary screening criteria (Figure GH-24 to -26) and secondary screening criteria for dissolved selenium. However, Mann-Kendall trend analyses indicates concentrations of all OCs are probably decreasing, stable or not trending (Attachment II). Concentrations of all OCs were below those measured in the Wolfram Creek (GH_WC1 and GH_WC2) and Leask Creek (GH_LC2).

The Se:SO_4 (S) plot suggests non-contact groundwater from RG_MW_LCWC1 is mixing with spoils influenced water (Figure GH-27). The water type at RG_MW_LCWC1 is calcium-magnesium-sulphate-bicarbonate, supporting the inference that RG_MW_LCWC1 is mixing with mine-influenced water (Figure GH-28). The source of nitrate-N and dissolved selenium is inferred to originate from infiltration of Wolfram Creek surface water into the ground upstream of the pond.

Thompson Creek Drainage

Monitoring well GH_GA-MW-3 is downgradient of Thompson Creek and Lower Thompson Pond (Drawing GH-01). The nearest surface water station (GH_TC1) is approximately 90 m away along Thompson Creek and downstream of Lower Thompson Pond. Near Thompson Creek, approximate surface water elevations in the Elk River Side Channel (ERSC) are consistent with groundwater elevations measured at GH_GA-MW-3 during times of low flow (SNC-Lavalin, 2019c).

In previous years groundwater at GH_GA-MW-3 had OC concentrations greater than applicable screening criteria; however, concentrations in 2021 were below criteria of all OCs (Figures GH-32 to -34). In addition, concentrations of sulphate (30.9 to 108 mg/L) and dissolved selenium (1.38 to 7.04 µg/L) at GH_GA-MW-3 were less than concentrations measured in Thompson Creek (GH_TC1 and GH_TC2). Mann-Kendall trend analyses indicated nitrate-N concentrations were probably decreasing, while there was no trend identified in sulphate and dissolved selenium concentrations (Attachment III).

In 2021, the water type at GH_GA-MW-3 varied from magnesium-calcium-sodium-sulphate-bicarbonate in Q1, calcium-magnesium-bicarbonate in Q2 when water levels were highest (Figure GH-31), and magnesium-calcium-sodium-bicarbonate in Q3 and Q4 (Figure GH-36). The Se:SO_4 (S) plot suggests Q1 and Q3 groundwater was mixing with spoils influenced water, while Q2 and Q4 water chemistry was more consistent with the Elk River (GH_ERC) and is inferred to be more influenced by non-contact water (Figure GH-35).

The Schoeller plot compares data from 2018 to 2021 for GH_GA-MW-3, Thompson Pond (GH_TC2) and the Elk River (GH_ERC and GH_ER2; Figure GH-37). In 2021, major ion concentrations were similar to the Elk River in 2021 with lower proportions of sulphate compared to 2020 likely from high water levels during freshet.

Downgradient of Thompson Creek Drainage

Monitoring well GH_MW_ERSC-1 is downgradient of Thompson Creek and downgradient of the confluence between the ERSC and the Elk River. The ERSC in this area is interpreted to receive flow in the spring and summer from the groundwater fed wetted area near where Thompson Creek joins the ERSC and surface water monitoring station GH_ERSC2. In the fall, flows are inferred to infiltrate into the ground. The nearest surface water station to GH_MW-ERSC-1 is GH_ERC, located approximately 200 m upstream of the well (Drawing GH-01).

In 2021, concentrations of nitrate-N (0.872 to 10.7 mg/L) and dissolved selenium (5.82 to 62.8 µg/L) were greater than applicable screening criteria (Tables GH-03 and -04). Since 2017, there have been several occurrences of dissolved selenium and nitrate-N- greater than the primary screening criteria (Figures GH-32 to -34). Mann-Kendall trend analyses has indicated an increasing trend in nitrate-N and dissolved selenium concentrations and a probably increasing trend in sulphate concentrations (Attachment III).

The Se:SO_4 (S) plot suggests that non-contact groundwater from GH_MW-ERSC-1 is mixing with spoils influenced water (Figure GH-35). The water type has historically been calcium-bicarbonate, consistent with the Elk River and the ERSC. In 2021, the water type varied between calcium-magnesium-bicarbonate in Q1, calcium-bicarbonate in Q2 and calcium-sulphate-bicarbonate in Q3 and Q4 (Figure GH-36). In addition, the Piper plot shows GH_MW-ERSC-1 plotting in the mine-influenced area of the diagram with higher proportions of sulphate.

A Schoeller plot compares data from 2018 to 2021 for GH_MW-ERSC-1, Thompson Pond (GH_TC2) and the Elk River (GH_ERC; Figure GH-38). In 2021, major ion concentrations were similar to Thompson Pond with higher proportions of sulphate compared to 2020 indicating groundwater in the area was more influenced by Thompson Pond. In Q2, the Elk River had more influence on GH_MW-ERSC-1 likely due to high water levels during freshet.

The MBI has several monitoring wells in the area of GH_MW-ERSC-1 and is currently completing an interpretive study in 2021 of all data collected within the Elk River main stem. Further interpretation of the potential source of elevated OCs measured intermittently at GH_MW-ERSC-1 will be conducted.

Elk River Valley Downgradient of GHO

Nested monitoring wells GH_MW-EF1A/B were installed in 2020 in the Elk River Valley bottom near Elkford to better understand upland groundwater transport to the valley bottom (Drawing GH-01). Municipal supply well RG_DW-01-03 is located in the Elk River Valley bottom near Elkford and is sampled to monitor groundwater quality farther downgradient in Study Area 4. Surface water station GH_ER1 is in the Elk River approximately 225 m east of RG_DW-01-03 while GH_ERC is located upstream near the GHO permitted area.

In 2021, OC concentrations at all wells have remained the same order of magnitude as the Elk River (GH_ER1, GH_ERC) with no lag in concentrations observed at GH_MW_EF1A/B (Figures GH-40 to -42). OC concentrations at RG_DW-01-03 were greater than concentrations measured in the Elk River with peak concentrations in Q2 and/or Q3 (Figures GH-40 to -42). The Se:SO_4 (S) plot indicates groundwater from RG_DW-01-03 is non-contact water mixing with mine-influenced water (Figure GH-43). Mann-Kendall trend analyses show an increasing trend in nitrate-N, sulphate and dissolved selenium at RG_DW-01-03; however, concentrations remained at least an order of magnitude lower than the applicable primary screening criteria (Attachment III).

Regionally, concentrations of OCs in the Elk River Valley bottom in Study Area 4 decrease downstream of the GHO mine permitted area. Dissolved selenium concentrations were below screening criteria in supply well RG_DW-01-03, with concentrations further decreasing farther downgradient of Elkford, likely due to mixing with surface water and additional groundwater inputs.

2 Recommendations

Recommendations identified for GHO SSGMP and RGMP Study Areas 1, 2 and 4 are presented in Table L. Appendix II of the main report provides recommendations related to GHO from the 2020 RGMP Update (SNC-Lavalin, 2020a) and the 2020 Annual Report (SNC-Lavalin, 2021a). Where previous recommendations were carried over, they are provided in Table M.

Table L: Summary of New Recommendations - GHO SSGMPs and RGMP

Program	Recommendation
Site-Specific Groundwater Monitoring Programs	
GHO SSGMP	Replace the transducer in GH_MW_GHC-1B.
	Install a transducer in GH_MW_RLP2.
Regional Groundwater Monitoring Program	
Study Area 4	Lower the hanging depth of loggers installed in RG_MW_LC3A/B

Table M: Summary of Existing Recommendations - GHO SSGMP and RGMP

Program	Recommendation
Site-Specific Groundwater Monitoring Programs	
GHO SSGMP	Decommission GH_GA-MW-4 which was replaced with RG_MW_LC3A/B, now that one year of data has been collected at RG_MW_LC3A/B.
	Decommission GH_GA-MW-2 which was replaced with RG_MW_WC2A/B, now that one year of data has been collected at RG_MW_WC2A/B.
Regional Groundwater Monitoring Program	
Study Area 1	Review results of ongoing MBI and Porter Creek investigations to assess the potential groundwater transport of OCs from the Porter Creek catchment.
Study Area 3	Assess results from GHO Greenhills-Fording Aquifer Study drilling program to consider potential inclusion of the new monitoring wells in the GHO SSGMP.
Study Area 4	Assess results of isotope samples (^{18}O-H_2O, ^{2}H-H_2O, tritium and sulphate) at GH_MW-MC-2D and GH_MW-MC-1D. If results are inconclusive, further field investigation of the deep groundwater flow regime will be conducted.
	Assess results from MBI investigation downgradient of Thompson Creek watershed to consider potential inclusion of new monitoring wells into SSGMP/RGMP.

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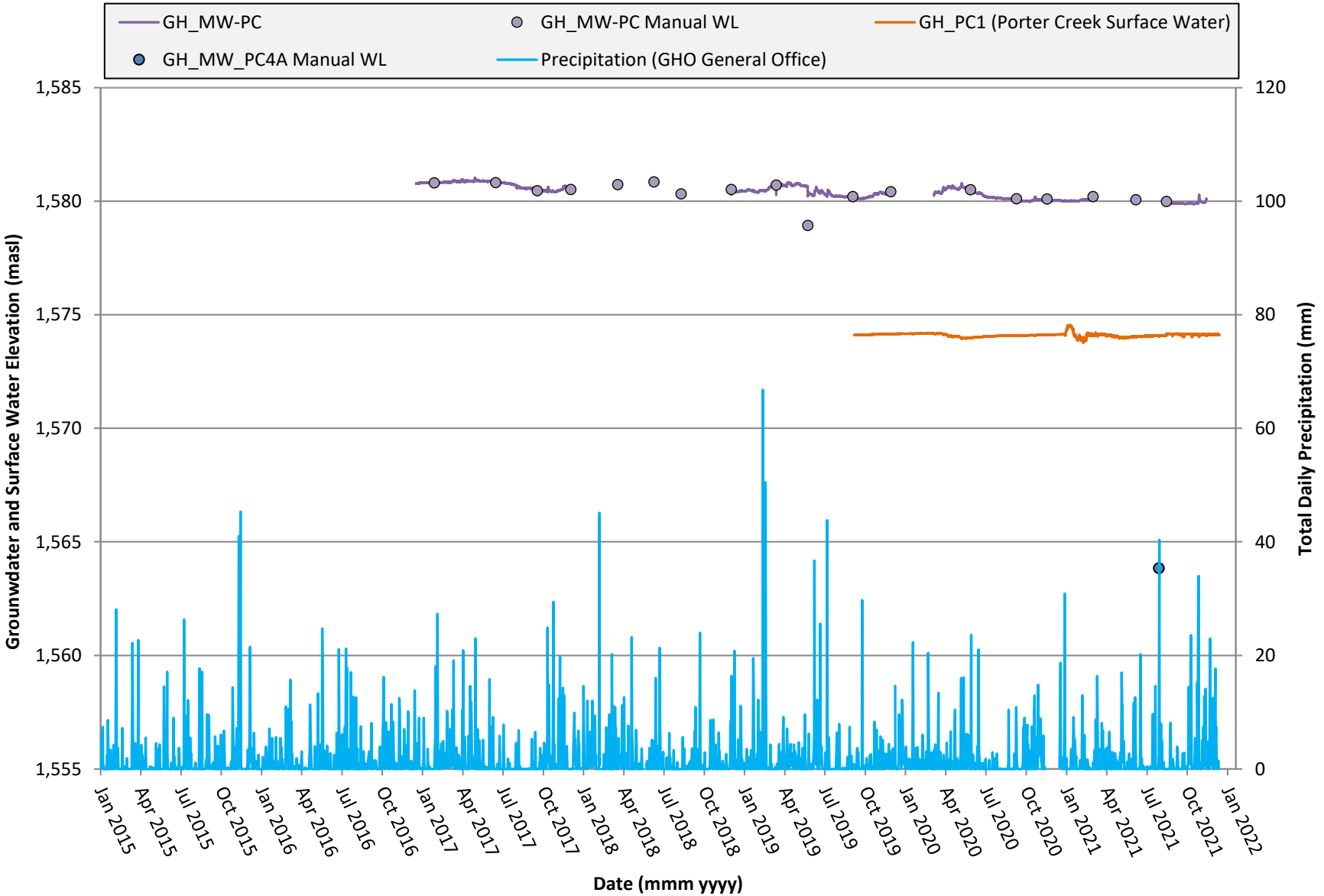
Figures:

Figure GH-01: Porter Creek - Hydrograph



Note: Data was removed where suspected datalogger removal occured.
Precipitation data recorded on February 8, 17 and 18, 2018 have been removed as the data is inferred to be anomalous.

Figure GH-02: Porter Creek Watershed - Selenium

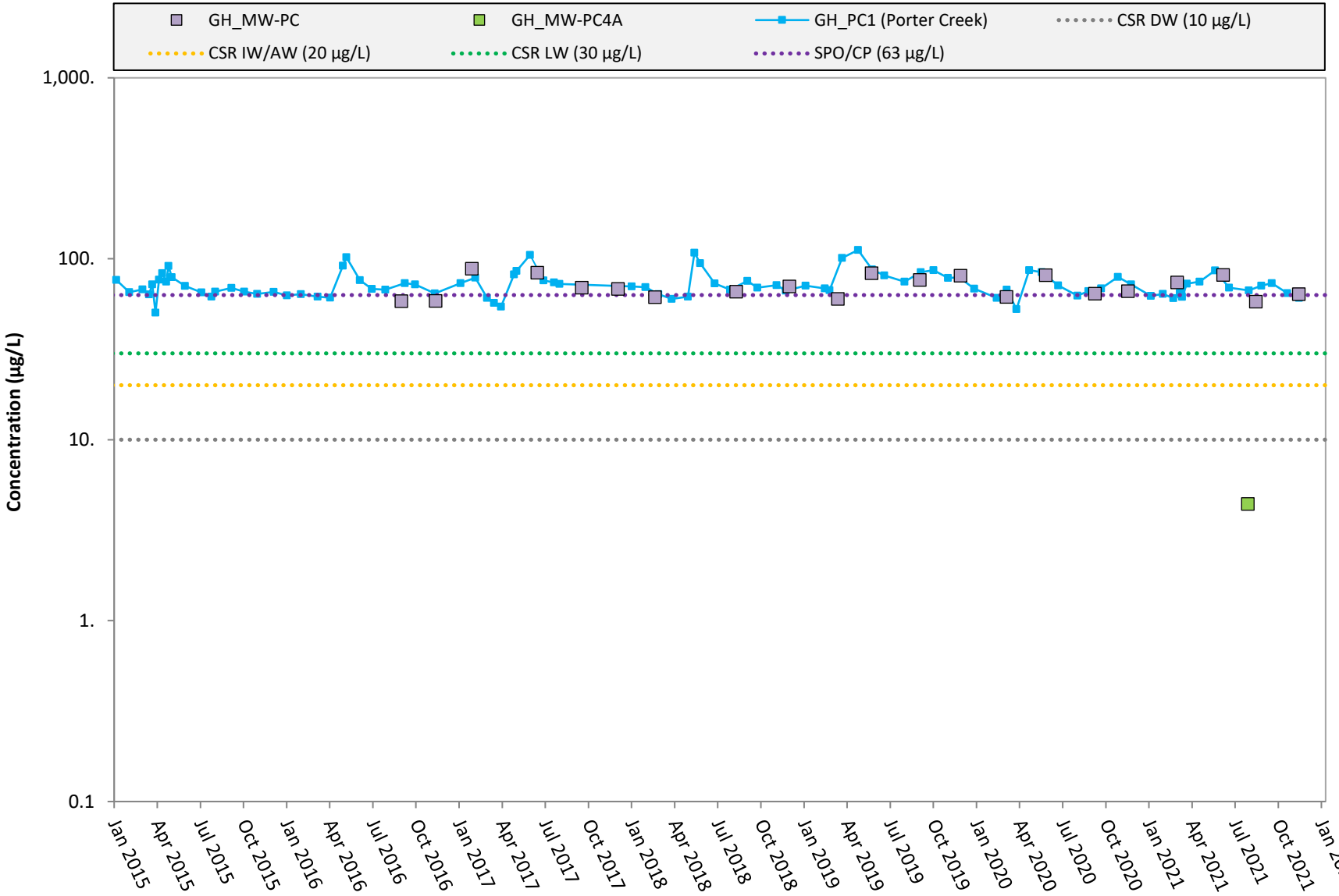


Figure GH-03: Porter Creek Watershed - Sulphate

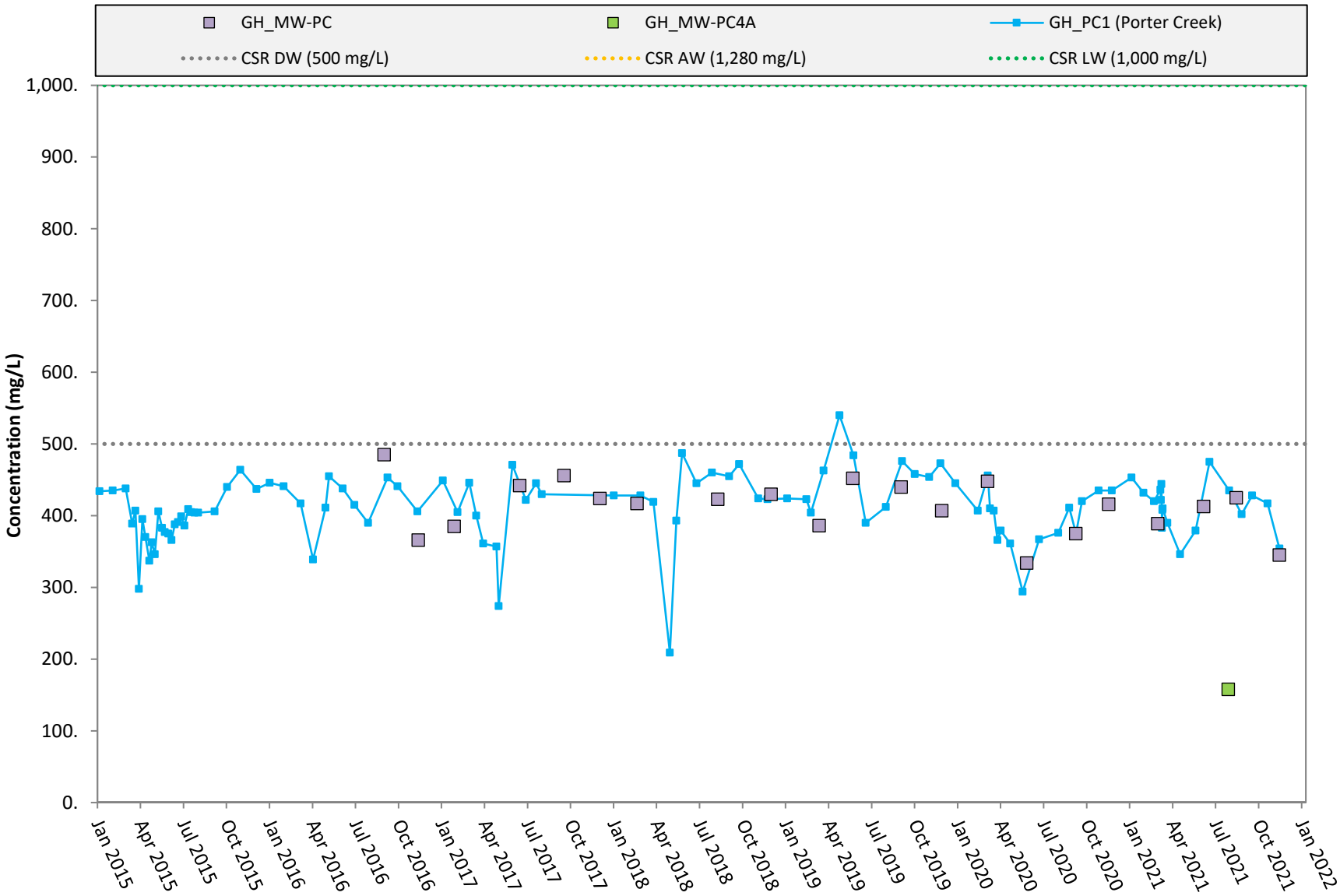


Figure GH-04: Porter Creek Watershed - Nitrate-N

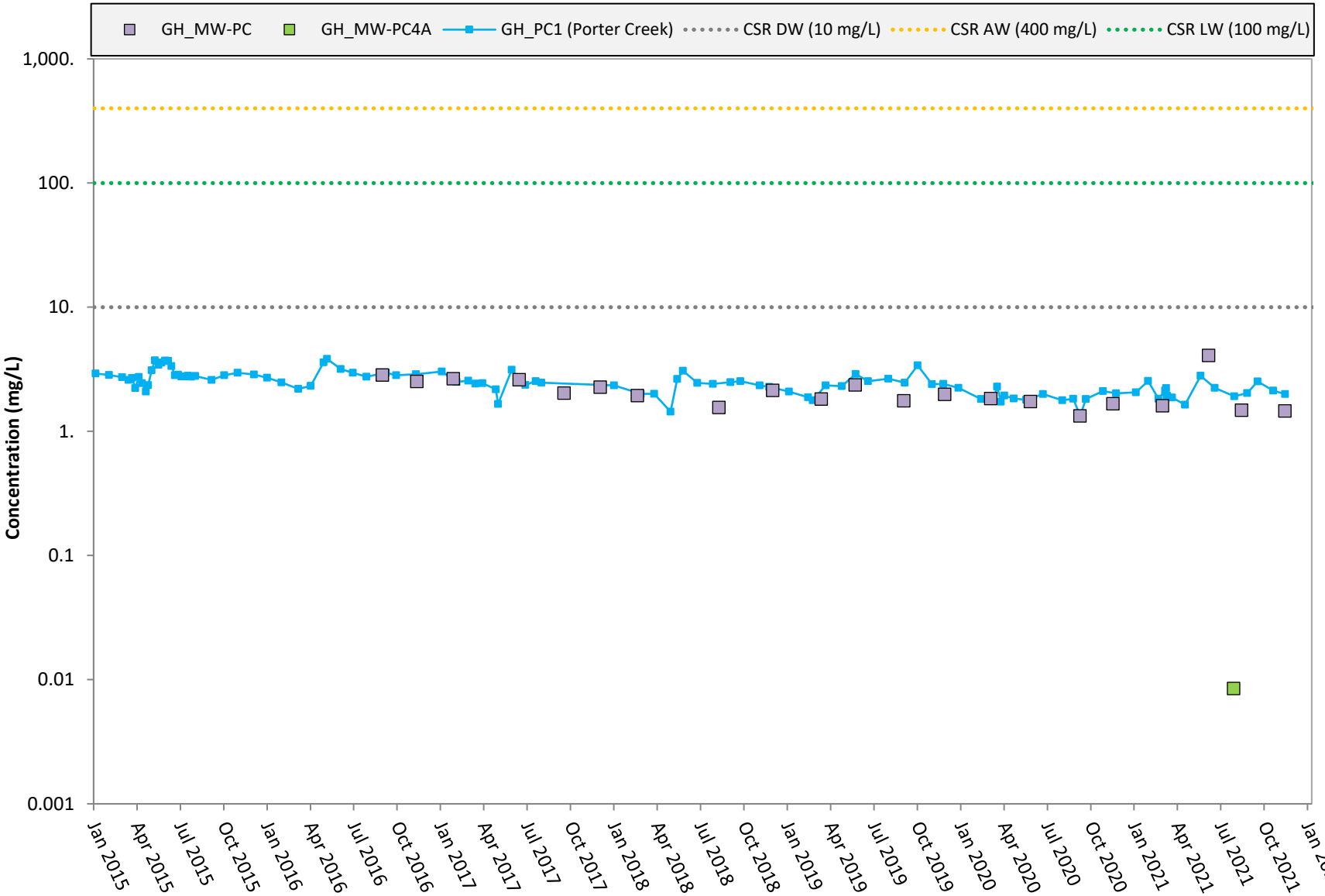
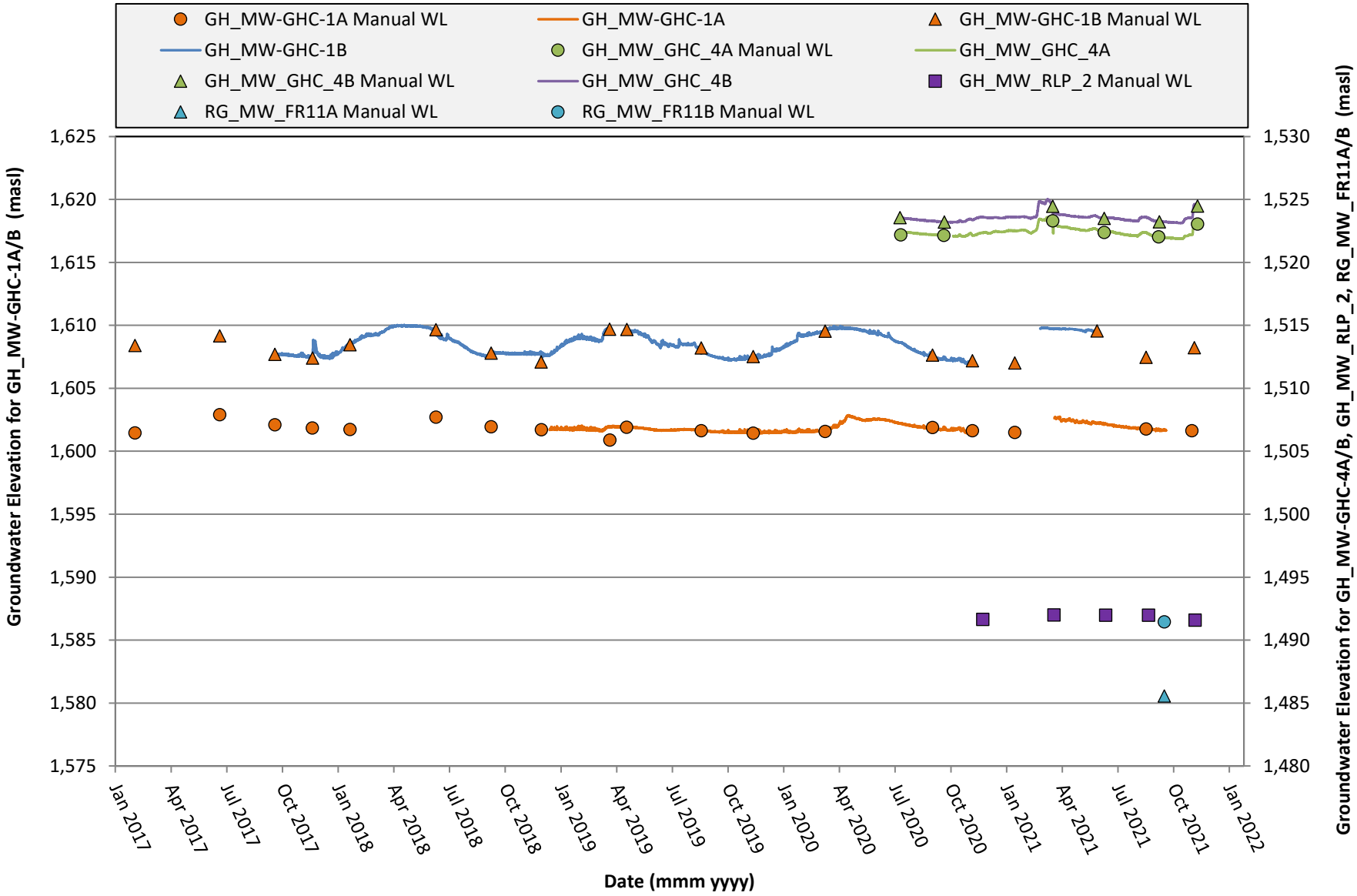
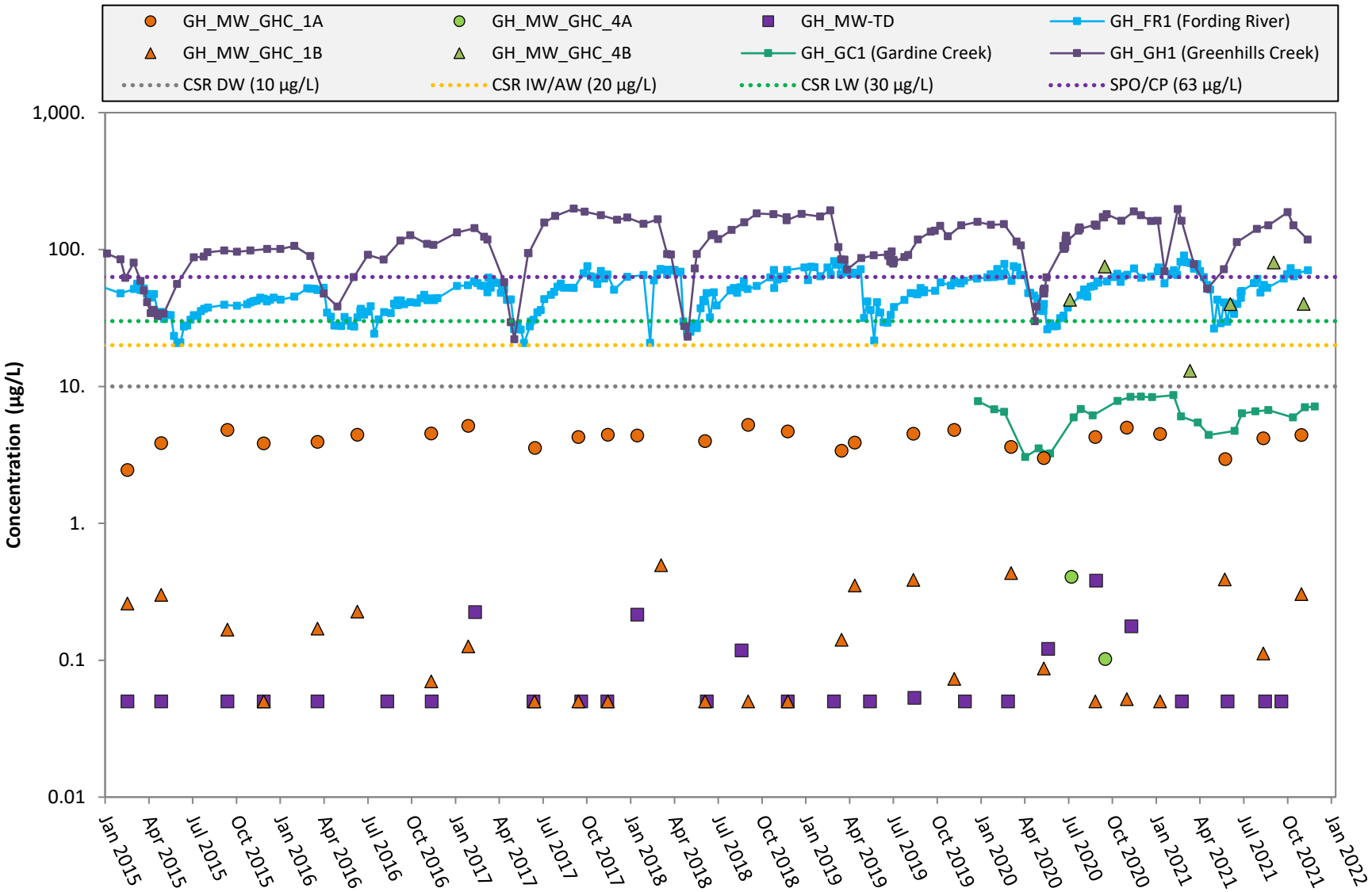


Figure GH-05: Greenhills Creek Watershed - Hydrograph



Note: Data was removed where suspected datalogger removal occured.
Precipitation data recorded on February 8, 17 and 18, 2018 have been removed as the data is inferred to be anomalous.

Figure GH-06: Greenhills Creek Watershed - Selenium



Note: For concentrations measured below the method detection limit, the method detection limit (0.05 µg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-07: Greenhills Creek Watershed - Sulphate

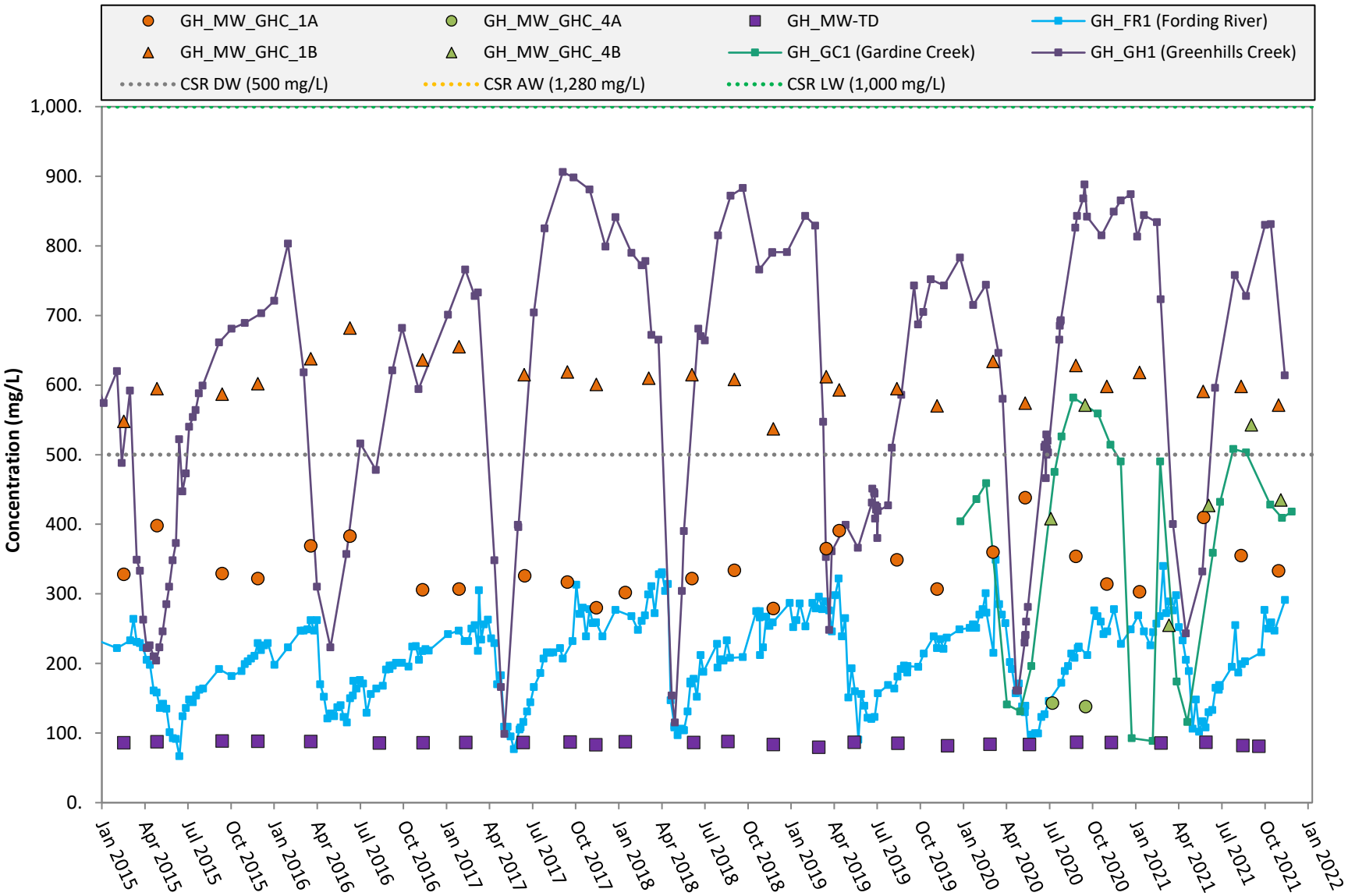
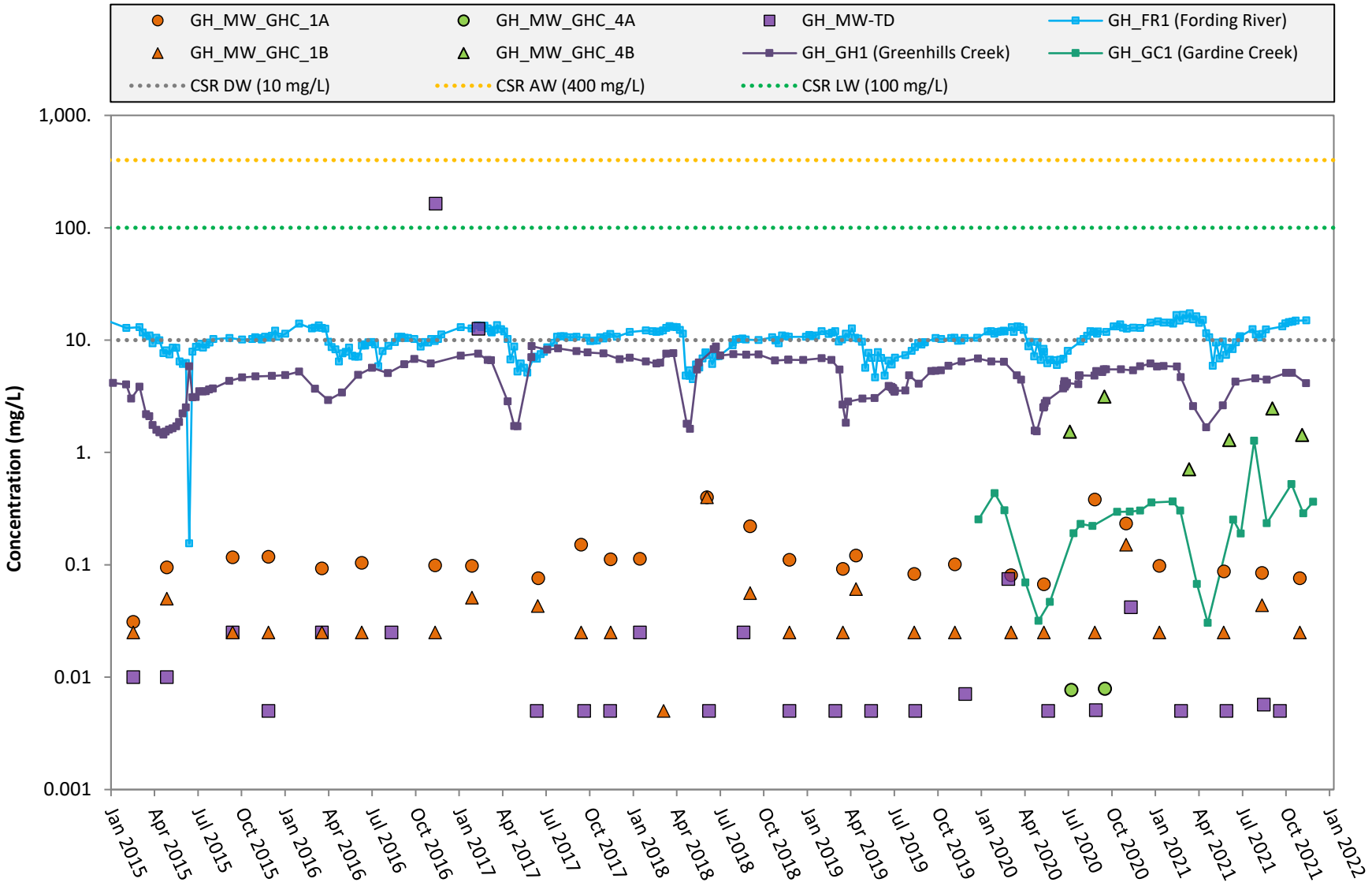


Figure GH-08: Greenhills Creek Watershed - Nitrate-N



Note: For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-09: Greenhills Creek Watershed - Se:SO_4 (S)

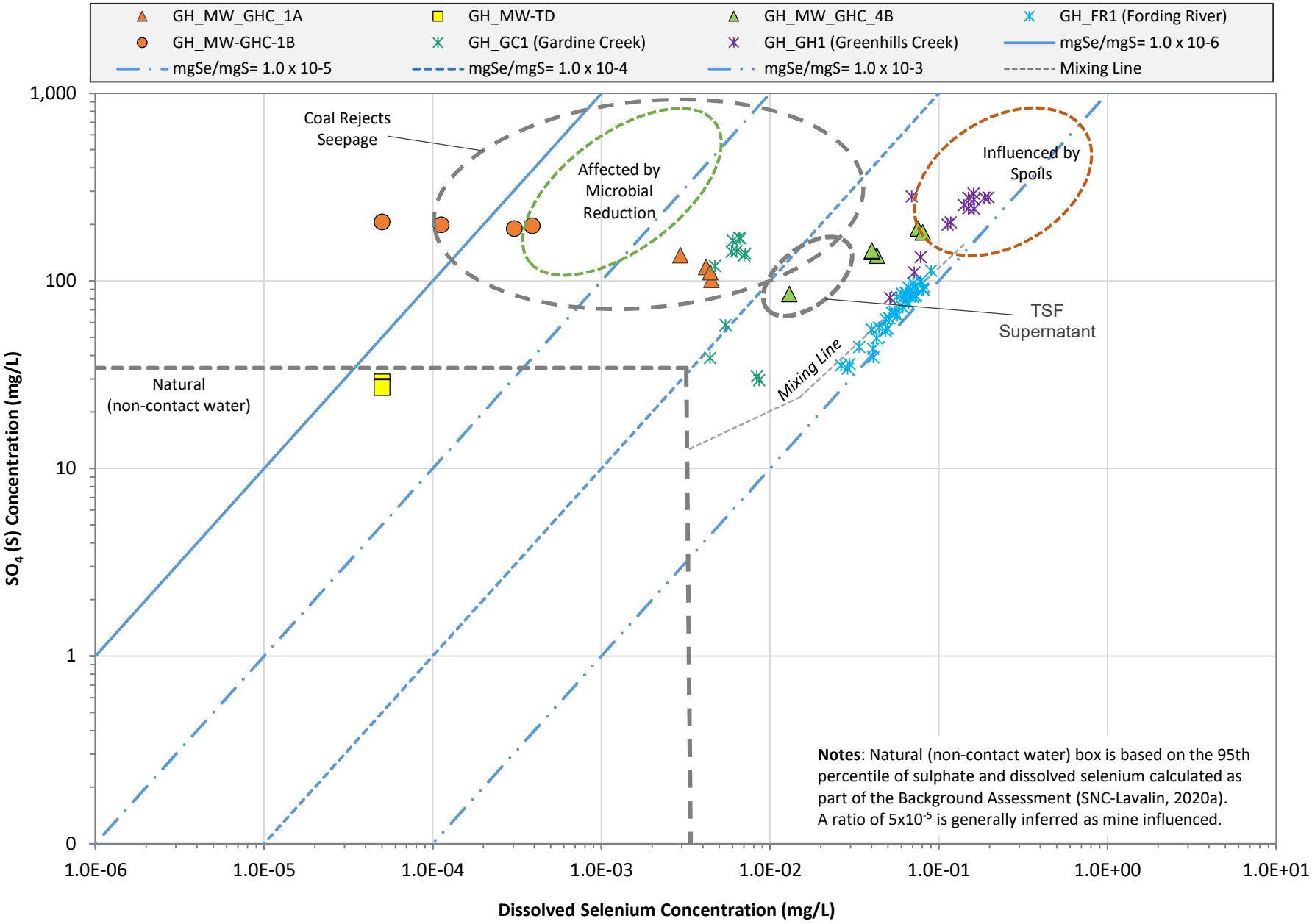
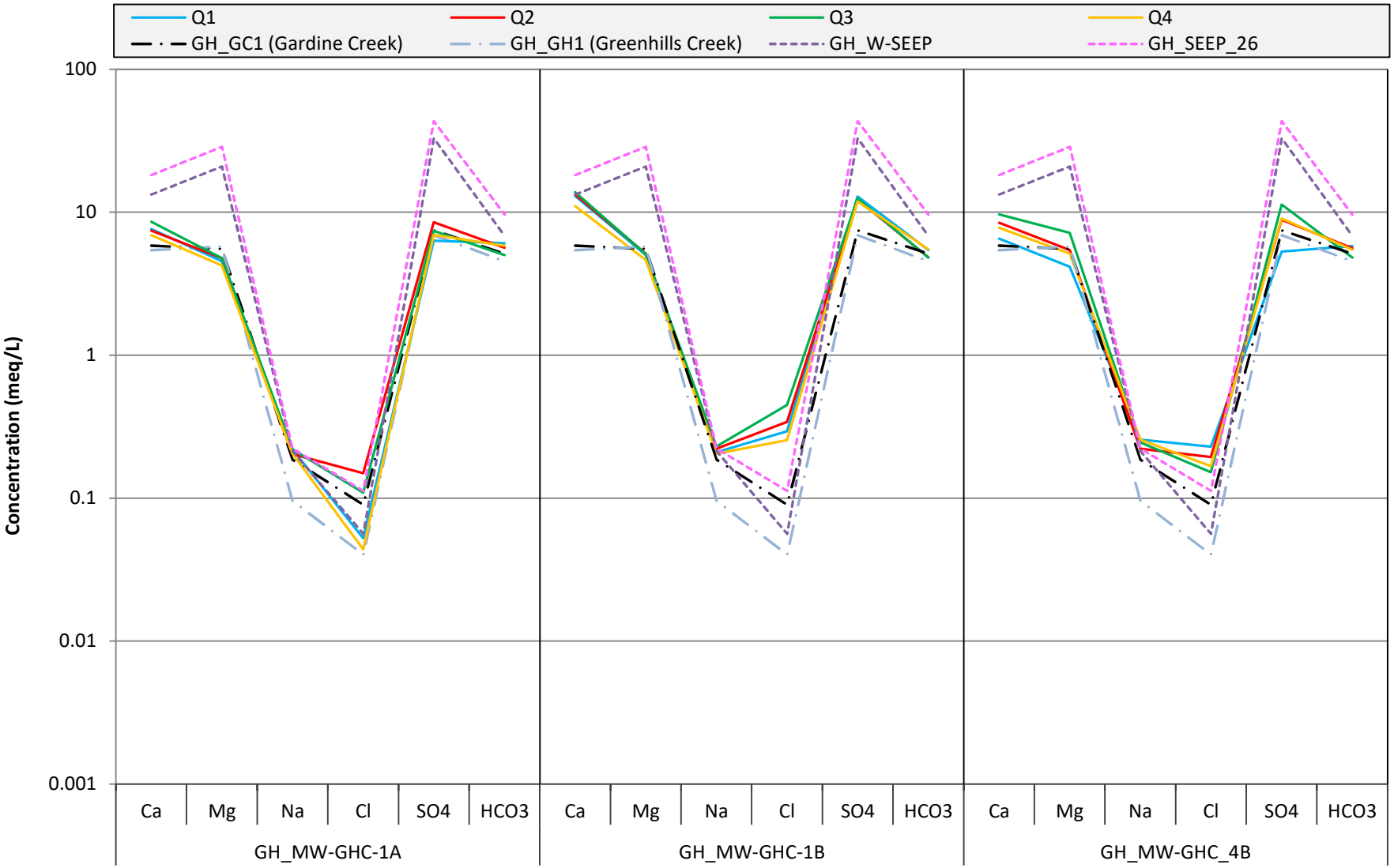
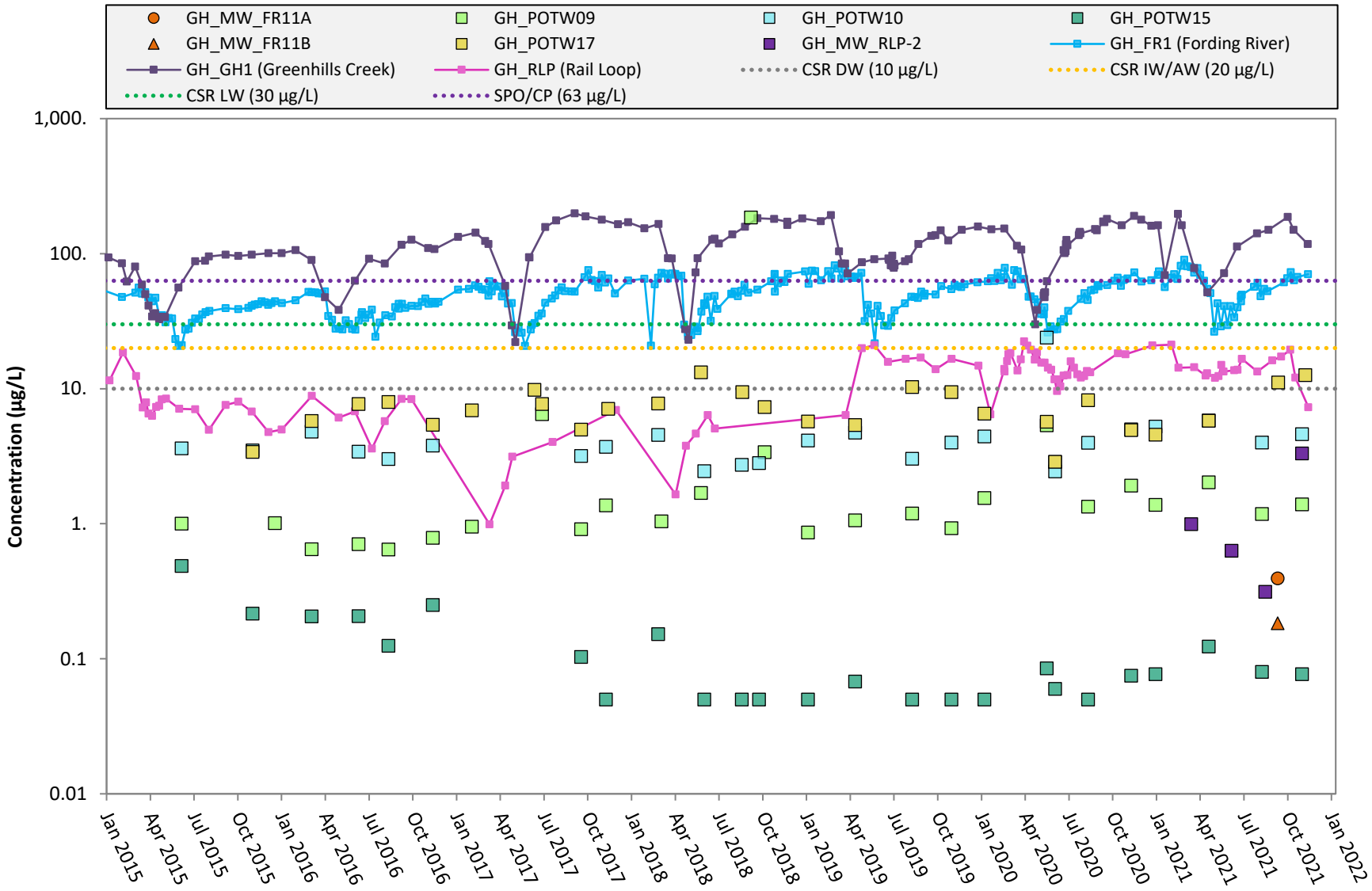


Figure GH-10: Schoeller Plot in the Greenhills Creek Drainage



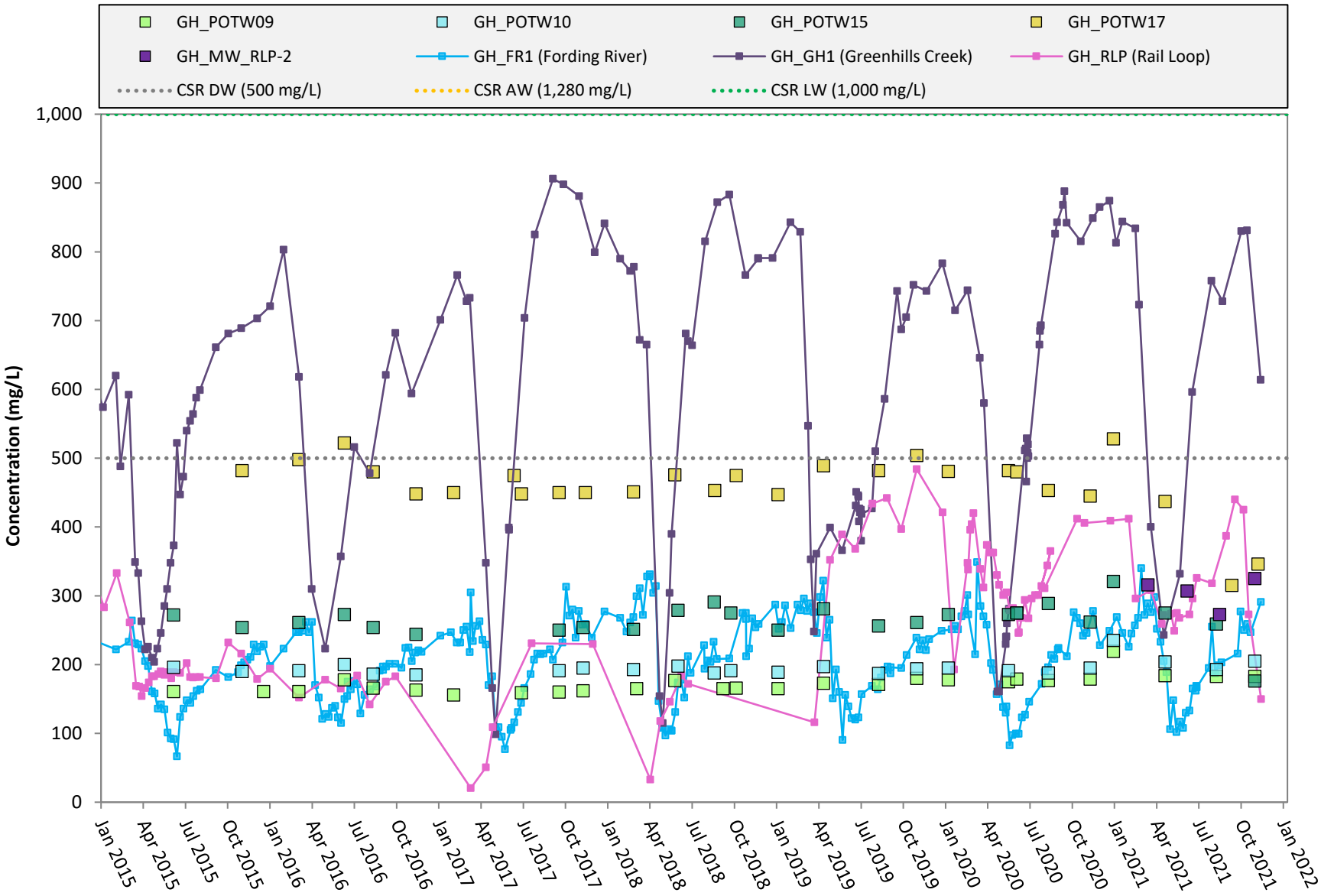
Note: Analytical data presented for GH_GH1 and GH_GC1 are from Q2 2021.

Figure GH-11: Downgradient of Greenhills Creek Watershed - Selenium



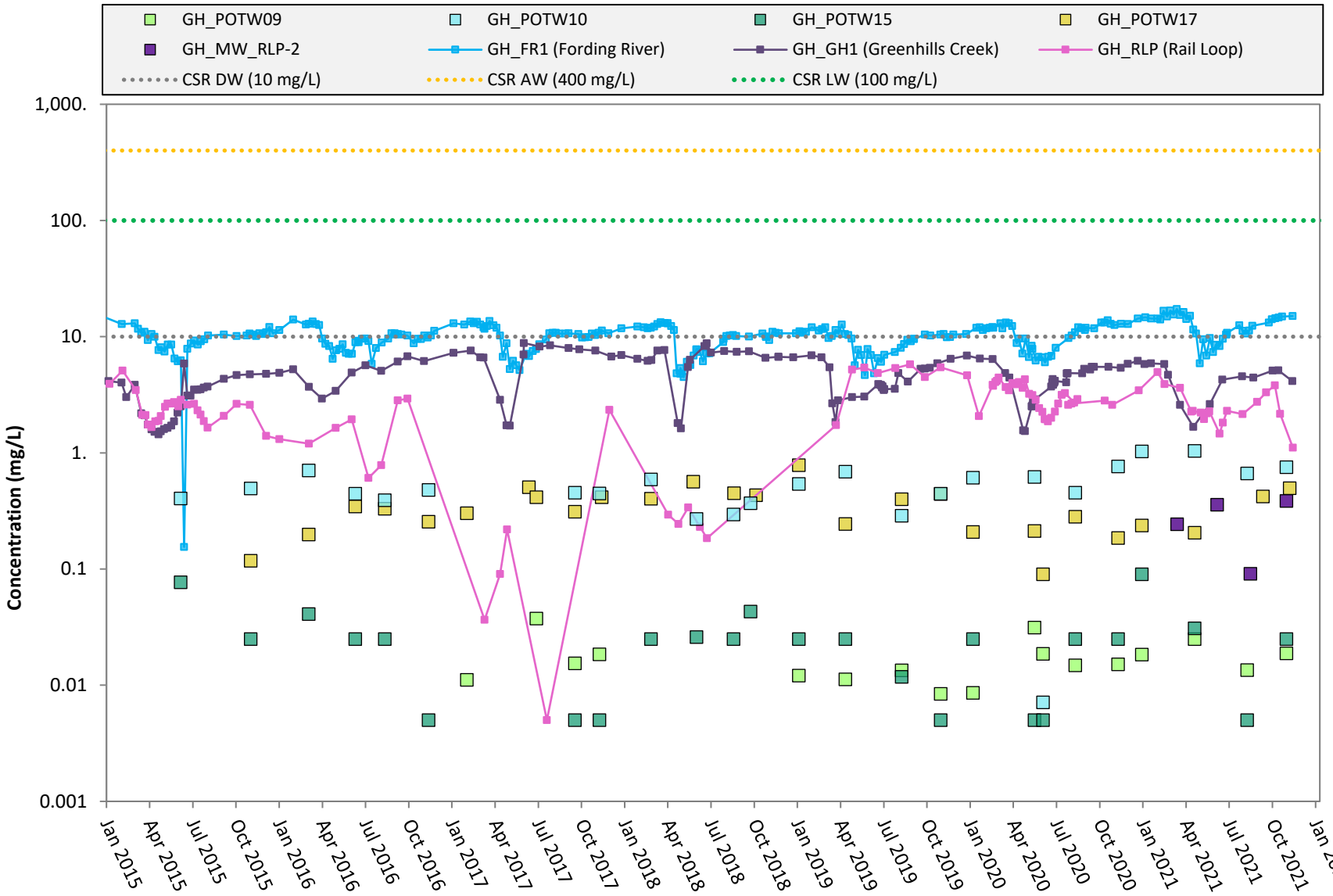
Note: For concentrations measured below the method detection limit, the method detection limit (0.05 µg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-12: Downgradient of Greenhills Creek Watershed - Sulphate



Note: For concentrations measured below the method detection limit, the method detection limit (0.3 mg/L) was utilized for plotting purposes.

Figure GH-13: Downgradient of Greenhills Creek Watershed - Nitrate-N



Note: For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-14: Downgradient of Greenhills Creek Watershed - Se:SO_4 (S)

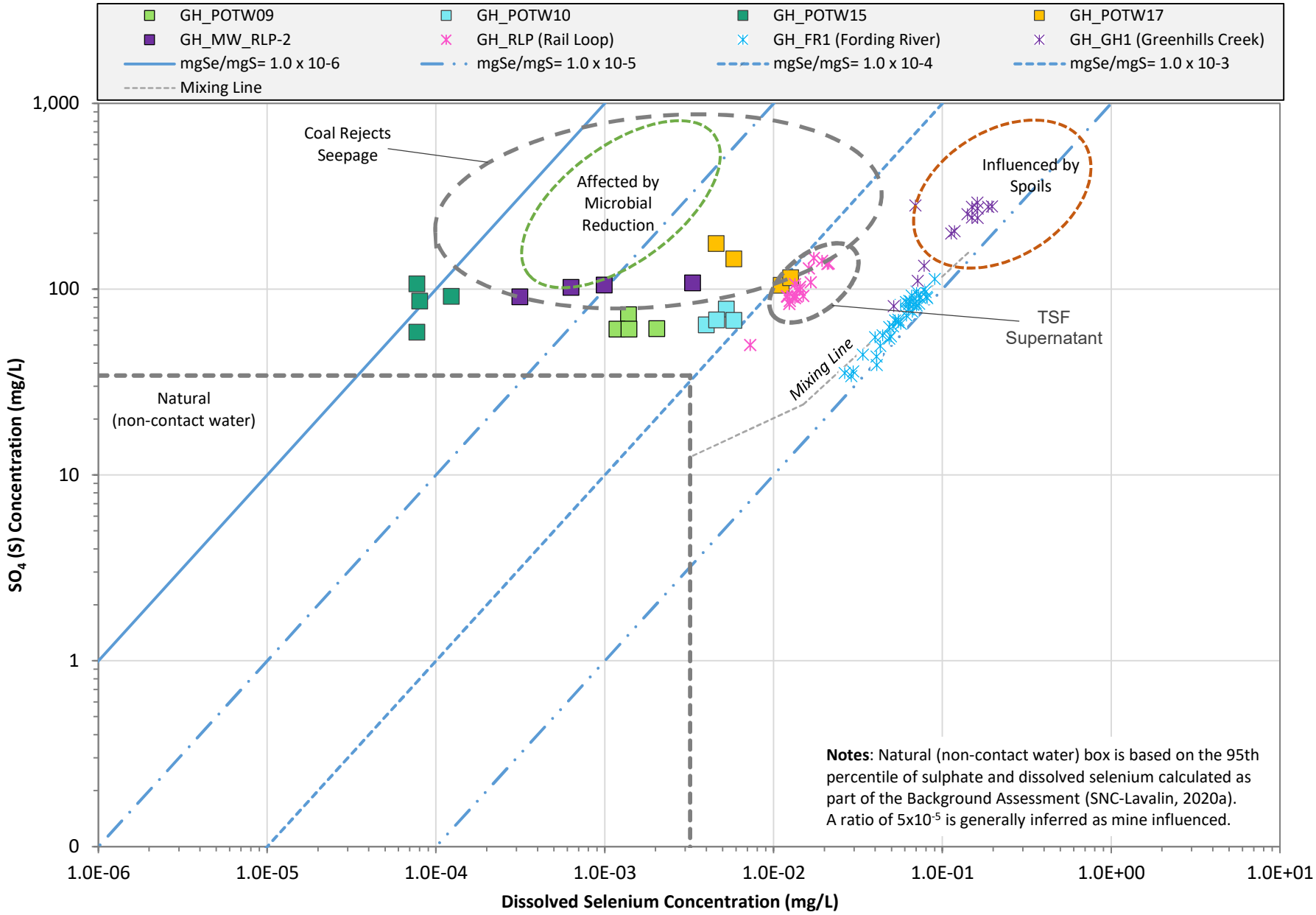


Figure GH-15: Greenhills Creek Watershed - Supply Well Pumping Rates

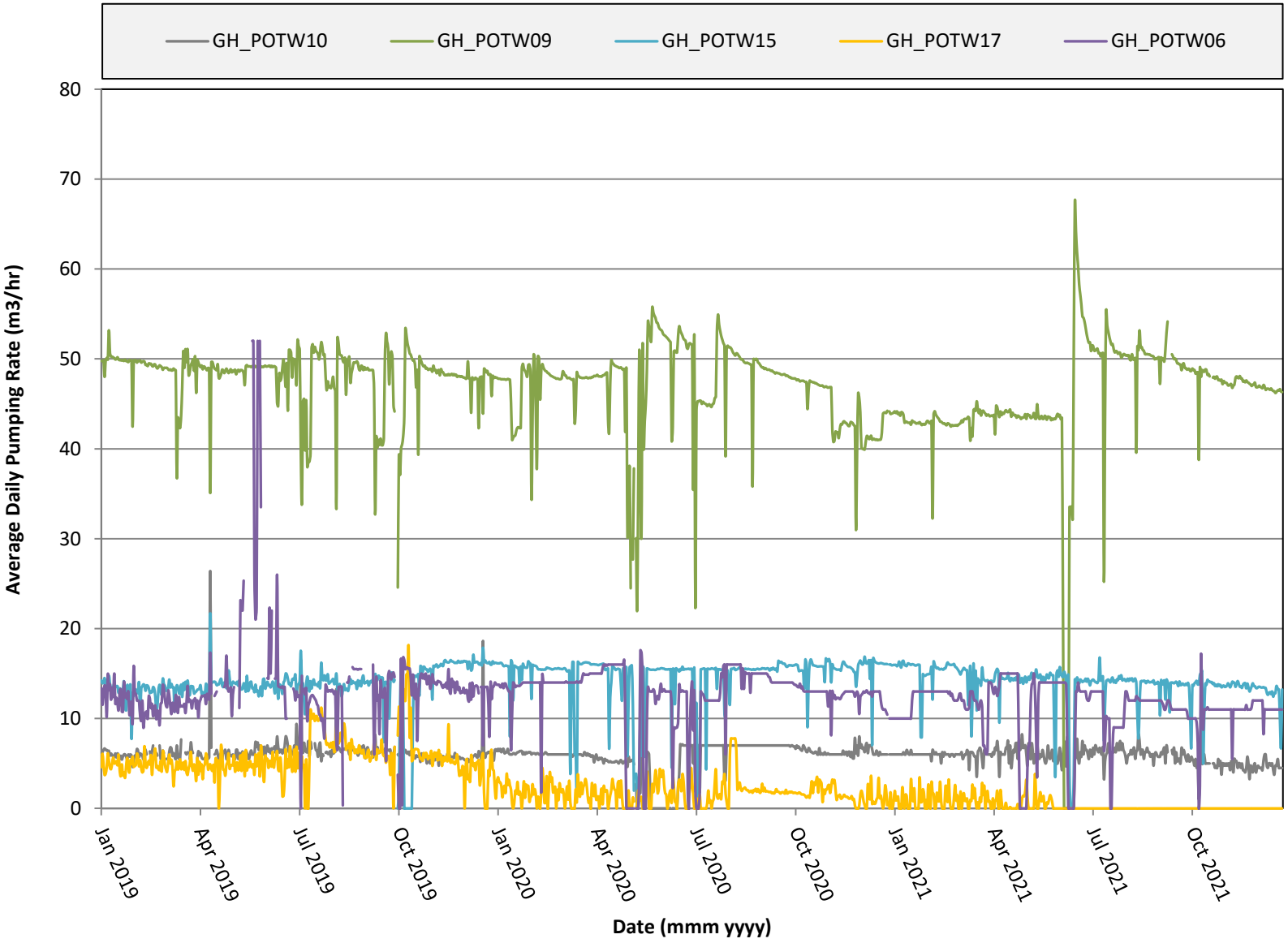
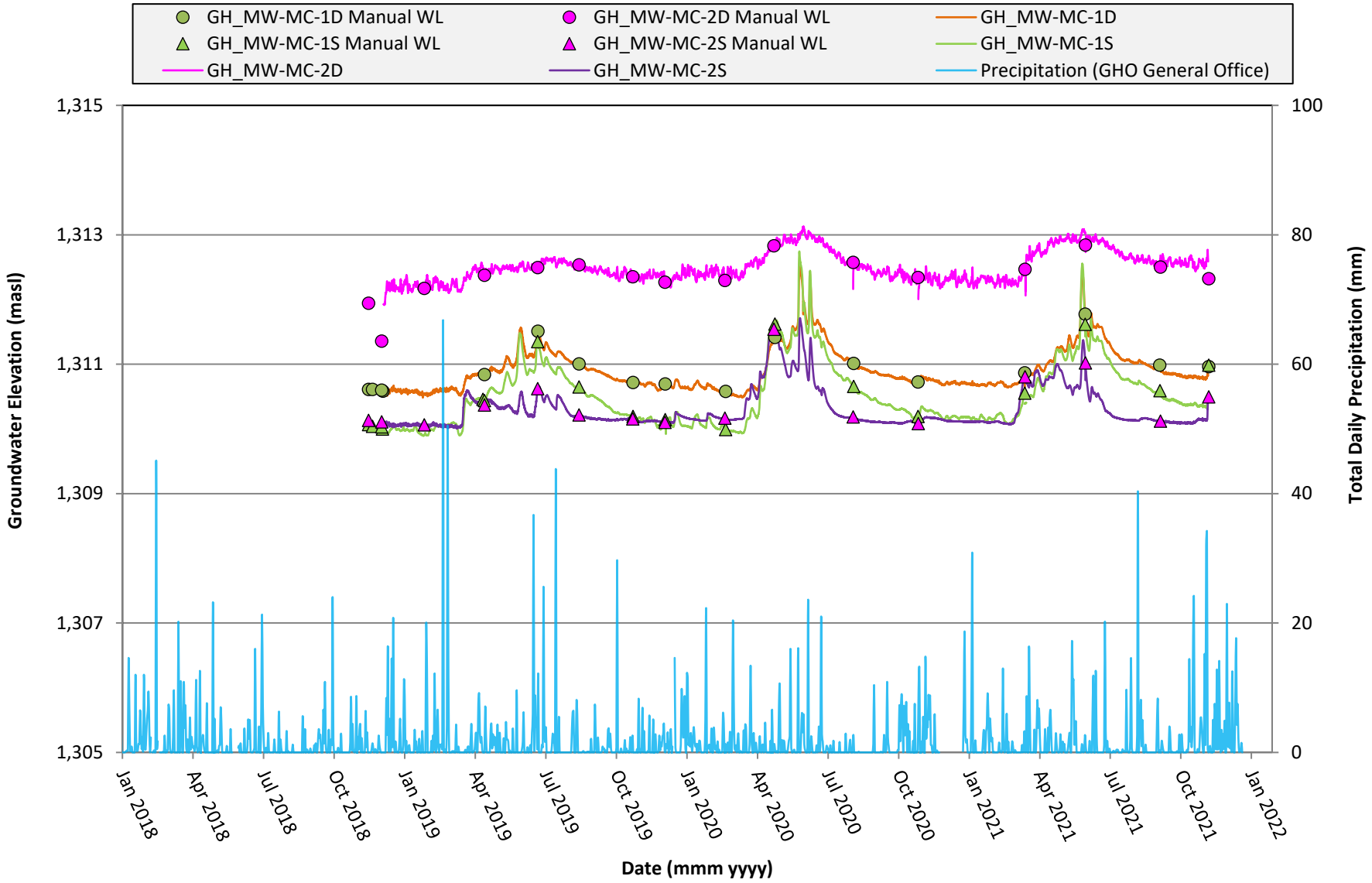
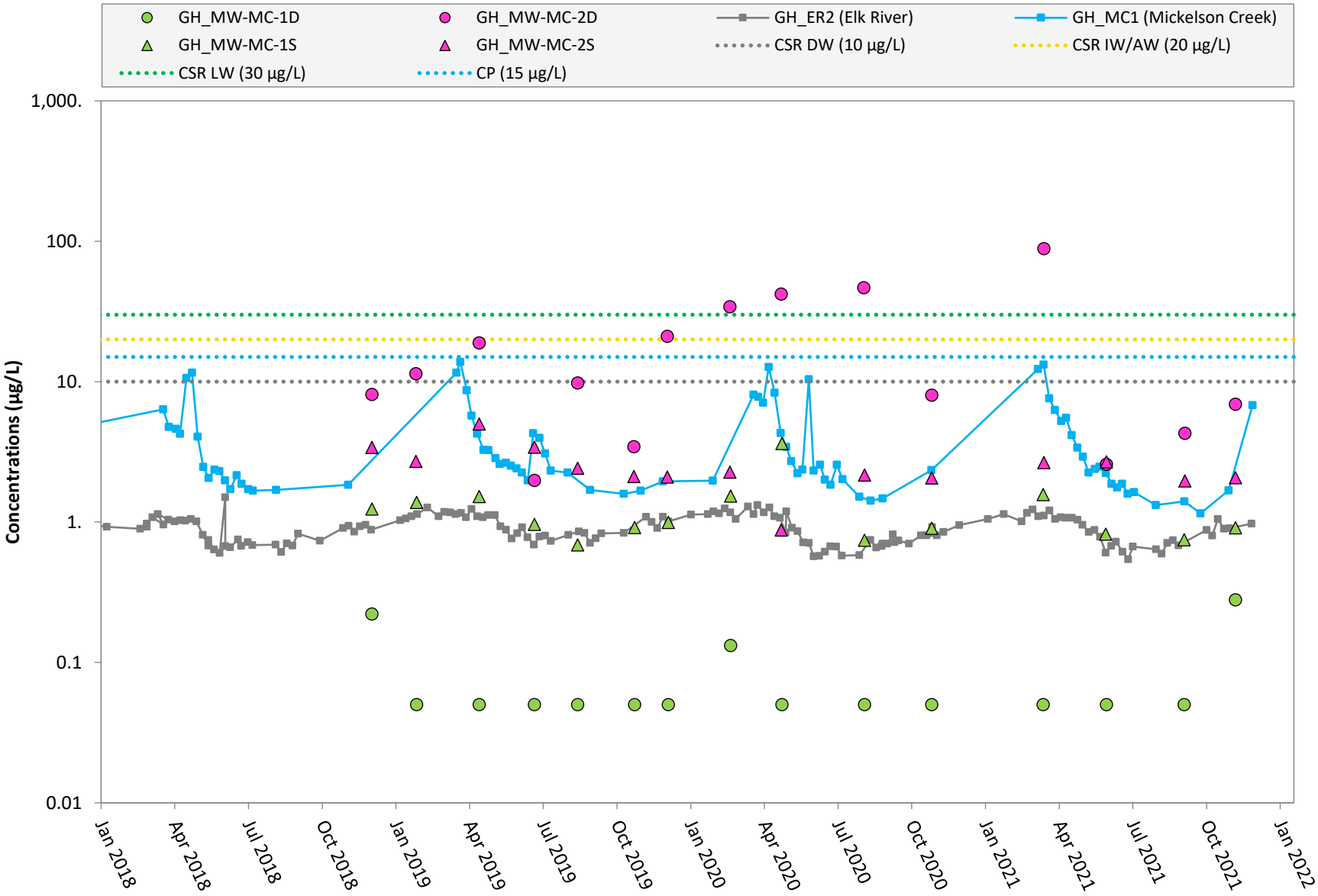


Figure GH-16: Mickelson Creek - Hydrograph



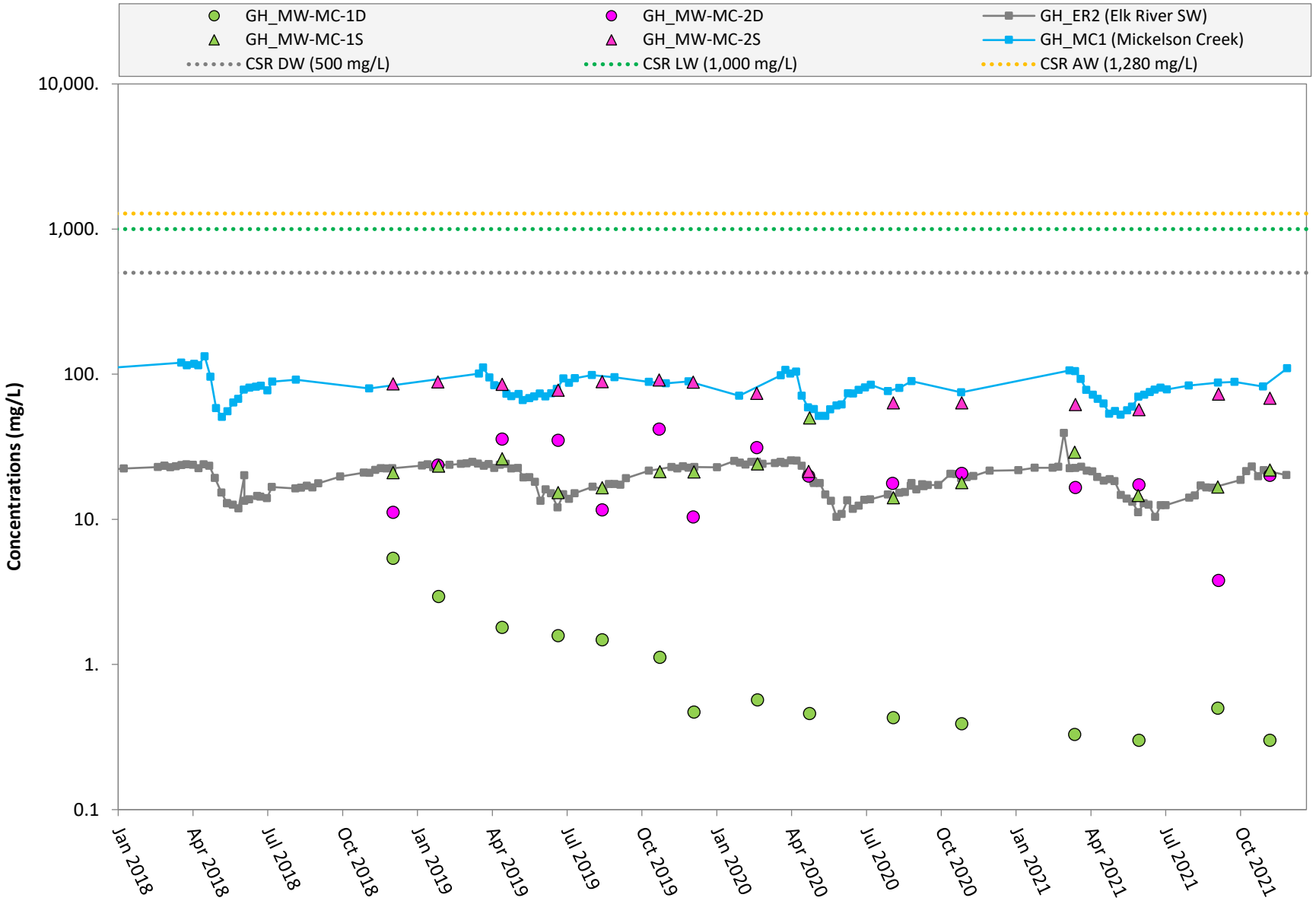
Note: Data was removed where suspected datalogger removal occured.
Precipitation data recorded on February 8, 17 and 18, 2018 have been removed as the data is inferred to be anomalous.

Figure GH-17: Mickelson Creek - Selenium



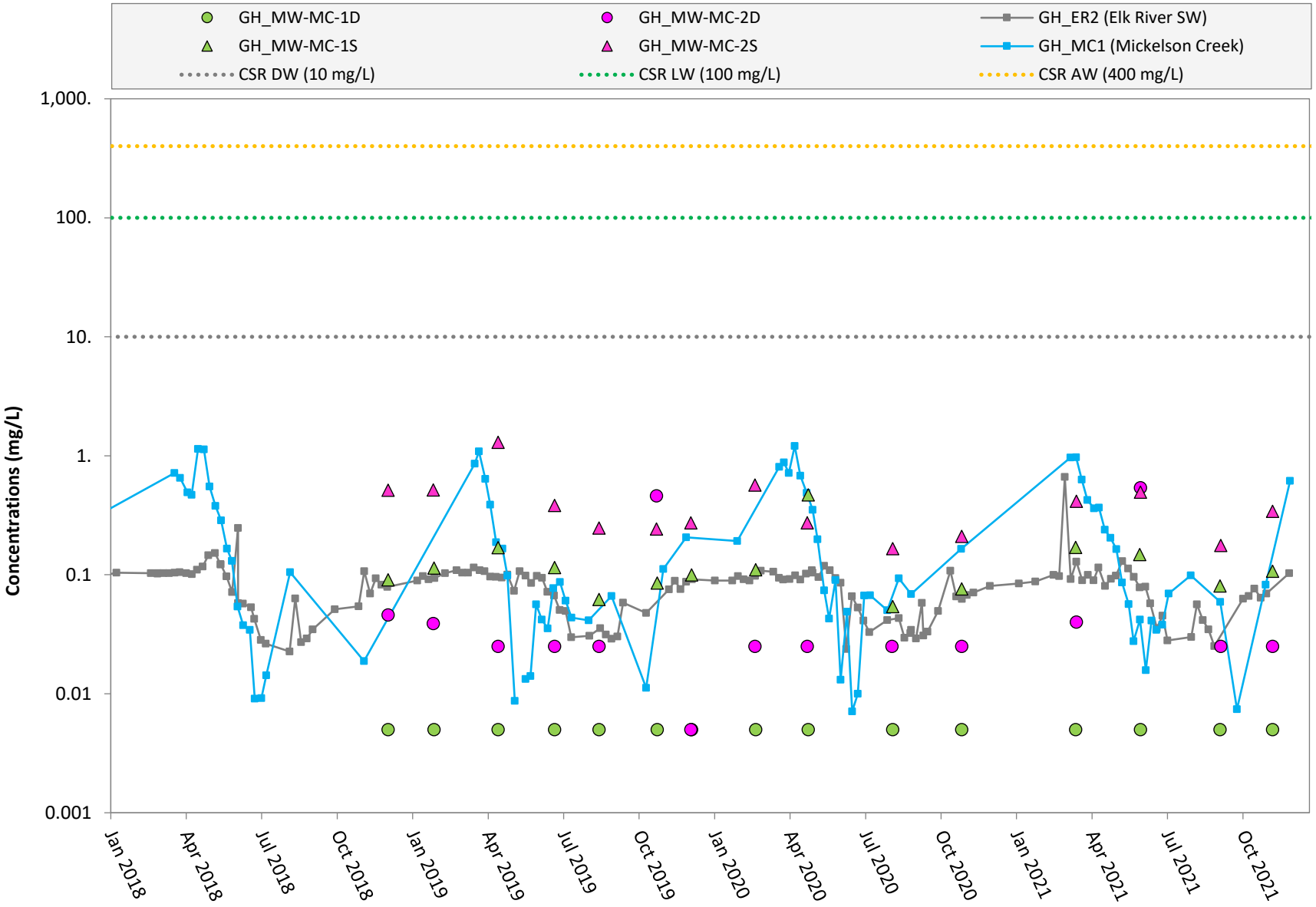
Note: For concentrations measured below the method detection limit, the method detection limit (0.05 µg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-18: Mickelson Creek- Sulphate



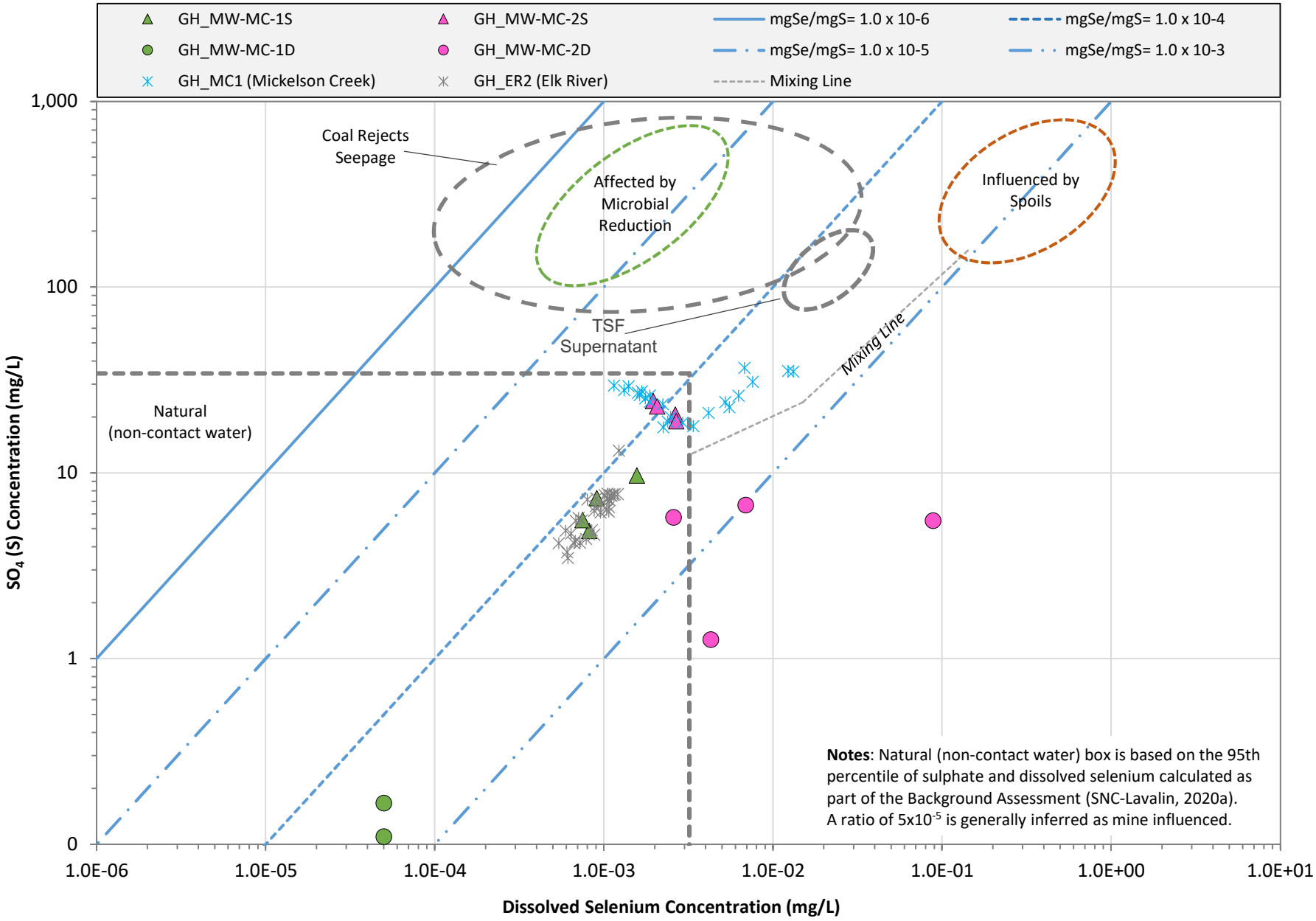
Note: Logarithmic scale has been applied based on distribution of concentrations relative to applicable screening criteria.

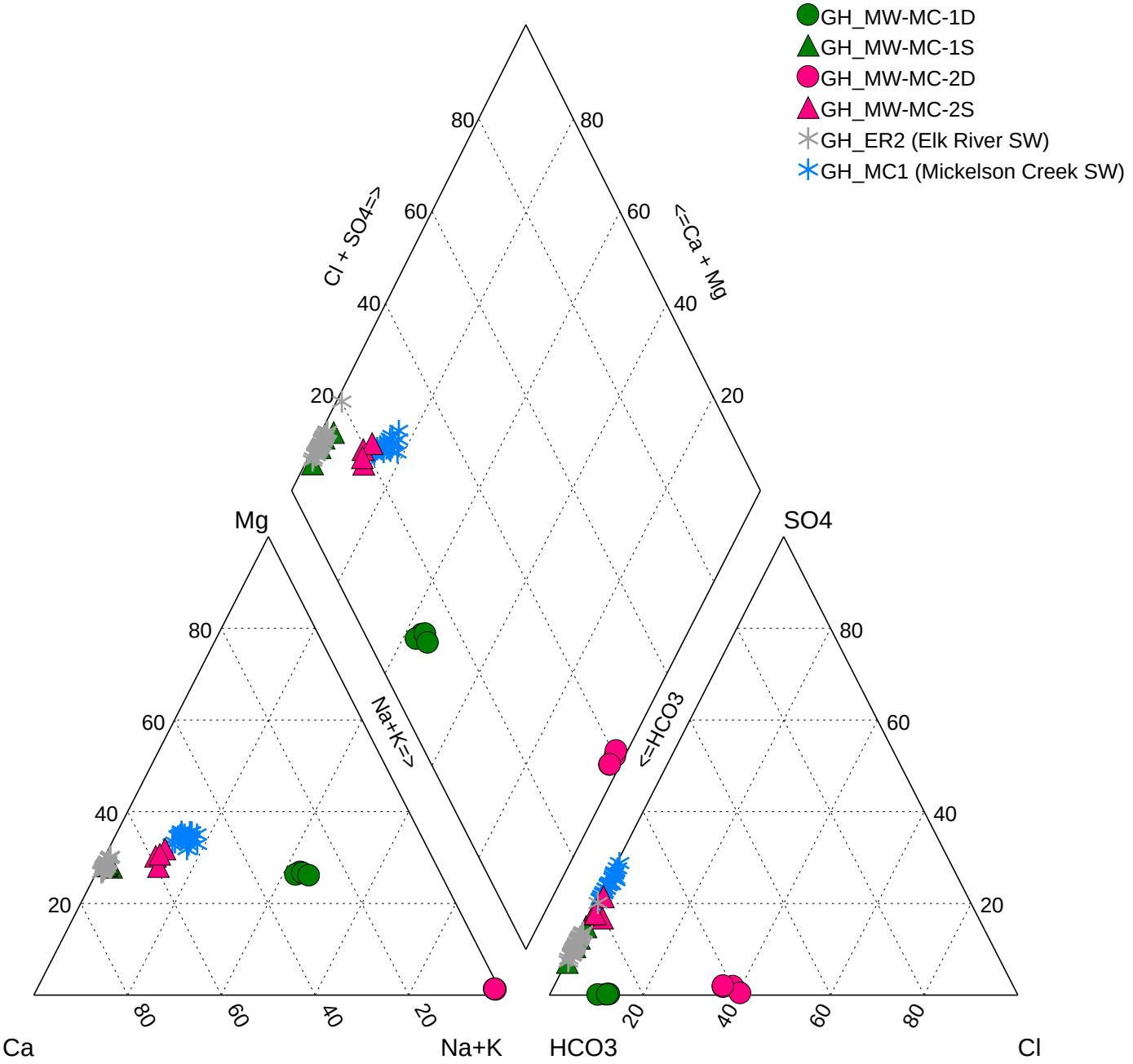
Figure GH-19: Mickelson Creek - Nitrate-N



Note: For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-20: Mickelson Creek - Se:SO_4 (S)

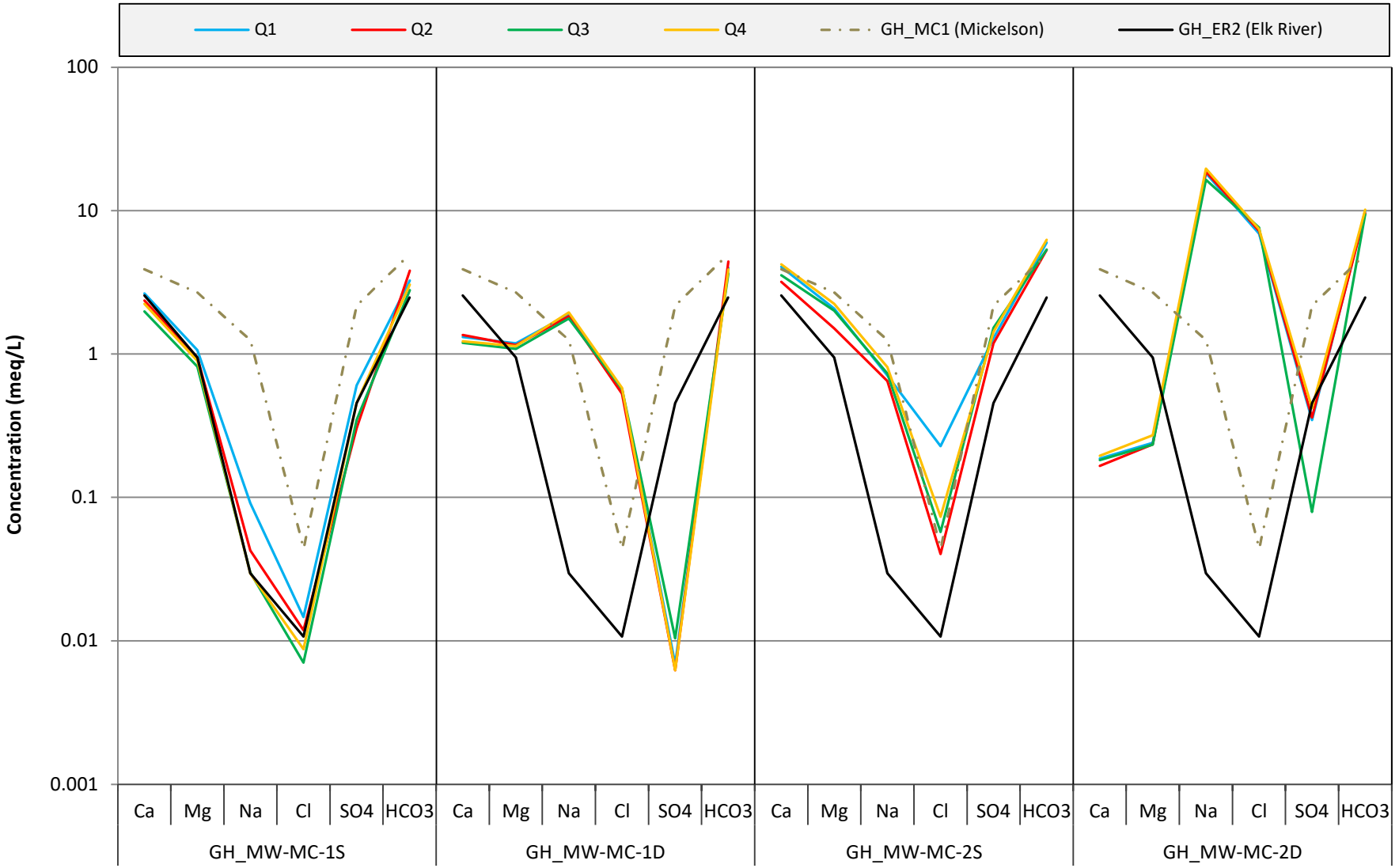




DESCRIPTION: Figure GH-21: Piper Diagram for Mickelson Creek

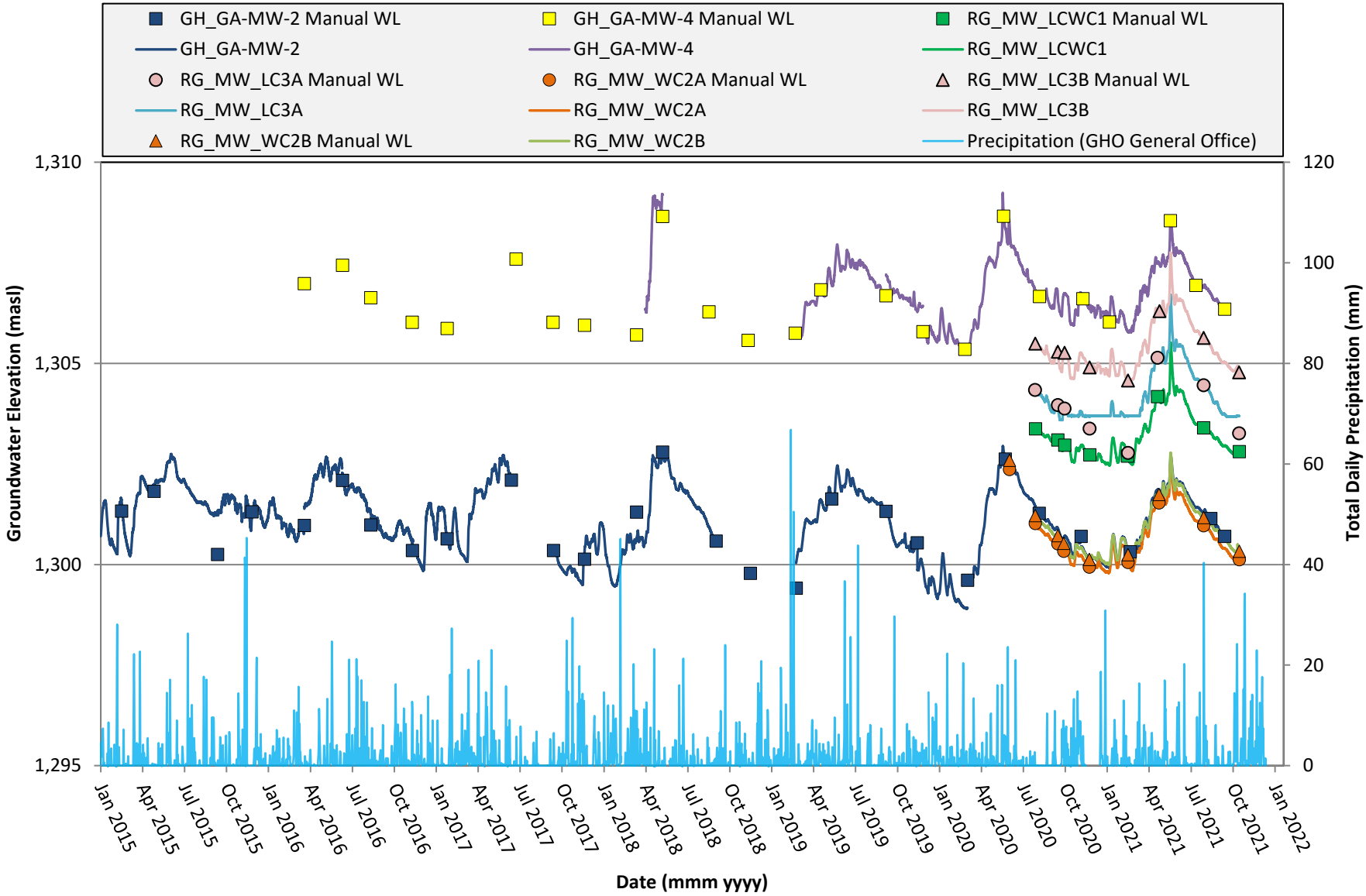
	PROJECT: 2021 RGMP SSGMP Annual Report	PROJECT NO: 635544
	CLIENT: Teck Coal Limited	DATE: 2022-02-15

Figure GH-22: Schoeller Plot in the Mickelson Drainage (2021)



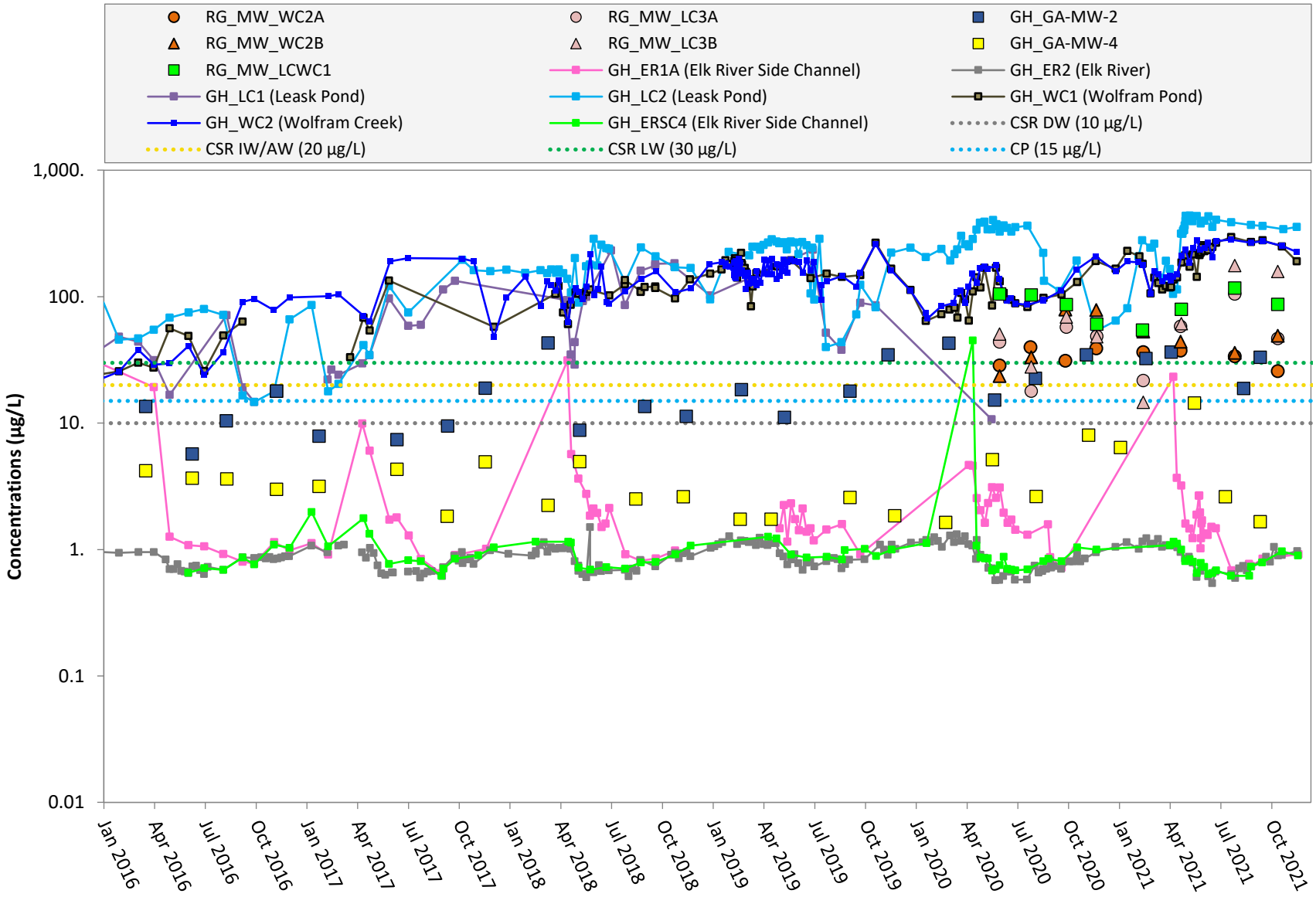
Note: Analytical data presented for GH_MC1 is from Q1 2021.

Figure GH-23: Leask and Wolfram Creeks - Hydrograph



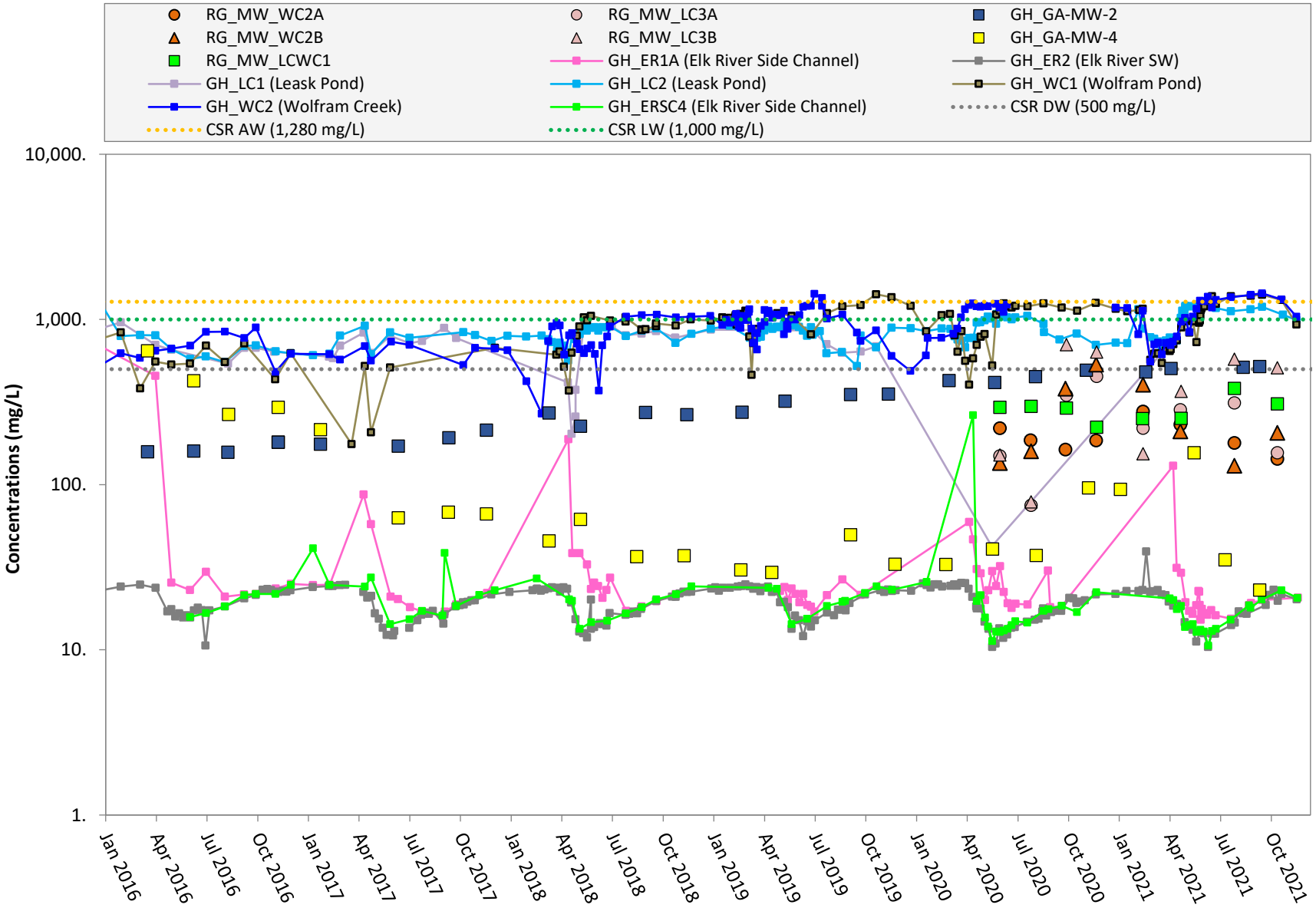
Note: Data was removed where suspected datalogger removal occured.
Precipitation data recorded on February 8, 17 and 18, 2018 have been removed as the data is inferred to be anomalous.

Figure GH-24: Leask and Wolfram Creeks - Selenium



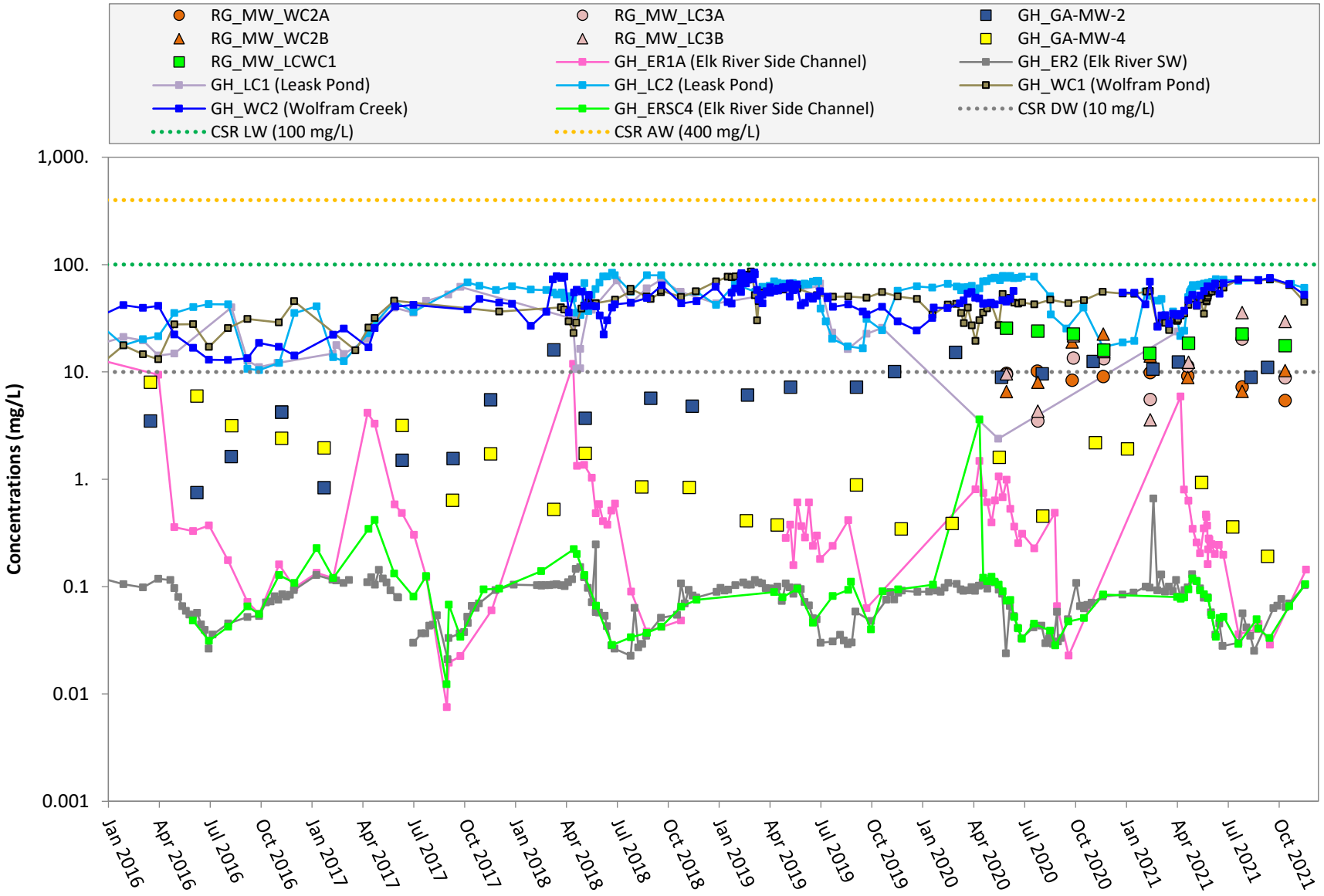
Note: For concentrations measured below the method detection limit, the method detection limit (0.05 µg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-25: Leask and Wolfram Creek - Sulphate



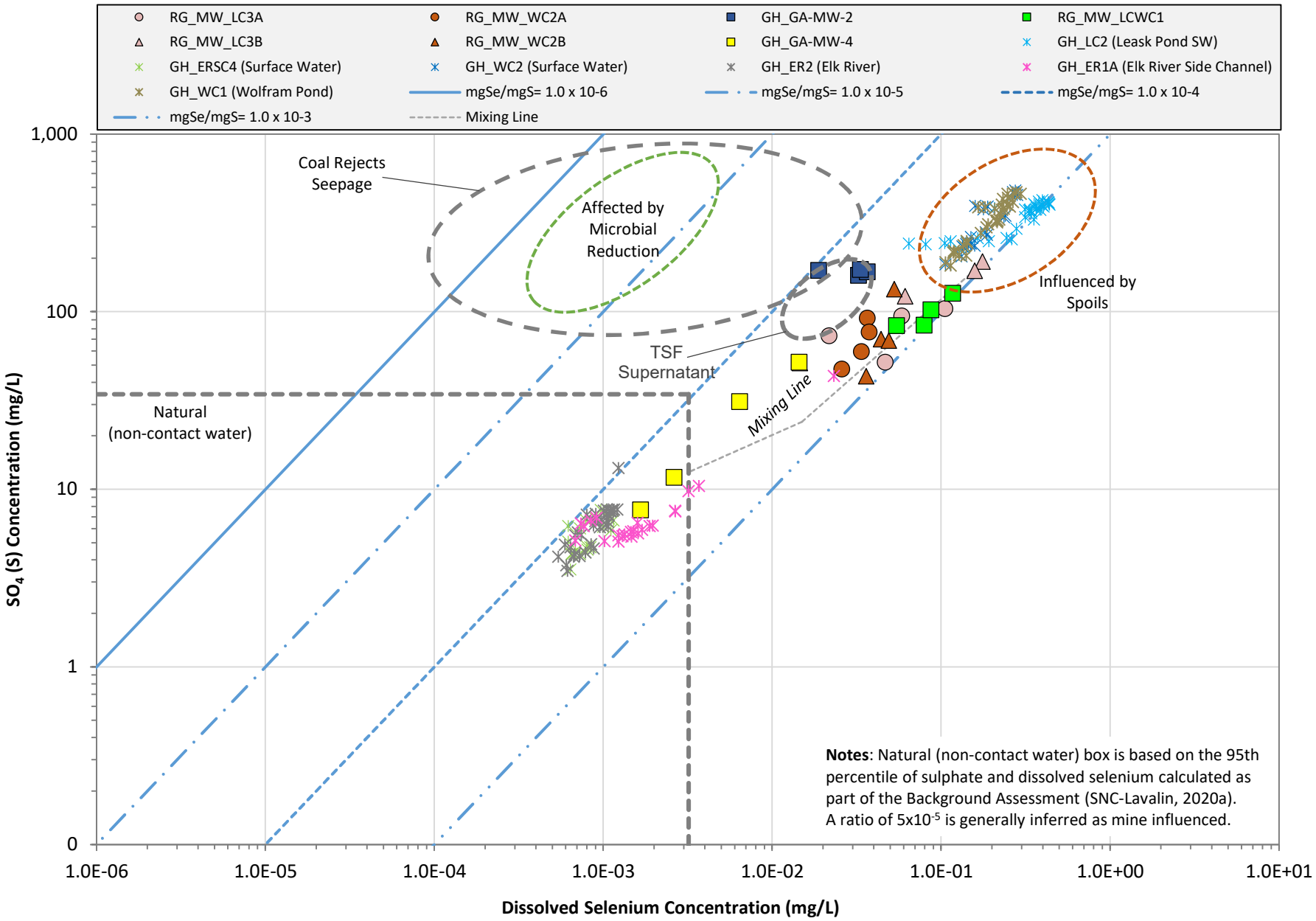
Note: Logarithmic scale has been applied based on distribution of concentrations relative to applicable screening criteria.

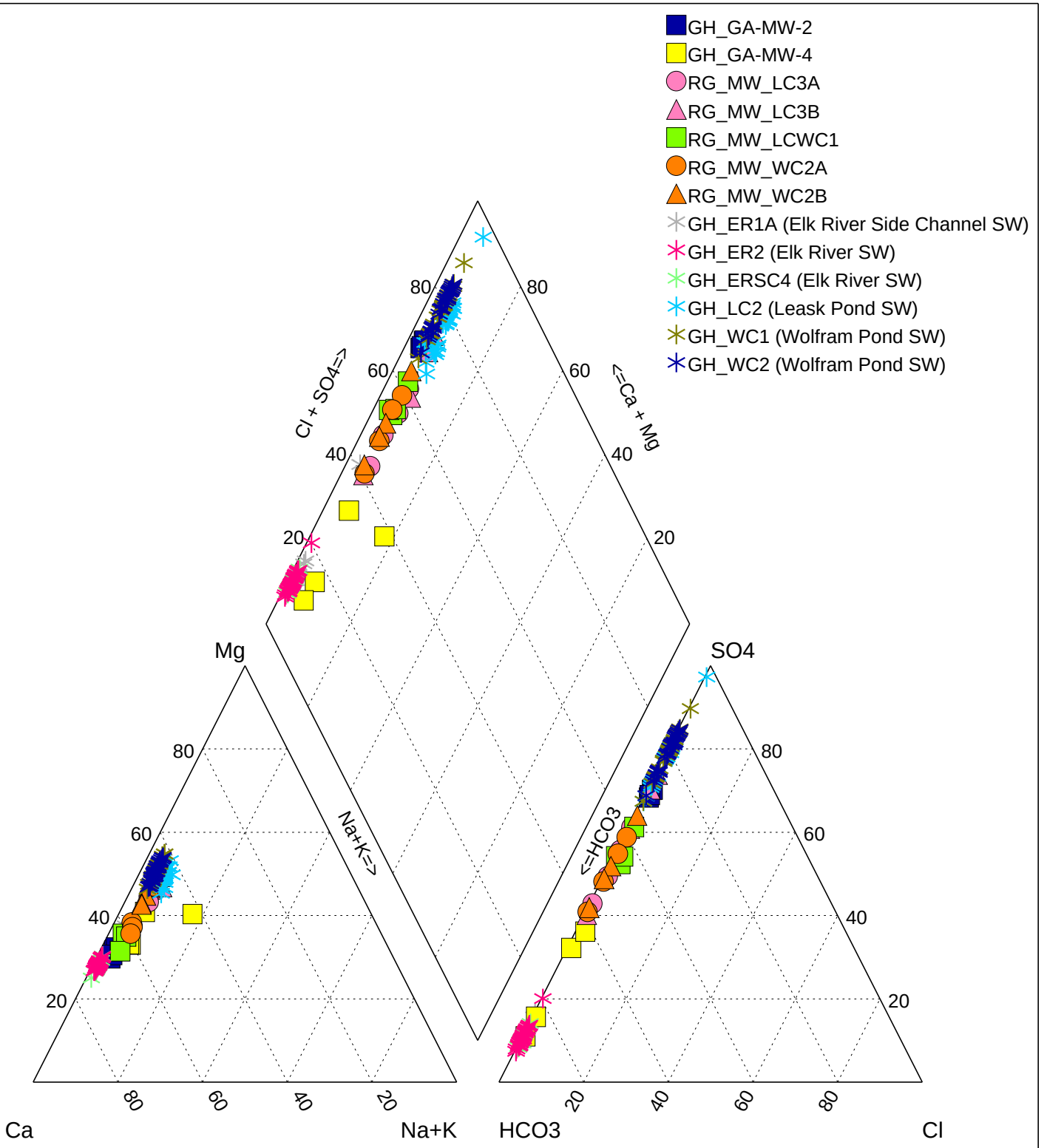
Figure GH-26: Leask and Wolfram Creeks - Nitrate-N



Note: For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-27: Leask and Wolfram Watersheds - Se:SO_4 (S)

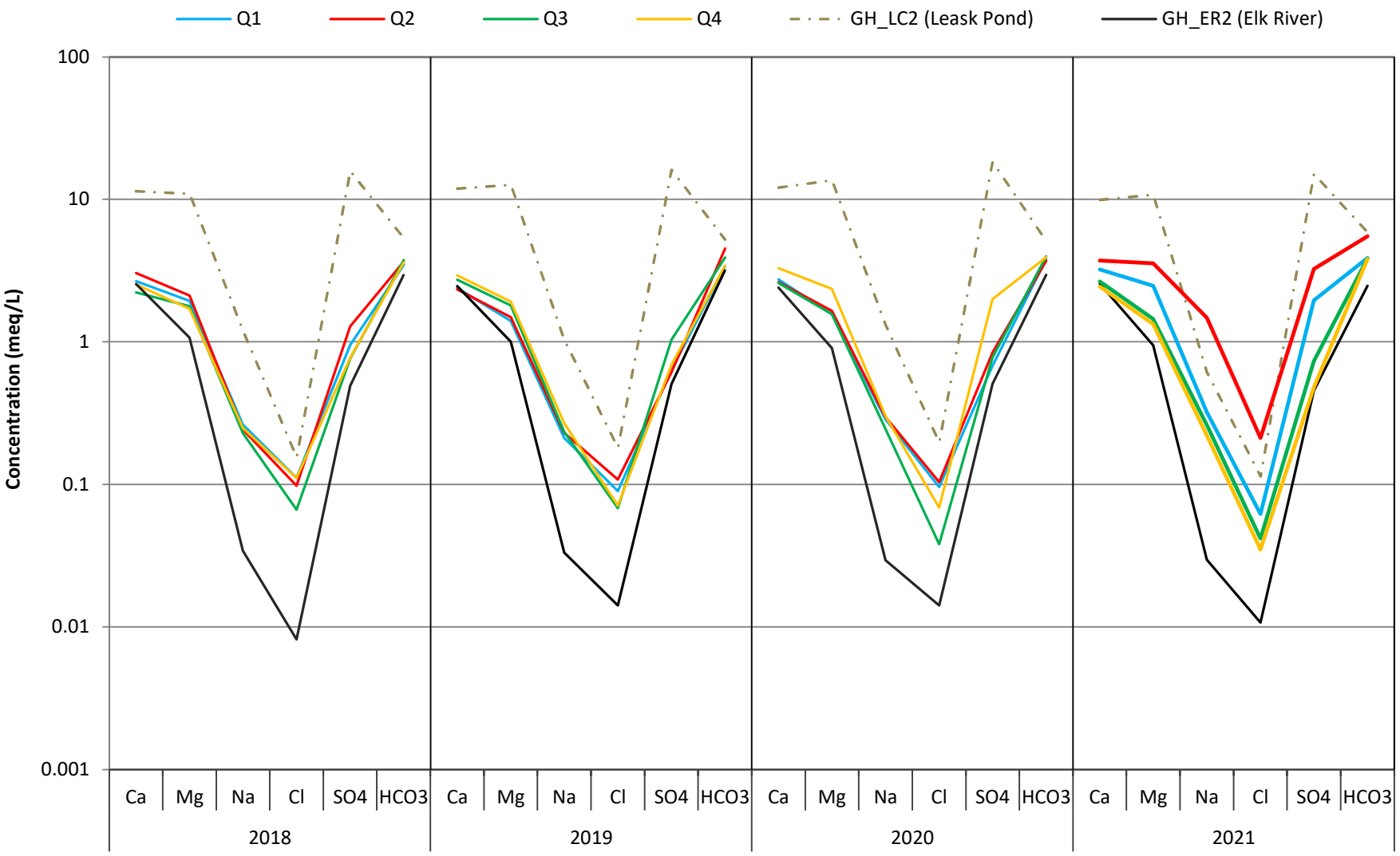




DESCRIPTION: Figure GH-28: Piper Diagram for Leask and Wolfram Creeks

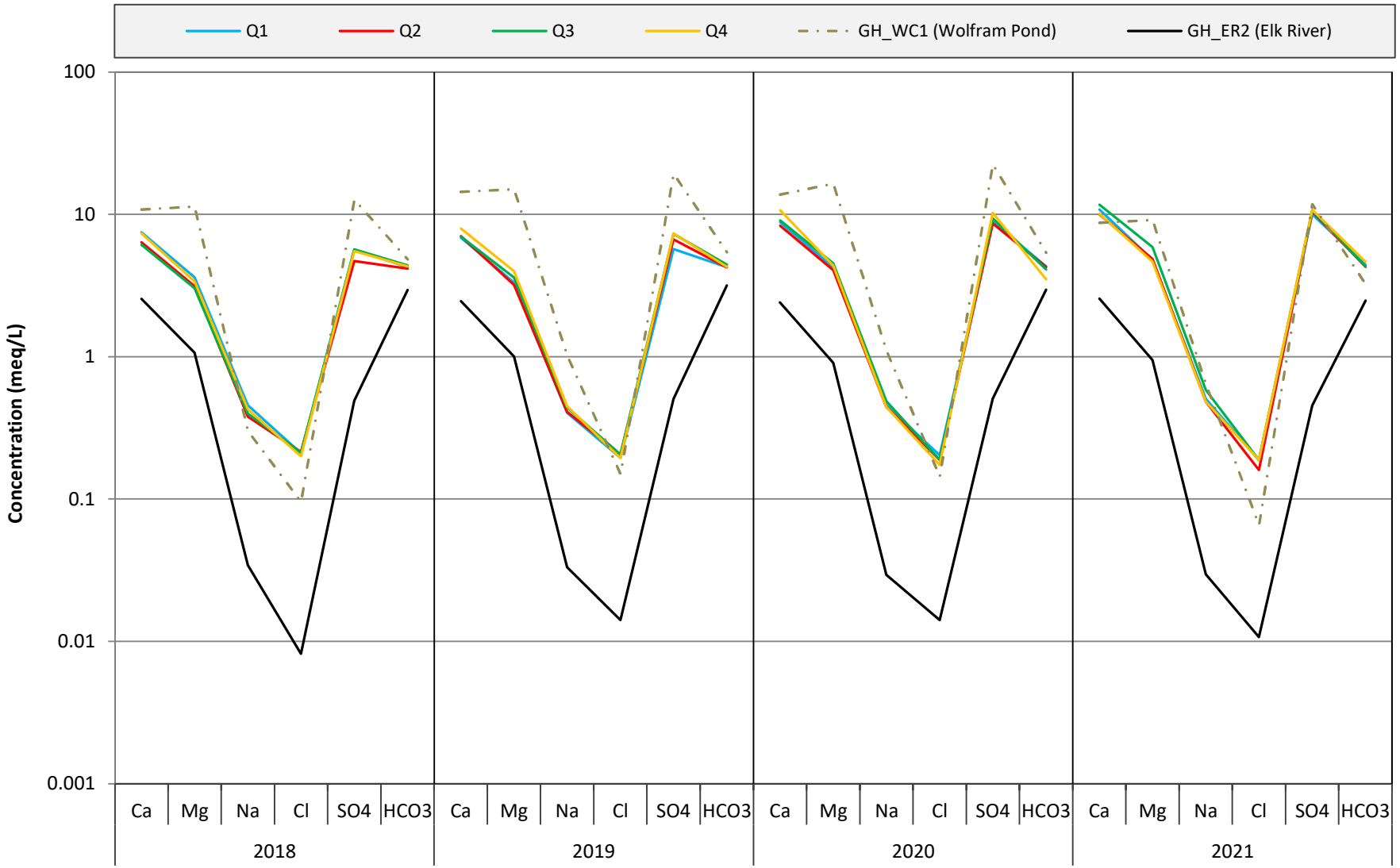
	PROJECT: 2021 RGMP SSGMP Annual Report	PROJECT NO: 635544
	CLIENT: Teck Coal Limited	DATE: 2022-02-23

Figure GH-29: Schoeller Plot in the Elk River Valley (GH_GA-MW-4)



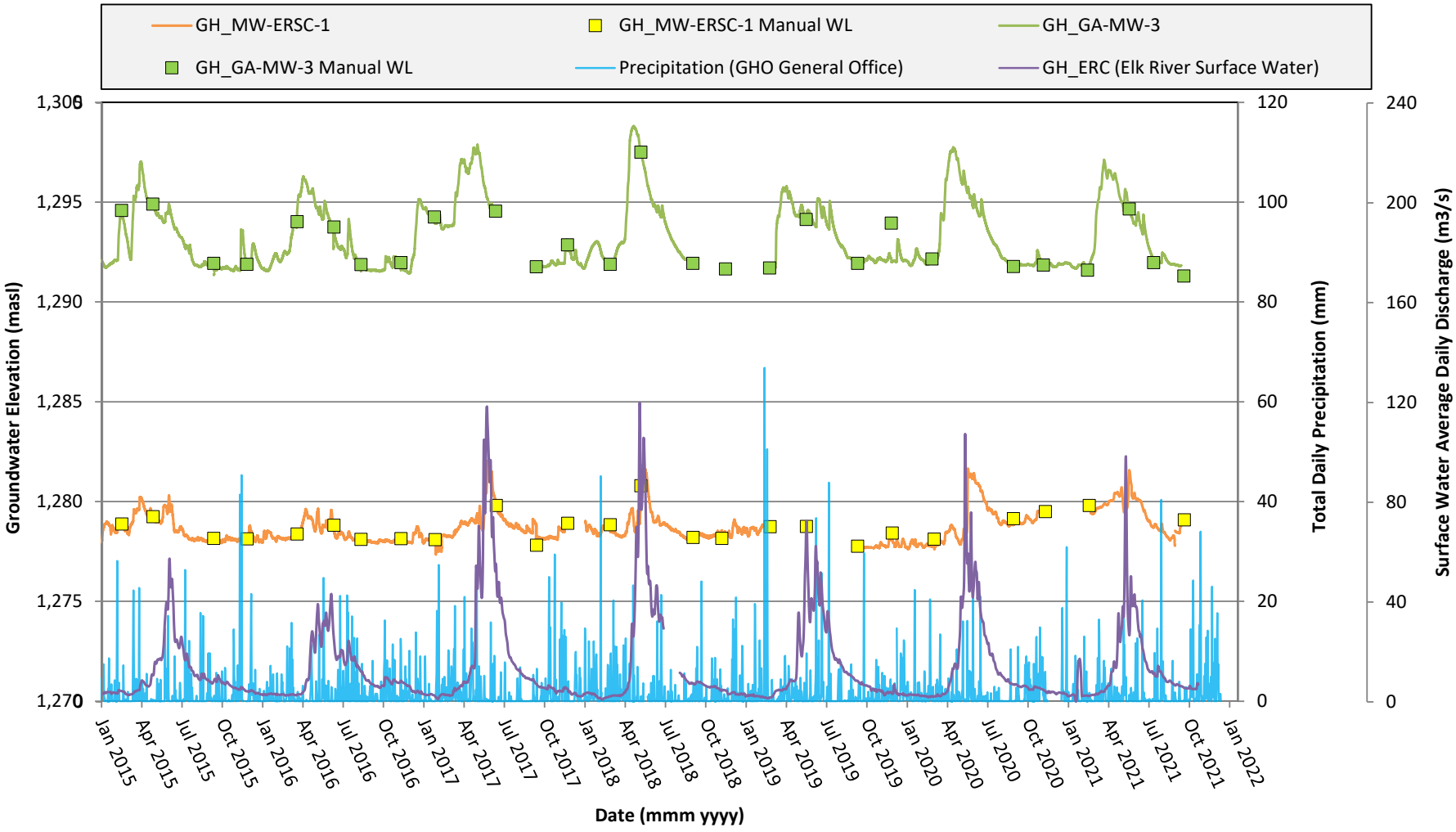
Note: Analytical data presented for surface water samples are from Q1.

Figure GH-30: Schoeller Plot in the Elk River Valley (GH_GA-MW-2)



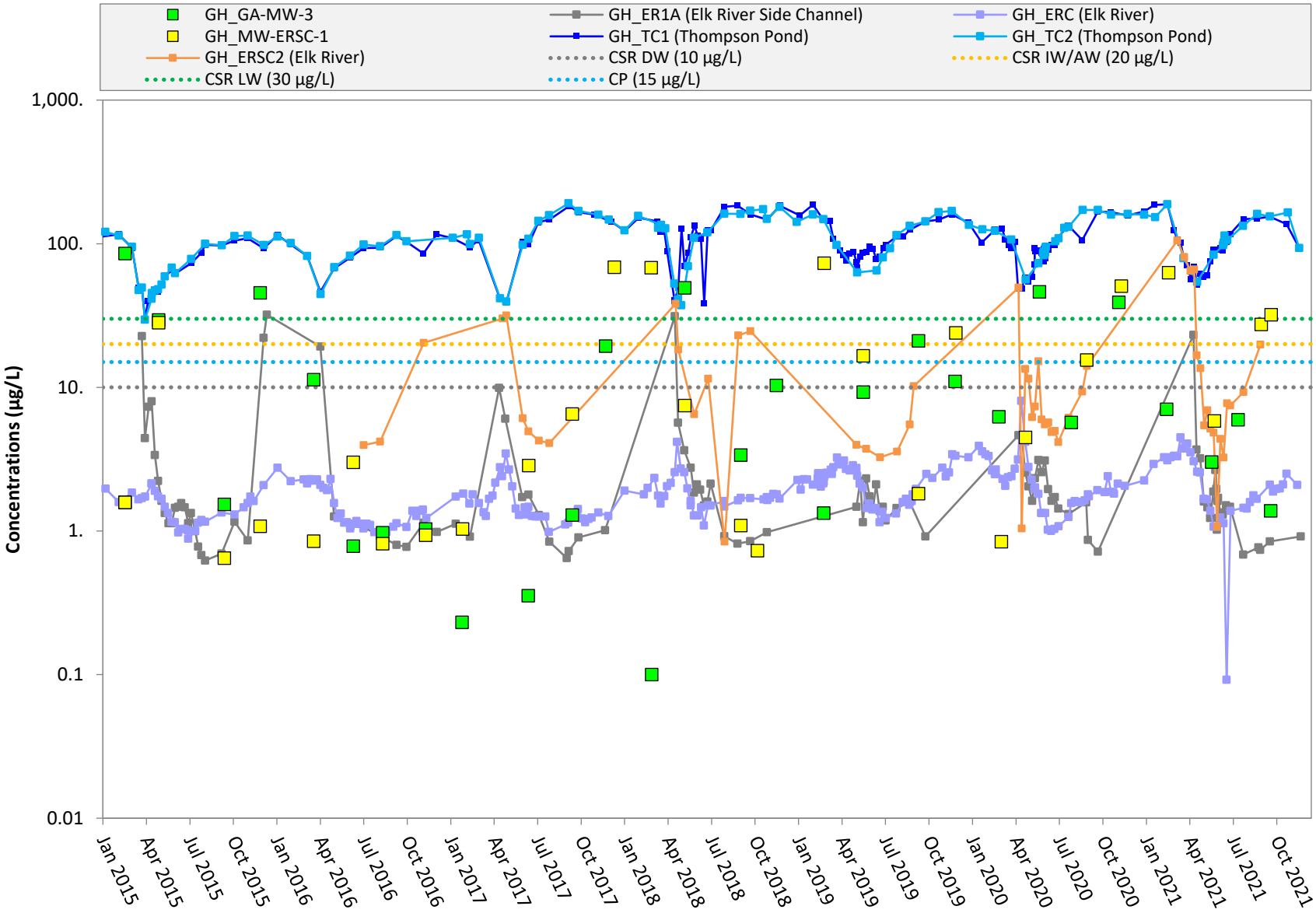
Note: Analytical data presented for surface water samples are from Q1 .

Figure GH-31: Thompson Creek and Downgradient of Thompson Creek - Hydrograph



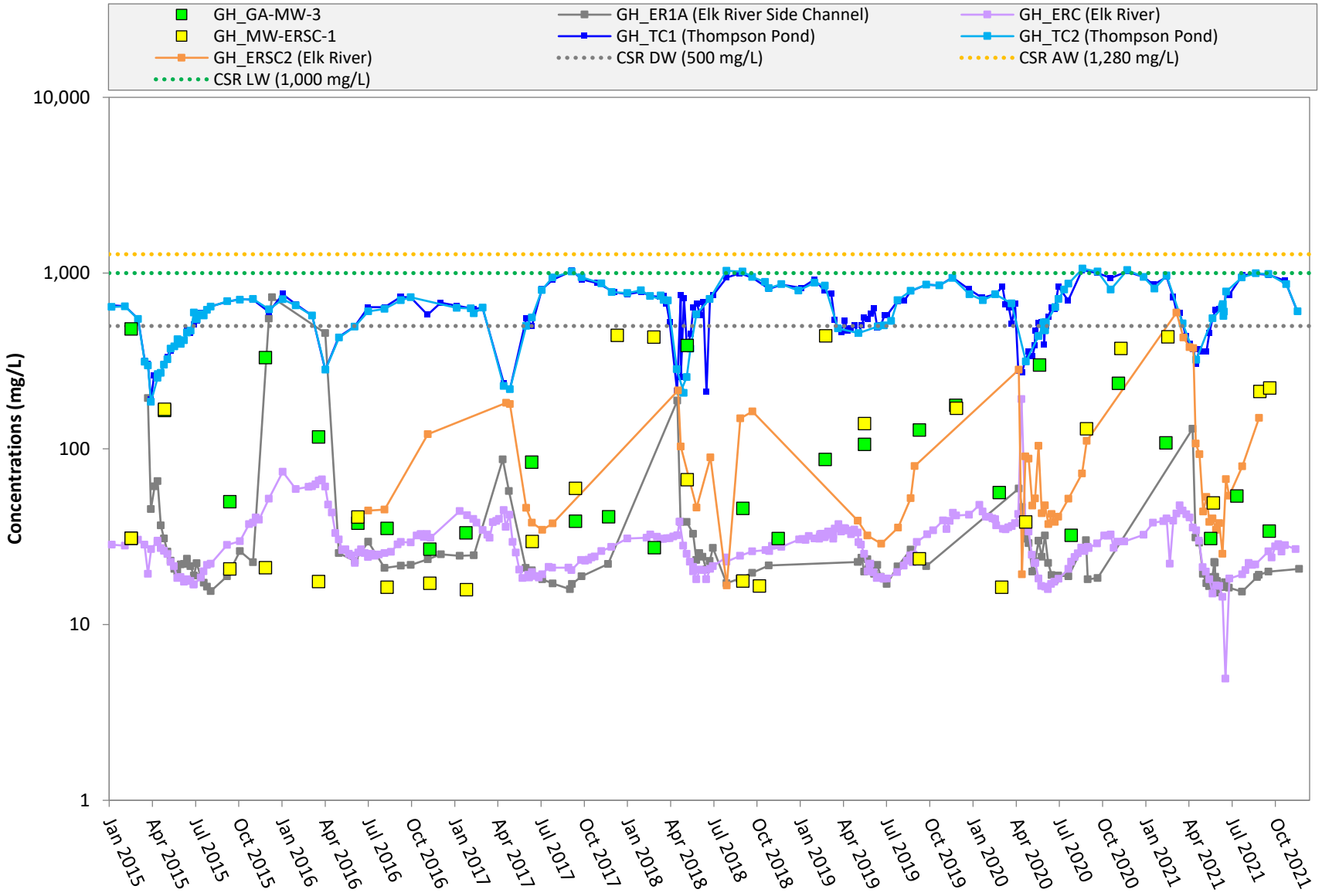
Note: Data was removed where suspected datalogger removal occured.
Scale discharge for GH_ERC was provided by Golder (2018) using Environment Canada Gauges 08NK018 and 08NK016 using equation: Flow[GH_ERC] = (Flow[08NK016] - Flow[08NK018])x(903/(1840-6210))

Figure GH-32: Thompson Creek and Downgradient of Thompson Creek - Selenium



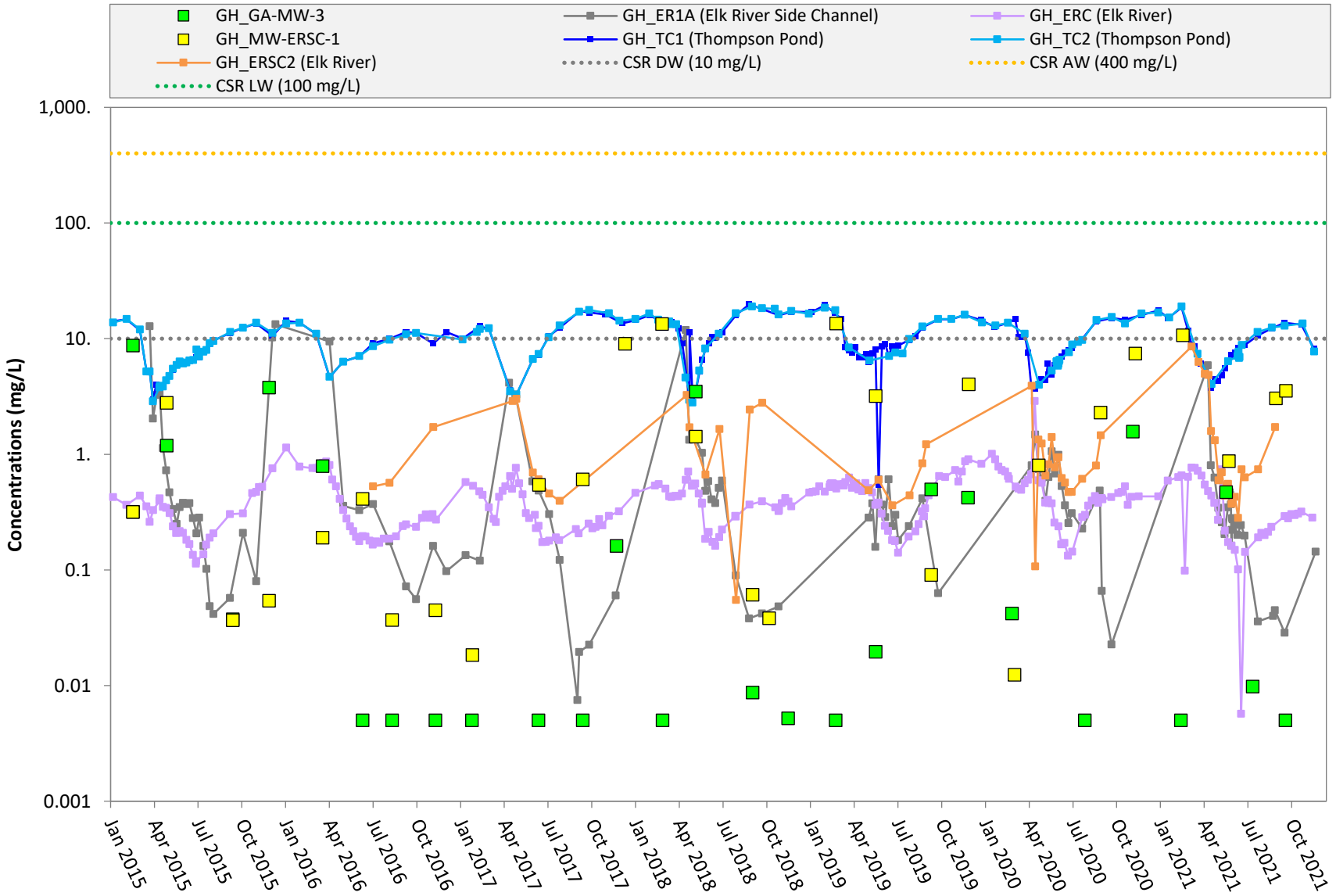
Note: Logarithmic scale has been applied based on distribution of concentrations relative to applicable screening criteria.

Figure GH-33: Thompson Creek and Downgradient of Thompson Creek - Sulphate



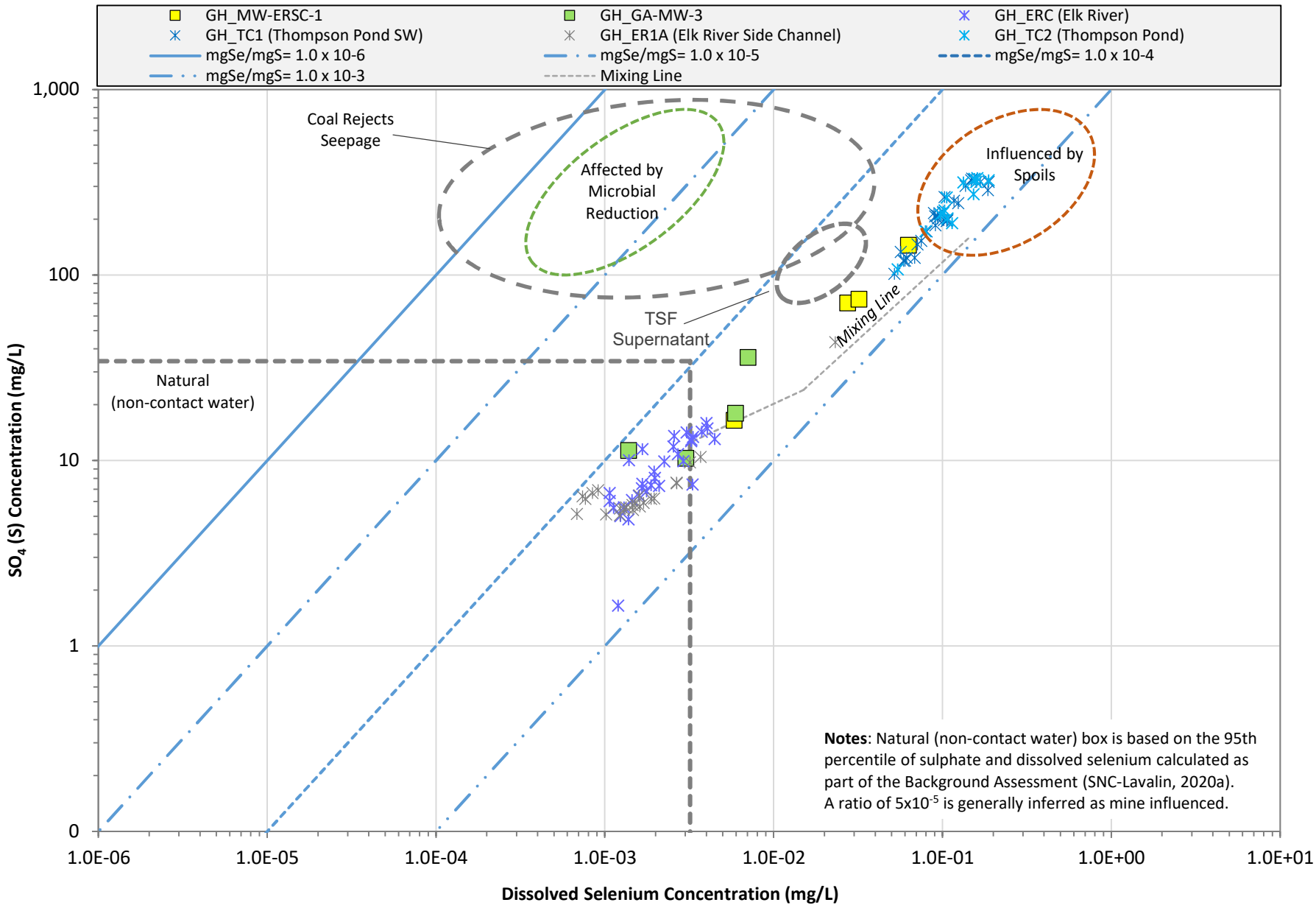
Note: Logarithmic scale has been applied based on distribution of concentrations relative to applicable screening criteria.

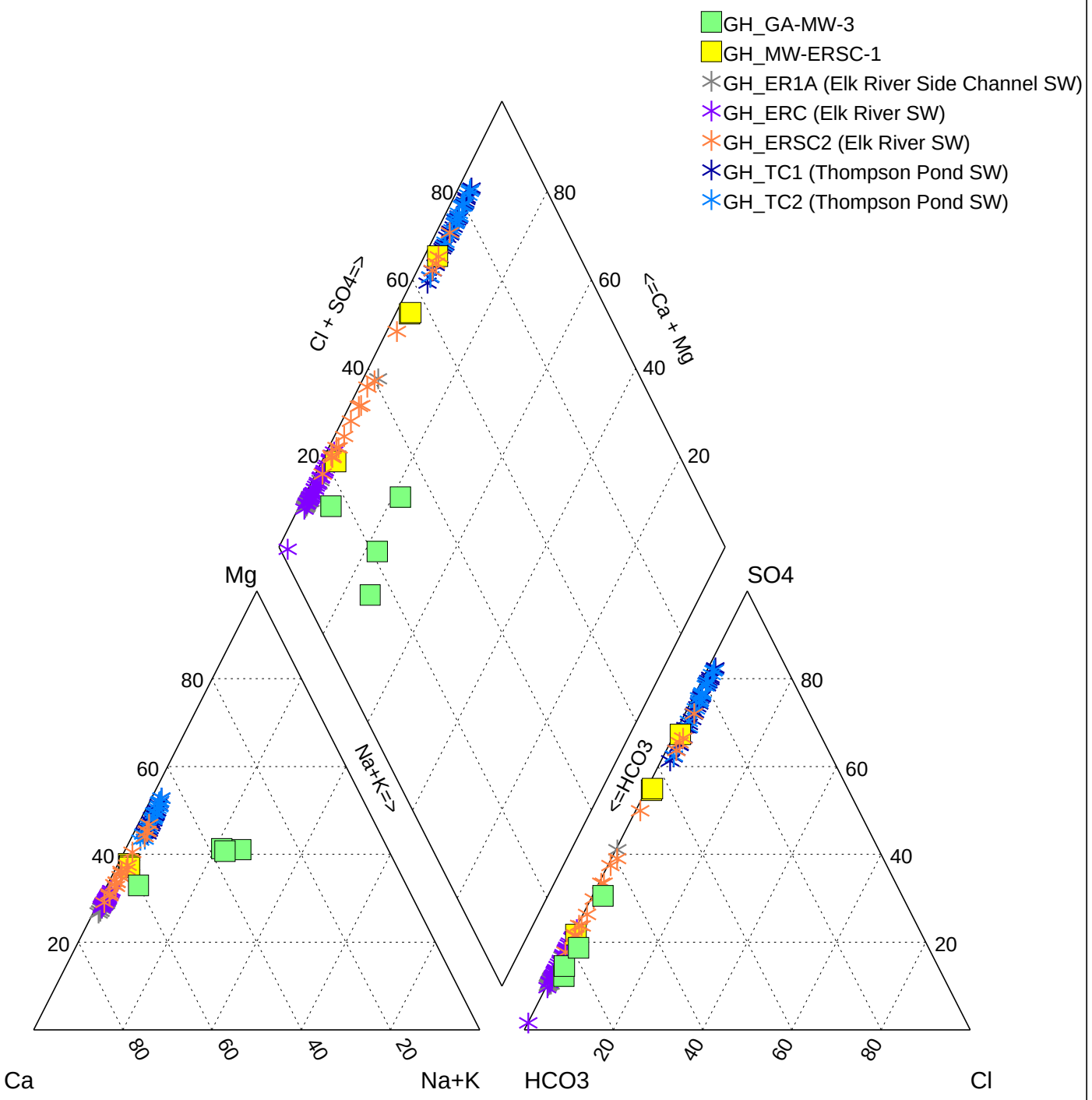
Figure GH-34: Thompson Creek and Downgradient of Thompson Creek - Nitrate-N



Note: For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-35: Thompson Creek and Downgradient of Thompson Creek - Se:SO_4 (S)

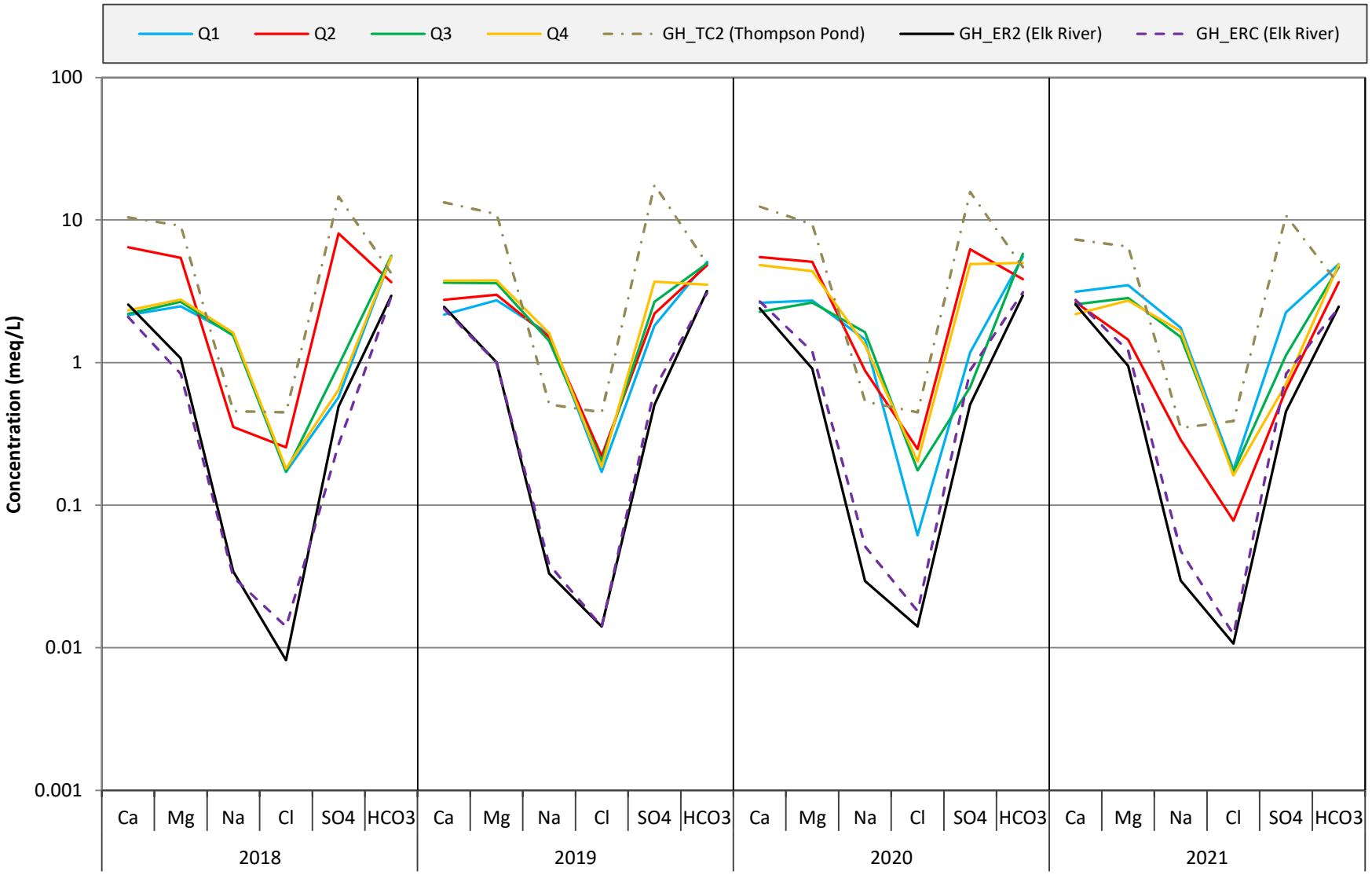




DESCRIPTION: Figure GH-36: Piper Diagram for Thompson Creek and Downgradient of Thompson Creek

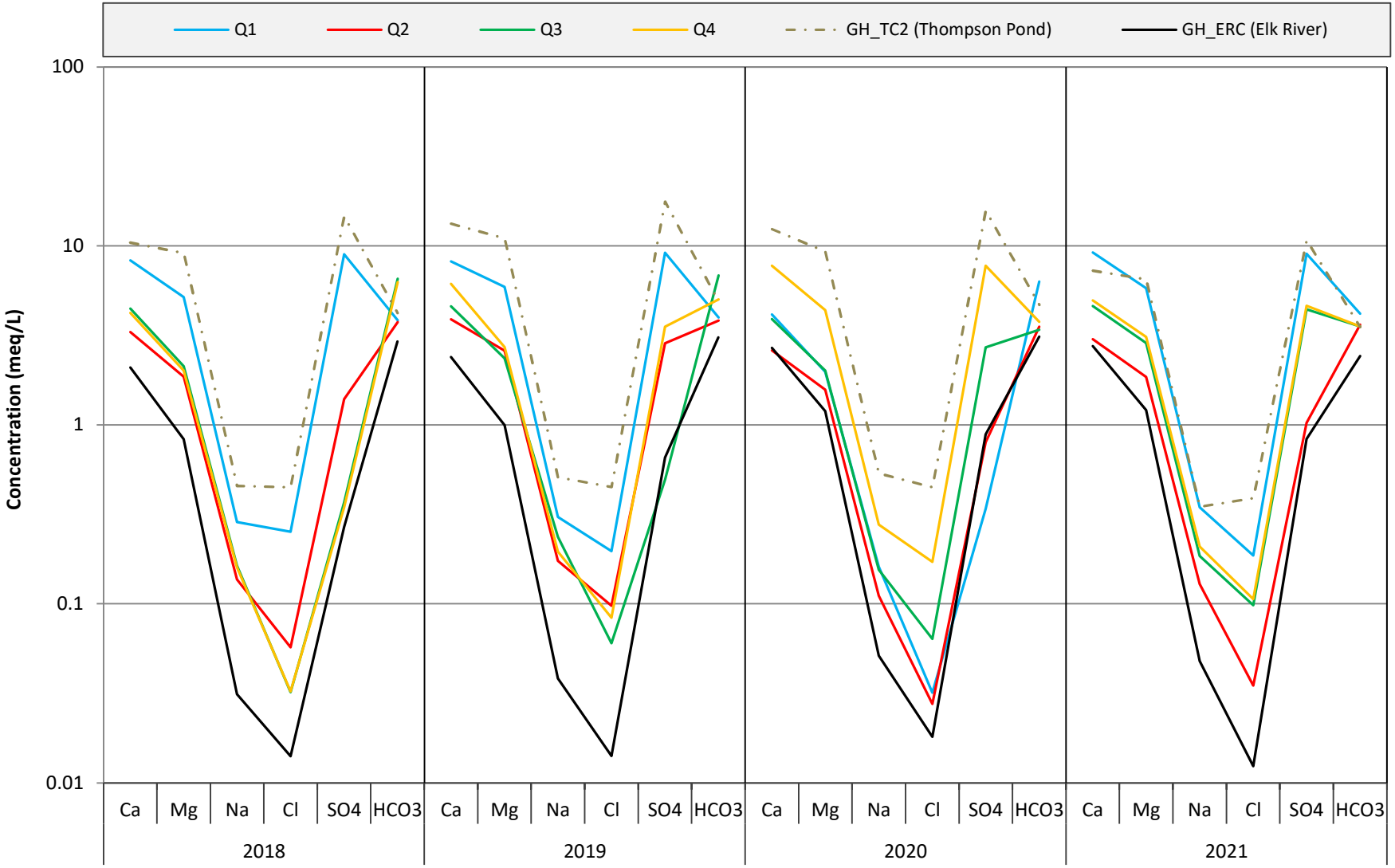
	PROJECT: 2021 RGMP SSGMP Annual Report	PROJECT NO: 635544
	CLIENT: Teck Coal Limited	DATE: 2022-02-23

Figure GH-37: Schoeller Plot in the Elk River Valley (GH_GA-MW-3)



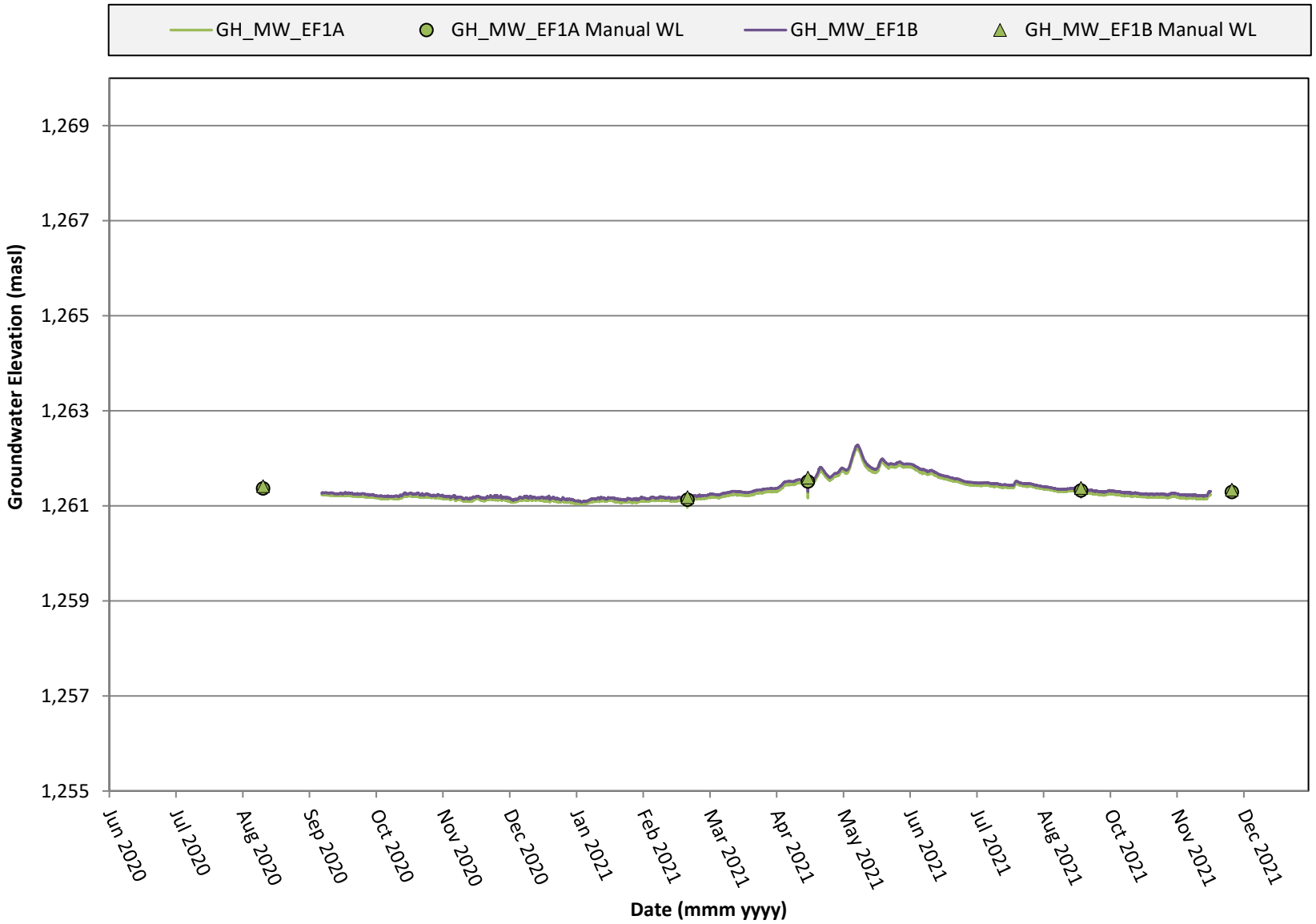
Note: Analytical data presented for surface water samples are from Q1 .

Figure GH-38: Schoeller Plot in the Elk River Valley (GH_MW-ERSC-1)



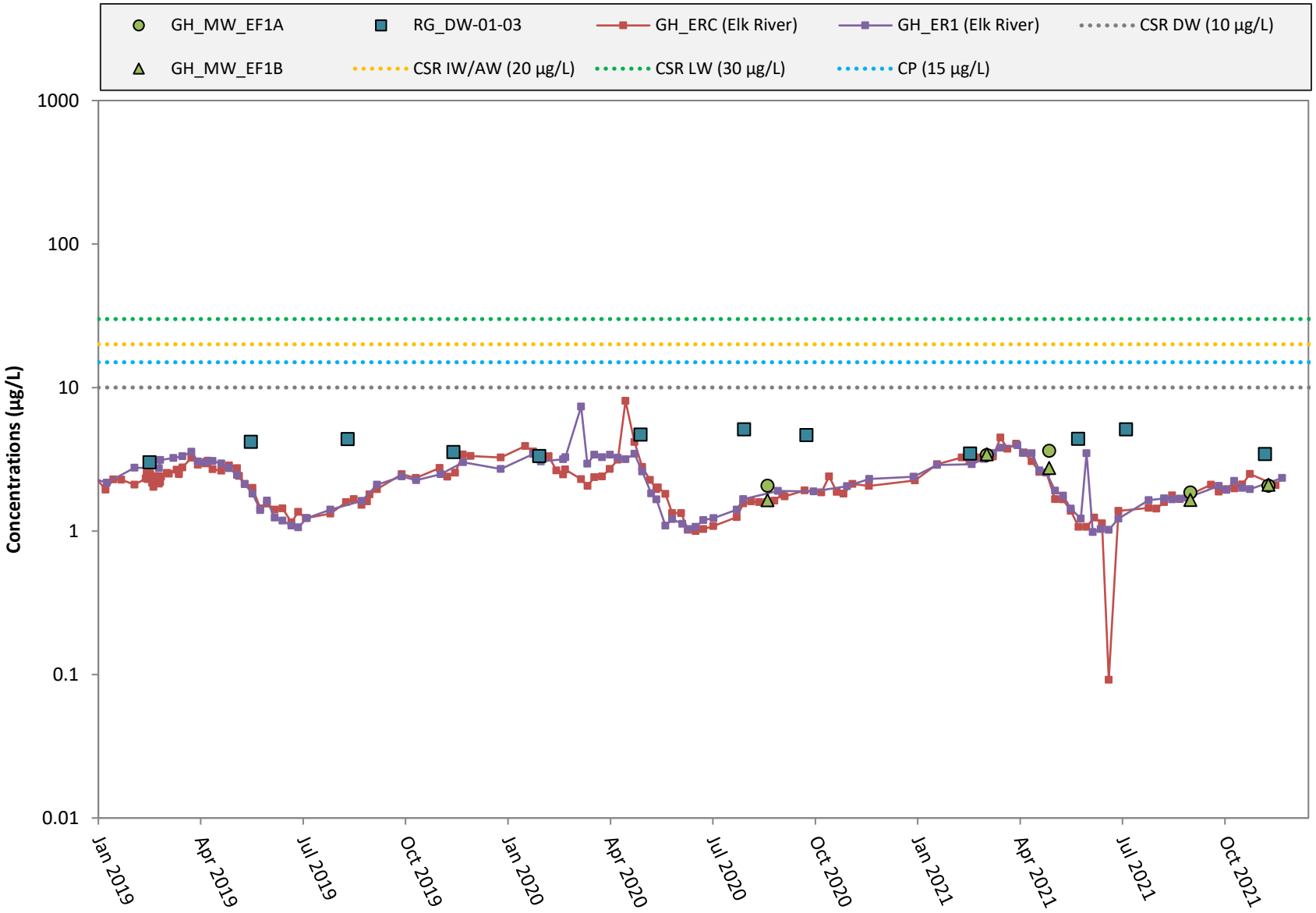
Note: Analytical data presented for GH_ER1A and GH_ERC are from Q2.

Figure GH-39: Elk River Valley Downgradient - Hydrograph



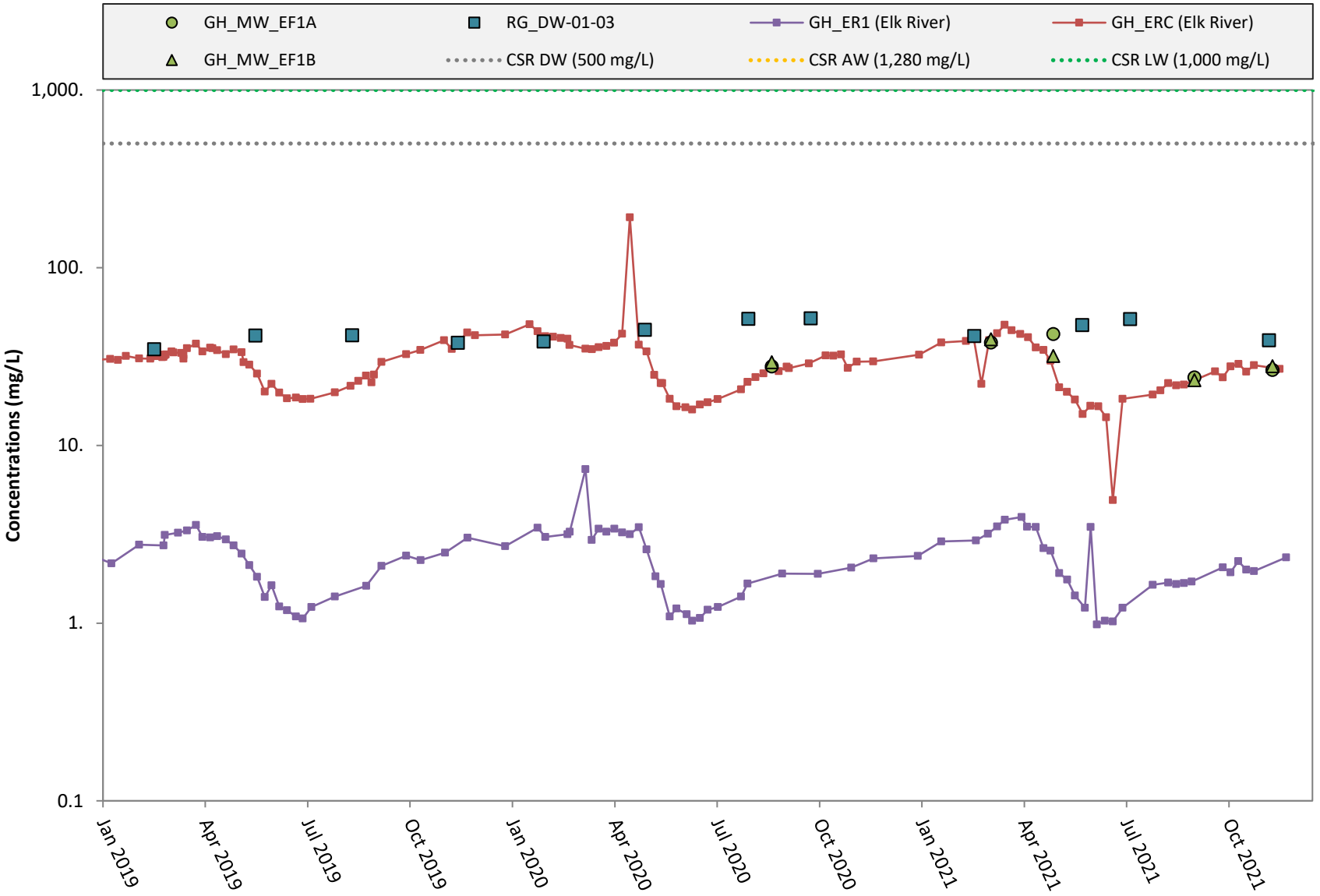
Note: Data was removed where suspected datalogger removal occured.
Precipitation data recorded on February 8, 17 and 18, 2018 have been removed as the data is inferred to be anomalous.

Figure GH-40: Elk River Valley - Selenium



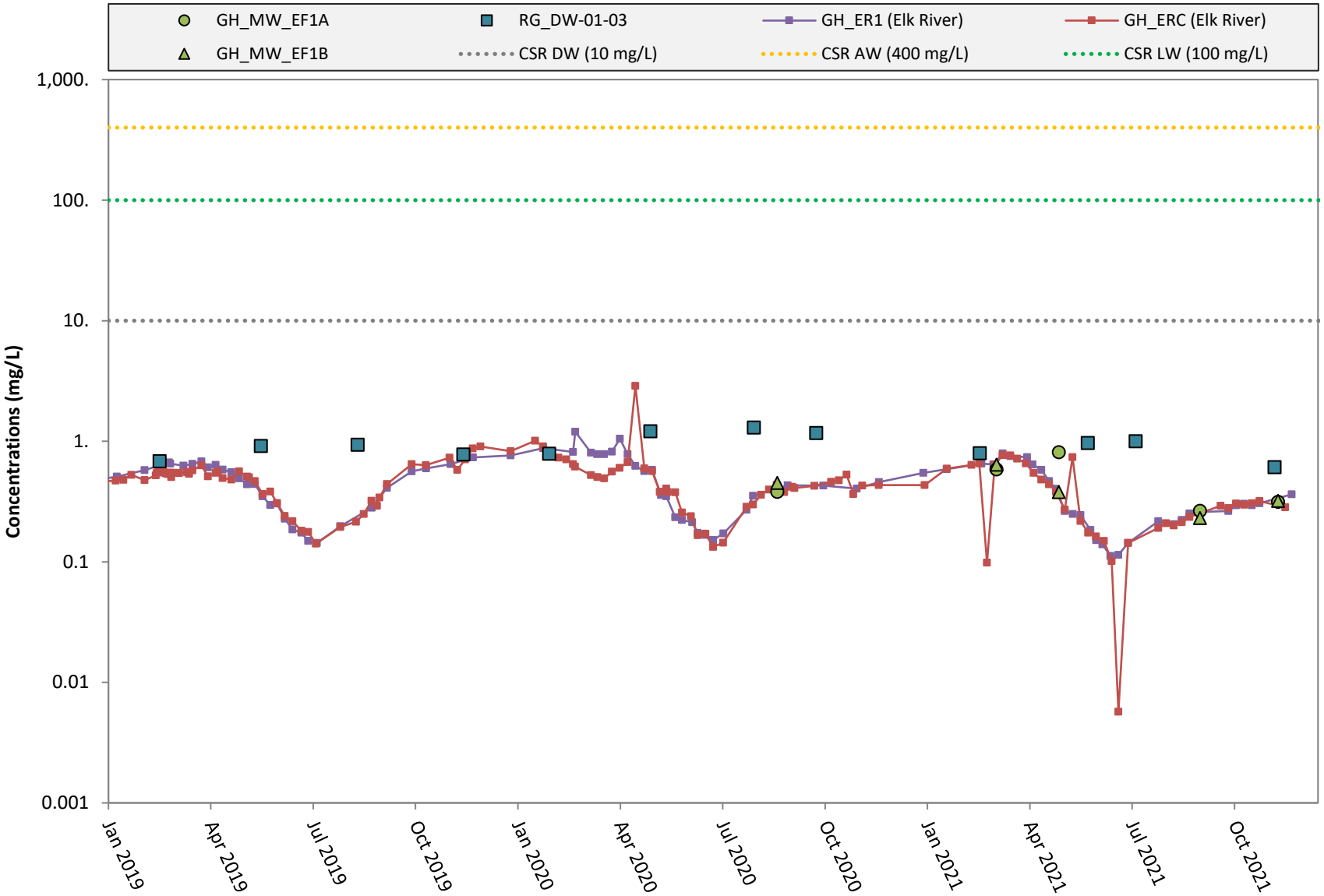
Note: For concentrations measured below the method detection limit, the method detection limit (0.05 µg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-41: Elk River Valley - Sulphate



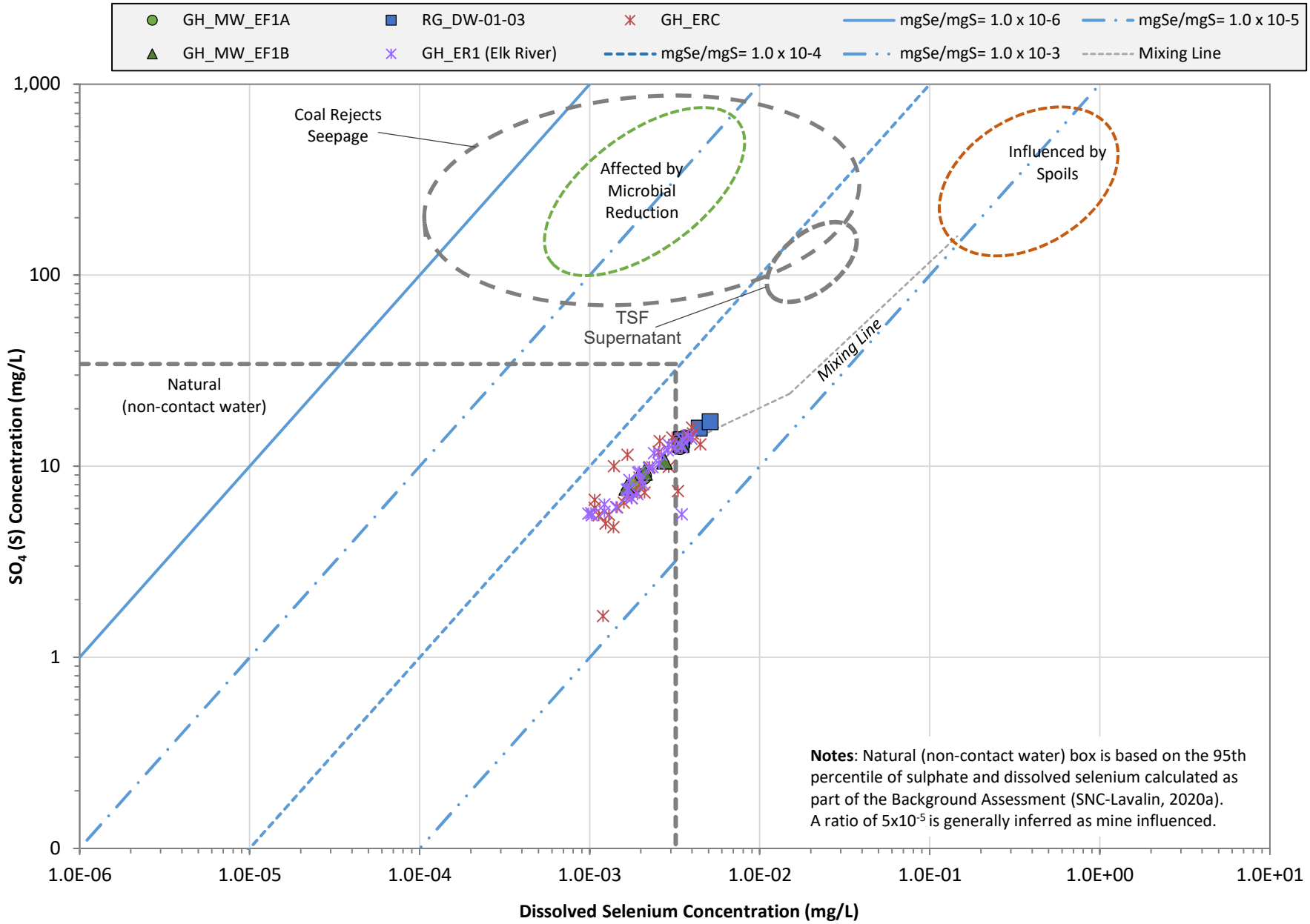
Note: For concentrations measured below the method detection limit, the method detection limit (0.3 mg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-42: Elk River Valley - Nitrate-N



Note: For concentrations measured below the method detection limit, the method detection limit (0.005 mg/L) was utilized for plotting purposes. Logarithmic scale has been applied on distribution of concentrations relative to applicable screening criteria.

Figure GH-43: Elk River Downgradient - Se:SO_4 (S)



Tables:

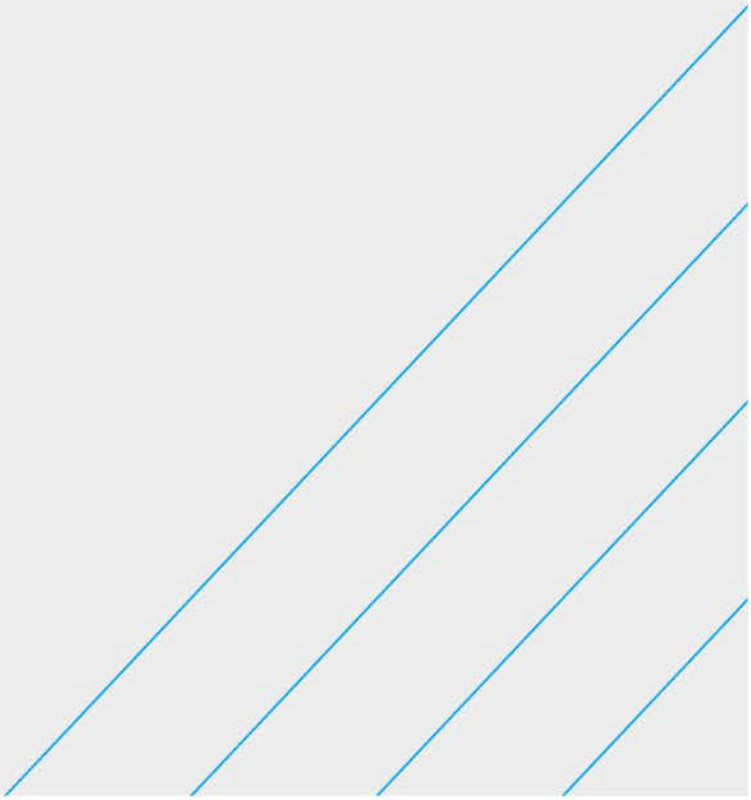


TABLE GH-01: Summary of Well Installation Details and Hydrogeological Information

Area	Well ID	Monitoring Program[a]	Well Type	Logs (Y/N)	Coordinates (UTM NAD 83)		Ground Elevation	TOC Elevation	Stick Up Height	Drilled Depth	Well Diameter	Top of Screen Depth	Bottom of Screen Depth	Screened Formation	Depth to Bedrock	Hydraulic Conductivity
					Easting	Northing	masl	masl	m	mbgs	mm	mbgs	mbgs		mbgs	m/s
Porter Creek Watershed (Fording River Valley)	GH_MW-PC	SSGMP, RGMP	Monitoring	Y	653526	5555339	1583.50	1584.72	1.22	45.0	51	3.5	6.5	Gravel and Cobbles	5.5	6.3E-07
	GH_MW-PC4A[b,f]	SSGMP	Monitoring	Y	653498	5555426	1575.26	1576.32	1.06	18.1	51	16.5	18.1	Bedrock	9.6	6.5E-07
	GH_MW-PC4B[b,f]	SSGMP	Monitoring	Y	659278	5530776	1575.35	1576.36	1.01	10.4	51	7.4	9.0	Sand and Gravel	9.6	-
Greenhills Creek Watershed (Fording River Valley)	GH_MW-GHC-1A[c]	SSGMP	Monitoring	Y	654052[e]	5547207[e]	1610.00	1610.80	0.80	23.2	51	18.3	21.4	Bedrock	14.6	5.0E-05
	GH_MW-GHC-1B[d]	SSGMP	Monitoring	Y	654050[e]	5547205[e]	1610.00	1610.80	0.80	14.6	51	4.6	7.6	Silty Gravel	14.6	3.0E-07
	GH_MW_GHC_4A[f]	SSGMP	Monitoring	Y	653815	5546306	1525.26	1526.25	0.99	11.9	50	8.5	11.6	Bedrock	6.1	3.0E-08
	GH_MW_GHC_4B[f]	SSGMP	Monitoring	Y	653810	5546308	1525.36	1526.36	1.00	5.8	50	1.5	4.6	Gravel and Sand	4.6	2.0E-04
	GH_MW-TD	SSGMP	Monitoring	Y	652694	5546536	1600.00	1600.75	0.75	38.1	51	31.4	34.4	Sand and Silt	35.1	-
	GH_MW-RLP-2[f]	SSGMP	Monitoring	Y	654075	5545343	1493.21	1494.16	0.95	10.6	50	3.5	5.0	Gravel and Cobbles	-	9.0E-04
	GH_POTW09	SSGMP, RGMP	Supply	Y	654208	5545404	1494.20	-	0.34	37.0	250	26.8	36.3	Silty Gravel	36.1	-
	GH_POTW10	SSGMP, RGMP	Supply	Y	653291	5545484	1486.00	-	0.00	53.6	-	49.0	52.0	Gravel and Cobbles	-	-
	GH_POTW15	SSGMP, RGMP	Supply	Y	653169	5545667	1490.30	-	1.04	43.9	-	41.5	43.9	Gravel and Cobbles	-	2.8E-04
	GH_POTW17	SSGMP, RGMP	Supply	Y	653698	5545811	1504.00	-	-	47.2	254	39.3	42.4	Sand and Gravel	-	2.5E-04
	RG_MW_FR11A[b,f]	SSGMP	Monitoring	Y	652114	5545334	1499.78	1500.60	0.82	21.4	51	19.5	21.0	Bedrock	3.3	-
	RG_MW_FR11B[b,f]	SSGMP	Monitoring	Y	652113	5545335	1499.79	1500.66	0.87	15.2	51	13.4	15.0	Bedrock	3.3	-
Elk River Valley	GH_MW-MC-1D	SSGMP, RGMP	Monitoring	Y	647979	5553565	1313.08	1313.99	0.91	47.2	51	30.4	31.9	Sand and Gravel	42.7	2.6E-04
	GH_MW-MC-1S	SSGMP, RGMP	Monitoring	Y	647979	5553565	1313.10	1314.01	0.91	47.2	51	9.3	10.8	Sand and Gravel	42.7	2.5E-03
	GH_MW-MC-2D	SSGMP	Monitoring	Y	648211	5553498	1314.13	1315.13	1.00	16.8	51	12.2	15.2	Sand and Gravel	15.8	7.1E-08
	GH_MW-MC-2S	SSGMP	Monitoring	Y	648211	5553498	1314.13	1315.12	0.99	16.8	51	4.5	6.0	Silt / Sand and Gravel	15.8	2.0E-05
	GH_GA-MW-4	SSGMP, RGMP	Monitoring	Y	648217	5552960	1311.58	1312.52	0.94	17.2	51	13.7	16.7	Sand and Gravel	-	1.0E-04
	RG_MW_LC3A[f]	SSGMP	Monitoring	Y	648182	5552736	1279.46	1280.29	0.84	27.4	50	18.0	19.5	Sand and Gravel	-	2.2E-04
	RG_MW_LC3B[f]	SSGMP	Monitoring	Y	648182	5552737	1279.50	1280.33	0.83	14.9	50	12.0	13.5	Gravel	-	1.6E-03

Notes:
a: SSGMP denotes GHO Site-Specific Groundwater Monitoring Program; RGMP denotes Regional Groundwater Monitoring Program.
b: Monitoring wells installed in 2021 to support the SSGMP and/or RGMP.
c: Previously known as GH_MW-GHC-1D.
d: Previously known as GH_MW-GHC-1S.
e: UTM coordinates obtained from LiDAR.
f: Monitoring wells added to the SSGMP Program as per the 2021 SSGMP Update.
g: Monitoring wells added to the RGMP Program as per the 2020 RGMP Update.
masl denotes metres above sea level.
mbgs denotes metres below ground surface.
TOC denotes top of pipe casing.
"-" denotes data not available.

TABLE GH-01: Summary of Well Installation Details and Hydrogeological Information

Area	Well ID	Monitoring Program[a]	Well Type	Logs (Y/N)	Coordinates (UTM NAD 83)		Ground Elevation	TOC Elevation	Stick Up Height	Drilled Depth	Well Diameter	Top of Screen Depth	Bottom of Screen Depth	Screened Formation	Depth to Bedrock	Hydraulic Conductivity
					Easting	Northing	masl	masl	m	mbgs	mm	mbgs	mbgs		mbgs	m/s
Elk River Valley	GH_GA-MW-2	SSGMP, RGMP	Monitoring	Y	648294	5552115	1305.04	1306.13	1.02	29.6	51	23.0	29.0	Sand/Silt	28.5	1.0E-03
	RG_MW_WC2A[f]	SSGMP	Monitoring	Y	648196	5552079	1304.01	1304.87	0.86	30.5	50	21.1	22.6	Sand and Gravel	-	3.1E-04
	RG_MW_WC2B[f]	SSGMP	Monitoring	Y	648197	5552079	1304.04	1304.80	0.76	7.6	50	4.3	5.8	Sand and Gravel	-	8.3E-04
	RG_MW_LCWC1[f]	SSGMP	Monitoring	Y	648356	5552400	1310.45	1311.26	0.81	11.9	50	7.3	8.8	Sand and Gravel/Sand	-	4.2E-04
	GH_GA-MW-3	SSGMP, RGMP	Monitoring	Y	648577	5550302	1299.62	1300.56	0.94	14.4	51	8.0	14.0	Sand and Gravel	14.4	2.0E-06
	GH_MW-ERSC-1	SSGMP, RGMP	Monitoring	Y	649081	5548704	1283.36	1284.11	0.75	7.9	51	4.1	7.2	Till/Bedrock	6.1	3.0E-06
	GH_MW_EF1A[g]	RGMP	Monitoring	Y	649058	5544459	1264.29	1265.21	0.92	27.4	50	22.6	24.1	Sand	-	3.2E-03
	GH_MW_EF1B[g]	RGMP	Monitoring	Y	649057	5544457	1264.34	1265.13	0.79	7.6	50	5.4	7.0	Gravel	-	1.1E-03
	RG_DW-01-03 (Town Centre Well)	RGMP	Supply	Y	649089	5543336	-	-	-	28.0	-	-	-	Sand and Gravel	-	-

Notes:

a: SSGMP denotes GHO Site-Specific Groundwater Monitoring Program; RGMP denotes Regional Groundwater Monitoring Program.

b: Monitoring wells installed in 2021 to support the SSGMP and/or RGMP.

c: Previously known as GH_MW-GHC-1D.

d: Previously known as GH_MW-GHC-1S.

e: UTM coordinates obtained from LiDAR.

f: Monitoring wells added to the SSGMP Program as per the 2021 SSGMP Update.

g: Monitoring wells added to the RGMP Program as per the 2020 RGMP Update.

masl denotes metres above sea level.

mbgs denotes metres below ground surface.

TOC denotes top of pipe casing.

"-" denotes data not available.

TABLE GH-02: Summary of Groundwater Levels and Sampling Information (GHO)

Area	Well ID	Ground Elevation	TOC Elevation	Stick Up Height	Date of Static Water Level Measurement	Depth to Water	Potentiometric Elevation	Well Pairs	Date of Static Water Level Measurement	Calculated Vertical Gradient		Continuous Water Level Monitoring	Purging / Sampling Methodology
		masl	masl	m	yyyy-mm-dd	mbtoc	masl		yyyy-mm-dd	m/m	Direction	Quarter	
Porter Creek Watershed (Fording River Valley)	GH_MW-PC	1583.50	1582.28	1.22	2021-03-18	4.51	1577.77	-	-	-	-	Q1, Q2, Q4	Bladder
					2021-06-24	4.65	1577.63						
					2021-09-02	5.44	1576.84						
					2021-12-03	4.64	1577.64						
	GH_MW-PC4A	1575.26	1576.32	1.06	2021-08-16	12.48	1563.84	-	-	-	-	-	Geosub
	GH_MW-PC4B	1575.35	1576.36	1.01	2021-08-16	Dry	-	-	-	-	-	-	Geosub
Greenhills Creek Watershed (Fording River Valley)	GH_MW-GHC-1A	1610.00	1610.80	0.80	2021-01-25	9.30	1601.51	GH_MW-GHC-1B and GH_MW-GHC-1A	2021-01-25	-0.401	Downward	Q1, Q2, Q3, Q4	Bladder
					2021-06-01	-	-		2021-06-01	-	-		
					2021-08-30	9.03	1601.77		2021-08-30	-0.414	Downward		
					2021-11-14	9.16	1601.64		2021-11-14	-0.479	Downward		
	GH_MW-GHC-1B	1610.00	1610.80	0.80	2021-01-25	3.79	1607.01	-	-	-	-	Q1, Q2	Bladder
					2021-06-10	1.25	1609.55						
					2021-08-30	3.34	1607.46						
					2021-11-18	2.58	1608.22						
	GH_MW_GHC_4A	1525.26	1526.25	0.99	2021-03-29	2.95	1523.31	GH_MW-GHC_4B and GH_MW-GHC_4A	2021-03-29	-0.162	Downward	Q1, Q2, Q3, Q4	-
					2021-06-22	3.88	1522.37		2021-06-22	-0.159	Downward		
					2021-09-20	4.23	1522.03		2021-09-20	-0.170	Downward		
					2021-11-23	3.21	1523.05		2021-11-23	-0.200	Downward		
	GH_MW_GHC_4B	1525.36	1526.36	1.00	2021-03-29	1.91	1524.46	-	-	-	-	Q1, Q2, Q3, Q4	Geosub
					2021-06-22	2.86	1523.50						
					2021-09-21	3.13	1523.23						
					2021-11-23	1.89	1524.47						
	GH_MW-TD	1600.00	1600.75	0.75	-	-	-	-	-	-	-	-	Artesian
					2021-06-16	Artesian	-						
					2021-09-03	Artesian	-						
					2021-10-07	Artesian	-						
	GH_MW_RLP-2	1493.21	1494.16	0.90	2021-03-31	2.15	1492.01	-	-	-	-	-	Artesian
					2021-06-24	2.18	1491.98						
					2021-09-03	2.16	1492.00						
					2021-11-19	2.56	1491.60						
	GH_POTW09	1494.20	-	0.34	2021	-	-	-	-	-	-	-	Tap
	GH_POTW10	1486.00	-	0.00	2021	-	-	-	-	-	-	-	Tap
	GH_POTW15	1490.30	-	1.04	2021	-	-	-	-	-	-	-	Tap
	GH_POTW17	1504.00	-	-	2021	-	-	-	-	-	-	-	Tap
	RG_MW_FR11A	1499.78	1500.60	0.82	2021-09-29	15.03	1485.57	GH_MW-FR11B and GH_MW-FR11A	2021-09-29	-0.956	Downward	-	Geosub
	RG_MW_FR11B	1499.79	1500.66	0.87	2021-09-29	9.20	1491.46	-		-	-	-	Geosub
Mickelson Watershed (Elk River Valley)	GH_MW-MC-1D	1313.08	1313.99	0.91	2021-03-22	3.12	1310.87	GH_MW-MC-1D and GH_MW-MC-1S	2021-03-22	0.015	Upward	Q1, Q2, Q3, Q4	Peristaltic
					2021-06-09	2.22	1311.77		2021-06-09	0.007	Upward		
					2021-09-14	3.01	1310.98		2021-09-14	0.019	Upward		
					2021-11-17	3.03	1310.96		2021-11-17	-0.001	Downward		
	GH_MW-MC-1S	1313.10	1314.01	0.91	2021-03-22	3.46	1310.55	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-06-09	2.40	1311.62						
					2021-09-14	3.42	1310.59						
					2021-11-17	3.03	1310.99						
	GH_MW-MC-2D	1314.13	1315.13	1.00	2021-03-22	2.67	1312.47	GH_MW-MC-2D and GH_MW-MC-2S	2021-03-22	0.198	Upward	Q1, Q2, Q3, Q4	Peristaltic
					2021-06-09	2.29	1312.84		2021-06-09	0.216	Upward		
					2021-09-15	2.64	1312.49		2021-09-15	0.282	Upward		
					2021-11-17	2.81	1312.32		2021-11-17	0.217	Upward		
	GH_MW-MC-2S	1314.13	1315.12	0.99	2021-03-22	4.31	1310.81	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-06-09	4.10	1311.02						
					2021-09-15	4.99	1310.12						
					2021-11-17	4.62	1310.49						

Notes:
TOC denotes top of casing.
masl denotes meters above sea level.
mbtoc denotes meters below top of casing.
"-" denotes data not available.
Quarter is represented as Q1, Q2, Q3, Q4.

TABLE GH-02: Summary of Groundwater Levels and Sampling Information (GHO)

Area	Well ID	Ground Elevation	TOC Elevation	Stick Up Height	Date of Static Water Level Measurement	Depth to Water	Potentiometric Elevation	Well Pairs	Date of Static Water Level Measurement	Calculated Vertical Gradient		Continuous Water Level Monitoring	Purging / Sampling Methodology
		masl	masl	m	yyyy-mm-dd	mbtoc	masl		yyyy-mm-dd	m/m	Direction	Quarter	
Leask Watershed (Elk River Valley)	GH_GA-MW-4	1311.58	1312.52	0.94	2021-01-21	6.49	1306.03	-	-	-	-	Q1, Q2, Q3, Q4	Bladder
					2021-06-04	3.97	1308.55						
					2021-07-30	5.57	1306.95						
					2021-10-01	6.17	1306.35						
	RG_MW_LC3A	1318.33	1319.04	0.71	2021-03-03	16.26	1302.78	GH_MW_LC3A and GH_MW_LC3B	2021-03-03	-0.352	Downward	Q1, Q2, Q3, Q4	Geosub
					2021-05-07	13.90	1305.14		2021-05-07	-0.193	Downward		
					2021-08-16	14.59	1304.45		2021-08-16	-0.208	Downward		
					2021-11-02	15.78	1303.26		2021-11-02	-0.290	Downward		
	RG_MW_LC3B	1318.28	1319.07	0.79	2021-03-03	14.50	1304.57	-	-	-	-	Q1, Q2, Q3, Q4	Geosub
					2021-05-11	12.78	1306.29						
					2021-08-16	13.44	1305.63						
					2021-11-02	14.30	1304.77						
Wolfram Drainage (Elk River Valley)	GH_GA-MW-2	1305.04	1306.13	1.02	2021-03-08	5.81	1300.32	-	-	-	-	Q1, Q2, Q3, Q4	Bladder
					2021-05-07	4.13	1302.00						
					2021-09-01	4.99	1301.14						
					2021-10-01	5.43	1300.70						
	RG_MW_WC2A	1304.01	1304.87	0.86	2021-03-03	4.81	1300.06	GH_MW_WC2A and GH_MW_WC2B	2021-03-03	-0.011	Downward	Q1, Q2, Q3, Q4	Geosub
					2021-05-10	3.34	1301.53		2021-05-10	-0.013	Downward		
					2021-08-16	3.91	1300.97		2021-08-16	-0.012	Downward		
					2021-11-02	4.75	1300.13		2021-11-02	-0.012	Downward		
	RG_MW_WC2B	1304.04	1304.80	0.76	2021-03-03	4.55	1300.25	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-05-10	3.05	1301.75						
					2021-08-16	3.63	1301.17						
					2021-11-02	4.47	1300.34						
	RG_MW_LCWC1	1310.45	1311.26	0.81	2021-03-02	8.56	1302.70	-	-	-	-	Q1, Q2, Q3, Q4	Peristaltic
					2021-05-07	7.08	1304.18						
					2021-08-16	7.86	1303.40						
					2021-11-02	8.46	1302.81						
Thompson Watershed (Elk River Valley)	GH_GA-MW-3	1299.78	1300.56	0.94	2021-03-01	9.16	1291.40	-	-	-	-	Q1, Q2, Q3, Q4	Bladder
					2021-06-04	6.09	1294.47						
					2021-07-30	8.78	1291.78						
					2021-10-07	9.45	1291.11						
	GH_MW-ERSC-1	1283.36	1284.11	0.75	2021-03-05	4.30	1279.81	-	-	-	-	Q1, Q3, Q4	Bladder
					2021-06-10	-	-						
					2021-09-17	5.22	1278.89						
					2021-10-08	5.03	1279.08						
Elk River Valley Bottom near Elkford	GH_MW_EF1A	1264.29	1265.21	0.92	2021-03-18	4.08	1261.13	GH_MW_EF1A and GH_MW_EF1B	2021-03-18	-	-	Q1, Q2, Q3	Peristaltic
					2021-05-13	3.70	1261.51		2021-05-13	-0.003	Downward		
					2021-09-17	3.89	1261.32		2021-09-17	-0.005	Downward		
					2021-11-26	3.92	1261.29		2021-11-26	-0.003	Downward		
	GH_MW_EF1B	1264.34	1265.13	0.79	2021-03-18	3.95	1261.19	-	-	-	-	Q1, Q2, Q3	Peristaltic
					2021-05-13	3.54	1261.60						
					2021-09-17	3.76	1261.38						
					2021-11-26	3.79	1261.34						
	RG_DW-01-03	-	-	-	2021	-	-	-	-	-	-	-	Tap

Notes:
TOC denotes top of casing.
masl denotes meters above sea level.
mbtoc denotes meters below top of casing.
"-" denotes data not available.
Quarter is represented as Q1, Q2, Q3, Q4.

TABLE GH-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Inorganics, Nutrients and Organics in Groundwater (GHO)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature C	pH (field) pH	Dissolved Oxygen mg/L	Field Conductivity µS/cm	Field ORP mV	pH pH	Hardness mg/L	Conductivity µS/cm	Total Suspended Solids mg/L	Total Dissolved Solids mg/L	Turbidity ntu	Total Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Hydroxide mg/L	Bromide mg/L	Chloride mg/L	Fluoride mg/L	Sulphate mg/L	Ammonia Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Kjeldahl Nitrogen-N mg/L	Ortho-Phosphate mg/L	Phosphorus, Total mg/L	Total Organic Carbon mg/L	Dissolved Organic Carbon mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Fording River Valley (Porter Creek Drainage) (^ denotes well part of Study Area 1)																													
GH_MW-PC^	GH_MW-PC_WG_2021-01-04_NP	2021 03 18	2.3	7.57	8.2	993	135.6	8.24	610	1,000	83	756	44.5	198	242	< 1.0	< 1.0	< 0.05	0.92	0.202	389	0.012	1.61	< 0.001	0.625	0.0076	0.0963	1.43	0.57
	GH_MW-PC_WG_2021-04-05_NP	2021 06 24	5.3	7.15	6.79	1,004	188.3	7.93	626	1,040	119	795	68.8	228	278	< 1.0	< 1.0	< 0.250	1.50	0.368	413	0.0078	4.09	< 0.0050	0.149	0.0035	0.0556	2.89	2.33
	GH_MW-PC_WG_2021-07-05_NP	2021 09 02	8.4	7.26	6.11	1,000	311.8	7.80	620	957	30.3	842	16.1	236	288	< 1.0	< 1.0	< 0.250	1.16	0.255	425	0.0077	1.48	< 0.0050	0.190	0.0048	0.0283	1.70	1.25
	GH_MW-PC_WG_2021-10-04_NP	2021 12 03	3.8	7.13	8.67	902	276.6	7.54	587	991	113	757	66.6	263	263	< 1.0	< 1.0	< 0.050	0.86	0.044	345	0.0115	1.46	< 0.0010	0.149	0.0072	0.0770	2.14	0.93
GH_MW_PC4A^	GH_MW_PC4A_WG_2021_08_16_NP	2021 08 16	6.9	7.25	3.32	618	169.9	7.80	362	619	22.2	414	42.1	222	271	< 5.0	< 5.0	< 0.050	0.63	0.217	158	0.0275	0.0085	< 0.0010	< 0.20	0.0037	0.0577	1.67	1.60
Fording River Valley (Greenhills Creek Drainage) (+ denotes well part of Study Area 3)																													
GH_MW-GHC-1A	GH_MW-GHC-1A_WG_2021-01-04_NP	2021 01 25	3.6	7.43	1.16	939	57.5	7.87	609	972	10.2	742	6.66	304	370	< 5.0	< 5.0	< 0.25	1.86	0.53	303	< 0.0050	0.098	< 0.0050	1.52	0.0042	0.0197	3.58	3.14
	GH_FOX2_WG_2021-01-04_NP	Duplicate	-	-	-	-	-	7.84	614	970	38.5	725	3.81	307	375	< 5.0	< 5.0	< 0.050	1.74	0.518	287	< 0.0050	0.0967	< 0.0010	0.151	0.0042	0.0234	3.29	3.37
	QA/QC RPD%		-	-	-	-	-	0	1	0	116	2	54	1	1	*	*	*	7	2	5	*	1	*	*	*	17	8	7
	GH_MW-GHC-1A_WG_2021-04-05_NP	2021 06 11	7.1	7.12	3.3	1,050	197	8.09	611	1,090	5.8	783	0.25	282	344	< 1.0	< 1.0	< 0.250	5.31	0.389	410	0.0065	0.0875	< 0.0050	0.063	0.0034	0.0034	1.42	1.39
	GH_MW-GHC-1A_WG_2021-07-05_NP	2021 08 30	7.4	7.03	1.50	1,111.2	101.6	7.97	668	1,000	< 1.0	773	0.68	251	306	< 1.0	< 1.0	< 0.250	3.87	0.515	355	< 0.0050	0.0847	< 0.0050	0.055	0.0037	0.0053	1.33	1.19
	GH_MW-GHC-1A_WG_2021-10-04_NP	2021 11 18	4.1	7.07	1.07	1,007	181.7	7.80	560	1,030	1.0	758	0.48	292	356	< 1.0	< 1.0	0.296	1.56	0.416	333	0.0058	0.0759	< 0.0050	< 0.050	0.0042	0.0048	1.30	1.13
GH_MW-GHC-1B	GH_MW-GHC-1B_WG_2021-01-04_NP	2021 01 25	4.6	7.37	1.08	1,329	-24.1	7.84	903	1,360	6.8	1,180	8.06	271	331	< 5.0	< 5.0	< 0.25	10.4	0.18	618	0.0228	< 0.025	< 0.0050	0.223	< 0.0010	0.0049	4.06	4.05
	GH_MW-GHC-1B_WG_2021-04-05_NP	2021 06 10	5.5	7.02	0.55	1,289	5.04	7.86	924	1,330	85.9	1,080	60.0	242	295	< 1.0	< 1.0	< 0.250	12.1	0.202	591	0.0194	< 0.0250	0.0100	0.130	< 0.0010	0.839	7.72	7.05
	GH_MW-GHC-1B_WG_2021-07-05_NP	2021 08 30	8.2	7.03	0.60	1,472	6.2	7.96	946	1,330	15.2	1,130	9.00	240	293	< 1.0	< 1.0	0.290	15.9	< 0.100	598	0.0198	0.0436	< 0.0050	0.105	< 0.0010	0.0102	2.22	2.04
	GH_MW-GHC-1B_WG_2021-10-04_NP	2021 11 18	5.3	7.01	0.46	1,375	35.8	7.72	784	1,410	8.8	1,170	7.29	275	335	< 1.0	< 1.0	< 0.250	9.02	< 0.100	571	0.0194	< 0.0250	0.0096	0.090	< 0.0010	0.0384	2.21	2.19
	GH_FOX3_WG_2021-07-05_NP	Duplicate	-	-	-	-	-	7.66	802	1,410	13.2	1,120	10.8	293	358	< 1.0	< 1.0	< 0.250	11.3	0.131	610	0.0178	< 0.0250	0.0209	0.205	0.0011	0.0114	2.22	2.43
	QA/QC RPD%		-	-	-	-	-	1	2	0	40	4	39	6	7	*	*	*	22	*	7	*	*	74	*	*	108	*	*
GH_MW_GHC_4B	GH_MW_GHC_4B_WG_2021_03_29_NP	2021 03 29	2.8	7.06	7.31	998	216.4	7.74	536	1,030	1.1	730	1.14	290	354	< 5.0	< 5.0	< 0.050	8.14	0.073	255	0.0121	0.708	< 0.0010	0.309	0.0044	0.0055	1.89	2.19
	GH_MW_GHC_4B_WG_2021_06_22_NP	2021 06 22	7.5	6.95	6.29	1,148	214.1	7.59	693	1,130	< 1.0	822	0.37	280	341	< 5.0	< 5.0	< 0.25	6.87	0.12	427	0.0108	1.29	< 0.0050	0.852	0.0039	0.0039	2.05	2.30
	GH_MW_MC10-A_WG_2021_06_22_NP	Duplicate	-	-	-	-	-	7.55	679	1,140	< 1.0	899	0.39	279	340	< 5.0	< 5.0	< 0.25	6.98	0.13	413	0.0115	1.31	< 0.0050	0.465	0.0031	0.0039	2.06	2.45
	QA/QC RPD%		-	-	-	-	-	1	2	1	*	9	*	0	0	*	*	*	2	8	3	*	2	*	59	*	*	*	*
	GH_MW_GHC_4B_WG_2021_09_21_NP	2021 09 21	7.2	7.1	2.89	1,310	53.9	8.18	840	1,300	1.1	1,050	1.36	240	293	< 5.0	< 5.0	< 0.25	5.40	< 0.10	543	0.0067	2.47	< 0.0050	0.419	< 0.0010	0.0079	1.98	2.27
	GH_MW_GHC_4B_WG_2021_11_23_NP	2021 11 23	4.7	7.1	8.55	1,055	195	8.12	646	1,120	4.0	827	1.84	273	333	< 5.0	< 5.0	< 0.25	5.95	0.12	435	< 0.0050	1.43	< 0.0050	0.215	0.0049	0.0050	2.11	2.21
GH_MW-TD	GH_MW-TD_WG_2021-03-12_NP	2021 03 12	6.7	7.62	5.65	724	71.6	8.00	377	679	13.9	417	22.5	337	411	< 1.0	< 1.0	< 0.050	0.34	0.287	85.6	0.106	< 0.0050	< 0.0010	0.114	< 0.0010	0.0152	0.83	< 0.50
	GH_MW-TD_WG_2021-04-05_NP	2021 06 16	13.8	7.14	2.28	742	71.3	8.39	358	676	< 1.0	457	1.32	338	397	7.8	< 1.0	< 0.050	0.26	0.223	86.9	0.123	< 0.0050	< 0.0010	0.092	0.0013	< 0.0020	0.95	0.94
	GH_FOX3_WG_2021-04-05_NP	Duplicate	-	-	-	-	-	8.39	363	695	< 1.0	442	1.35	337	395	7.9	< 1.0	< 0.050	0.27	0.246	86.9	0.124	< 0.0050	< 0.0010	0.090	< 0.0010	0.0024	0.94	1.02
	QA/QC RPD%		-	-	-	-	-	0	1	3	*	3	2	0	1	1	*	*	*	10	0	1	*	*	*	*	*	*	*
	GH_MW-TD_WG_2021-07-05_NP	2021 09 03	9.8	7.15	2.99	710	33.8	8.18	350	746	< 1.0	451	1.34	344	419	< 1.0	< 1.0	< 0.050	0.31	0.266	82.2	0.125	0.0057	< 0.0010	0.125	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_FOX3_WG_2021-07-05_NP	Duplicate	-	-	-	-	-	8.15	351	749	< 1.0	448	1.64	345	421	< 1.0	< 1.0	< 0.050	0.33	0.273	82.1	0.127	< 0.0050	< 0.0010	0.136	< 0.0010	< 0.0020	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	0	0	0	*	1	20	0	0	*	*	*	*	3	0	2	*	*	*	*	*	*	*
	GH_MW-TD_WG_2021-10-04_NP	2021 10 07	6.2	7.3	2.21	693	-29.8	8.33	363	727	< 1.0	427	1.82	373	441	6.7	< 1.0	< 0.050	0.29	0.261	81.1	0.167	< 0.0050	< 0.0010	0.183	< 0.0010	0.0030	2.87	2.81
GH_MW_RLP-2+	GH_RLP-2_WG_2021-03-31_NP	2021 03 31	2.1	7.16	0.16	952	28.2	7.86	602	1,040	4.8	821	3.36	291	354	< 1.0	< 1.0	0.062	16.0	0.507	316	0.210	0.243	0.0038	0.397	0.0010	0.0072	4.92	5.02
	GH_MW-RLP-2_WG_2021-04-05_NP	2021 06 24	6.6	6.83	0.51	940	25.3	7.72	602	1,020	2.6	694	12.6	290	354	< 1.0	< 1.0	< 0.250	16.3	0.699	307	0.313	0.358	< 0.0050	0.492	< 0.0010	0.0035	5.44	5.28
	GH_MW-RLP-2_WG_2021-07-05_NP	2021 09 03	11.5	6.98	0.51	1,034	-39.2	8.17	570	1,080	5.6	751	29.6	343	418	< 1.0	< 1.0	< 0.250	17.0	0.716	273	0.582	0.0910	< 0.0050	0.724	< 0.0010	0.0034	10.2	9.52
	GH_MW-RLP-2_WG_2021-10-04_NP	2021 11 19	7.6	7.11	3.4	999	3.1	7.88	545	1,000	4.3	646	4.91	272	331	< 1.0	< 1.0	< 0.250	18.1	0.688	325	0.172	0.385	0.143	0.345	< 0.0010	0.0054	2.98	2.78

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE GH-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Inorganics, Nutrients and Organics in Groundwater (GHO)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature C	pH (field) pH	Dissolved Oxygen mg/L	Field Conductivity µS/cm	Field ORP mV	pH pH	Hardness mg/L	Conductivity µS/cm	Total Suspended Solids mg/L	Total Dissolved Solids mg/L	Turbidity ntu	Total Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Hydroxide mg/L	Bromide mg/L	Chloride mg/L	Fluoride mg/L	Sulphate mg/L	Ammonia Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Kjeldahl Nitrogen-N mg/L	Ortho-Phosphate mg/L	Phosphorus, Total mg/L	Total Organic Carbon mg/L	Dissolved Organic Carbon mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Fording River Valley (Greenhills Creek Drainage) (+ denotes well part of Study Area 3)																													
GH_POTW09+	GH_POTW09_WG_2021-01-04_NP	2021 01 15	6.2	7.46	5.65	724	28	7.79	429	749	< 1.0	491	1.10	260	317	< 5.0	< 5.0	< 0.050	7.46	0.895	219	0.0236	0.0183	< 0.0010	< 0.050	< 0.0010	0.0024	1.41	1.25
	GH_POTW09_WG_2021-05-03_NP	2021 05 07	7.9	7.4	4.13	791	75.9	8.30	431	768	< 1.0	512	1.08	258	314	< 1.0	< 1.0	< 0.050	7.44	0.710	184	0.0329	0.0250	0.0016	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_POTW09_WG_2021-07-05_NP	2021 08 27	8.4	7.60	3.00	856	-157.4	8.05	422	762	< 1.0	504	0.74	231	282	< 1.0	< 1.0	< 0.050	5.90	0.676	183	0.0505	0.0135	< 0.0010	0.052	0.0011	< 0.0020	1.56	1.50
	GH_POTW09_WG_2021-10-04_NP	2021 11 19	6.5	7.59	-	754	57.2	8.21	408	752	< 1.0	496	0.72	280	341	< 1.0	< 1.0	< 0.050	5.96	0.697	183	0.0286	0.0188	< 0.0010	0.052	0.0013	< 0.0020	< 0.50	< 0.50
GH_POTW10+	GH_POTW10_WG_2021-01-04_NP	2021 01 15	6.6	7.62	6.7	674	-2.5	7.90	396	722	2.0	480	10.9	213	260	< 5.0	< 5.0	< 0.050	9.09	0.938	235	0.0748	1.03	0.0166	0.288	< 0.0010	0.0026	1.36	1.41
	GH_POTW10_WG_2021-05-03_NP	2021 05 07	7.6	7.49	5.61	722	19.6	8.31	420	748	1.0	592	6.02	212	256	1.2	< 1.0	< 0.050	7.98	0.735	204	0.0671	1.04	0.0214	0.067	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_POTW10_WG_2021-07-05_NP	2021 08 27	8.7	7.73	4.98	50.3	-51.6	7.98	387	724	< 1.0	487	6.31	185	225	< 1.0	< 1.0	< 0.050	8.16	0.718	193	0.0587	0.664	0.0197	0.132	< 0.0010	< 0.0020	1.48	1.25
	GH_POTW10_WG_2021-10-04_NP	2021 11 19	7.4	7.45	-	723	22.1	7.97	395	729	1.4	472	4.69	227	276	< 1.0	< 1.0	< 0.050	8.26	0.849	205	0.0516	0.754	0.0162	0.189	0.0012	< 0.0020	< 0.50	< 0.50
GH_POTW15+	GH_POTW15_WG_2021-01-04_NP	2021 01 15	6.3	7.49	9.36	870	3.9	7.69	506	908	< 1.0	624	5.95	240	292	< 5.0	< 5.0	< 0.25	32.8	0.20	321	0.0407	0.090	0.0124	0.070	< 0.0010	< 0.0020	1.66	1.88
	GH_POT_15_WG_2021-05-03-NP	2021 05 07	6.5	7.36	5.39	991	22.6	8.23	535	956	1.5	671	10.4	236	288	< 1.0	< 1.0	< 0.250	35.7	0.116	275	0.0516	0.0309	0.0082	< 0.050	< 0.0010	< 0.0020	1.00	0.93
	GH_POTW15_WG_2021-07-05_NP	2021 08 27	8.3	7.43	1.82	995	-90.9	7.91	494	919	3.8	647	14.6	198	242	< 1.0	< 1.0	0.122	31.4	0.139	259	0.0478	0.0050	< 0.0010	0.090	< 0.0010	< 0.0020	2.08	1.88
	GH_POTW15_WG_2021-10-04_NP	2021 11 19	5.9	7.28	-	923	-10.4	7.84	492	921	1.8	612	12.1	255	311	< 1.0	< 1.0	< 0.250	23.6	0.130	176	0.0398	< 0.0250	< 0.0050	0.071	0.0011	< 0.0020	0.68	0.67
GH_POTW17+	GH_POTW17_WG_2021-01-04_NP	2021 01 15	8.8	7.53	7.69	1,130	67.6	7.62	731	1,190	< 1.0	926	2.05	297	363	< 5.0	< 5.0	< 0.25	19.2	0.13	528	0.0141	0.237	0.0108	0.059	< 0.0010	< 0.0020	0.75	0.83
	GH_POTW17_WG_2021-05-03_NP	2021 05 07	8.2	7.27	4.81	1,246	110.9	8.09	714	1,190	< 1.0	906	1.34	256	312	< 1.0	< 1.0	< 0.250	15.8	< 0.100	437	0.0096	0.205	< 0.0050	< 0.050	< 0.0010	< 0.0020	0.69	0.65
	GH_POTW17_WG_2021-07-05_NP	2021 09 30	10	7.45	6.84	1,021	82.1	8.29	578	890	2.5	766	8.38	252	307	< 1.0	< 1.0	< 0.250	19.0	0.197	315	0.0239	0.421	< 0.0050	0.237	< 0.0010	0.0240	3.86	2.44
	GH_POTW17_WG_2021-10-04_NP	2021 11 26	7.4	7.53	2.86	1,002	13.1	7.75	603	1,040	1.5	768	5.21	257	313	< 1.0	< 1.0	< 0.250	24.0	0.270	346	0.0251	0.496	< 0.0050	0.074	< 0.0010	< 0.0020	0.94	0.94
RG_MW_FR11A	RG_MW_FR11A_WG_2021_09_29_NP	2021 09 29	8.5	7.3	7.85	546.2	136	8.24	279	495	-	-	-	-	-	-	-	-	-	-	-	0.315	-	-	0.447	-	0.0210	1.57	1.82
RG_MW_FR11B	RG_MW_FR11B_WG_2021_09_29_NP	2021 09 29	7.6	7.03	5.72	546.9	163.8	7.96	300	534	-	-	-	-	-	-	-	-	-	-	-	0.201	-	-	0.290	-	0.0940	0.95	1.03
Elk River Valley (denotes well part of Study Area 4)**																													
GH_MW-MC-1D	GH_MW-MC-1D_WG_2021_03_22_NP	2021 03 22	2.9	7.8	0.19	398.4	-139.2	8.27	125	387	2.2	234	3.02	200	244	< 5.0	< 5.0	0.089	20.1	0.791	0.33	0.0179	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	0.68	0.71
	GH_MW-MC-1D_WG_2021_06_09_NP	2021 06 09	5.4	7.73	0.19	408.7	-131	7.92	126	325	< 1.0	212	1.13	222	270	< 5.0	< 5.0	< 0.050	18.7	0.686	< 0.30	0.0368	< 0.0050	< 0.0010	0.310	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_MW-MC-1D_WG_2021_09_14_NP	2021 09 14	8.6	7.97	0.46	381.3	12.8	8.47	114	406	< 1.0	224	1.11	197	223	8.5	< 5.0	0.103	20.2	0.727	0.50	0.0307	< 0.0050	< 0.0010	0.065	< 0.0010	< 0.0020	< 0.50	1.05
	GH_MW-MC-1D_WG_2021_11_17_NP	2021 11 17	3.3	7.92	1.02	386.3	-164.7	8.47	118	402	4.0	210	3.08	206	238	6.8	< 5.0	0.102	20.6	0.737	< 0.30	0.0395	< 0.0050	< 0.0010	< 0.050	0.0023	0.0055	0.86	0.90
	GH_MW_MC10-A_WG_2021_11_17_NP	Duplicate	-	-	-	-	-	8.49	123	397	4.5	198	4.10	213	244	8.0	< 5.0	0.100	20.6	0.724	< 0.30	0.0435	< 0.0050	< 0.0010	< 0.050	0.0011	0.0047	0.83	0.88
	QA/QC RPD%		-	-	-	-	-	0	4	1	*	6	28	3	2	16	*	*	0	2	*	10	*	*	*	*	*	*	*
GH_MW-MC-1S	GH_MW-MC-1S_WG_2021_03_22_NP	2021 03 22	1.8	7.6	9.79	343.2	119.2	8.19	186	330	< 1.0	208	< 0.10	163	199	< 5.0	< 5.0	< 0.050	0.52	0.148	29.0	0.0066	0.170	< 0.0010	< 0.050	< 0.0010	< 0.0020	0.80	0.90
	GH_MW-MC-1S_WG_2021_06_08_NP	2021 06 08	7.3	7.56	6.36	319.6	117	8.10	165	298	< 1.0	173	0.12	154	233	< 5.0	< 5.0	< 0.050	0.42	0.146	14.6	0.0084	0.148	< 0.0010	0.094	0.0018	< 0.0020	1.78	1.73
	GH_MW-MC-1S_WG_2021_09_14_NP	2021 09 14	10.6	7.32	4.99	267	208.6	8.34	140	294	< 1.0	172	0.15	147	170	< 5.0	< 5.0	< 0.050	0.25	0.142	16.7	< 0.0050	0.0804	< 0.0010	0.075	0.0010	< 0.0020	0.86	0.99
	GH_MW-MC-1S_WG_2021_11_17_NP	2021 11 17	3.5	7.69	8.36	310	-16.6	8.38	157	300	< 4.0	169	< 0.10	160	186	< 5.0	< 5.0	< 0.050	0.31	0.128	21.9	< 0.0050	0.107	< 0.0010	< 0.050	0.0021	< 0.0020	1.20	0.96
GH_MW-MC-2D	GH_MW-MC-2D_WG_2021_03_23_NP	2021 03 23	4	8.82	0.06	1,808	-390.2	9.04	21.4	1,870	5.3	1,210	26.4	590	608	55.0	< 5.0	0.59	*244*	***2.90***	16.6	0.567	0.040	< 0.0050	0.834	0.0830	0.371	2.26	1.88
	GH_MW-MC-2D_WG_2021_06_09_NP	2021 06 09	6.5	8.81	0.11	2,053	-373	8.92	20.1	1,720	4.9	1,110	21.1	567	585	52.6	< 5.0	0.58	*256*	***2.99***	17.3	0.631	0.539	0.0164	0.564	0.0634	0.213	1.98	1.54
	GH_MW_MC10-A_WG_2021_06_09_NP	Duplicate	-	-	-	-	-	8.71	19.8	1,810	4.5	1,090	21.0	586	645	34.7	< 5.0	0.33	*260*	***3.08***	15.2	0.711	< 0.025	< 0.0050	0.555	0.0619	0.205	1.91	0.74
	QA/QC RPD%		-	-	-	-	-	2	2	5	*	2	0	3	10	41	*	55	2	3	13	12	*	*	2	2	4	*	*
	GH_MW-MC-2D_WG_2021_09_15_NP	2021 09 15	9.3	9.01	0.22	1,958	-386.5	8.98	20.8	1,960	4.5	1,200	28.5	557	575	51.4	< 5.0	0.88	*270*	***2.76***	3.8	0.56	< 0.025	< 0.0050	0.578	0.0964	0.325	3.13	2.44
	GH_MW-MC-2D_WG_2021_11_17_NP	2021 11 17	2.1	8.88	0.79	2,019	-336.2	9.18	23.3	1,970	3.9	1,140	27.2	638	620	78.0	< 5.0	0.83	*263*	***2.56***	20.1	0.64	< 0.025	< 0.0050	0.690	0.298	0.284	3.49	2.19

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE GH-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Inorganics, Nutrients and Organics in Groundwater (GHO)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature C	pH (field) pH	Dissolved Oxygen mg/L	Field Conductivity µS/cm	Field ORP mV	pH pH	Hardness mg/L	Conductivity µS/cm	Total Suspended Solids mg/L	Total Dissolved Solids mg/L	Turbidity ntu	Total Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Hydroxide mg/L	Bromide mg/L	Chloride mg/L	Fluoride mg/L	Sulphate mg/L	Ammonia Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Kjeldahl Nitrogen-N mg/L	Ortho-Phosphate mg/L	Phosphorus, Total mg/L	Total Organic Carbon mg/L	Dissolved Organic Carbon mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Elk River Valley (denotes well part of Study Area 4)**																													
GH_MW-MC-2S	GH_MW-MC-2S_WG_2021_03_23_NP	2021 03 23	5	7.16	2.58	614.4	-148.2	7.60	306	590	2.0	359	3.07	299	365	< 5.0	< 5.0	< 0.050	8.07	0.222	61.7	0.0083	0.414	0.0014	0.344	0.0052	0.0075	1.74	1.70
	GH_MW-MC-2S_WG_2021_06_09_NP	2021 06 09	5.6	7.19	7.4	545.4	40.6	7.84	235	490	< 1.0	303	0.72	237	325	< 5.0	< 5.0	< 0.050	1.43	0.153	56.9	0.0692	0.494	< 0.0010	0.163	0.0042	0.0062	2.64	2.18
	GH_MW-MC-2S_WG_2021_09_15_NP	2021 09 15	7.5	7.05	7.46	564.4	72.1	8.01	278	585	< 1.0	373	0.57	267	326	< 5.0	< 5.0	< 0.050	2.04	0.121	73.1	0.0055	0.176	< 0.0010	< 0.050	0.0045	0.0044	2.16	2.09
	GH_MW-MC-2S_WG_2021_11_17_NP	2021 11 17	3.8	6.96	7.83	629	207.2	8.37	323	643	< 1.0	315	0.26	326	382	7.7	< 5.0	< 0.050	2.60	0.101	68.3	< 0.0050	0.342	< 0.0010	0.113	0.0055	0.0062	2.22	2.31
GH_GA-MW-4**	GH_GA-MW-4_WG_2021-01-04_NP	2021 01 21	3.4	7.67	6.6	485.8	43	7.97	285	505	< 1.0	305	0.30	194	237	< 5.0	< 5.0	< 0.050	2.20	0.165	93.7	< 0.0050	1.92	< 0.0010	0.646	0.0025	0.031	1.47	1.41
	GH_GA-MW-4_WG_2021-04-05_NP	2021 06 04	7.0	7.56	7.05	401.5	116.7	7.84	364	780	9.8	518	46.1	276	336	< 1.0	< 1.0	< 0.050	7.52	0.531	156	0.0375	0.935	0.0421	0.293	< 0.0010	0.0171	1.19	1.35
	GH_GA-MW-4_WG_2021-07-05_NP	2021 07 30	13.3	7.63	6.30	365.8	22.8	8.18	205	393	1.4	242	0.61	192	235	< 1.0	< 1.0	< 0.050	1.48	0.123	35.1	0.0269	0.359	< 0.0010	< 0.050	0.0017	< 0.0020	1.13	0.90
	GH_GA-MW-4_WG_2021-10-04_NP	2021 10 01	7.5	7.48	4.28	348.6	307.7	8.14	189	365	< 1.0	217	< 0.10	191	233	< 1.0	< 1.0	< 0.050	1.24	0.194	23.0	0.0215	0.191	0.0012	0.088	0.0016	< 0.0020	3.12	3.07
RG_MW_LC3A**	RG_MW_LC3A_WG_2021_03_03_NP	2021 03 03	6.3	7.41	7.37	616.6	213.5	8.25	458	761	11.2	517	2.31	222	271	< 5.0	< 5.0	< 0.050	3.40	0.179	220	< 0.0050	5.55	0.0027	0.235	< 0.0010	0.0235	1.20	0.50
	RG_MW_LC3A_WG_2021_05_10_NP	2021 05 10	6.4	7.41	8.57	1,047	76.4	8.22	598	1,020	< 1.0	711	1.11	223	272	< 5.0	< 5.0	< 0.050	3.06	0.124	284	0.0012	11.3	< 0.0010	< 0.050	< 0.0010	< 0.0020	2.83	1.71
	RG_MW_LC3A_WG_2021_08_16_NP	2021 08 16	10.1	6.96	6.79	990	65	8.36	549	983	3.7	731	3.79	203	231	8.3	< 5.0	< 0.25	2.69	0.15	313	< 0.0050	20.3	0.0053	< 0.15	0.0014	0.0087	1.86	1.91
	RG_MW_LC3A_WG_2021_11_02_NP	2021 11 02	7.3	7.14	5.57	710	109.6	7.97	367	717	6.1	483	5.19	206	251	< 5.0	< 5.0	< 0.050	1.88	0.139	156	< 0.0050	8.84	0.0017	< 0.050	0.0017	0.0406	1.60	1.44
RG_MW_LC3B**	RG_MW_LC3B_WG_2021_03_03_NP	2021 03 03	7.3	7.66	15.59	607	236.3	8.22	361	620	427	471	500	228	278	< 5.0	< 5.0	< 0.050	1.83	0.230	154	0.0085	3.59	0.0015	0.608	< 0.0010	0.541	< 5.0	0.93
	RG_MW_LC3B_WG_2021_05_11_NP	2021 05 11	6.6	7.43	9.44	1,076	113.7	8.26	605	1,090	6.5	789	1.81	235	286	< 5.0	< 5.0	< 0.050	2.07	0.154	367	0.0098	12.3	< 0.0010	3.03	< 0.0010	0.0083	3.6	2.87
	RG_MW_LC3B_WG_2021_08_16_NP	2021 08 16	12.2	7.21	5.85	1,503	106.7	8.31	864	1,510	1.0	1,250	1.13	207	242	5.3	< 5.0	< 0.25	3.19	0.11	574	< 0.0050	35.7	< 0.0050	< 0.15	< 0.0010	< 0.0020	2.05	1.48
	RG_MW_LC3B_WG_2021_11_02_NP	2021 11 02	7.1	7.23	6.88	1,365	147.6	8.03	736	1,340	3.5	1,010	1.04	212	258	< 5.0	< 5.0	< 0.25	3.30	0.12	510	0.0050	29.5	< 0.0050	0.173	0.0020	0.0072	1.57	1.90
RG_MW_LCWC1**	RG_MW_LCWC1_WG_2021_03_02_NP	2021 03 02	5.5	7.29	6.31	846	108.2	7.91	544	916	5.1	675	10.2	218	265	< 5.0	< 5.0	< 0.25	8.95	< 0.10	251	< 0.0050	14.9	< 0.0050	0.390	0.0015	0.0087	1.55	1.40
	RG_MW_LCWC1_WG_2021_05_11_NP	2021 05 11	4.9	7.14	8.72	924	99.9	8.12	518	929	1.8	637	1.94	211	257	< 5.0	< 5.0	< 0.050	2.00	0.074	252	0.0111	18.5	< 0.0010	0.286	0.0017	0.0028	3.3	3.97
	RG_MW_LCWC1_WG_2021_08_16_NP	2021 08 16	5.7	6.89	8.12	1,192	123.8	8.06	677	1,160	2.1	914	3.75	234	286	< 5.0	< 5.0	< 0.25	6.19	< 0.10	382	< 0.0050	22.6	0.0085	< 0.15	0.0024	0.0053	1.92	1.99
	RG_MW_LCWC1_WG_2021_11_02_NP	2021 11 02	6.1	7.08	7.27	1,071	90.8	7.86	567	1,070	48.6	770	22.1	250	305	< 5.0	< 5.0	< 0.25	9.58	< 0.10	308	0.0091	17.6	0.0120	< 0.050	0.0028	0.0382	2.6	1.90
RG_MW_WC2A**	RG_MW_WC2A_WG_2021_03_03_NP	2021 03 03	4.9	7.49	5.36	813	217.6	7.99	510	834	22.8	564	1.60	190	232	< 5.0	< 5.0	< 0.25	2.61	0.12	277	< 0.0050	9.86	< 0.0050	0.453	0.0014	0.0253	< 0.50	< 0.50
	RG_MW_WC2A_WG_2021_05_10_NP	2021 05 10	7.2	7.4	5.32	887	172.3	8.09	508	843	1.3	602	0.37	187	228	< 5.0	< 5.0	< 0.050	2.16	0.088	231	0.00050	9.14	< 0.0010	< 0.050	0.0013	< 0.0020	1.43	1.12
	RG_MW_WC2A_WG_2021_08_16_NP	2021 08 16	8.9	6.97	5.1	736	213.6	8.05	417	702	201	471	27.2	190	232	< 5.0	< 5.0	< 0.050	1.81	0.131	179	0.0247	7.25	< 0.0010	< 0.050	0.0016	0.316	1.67	1.84
	RG_MW_WC2A_WG_2021_11_02_NP	2021 11 02	6.2	7.37	4.95	648	62.9	8.01	338	659	42.7	442	7.63	206	251	< 5.0	< 5.0	< 0.050	1.33	0.111	143	0.0072	5.41	< 0.0010	0.136	0.0012	0.0431	1.07	0.98
RG_MW_WC2B**	RG_MW_WC2B_WG_2021_03_03_NP	2021 03 03	4.4	7.39	8.5	865	229	8.24	656	1,070	< 1.0	789	0.70	223	272	< 5.0	< 5.0	< 0.25	3.00	0.14	402	< 0.0050	14.1	< 0.0050	0.586	0.0012	< 0.0020	0.60	< 0.50
	RG_MW_MC10A_WG_2021_03_03_NP	Duplicate	-	-	-	-	-	8.24	669	1,080	1.9	840	0.70	220	268	< 5.0	< 5.0	< 0.25	2.96	0.14	405	< 0.0050	14.3	< 0.0050	0.551	< 0.0010	< 0.0020	0.60	< 0.50
	QA/QC RPD%		-	-	-	-	-	0	2	1	*	6	0	1	1	*	*	*	1	0	1	*	1	*	6	*	*	*	*
	RG_MW_WC2B_WG_2021_05_10_NP	2021 05 10	4.6	7.25	8.47	1,227	175.6	8.32	478	808	< 1.0	572	0.11	196	235	< 5.0	< 5.0	< 0.050	1.57	0.101	210	0.0020	8.89	< 0.0010	< 0.050	0.0020	< 0.0020	1.43	1.47
	RG_MW_WC2B_WG_2021_08_16_NP	2021 08 16	10.5	7.13	6.04	623	270.9	8.39	329	596	5.2	405	0.27	187	212	7.7	< 5.0	< 0.050	0.92	0.187	130	< 0.0050	6.59	< 0.0010	< 0.050	< 0.0010	< 0.0020	1.12	1.17
	RG_MW_WC2B_WG_2021_11_02_NP	2021 11 02	7.7	7.22	7.09	808	225.1	7.99	428	815	< 1.0	578	0.11	215	262	< 5.0	< 5.0	< 0.050	1.41	0.125	206	0.0106	10.3	< 0.0010	< 0.050	0.0032	0.0029	1.03	1.24
GH_GA-MW-2**	GH_GA-MW-2_WG_2021-01-04_NP	2021 03 08	5.0	7.40	0.53	1,120	124	8.18	782	1,210	1.0	1,000	0.17	222	270	< 1.0	< 1.0	< 0.250	6.66	< 0.100	481	< 0.0050	10.6	0.100	< 0.050	< 0.0010	< 0.0020	0.95	0.98
	GH_GA-MW-2_2021-04-05_NP	2021 04 23	5	7.4	0.53	1,120	124	7.55	745	1,280	< 1.0	978	< 0.10	214	261	< 1.0	< 1.0	< 0.250	5.68	< 0.100	504	< 0.0050	12.4	0.0795	< 0.050	< 0.0010	< 0.0020	0.92	0.99
	GH_GA-MW-2_WG_2021-07-05_NP	2021 09 01	7.0	7.26	0.85	1,203	248.9	8.02	882	1,240	7.1	1,050	2.91	215	263	< 1.0	< 1.0	< 0.250	6.66	< 0.100	513	< 0.0050	8.91	0.152	0.239	0.0012	0.0104	2.00	2.38
	GH_GA-MW-2_WG_2021-10-04_NP	2021 10 01	6.9	7.27	1.28	1,236	263.1	8.01	737	1,300	4.7	1,030	0.61	233	284	< 1.0	< 1.0	< 0.250	6.69	< 0.100	519	< 0.0050	11.0	0.0448	0.391	0.0022	< 0.0020	2.99	2.47

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
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SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE GH-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Inorganics, Nutrients and Organics in Groundwater (GHO)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature C	pH (field) pH	Dissolved Oxygen mg/L	Field Conductivity µS/cm	Field ORP mV	pH pH	Hardness mg/L	Conductivity µS/cm	Total Suspended Solids mg/L	Total Dissolved Solids mg/L	Turbidity ntu	Total Alkalinity mg/L	Bicarbonate mg/L	Carbonate mg/L	Hydroxide mg/L	Bromide mg/L	Chloride mg/L	Fluoride mg/L	Sulphate mg/L	Ammonia Nitrogen mg/L	Nitrate Nitrogen mg/L	Nitrite Nitrogen mg/L	Kjeldahl Nitrogen-N mg/L	Ortho-Phosphate mg/L	Phosphorus, Total mg/L	Total Organic Carbon mg/L	Dissolved Organic Carbon mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Elk River Valley (denotes well part of Study Area 4)**																													
GH_GA-MW-3	GH_GA-MW-3_WG_2021-01-04_NP	2021 03 01	5.2	7.61	0.43	683	-316.8	7.46	332	696	21.9	424	62.8	246	300	< 1.0	< 1.0	< 0.050	6.29	0.543	108	0.556	< 0.0050	0.0042	0.111	< 0.0010	0.0339	1.01	0.58
	GH_GA-MW-3_WG_2021-04-05_NP	2021 06 04	8.7	7.30	1.44	785	-297.5	7.73	205	393	< 1.0	220	< 0.10	183	224	< 1.0	< 1.0	< 0.050	2.76	0.151	30.9	0.0064	0.470	< 0.0010	0.110	0.0014	< 0.0020	1.41	1.53
	GH_GA-MW-3_WG_2021-07-05_NP	2021 07 30	8.9	7.52	0.65	554	-299.3	8.01	270	618	5.7	367	47.4	235	286	< 1.0	< 1.0	< 0.050	6.07	0.563	53.9	0.352	0.0098	0.0381	0.314	0.0066	0.0236	0.56	0.66
	GH_GA_MW-3_WG_2021-10-04_NP	2021 10 07	7.4	7.62	0.33	559	-306.2	8.21	246	605	3.9	336	82.9	245	299	< 1.0	< 1.0	< 0.050	5.74	0.632	34.0	0.400	< 0.0050	< 0.0010	0.454	0.0074	0.0388	2.98	2.28
GH_MW-ERSC-1**	GH_MW-ERSC-1_WG_2021-01-04_NP	2021 03 05	4.5	7.45	9	1,078	83.8	8.15	750	1,110	< 1.0	824	0.72	209	255	< 1.0	< 1.0	< 0.250	6.61	0.106	434	0.0065	10.7	0.0162	< 0.050	0.0016	0.0116	1.07	0.96
	GH_MW-ESRC-1_WG_2021-04-05_NP	2021 06 10	6.4	7.57	8.62	397.2	152.1	8.27	243	405	1.3	237	0.32	182	222	< 1.0	< 1.0	< 0.050	1.24	0.180	49.3	0.0064	0.872	< 0.0010	0.303	0.0033	0.0030	4.64	5.03
	GH_MW-ERSC-1_WG_2021-07-05_NP	2021 09 17	8.9	7.33	6.01	660	130.1	8.21	374	706	< 1.0	508	0.38	177	216	< 1.0	< 1.0	< 0.050	3.49	0.122	212	0.0142	3.05	< 0.0010	0.276	0.0013	0.0040	< 0.50	< 0.50
	GH_MW-ERSC-1_WG_2021-10-04_NP	2021 10 08	8.5	7.4	6.8	728	129.9	8.33	403	776	4.5	532	1.07	185	216	4.3	< 1.0	< 0.050	3.77	0.126	222	0.0101	3.54	0.0010	0.329	< 0.0010	0.0145	2.63	2.75
GH_MW_EF1A**	GH_MW-EF1A_WG_2021-03-18_NP	2021 03 18	4.2	7.81	9.53	348.2	229.5	8.29	178	335	< 1.0	176	< 0.10	111	135	< 1.0	< 1.0	< 0.050	0.89	0.082	38.0	< 0.0050	0.585	0.0017	0.241	0.0013	< 0.0020	< 0.50	< 0.50
	GH_FOX3_WG_2021-03-18_NP	Duplicate	-	-	-	-	-	8.30	183	338	< 1.0	187	0.18	156	187	1.7	< 1.0	< 0.050	0.87	0.079	37.1	< 0.0050	0.622	< 0.0010	0.281	0.0014	< 0.0020	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	0	3	1	*	6	*	34	32	*	*	*	2	*	2	*	6	*	*	*	*	*	*
	GH_MW_EF1A_WG_2021-04-05_NP	2021 05 13	5.1	7.59	10.26	364.8	179.7	8.07	192	360	< 1	294	< 0.1	163	199	< 1.0	< 1.0	< 0.25	1.23	0.103	42.3	< 0.005	0.812	< 0.005	0.292	< 0.001	< 0.002	0.96	1.04
	GH_MW_EF1A_WG_2021_09_17_NP	2021 09 17	8.2	7.73	6.89	285.6	165.4	8.13	159	305	277	195	0.35	151	184	< 5.0	< 5.0	< 0.050	0.69	0.153	24.1	< 0.0050	0.265	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_MW_MC10-A_WG_2021_09_17_NP	Duplicate	-	-	-	-	-	8.21	154	306	< 1.0	190	< 0.10	146	179	< 5.0	< 5.0	< 0.050	0.68	0.156	24.0	< 0.0050	0.264	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	QA/QC RPD%		-	-	-	-	-	1	3	0	*	3	*	3	3	*	*	*	1	2	0	*	0	*	*	*	*	*	*
	GH_MW_EF1A_WG_2021_11_26_NP	2021 11 26	5.8	7.83	7.97	270.3	117.2	7.83	180	362	< 1.0	193	< 0.10	138	169	< 5.0	< 5.0	< 0.050	0.86	0.161	26.6	< 0.0050	0.315	< 0.0010	< 0.050	0.0014	0.0026	0.98	1.08
GH_MW_EF1B**	GH_MW-EF1B_WG_2021-03-18_NP	2021 03 18	2.2	7.96	10.46	362.4	222.7	8.32	188	347	< 1.0	200	0.11	161	192	2.6	< 1.0	< 0.050	0.83	0.080	39.6	< 0.0050	0.639	< 0.0010	0.198	0.0019	< 0.0020	< 0.50	< 0.50
	GH_MW_EF1B_WG_2021-04-05_NP	2021 05 13	4.5	7.78	9.87	363.8	199.4	8.15	181	343	< 1	183	< 0.1	171	209	< 1.0	< 1.0	< 0.05	0.61	0.126	31.9	0.016	0.378	< 0.001	0.203	< 0.001	< 0.002	1	0.98
	GH_MW_EF1B_WG_2021_09_17_NP	2021 09 17	9.8	7.7	3.25	296.6	-0.6	8.12	155	305	27.8	180	< 0.10	157	192	< 5.0	< 5.0	< 0.050	0.62	0.161	23.3	< 0.0050	0.231	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_MW_EF1B_WG_2021_11_26_NP	2021 11 26	5	7.76	8.88	284.4	52.4	8.28	184	318	< 1.0	205	0.31	156	190	< 5.0	< 5.0	< 0.050	0.74	0.153	27.9	0.0102	0.320	< 0.0010	0.099	0.0019	< 0.0020	1.16	0.81
	GH_MW_MC10A_WG_2021_11_26_NP	Duplicate	-	-	-	-	-	8.26	186	322	1.2	209	0.39	158	192	< 5.0	< 5.0	< 0.050	0.73	0.154	27.8	< 0.0050	0.320	< 0.0010	0.134	0.0021	< 0.0020	1.08	1.25
	QA/QC RPD%		-	-	-	-	-	0	1	1	*	2	*	1	1	*	*	*	1	1	0	*	0	*	*	*	*	*	*
RG_DW-01-03**	RG_DW-01-03_WP_Q1-2021_NP	2021 03 03	5.70	7.96	10.77	381.00	199.70	8.35	199	354	< 1.0	230	< 0.10	160	187	< 5.0	< 5.0	< 0.050	0.72	0.116	41.3	< 0.0050	0.797	0.0010	0.240	< 0.0010	< 0.0020	0.70	0.64
	RG_DW-01-03_WP_Q2-2021_NP	2021 06 08	6.60	7.22	10.55	393.90	205.20	8.28	212	369	< 1.0	238	0.16	157	192	< 1.0	< 1.0	< 0.050	0.83	0.147	47.5	< 0.0050	0.969	< 0.0010	0.357	< 0.0010	< 0.0020	0.67	< 0.50
	RG_DW-01-03_WP_Q3-2021_NP	2021 07 21	6.70	7.88	12.69	396.10	244.60	8.24	197	376	< 1.0	242	< 0.10	159	194	< 1.0	< 1.0	< 0.050	0.74	0.114	51.4	< 0.0050	1.00	< 0.0010	0.186	< 0.0010	< 0.0020	1.34	1.31
	RG_DW-01-03_WP_2021_11_23_NP	2021 11 23	5.60	8.09	10.65	352.80	161.00	8.17	180	341	< 1.0	210	< 0.10	159	194	< 1.0	< 1.0	< 0.050	0.76	0.145	39.0	< 0.0050	0.609	< 0.0010	< 0.050	0.0012	< 0.0020	< 0.50	< 0.50
Blanks																													
Field Blanks																													
GH_MW-GHC-1A	GH_JDW2_WG_2021-01-04_NP	2021 01 25	-	-	-	-	-	5.40	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	1.80	< 0.50
RG_MW_WC2A	RG_MW_MC10B_WG_2021_03_03_NP	2021 03 03	-	-	-	-	-	5.71	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
GH_MW_EF1A	GH_JDW3_WG_2021-03-18_NP	2021 03 18	-	-	-	-	-	5.61	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
GH_MW-MC-2D	GH_MW_MC10-B_WG_2021_06_09_NP	2021 06 09	-	-	-	-	-	3.95	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	0.092	< 0.0010	< 0.0020	< 0.50	< 0.50
GH_MW_GHC_4B	GH_MW_MC10-B_WG_2021_06_22_NP	2021 06 22	-	-	-	-	-	4.16	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
GH_MW-TD	GH_JDW3_WG_2021-07-05_NP	2021 09 03	-	-	-	-	-	5.49	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
GH_MW_EF1A	GH_MW_MC10-B_WG_2021_09_17_NP	2021 09 17	-	-	-	-	-	4.85	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
GH_MW_EF1A	GH_MW_MC10B_WG_2021_11_26_NP	2021 11 26	-	-	-	-	-	5.51	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	0.0010	< 0.0020	< 0.50	0.68
GH_MW-PC	GH_JDW3_WG_2021-10-04_NP	2021 12 03	-	-	-	-	-	5.55	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE GH-03: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Inorganics, Nutrients and Organics in Groundwater (GHO)

			Field Parameters					Physical Parameters						Dissolved Inorganics								Nutrients						Organics	
Sample Location	Sample ID	Sample Date (yyyy mm dd)	Field Temperature	pH (field)	Dissolved Oxygen	Field Conductivity	Field ORP	pH	Hardness	Conductivity	Total Suspended Solids	Total Dissolved Solids	Turbidity	Total Alkalinity	Bicarbonate	Carbonate	Hydroxide	Bromide	Chloride	Fluoride	Sulphate	Ammonia Nitrogen	Nitrate Nitrogen	Nitrite Nitrogen	Kjeldahl Nitrogen-N	Ortho-Phosphate	Phosphorus, Total	Total Organic Carbon	Dissolved Organic Carbon
			C	pH	mg/L	µS/cm	mV	pH	mg/L	µS/cm	mg/L	mg/L	ntu	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
BC Standard																													
CSR Aquatic Life (AW)[a]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,500	2-3[b]	1,280-4,290[b]	1.31-18.5[c]	400	0.2-2[d]	n/a	n/a	n/a	n/a	n/a
CSR Irrigation Watering (IW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	1	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
CSR Livestock Watering (LW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	600	1	1,000	n/a	100	10	n/a	n/a	n/a	n/a	n/a
CSR Drinking Water (DW)			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	250	1.5	500	n/a	10	1	n/a	n/a	n/a	n/a	n/a
Blanks																													
Trip Blanks																													
	GH_RDI2_WG_2021-01-04_NP	2021 01 25	-	-	-	-	-	5.37	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	0.0476	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_MW_MC10-C_WG_2021_06_09_NP	2021 06 09	-	-	-	-	-	4.01	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	0.148	< 0.0010	< 0.0020	0.56	0.52
	GH_MW_MC10-C_WG_2021_06_22_NP	2021 06 22	-	-	-	-	-	4.35	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_MW_MC10C_WG_2021_11_26_NP	2021 11 26	-	-	-	-	-	5.11	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 5.0	< 5.0	< 5.0	< 0.050	< 0.10	< 0.020	< 0.30	< 0.0050	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50
	GH_RD12_WG_2021-10-04_NP	2021 12 03	-	-	-	-	-	5.78	< 0.50	< 2.0	< 1.0	< 10	< 0.10	< 1.0	< 1.0	< 1.0	< 1.0	< 0.050	< 0.10	< 0.020	< 0.30	0.0135	< 0.0050	< 0.0010	< 0.050	< 0.0010	< 0.0020	< 0.50	< 0.50

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[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH and Temperature. Temperature assumed 10C.

[d] Standard varies with Chloride.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE GH-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (GHO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																														
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
			mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																		
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400[b]
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Fording River Valley (Porter Creek Drainage) (^ denotes well part of Study Area 1)																																		
GH_MW-PC^	GH_MW-PC_WG_2021-01-04_NP	2021 03 18	610	2.2	0.1	0.16	82.6	< 0.02	< 0.05	< 10	0.0368	110	0.24	< 0.1	11.7	< 10	< 0.05	6.8	81.4	0.56	< 0.005	2.61	0.84	0.994	***74***	< 0.01	0.953	143	< 0.01	< 0.1	< 0.3	4.75	< 0.5	4.8
	GH_MW-PC_WG_2021-04-05_NP	2021 06 24	626	< 1.0	< 0.10	0.16	93.3	< 0.020	< 0.050	< 10	0.0379	115	0.24	< 0.10	4.32	< 10	< 0.050	7.6	82.4	0.14	< 0.0050	2.58	0.58	1.03	***81.4***	< 0.010	1.02	151	< 0.010	< 0.10	< 0.30	4.72	< 0.50	2.1
	GH_MW-PC_WG_2021-07-05_NP	2021 09 02	620	2.6	< 0.10	0.14	110	< 0.020	< 0.050	< 10	0.0430	117	0.28	< 0.10	5.27	< 10	< 0.050	8.5	79.6	2.06	< 0.0050	2.57	0.74	1.19	***58.0***	< 0.010	0.941	150	< 0.010	< 0.10	< 0.30	4.72	< 0.50	2.7
	GH_MW-PC_WG_2021-10-04_NP	2021 12 03	587	2.8	< 0.10	0.21	84.3	< 0.020	< 0.050	< 10	0.0410	102	0.26	< 0.10	4.54	< 10	< 0.050	6.8	80.6	0.37	< 0.0050	2.04	0.64	1.02	***63.7***	< 0.010	1.14	139	< 0.010	< 0.10	< 0.30	4.44	< 0.50	1.9
GH_MW_PC4A^	GH_MW_PC4A_WG_2021_08_16_NP	2021 08 16	362	4.0	0.55	0.40	29.6	< 0.020	< 0.050	10	0.0187	98.1	< 0.10	0.71	0.92	14	< 0.050	3.7	28.5	147	< 0.0050	2.36	3.01	1.46	4.41	< 0.010	1.65	150	0.018	0.15	< 0.30	1.97	< 0.50	10.2
Fording River Valley (Greenhills Creek Drainage) (+ denotes well part of Study Area 3)																																		
GH_MW-GHC-1A	GH_MW-GHC-1A_WG_2021-01-04_NP	2021 01 25	609	< 3.0	< 0.10	< 0.10	81.6	< 0.020	< 0.050	32	0.0228	153	< 0.10	< 0.10	0.35	< 10	< 0.050	16.0	55.3	0.15	< 0.0050	0.718	0.91	1.46	4.49	< 0.010	5.05	433	0.023	< 0.10	< 10	2.89	< 0.50	2.2
	GH_FOX2_WG_2021-01-04_NP	Duplicate	614	< 3.0	< 0.10	< 0.10	85.7	< 0.020	< 0.050	34	0.0178	157	< 0.10	< 0.10	0.24	< 10	< 0.050	16.5	53.8	0.27	< 0.0050	0.692	0.98	1.47	4.89	< 0.010	4.88	450	0.018	< 0.10	< 10	2.93	< 0.50	< 1.0
	QA/QC RPD%		1	*	*	*	5	*	*	*	*	3	*	*	*	*	*	3	3	*	*	4	*	1	9	*	3	4	*	*	*	1	*	*
	GH_MW-GHC-1A_WG_2021-04-05_NP	2021 06 11	611	< 1.0	< 0.10	< 0.10	93.6	< 0.020	< 0.050	29	0.0206	149	< 0.10	< 0.10	0.46	< 10	< 0.050	14.3	58.1	0.10	< 0.0050	0.618	0.69	1.48	2.94	< 0.010	4.67	464	0.020	< 0.10	< 0.30	2.55	< 0.50	1.1
	GH_MW-GHC-1A_WG_2021-07-05_NP	2021 08 30	668	1.2	< 0.10	< 0.10	92.7	< 0.020	< 0.050	35	0.0238	172	< 0.10	< 0.10	1.75	< 10	0.052	18.2	57.9	0.14	< 0.0050	0.796	0.75	1.57	4.17	< 0.010	5.06	563	0.025	< 0.10	< 0.30	3.34	< 0.50	3.2
	GH_MW-GHC-1A_WG_2021-10-04_NP	2021 11 18	560	1.1	< 0.10	< 0.10	84.2	< 0.020	< 0.050	30	0.0177	139	< 0.10	< 0.10	1.41	< 10	< 0.050	15.6	51.6	< 0.10	< 0.0050	0.735	0.65	1.43	4.42	< 0.010	4.71	475	0.020	< 0.10	< 0.30	2.84	< 0.50	2.6
GH_MW-GHC-1B	GH_MW-GHC-1B_WG_2021-01-04_NP	2021 01 25	903	< 3.0	< 0.10	0.94	28.1	< 0.020	< 0.050	39	0.0246	261	< 0.10	0.58	0.28	616	< 0.050	20.9	61.2	*298*	< 0.0050	0.951	1.75	1.99	< 0.050	< 0.010	4.83	669	0.013	< 0.10	< 10	2.05	< 0.50	5.5
	GH_MW-GHC-1B_WG_2021-04-05_NP	2021 06 10	924	< 1.0	< 0.10	0.74	33.0	< 0.020	< 0.050	38	0.0235	267	< 0.10	0.32	0.30	378	< 0.050	22.6	62.4	144	< 0.0050	0.900	1.58	2.14	0.389	< 0.010	5.10	721	0.013	< 0.10	< 0.30	1.83	< 0.50	9.9
	GH_MW-GHC-1B_WG_2021-07-05_NP	2021 08 30	946	< 1.0	< 0.10	0.96	32.8	< 0.020	< 0.050	50	0.0222	277	< 0.10	0.37	0.34	574	< 0.050	26.6	61.9	182	< 0.0050	1.19	1.98	2.41	0.112	< 0.010	5.29	816	0.021	< 0.10	< 0.30	2.18	< 0.50	45.9
	GH_MW-GHC-1B_WG_2021-10-04_NP	2021 11 18	784	< 1.0	< 0.10	0.99	30.0	< 0.020	< 0.050	39	0.0198	221	< 0.10	0.34	0.36	567	< 0.050	22.3	56.4	155	< 0.0050	0.974	1.49	2.16	0.304	< 0.010	4.71	666	0.016	< 0.10	< 0.30	1.66	< 0.50	8.5
	GH_FOX3_WG_2021-07-05_NP_GHC	Duplicate	802	< 1.0	< 0.10	0.95	31.5	< 0.020	< 0.050	40	0.0180	227	< 0.10	0.32	0.36	563	< 0.050	22.8	57.1	157	< 0.0050	1.03	1.62	2.18	0.237	< 0.010	4.81	695	0.015	< 0.10	< 0.30	1.73	< 0.50	9.2
	QA/QC RPD%		2	*	*	4	5	*	*	*	*	3	*	*	*	1	*	2	1	1	*	6	*	1	*	*	2	4	*	*	*	4	*	8
GH_MW_GHC_4B	GH_MW_GHC_4B_WG_2021_03_29_NP	2021 03 29	536	< 1.0	< 0.10	0.13	57.8	< 0.020	< 0.050	17	0.0403	131	0.10	< 0.10	0.25	< 10	< 0.050	9.5	50.4	0.30	< 0.0050	0.413	0.62	1.49	13.0	< 0.010	5.90	293	< 0.010	< 0.10	< 0.30	1.38	< 0.50	< 1.0
	GH_MW_GHC_4B_WG_2021_06_22_NP	2021 06 22	693	1.4	0.11	0.14	65.5	< 0.020	< 0.050	16	0.0458	169	0.14	< 0.10	0.28	< 10	< 0.050	7.8	66.0	0.24	< 0.0050	0.414	< 0.50	1.78	***40.0***	< 0.010	5.09	335	0.035	< 0.10	< 0.30	1.45	< 0.50	< 1.0
	GH_MW_MC10-A_WG_2021_06_22_NP	Duplicate	679	< 1.0	< 0.10	< 0.10	65.3	< 0.020	< 0.050	16	0.0318	166	0.12	< 0.10	0.25	< 10	< 0.050	7.5	64.3	0.14	< 0.0050	0.389	< 0.50	1.73	***38.2***	< 0.010	4.98	333	< 0.010	< 0.10	< 0.30	1.41	< 0.50	< 1.0
	QA/QC RPD%		2	*	*	*	0	*	*	*	36	2	*	*	*	*	*	4	3	*	*	6	*	3	5	*	2	1	*	*	*	3	*	*
	GH_MW_GHC_4B_WG_2021_09_21_NP	2021 09 21	840	< 1.0	< 0.10	< 0.10	77.2	< 0.020	< 0.050	18	0.0478	193	0.12	< 0.10	0.29	< 10	< 0.050	10.4	87.2	< 0.10	< 0.0050	0.454	< 0.50	1.91	***80.3***	< 0.010	5.64	396	< 0.010	< 0.10	< 0.30	1.79	< 0.50	< 1.0
	GH_MW_GHC_4B_WG_2021_11_23_NP	2021 11 23	646	< 1.0	< 0.10	0.12	65.5	< 0.020	< 0.050	18	0.0382	156	0.13	< 0.10	0.25	< 10	< 0.050	9.9	62.5	0.12	< 0.0050	0.466	0.55	1.73	***40.2***	< 0.010	5.89	323	< 0.010	< 0.10	< 0.30	1.59	< 0.50	< 1.0
GH_MW-TD	GH_MW-TD_WG_2021-03-12_NP	2021 03 12	377	< 1.0	< 0.10	0.17	24.0	< 0.020	< 0.050	420	0.121	91.3	< 0.10	0.42	< 0.20	122	< 0.050	42.9	36.2	*722*	< 0.0050	2.53	0.65	2.46	< 0.050	< 0.010	31.4	1,250	0.157	< 0.10	< 0.30	0.969	< 0.50	1.9
	GH_MW-TD_WG_2021-04-05_NP	2021 06 16	358	2.1	< 0.10	0.17	23.5	< 0.020	< 0.050	389	0.175	84.1	< 0.10	0.24	< 0.20	123	< 0.050	49.6	35.9	*489*	< 0.0050	2.54	< 0.50	3.07	< 0.050	< 0.020	29.9	1,280	0.074	< 0.10	< 0.30	0.500	< 0.50	< 1.0
	GH_FOX3_WG_2021-04-05_NP	Duplicate	363	< 1.0	< 0.10	0.19	24.4	< 0.020	< 0.050	380	0.0746	84.7	< 0.10	0.25	< 0.20	127	< 0.050	49.0	36.9	*492*	< 0.0050	2.52	< 0.50	3.18	< 0.050	< 0.010	30.6	1,280	0.081	< 0.10	< 0.30	0.529	< 0.50	< 1.0
	QA/QC RPD%		1	*	*	*	4	*	*	2	80	1	*	*	*	3	*	1	3	1	*	1	*	4	*	*	2	0	9	*	*	6	*	*
	GH_MW-TD_WG_2021-07-05_NP	2021 09 03	350	< 1.0	< 0.10	0.16	22.2	< 0.020	< 0.050	360	0.0636	80.5	< 0.10	0.24	< 0.20	142	< 0.050	43.4	36.3	*494*	< 0.0050	2.58	< 0.50	2.75	< 0.050	< 0.010	29.8	1,220	0.076	< 0.10	< 0.30	0.531	< 0.50	< 1.0
	GH_FOX3_WG_2021-07-05_NP	Duplicate	351	< 1.0	< 0.10	0.14	22.2	< 0.020	< 0.050	366	0.0559	80.4	< 0.10	0.25	< 0.20	144	< 0.050	42.3	36.4	*505*	< 0.0050	2.68	< 0.50	2.70	< 0.050	< 0.010	30.3	1,220	0.083	< 0.10	< 0.30	0.560	< 0.50	1.4
	QA/QC RPD%		0	*	*	*	0	*	*	2	13	0	*	*	*	1	*	3	0	2	*	4	*	2	*	*	2	0	9	*	*	5	*	*
	GH_MW-TD_WG_2021-10-04_NP	2021 10 07	363	1.1	< 0.10	0.14	23.0	< 0.020	< 0.050	376	0.0921	85.8	< 0.10	0.26	< 0.20	151	< 0.050	44.4	36.2	*521*	< 0.0050	2.55	< 0.50	2.55	< 0.050	< 0.010	28.5	1,140	0.083	< 0.10	< 0.30	0.545	< 0.50	< 1.0
GH_MW_RLP-2+	GH_RLP-2_WG_2021-03-31_NP	2021 03 31	602	3.1	0.10	0.25	130	< 0.020	< 0.050	22	0.0224	143	< 0.10	2.21	0.31	220	< 0.050	36.4	59.6	*1,470*	< 0.0050	5.83	5.95	3.92	0.992	< 0.010	12.9	421	< 0.010	< 0.10	< 0.30	3.92	0.69	3.1
	GH_MW-RLP-2_WG_2021-04-05_NP	2021 06 24	602	< 5.0	0.10	0.41	121	< 0.020	< 0.050	26	0.0180	144	0.11	1.77	0.29	1,790	< 0.050	41.2	59.0	*1,620*	< 0.0050	5.14	5.44	4.01	0.630	< 0.010	13.9	338	< 0.010	< 0.10	< 0.30	3.01	0.71	3.2
	GH_MW-RLP-2_WG_2021-07-05_NP	2021 09 03	570	5.9	< 0.10	0.78	140	< 0.020	< 0.050	29	0.0217	137	0.20	2.04	< 0.20	3,980	0.144	36.6	55.4	*2,000*	< 0.0050	5.85	6.96	4.16	0.314	< 0.010	14.3	349	0.010	< 0.10	0.39	2.50	1.41	4.2
	GH_MW-RLP-2_WG_2021-10-04_NP	2021 11 19	545	1.8	0.17	0.27	127	< 0.020	< 0.050	26	0.0166	120	< 0.10	0.89	0.36	634	< 0.050	40.6	59.5	*1,120*	< 0.0050	8.64	4.70	4.55	3.31	< 0.010	13.4	386	0.014	< 0.10	< 0.30	4.51	< 0.50	2.4

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

TABLE GH-04: Summary of Analytical Results Compared to Primary Screening Criteria fo Dissolved Metals in Groundwater (GHO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																																
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
			mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																				
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400[b]
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Fording River Valley (Greenhills Creek Drainage) (+ denotes well part of Study Area 3)																																				
GH_POTW09+	GH_POTW09_WG_2021-01-04_NP	2021 01 15	429	< 3.0	< 0.10	0.54	33.9	< 0.020	< 0.050	20	0.0105	105	< 0.10	0.18	1.40	158	< 0.050	11.9	40.6	179	< 0.0050	2.48	1.22	1.56	1.38	< 0.010	7.24	349	0.014	< 0.10	< 10	2.47	< 0.50	9.1
	GH_POTW09_WG_2021-05-03_NP	2021 05 07	431	< 1.0	< 0.10	0.53	35.6	< 0.020	< 0.050	19	0.0098	102	< 0.10	0.18	1.11	163	< 0.050	11.7	42.9	192	< 0.0050	2.40	1.88	1.65	2.03	< 0.010	7.64	358	0.016	< 0.10	< 0.30	2.26	< 0.50	6.5
	GH_POTW09_WG_2021-07-05_NP	2021 08 27	422	< 1.0	< 0.10	0.48	33.0	< 0.020	< 0.050	21	0.0116	100	< 0.10	0.17	1.13	151	< 0.050	13.6	41.9	176	< 0.0050	2.34	1.01	1.60	1.18	< 0.010	7.69	351	0.018	< 0.10	< 0.30	2.05	< 0.50	8.0
	GH_POTW09_WG_2021-10-04_NP	2021 11 19	408	< 1.0	< 0.10	0.46	31.3	< 0.020	< 0.050	18	0.0099	93.2	< 0.10	0.17	< 0.20	162	< 0.050	11.6	42.6	177	< 0.0050	2.42	1.19	1.55	1.39	< 0.010	7.07	348	0.016	< 0.10	< 0.30	2.16	< 0.50	1.8
GH_POTW10+	GH_POTW10_WG_2021-01-04_NP	2021 01 15	396	< 3.0	< 0.10	1.01	18.1	< 0.020	< 0.050	37	0.0098	92.1	< 0.10	0.12	< 0.20	425	< 0.050	15.7	40.4	42.1	< 0.0050	2.72	0.93	1.58	5.24	< 0.010	4.84	530	< 0.010	< 0.10	< 10	0.713	< 0.50	2.1
	GH_POTW10_WG_2021-05-03_NP	2021 05 07	420	< 1.0	< 0.10	1.09	19.0	< 0.020	< 0.050	38	0.0089	96.6	< 0.10	0.14	< 0.20	469	0.186	17.0	43.5	48.7	< 0.0050	2.96	1.03	1.72	5.81	< 0.010	5.24	578	< 0.010	< 0.10	< 0.30	0.672	< 0.50	1.3
	GH_POTW10_WG_2021-07-05_NP	2021 08 27	387	< 1.0	< 0.10	1.06	17.6	< 0.020	< 0.050	37	0.0077	87.8	< 0.10	0.13	< 0.20	471	< 0.050	17.4	40.7	46.9	< 0.0050	2.72	1.63	1.70	3.99	< 0.010	5.42	515	< 0.010	< 0.10	< 0.30	0.609	< 0.50	1.9
	GH_POTW10_WG_2021-10-04_NP	2021 11 19	395	< 1.0	< 0.10	1.04	18.1	< 0.020	< 0.050	33	0.0138	87.8	< 0.10	0.18	< 0.20	362	< 0.050	15.8	42.8	52.0	< 0.0050	2.74	1.04	1.68	4.60	< 0.010	5.03	522	0.010	< 0.10	< 0.30	0.702	< 0.50	1.7
GH_POTW15+	GH_POTW15_WG_2021-01-04_NP	2021 01 15	506	< 3.0	< 0.10	1.32	20.6	< 0.020	< 0.050	20	0.0112	129	< 0.10	0.19	< 0.20	559	< 0.050	14.5	44.8	178	< 0.0050	2.39	0.68	1.53	0.077	< 0.010	10.7	375	0.016	< 0.10	< 10	1.44	< 0.50	1.7
	GH_POT_15_WG_2021-05-03-NP	2021 05 07	535	< 1.0	< 0.10	1.55	22.9	< 0.020	< 0.050	20	0.0124	133	< 0.10	0.22	< 0.20	775	0.135	15.0	49.3	*217*	< 0.0050	2.44	0.90	1.67	0.123	< 0.010	12.0	404	0.016	< 0.10	< 0.30	1.36	< 0.50	1.6
	GH_POTW15_WG_2021-07-05_NP	2021 08 27	494	< 1.0	< 0.10	1.57	20.2	< 0.020	< 0.050	20	0.0109	124	< 0.10	0.21	< 0.20	848	< 0.050	16.2	44.7	197	< 0.0050	2.30	1.49	1.58	0.080	< 0.010	11.8	372	0.014	< 0.10	< 0.30	1.28	< 0.50	4.0
	GH_POTW15_WG_2021-10-04_NP	2021 11 19	492	< 1.0	< 0.10	1.58	20.4	< 0.020	< 0.050	18	0.0103	121	< 0.10	0.21	< 0.20	863	< 0.050	14.5	46.0	191	< 0.0050	2.39	0.76	1.53	0.077	< 0.010	11.2	376	0.016	< 0.10	< 0.30	1.34	< 0.50	1.3
GH_POTW17+	GH_POTW17_WG_2021-01-04_NP	2021 01 15	731	< 3.0	< 0.10	0.17	27.1	< 0.020	< 0.050	27	0.0434	179	< 0.10	0.12	0.23	50	0.081	14.3	69.2	57.6	< 0.0050	1.08	5.79	1.67	4.57	< 0.010	8.30	494	0.011	< 0.10	< 10	2.29	< 0.50	4.6
	GH_POTW17_WG_2021-05-03_NP	2021 05 07	714	< 1.0	< 0.10	< 0.10	23.9	< 0.020	< 0.050	24	0.0348	173	< 0.10	0.11	< 0.20	52	0.200	13.7	68.5	52.5	< 0.0050	1.10	3.90	1.75	5.80	< 0.010	8.76	517	< 0.010	< 0.10	< 0.30	1.88	< 0.50	1.9
	GH_POTW17_WG_2021-07-05_NP	2021 09 30	578	< 1.0	< 0.10	0.59	32.9	< 0.020	< 0.050	20	0.0217	132	< 0.10	0.10	0.62	177	0.050	14.6	60.2	77.1	< 0.0050	1.86	3.51	1.65	11.1	< 0.010	8.92	378	< 0.010	< 0.10	< 0.30	2.00	< 0.50	2.6
	GH_POTW17_WG_2021-10-04_NP	2021 11 26	603	< 1.0	< 0.10	0.68	33.2	< 0.020	< 0.050	19	0.0268	136	< 0.10	0.13	< 0.20	373	< 0.050	14.6	64.0	96.2	< 0.0050	1.67	2.06	1.66	12.6	< 0.010	9.92	359	< 0.010	< 0.10	< 0.30	1.97	< 0.50	1.3
RG_MW_FR11A	RG_MW_FR11A_WG_2021_09_29_NP	2021 09 29	279	2.8	0.27	0.72	51.2	< 0.020	< 0.050	110	0.0226	59.3	< 0.10	0.29	1.12	< 10	< 0.050	20.2	31.9	92.1	< 0.0050	5.35	1.71	2.67	0.394	< 0.010	14.6	479	0.021	1.11	< 0.30	1.18	< 0.50	8.1
RG_MW_FR11B	RG_MW_FR11B_WG_2021_09_29_NP	2021 09 29	300	4.4	0.40	0.48	56.1	< 0.020	< 0.050	71	0.0428	67.6	< 0.10	0.38	2.51	< 10	0.254	18.2	31.9	136	< 0.0050	3.07	1.46	2.92	0.183	< 0.010	9.31	363	0.022	0.71	< 0.30	0.864	< 0.50	11.9
Elk River Valley (denotes well part of Study Area 4)**																																				
GH_MW-MC-1D	GH_MW-MC-1D_WG_2021_03_22_NP	2021 03 22	125	2.1	< 0.10	1.07	891	< 0.020	< 0.050	75	< 0.0050	26.3	< 0.10	< 0.10	< 0.20	165	< 0.050	79.8	14.4	125	< 0.0050	6.48	< 0.50	1.31	< 0.050	< 0.010	43.3	380	0.032	< 0.10	< 0.30	0.062	< 0.50	< 1.0
	GH_MW-MC-1D_WG_2021_06_09_NP	2021 06 09	126	< 1.0	< 0.10	0.96	807	< 0.020	< 0.050	93	< 0.0050	27.2	< 0.10	< 0.10	< 0.20	164	< 0.050	85.6	14.0	129	< 0.0050	6.41	< 0.50	1.34	< 0.050	< 0.010	42.2	396	0.036	< 0.10	< 0.30	0.070	< 0.50	< 1.0
	GH_MW-MC-1D_WG_2021_09_14_NP	2021 09 14	114	< 1.0	< 0.10	0.99	848	< 0.020	< 0.050	74	< 0.0050	24.0	< 0.10	< 0.10	< 0.20	179	< 0.050	81.4	13.2	125	< 0.0050	6.72	< 0.50	1.25	< 0.050	< 0.010	40.6	394	0.036	< 0.10	< 0.30	0.070	< 0.50	< 1.0
	GH_MW-MC-1D_WG_2021_11_17_NP	2021 11 17	118	3.8	< 0.10	1.05	851	< 0.020	< 0.050	88	< 0.0050	24.6	< 0.10	< 0.10	< 0.20	193	< 0.050	82.7	13.8	121	< 0.0050	6.84	< 0.50	1.27	0.279	< 0.010	44.8	386	< 0.010	0.20	< 0.30	0.136	< 0.50	1.1
	GH_MW_MC10-A_WG_2021_11_17_NP	Duplicate	123	4.2	< 0.10	1.08	850	< 0.020	< 0.050	90	< 0.0050	25.2	< 0.10	< 0.10	< 0.20	195	< 0.050	81.4	14.6	122	< 0.0050	6.83	< 0.50	1.32	0.249	< 0.010	45.5	383	< 0.010	0.22	< 0.30	0.137	< 0.50	< 1.0
	QA/QC RPD%		4	*	*	3	0	*	*	2	*	2	*	*	*	1	*	2	6	1	*	0	*	4	*	*	2	1	*	*	*	1	*	*		
GH_MW-MC-1S	GH_MW-MC-1S_WG_2021_03_22_NP	2021 03 22	186	1.6	< 0.10	< 0.10	55.0	< 0.020	< 0.050	< 10	< 0.0050	53.0	0.23	< 0.10	< 0.20	< 10	< 0.050	2.2	12.9	< 0.10	< 0.0050	0.965	< 0.50	0.34	1.57	< 0.010	2.10	224	< 0.010	< 0.10	< 0.30	0.858	< 0.50	< 1.0
	GH_MW-MC-1S_WG_2021_06_08_NP	2021 06 08	165	< 1.0	< 0.10	< 0.10	52.2	< 0.020	< 0.050	< 10	0.0057	47.3	0.21	< 0.10	0.24	< 10	< 0.050	2.4	11.5	< 0.10	< 0.0050	0.946	< 0.50	0.38	0.819	< 0.010	0.979	205	< 0.010	< 0.10	< 0.30	0.763	< 0.50	< 1.0
	GH_MW-MC-1S_WG_2021_09_14_NP	2021 09 14	140	< 1.0	< 0.10	< 0.10	55.9	< 0.020	< 0.050	< 10	< 0.0050	39.7	0.18	< 0.10	< 0.20	< 10	< 0.050	1.9	9.90	< 0.10	< 0.0050	1.18	< 0.50	0.39	0.749	< 0.010	0.688	202	< 0.010	< 0.10	< 0.30	0.646	< 0.50	< 1.0
	GH_MW-MC-1S_WG_2021_11_17_NP	2021 11 17	157	< 1.0	< 0.10	< 0.10	50.2	< 0.020	< 0.050	< 10	< 0.0050	44.8	0.24	< 0.10	< 0.20	< 10	< 0.050	1.5	10.9	< 0.10	< 0.0050	1.05	< 0.50	0.37	0.908	< 0.010	0.677	196	< 0.010	< 0.10	< 0.30	0.663	< 0.50	< 1.0
GH_MW-MC-2D	GH_MW-MC-2D_WG_2021_03_23_NP	2021 03 23	21.4	19.7	< 0.50	1.59	112	< 0.10	< 0.25	*792*	< 0.025	3.74	< 0.50	< 0.50	< 1.0	< 50	< 0.25	1,030	2.92	39.1	< 0.0050	0.85	< 2.5	1.89	***88.5***	< 0.050	420	221	< 0.050	< 0.50	< 1.5	0.859	< 2.5	< 5.0
	GH_MW-MC-2D_WG_2021_06_09_NP	2021 06 09	20.1	19.8	0.11	0.80	138	< 0.020	< 0.050	*713*	< 0.0050	3.33	0.12	< 0.10	< 0.20	< 10	< 0.050	1,510	2.85	38.7	< 0.0050	0.490	< 0.50	1.88	2.58	< 0.010	430	238	< 0.010	< 0.10	< 0.30	0.562	< 0.50	< 1.0
	GH_MW_MC10-A_WG_2021_06_09_NP	Duplicate	19.8	24.2	< 0.50	0.71	127	< 0.10	< 0.25	*752*	< 0.025	3.29	< 0.50	< 0.50	< 1.0	< 50	< 0.25	1,040	2.81	36.8	< 0.0050	0.53	< 2.5	1.76	6.19	< 0.050	416	233	< 0.050	< 0.50	< 1.5	0.527	< 2.5	< 5.0
	QA/QC RPD%		2	20	*	12	8	*	*	5	*	1	*	*	*	*	*	37	1	5	*	8	*	7	82	*	3	2	*	*	*	6	*	*		
	GH_MW-MC-2D_WG_2021_09_15_NP	2021 09 15	20.8	19.0	0.15	1.99	131	< 0.020	< 0.050	*539*	< 0.0050	3.65	0.14	< 0.10	< 0.20	< 10	< 0.050	1,180	2.83	45.5	< 0.0050	0.734	< 0.50	1.77	4.28	< 0.010	378	219	< 0.010	< 0.10	< 0.30	0.768	0.69	< 1.0
	GH_MW-MC-2D_WG_2021_11_17_NP	2021 11 17	23.3	31.5	< 0.50	1.49	136	< 0.10	< 0.25	*845*	< 0.025	3.92	< 0.50	< 0.50	< 1.0	< 50	< 0.25	1,030	3.29	44.6	< 0.0050	0.93	< 2.5	1.90	6.90	< 0.050	452	231	< 0.050	< 0.50	< 1.5	0.672	< 2.5	< 5.0

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE GH-04: Summary of Analytical Results Compared to Primary Screening Criteria fo Dissolved Metals in Groundwater (GHO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																																
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
				µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																				
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400[b]
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Elk River Valley (denotes well part of Study Area 4)**																																				
GH_MW-MC-2S	GH_MW-MC-2S_WG_2021_03_23_NP	2021 03 23	306	4.5	0.11	0.22	108	< 0.020	< 0.050	33	0.0425	81.0	0.14	< 0.10	0.38	< 10	< 0.050	25.5	25.2	21.6	< 0.0050	1.25	0.81	1.31	2.65	< 0.010	16.3	273	0.010	< 0.10	< 0.30	1.15	< 0.50	1.1
	GH_MW-MC-2S_WG_2021_06_09_NP	2021 06 09	235	6.4	< 0.50	< 0.50	84.6	< 0.10	< 0.25	< 50	0.043	63.9	< 0.50	< 0.50	< 1.0	< 50	< 0.25	20.2	18.3	17.5	< 0.0050	1.49	< 2.5	1.00	2.68	< 0.050	14.9	215	< 0.050	< 0.50	< 1.5	0.832	< 2.5	< 5.0
	GH_MW-MC-2S_WG_2021_09_15_NP	2021 09 15	278	4.0	< 0.10	0.16	107	< 0.020	< 0.050	25	0.0379	70.9	0.13	< 0.10	0.49	< 10	< 0.050	23.1	24.4	9.65	< 0.0050	1.36	0.63	1.17	1.96	< 0.010	16.8	240	< 0.010	< 0.10	< 0.30	1.04	< 0.50	< 1.0
	GH_MW-MC-2S_WG_2021_11_17_NP	2021 11 17	323	1.7	< 0.10	0.17	125	< 0.020	< 0.050	35	0.0534	84.4	0.19	< 0.10	0.44	< 10	< 0.050	27.0	27.2	1.14	< 0.0050	1.11	0.68	1.25	2.07	< 0.010	18.6	271	< 0.010	< 0.10	< 0.30	1.07	< 0.50	1.2
GH_GA-MW-4**	GH_GA-MW-4_WG_2021-01-04_NP	2021 01 21	285	< 3.0	0.41	< 0.10	90.7	< 0.020	< 0.050	16	< 0.015	64.4	0.15	< 0.10	< 0.20	< 10	< 0.050	40.2	30.0	< 0.10	< 0.0050	*16.7*	3.13	1.62	6.41	< 0.010	7.39	233	< 0.010	< 0.10	< 10	2.17	< 0.50	< 1.0
	GH_GA-MW-4_WG_2021-04-05_NP	2021 06 04	364	1.8	< 0.10	0.21	68.4	< 0.020	< 0.050	220	< 0.0050	74.5	0.24	< 0.10	< 0.20	22	< 0.050	77.6	43.2	8.80	< 0.500[a]	0.094	< 0.50	2.52	14.4	< 0.010	33.9	2,060	< 0.010	< 0.10	< 0.30	0.440	< 0.50	< 1.0
	GH_GA-MW-4_WG_2021-07-05_NP	2021 07 30	205	2.1	0.13	< 0.10	83.1	< 0.020	< 0.050	13	< 0.0050	53.1	0.26	< 0.10	0.76	< 10	< 0.050	13.6	17.6	0.17	< 0.0050	1.64	1.01	0.981	2.62	< 0.010	6.00	175	< 0.010	< 0.10	< 0.30	1.26	< 0.50	< 1.0
	GH_GA-MW-4_WG_2021-10-04_NP	2021 10 01	189	1.2	0.14	< 0.10	78.3	< 0.020	< 0.050	12	0.0058	49.0	0.18	< 0.10	< 0.20	< 10	< 0.050	13.2	16.2	< 0.10	< 0.0050	1.62	< 0.50	0.980	1.66	< 0.010	5.06	160	< 0.010	< 0.10	< 0.30	1.13	< 0.50	< 1.0
RG_MW_LC3A**	RG_MW_LC3A_WG_2021_03_03_NP	2021 03 03	458	< 1.0	0.55	0.14	81.1	< 0.020	< 0.050	18	0.0286	97.3	0.20	< 0.10	0.72	< 10	< 0.050	75.5	52.1	0.11	< 0.0050	5.05	< 0.50	2.27	***21.7***	< 0.010	9.76	303	< 0.010	< 0.10	< 0.30	3.45	< 0.50	1.6
	RG_MW_LC3A_WG_2021_05_10_NP	2021 05 10	598	1.4	0.71	0.14	106	< 0.020	< 0.050	16	0.0285	122	0.51	0.17	1.42	27	< 0.050	100	71.2	2.07	< 0.0050	6.59	3.76	2.57	***58.3***	< 0.010	15.9	387	< 0.010	< 0.10	< 0.30	4.53	< 0.50	1.2
	RG_MW_LC3A_WG_2021_08_16_NP	2021 08 16	549	4.6	0.79	0.11	115	< 0.020	< 0.050	18	0.0286	112	0.70	0.15	0.85	29	0.065	73.9	65.1	2.11	< 0.0050	5.75	3.44	3.03	***105***	< 0.010	12.9	399	< 0.010	< 0.10	< 0.30	3.69	< 0.50	2.5
	RG_MW_LC3A_WG_2021_11_02_NP	2021 11 02	367	< 1.0	0.49	0.10	65.4	< 0.020	< 0.050	17	0.0206	79.6	0.22	< 0.10	0.33	< 10	< 0.050	44.1	40.9	0.20	< 0.0050	3.64	< 0.50	2.09	***46.6***	< 0.010	8.93	270	< 0.010	< 0.10	< 0.30	2.53	< 0.50	< 1.0
RG_MW_LC3B**	RG_MW_LC3B_WG_2021_03_03_NP	2021 03 03	361	8.4	1.53	0.14	54.1	< 0.020	< 0.050	16	0.0272	70.8	0.23	< 0.10	0.41	< 10	< 0.050	71.6	44.9	0.66	< 0.0050	8.59	0.69	3.01	14.6	< 0.010	7.12	243	< 0.010	0.13	< 0.30	3.24	< 0.50	1.1
	RG_MW_LC3B_WG_2021_05_11_NP	2021 05 11	605	1.2	2.10	0.17	91.6	< 0.020	< 0.050	20	0.0421	120	1.57	0.25	21.5	41	< 0.050	133	73.9	2.90	< 0.0050	*13.7*	6.39	4.61	***61.2***	< 0.010	18.0	434	< 0.010	< 0.10	< 0.30	6.24	< 0.50	1.1
	RG_MW_LC3B_WG_2021_08_16_NP	2021 08 16	864	< 5.0	1.60	< 0.50	108	< 0.10	< 0.25	< 50	0.045	161	< 0.50	1.49	< 1.0	< 50	< 0.25	129	112	< 0.50	< 0.0050	7.12	3.0	3.74	***176***	< 0.050	19.4	578	< 0.050	< 0.50	< 1.5	6.86	< 2.5	< 5.0
	RG_MW_LC3B_WG_2021_11_02_NP	2021 11 02	736	< 1.0	0.90	0.11	92.5	< 0.020	< 0.050	16	0.0375	141	0.22	< 0.10	0.73	< 10	< 0.050	107	93.5	0.67	< 0.0050	6.36	2.04	3.20	***158***	< 0.010	18.1	483	< 0.010	< 0.10	< 0.30	6.70	< 0.50	1.5
RG_MW_LCWC1**	RG_MW_LCWC1_WG_2021_03_02_NP	2021 03 02	544	1.2	< 0.10	0.12	159	< 0.020	< 0.050	18	0.0302	146	0.23	0.10	1.17	15	< 0.050	27.4	43.7	1.76	< 0.0050	1.09	1.26	1.47	***54.3***	< 0.010	11.5	475	0.012	< 0.10	< 0.30	1.34	< 0.50	4.7
	RG_MW_LCWC1_WG_2021_05_11_NP	2021 05 11	518	1.3	< 0.10	0.13	150	< 0.020	< 0.050	17	0.0445	131	1.71	0.15	1.09	< 10	< 0.050	37.6	46.4	1.04	< 0.0050	1.94	1.18	1.49	***79.3***	< 0.010	7.54	367	< 0.010	< 0.10	< 0.30	1.84	< 0.50	< 1.0
	RG_MW_LCWC1_WG_2021_08_16_NP	2021 08 16	677	< 1.0	0.12	0.11	191	< 0.020	< 0.050	17	0.0541	172	0.20	0.11	0.45	13	0.064	54.3	60.2	0.73	< 0.0050	1.07	0.90	1.52	***117***	< 0.010	13.7	519	< 0.010	< 0.10	< 0.30	2.15	< 0.50	1.9
	RG_MW_LCWC1_WG_2021_11_02_NP	2021 11 02	567	4.7	< 0.10	0.12	152	< 0.020	< 0.050	17	0.0399	152	0.13	< 0.10	0.33	< 10	< 0.050	37.9	45.5	0.81	< 0.0050	0.996	< 0.50	1.42	***87.0***	< 0.010	12.4	489	< 0.010	< 0.10	< 0.30	1.48	< 0.50	< 1.0
RG_MW_WC2A**	RG_MW_WC2A_WG_2021_03_03_NP	2021 03 03	510	< 1.0	0.10	0.16	56.1	< 0.020	< 0.050	13	0.0254	124	0.15	< 0.10	< 0.20	< 10	< 0.050	37.5	48.8	1.39	< 0.0050	1.09	0.67	1.36	***36.5***	< 0.010	10.8	360	0.018	< 0.10	< 0.30	2.33	< 0.50	< 1.0
	RG_MW_WC2A_WG_2021_05_10_NP	2021 05 10	508	1.4	0.11	0.16	54.9	< 0.020	< 0.050	13	0.0217	122	0.12	< 0.10	< 0.20	< 10	< 0.050	39.6	49.2	0.62	< 0.0050	1.14	0.60	1.36	***37.5***	< 0.010	9.22	349	0.015	< 0.10	< 0.30	2.07	< 0.50	1.2
	RG_MW_WC2A_WG_2021_08_16_NP	2021 08 16	417	< 1.0	0.14	0.12	46.2	< 0.020	< 0.050	12	0.0291	102	0.19	< 0.10	0.25	< 10	< 0.050	35.8	39.7	4.55	< 0.0050	1.10	0.61	1.23	***33.7***	< 0.010	9.05	303	0.018	< 0.10	< 0.30	1.75	< 0.50	1.2
	RG_MW_WC2A_WG_2021_11_02_NP	2021 11 02	338	1.1	0.18	0.11	38.6	< 0.020	< 0.050	12	0.0259	84.3	0.18	< 0.10	< 0.20	< 10	< 0.050	32.7	30.8	1.26	< 0.0050	1.28	< 0.50	1.14	***25.8***	< 0.010	7.77	260	0.013	< 0.10	< 0.30	1.60	< 0.50	< 1.0
RG_MW_WC2B**	RG_MW_WC2B_WG_2021_03_03_NP	2021 03 03	656	< 1.0	0.56	0.15	84.2	< 0.020	< 0.050	15	0.0563	134	0.17	< 0.10	0.22	< 10	< 0.050	77.9	78.0	< 0.10	< 0.0050	2.97	5.68	2.48	***52.9***	< 0.010	10.9	391	< 0.010	< 0.10	< 0.30	4.43	< 0.50	1.5
	RG_MW_MC10A_WG_2021_03_03_NP	Duplicate	669	< 1.0	0.59	0.13	84.8	< 0.020	< 0.050	16	0.0540	139	0.20	< 0.10	0.20	< 10	< 0.050	80.3	78.1	< 0.10	< 0.0050	3.08	5.61	2.49	***50.7***	< 0.010	10.7	413	< 0.010	< 0.10	< 0.30	4.63	< 0.50	1.5
	QA/QC RPD%		2	*	5	*	1	*	*	*	4	4	*	*	*	*	*	3	0	*	*	4	1	0	4	*	2	5	*	*	*	4	*	*
	RG_MW_WC2B_WG_2021_05_10_NP	2021 05 10	478	< 1.0	0.52	0.15	62.9	< 0.020	< 0.050	12	0.0319	102	0.20	< 0.10	< 0.20	< 10	< 0.050	51.8	54.4	< 0.10	< 0.0050	2.96	4.31	1.97	***44.1***	< 0.010	8.48	302	< 0.010	< 0.10	< 0.30	3.17	< 0.50	1.3
	RG_MW_WC2B_WG_2021_08_16_NP	2021 08 16	329	< 1.0	0.58	0.11	57.5	< 0.020	< 0.050	13	0.0319	72.7	0.21	< 0.10	0.23	< 10	< 0.050	34.3	35.8	< 0.10	< 0.0050	3.69	3.54	1.69	***36.0***	< 0.010	5.44	263	< 0.010	< 0.10	< 0.30	2.27	< 0.50	< 1.0
	RG_MW_WC2B_WG_2021_11_02_NP	2021 11 02	428	< 1.0	0.54	0.12	68.1	< 0.020	< 0.050	15	0.0394	95.0	0.19	< 0.10	< 0.20	< 10	< 0.050	42.3	46.3	< 0.10	< 0.0050	3.19	3.83	2.01	***49.0***	< 0.010	7.61	318	< 0.010	< 0.10	< 0.30	2.83	< 0.50	< 1.0
GH_GA-MW-2**	GH_GA-MW-2_WG_2021-01-04_NP	2021 03 08	782	< 1.0	1.89	0.22	34.4	< 0.020	< 0.050	20	0.0688	217	< 0.10	0.54	2.04	< 10	< 0.050	22.2	58.4	96.5	< 0.0050	*36.8*	8.57	1.52	***32.4***	< 0.010	11.6	796	< 0.010	0.15	< 0.30	9.71	< 0.50	12.1
	GH_GA-MW-2_2021-04-05_NP	2021 04 23	745	< 1.0	1.84	0.22	32.3	< 0.020	< 0.050	20	0.0787	201	< 0.10	0.41	1.40	< 10	< 0.050	21.6	59.1	74.3	< 0.0050	*24.9*	6.86	1.53	***36.5***	< 0.010	11.1	744	0.016	< 0.10	< 0.30	9.03	< 0.50	10.6
	GH_GA-MW-2_WG_2021-07-05_NP	2021 09 01	882	1.4	1.39	0.19	31.7	< 0.020	< 0.050	22	< 0.0850	235	< 0.10	0.81	2.42	< 10	< 0.050	21.0	71.6	132	< 0.0050	*39.5*	12.0	1.69	18.8	< 0.010	13.4	818	< 0.010	< 0.10	< 0.30	7.28	< 0.50	17.0
	GH_GA-MW-2_WG_2021-10-04_NP	2021 10 01	737	< 1.0	1.82	0.21	30.1	< 0.020	< 0.050	19	0.0942	202	< 0.10	0.55	2.71	< 10	< 0.050	20.4	56.6	99.2	< 0.0050	*25.8*	8.33	1.54	***33.2***	< 0.010	11.1	721	0.012	< 0.10	< 0.30	9.16	< 0.50	12.5

All terms defined within the body of SNC-Lavalin's report.
< Denotes concentration less than indicated detection limit.
- Denotes analysis not conducted.
n/a Denotes no applicable standard/guideline.
QA/QC RPD Denotes quality assurance/quality control relative percent difference
* RPDs are not calculated where one or more concentrations are less than five times RDL.
RDL Denotes reported detection limit.

[a] Standard to protect freshwater aquatic life.
[b] Standard varies with Hardness.
[c] Standard varies with pH.
[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.
[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).
[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.
[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

TABLE GH-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (GHO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																																
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
BC Standard																																				
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400[b]
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Elk River Valley (denotes well part of Study Area 4)**																																				
GH_GA-MW-3	GH_GA-MW-3_WG_2021-01-04_NP	2021 03 01	332	2.1	< 0.10	0.10	108	< 0.0200	< 0.050	269	< 0.00500	63.0	1.07	< 0.100	< 0.20	16	< 0.050	105	42.4	9.72	< 0.100	0.060	1.04	2.73	7.04	< 0.010	40.3	2,410	< 0.010	< 0.10	< 0.30	0.267	< 0.50	< 1.0
	GH_GA-MW-3_WG_2021-04-05_NP	2021 06 04	205	< 1.0	0.12	< 0.10	82.2	< 0.020	< 0.050	12	< 0.0050	53.0	0.18	< 0.10	0.26	< 10	< 0.050	14.5	17.6	< 0.10	< 0.0050	1.51	< 0.50	0.943	3.02	< 0.010	6.60	176	< 0.010	< 0.10	< 0.30	1.29	< 0.50	1.0
	GH_GA-MW-3_WG_2021-07-05_NP	2021 07 30	270	1.7	< 0.10	< 0.10	98.4	< 0.020	< 0.100	257	< 0.0050	51.4	< 0.10	< 0.10	< 0.20	10	< 0.050	88.6	34.5	6.47	< 0.0050	< 0.050	< 0.50	2.54	5.94	< 0.010	34.7	2,190	< 0.010	< 0.10	< 0.30	0.173	< 0.50	< 1.0
	GH_GA_MW-3_WG_2021-10-04_NP	2021 10 07	246	3.2	< 0.10	< 0.10	104	< 0.020	< 0.050	262	< 0.0050	43.9	2.67	< 0.10	< 0.20	< 10	< 0.050	93.6	33.1	6.51	< 0.0050	< 0.050	1.58	2.47	1.38	< 0.010	38.1	2,170	< 0.010	< 0.10	< 0.30	0.052	< 0.50	< 1.0
GH_MW-ERSC-1**	GH_MW-ERSC-1_WG_2021-01-04_NP	2021 03 05	750	< 1.0	< 0.10	0.11	199	< 0.0200	< 0.050	11	0.0469	184	0.22	< 0.100	0.62	< 10	< 0.050	20.6	70.5	6.70	< 0.0050	2.39	0.81	1.09	***62.8***	< 0.010	7.96	577	< 0.010	< 0.10	< 0.30	2.19	< 0.50	2.0
	GH_MW-ESRC-1_WG_2021-04-05_NP	2021 06 10	243	1.6	< 0.10	0.13	69.9	< 0.020	< 0.050	10	0.0117	60.2	0.26	< 0.10	1.10	< 10	< 0.050	10.1	22.5	4.22	< 0.0050	1.61	< 0.50	0.775	5.82	< 0.010	2.96	198	< 0.010	< 0.10	< 0.30	1.07	< 0.50	3.5
	GH_MW-ERSC-1_WG_2021-07-05_NP	2021 09 17	374	< 1.0	< 0.10	0.14	140	< 0.020	< 0.050	14	0.0429	92.5	0.16	< 0.10	0.22	< 10	< 0.050	13.8	34.8	7.05	< 0.0050	1.59	0.76	1.05	***27.4***	< 0.010	4.25	345	0.022	< 0.10	< 0.30	1.38	< 0.50	2.4
	GH_MW-ERSC-1_WG_2021-10-04_NP	2021 10 08	403	1.4	0.10	0.16	150	< 0.020	< 0.050	14	0.0357	99.4	0.17	< 0.10	1.04	< 10	0.113	15.2	37.7	6.56	< 0.0050	1.37	0.62	1.08	***32.0***	< 0.010	4.80	386	0.014	< 0.10	< 0.30	1.40	< 0.50	7.5
GH_MW_EF1A**	GH_MW-EF1A_WG_2021-03-18_NP	2021 03 18	178	1.5	< 0.10	< 0.10	60.4	< 0.020	< 0.050	< 10	< 0.0050	49.7	0.23	< 0.10	< 0.20	< 10	< 0.050	3.0	13.2	< 0.10	< 0.0050	1.08	< 0.50	0.393	3.38	< 0.010	1.30	218	< 0.010	< 0.10	< 0.30	0.796	< 0.50	< 1.0
	GH_FOX3_WG_2021-03-18_NP	Duplicate	183	1.0	< 0.10	< 0.10	60.0	< 0.020	< 0.050	< 10	0.0058	51.4	0.23	< 0.10	< 0.20	< 10	< 0.050	3.1	13.2	< 0.10	< 0.0050	1.05	< 0.50	0.411	3.50	< 0.010	1.30	217	< 0.010	< 0.10	< 0.30	0.811	< 0.50	< 1.0
	QA/QC RPD%		3	*	*	*	1	*	*	*	*	3	*	*	*	*	*	*	0	*	*	3	*	4	3	*	0	0	*	*	*	2	*	*
	GH_MW_EF1A_WG_2021-04-05_NP	2021 05 13	192	1.2	< 0.1	< 0.1	63.5	< 0.02	< 0.05	< 10	< 0.005	54.6	0.25	< 0.1	< 0.2	< 10	< 0.05	3.1	13.5	< 0.1	< 0.005	0.969	< 0.5	0.404	3.62	< 0.01	1.38	224	< 0.01	< 0.1	< 0.3	0.837	< 0.5	< 1
	GH_MW_EF1A_WG_2021_09_17_NP	2021 09 17	159	1.1	< 0.10	< 0.10	55.9	< 0.020	< 0.050	< 10	< 0.0050	44.3	0.23	< 0.10	< 0.20	< 10	< 0.050	3.1	11.7	< 0.10	< 0.0050	1.02	< 0.50	0.37	1.86	< 0.010	1.20	189	< 0.010	< 0.10	< 0.30	0.689	< 0.50	< 1.0
	GH_MW_MC10-A_WG_2021_09_17_NP	Duplicate	154	1.4	< 0.10	< 0.10	54.6	< 0.020	< 0.050	< 10	0.0057	42.6	0.19	< 0.10	< 0.20	< 10	< 0.050	3.0	11.6	< 0.10	< 0.0050	0.976	< 0.50	0.37	1.81	< 0.010	1.16	184	< 0.010	< 0.10	< 0.30	0.670	< 0.50	< 1.0
	QA/QC RPD%		3	*	*	*	2	*	*	*	*	4	*	*	*	*	*	*	1	*	*	4	*	0	3	*	3	3	*	*	*	3	*	*
	GH_MW_EF1A_WG_2021_11_26_NP	2021 11 26	180	1.1	< 0.10	< 0.10	60.0	< 0.020	< 0.050	< 10	< 0.0050	50.8	0.26	< 0.10	< 0.20	< 10	< 0.050	3.3	12.9	< 0.10	< 0.0050	1.04	< 0.50	0.40	2.07	< 0.010	1.25	199	< 0.010	< 0.10	< 0.30	0.733	< 0.50	< 1.0
GH_MW_EF1B**	GH_MW-EF1B_WG_2021-03-18_NP	2021 03 18	188	1.0	< 0.10	< 0.10	54.2	< 0.020	< 0.050	< 10	0.0071	51.9	0.24	< 0.10	< 0.20	< 10	< 0.050	2.9	14.2	< 0.10	< 0.0050	1.06	< 0.50	0.362	3.43	< 0.010	1.33	221	< 0.010	< 0.10	< 0.30	0.927	< 0.50	< 1.0
	GH_MW_EF1B_WG_2021-04-05_NP	2021 05 13	181	1.4	< 0.1	< 0.1	53.3	< 0.02	< 0.05	< 10	0.0069	51.4	0.22	< 0.1	< 0.2	< 10	< 0.05	3.2	12.9	< 0.1	< 0.005	1.08	< 0.5	0.396	2.75	< 0.01	1.19	215	< 0.01	< 0.1	< 0.3	0.886	< 0.5	< 1
	GH_MW_EF1B_WG_2021_09_17_NP	2021 09 17	155	< 1.0	< 0.10	< 0.10	56.1	< 0.020	< 0.050	< 10	0.0083	43.4	0.19	< 0.10	< 0.20	< 10	< 0.050	2.8	11.3	< 0.10	< 0.0050	0.983	< 0.50	0.43	1.65	< 0.010	0.897	193	< 0.010	< 0.10	< 0.30	0.623	< 0.50	< 1.0
	GH_MW_EF1B_WG_2021_11_26_NP	2021 11 26	184	< 1.0	< 0.10	< 0.10	56.8	< 0.020	< 0.050	< 10	< 0.0050	52.3	0.22	< 0.10	< 0.20	< 10	< 0.050	2.6	13.0	< 0.10	< 0.0050	0.964	< 0.50	0.38	2.10	< 0.010	1.04	209	< 0.010	< 0.10	< 0.30	0.754	< 0.50	< 1.0
	GH_MW_MC10A_WG_2021_11_26_NP	Duplicate	186	< 1.0	< 0.10	< 0.10	56.9	< 0.020	< 0.050	< 10	0.0081	53.3	0.27	< 0.10	< 0.20	< 10	< 0.050	2.7	12.8	< 0.10	< 0.0050	1.00	< 0.50	0.38	2.38	< 0.010	1.10	208	< 0.010	< 0.10	< 0.30	0.764	< 0.50	< 1.0
	QA/QC RPD%		1	*	*	*	0	*	*	*	*	2	*	*	*	*	*	*	2	*	*	4	*	0	12	*	6	0	*	*	*	1	*	*
RG_DW-01-03**	RG_DW-01-03_WP_Q1-2021_NP	2021 03 03	199	< 3.0	< 0.10	< 0.10	67.2	< 0.020	< 0.050	< 10	< 0.0050	57.4	0.25	< 0.10	0.58	< 10	< 0.050	2.7	13.5	< 0.10	-	0.984	< 0.50	0.360	3.47	< 0.010	1.21	224	< 0.010	< 0.10	< 10	0.874	< 0.50	2.2
	RG_DW-01-03_WP_Q2-2021_NP	2021 06 08	212	1.3	< 0.10	< 0.10	84.2	< 0.020	< 0.050	< 10	0.0097	57.9	0.25	< 0.10	1.49	< 10	0.081	2.7	16.3	< 0.10	-	0.990	< 0.50	0.498	4.40	< 0.010	1.52	227	< 0.010	< 0.10	< 0.30	0.887	< 0.50	7.9
	RG_DW-01-03_WP_Q3-2021_NP	2021 07 21	197	< 1.0	< 0.10	< 0.10	79.2	< 0.020	< 0.050	< 10	0.0106	56.0	0.28	< 0.10	0.78	< 10	0.063	2.6	13.9	< 0.10	-	0.952	< 0.50	0.444	5.11	< 0.010	1.38	222	< 0.010	< 0.10	< 0.30	0.822	< 0.50	20.6
	RG_DW-01-03_WP_2021_11_23_NP	2021 11 23	180	1	< 0.10	< 0.10	71.5	< 0.020	< 0.050	< 10	0.0052	50.2	0.23	< 0.10	0.58	< 10	< 0.050	2.3	13.4	< 0.10	-	0.939	< 0.50	0.413	3.44	< 0.010	1.32	207	< 0.010	< 0.10	< 0.30	0.781	< 0.50	2.0
Blanks																																				
Field Blanks																																				
GH_MW-GHC-1A	GH_JDW2_WG_2021-01-04_NP	2021 01 25	< 0.50	< 3.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.10	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 10	< 0.010	< 0.50	< 1.0
RG_MW_WC2A	RG_MW_MC10B_WG_2021_03_03_NP	2021 03 03	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	0.0097	0.11	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
GH_MW_EF1A	GH_JDW3_WG_2021-03-18_NP	2021 03 18	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
GH_MW-MC-2D	GH_MW_MC10-B_WG_2021_06_09_NP	2021 06 09	< 0.50	< 1.0	< 0.10	< 0.10	0.21	< 0.020	< 0.050	< 10	0.0068	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	0.16	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	2.5
GH_MW_GHC_4B	GH_MW_MC10-B_WG_2021_06_22_NP	2021 06 22	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
GH_MW-TD	GH_JDW3_WG_2021-07-05_NP	2021 09 03	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
GH_MW_EF1A	GH_MW_MC10-B_WG_2021_09_17_NP	2021 09 17	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
GH_MW_EF1A	GH_MW_MC10B_WG_2021_11_26_NP	2021 11 26	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	0.23	< 10	< 0.050	< 1.0	< 0.0050	0.11	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
GH_MW-PC	GH_JDW3_WG_2021-10-04_NP	2021 12 03	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

TABLE GH-04: Summary of Analytical Results Compared to Primary Screening Criteria for Dissolved Metals in Groundwater (GHO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	Hardness	Dissolved Metals																																
				Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Potassium	Selenium	Silver	Sodium	Strontium	Thallium	Tin	Titanium	Uranium	Vanadium	Zinc[f]
			mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
BC Standard																																				
CSR Aquatic Life (AW)[a]			n/a	n/a	90	50	10,000	1.5	n/a	12,000	0.5-4[b]	n/a	10[d]	40	20-90[b]	n/a	40-160[b]	n/a	n/a	n/a	0.25	10,000	250-1,500[b]	n/a	20	0.5-15[b]	n/a	n/a	3	n/a	1,000	85	n/a	75-2,400[b]
CSR Irrigation Watering (IW)			n/a	5,000	n/a	100	n/a	100	n/a	500	5	n/a	5[d]	50	200	5,000	200	2,500	n/a	200	1	10	200	n/a	20	n/a	n/a	n/a	n/a	n/a	n/a	10	100	1,000-5,000[c]
CSR Livestock Watering (LW)			n/a	5,000	n/a	25	n/a	100	n/a	5,000	80	1,000	50[d]	1,000	300	n/a	100	5,000	n/a	n/a	2	50	1,000	n/a	30	n/a	n/a	n/a	n/a	n/a	n/a	200	100	2,000
CSR Drinking Water (DW)			n/a	9,500	6	10	1,000	8	n/a	5,000	5	n/a	50[d]	20[e]	1,500	6,500	10	8	n/a	1,500	1	250	80	n/a	10	20	200	2,500	n/a	2,500	n/a	20	20	3,000
Health-based Value (HBV)[g]			n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1,200	n/a	n/a	n/a	2,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Blanks																																				
Trip Blanks																																				
	GH_RDI2_WG_2021-01-04_NP	2021 01 25	< 0.50	< 3.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.10	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 10	< 0.010	< 0.50	< 1.0
	GH_MW_MC10-C_WG_2021_06_09_NP	2021 06 09	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	GH_MW_MC10-C_WG_2021_06_22_NP	2021 06 22	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	GH_MW_MC10C_WG_2021_11_26_NP	2021 11 26	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.10	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0
	GH_RD12_WG_2021-10-04_NP	2021 12 03	< 0.50	< 1.0	< 0.10	< 0.10	< 0.10	< 0.020	< 0.050	< 10	< 0.0050	< 0.050	< 0.10	< 0.10	< 0.20	< 10	< 0.050	< 1.0	< 0.0050	< 0.10	< 0.0050	< 0.050	< 0.50	< 0.050	< 0.050	< 0.010	< 0.050	< 0.20	< 0.010	< 0.10	< 0.30	< 0.010	< 0.50	< 1.0

All terms defined within the body of SNC-Lavalin's report.

< Denotes concentration less than indicated detection limit.

- Denotes analysis not conducted.

n/a Denotes no applicable standard/guideline.

QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

RDL Denotes reported detection limit.

BOLD	Concentration greater than CSR Aquatic Life (AW) standard
ITALIC	Concentration greater than CSR Irrigation Watering (IW) standard
UNDERLINE	Concentration greater than CSR Livestock Watering (LW) standard
SHADED	Concentration greater than CSR Drinking Water (DW) standard

[a] Standard to protect freshwater aquatic life.

[b] Standard varies with Hardness.

[c] Standard varies with pH.

[d] Individual standards exist for Cr +3 and Cr +6. Reported value represents more stringent standard.

[e] Interim BC MoE Regional Background Estimate (Protocol 9 Determining Background Groundwater Quality).

[f] There is no Zinc standard specified for H > 400; therefore, the standard for H=300-<400 is applied as a conservative comparison.

[g] Ramboll calculated health-based values for these two parameters based on toxicity values (tolerable daily intakes; TDI) and drinking water allocation factors (DW AFs), documented in Appendix IV.

TABLE GH-05: Summary of Analytical Results Compared to Secondary Screening Criteria for Selenium (GHO)

Sample Location	Sample ID	Sample Date (yyyy mm dd)	SPO/Compliance Point	Selenium µg/L
Groundwater Quality Benchmarks				
SPO			Elk River [GH_ER1 (E206661)	19
Compliance Point			Elk River [GH_ERC (E300090)]	15
			Fording River [GH_FR1 (0200378)]	63
Fording River Valley (Porter Creek Drainage) (^ denotes well part of Study Area 1)				
GH_MW-PC^	GH_MW-PC_WG_2021-01-04_NP	2021 03 18	GH_FR1 (0200378)	74
	GH_MW-PC_WG_2021-04-05_NP	2021 06 24	GH_FR1 (0200378)	81.4
	GH_MW-PC_WG_2021-07-05_NP	2021 09 02	GH_FR1 (0200378)	58.0
	GH_MW-PC_WG_2021-10-04_NP	2021 12 03	GH_FR1 (0200378)	63.7
Fording River Valley (Greenhills Creek Drainage) (+ denotes well part of Study Area 3)				
GH_MW_GHC_4B	GH_MW_GHC_4B_WG_2021_03_29_NP	2021 03 29	GH_FR1 (0200378)	13.0
	GH_MW_GHC_4B_WG_2021_06_22_NP	2021 06 22	GH_FR1 (0200378)	40.0
	GH_MW_MC10-A_WG_2021_06_22_NP	Duplicate	GH_FR1 (0200378)	38.2
	QA/QC RPD%			5
	GH_MW_GHC_4B_WG_2021_09_21_NP	2021 09 21	GH_FR1 (0200378)	80.3
GH_POTW17+	GH_POTW17_WG_2021-07-05_NP	2021 09 30	GH_FR1 (0200378)	11.1
	GH_POTW17_WG_2021-10-04_NP	2021 11 26	GH_FR1 (0200378)	12.6
Elk River Valley (denotes well part of Study Area 4)**				
GH_MW-MC-2D	GH_MW-MC-2D_WG_2021_03_23_NP	2021 03 23	GH_ERC (E300090)	88.5
GH_GA-MW-4**	GH_GA-MW-4_WG_2021-04-05_NP	2021 06 04	GH_ERC (E300090)	14.4
RG_MW_LC3A**	RG_MW_LC3A_WG_2021_03_03_NP	2021 03 03	GH_ER1 (E206661) / GH_ERC (E300090)	21.7
	RG_MW_LC3A_WG_2021_05_10_NP	2021 05 10	GH_ER1 (E206661) / GH_ERC (E300090)	58.3
	RG_MW_LC3A_WG_2021_08_16_NP	2021 08 16	GH_ER1 (E206661) / GH_ERC (E300090)	105
	RG_MW_LC3A_WG_2021_11_02_NP	2021 11 02	GH_ER1 (E206661) / GH_ERC (E300090)	46.6
RG_MW_LC3B**	RG_MW_LC3B_WG_2021_03_03_NP	2021 03 03	GH_ER1 (E206661) / GH_ERC (E300090)	14.6
	RG_MW_LC3B_WG_2021_05_11_NP	2021 05 11	GH_ER1 (E206661) / GH_ERC (E300090)	61.2
	RG_MW_LC3B_WG_2021_08_16_NP	2021 08 16	GH_ER1 (E206661) / GH_ERC (E300090)	176
	RG_MW_LC3B_WG_2021_11_02_NP	2021 11 02	GH_ER1 (E206661) / GH_ERC (E300090)	158
RG_MW_LCWC1**	RG_MW_LCWC1_WG_2021_03_02_NP	2021 03 02	GH_ER1 (E206661) / GH_ERC (E300090)	54.3
	RG_MW_LCWC1_WG_2021_05_11_NP	2021 05 11	GH_ER1 (E206661) / GH_ERC (E300090)	79.3
	RG_MW_LCWC1_WG_2021_08_16_NP	2021 08 16	GH_ER1 (E206661) / GH_ERC (E300090)	117
	RG_MW_LCWC1_WG_2021_11_02_NP	2021 11 02	GH_ER1 (E206661) / GH_ERC (E300090)	87.0
RG_MW_WC2A**	RG_MW_WC2A_WG_2021_03_03_NP	2021 03 03	GH_ER1 (E206661) / GH_ERC (E300090)	36.5
	RG_MW_WC2A_WG_2021_05_10_NP	2021 05 10	GH_ER1 (E206661) / GH_ERC (E300090)	37.5
	RG_MW_WC2A_WG_2021_08_16_NP	2021 08 16	GH_ER1 (E206661) / GH_ERC (E300090)	33.7
	RG_MW_WC2A_WG_2021_11_02_NP	2021 11 02	GH_ER1 (E206661) / GH_ERC (E300090)	25.8
RG_MW_WC2B**	RG_MW_WC2B_WG_2021_03_03_NP	2021 03 03	GH_ER1 (E206661) / GH_ERC (E300090)	52.9
	RG_MW_MC10A_WG_2021_03_03_NP	Duplicate	GH_ER1 (E206661) / GH_ERC (E300090)	50.7
	QA/QC RPD%			4
	RG_MW_WC2B_WG_2021_05_10_NP	2021 05 10	GH_ER1 (E206661) / GH_ERC (E300090)	44.1
	RG_MW_WC2B_WG_2021_08_16_NP	2021 08 16	GH_ER1 (E206661) / GH_ERC (E300090)	36.0
	RG_MW_WC2B_WG_2021_11_02_NP	2021 11 02	GH_ER1 (E206661) / GH_ERC (E300090)	49.0
GH_GA-MW-2**	GH_GA-MW-2_WG_2021-01-04_NP	2021 03 08	GH_ERC (E300090)	32.4
	GH_GA-MW-2_2021-04-05_NP	2021 04 23	GH_ERC (E300090)	36.5
	GH_GA-MW-2_WG_2021-07-05_NP	2021 09 01	GH_ERC (E300090)	18.8
	GH_GA-MW-2_WG_2021-10-04_NP	2021 10 01	GH_ERC (E300090)	33.2
GH_MW-ERSC-1**	GH_MW-ERSC-1_WG_2021-01-04_NP	2021 03 05	GH_ER1 (E206661)	62.8
	GH_MW-ERSC-1_WG_2021-07-05_NP	2021 09 17	GH_ER1 (E206661)	27.4
	GH_MW-ERSC-1_WG_2021-10-04_NP	2021 10 08	GH_ER1 (E206661)	32.0

All terms defined within the body of SNC-Lavalin's report.

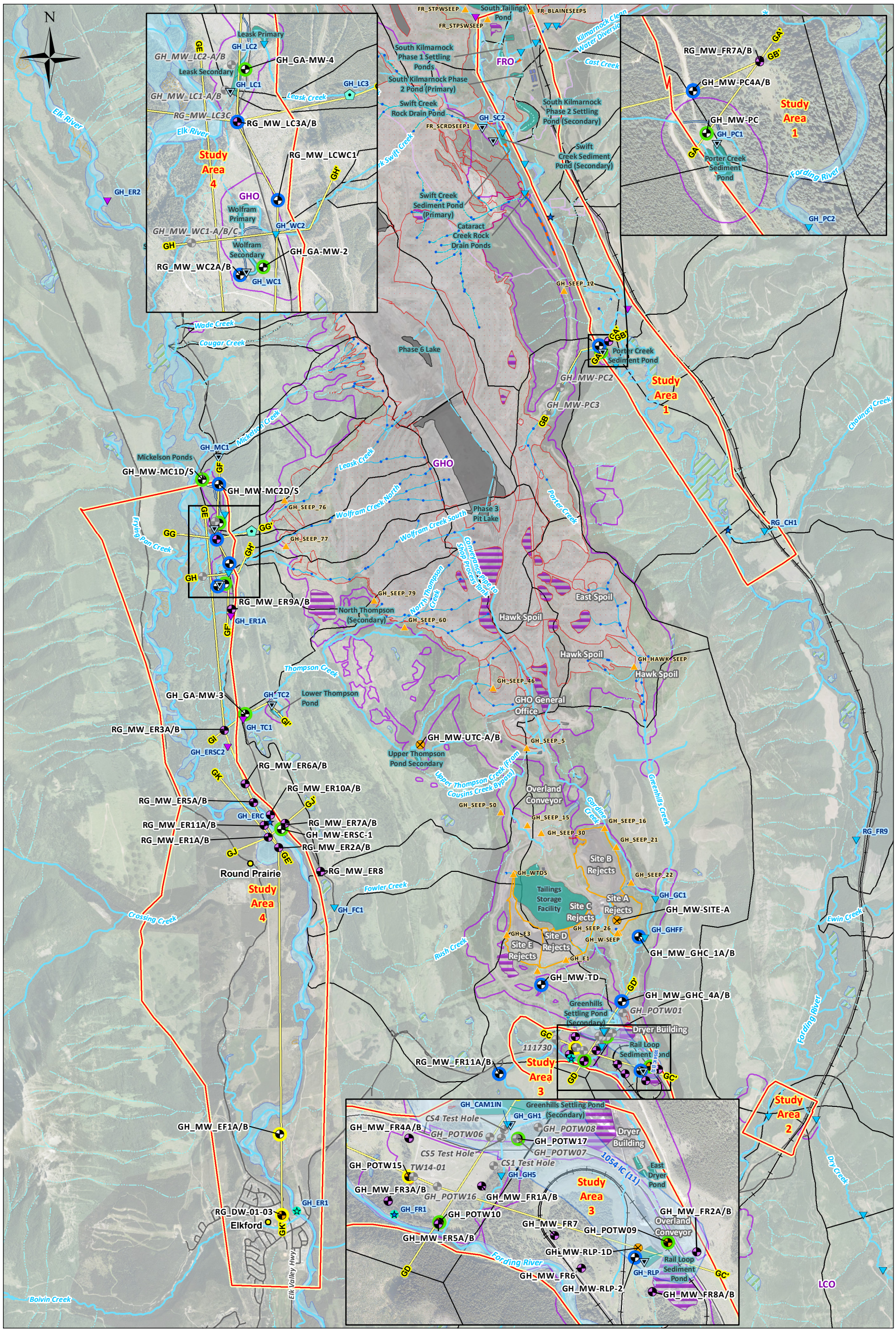
QA/QC RPD Denotes quality assurance/quality control relative percent difference

* RPDs are not calculated where one or more concentrations are less than five times RDL.

SHADED Concentration greater than SPO by Area/Compliance Point by Area

Drawings:

GH-01: Sample Location Plan – Greenhills Operations
GH-02: Greenhills Operations – Inferred Geological Cross Section GA-GA'
GH-03: Greenhills Operations – Inferred Geological Cross Section GB-GB'
GH-04: Greenhills Operations – Inferred Geological Cross Section GC-GC'
GH-05: Greenhills Operations – Inferred Geological Cross Section GD-GD'
GH-06: Greenhills Operations – Inferred Geological Cross Section GE-GE'
GH-07: Greenhills Operations – Inferred Geological Cross Section GF-GF'
GH-08: Greenhills Operations – Inferred Geological Cross Section GG-GG'
GH-09: Greenhills Operations – Inferred Geological Cross Section GH-GH'
GH-10: Greenhills Operations – Inferred Geological Cross Section GI-GI'
GH-11: Greenhills Operations – Inferred Geological Cross Section GJ-GJ'
GH-12: Greenhills Operations – Inferred Geological Cross Section GK-GK’
GH-13: Groundwater Elevations from Q4 2021 and Inferred Groundwater Flow Direction (East)
GH-14: Greenhills Operations – Spatial Distribution of Nitrate Nitrogen in Groundwater (East)
GH-15: Greenhills Operations – Spatial Distribution of Sulphate in Groundwater (East)
GH-16: Greenhills Operations – Spatial Distribution of Dissolved Cadmium Groundwater (East)
GH-17: Greenhills Operations – Spatial Distribution of Dissolved Selenium in Groundwater (East)
GH-18: Groundwater Elevations from Q4 2021 and Inferred Groundwater Flow Direction (West)
GH-19: Greenhills Operations – Spatial Distribution of Nitrate Nitrogen in Groundwater (West)
GH-20: Greenhills Operations – Spatial Distribution of Sulphate in Groundwater (West)
GH-21: Greenhills Operations – Spatial Distribution of Dissolved Cadmium Groundwater (West)
GH-22: Greenhills Operations – Spatial Distribution of Dissolved Selenium in Groundwater (West)



Legend

Groundwater Stations
- Monitoring Well
- Supply Well
- Well included in the RGMP
- Well included in the SSGMP
- Well included in both the RGMP and the SSGMP
- Monitoring Well (Other Programs)
- Decommissioned
- Monitoring Wells to be Considered for Inclusion in SSGMP and/or RGMP

Surface Water Stations
- Compliance Point
- Order Station
- Order Station and Compliance Point
- Receiving Environment
- Authorized Discharge
- Monitoring
- Hydrometric stations
- Seep

Site Features
- Secondary Road
- Rails
- Geological Cross Section
- Plant Site
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Mapped Aquifers
- Pit
- Stockpiles
- Waste Dump (Spoils)
- Watersheds
- FRO
- GHO

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:52000 Scale)

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.

References:
1. Information provided by Teck Coal Limited.
2.Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

0 0.2 0.4 0.8 1.2 1.6 2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

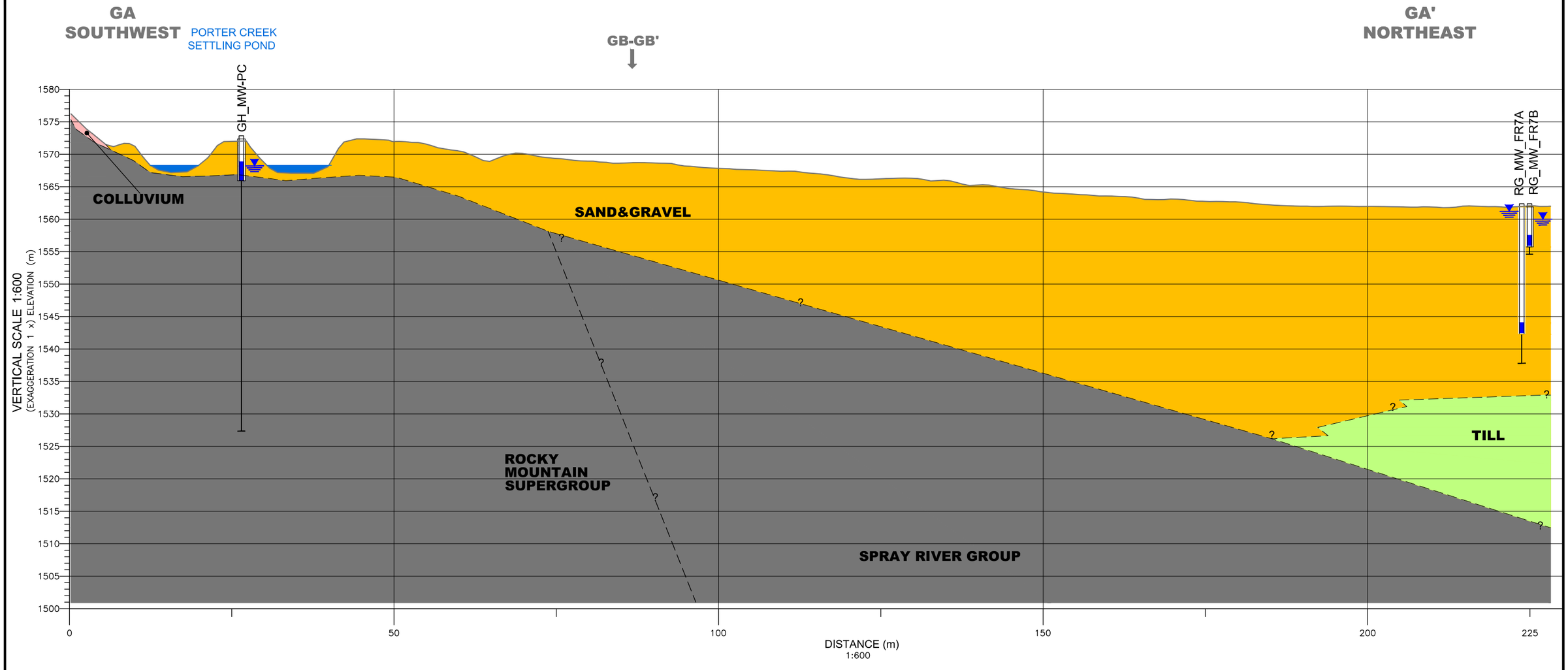
SNC·LAVALIN

Sample Location Plan - Greenhills Operations

CHK'D: RS | BY: CW | DATE: 2022-03-23 | SCALE: 1:52,000 | COORD SYS: NAD 1983 UTM Zone 11N | Ref Num: DRAWING GH-01

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GISMap Series\635544_2021 RGMP SSGMP Annual Report\635544-35-LocPlan_GHO.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



BOREHOLE LEGEND

- COLLUVIUM
- SAND & GRAVEL
- CLAY
- BEDROCK

INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4)

GH_MW-PC
SOLID PIPE
SLOTTED PIPE
END OF BOREHOLE

NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83)
5. THE INFERRED PRESENCE OF CLAY AT RG_MW_7A/B IS BASED ON CONTINUITY OF FINE-GRAINED UNIT ALONG FORDING RIVER VALLEY, ENCOUNTERED AT RG_MW_FR8A AND RG_MW_FR5A.

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-03-14	ISSUED TO CLIENT	AJK	KH

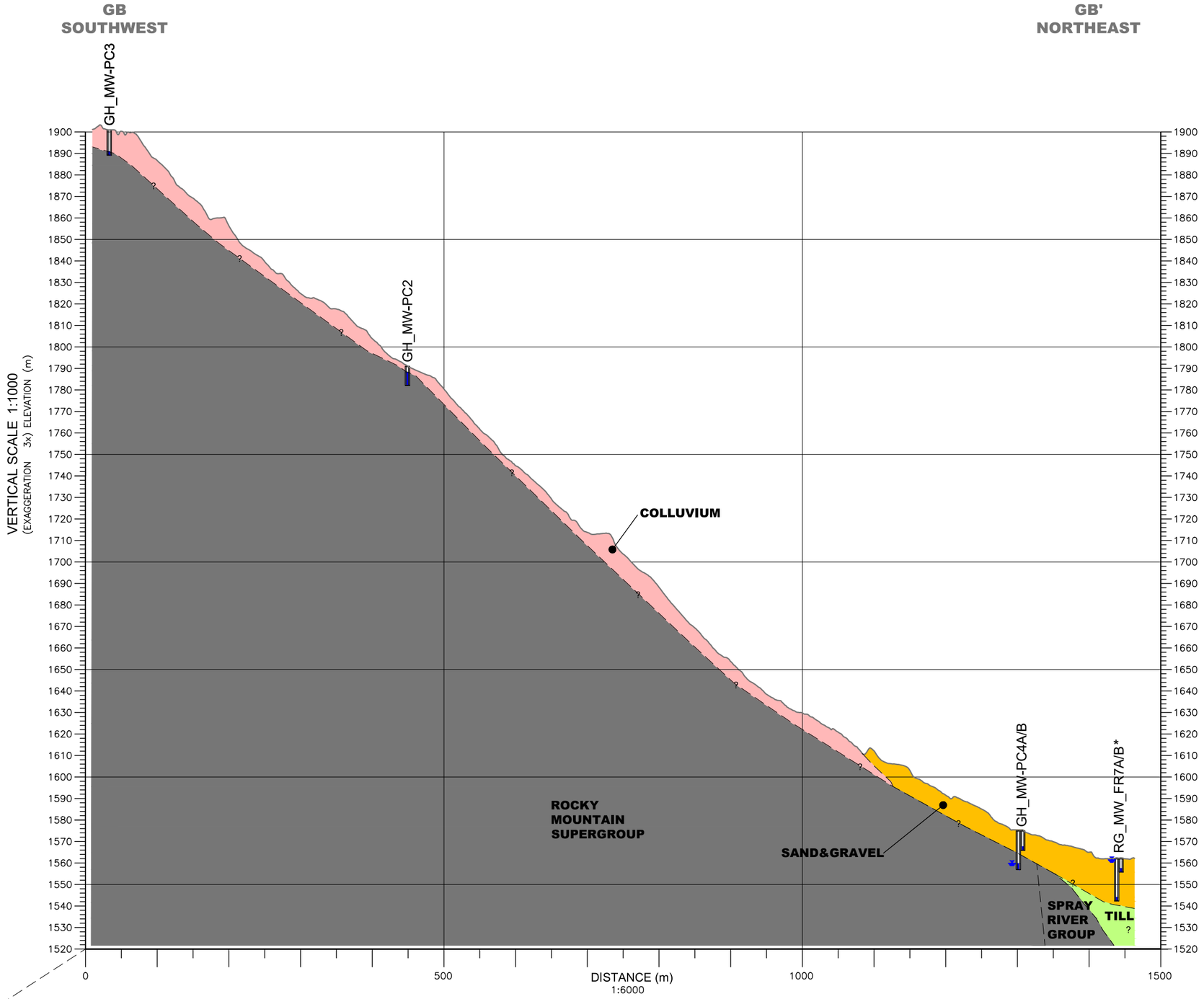
CLIENT NAME:
TECK COAL LIMITED
–

PROJECT LOCATION:
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATIONS
INFERRED GEOLOGICAL CROSS SECTION GA-GA'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: CH	PLOT: 20220314.1551	CADFILE: 635544-X2R18	**DRAWING GH-02**



COLLUVIUM
SAND & GRAVEL
TILL
BEDROCK

INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4)

EV_BCgw
(OS~70m)
WELL OFFSET FROM SECTION LINE
SOLID PIPE
SLOTTED PIPE
END OF BOREHOLE

NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.

FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83)

4. *=WELL LOCATION NOT INCLUDED AS PART OF THE FRO SSGMP OR RGMP. REFER TO THE 2020 RGMP UPDATE FOR BOREHOLE LOGS (SNC-LAVALIN, 2020a).

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-03-14	ISSUED TO CLIENT	AJK	KH

CLIENT NAME:
TECK COAL LIMITED
–

PROJECT LOCATION:
ELK VALLEY, BC
–

SNC·LAVALIN

TITLE:
GREENHILLS OPERATIONS
INFERRED GEOLOGICAL CROSS SECTION GB-GB'

DRN BY: AJK	SCALE: AS SHOWN	DATE: 2022-03-02	DWG No: REV.: 0
CHK'D: KH	PLOT: 20220314.1547	CADFILE:635544-X2R18	**DRAWING GH-03**

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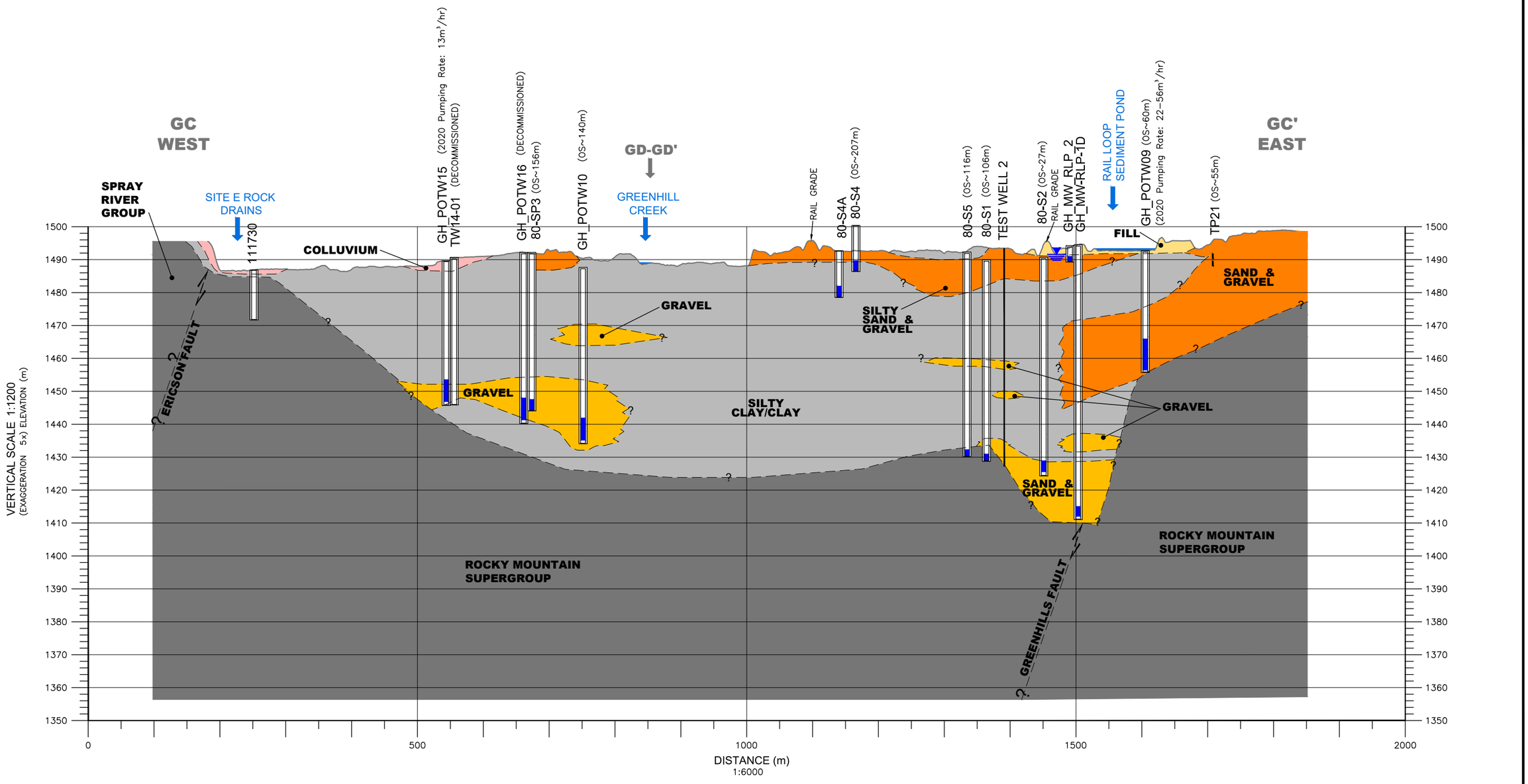

LEGEND

- FILL
- COLLUVIUM
- SAND & GRAVEL
- SAND
- SILT
- CLAY
- BEDROCK

INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4 MANUAL WATER LEVEL MEASUREMENT)

NORMAL FAULT

BOREHOLE LEGEND

EV_BCgw (OS~70m) — WELL OFFSET FROM SECTION LINE

SOLID PIPE

SLOTTED PIPE

END OF BOREHOLE

NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. DETAILED INSTALL RECORDS WERE NOT AVAILABLE FOR WELLS GH_POTW15, GH_POTW09 AND GH_POTW10. ESTIMATED 6m SCREEN.
5. GROUND SURFACE ELEVATION OF WELLS WAS OBTAINED FROM LIDAR. GROUNDWATER ELEVATIONS SHOWN ON SECTIONS WERE CALCULATED USING LIDAR GROUND SURFACE ELEVATIONS.

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-03-14	ISSUED TO CLIENT	AJK	KH

CLIENT NAME: TECK COAL LIMITED
–

PROJECT LOCATION: ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATONS
INFERRED GEOLOGICAL CROSS SECTION GC-GC'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: CH	PLOT: 20220314.1547	CADFILE: 635544-X2R18	**DRAWING GH-04**

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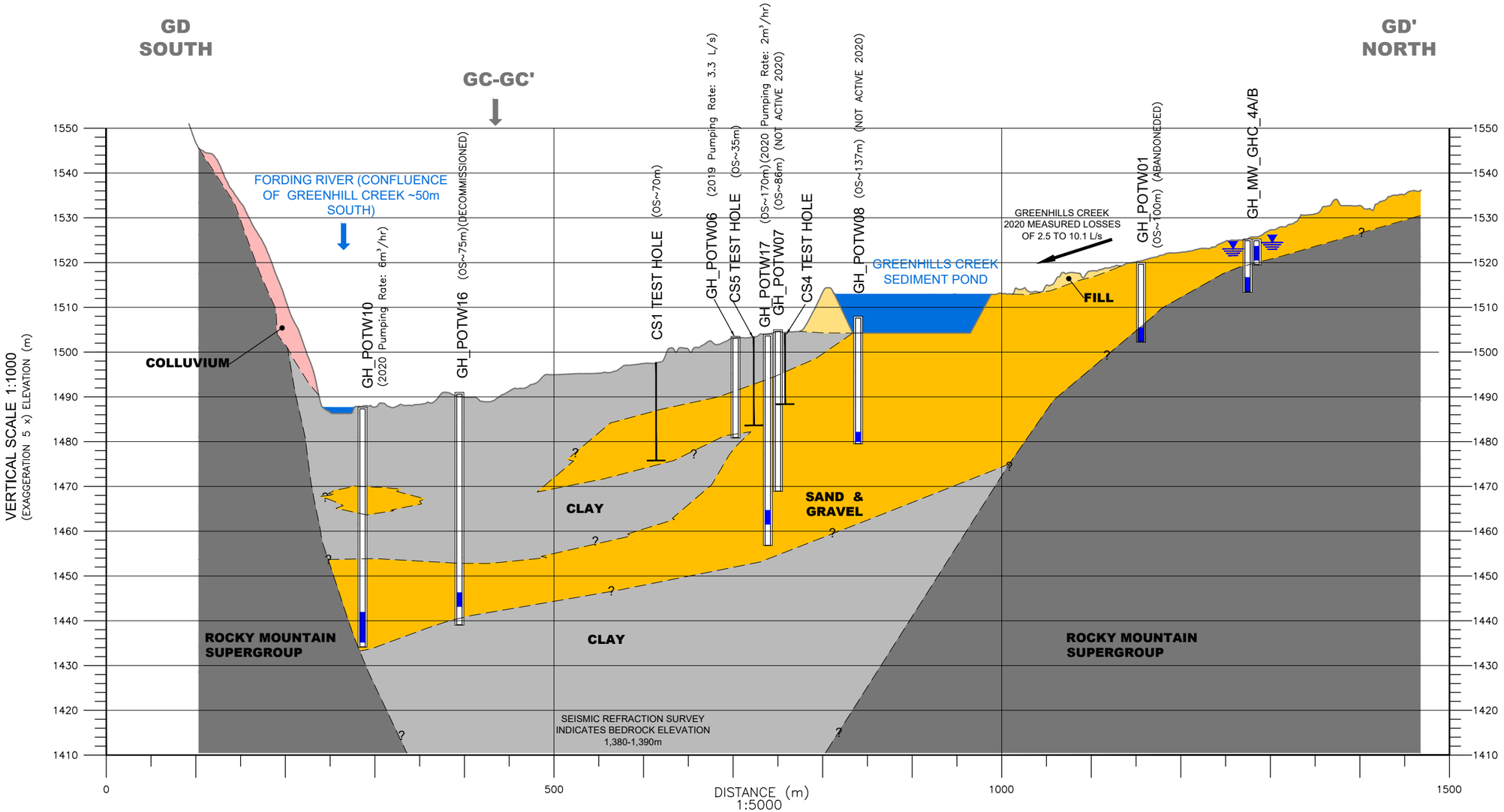


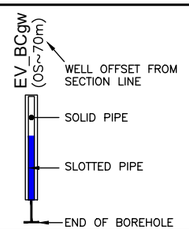
LEGEND

- FILL
- COLLUVIUM
- SAND & GRAVEL
- CLAY
- BEDROCK

– – – – INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4 MANUAL WATER LEVEL MEASUREMENT)

BOREHOLE LEGEND



NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. DETAILED INSTALL RECORDS WERE NOT AVAILABLE FOR WELL GH_POTW01 AND GH_POTW10. ESTIMATED 6m SCREEN.
5. GROUND SURFACE ELEVATION OF WELLS WAS OBTAINED FROM LIDAR. GROUNDWATER ELEVATIONS SHOWN ON SECTIONS WERE CALCULATED USING LIDAR GROUND SURFACE ELEVATIONS.

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-03-14	ISSUED TO CLIENT	AJK	KH

CLIENT NAME: TECK COAL LIMITED
–

PROJECT LOCATION: ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATONS
INFERRED GEOLOGICAL CROSS SECTION GD-GD'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: CH	PLOT: 20220314.1547	CADFILE: 635544-X2R18	**DRAWING GH-05**

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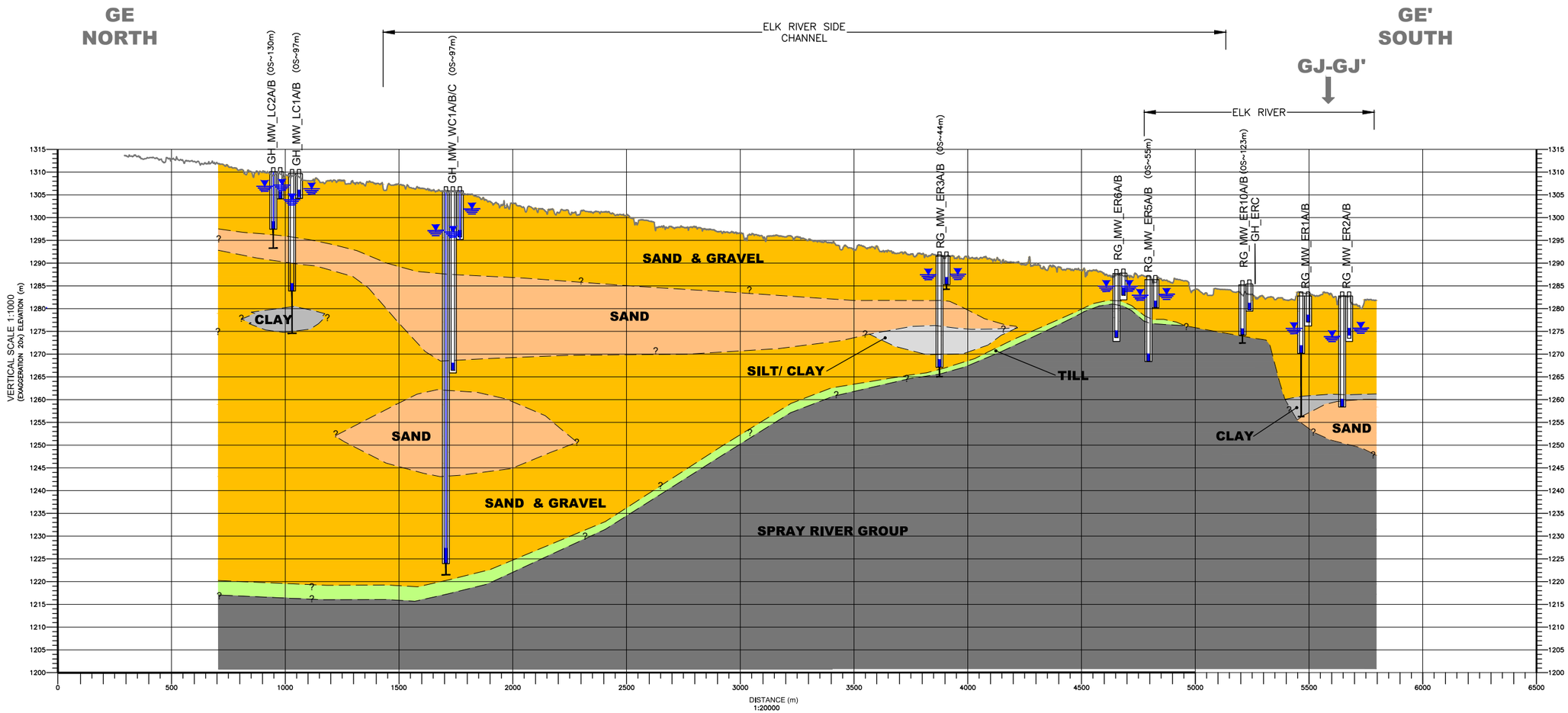

LEGEND

- SAND & GRAVEL
- SAND
- SILT
- CLAY
- TILL
- BEDROCK

– – – – INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4 MANUAL WATER LEVEL MEASUREMENT)

BOREHOLE LEGEND

EV_BCgw (0S~70m)

- WELL OFFSET FROM SECTION LINE
- SOLID PIPE
- SLOTTED PIPE
- END OF BOREHOLE

NOTES

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2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-03-14	ISSUED TO CLIENT	AJK	KH

CLIENT NAME: TECK COAL LIMITED
–

PROJECT LOCATION: ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATONS
INFERRED GEOLOGICAL CROSS SECTION GE-GE'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: CH	PLOT: 20220314.1546	CADFILE: 635544-X2R18	**DRAWING GH-06**

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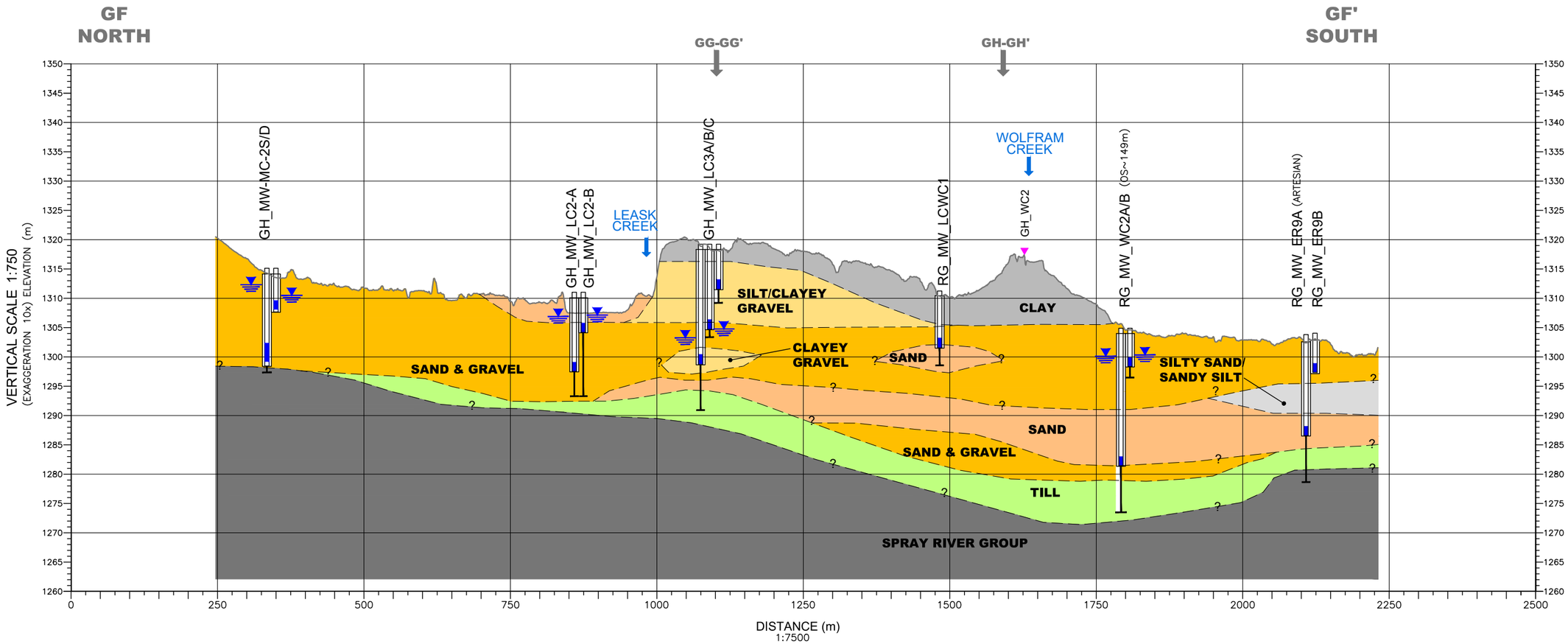


LEGEND

- SAND & GRAVEL
- SAND
- SILT
- CLAY
- TILL
- BEDROCK

– – – – INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4 MANUAL WATER LEVEL MEASUREMENT)

SURFACE WATER

BOREHOLE LEGEND

EV_BCgw (OS~70m)

WELL OFFSET FROM SECTION LINE

SOLID PIPE

SLOTTED PIPE

END OF BOREHOLE

NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. WATER LEVEL FOR RG_MW_ER9B IS FROM 2021-05-07.

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-03-14	ISSUED TO CLIENT	AJK	KH

CLIENT NAME: TECK COAL LIMITED
–

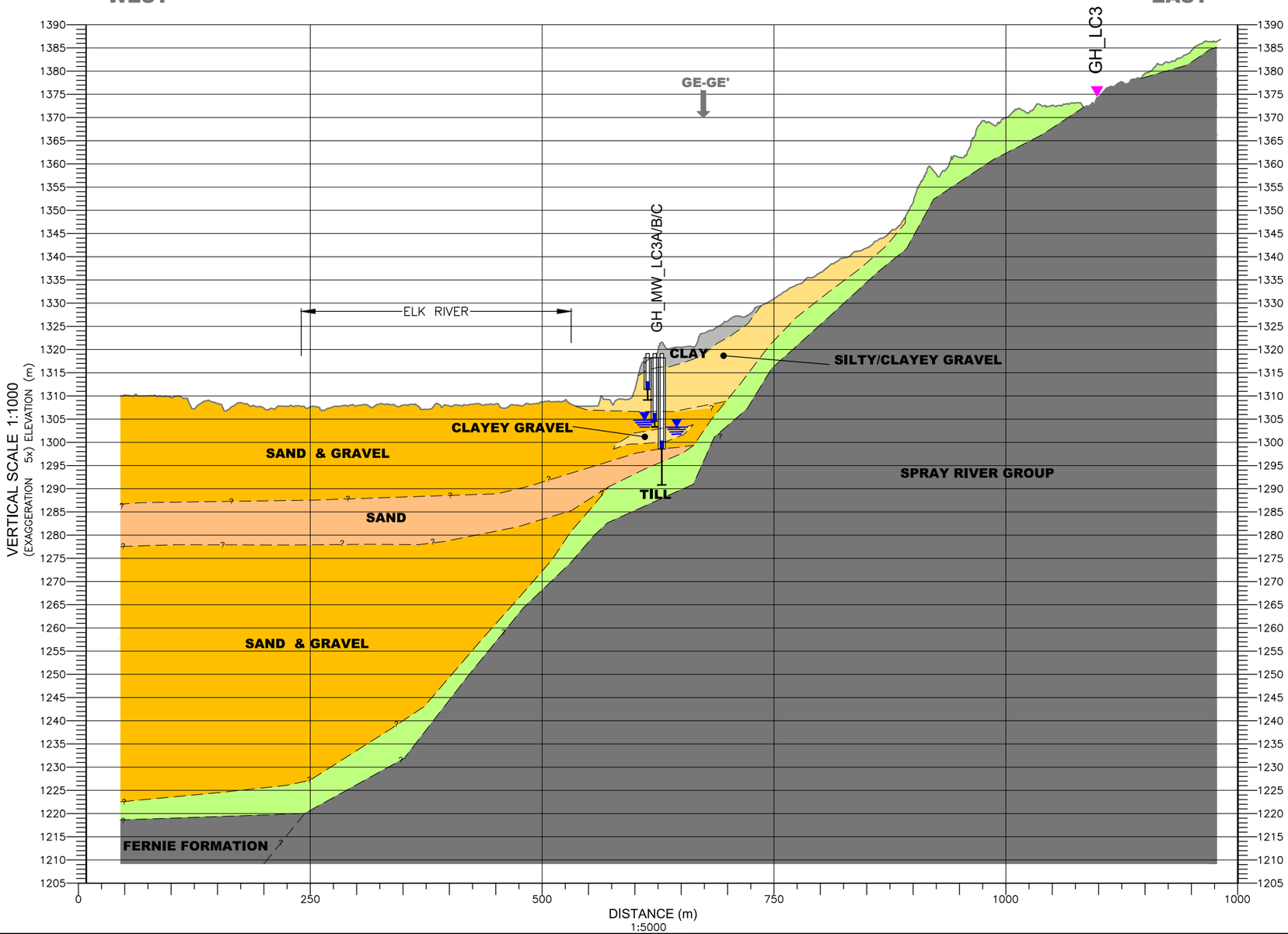
PROJECT LOCATION: ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATONS
INFERRED GEOLOGICAL CROSS SECTION GF-GF'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: CH	PLOT: 20220314.1546	CADFILE: 635544-X2R18	**DRAWING GH-07**

PATH: P:\CURRENT PROJECTS\TECK COAL LTD\SPO\635544\4.0 EXECUTION\4.5 GIS AND DRAWINGS\CAD\635544-X2R18.DWG



LEGEND

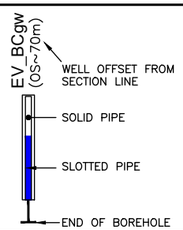
- SAND & GRAVEL
- GRAVEL
- SAND
- CLAY
- TILL
- BEDROCK

INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4 MANUAL WATER LEVEL MEASUREMENT)

SURFACE WATER

BOREHOLE LEGEND



NOTES

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2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. FRO LOCAL DATUM USED (ELEVATIONS ARE +0.94m HIGHER THAN UTM NAD83.)
5. BEDROCK TOPOGRAPHY ON THE WEST SIDE OF GHO WAS INFERRED BASED ON ELECTRICAL RESISTIVITY SURVEYS COMPLETED ALONG THE LENGTH OF LEASK CREEK IN OCTOBER 2019 BY ADVISIAN (2020).
6. TILL ON THE WEST SIDE OF GHO IS INFERRED BASED ON SURFICIAL MAPPING COMPLETED BY GOLDER (2014) – WEST SPOILS EXPANSION GEOMORPHOLOGICAL AND TERRAIN HAZARD ASSESSMENT.

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-03-14	ISSUED TO CLIENT	AJK	KH

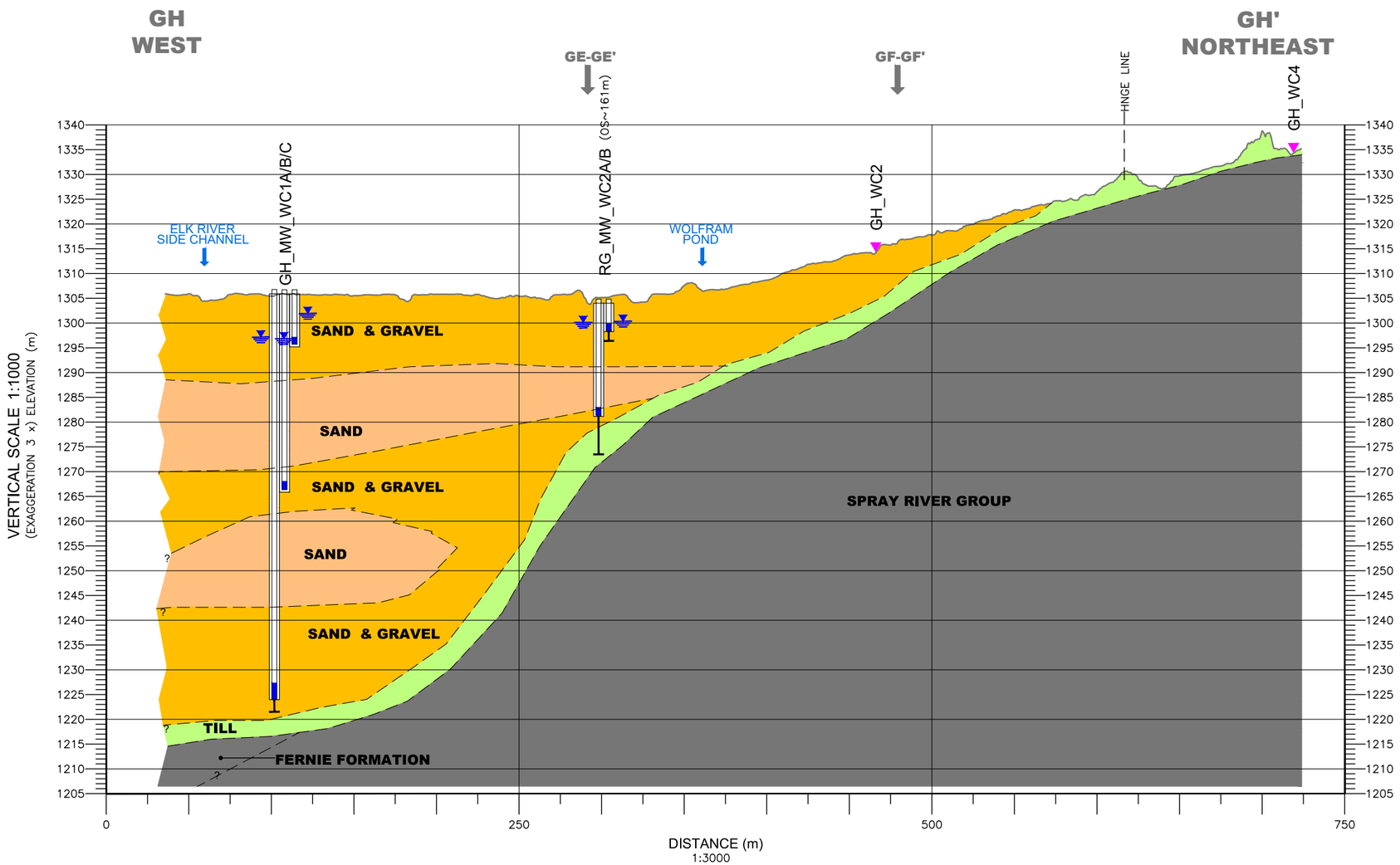
CLIENT NAME: TECK COAL LIMITED
–

PROJECT LOCATION: ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATONS
INFERRED GEOLOGICAL CROSS SECTION GG-GG'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: CH	PLOT: 20220314.1546	CADFILE: 635544-X2R18	**DRAWING GH-08**



LEGEND

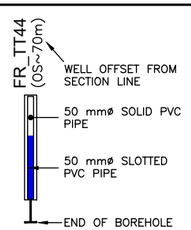
- SAND & GRAVEL
- SAND
- SILT
- CLAY
- TILL
- BEDROCK

INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4 MANUAL WATER LEVEL MEASUREMENT)

SURFACE WATER

BOREHOLE LEGEND



NOTES

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2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. BEDROCK TOPOGRAPHY ON THE WEST SIDE OF GHO WAS INFERRED BASED ON ELECTRICAL RESISTIVITY SURVEYS COMPLETED ALONG THE LENGTH OF WOLFRAM CREEK IN OCTOBER 2019 BY ADVISIAN (2020).
5. TILL ON THE WEST SIDE OF GHO IS INFERRED BASED ON SURFICIAL MAPPING COMPLETED BY GOLDER (2014) – WEST SPOILS EXPANSION GEOMORPHOLOGICAL AND TERRAIN HAZARD ASSESSMENT.

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-03-14	ISSUED TO CLIENT	AJK	KH

CLIENT NAME: TECK COAL LIMITED
–

PROJECT LOCATION: ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATONS
INFERRED GEOLOGICAL CROSS SECTION GH-GH'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: CH	PLOT: 20220314.1545	CADFILE: 635544-X2R18	**DRAWING GH-09**

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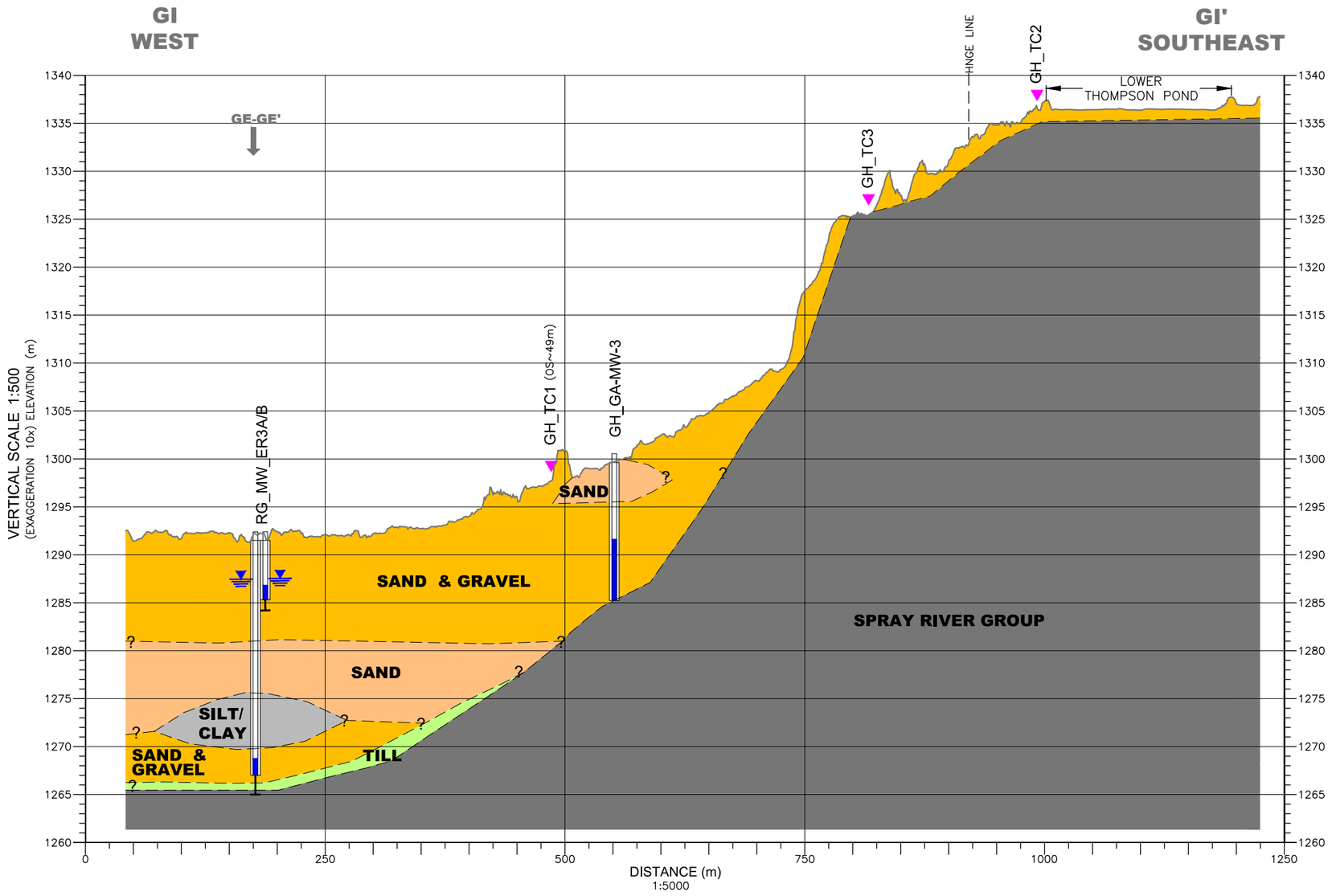


LEGEND

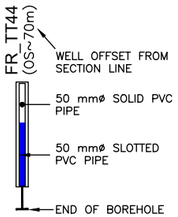
- SAND & GRAVEL
- SAND
- SILT
- CLAY
- TILL
- BEDROCK

– – – – INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4 MANUAL WATER LEVEL MEASUREMENT)

SURFACE WATER

BOREHOLE LEGEND



NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. BEDROCK TOPOGRAPHY ON THE WEST SIDE OF GHO WAS INFERRED BASED ON ELECTRICAL RESISITIVITY SURVEYS COMPLETED ALONG THE LENGTH OF THOMSON CREEK IN OCTOBER 2019 BY ADVISIAN (2020).
5. SURFICIAL GEOLOGY ON THE WEST SIDE OF GHO IS INFERRED BASED ON SURFICIAL MAPPING COMPLETED BY GOLDER (2014) – WEST SPOILS EXPANSION GEOMORPHOLOGICAL AND TERRAIN HAZARD ASSESSMENT. SAND AND GRAVEL WAS INFERRED BASED ON A MAPPED ALLUVIAL FAN COINCIDENT WITH THE SECTION LINE.

REFERENCE DRAWINGS

–	–	–
DWG. NO.	DATE	DESCRIPTION

REVISIONS

0	2022–03–14	ISSUED TO CLIENT	AJK	KH
REV.	DATE	DESCRIPTION	BY	CHK

CLIENT NAME:
TECK COAL LIMITED
–

PROJECT LOCATION:
ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATONS
INFERRED GEOLOGICAL CROSS SECTION GI-GI'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020–02–10	DWG No: REV.: **0**
CHK'D: CH	PLOT: 20220314.1545	CADFILE: 635544–X2R18	**DRAWING GH-10**

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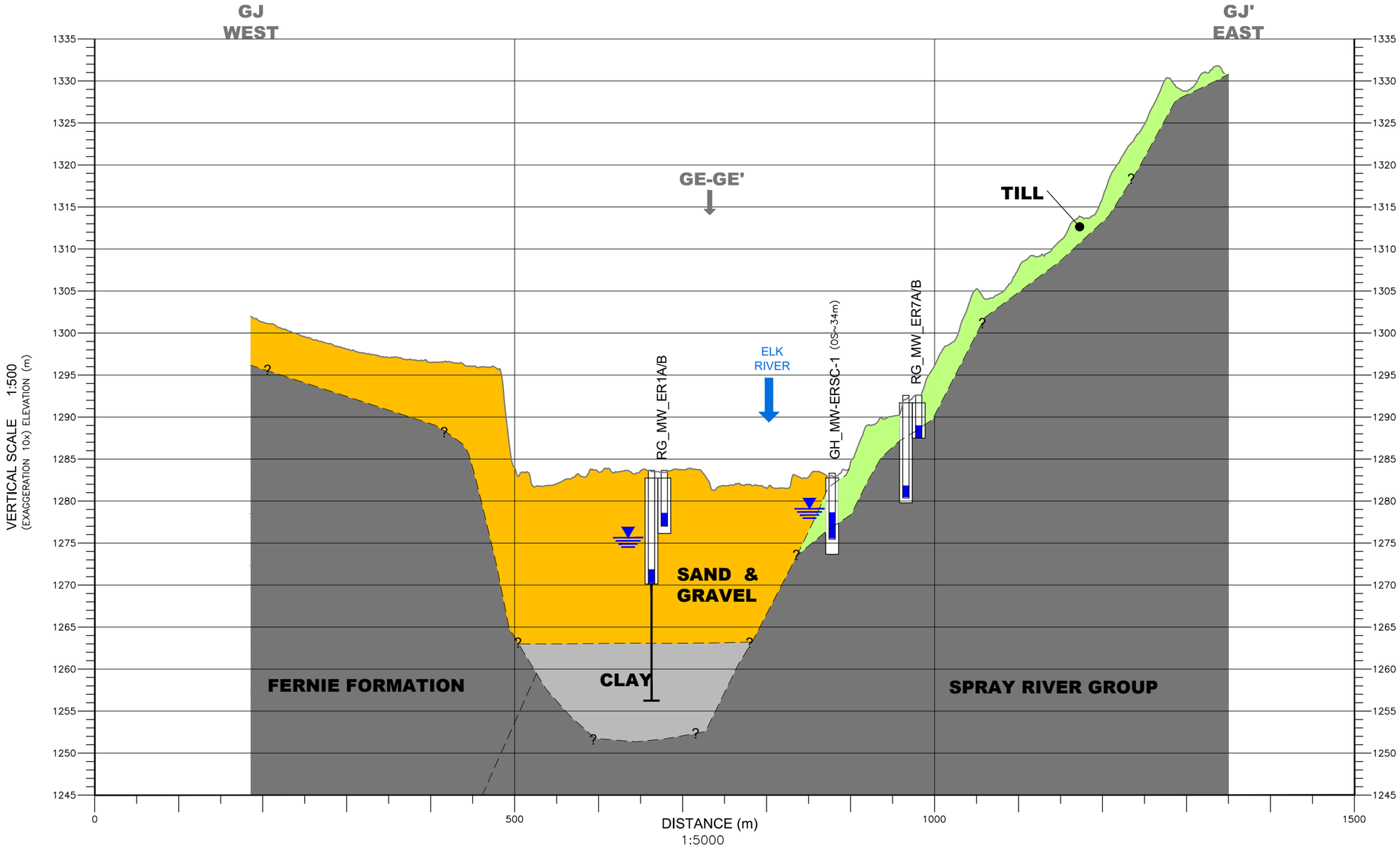

LEGEND

- SAND & GRAVEL
- SAND
- SILT
- CLAY
- TILL
- BEDROCK

– – – – INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4)
MANUAL WATER LEVEL MEASUREMENT)

BOREHOLE LEGEND

EV_BCgw (OS~70m)
WELL OFFSET FROM SECTION LINE
SOLID PIPE
SLOTTED PIPE
END OF BOREHOLE

NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.
4. BEDROCK SURFACE TOPOGRAPHY ON THE WEST SIDE OF THE ELK VALLEY WAS INFERRED BASED ON AN OUTCROP PROVIDED IN BC GEOLOGICAL SURVEY PRELIMINARY MAP 63.
5. TILL ON THE EAST SIDE OF THE ELK VALLEY WAS INFERRED BASED ON MAPPING OF SURFICIAL GEOLOGY (GEORGE ET AL., 1986).

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022–03–14	ISSUED TO CLIENT	AJK	KH

CLIENT NAME: TECK COAL LIMITED
–

PROJECT LOCATION: ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATONS
INFERRED GEOLOGICAL CROSS SECTION GJ-GJ'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020–02–10	DWG No: REV.: 0
CHK'D: CH	PLOT: 20220314.1545	CADFILE: 635544–X2R18	**DRAWING GH-11**

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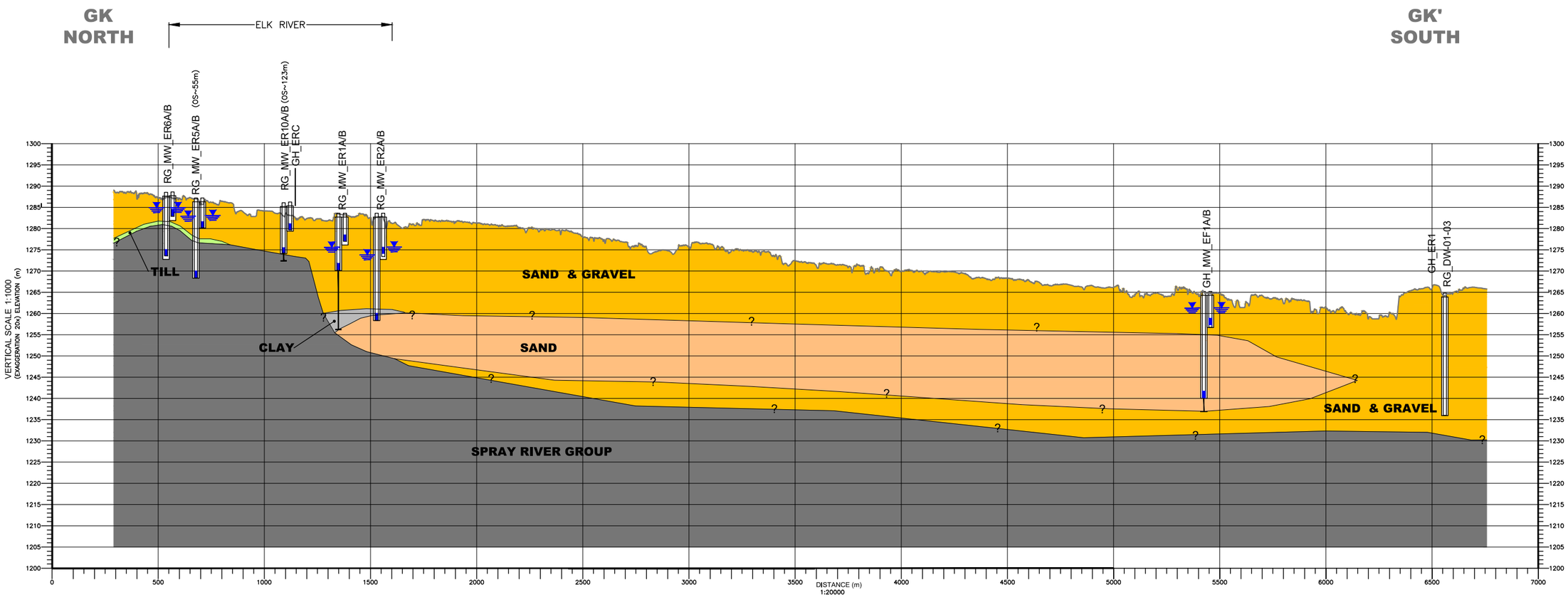

LEGEND

- SAND & GRAVEL
- SAND
- SILT
- CLAY
- TILL
- BEDROCK

– – – – INFERRED STRATIGRAPHIC BOUNDARY

GROUNDWATER ELEVATION (2021 Q4)
MANUAL WATER LEVEL MEASUREMENT)

BOREHOLE LEGEND

EV_BCgw (0S~70m) — WELL OFFSET FROM SECTION LINE

SOLID PIPE

SLOTTED PIPE

END OF BOREHOLE

NOTES

1. THE CROSS SECTION DEPICTED IS BASED ON INTERPRETATION OF LIMITED GEOLOGICAL DATA. ACTUAL GEOLOGICAL CONDITIONS MAY BE DIFFERENT FROM THOSE INTERPRETED.
2. INFORMATION PRESENTED IS WITHIN 25m OF SECTION LINE UNLESS INDICATED OTHERWISE ON DRAWING.
3. ORIGINAL DRAWING IN COLOUR.

REFERENCE DRAWINGS

DWG. NO.	DATE	DESCRIPTION
–	–	–

REVISIONS

REV.	DATE	DESCRIPTION	BY	CHK
0	2022-03-14	ISSUED TO CLIENT	AJK	KH

CLIENT NAME: TECK COAL LIMITED
–

PROJECT LOCATION: ELK VALLEY, BC

SNC·LAVALIN

TITLE:
GREENHILLS OPERATONS
INFERRED GEOLOGICAL CROSS SECTION GK-GK'

DWN BY: AJK	SCALE: AS SHOWN	DATE: 2020-02-10	DWG No: REV.: 0
CHK'D: KMC	PLOT: 20220322.1220	CADFILE: 635544-X2R18	**DRAWING GH-12**

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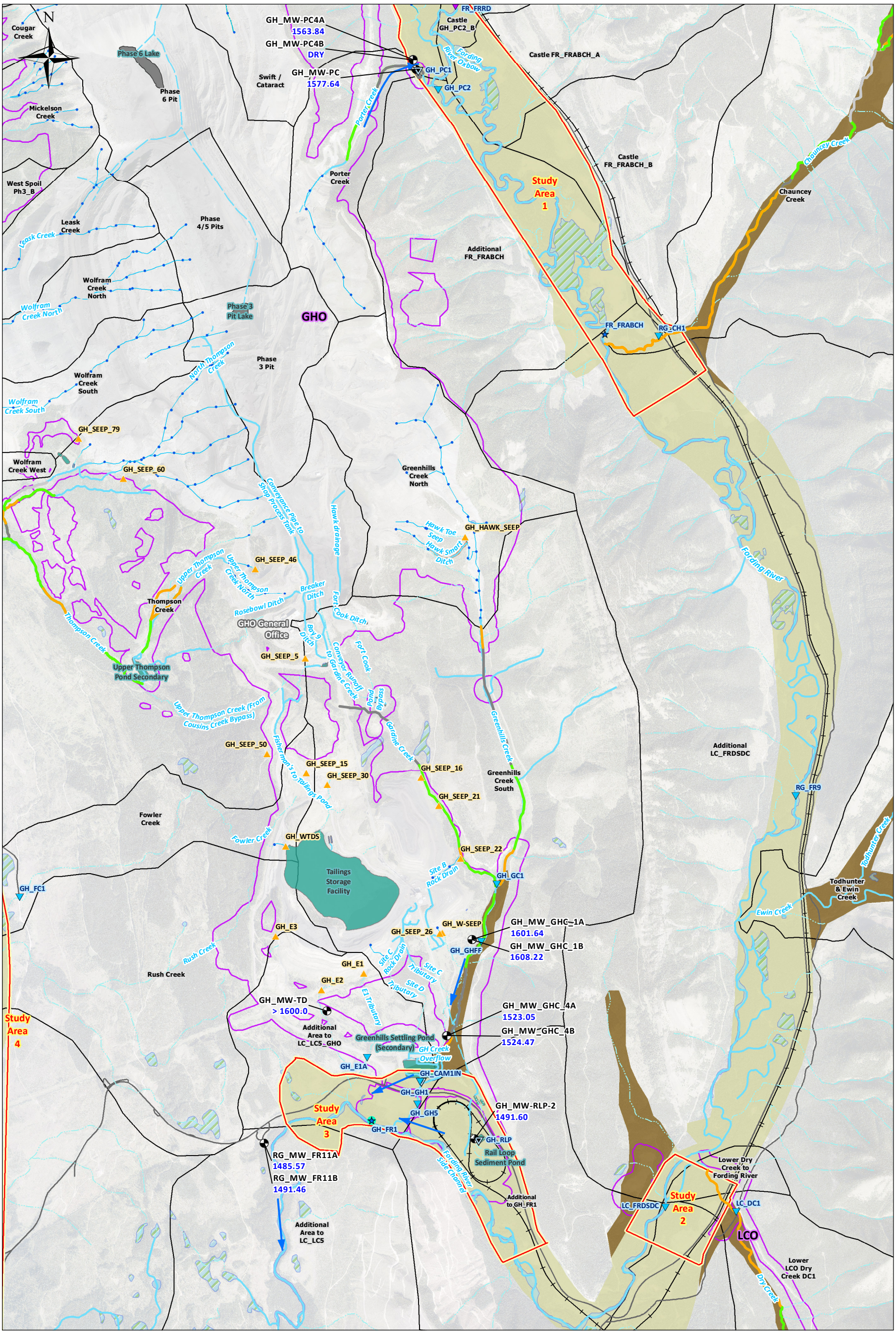


Legend

Groundwater Stations
- Monitoring Well

Surface Water Stations
- Compliance Point
- Order Station and Compliance Point
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Flow Accretion
- Gaining
- Losing
- Dry

- No Change
- Insufficient Information

Site Features
- Secondary Road
- Rails
- Interpreted GW flow direction
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- Mine Permitted Areas
- Interpreted Tributary Valley-bottom Extent
- Interpreted Main Valley-bottom Extent

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:35000 Scale)

1275.71 Water level Q3/Q4 (masl) - used in contouring

Castle FR_FRABCH_A Watershed ID

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Flow accretion studies completion dates:
· Elk River, Fording River: combined 2020/2021 studies
· Greenhills and Gardine Creek: August 2020
· Upper Greenhills Creek: March 2021
· Porter Creek: June 2021
· Dry Creek: November 2018
· Chauncey Creek: July, September, and November 2020

References:
1. Information provided by Teck Coal Limited.

0 250 500 1,000 1,500 Meters

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

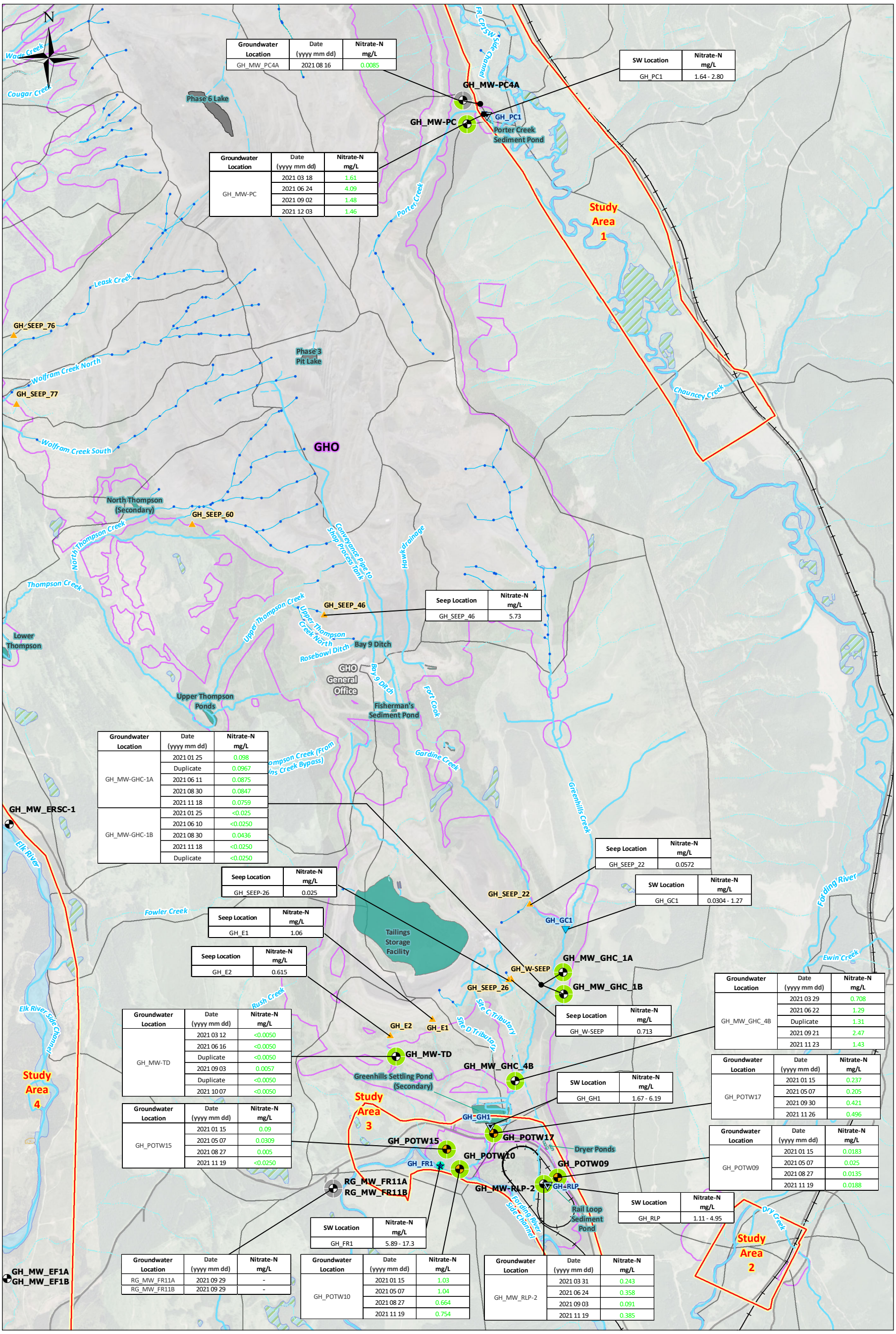
SNC·LAVALIN

Groundwater Elevations from Q4 2021 and Inferred Groundwater Flow Direction (East)

CHK'D: RS | DATE: 2022-03-23 | SCALE: 1:35,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING GH-13

MXD Path: \\SLI4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-36-GWElev_GHO_E.mxd

Project Path: \\SLI4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Legend

Groundwater Stations[4]
- Monitoring
- Supply

Surface Water Stations
- Order Station and Compliance Point
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:45000 Scale)

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Nitrate-N mg/L
CSR Aquatic Life	400
CSR Irrigation Watering	n/a
CSR Livestock Watering	100
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. Nitrate-N = Nitrate Nitrogen

References:
1. Data provided by Teck Coal Limited.

0 0.15 0.3 0.6 0.9 1.2 1.5 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

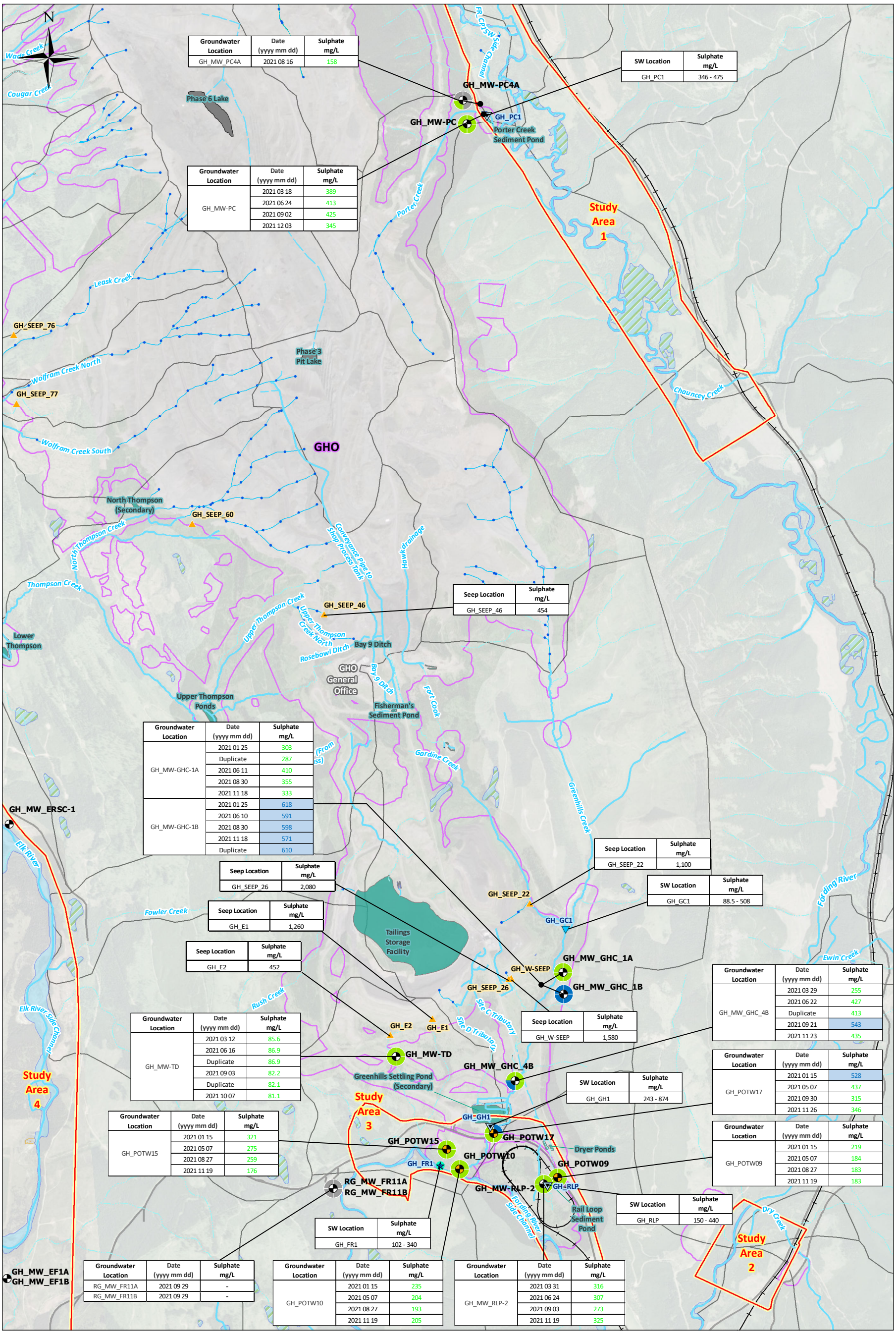
SNC·LAVALIN

Greenhills Operations - Spatial Distribution of Nitrate Nitrogen in Groundwater (East)

CHK'D: RS | DATE: 2022-03-17 | SCALE: 1:35,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING GH-14

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GISMap Series\635544_2021 RGMP SSGMP Annual Report\635544-52-SpatialDist_N_GHO_E.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Legend

Groundwater Stations[4]
- Monitoring
- Supply

Surface Water Stations
- Order Station and Compliance Point
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:45000 Scale)

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Sulphate mg/L
CSR Aquatic Life	1,280-4,290
CSR Irrigation Watering	n/a
CSR Livestock Watering	1,000
CSR Drinking Water	500

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.15 0.3 0.6 0.9 1.2 1.5 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

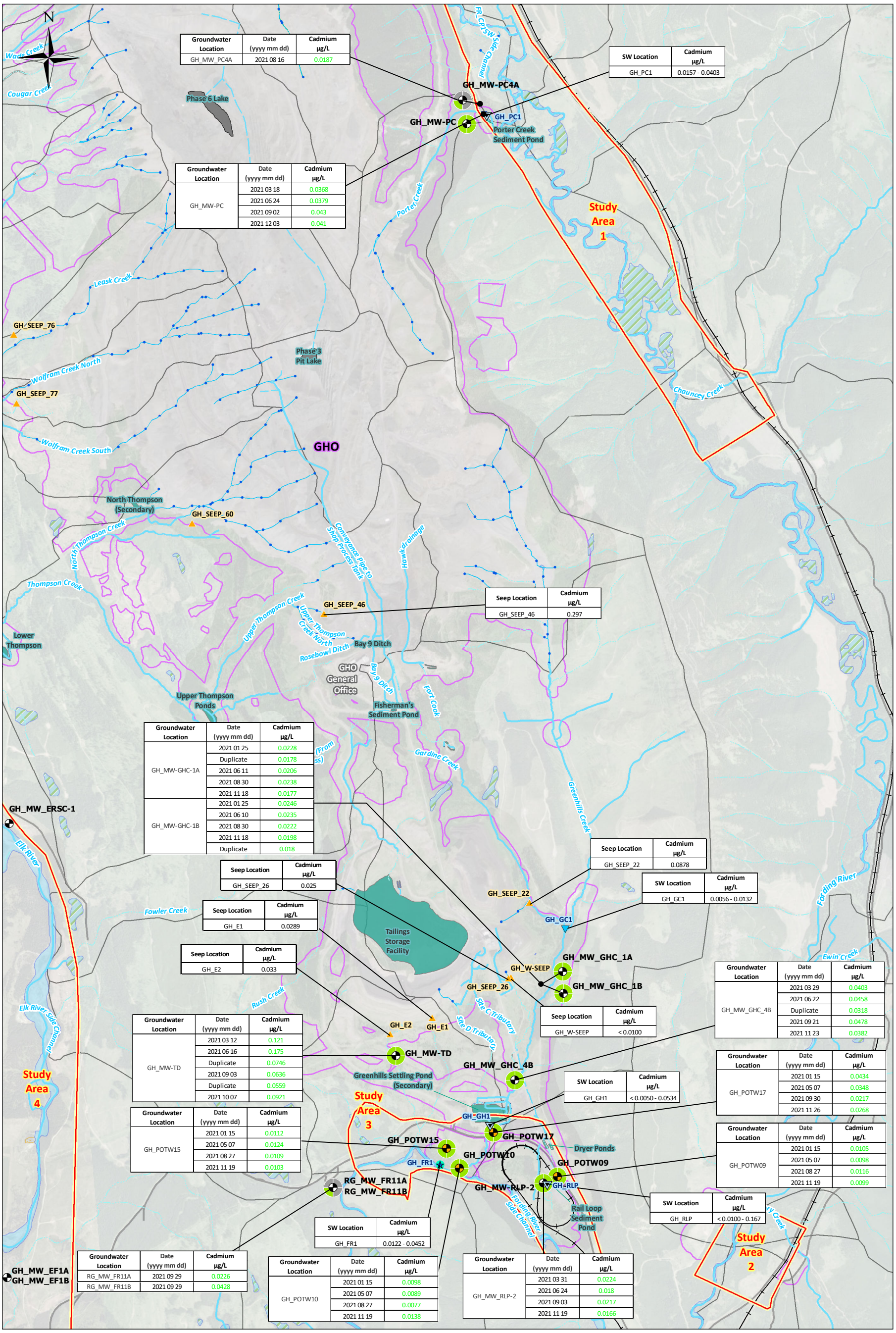
SNC·LAVALIN

Greenhills Operations - Spatial Distribution of Sulphate in Groundwater (East)

CHK'D: RS | BY: CW | DATE: 2022-03-17 | SCALE: 1:35,000 | COORD SYS: NAD 1983 UTM Zone 11N | Ref Num: DRAWING GH-15

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GISMap Series\635544_2021 RGMP SSGMP Annual Report\635544-53-SpatialDist_SO4_GHO_E.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW_PC4A	2021 08 16	0.0187

SW Location	Cadmium µg/L
GH_PC1	0.0157 - 0.0403

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-PC	2021 03 18	0.0368
	2021 06 24	0.0379
	2021 09 02	0.043
	2021 12 03	0.041

Seep Location	Cadmium µg/L
GH_SEEP_46	0.297

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-GHC-1A	2021 01 25	0.0228
	Duplicate	0.0178
	2021 06 11	0.0206
	2021 08 30	0.0238
	2021 11 18	0.0177
GH_MW-GHC-1B	2021 01 25	0.0246
	2021 06 10	0.0235
	2021 08 30	0.0222
	2021 11 18	0.0198
	Duplicate	0.018

Seep Location	Cadmium µg/L
GH_SEEP_22	0.0878

SW Location	Cadmium µg/L
GH_GC1	0.0056 - 0.0132

Seep Location	Cadmium µg/L
GH_SEEP_26	0.025

Seep Location	Cadmium µg/L
GH_E1	0.0289

Seep Location	Cadmium µg/L
GH_E2	0.033

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW_GHC_4B	2021 03 29	0.0403
	2021 06 22	0.0458
	Duplicate	0.0318
	2021 09 21	0.0478
	2021 11 23	0.0382

Seep Location	Cadmium µg/L
GH_W-SEEP	< 0.0100

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-TD	2021 03 12	0.121
	2021 06 16	0.175
	Duplicate	0.0746
	2021 09 03	0.0636
	Duplicate	0.0559
	2021 10 07	0.0921

SW Location	Cadmium µg/L
GH_GH1	< 0.0050 - 0.0534

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_POTW17	2021 01 15	0.0434
	2021 05 07	0.0348
	2021 09 30	0.0217
	2021 11 26	0.0268

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_POTW15	2021 01 15	0.0112
	2021 05 07	0.0124
	2021 08 27	0.0109
	2021 11 19	0.0103

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_POTW09	2021 01 15	0.0105
	2021 05 07	0.0098
	2021 08 27	0.0116
	2021 11 19	0.0099

SW Location	Cadmium µg/L
GH_RLP	< 0.0100 - 0.167

SW Location	Cadmium µg/L
GH_FR1	0.0122 - 0.0452

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
RG_MW_FR11A	2021 09 29	0.0226
RG_MW_FR11B	2021 09 29	0.0428

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_POTW10	2021 01 15	0.0098
	2021 05 07	0.0089
	2021 08 27	0.0077
	2021 11 19	0.0138

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-RLP-2	2021 03 31	0.0224
	2021 06 24	0.018
	2021 09 03	0.0217
	2021 11 19	0.0166

Legend

Groundwater Stations[4]
- Monitoring
- Supply

Surface Water Stations
- Order Station and Compliance Point
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:45000 Scale)

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

^ Dissolved phase of the parameter is shown in the spatial plot.

Primary Screening Criteria	Cadmium^ µg/L
CSR Aquatic Life	0.5-4
CSR Irrigation Watering	5
CSR Livestock Watering	80
CSR Drinking Water	5

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.15 0.3 0.6 0.9 1.2 1.5 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

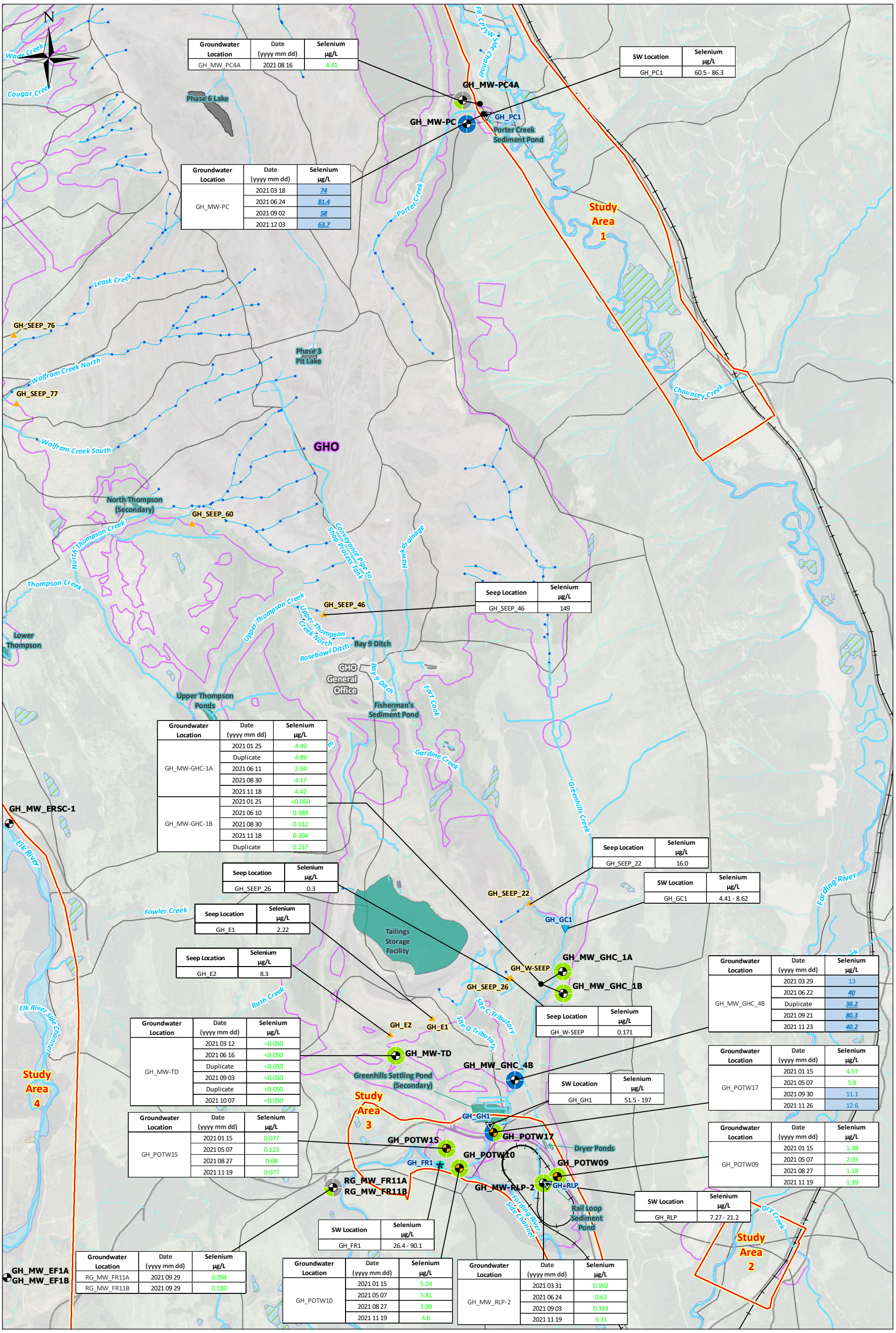
SNC·LAVALIN

Greenhills Operations - Spatial Distribution of Dissolved Cadmium in Groundwater (East)

CHK'D: RS | DATE: 2022-03-17 | SCALE: 1:35,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING GH-16

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-54-SpatialDist_Cd_GHO_E.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW_PC4A	2021 08 16	4.41

SW Location	Selenium µg/L
GH_PC1	60.5 - 86.3

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-PC	2021 03 18	74
	2021 06 24	81.4
	2021 09 02	58
	2021 12 03	63.7

Seep Location	Selenium µg/L
GH_SEEP_46	149

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-GHC-1A	2021 01 25	4.49
	Duplicate	4.89
	2021 06 11	2.94
	2021 08 30	4.17
	2021 11 18	4.42
GH_MW-GHC-1B	2021 01 25	<0.050
	2021 06 10	0.389
	2021 08 30	0.112
	2021 11 18	0.304
	Duplicate	0.237

Seep Location	Selenium µg/L
GH_SEEP_22	16.0

SW Location	Selenium µg/L
GH_GC1	4.41 - 8.62

Seep Location	Selenium µg/L
GH_SEEP_26	0.3

Seep Location	Selenium µg/L
GH_E1	2.22

Seep Location	Selenium µg/L
GH_E2	8.3

Seep Location	Selenium µg/L
GH_W-SEEP	0.171

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-TD	2021 03 12	<0.050
	2021 06 16	<0.050
	Duplicate	<0.050
	2021 09 03	<0.050
	Duplicate	<0.050
	2021 10 07	<0.050

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW_GHC_4B	2021 03 29	13
	2021 06 22	40
	Duplicate	38.2
	2021 09 21	80.3
	2021 11 23	40.2

SW Location	Selenium µg/L
GH_GH1	51.5 - 197

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_POTW17	2021 01 15	4.57
	2021 05 07	5.8
	2021 09 30	11.1
	2021 11 26	12.6

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_POTW15	2021 01 15	0.077
	2021 05 07	0.123
	2021 08 27	0.08
	2021 11 19	0.077

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_POTW09	2021 01 15	1.38
	2021 05 07	2.03
	2021 08 27	1.18
	2021 11 19	1.39

SW Location	Selenium µg/L
GH_FR1	26.4 - 90.1

SW Location	Selenium µg/L
GH_RLP	7.27 - 21.2

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
RG_MW_FR11A	2021 09 29	0.394
RG_MW_FR11B	2021 09 29	0.183

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_POTW10	2021 01 15	5.24
	2021 05 07	5.81
	2021 08 27	3.99
	2021 11 19	4.6

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW_RLP-2	2021 03 31	0.992
	2021 06 24	0.63
	2021 09 03	0.314
	2021 11 19	3.31

Legend

Groundwater Stations[4]
- Monitoring
- Supply

Surface Water Stations
- Order Station and Compliance Point
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:45000 Scale)

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

^ Dissolved phase of the parameter is shown in the spatial plot.

Primary Screening Criteria	Selenium^ µg/L
CSR Aquatic Life	20
CSR Irrigation Watering	20
CSR Livestock Watering	30
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.15 0.3 0.6 0.9 1.2 1.5 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

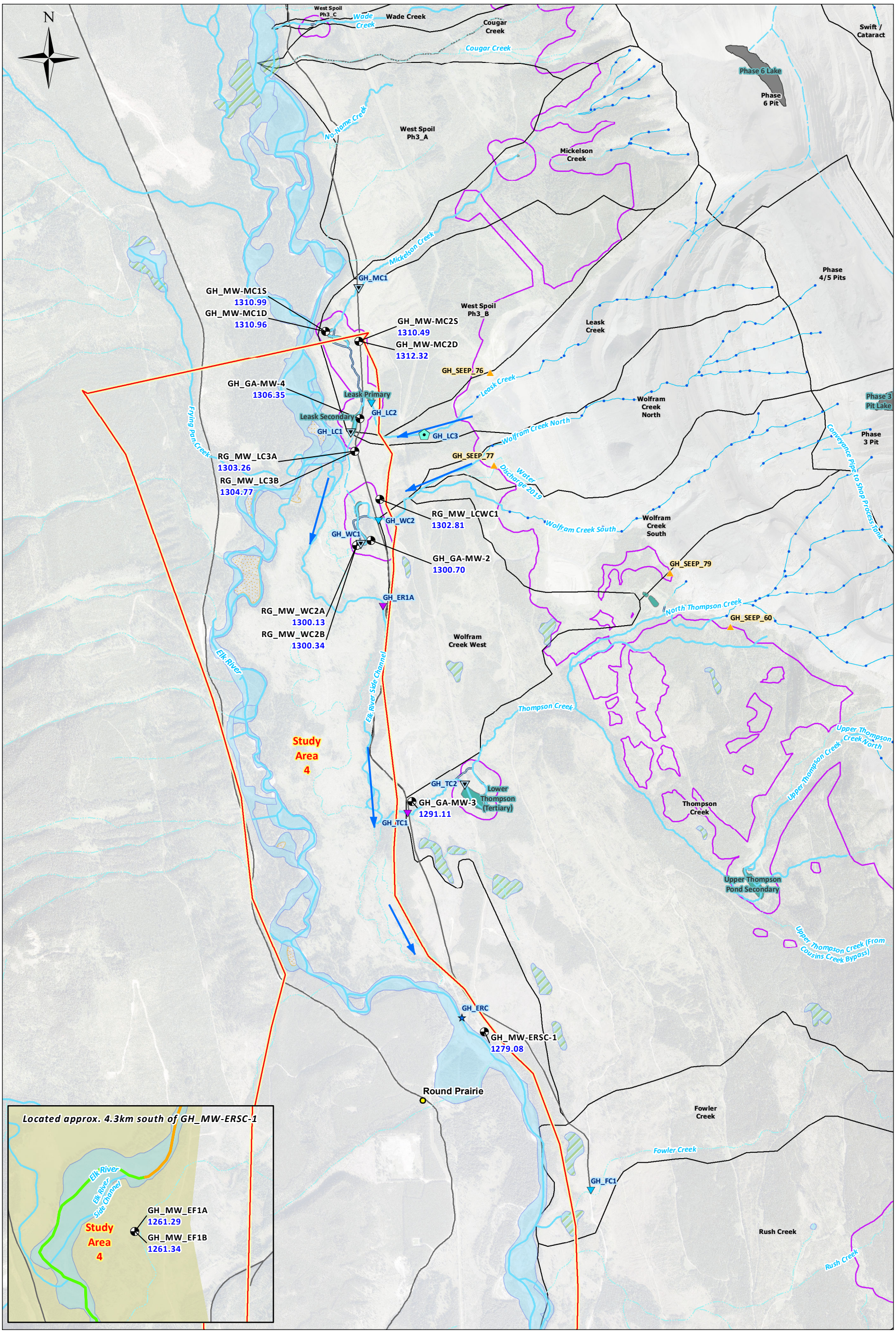
SNC·LAVALIN

Greenhills Operations - Spatial Distribution of Dissolved Selenium in Groundwater (East)

CHK'D: RS | DATE: 2022-03-17 | SCALE: 1:35,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING GH-17

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-55-SpatialDist_Se_GHO_E.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Legend

Groundwater Stations
- Monitoring Well

Surface Water Stations
- Compliance Point
- Receiving Environment
- Authorized Discharge
- Monitoring
- Hydrometric stations
- Seep

Site Features
- Secondary Road

- Interpreted GW flow direction
- Study Areas
- Tailings/Settling Pond
- End-Pit Lake
- Watersheds
- Mine Permitted Areas

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:26000 Scale)

1275.71 Water level Q3/Q4 (masl) - used in contouring

Castle FR_FRABCH_A Watershed ID

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Flow accretion studies completion dates:
· Elk River and side channels: combined 2020/2021 studies
· Greenhills and Gardine Creek: Aug 2020
· Porter Creek: June 2021
· Dry Creek: November 2018
· Chauncey Creek: July, September, and November 2020
· GHO Tributaries: 2019

References:
1. Information provided by Teck Coal Limited.

0 125 250 500 750 1,000 Meters

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

Groundwater Elevations from Q4 2021 and Inferred Groundwater Flow Direction (West)

CHK'D: RS | DATE: 2022-03-17 | SCALE: 1:26,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING GH-18

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-37-GWElev_GHO_W.mxd

N

SW Location	Nitrate-N mg/L
GH_ER2	0.0252 - 0.663

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_MW-MC-2D	2021 03 23	0.04
	2021 06 09	0.539
	Duplicate	<0.025
	2021 09 15	<0.025
	2021 11 17	<0.025
GH_MW-MC-2S	2021 03 23	0.414
	2021 06 09	0.494
	2021 09 15	0.176
	2021 11 17	0.342

SW Location	Nitrate-N mg/L
GH_MC1	0.0074 - 0.973

Seep Location	Nitrate-N mg/L
GH_SEEP_76	73.3

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_GA-MW-4	2021 01 21	1.92
	2021 06 04	0.935
	2021 07 30	0.359
	2021 10 01	0.191

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_MW-MC-1D	2021 03 22	<0.0050
	2021 06 09	<0.0050
	2021 09 14	<0.0050
	2021 11 17	<0.0050
	Duplicate	<0.0050
GH_MW-MC-1S	2021 03 22	0.17
	2021 06 08	0.148
	2021 09 14	0.0804
	2021 11 17	0.107

SW Location	Nitrate-N mg/L
GH_LC2	18.8 - 73.2

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
RG_MW_LC3A	2021 03 03	5.55
	2021 05 10	11.3
	2021 08 16	20.3
	2021 11 02	8.84
RG_MW_LC3B	2021 03 03	3.59
	2021 05 11	12.3
	2021 08 16	35.7
	2021 11 02	29.5

Seep Location	Nitrate-N mg/L
GH_SEEP_77	88.5

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
RG_MW_LCWC1	2021 03 02	14.9
	2021 05 11	18.5
	2021 08 16	22.6
	2021 11 02	17.6

SW Location	Nitrate-N mg/L
GH_WC2	26.3 - 75.1

Seep Location	Nitrate-N mg/L
GH_SEEP_60	26.8

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
RG_MW_WC2A	2021 03 03	9.86
	2021 05 10	9.14
	2021 08 16	7.25
	2021 11 02	5.41
RG_MW_WC2B	2021 03 03	14.1
	Duplicate	14.3
	2021 05 10	8.89
	2021 08 16	6.59
	2021 11 02	10.3

SW Location	Nitrate-N mg/L
GH_WC1	24.5 - 72.9

SW Location	Nitrate-N mg/L
GH_ER1A	0.0287 - 5.89

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_GA-MW-2	2021 03 08	10.6
	2021 04 23	12.4
	2021 09 01	8.91
	2021 10 01	11

Seep Location	Nitrate-N mg/L
GH_SEEP_46	5.73

SW Location	Nitrate-N mg/L
GH_TC2	4.04 - 19

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_GA-MW-3	2021 03 01	<0.0050
	2021 06 04	0.47
	2021 07 30	0.0098
	2021 10 07	<0.0050

SW Location	Nitrate-N mg/L
GH_TC1	3.77 - 18.6

SW Location	Nitrate-N mg/L
GH_ERC	0.0057 - 0.767

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_MW-ERSC-1	2021 03 05	10.7
	2021 06 10	0.872
	2021 09 17	3.05
	2021 10 08	3.54

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
GH_MW_EF1A	2021 03 18	0.585
	Duplicate	0.622
	2021 05 13	0.812
	2021 09 17	0.265
	Duplicate	0.264
	2021 11 26	0.315
GH_MW_EF1B	2021 03 18	0.639
	2021 05 13	0.378
	2021 09 17	0.231
	2021 11 26	0.32
	Duplicate	0.32

Groundwater Location	Date (yyyy mm dd)	Nitrate-N mg/L
RG_DW-01-03	2021 03 03	0.797
	2021 06 08	0.969
	2021 07 21	1
	2021 11 23	0.609

SW Location	Nitrate-N mg/L
GH_ER1	0.112 - 0.794

Swift Creek Sediment Pond (Secondary)
Study Area 1
FRO
South Fork Swift Creek
Cataract Creek
Wolf Creek
Br F Creek
Willow Creek North
Elk River
Wolf Secondary
Willow Secondary
Willow Creek South
Wilde Creek
Wade Creek
Cougar Creek
Phase 6 Lake
No-Name Creek
Mickelson Creek
Leask Creek
Porter Creek
GH_MC1
GH_MW-MC1D
GH_MW-MC1S
GH_MW-MC2D
GH_MW-MC2S
GH_SEEP_76
GH_LC2
RG_MW_LC3A
GH_GA-MW-4
Leask Secondary
GH_SEEP_77
RG_MW_LC3B
RG_MW_LCWC1
GH_WC2
RG_MW_WC2A
GH_GA-MW-2
GH_WC1
GH_ER1A
RG_MW_WC2B
Thompson Creek
GH_SEEP_60
Drainage
GH_SEEP_46
GH_GA-MW-3
GH_TC2
Lower Thompson (Tertiary)
GH_TC1
Upper Thompson Creek
Rosebowl Ditch
Bay 9 Ditch
GHO General Office
Upper Thompson Pond Secondary
Upper Thompson Creek (From Cousins Creek Bypass)
Elk River
GH_ERC
GH_MW_ERSC-1
Fisherman's to Tailings Pond
Tailings Storage Facility
Fowler Creek
Study Area 4
Crossing Creek
Rush Creek
GH_E1
GH_E2
GH_MW-TD
Study Area 3
RG_MW_FR11A
RG_MW_FR11B
GH_MW_EF1A
GH_MW_EF1B
Elk Valley Hwy
RG_DW-01-03
GH_ER1
Bolvin Creek
Fording River

Legend

Groundwater Stations[4]
- Monitoring
- Supply

Surface Water Stations
- Compliance Point
- Order Station
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:45000 Scale)

Green below the applicable screening criteria
Blue above the applicable screening criteria
Grey no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Nitrate-N mg/L
CSR Aquatic Life	400
CSR Irrigation Watering	n/a
CSR Livestock Watering	100
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. Nitrate-N = Nitrate Nitrogen

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 1.6 2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

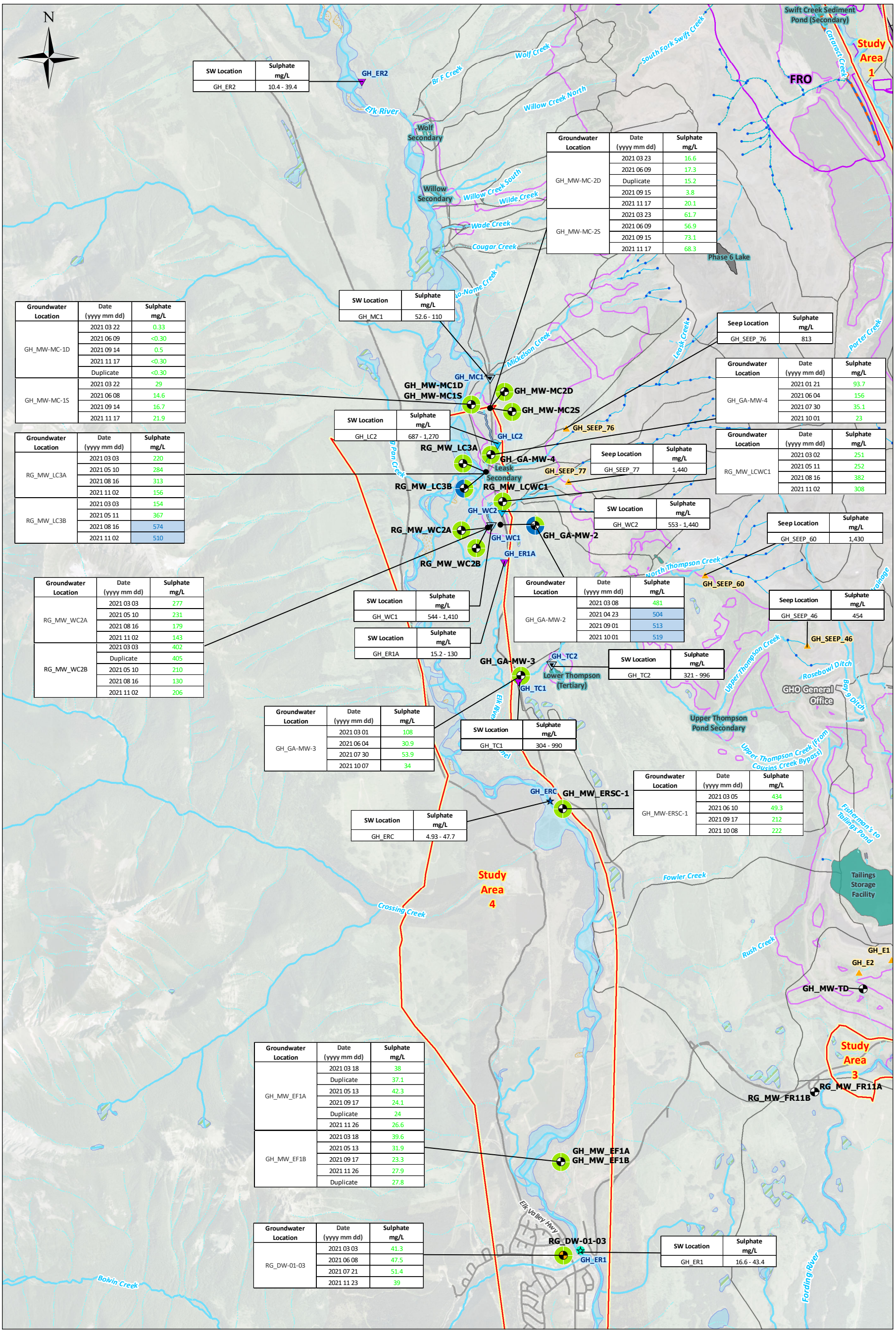
SNC·LAVALIN

Greenhills Operations - Spatial Distribution of Nitrate Nitrogen in Groundwater (West)

CHK'D: RS | DATE: 2022-03-17 | SCALE: 1:45,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING GH-19

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-48-SpatialDist_N_GHO_W.mxd



SW Location	Sulphate mg/L
GH_ER2	10.4 - 39.4

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_MW-MC-2D	2021 03 23	16.6
	2021 06 09	17.3
	Duplicate	15.2
	2021 09 15	3.8
	2021 11 17	20.1
GH_MW-MC-2S	2021 03 23	61.7
	2021 06 09	56.9
	2021 09 15	73.1
	2021 11 17	68.3

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_MW-MC-1D	2021 03 22	0.33
	2021 06 09	<0.30
	2021 09 14	0.5
	2021 11 17	<0.30
	Duplicate	<0.30
GH_MW-MC-1S	2021 03 22	29
	2021 06 08	14.6
	2021 09 14	16.7
	2021 11 17	21.9

SW Location	Sulphate mg/L
GH_MC1	52.6 - 110

Seep Location	Sulphate mg/L
GH_SEEP_76	813

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_GA-MW-4	2021 01 21	93.7
	2021 06 04	156
	2021 07 30	35.1
	2021 10 01	23

SW Location	Sulphate mg/L
GH_LC2	687 - 1,270

Seep Location	Sulphate mg/L
GH_SEEP_77	1,440

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
RG_MW_LCWC1	2021 03 02	251
	2021 05 11	252
	2021 08 16	382
	2021 11 02	308

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
RG_MW_LC3A	2021 03 03	220
	2021 05 10	284
	2021 08 16	313
	2021 11 02	156
RG_MW_LC3B	2021 03 03	154
	2021 05 11	367
	2021 08 16	574
	2021 11 02	510

SW Location	Sulphate mg/L
GH_WC2	553 - 1,440

Seep Location	Sulphate mg/L
GH_SEEP_60	1,430

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_GA-MW-2	2021 03 08	481
	2021 04 23	504
	2021 09 01	513
	2021 10 01	519

Seep Location	Sulphate mg/L
GH_SEEP_46	454

SW Location	Sulphate mg/L
GH_WC1	544 - 1,410

SW Location	Sulphate mg/L
GH_ER1A	15.2 - 130

SW Location	Sulphate mg/L
GH_TC2	321 - 996

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_GA-MW-3	2021 03 01	108
	2021 06 04	30.9
	2021 07 30	53.9
	2021 10 07	34

SW Location	Sulphate mg/L
GH_TC1	304 - 990

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_MW-ERSC-1	2021 03 05	434
	2021 06 10	49.3
	2021 09 17	212
	2021 10 08	222

SW Location	Sulphate mg/L
GH_ERC	4.93 - 47.7

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
GH_MW_EF1A	2021 03 18	38
	Duplicate	37.1
	2021 05 13	42.3
	2021 09 17	24.1
	Duplicate	24
	2021 11 26	26.6
GH_MW_EF1B	2021 03 18	39.6
	2021 05 13	31.9
	2021 09 17	23.3
	2021 11 26	27.9
	Duplicate	27.8

Groundwater Location	Date (yyyy mm dd)	Sulphate mg/L
RG_DW-01-03	2021 03 03	41.3
	2021 06 08	47.5
	2021 07 21	51.4
	2021 11 23	39

SW Location	Sulphate mg/L
GH_ER1	16.6 - 43.4

Legend

Groundwater Stations[4]
- Monitoring
- Supply

Surface Water Stations
- Compliance Point
- Order Station
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:45000 Scale)

Green below the applicable screening criteria
Blue above the applicable screening criteria
Grey no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Primary Screening Criteria	Sulphate mg/L
CSR Aquatic Life	1,280-4,290
CSR Irrigation Watering	n/a
CSR Livestock Watering	1,000
CSR Drinking Water	500

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 1.6 2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

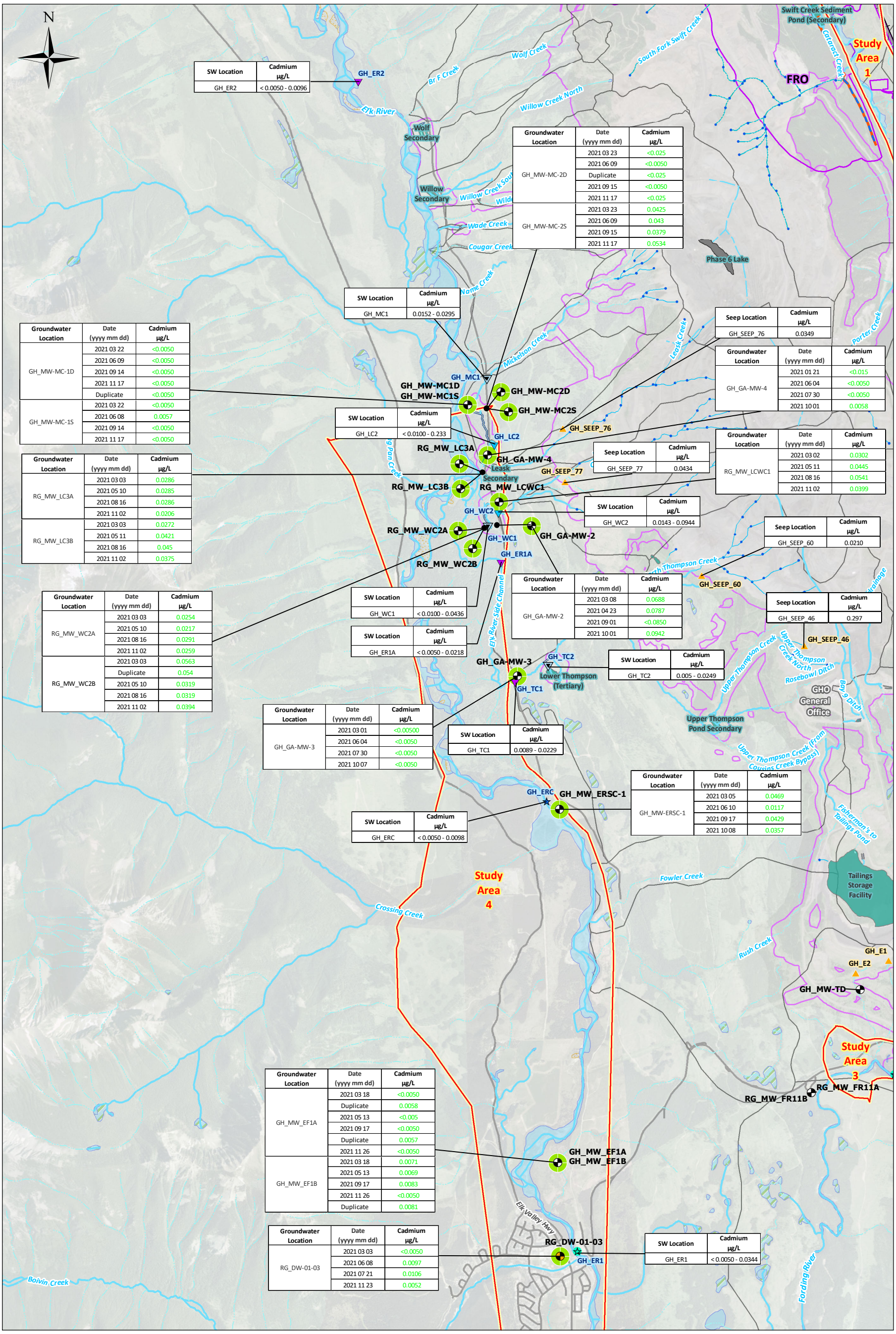
SNC·LAVALIN

Greenhills Operations - Spatial Distribution of Sulphate in Groundwater (West)

CHK'D: RS | DATE: 2022-03-17 | SCALE: 1:45,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING GH-20

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-49-SpatialDist_SO4_GHO_W.mxd



SW Location	Cadmium µg/L
GH_ER2	< 0.0050 - 0.0096

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-MC-2D	2021 03 23	<0.025
	2021 06 09	<0.0050
	Duplicate	<0.025
	2021 09 15	<0.0050
	2021 11 17	<0.025
GH_MW-MC-2S	2021 03 23	0.0425
	2021 06 09	0.043
	2021 09 15	0.0379
	2021 11 17	0.0534

SW Location	Cadmium µg/L
GH_MC1	0.0152 - 0.0295

Seep Location	Cadmium µg/L
GH_SEEP_76	0.0349

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_GA-MW-4	2021 01 21	<0.015
	2021 06 04	<0.0050
	2021 07 30	<0.0050
	2021 10 01	0.0058

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-MC-1D	2021 03 22	<0.0050
	2021 06 09	<0.0050
	2021 09 14	<0.0050
	2021 11 17	<0.0050
	Duplicate	<0.0050
GH_MW-MC-1S	2021 03 22	<0.0050
	2021 06 08	0.0057
	2021 09 14	<0.0050
	2021 11 17	<0.0050

SW Location	Cadmium µg/L
GH_LC2	< 0.0100 - 0.233

Seep Location	Cadmium µg/L
GH_SEEP_77	0.0434

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
RG_MW_LCWC1	2021 03 02	0.0302
	2021 05 11	0.0445
	2021 08 16	0.0541
	2021 11 02	0.0399

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
RG_MW_LC3A	2021 03 03	0.0286
	2021 05 10	0.0285
	2021 08 16	0.0286
	2021 11 02	0.0206
RG_MW_LC3B	2021 03 03	0.0272
	2021 05 11	0.0421
	2021 08 16	0.045
	2021 11 02	0.0375

SW Location	Cadmium µg/L
GH_WC2	0.0143 - 0.0944

Seep Location	Cadmium µg/L
GH_SEEP_60	0.0210

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_GA-MW-2	2021 03 08	0.0688
	2021 04 23	0.0787
	2021 09 01	<0.0850
	2021 10 01	0.0942

Seep Location	Cadmium µg/L
GH_SEEP_46	0.297

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
RG_MW_WC2A	2021 03 03	0.0254
	2021 05 10	0.0217
	2021 08 16	0.0291
	2021 11 02	0.0259
RG_MW_WC2B	2021 03 03	0.0563
	Duplicate	0.054
	2021 05 10	0.0319
	2021 08 16	0.0319
	2021 11 02	0.0394

SW Location	Cadmium µg/L
GH_WC1	< 0.0100 - 0.0436

SW Location	Cadmium µg/L
GH_ER1A	< 0.0050 - 0.0218

SW Location	Cadmium µg/L
GH_TC2	0.005 - 0.0249

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_GA-MW-3	2021 03 01	<0.00500
	2021 06 04	<0.0050
	2021 07 30	<0.0050
	2021 10 07	<0.0050

SW Location	Cadmium µg/L
GH_TC1	0.0089 - 0.0229

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW-ERSC-1	2021 03 05	0.0469
	2021 06 10	0.0117
	2021 09 17	0.0429
	2021 10 08	0.0357

SW Location	Cadmium µg/L
GH_ERC	< 0.0050 - 0.0098

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
GH_MW_EF1A	2021 03 18	<0.0050
	Duplicate	0.0058
	2021 05 13	<0.005
	2021 09 17	<0.0050
	Duplicate	0.0057
	2021 11 26	<0.0050
GH_MW_EF1B	2021 03 18	0.0071
	2021 05 13	0.0069
	2021 09 17	0.0083
	2021 11 26	<0.0050
	Duplicate	0.0081

Groundwater Location	Date (yyyy mm dd)	Cadmium µg/L
RG_DW-01-03	2021 03 03	<0.0050
	2021 06 08	0.0097
	2021 07 21	0.0106
	2021 11 23	0.0052

SW Location	Cadmium µg/L
GH_ER1	< 0.0050 - 0.0344

Legend

Groundwater Stations[4]
- Monitoring
- Supply

Surface Water Stations
- Compliance Point
- Order Station
- Order Station and Compliance Point
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:45000 Scale)

Green: below the applicable screening criteria
Blue: above the applicable screening criteria
Grey: no sample collected

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

^ Dissolved phase of the parameter is shown in the spatial plot.

Primary Screening Criteria	Cadmium^ µg/L
CSR Aquatic Life	0.5-4
CSR Irrigation Watering	5
CSR Livestock Watering	80
CSR Drinking Water	5

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 1.6 2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

Greenhills Operations - Spatial Distribution of Dissolved Cadmium in Groundwater (West)

CHK'D: RS | BY: CW | DATE: 2022-03-17 | SCALE: 1:45,000 | COORD SYS: NAD 1983 UTM Zone 11N | Ref Num: DRAWING GH-21

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GISMap Series\635544_2021 RGMP SSGMP Annual Report\635544-50-SpatialDist_Cd_GHO_W.mxd

Greenhills Operations - Spatial Distribution of Dissolved Selenium in Groundwater (West)

SW Location	Selenium µg/L
GH_ER2	0.542 - 1.23

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-MC-2D	2021 03 23	88.5
	2021 06 09	2.58
	Duplicate	6.19
	2021 09 15	4.28
	2021 11 17	6.9
GH_MW-MC-2S	2021 03 23	2.65
	2021 06 09	2.68
	2021 09 15	1.96
	2021 11 17	2.07

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-MC-1D	2021 03 22	<0.050
	2021 06 09	<0.050
	2021 09 14	<0.050
	2021 11 17	0.279
	Duplicate	0.249
GH_MW-MC-1S	2021 03 22	1.57
	2021 06 08	0.819
	2021 09 14	0.749
	2021 11 17	0.908

SW Location	Selenium µg/L
GH_MC1	1.15 - 13.2

Seep Location	Selenium µg/L
GH_SEEP_76	631

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_GA-MW-4	2021 01 21	6.41
	2021 06 04	14.4
	2021 07 30	2.62
	2021 10 01	1.66

SW Location	Selenium µg/L
GH_LC2	64.4 - 438

Seep Location	Selenium µg/L
GH_SEEP_77	241

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
RG_MW_LC3A	2021 03 03	21.7
	2021 05 10	58.3
	2021 08 16	105
	2021 11 02	46.6
RG_MW_LC3B	2021 03 03	14.6
	2021 05 11	61.2
	2021 08 16	176
	2021 11 02	158

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
RG_MW_LCWC1	2021 03 02	54.3
	2021 05 11	79.3
	2021 08 16	117
	2021 11 02	87

SW Location	Selenium µg/L
GH_WC2	106 - 282

Seep Location	Selenium µg/L
GH_SEEP_60	403

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
RG_MW_WC2A	2021 03 03	36.5
	2021 05 10	37.5
	2021 08 16	33.7
	2021 11 02	25.8
RG_MW_WC2B	2021 03 03	52.9
	Duplicate	50.7
	2021 05 10	44.1
	2021 08 16	36
	2021 11 02	49

SW Location	Selenium µg/L
GH_WC1	106 - 296

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_GA-MW-2	2021 03 08	32.4
	2021 04 23	36.5
	2021 09 01	18.8
	2021 10 01	33.2

Seep Location	Selenium µg/L
GH_SEEP_46	149

SW Location	Selenium µg/L
GH_ER1A	0.683 - 23.2

SW Location	Selenium µg/L
GH_TC2	543 - 188

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_GA-MW-3	2021 03 01	7.04
	2021 06 04	3.02
	2021 07 30	5.94
	2021 10 07	1.38

SW Location	Selenium µg/L
GH_TC1	52 - 188

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW-ERSC-1	2021 03 05	62.8
	2021 06 10	5.82
	2021 09 17	27.4
	2021 10 08	32

SW Location	Selenium µg/L
GH_ERC	0.092 - 4.48

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
GH_MW_EF1A	2021 03 18	3.38
	Duplicate	3.5
	2021 05 13	3.62
	2021 09 17	1.86
	Duplicate	1.81
	2021 11 26	2.07
GH_MW_EF1B	2021 03 18	3.43
	2021 05 13	2.75
	2021 09 17	1.65
	2021 11 26	2.1
	Duplicate	2.38

Groundwater Location	Date (yyyy mm dd)	Selenium µg/L
RG_DW-01-03	2021 03 03	3.47
	2021 06 08	4.4
	2021 07 21	5.11
	2021 11 23	3.44

SW Location	Selenium µg/L
GH_ER1	0.983 - 3.96

Legend

Groundwater Stations[4]
- Monitoring
- Supply

Surface Water Stations
- Compliance Point
- Order Station
- Receiving Environment
- Authorized Discharge
- Monitoring
- Seep

Site Features
- Secondary Road
- Rails
- Study Areas
- Tailings/Settling Pond
- Waste Water Pond
- End-Pit Lake
- Watersheds
- FRO Permitted Boundary
- GHO Permitted Boundary

Water Features
- Stream + Stream Ditch
- Intermittent + Indefinite Stream
- Subsurface
- Ditch
- Rock Drain
- Water Pipeline
- Bypass/Diversion Channel
- Island
- Lake/River Bed
- Wetted Area/Wetland (Based on 1:45000 Scale)

Q4 Q1 Q3 Q2

symbol locations have been adjusted relative to well locations for visibility

Green below the applicable screening criteria
Blue above the applicable screening criteria
Grey no sample collected

^ Dissolved phase of the parameter is shown in the spatial plot.

Primary Screening Criteria	Selenium^ µg/L
CSR Aquatic Life	20
CSR Irrigation Watering	20
CSR Livestock Watering	30
CSR Drinking Water	10

Notes:
1. Original in colour.
2. Numerical scale reflects full-size print. Print scaling will distort this scale, however scale bar will remain accurate.
3. Intended for illustration purposes, accuracy has not been verified for construction or navigation purposes.
4. Locations of overlapping wells have been adjusted for clarity.
5. SW = Surface Water

References:
1. Data provided by Teck Coal Limited.

0 0.2 0.4 0.8 1.2 1.6 2 km

PROJECT LOCATION: Elk Valley, BC

CLIENT NAME: Teck Coal Limited

SNC·LAVALIN

CHK'D: RS | DATE: 2022-03-17 | SCALE: 1:45,000 | Ref Num:
BY: CW | COORD SYS: NAD 1983 UTM Zone 11N | DRAWING GH-22

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-51-SpatialDist_Se_GHO_W.mxd

Attachment I: Borehole Logs - Greenhills Operations

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Client
Teck Coal Limited

Location
Greenhills Operations

Borehole No. : GH_BH_GHC_4A

PAGE 1 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	674842
Drilling Method	Odex	Ground Surface Elev. (m)	1525.264	Borehole Logged By:	RAS
Borehole Dia. (m)	0.10	Top of Casing Elev. (m)	1526.254	Date Drilled:	2020 07 16
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5546305.746	Easting: 653814.809	Log Typed By:	VL

Drilling Legend: Sample Interval; Odex; Split Spoon

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Solid PVC; Slotted PVC

Well Name 1: GH_MW_GHC_4A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SILTY CLAY, some gravel, fine to coarse, subrounded to subangular, trace sand, fine to coarse grained, dark brown, loose, damp, rootlets, decayed wood.						
	At 0.3 m - no rootlets, no wood						
1	GRAVEL and SAND, fine to coarse gravel, fine to coarse grained sand, subrounded to subangular, some silt, dark brown, dense, damp.						
	At 2.1 m - moist						
2	At 2.7 m - wet						
3							
4				GHC_4A-01		58	
	At 4.5 m - SILTY CLAY, trace gravel, fine to coarse, brown, stiff, moist, 15 cm lense.			GHC_4A-02	16 30 50		
5	At 5.2 m - damp						
	At 5.6 m - dry						
6	BEDROCK, fine-grained, light grey, dry.						
7				GHC_4A-03			
	At 7.3 m - wet at start of run						
8	At 7.8 m - dry						
9							
10							

BENTONITE

GH_MW_GHC_4A

SAND

NOTES
Moisture contents are as logged in recovered samples and may be biased drier than in situ conditions.

QA: TG 2020 08 11 Print Date:2020-08-14

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations

Borehole No. : GH_BH_GHC_4A

PAGE 2 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	674842
Drilling Method	Odex	Ground Surface Elev. (m)	1525.264	Borehole Logged By:	RAS
Borehole Dia. (m)	0.10	Top of Casing Elev. (m)	1526.254	Date Drilled:	2020 07 16
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5546305.746	Easting: 653814.809	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Odex
- Split Spoon

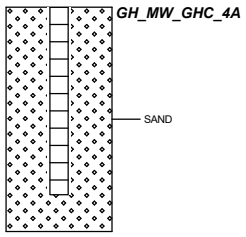
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_GHC_4A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	BEDROCK, fine-grained, light grey, dry. *(continued)*						
11							
12	Bottom of hole at 11.9 m.						
13							
14							
15							
16							
17							
18							
19							
20							



NOTES
Moisture contents are as logged in recovered samples and may be biased drier than in situ conditions.

QA: TG 2020 08 11 Print Date:2020-08-14

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations

Borehole No. : GH_BH_GHC_4B

PAGE 1 OF 1

Drilling Contractor	Owen's Drilling	Date Monitored	n/a	Project Number:	674842
Drilling Method	Odex	Ground Surface Elev. (m)	1525.363	Borehole Logged By:	RAS
Borehole Dia. (m)	0.10	Top of Casing Elev. (m)	1526.363	Date Drilled:	2020 07 16
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5546308.488	Easting: 653810.098	Log Typed By:	VL

Drilling Legend: Sample Interval; Odex; Split Spoon

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Solid PVC; Slotted PVC

Well Name 1: GH_MW_GHC_4B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SILTY CLAY, some gravel, fine to coarse, subrounded to subangular, trace sand, fine to coarse grained, brown, loose, damp.						
1	GRAVEL and SAND, fine to coarse gravel, subrounded to subangular, fine to coarse grained sand, some silt, containing cobbles, dark brown, dense, damp.						
2	At 2.1 m - moist At 2.4 m - wet						
3				GHC_4B-01	7 8 10 8	33	
4	At 4.3 m - dry						
5	BEDROCK, fine-grained, dry.						
6	Bottom of hole at 5.8 m.						
7							
8							
9							
10							

BENTONITE

GH_MW_GHC_4B

SAND

BENTONITE

NOTES
Moisture contents are as logged in recovered samples and may be biased drier than in situ conditions.

QA: TG 2020 08 11 Print Date:2020-08-14

Log of Monitoring Well: GH_MW-GHC-1D

HEMMERA

Project Name/No: Greenhills Ops Elkford BC/577-016.04
Drilling Company: JR Drilling
Client: Teck Coal Ltd.
Drilling Method: Dual air rotary
Date Drilled: November 20, 2014
Logged by: RM
Site Location: Greenhills Operations, BC
Sheet: 1 of 2

SUBSURFACE PROFILE			SAMPLE						Backfill details
Depth (ft / m)	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	
ft -3 -2 -1 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 / m 1 2 3 4 5 6 7 8 9 10 11		Ground Surface	1610.00						
		TOPSOIL Black, dry, loose, organic soil	0.00						
		TILL Sandy (fine, medium and coarse grain) TILL, some gravel (fine and medium grain, sub-angular), brown, dry, loose, well graded	1608.78						
			1.22						
		Silty TILL, dark brown, wet, dense							
		Water table at 2.13 m	1607.87						
			2.13						
			1606.34						
		Gravelly (fine to medium grain, sub-angular) TILL, dark brown, wet, loose to medium dense, well graded. Silty lenses present throughout. Between 4.57 m and 7.62 m, moderate water yield.	3.66						
		Silty TILL, some gravels (fine to medium grain, sub-angular), dark brown, wet, dense to very dense.	1601.47						
			8.53						

Bentonite

Water level, 25 November, 2014

Well location: 5,547,207 N, 654,052 E
Well casing diameter: 2"
Depth of well (TOC): 21.36 m
Depth to water level (TOC): 8.639 m
Well casing material: Sch. 80 PVC
Well Elevation (TOC): 1610.8 m
Date of water level: 25 Novermber, 2014
Well screen slot size: 010
Ground Elevation: 1610 m
Borehole diameter: 0.15 m
Well screen interval (bgs): 18.31 m - 21.36 m

Log of Monitoring Well: GH_MW-GHC-1D

HEMMERA

Project Name/No: Greenhills Ops Elkford BC/577-016.04
Drilling Company: JR Drilling
Client: Teck Coal Ltd.
Drilling Method: Dual air rotary
Date Drilled: November 20, 2014
Logged by: RM
Site Location: Greenhills Operations, BC
Sheet: 2 of 2

SUBSURFACE PROFILE			SAMPLE						
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
38–77									
48		**BEDROCK** Quartzitic Sandstone. Light grey, moderately strong, moderately fractured, weathered	1595.37 14.63						
53		Sandstone, competent, very strong, small and uniform bedrock cuttings	1593.65 16.15						
62		Between 18.9 m - 20.4 m, major fracture zone, high water yield, oxidation present, nonuniform bedrock cuttings	1591.10 18.90						
69		Between 21.0 m - 21.7 m, major fracture zone, moderate water yield, nonuniform bedrock cuttings	1588.97 21.03						
76		End of Log	1586.84 23.16						Filter Sand 10/20

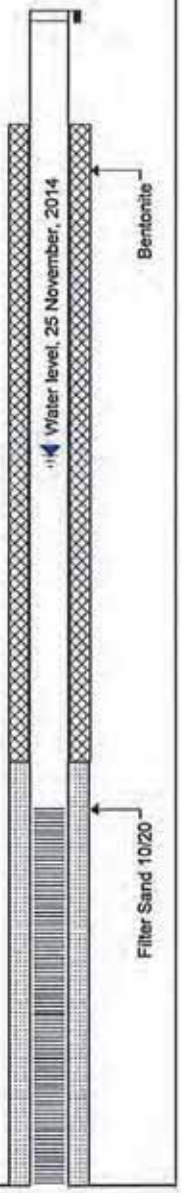
Well location: 5,547,207 N, 654,052 E
Well casing diameter: 2"
Depth of well (TOC): 21.36 m
Depth to water level (TOC): 8.639 m
Well casing material: Sch. 80 PVC
Well Elevation (TOC): 1610.8 m
Date of water level: 25 Novermber, 2014
Well screen slot size: 010
Ground Elevation: 1610 m
Borehole diameter: 0.15 m
Well screen interval (bgs): 18.31 m - 21.36 m

Log of Monitoring Well: GH_MW-GHC-1S

HEMMERA

Project Name/No: Greenhills Ops Elkford BC/577-016.04
Drilling Company: JR Drilling
Client: Teck Coal Ltd.
Drilling Method: Dual air rotary
Date Drilled: November 18, 2014
Logged by: RM
Site Location: Greenhills Operations, BC
Sheet: 1 of 2

SUBSURFACE PROFILE			SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
		Ground Surface	1610.00 / 0.00						
		TOPSOIL Black, dry, loose, organic soil							
		TILL Sandy (fine, medium and coarse grain) TILL, some gravel (fine and medium grain, sub-angular), brown, dry, loose, well graded							
1		Silty TILL, dark brown, wet, dense	1608.78 / 1.22						
2		Water table at 2.13 m	1607.87 / 2.13						
3									
4		Gravelly (fine to medium grain, sub-angular) TILL, dark brown, wet, loose to medium dense, well graded. Silty lenses present throughout. Between 4.57 m and 7.62 m, moderate water yield.	1606.34 / 3.66						
5									
6									
7									



Well location: 5,547,205 N, 654,050 E
Well casing diameter: 2"
Depth of well (TOC): 7.63 m
Depth to water level (TOC): 2.976 m
Well casing material: Sch. 80 PVC
Well Elevation (TOC): 1610.8 m
Date of water level: 25 Novermber, 2014
Well screen slot size: 010
Ground Elevation: 1610 m
Borehole diameter: 0.17 m
Well screen interval (bgs): 4.58 m - 7.63 m

Log of Monitoring Well: GH_MW-GHC-1S

HEMMERA

Project Name/No: Greenhills Ops Elkford BC/577-016.04
Drilling Company: JR Drilling
Client: Teck Coal Ltd.
Drilling Method: Dual air rotary
Date Drilled: November 18, 2014
Logged by: RM
Site Location: Greenhills Operations, BC
Sheet: 2 of 2

SUBSURFACE PROFILE			SAMPLE						
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
24–49		Silty TILL, some gravels (fine to medium grain, sub-angular), dark brown, wet, dense to very dense.	1601.47 / 8.53						Slough
		Bedrock encountered at 14.6 m	1595.67 / 14.33						
		End of Log	1595.37 / 14.63						

Well location: 5,547,205 N, 654,050 E
Well casing diameter: 2"
Depth of well (TOC): 7.63 m
Depth to water level (TOC): 2.976 m
Well casing material: Sch. 80 PVC
Well Elevation (TOC): 1610.8 m
Date of water level: 25 Novermber, 2014
Well screen slot size: 010
Ground Elevation: 1610 m
Borehole diameter: 0.17 m
Well screen interval (bgs): 4.58 m - 7.63 m

Log of Monitoring Well: GH_MW-TD

HEMMERA

Project Name/No: Greenhills Ops Elkford BC/577-016.04
Drilling Company: JR Drilling

Client: Teck Coal Ltd.
Drilling Method: Dual air rotary

Date Drilled: November 21, 2014
Logged by: RM

Site Location: Greenhills Operations, BC
Sheet: 1 of 3

SUBSURFACE PROFILE			SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
0 / 0		Ground Surface	1600.00 / 0.00						Bentonite
		TOPSOIL Black, dry, loose, organic soil							
		TILL Sand, gravelly (medium to coarse grain, sub-rounded), some lenses of sand and silt, moist, dense, brown. Lots of broken rock fragments							
7 / 2		Below 2.13 m becomes dry.	1597.87 / 2.13						
12 / 4		Below 3.66 m becomes medium dense	1596.34 / 3.66						
15 / 5		Below 4.6 m moist and dense. Below 4.9 m dry, very dense	1595.43 / 4.57						
18 / 6		Below 5.5 m, becomes more silty, more dense	1594.51 / 5.49						
24 / 7		Below 7.3 m, siltstone clasts, very dry, very dense	1592.68 / 7.32						
42 / 12									

Well location: 5,546,536 N, 652,694 E
Well casing diameter: 2"
Depth of well (TOC): 34.44 m

Depth to water level (TOC): Flowing artesian well
Well casing material: Sch. 80 PVC
Well Elevation (TOC): 1600.75 m asl

Date of water level: N/A
Well screen slot size: 010
Ground Elevation: 1600 m asl

Borehole diameter: 0.17 m
Well screen interval (bgs): 31.39 - 34.44 m

Log of Monitoring Well: GH_MW-TD

HEMMERA

Project Name/No: Greenhills Ops Elkford BC/577-016.04
Drilling Company: JR Drilling

Client: Teck Coal Ltd.
Drilling Method: Dual air rotary

Date Drilled: November 21, 2014
Logged by: RM

Site Location: Greenhills Operations, BC
Sheet: 2 of 3

SUBSURFACE PROFILE			SAMPLE						
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
13–26		Below 14.6 m medium dense, increasing sand content	1585.37 / 14.63						Bentonite
		Below 16.2 m very dense, dry, siltstone clasts (angular to sub-angular), trace sandstone clasts	1583.85 / 16.15						
		Below 18.3 m Silt and Sand (fine), some siltstone clasts, dark brown	1581.71 / 18.29						
		Below 19.2 m medium dense	1580.80 / 19.20						
		Below 20.1 m very dense	1579.88 / 20.12						

Well location: 5,546,536 N, 652,694 E
Well casing diameter: 2"
Depth of well (TOC): 34.44 m

Depth to water level (TOC): Flowing artesian well
Well casing material: Sch. 80 PVC
Well Elevation (TOC): 1600.75 m asl

Date of water level: N/A
Well screen slot size: 010
Ground Elevation: 1600 m asl

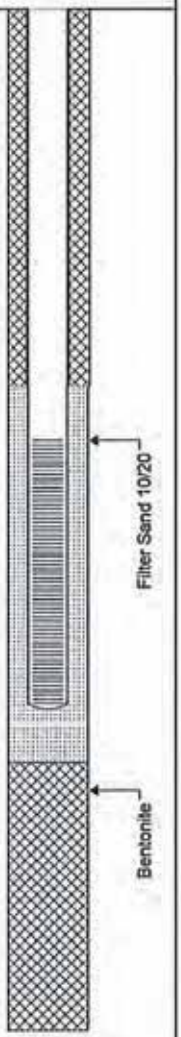
Borehole diameter: 0.17 m
Well screen interval (bgs): 31.39 - 34.44 m

Log of Monitoring Well: GH_MW-TD

HEMMERA

Project Name/No: Greenhills Ops Elkford BC/577-016.04
Drilling Company: JR Drilling
Client: Teck Coal Ltd.
Drilling Method: Dual air rotary
Date Drilled: November 21, 2014
Logged by: RM
Site Location: Greenhills Operations, BC
Sheet: 3 of 3

SUBSURFACE PROFILE			SAMPLE						Backfill details
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	
27		Below 27.4 m increasing sand conctent, decreasing silt content, trace mudstone clasts, light brown, dense, dry	1572.57 / 27.43						
30		Below 30.2 m sand and silt till with siltstone clast, wet. First water bearing unit.	1569.82 / 30.18						
32		Moderate water yield between 32.3 m and 34.1 m	1567.69 / 32.31						
35		**BEDROCK** Siltstone, fresh, competent, very dense, dry.	1564.95 / 35.05						
38		End of Log	1561.90 / 38.10						



Well location: 5,546,536 N, 652,694 E
Well casing diameter: 2"
Depth of well (TOC): 34.44 m
Depth to water level (TOC): Flowing artesian well
Well casing material: Sch. 80 PVC
Well Elevation (TOC): 1600.75 m asl
Date of water level: N/A
Well screen slot size: 010
Ground Elevation: 1600 m asl
Borehole diameter: 0.17 m
Well screen interval (bgs): 31.39 - 34.44 m

GH_POTW09

Greenhills Well 9

Report 1 - Detailed Well Record

Well Tag Number: 85223

Owner: ELK VALLEY COAL - GREENHILLS OPERATION

Address:

Area: GREENHILLS

WELL LOCATION:
Land District
District Lot: 4588 Plan: 11279 Lot: 1
Township: Section: Range:
Indian Reserve: Meridian: Block:
Quarter:
Island:
BCGS Number (NAD 83): Well: 5

Class of Well:
Subclass of Well:
Orientation of Well:
Status of Well:
Well Use:
Observation Well Number:
Observation Well Status:
Construction Method:
Diameter: 10.75 inches
Casing drive shoe:
Well Depth: 117 feet
Elevation: feet (ASL)
Final Casing Stick Up: inches
Well Cap Type:
Bedrock Depth: 117 feet
Lithology Info Flag: Y
File Info Flag: N
Sieve Info Flag: N
Screen Info Flag: Y

Site Info Details:
Other Info Flag:
Other Info Details:

Construction Date: 1992-06-29 00:00:00

Driller:
Well Identification Plate Number: 15802
Plate Attached By: KIMBERLY RASMUSSEN
Where Plate Attached: WELL CASING

PRODUCTION DATA AT TIME OF DRILLING:
Well Yield: (Driller's Estimate)
Development Method:
Pump Test Info Flag: N
Artesian Flow: UNKNOWN YIELD
Artesian Pressure (ft):
Static Level:

WATER QUALITY:
Character:
Colour:
Odour:
Well Disinfected: N
EMS ID:
Water Chemistry Info Flag: N
Field Chemistry Info Flag:
Site Info (SEAM): N

Water Utility: N
Water Supply System Name: GREENHILLS WATER SUPPLY SYSTEM
Water Supply System Well Name: WELL 9

SURFACE SEAL:
Flag: Y
Material:
Method:
Depth (ft): 88 feet
Thickness (in):

WELL CLOSURE INFORMATION:
Reason For Closure:
Method of Closure:
Closure Sealant Material:
Closure Backfill Material:
Details of Closure:

Screen from	to feet	Type	Slot Size
88	119		.25
null	null		.12

Casing from	to feet	Diameter	Material	Drive Shoe
0	88	10.75	Other	null

GENERAL REMARKS:

LITHOLOGY INFORMATION:

From	0 to 19.7 Ft.	GRAVELY CLAY	0	nothing entered
From	19.7 to 21.4 Ft.	GRAVELY CLAY	0	nothing entered
From	21.4 to 43 Ft.	GRAVELY CLAY COLLUVIUM	0	nothing entered
From	43 to 65 Ft.	SILTY CLAY - LACUSTRINE	0	nothing entered
From	65 to 70 Ft.	GRAVEL- DIRTY - WATER	0	nothing entered
From	70 to 98.43 Ft.	CLEANER GRAVEL	0	nothing entered
From	98.43 to 118 Ft.	GRAVEL SILTY	0	nothing entered
From	118.4 to 121.4 Ft.	SANDSTONE AND SHALE	0	nothing entered

- Return to Main
- Return to Search Options
- Return to Search Criteria

GH_POTW10

BRITISH COLUMBIA

Greenhills Well 10

Report 1 - Detailed Well Record

Well Tag Number: 85218 Owner: ELK VALLEY COAL - GREENHILLS OPERATION Address: Area: GREENHILLS WELL LOCATION: Land District District Lot: 4588 Plan: 11279 Lot: 1 Township: Section: Range: Indian Reserve: Meridian: Block: Quarter: Island: BCGS Number (NAD 83): Well: 5 Class of Well: Subclass of Well: Orientation of Well: Status of Well: Well Use: Observation Well Number: Observation Well Status: Construction Method: Diameter: 8" inches Casing drive shoe: Well Depth: 176 feet Elevation: feet (ASL) Final Casing Stick Up: inches Well Cap Type: Bedrock Depth: feet Lithology Info Flag: Y File Info Flag: N Sieve Info Flag: N Screen Info Flag: N Site Info Details: Other Info Flag: Other Info Details:	Construction Date: 2001-06-22 00:00:00 Driller: Well Identification Plate Number: 15805 Plate Attached By: Where Plate Attached: PRODUCTION DATA AT TIME OF DRILLING: Well Yield: 50 (Driller's Estimate) Development Method: Pump Test Info Flag: N Artesian Flow: Artesian Pressure (ft): Static Level: WATER QUALITY: Character: Colour: Odour: Well Disinfected: N EMS ID: Water Chemistry Info Flag: N Field Chemistry Info Flag: Site Info (SEAM): N Water Utility: N Water Supply System Name: GREENHILLS WATER SUPPLY SYSTEM Water Supply System Well Name: WELL 10 SURFACE SEAL: Flag: N Material: Method: Depth (ft): Thickness (in): WELL CLOSURE INFORMATION: Reason For Closure: Method of Closure: Closure Sealant Material: Closure Backfill Material: Details of Closure:

Screen from	to feet	Type	Slot Size

Casing from	to feet	Diameter	Material	Drive Shoe
0	176	null	Other	null

GENERAL REMARKS:
WATER QUALITY GUARANTEED BY CONTRACTOR

LITHOLOGY INFORMATION:

From	0	to	58	Ft.	CLAY	0 nothing entered
From	58	to	78	Ft.	GRAVEL AND BOULDERS	0 nothing entered
From	78	to	110	Ft.	CLAY AND GRAVEL	0 nothing entered
From	110	to	176	Ft.	COURSE GRAVEL	0 nothing entered

- Return to Main
- Return to Search Options
- Return to Search Criteria

GH_POTW15

BRITISH COLUMBIA

Greenhills Well 15

Report 1 - Detailed Well Record

Well Tag Number: 85221 Owner: ELK VALLEY COAL - GREENHILLS OPERATION Address: Area: WELL LOCATION: Land District District Lot: 4588 Plan: 11279 Lot: 1 Township: Section: Range: Indian Reserve: Meridian: Block: Quarter: Island: BCGS Number (NAD 83): Well: 7 Class of Well: Subclass of Well: Orientation of Well: Status of Well: Well Use: Observation Well Number: Observation Well Status: Construction Method: Diameter: inches Casing drive shoe: Well Depth: 144 feet Elevation: feet (ASL) Final Casing Stick Up: inches Well Cap Type: Bedrock Depth: feet Lithology Info Flag: Y File Info Flag: N Sieve Info Flag: N Screen Info Flag: N Site Info Details: Other Info Flag: Other Info Details:	Construction Date: 2001-11-01 00:00:00 Driller: Well Identification Plate Number: 15803 Plate Attached By: KIMBERLY RASMUSSEN Where Plate Attached: WELL CASING PRODUCTION DATA AT TIME OF DRILLING: Well Yield: 100 (Driller's Estimate) Development Method: Pump Test Info Flag: N Artesian Flow: Artesian Pressure (ft): Static Level: 11 feet WATER QUALITY: Character: Colour: Odour: Well Disinfected: N EMS ID: Water Chemistry Info Flag: N Field Chemistry Info Flag: Site Info (SEAM): N Water Utility: N Water Supply System Name: GREENHILLS WATER SUPPLY SYSTEM Water Supply System Well Name: WELL 15 SURFACE SEAL: Flag: N Material: Method: Depth (ft): Thickness (in): WELL CLOSURE INFORMATION: Reason For Closure: Method of Closure: Closure Sealant Material: Closure Backfill Material: Details of Closure:

Screen from	to feet	Type	Slot Size

Casing from	to feet	Diameter	Material	Drive Shoe
0	144	null	Other	null

GENERAL REMARKS:
WATER QUALITY GUARANTEED BY CONTRACTOR

LITHOLOGY INFORMATION:

From	0	to	7	Ft.	FILL	0 nothing entered
From	7	to	15	Ft.	CLAY AND GRAVEL	0 nothing entered
From	15	to	125	Ft.	SILTY CLAY	0 nothing entered
From	125	to	144	Ft.	COARSE GRAVEL AND COBBLE	0 nothing entered

- Return to Main
- Return to Search Options
- Return to Search Criteria

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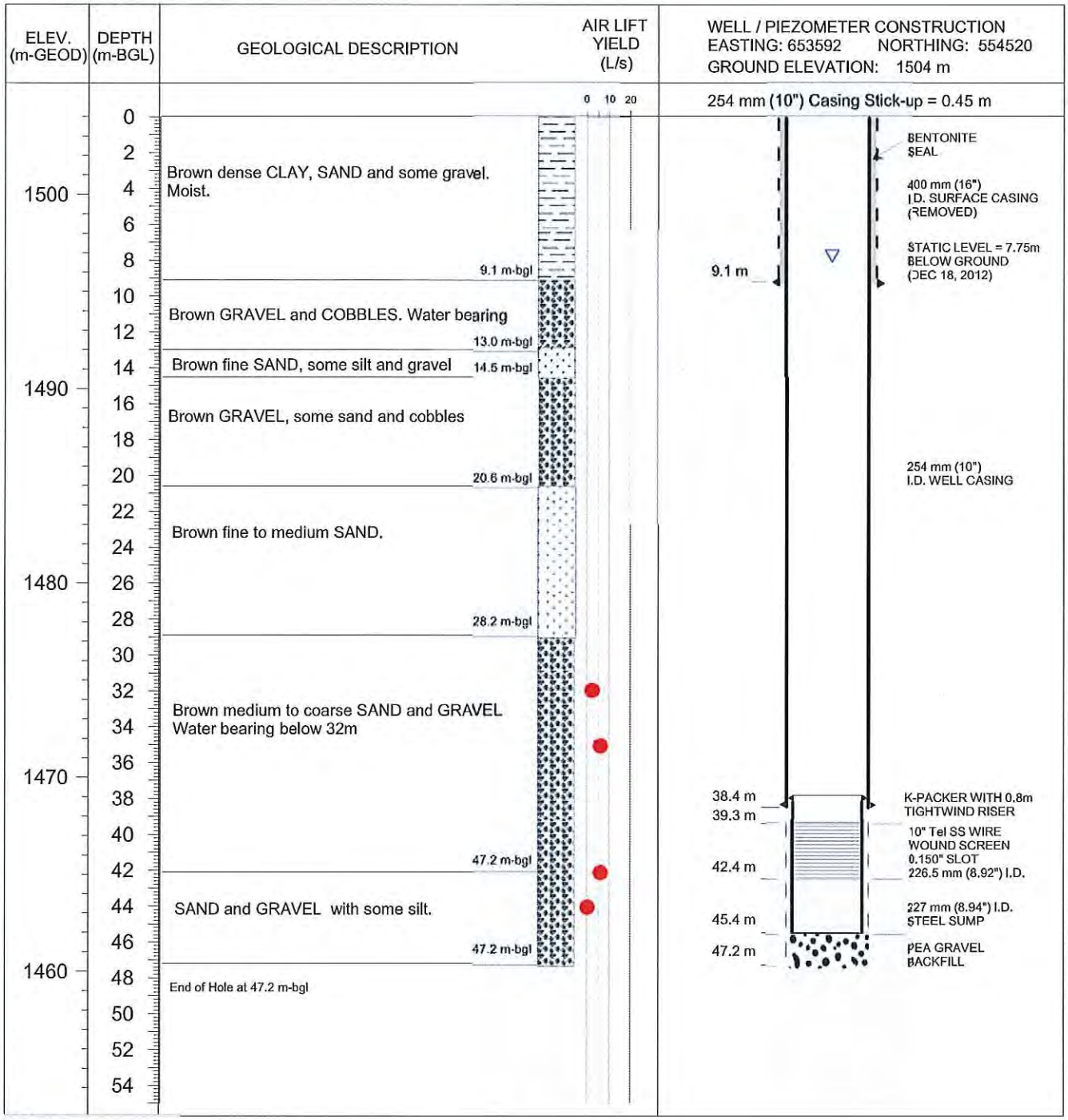


LEGEND

- Clay
- Gravel
- Sand

Note:
Coordinates and elevation not surveyed

DRILLING CONTRACTOR:	J.R. Drilling Ltd.
DRILLING METHOD:	DUAL ROTARY
START DATE:	19-Nov-12
END DATE:	21-Nov-12
HYDROGEOLOGY:	Eric Pastora

KERR WOOD LEIDAL ASSOCIATES LTD.
TECK COAL LTD. - GREENHILLS OPERATIONS
GROUNDWATER SUPPLY ASSESSMENT

PITEAU ASSOCIATES
GEOTECHNICAL AND HYDROGEOLOGICAL CONSULTANTS

WELL 17 LOG

BY	DATE
EP	JAN 13
APPROVED	FIG.
ATH	2

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_EF1A

PAGE 1 OF 3

Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 02	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1264.288	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1265.209	Date Drilled:	2020 08 08
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5544459.208	Easting: 649058.221	Log Typed By:	AS

Drilling Legend: Sample Interval; Odex

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC; Slotted PVC

Well Name 1: GH_MW_EF1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	SAND, fine grained, trace gravel, fine, subangular, poorly graded, light brown, loose, dry, organics.					
1	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular, well graded, brown, loose, damp.			EF1A-01		
2				EF1A-02		
3	At 3.1 m - wet.					
4	GRAVEL, fine to coarse, subangular, some silt, trace sand, fine to coarse grained, poorly graded, brown, loose, wet.			EF1A-03		
5				EF1A-04		
6	Below 5.8 m - some sand.					
7				EF1A-05		
8	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded, trace silt, well graded, grey, loose, wet.			EF1A-06		
9						
10				EF1A-07		

BENTONITE

BENTONITE

SLOUGH

NOTES
Bolded sample denotes sample analyzed.
* Denotes blind field duplicate.

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_EF1A

Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 02	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1264.288	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1265.209	Date Drilled:	2020 08 08
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5544459.208	Easting: 649058.221	Log Typed By:	AS

Drilling Legend: Sample Interval; Odex

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC; Slotted PVC

Well Name 1: GH_MW_EF1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
10	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded, trace silt, well graded, grey, loose, wet. *(continued)*					
11	GRAVELLY SAND, fine to coarse grained sand, fine to coarse gravel, subrounded, trace silt, well graded, grey, loose, wet.			EF1A-08		
12						
13				EF1A-09		
14				EF1A-10		
15						
16				EF1A-11		
17	SAND, fine to coarse grained, some silt, trace gravel, fine to coarse, subrounded, grey, medium dense, wet.			EF1A-12		
18						
19				EF1A-13		
20	GRAVELLY SAND, fine to coarse grained sand, subrounded gravel, some silt, well graded, grey, medium dense, wet.					

SLOUGH
BENTONITE
SLOUGH
BENTONITE
BENTONITE

NOTES
Bolded sample denotes sample analyzed.
* Denotes blind field duplicate.

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_EF1A

PAGE 3 OF 3

Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 02	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1264.288	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1265.209	Date Drilled:	2020 08 08
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5544459.208	Easting: 649058.221	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_EF1A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
20	GRAVELLY SAND, fine to coarse grained sand, subrounded gravel, some silt, well graded, grey, medium dense, wet. *(continued)*			EF1A-14			
21							
22				EF1A-15			
23							
24				EF1A-16			
25							
26				EF1A-17			
27							
28				EF1A-18			
29							
30	Bottom of hole at 27.4 m.						

BENTONITE
GH_MW_EF1A
SAND
SLOUGH

NOTES
Bolded sample denotes sample analyzed.
* Denotes blind field duplicate.

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_EF1B

PAGE 1 OF 1

Drilling Contractor	Owen's Drilling	Date Monitored	2020 09 02	Project Number:	631283
Drilling Method	Odex	Ground Surface Elev. (m)	1264.341	Borehole Logged By:	MTB
Borehole Dia. (m)	0.13	Top of Casing Elev. (m)	1265.127	Date Drilled:	2020 08 08
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5544457.462	Easting: 649056.933	Log Typed By:	AS

Drilling Legend
- Sample Interval
- Odex

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_EF1B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND, fine grained, trace gravel, fine, subangular, poorly graded, light brown, loose, dry, organics.						
	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular, well graded, brown, loose, damp.						
3	At 3.1 m - wet.						
4	GRAVEL, fine to coarse, subangular, some silt, trace sand, fine to coarse grained, poorly graded, brown, loose, wet.						
6	Below 5.8 m - some sand.						
7.6	Bottom of hole at 7.6 m.						

BENTONITE

GH_MW_EF1B

SAND

NOTES

QA/QC: LLH 2020 10 19 Print Date:2020-12-02

HYDROGEOLOGIC LOG

DRILLHOLE No. 79-6
Sheet 1 of 1

Project: ELKFORD VILLAGE GROUND WATER SURVEY

Type of drilling: Rotary

Rig: CP

Drilling fluid: Air/Foam

Coordinates: E 649,190
N 5,543,380

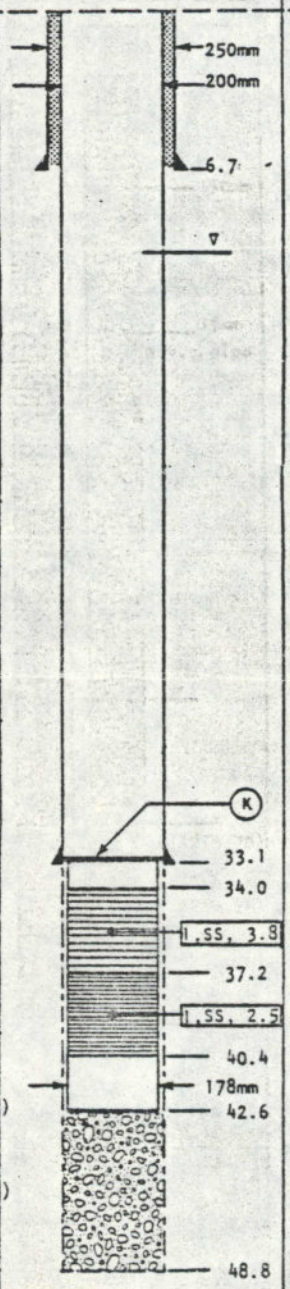
Angle from horizontal: 90°

Bearing: ____ °Azimuth

Reference elevation: 1266m

Elevation type: surveyed ☐ altimeter ☐ from map ☒

Purpose of hole: Water well and exploration.



(1)(2)* Lithology	(2)(3) Completed Construction	During Drilling: (2) Depth (m)	(2)(4) Water Level (m)	(5) Water Flow (l/s)	(6) Other	After Drilling: (2)(7) Water Level (m)	Permeability (8): (2) Depth (m)	Method	Value (m/s)	Comments
Ground Surface										
UNSAMPLED Surficial Deposits				Lw						
6.1 (1259.9)										
Sandy GRAVEL with silt variable from trace of silt to some silt. Subrounded gravel from ½cm to 1½cm ϕ.						9.3 (1256.7)				Water level on June 14th.
		15.2		3.8	EC=395 pH=6.6 H =290 I =0.6 T =5°C					
		18.3			pH=7.1					Sulfur odor noted @ 18.3m depth
21.6 (1244.4)										
Fine Cobbly GRAVEL with some sand 24.4 (1241.6)					EC=380 pH=7.0					
Fine sandy GRAVEL with tr. of silt. 27.4 (1238.6)		24.4	9.10 8.93		H =257 I =0.5 T =6					
		27.4		10.2						Sulfur odor noted @ 27.4m depth.
GRAVEL, some sand and silt, tr. of cobbles. 31.7 (1234.3)		30.5		13.6	EC=395 pH=8.1 I =0.5 T =6.5					
GRAVEL, some sand with tr. of cobbles and silt.		36.6	9.120	EC=270 I =0.5 T =6.5	● 1 ● 2 ● 3 ● 4 ● 5 ● 6 ● 7 ● 8 ● 9 ●10		36.3 36.9 38.1 38.7 39.3 39.9 40.5 42.4 43.0 43.6	h h h h h h h h h h	3.8(-4) 4 (-4) 8 (-4) 1.5(-3) 3.6(-3) 4.1(-3) 4 (-3) 1.6(-3) 1.1(-3) 4 (-4)	
39.6 (1226.4)										
Fine sandy GRAVEL with tr. of silt. 41.1 (1225.0)										
Silty SAND tr.of pebbles. (41.8)										
Sandy GRAVEL with some silt, increasing w/depth 44.2 (1221.8)										
Grading to silt										
Sandy SILT trace of clay 46.9 (1219.1)										
Sandy GRAVEL with some silt, tr.clay 48.8 (1217.2)				<6						

Contractor: R.J. Drilling
Date started: May 30, 1979
Date finished: June 14, 1979

Logged by: D.M.
Checked by: A.P.
Date: July/79

* NOTE: Bracketed numbers refer to notes preceding the logs.

PITEAU & ASSOCIATES
GEOTECHNICAL CONSULTANTS

Scale: 0 5m

HYDROGEOLOGIC LOG

DRILLHOLE No. 79-6-1
Sheet 1 of 1 Piezometer log.

Project ELKFORD VILLAGE GROUNDWATER SURVEY

Type of drilling Rotary

Rig CP

Drilling fluid Air/Foam

Coordinates: E 649,190
N 5,543,380

Angle from horizontal 90°

Bearing -- °Azimuth

Reference elevation 1265.608 M

Elevation type: surveyed [X] altimeter [ ] from map [ ]

Purpose of hole Observation Piezometer for well No. 79-6.

(1) (2) * Lithology	(2) (3) Completed Construction	During Drilling: (2) Depth (m)	During Drilling: (2)(4) Water Level (m)	During Drilling: (5) Water Flow (l/s)	During Drilling: (6) Other	After Drilling: (2)(7) Water Level (m)	After Drilling: Permeability (8) (2) Depth (m)	Permeability (8) Method	Permeability (8) Value (m/s)	Comments
Ground Surface 0.00 (1265.608)										NOTE; P.V.C. tubing stick-up is less than 1 cm above ground.
Unsampled surficial deposits.	0.30 (1265.31); 0.91 (1264.70); 150mm									
3.05 (1262.56)										
Sandy GRAVEL with trace of silt.	19mm p.v.c pipe									
6.10 (1259.51)										
Sandy GRAVEL with some silt.						8.46 (1257.15)				S.W.L. on June 14.
8.53 (1257.07)										
Coarser clean Sandy GRAVEL with trace of silt.	9.91 (1255.70); 10.67 (1254.94); 11.25 (1254.36)									Slots cut in last 0.9 metres of p.v.c Tubing.
END OF DRILLHOLE 12.19 (1253.42)										End of p.v.c. Tubing sealed with cap.

Contractor R.J. DRILLING LTD. Logged by D.M.

Date started May 29, 1979 Checked by:

Date finished May 29, 1979 Date: August 1979

* NOTE Bracketed numbers refer to notes preceding the logs.

PITEAU & ASSOCIATES
GEOTECHNICAL CONSULTANTS
VANCOUVER CALGARY

Scale: 0 1m 2m

HYDROGEOLOGIC LOG

DRILLHOLE No. 79-6-2 Piezometer log
Sheet 1 of 1

Project: ELKFORD VILLAGE GROUNDWATER SURVEY

Type of drilling: Rotary

Rig: CP

Drilling fluid: Air/Foam

Coordinates: E 649,190
N 5,543,380

Angle from horizontal: 90°

Bearing: --- *Azimuth

Reference elevation: 1265.480 M
surveyed [x]
Elevation type: altimeter [ ]
from map [ ]

Purpose of hole: Observation Piezometer
for well No. 79-6

(1) (2) * Lithology	(2) (3) Completed Construction	During Drilling: (2) Depth (m)	During Drilling: (2)(4) Water Level (m)	During Drilling: (5) Water Flow (l/s)	During Drilling: (6) Other	After Drilling: (2)(7) Water Level (m)	After Drilling: Permeability (8) (2) Depth (m)	Permeability (8) Method	Permeability (8) Value (m/s)	Comments
Ground Surface 0.00 (1265.480)	0.30 (1265.18) 0.91 (1264.57) 150mm									NOTE: P.V.C. tubing stick-up less than 1 cm above ground.
Unsampled surficial deposits. 2.92 (1262.56)										
Sandy GRAVEL with trace of silt. 5.97 (1259.51)	25.4mm p.v.c. pipe									
Sandy GRAVEL with some silt. 8.40 (1257.08)						8.30 (1257.18)				S.W.L. on June 14.
Coarser clean Sandy GRAVEL with trace of silt. 12.19	9.91 (1255.57) 10.67 (1254.81) 11.25 (1254.23)									Slots cut in last 0.9 metres on p.v.c. tubing. End of p.v.c. tubing sealed with cap.
FOR LITHOLOGIC DETAILS SEE LOG FOR WELL No. 79-6 (1253.29)	48.28 (1217.20)									Part of log omitted for clarity.

Contractor: R.J. DRILLING LTD. Logged by: D.M.

Date started: May 30, 1979 Checked by:

* NOTE Bracketed numbers refer to notes preceding the logs.

PITEAU & ASSOCIATES
GEOTECHNICAL CONSULTANTS

Scale: 0 1m 2m

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_LCWC1

PAGE 1 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1310.453	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1311.258	Date Drilled:	2020 06 07
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552399.910	Easting: 648356.101	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_LCWC1

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	TOPSOIL.					50	
1	SILTY CLAY, trace gravel, fine, trace sand, coarse grained, medium dense, high plastic, damp.			06-07-2020-01			
2							
3				06-07-2020-03		65	
4	SANDY CLAY, fine to coarse grained sand, some silt, loose, moist.			06-07-2020-02			
5				06-07-2020-04			
6	SAND and GRAVEL, coarse grained sand, subrounded, fine to coarse gravel, subrounded, containing cobbles.					25	
7				06-07-2020-05 06-07-2020-10			
8	SILTY SAND, coarse grained sand, trace gravel, fine, some clay, moist.						
9				06-07-2020-06		120	
10	SILTY SAND, fine grained sand, some clay, trace gravel, fine, loose to medium dense, damp.			06-07-2020-07			

BENTONITE
RG_MW_LCWC1
SAND
BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_LCWC1

PAGE 2 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1310.453	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1311.258	Date Drilled:	2020 06 07
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552399.910	Easting: 648356.101	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_LCWC1

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4	
10	SILTY SAND, fine grained sand, some clay, trace gravel, fine, loose to medium dense, damp. *(continued)*							
	At 10.5 m - increased density.			06-07-2020-08				BENTONITE
11								
				06-07-2020-09				
12	Bottom of hole at 11.9 m.							
13								
14								
15								
16								
17								
18								
19								
20								

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Mickelson Pond

Borehole No. : GH_BH-MC-1

PAGE 1 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1313.098	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1314.011 1313.988	Date Drilled:	2018 11 15
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5553565.222	Easting: 647979.304	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Depth in Metres | Soil Description | Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW-MC-1S
Well Name 2: GH_MW-MC-1D

0 SAND, fine grained, silty, trace fine gravel, subrounded, loose, moist, some to trace organics (roots/rootlets).

1 SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, cobbles present, trace silt, subrounded, well graded, brown, loose to medium dense, damp to dry.

2

3 At 3.1 m - fine to coarse grained sand, no silt

4 From 4.3 m to 4.9 m - wet

5 SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, cobbles present, trace to some silt, subrounded, well graded, medium dense, wet.

6

7 At 7.0 m - increase in gravel, dense, wet to moist

8

9 SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, trace silt, subrounded to rounded, well graded, brown, loose, wet.

10

BENTONITE/SLOUGH
BENTONITE
BENTONITE
GH_MW-MC-1S
SAND

NOTES
Water level 1 and first top of casing elevation is for GH_MW-MC-1S.
Water level 2 and second top of casing elevation is for GH_MW-MC-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Mickelson Pond

Borehole No. : GH_BH-MC-1

PAGE 2 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1313.098	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1314.011 1313.988	Date Drilled:	2018 11 15
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5553565.222	Easting: 647979.304	Log Typed By:	VL

Drilling Legend: Sample Interval; Auger Flight

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

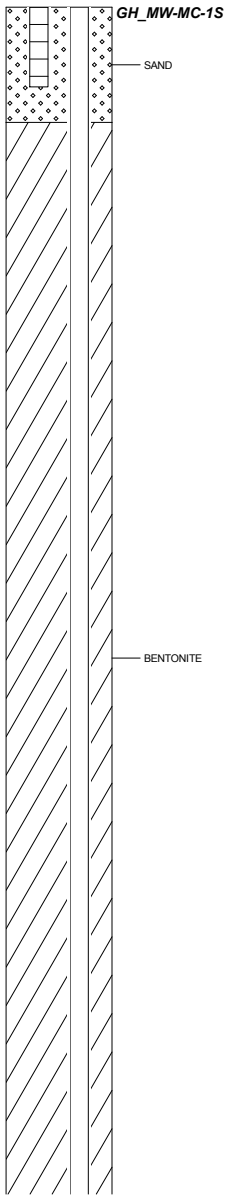
Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm) 10^1 10^2 10^3 10^4

Solid PVC; Slotted PVC

Well Name 1: GH_MW-MC-1S
Well Name 2: GH_MW-MC-1D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
10	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, trace silt, subrounded to rounded, well graded, brown, loose, wet. *(continued)*					
11	SILT, some fine grained sand, trace fine to coarse gravel, subrounded, brown to dark brown, firm, damp.					
12	At 12.2 m - damp to dry					
13						
14	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, some silt, subrounded, well graded, brown, dense, damp to dry.					
	SAND, fine grained, silty, some to trace gravel, fine to coarse, subrounded, poorly graded, brown, dense, damp to dry.					
15						
16	SILT, sandy, fine grained, trace fine gravel, brown, firm, damp to dry.					
17	SAND, fine to medium grained, silty, some gravel, fine to coarse, subrounded, well graded, brown, damp.					
18						
19	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, some silt, subrounded, well graded, brown, dense, damp.					
20						



NOTES
Water level 1 and first top of casing elevation is for GH_MW-MC-1S.
Water level 2 and second top of casing elevation is for GH_MW-MC-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Mickelson Pond

Borehole No. : GH_BH-MC-1

PAGE 3 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1313.098	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1314.011 1313.988	Date Drilled:	2018 11 15
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5553565.222	Easting: 647979.304	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- ○ Reading within indicated scale
- ● Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW-MC-1S
Well Name 2: GH_MW-MC-1D

Depth in Metres	Soil Description
20	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, some silt, subrounded, well graded, brown, dense, damp. *(continued)*
21	
22	
23	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, trace silt, well graded, brown, medium dense, moist. At 22.6 m - some silt to silty, loose, wet
24	
25	
26	
27	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, some to trace silt, subrounded to subangular, well graded, loose, wet. At 27.7 m - some silt
28	
29	At 29.0 m - trace silt
30	

BENTONITE

SAND

NOTES
Water level 1 and first top of casing elevation is for GH_MW-MC-1S.
Water level 2 and second top of casing elevation is for GH_MW-MC-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Mickelson Pond

Borehole No. : GH_BH-MC-1

PAGE 4 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1313.098	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1314.011 1313.988	Date Drilled:	2018 11 15
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5553565.222	Easting: 647979.304	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

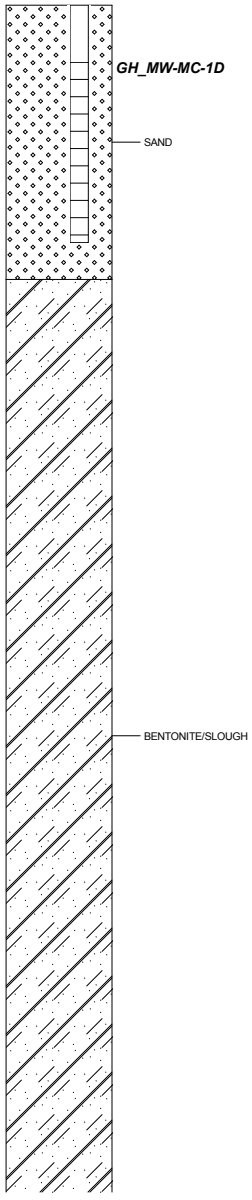
Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW-MC-1S
Well Name 2: GH_MW-MC-1D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
30	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, some to trace silt, subrounded to subangular, well graded, loose, wet. *(continued)*					
31						
32						
33						
34						
35	At 35.4 m - some silt					
36	At 36.3 m - silty					
37						
38	SAND and GRAVEL, fine grained sand, fine to coarse gravel, silty, subrounded to subangular, poorly graded, wet.					
39	GRAVEL, fine to coarse, some fine grained sand, some silt to silty, subangular to angular, poorly graded, dark grey to brown, wet to moist (possibly weathered bedrock).					
40						



NOTES
Water level 1 and first top of casing elevation is for GH_MW-MC-1S.
Water level 2 and second top of casing elevation is for GH_MW-MC-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Mickelson Pond

Borehole No. : GH_BH-MC-1

PAGE 5 OF 5

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1313.098	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1314.011 1313.988	Date Drilled:	2018 11 15
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5553565.222	Easting: 647979.304	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW-MC-1S
Well Name 2: GH_MW-MC-1D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
40	GRAVEL, fine to coarse, some fine grained sand, some silt to silty, subangular to angular, poorly graded, dark grey to brown, wet to moist (possibly weathered bedrock). *(continued)*					
	At 40.2 m - moist					
41	At 40.8 m - wet					
42						
	BEDROCK, fine grained, grey to dark grey, moderately weathered.					
43						
44						
45						
46						
47						
	Bottom of hole at 47.2 m.					
48						
49						
50						

BENTONITE/SLOUGH

NOTES
Water level 1 and first top of casing elevation is for GH_MW-MC-1S.
Water level 2 and second top of casing elevation is for GH_MW-MC-1D.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Mickelson Pond

Borehole No. : GH_BH-MC-2

PAGE 1 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1314.150	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1315.115 1315.132	Date Drilled:	2018 11 14
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5553498.261	Easting: 648210.667	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)

Solid PVC
Slotted PVC

Well Name 1: GH_MW-MC-2S
Well Name 2: GH_MW-MC-2D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	SAND, fine to medium grained, trace fine gravel, subrounded to subangular, poorly graded, dark brown, loose, dry.					
2	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, subangular to subrounded, cobbles present, well graded, brown, loose, damp/dry.					
3	At 3.1 m - fine grained sand, poorly graded					
5	SILT, some fine to medium grained sand, trace to some fine to coarse gravel, subangular to subrounded, soft to medium firm, wet.					
5	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, some silt, subangular to subrounded, well graded, brown to dark brown, medium dense, damp to dry.					
6	At 6.1 m - increased fine grained sand, trace to some silt, dense					
10						

BENTONITE
BENTONITE
GH_MW-MC-2S
SAND
BENTONITE

NOTES
Water level 1 and first top of casing elevation is for GH_MW-MC-2S.
Water level 2 and second top of casing elevation is for GH_MW-MC-2D.
GH_MW-MC-2S monitored 2018 11 18.

QA: MCA 2019 01 14 Print Date:2019-12-04

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations Mickelson Pond

Borehole No. : GH_BH-MC-2

PAGE 2 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2018 12 06	Project Number:	658004
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1314.150	Borehole Logged By:	MCA
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1315.115 1315.132	Date Drilled:	2018 11 14
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5553498.261	Easting: 648210.667	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Auger Flight

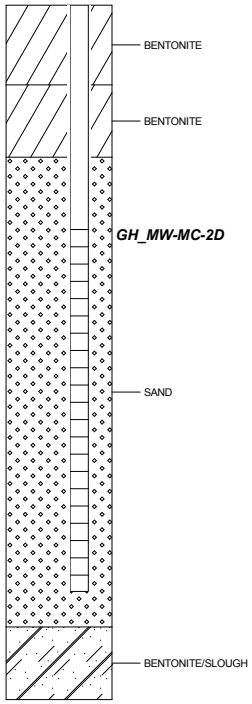
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW-MC-2S
Well Name 2: GH_MW-MC-2D

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	SAND and GRAVEL, fine to medium grained sand, fine to coarse gravel, some silt, subangular to subrounded, well graded, brown to dark brown, medium dense, damp to dry. *(continued)*						
11	At 11.6 m - moist						
12	At 12.2 m - damp to dry						
13							
14							
15							
16	BEDROCK, fine grained, grey to dark grey, moderately weathered.						
17	Bottom of hole at 16.8 m.						
18							
19							
20							



NOTES
Water level 1 and first top of casing elevation is for GH_MW-MC-2S.
Water level 2 and second top of casing elevation is for GH_MW-MC-2D.
GH_MW-MC-2S monitored 2018 11 18.

QA: MCA 2019 01 14 Print Date:2019-12-04

DATA ENTRY: IPG

PROJECT No.: 11.1422.0052

RECORD OF MONITORING WELL: GA-MW-04

SHEET 1 OF 2

LOCATION: See Location Plan
N: 5552963 E: 648217

BORING DATE: September 20, 2012

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Barber Rig – Air Rotary Tervita	Ground Surface		1304.00							Stick-up = 0.9 m
		(SP) GRAVELLY SAND, coarse-grained, fine gravel, sub-angular, poorly-graded, dark grey		0.00							
1											
2											
3											
4					1	GRAB					
5											Bentonite Pellets
6											24 Sep 2012 ▽
7											
8											
9				1295.00							
		(SM) SILTY SAND, medium to fine-grained, sub-rounded, poorly-graded, brown and dark grey		9.00	2	GRAB					
10				1294.00							
		CONTINUED NEXT PAGE									

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: TG
CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1422.0052_BH LOGS.GPJ CALGARY.GDT 7/30/15

PROJECT No.: 11.1422.0052

RECORD OF MONITORING WELL: GA-MW-04

SHEET 2 OF 2

LOCATION: See Location Plan

N: 5552963 E: 648217

BORING DATE: September 20, 2012

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	Barber Rig – Air Rotary Tervita	(SP) GRAVELLY SAND, coarse-grained, fine gravel, sub-angular, poorly-graded, dark grey		10.00							Bentonite Pellets
11											
12					3	GRAB					
13											10/20 Sand
14				1290.00							
		(SM) SILTY SAND, medium to fine-grained, sub-rounded, poorly-graded, brown and dark grey		14.00	4	GRAB					
				1289.50							
		(GW) GRAVEL, fine with coarse, sub-angular to sub-rounded, well graded, grey		14.50							
15											Slotted Section 10/20 Sand
16					5	GRAB					
17				1287.00							Bentonite Pellets
		(SP) GRAVELLY SAND, coarse-grained, fine gravel, poorly-graded, sub-angular, dark grey			6	GRAB					
				17.20							
		End of MONITORING WELL.									
18		NOTES: Standpipe installed to 16.7 m. Groundwater present at 6.0 m on September 24, 2012.									
19											
20											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: TG

CHECKED: JW

DATA ENTRY: IPG

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1422.0052_BH LOGS.GPJ CALGARY.GDT 7/30/15

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_LC3A

PAGE 1 OF 3

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1318.325	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1319.040	Date Drilled:	2020 06 05
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552736.051	Easting: 648181.849	Log Typed By:	VL

Drilling Legend: Sample Interval; Vibrasonic

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm): 10^1 10^2 10^3 10^4

Solid PVC; Slotted PVC

Well Name 1: RG_MW_LC3A

Depth in Metres	Soil Description	Sample Number	Blow Count	% Recovery
0	SILTY CLAY (TOPSOIL), some gravel, fine to coarse, rounded to subrounded, medium plastic, damp, organics.			60
1	SILTY CLAY, trace gravel, fine, rounded to subrounded, grey-brown, mottled, high plastic, damp.	06-05-2020-01		
2	SILTY GRAVEL, some clay, grey-brown, mottled, low plastic, damp.	06-05-2020-02		
3	At 2. 7 m - increased gravel, fine, rounded to subrounded.	06-05-2020-03		70
4	SANDY CLAY, fine grained sand, some silt, trace gravel, fine, rounded to subrounded, high plastic, damp.	06-05-2020-04		
5	SILTY GRAVEL, fine to coarse gravel, rounded to subrounded, some sand, coarse grained, some clay, wet.	06-05-2020-05		
6		06-06-2020-12		60
		06-05-2020-06		
7	CLAYEY GRAVEL, fine to coarse gravel, subrounded to subangular, containing cobbles, trace silt, trace sand, coarse grained, mottling, dense.			
8		06-05-2020-07		
		06-05-2020-08		
9	At 9.5 m - becomes loose, damp.			60
		06-05-2020-09		
10				

BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client: **Teck Coal Limited**

Location: **Regional Groundwater Monitoring**

Borehole No. : RG_BH_LC3A

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1318.325	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1319.040	Date Drilled:	2020 06 05
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552736.051	Easting: 648181.849	Log Typed By:	VL

Drilling Legend: Sample Interval; Vibrasonic

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm): 10^1 10^2 10^3 10^4

Solid PVC; Slotted PVC

Well Name 1: RG_MW_LC3A

Depth in Metres	Soil Description	Sample Number	Blow Count	% Recovery
10	CLAYEY GRAVEL, fine to coarse gravel, subrounded to subangular, containing cobbles, trace silt, trace sand, coarse grained, mottling, dense. *(continued)*	06-05-2020-10		
11	At 11.3 m - dry.	06-05-2020-11		
12	GRAVEL, fine to coarse, rounded, containing cobbles, some sand, fine to coarse grained, trace silt, wet.	06-05-2020-12	60	
13		06-05-2020-13		
14	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, rounded to subrounded, containing cobbles, trace silt, trace clay, wet.	06-05-2020-14		
15		06-05-2020-15	120	
	CLAY and GRAVEL, fine to coarse gravel, rounded to subrounded, brown, very dense.	06-05-2020-16		
16	At 15.8 m - grey.	06-05-2020-17		
17	At 16.5 m - increased coarse gravel.	06-05-2020-18		
18	SAND and GRAVEL, coarse grained sand, rounded to subrounded, fine gravel, trace coarse gravel, rounded to subrounded, some silt, brown, loose, wet.	06-06-2020-02	110	
19		06-06-2020-01		
20	SAND, fine to medium grained, some silt, trace gravel, fine, subrounded, trace clay, brown, loose, wet.	06-06-2020-03		

BENTONITE

RG_MW_LC3A

SAND

BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_LC3A

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1318.325	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1319.040	Date Drilled:	2020 06 05
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552736.051	Easting: 648181.849	Log Typed By:	VL

Drilling Legend: Sample Interval; Vibrasonic

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm) 10^1 10^2 10^3 10^4

Solid PVC; Slotted PVC

Well Name 1: RG_MW_LC3A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
20	SAND, fine to medium grained, some silt, trace gravel, fine, subrounded, trace clay, brown, loose, wet. *(continued)* At 20.1 m - increased fine grained sand, increased silt.			06-06-2020-04		
21	At 21.0 m - increased fine gravel, loose.				130	
22	SILTY SAND, fine grained sand, some clay, trace gravel, fine, rounded to subrounded, dense, wet.			06-06-2020-05		
23				06-06-2020-06		
24	At 23.5 m - increased fine gravel.			06-06-2020-07	100	
25	SILTY SAND, fine grained sand, some clay, trace gravel, fine, dense, damp.			06-06-2020-08		
26	SILTY CLAY, some sand, medium grained, dense, high plasticity, damp.			06-06-2020-09		
27	SILTY SAND, fine to medium grained sand, some clay, high plasticity, moist.			06-06-2020-10	100	
28	Bottom of hole at 27.4 m.					
29						
30						

BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_LC3B

PAGE 1 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1318.281	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1319.075	Date Drilled:	2020 06 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552736.874	Easting: 648181.728	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_LC3B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SILTY CLAY, trace gravel, fine, trace sand, fine grained, grey, high plasticity, damp.					40	
2	SILTY GRAVEL, fine to coarse gravel, rounded to subrounded, some sand, coarse grained, some clay, mottled, high plasticity, moist.					40	
3	GRAVEL, fine to coarse, rounded to subrounded, containing cobbles, some clay, loose, moist.						
4	CLAYEY SAND, fine grained sand, some gravel, fine to coarse, rounded to subrounded, dense, damp.					0	
9	CLAYEY GRAVEL, fine to coarse gravel, rounded to subrounded, containing cobbles, some silt, loose, wet.					20	
10							

BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_LC3B

PAGE 2 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1318.281	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1319.075	Date Drilled:	2020 06 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552736.874	Easting: 648181.728	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_LC3B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	CLAYEY GRAVEL, fine to coarse gravel, rounded to subrounded, containing cobbles, some silt, loose, wet. *(continued)*						
11							
12	GRAVEL, fine to coarse, rounded, containing cobbles (0.1 m), some sand, coarse grained, subrounded, trace silt, loose, wet.					50	
13							
14	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, rounded, some silt, trace clay, dense, moist.						
15	Bottom of hole at 14.9 m.						
16							
17							
18							
19							
20							

BENTONITE
RG_MW_LC3B
SAND
BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

DATA ENTRY: IPG

PROJECT No.: 11.1422.0052

RECORD OF MONITORING WELL: GA-MW-02

SHEET 1 OF 3

LOCATION: See Location Plan
N: 5552115 E: 648291

BORING DATE: September 19, 2012

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Barber Rig – Air Rotary Tervita	Ground Surface		1310.00									Stick-up = 1.02 m
		(SP) SAND, coarse-grained, trace fine gravel, angular, poorly-graded, grey		0.00									
1													
2					1	GRAB							
3													
4													19 Sep 2012 ▽
5				1305.00									Bentonite Pellets
		(GP) GRAVEL, coarse-grained, sub-rounded, brown		5.00									
6					2	GRAB							
7				1303.00									
		(CI) SILTY CLAY, some fine gravel, brown, cohesive, water content is close to plastic limit, very soft		7.00									
8					3	GRAB							
9													
10				1300.00									
		CONTINUED NEXT PAGE											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: TG
CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1422.0052_BH LOGS.GPJ CALGARY.GDT 7/30/15

DATA ENTRY: IPG

PROJECT No.: 11.1422.0052

RECORD OF MONITORING WELL: GA-MW-02

SHEET 2 OF 3

LOCATION: See Location Plan

N: 5552115 E: 648291

BORING DATE: September 19, 2012

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● rem V. ⊕ U - ○) (20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp — W — Wl) (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	Barber Rig – Air Rotary Tervita	(GW) GRAVEL, coarse-grained, sub-angular, well graded, grey		10.00	4	GRAB					
11				1298.50							
		(CI) SILTY CLAY, with some fine gravel, brown, cohesive, very soft, w~PL		11.50							
12											
13											
14					5	GRAB					
15											Bentonite Pellets
16											
17				1292.80							
		(SP) SAND, coarse-grained, some fine gravel, angular, poorly-graded, dark grey		17.20							
18					6	GRAB					
19				1290.50							
		(GW) GRAVEL, coarse-grained, sub-angular, well graded, grey		19.50	7	GRAB					
20		*CONTINUED NEXT PAGE*									

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1422.0052 BH LOGS.GPJ CALGARY.GDT 7/30/15

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: TG

CHECKED: JW

DATA ENTRY: IPG

PROJECT No.: 11.1422.0052

RECORD OF MONITORING WELL: GA-MW-02

SHEET 3 OF 3

LOCATION: See Location Plan

N: 5552115 E: 648291

BORING DATE: September 19, 2012

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕; 20 40 60 80)	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT (Wp, W, Wl; 10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
20	Barber Rig – Air Rotary Tervita	(GW) GRAVEL, coarse-grained, sub-angular, well graded, grey *(continued)*									Bentonite Pellets
21					7	GRAB					
22											10/20 Sand
23				1287.00							
		(ML) SILT, some fine gravel, trace coarse gravel, dark grey, non-cohesive, dry		23.00	8	GRAB					
24				1286.00							
		(SP) SAND, coarse-grained, some fine gravel, angular, poorly-graded, dark grey		24.00							
25											
26											Slotted Section 10/20 Sand
27					9	GRAB					
28											
29		— Bedrock at 28.5 m NOTES: Encountered BEDROCK at 28.5 m. Standpipe installed to 29.0 m. Groundwater level measured at 11.0 mGL on September 19, 2012.									Bentonite Pellets
				1280.50	10	GRAB					
		(SP) SAND, coarse-grained, coarse gravel, bits of bedrock, sub-angular, poorly-graded, light grey		29.60							
30		End of MONITORING WELL.									

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: TG

CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1422.0052 BH LOGS.GPJ CALGARY.GDT 7/30/15

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_WC2A

PAGE 1 OF 4

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1304.009	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1304.868	Date Drilled:	2020 06 08
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552079.286	Easting: 648195.937	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm): ○ Reading within indicated scale; ● Reading outside indicated scale; 10^1 10^2 10^3 10^4

Well Name 1: RG_MW_WC2A
- Solid PVC
- Slotted PVC

Depth in Metres	Soil Description	Sample Number	Blow Count	% Recovery
0	SILTY SAND (TOPSOIL), black, damp, organics.			60
1	SILTY SAND, fine to medium grained sand, trace clay, grey-brown, loose, low plasticity, damp.	06-07-2020-01		
2				
3	SAND and GRAVEL, coarse grained sand, fine to coarse gravel, rounded, trace silt, loose, wet.	06-07-2020-02		50
4		06-07-2020-03		
5		06-07-2020-05		
		06-07-2020-04		
6				90
	SAND and GRAVEL, coarse grained sand, fine gravel, rounded, trace silt, clean, wet.	06-07-2020-06		
7		06-07-2020-07		
	CLAY, trace silt, grey, medium dense, high plasticity, moist.			
8		06-07-2020-08		
9	GRAVEL and COBBLES, rounded to subrounded, well graded, clean, wet.			25
10				

BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_WC2A

PAGE 2 OF 4

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1304.009	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1304.868	Date Drilled:	2020 06 08
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552079.286	Easting: 648195.937	Log Typed By:	VL

Drilling Legend: Sample Interval; Vibrasonic

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm): 10^1 10^2 10^3 10^4

Solid PVC; Slotted PVC

Well Name 1: RG_MW_WC2A

Depth in Metres	Soil Description	Sample Number	Blow Count	% Recovery
10	GRAVEL and COBBLES, rounded to subrounded, well graded, clean, wet. *(continued)*	06-07-2020-09		
11				
12		06-07-2020-10		90
13	SAND, fine to medium grained, some silt, trace gravel, fine, loose, wet. At 13.1 m - increased sand, fine grained, increased silt, black inclusions. At 13.4 m - medium to coarse grained sand.	06-07-2020-11		
14		06-07-2020-12		
15	SILTY SAND, fine to medium grained sand, some clay, brown-grey, loose, medium plasticity, moist.	06-07-2020-13		100
16		06-08-2020-01		
17	At 17.1 m - decreased clay, increased medium grained sand.	06-08-2020-02 06-08-2020-04 06-08-2020-03		
18	SAND, fine to coarse grained, some silt, well graded, brown, loose, low plasticity, wet.			30
19				
20		06-08-2020-05		

BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Borehole No. : RG_BH_WC2A

Location
Regional Groundwater Monitoring

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1304.009	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1304.868	Date Drilled:	2020 06 08
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552079.286	Easting: 648195.937	Log Typed By:	VL

Drilling Legend: Sample Interval; Vibrasonic

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Soil Vapour (ppm): 10^1 10^2 10^3 10^4

Solid PVC; Slotted PVC

Well Name 1: RG_MW_WC2A

Depth in Metres	Soil Description	Sample Number	Blow Count	% Recovery
20	SAND, fine to coarse grained, some silt, well graded, brown, loose, low plasticity, wet. *(continued)* At 20.1 m - trace silt.			
21		06-08-2020-06		70
	SAND and GRAVEL, coarse grained sand, fine to coarse gravel, rounded, some silt, containing cobbles, subrounded, loose, wet.			
22		06-08-2020-07		
	At 22.7 m - increased fine grained sand.			
23		06-08-2020-08		
	SILT, trace sand, fine grained, grey, hard, low plasticity, dry.			
24		06-08-2020-09		110
		06-08-2020-10		
25	CLAY and GRAVEL (TILL), fine to coarse gravel, subrounded, some silt, dense, medium plasticity, dry.			
		06-08-2020-11		
26		06-08-2020-12		
27		06-08-2020-13		
	At 28.0 m - containing cobbles, some sand, fine to coarse grained, damp.			
28		06-08-2020-14		
29		06-08-2020-15		
30				

BENTONITE

RG_MW_WC2A

SAND

BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_WC2A

PAGE 4 OF 4

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1304.009	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1304.868	Date Drilled:	2020 06 08
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552079.286	Easting: 648195.937	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_WC2A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4	
30	CLAY and GRAVEL (TILL), fine to coarse gravel, subrounded, some silt, dense, medium plasticity, dry. *(continued)*							BENTONITE
	Bottom of hole at 30.5 m.							
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_WC2B

PAGE 1 OF 1

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	2020 06 16	Project Number:	631283
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1304.038	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1304.795	Date Drilled:	2020 06 08
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5552078.858	Easting: 648197.172	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale
Soil Vapour (ppm)

Solid PVC
Slotted PVC

Well Name 1: RG_MW_WC2B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	SILTY SAND, fine to medium grained sand, trace clay, poorly graded, grey-brown, loose, low plasticity.					40
1						
2	At 1.8 m - mottling.					
3	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, rounded, containing cobbles, trace silt, loose, wet.					40
4						
5						
6	CLAY, trace silt, grey, medium dense, high plastic, moist.					
7	SAND and GRAVEL, coarse grained sand, fine gravel, rounded, trace silt, wet.					
	Bottom of hole at 7.6 m.					
8						
9						
10						

BENTONITE
RG_MW_WC2B
SAND
BENTONITE

NOTES
Bolded sample denotes sample analyzed.

QA/QC: LLH 2020 09 02 Print Date:2020-12-02

DATA ENTRY: IPG

PROJECT No.: 11.1422.0052

RECORD OF MONITORING WELL: GA-MW-3S

SHEET 1 OF 2

LOCATION: See Location Plan
N: 5550296 E: 648578

BORING DATE: September 23, 2012

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80)	SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3})	WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0		Ground Surface		1294.00									
0	Barber Rig – Air Rotary Tervita	(SP) SAND, coarse-grained, sub-angular, poorly-graded, dark grey, homogenous, moist		0.00	1	GRAB							Bentonite Pellets
4.5		(SP) GRAVELY SAND, coarse-grained, fine gravel, poorly-graded, sub-angular, grey		1289.50 4.50	2	GRAB							10/20 Sand; 23 Sep 2012 ▽; Slotted Section 10/20 Sand
10		CONTINUED NEXT PAGE											

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: TG
CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1422.0052_BH LOGS.GPJ CALGARY.GDT 7/30/15

DATA ENTRY: IPG

PROJECT No.: 11.1422.0052

RECORD OF MONITORING WELL: GA-MW-3S

SHEET 2 OF 2

LOCATION: See Location Plan
N: 5550296 E: 648578

BORING DATE: September 23, 2012

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	Barber Rig – Air Rotary Tervita	(SP) GRAVELY SAND, coarse-grained, fine gravel, poorly-graded, sub-angular, grey *(continued)*									Slotted Section 10/20 Sand
11					3	GRAB					
12											
13											
14				1279.60	4	GRAB					Bentonite Pellets
15		End of MONITORING WELL. NOTES: Encountered BEDROCK at 14.4 m		14.40							
16											
17											
18											
19											
20											

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1422.0052_BH LOGS.GPJ CALGARY.GDT 7/30/15

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: TG
CHECKED: JW

Log of Monitoring Well: GH_MW-PC

HEMMERA

Project Name/No: 577-016.07

Client: Teck Coal Greenhills Operation

Date Drilled: September 2nd, 2016

Site Location: Elkford, BC

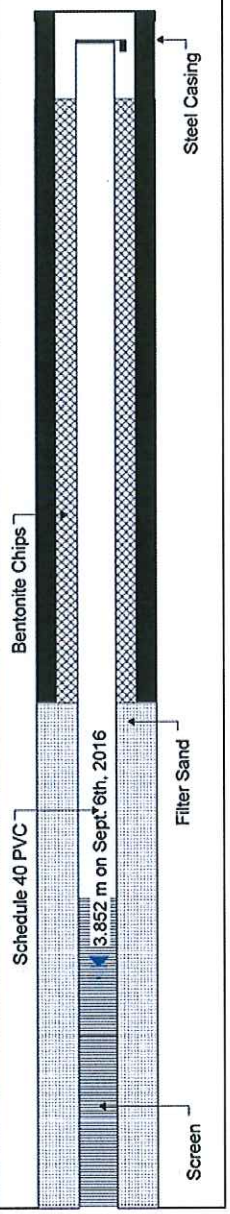
Drilling Company: JR Drilling

Drilling Method: Dual Rotary

Logged by: TK

Sheet: 1 of 8

SUBSURFACE PROFILE			SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
		Ground Surface	0.00						
		TOPSOIL TOPSOIL, brown, fine to medium silty sand with fine sub-angular gravel and rootlets	0.00						
		COBBLES and GRAVEL COBBLES and GRAVEL, with silt and sand, pulverized from drilling.	-1.00 1.00						
		Groundwater encountered at approximately 4.5 mbgs							



Well location: Porter Creek

Depth to water level (TOC): 3.852

Date of water level: September 6th, 2016

Borehole diameter: 15.24

Well casing diameter: 50.8mm

Well casing material: Schedule 40 PVC

Well screen slot size: 0.25mm

Well screen interval (bgs): 3.5-6.5

Depth of well (TOC): 7.601

Well Elevation (TOC): -

Ground Elevation: -

Log of Monitoring Well: GH_MW-PC

HEMMERA

Project Name/No: 577-016.07

Client: Teck Coal Greenhills Operation

Date Drilled: September 2nd, 2016

Site Location: Elkford, BC

Drilling Company: JR Drilling

Drilling Method: Dual Rotary

Logged by: TK

Sheet: 2 of 8

SUBSURFACE PROFILE			SAMPLE						
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
17									
18			-5.50						
19		**BEDROCK** BEDROCK (likely limestone), pulverized silt to fine/medium sub-angular/sub-rounded gravel size particles, crystalline, very hard, dry	5.50						
20	6								
21									
22									
23	7								
24									
25									
26	8								
27									
28									
29	9								
30									
31									
32									
33	10								
34									
35									
36	11								

Well location: Porter Creek

Depth to water level (TOC): 3.852

Date of water level: September 6th, 2016

Borehole diameter: 15.24

Well casing diameter: 50.8mm

Well casing material: Schedule 40 PVC

Well screen slot size: 0.25mm

Well screen interval (bgs): 3.5-6.5

Depth of well (TOC): 7.601

Well Elevation (TOC): -

Ground Elevation: -

Log of Monitoring Well: GH_MW-PC

HEMMERA

Project Name/No: 577-016.07

Client: Teck Coal Greenhills Operation

Date Drilled: September 2nd, 2016

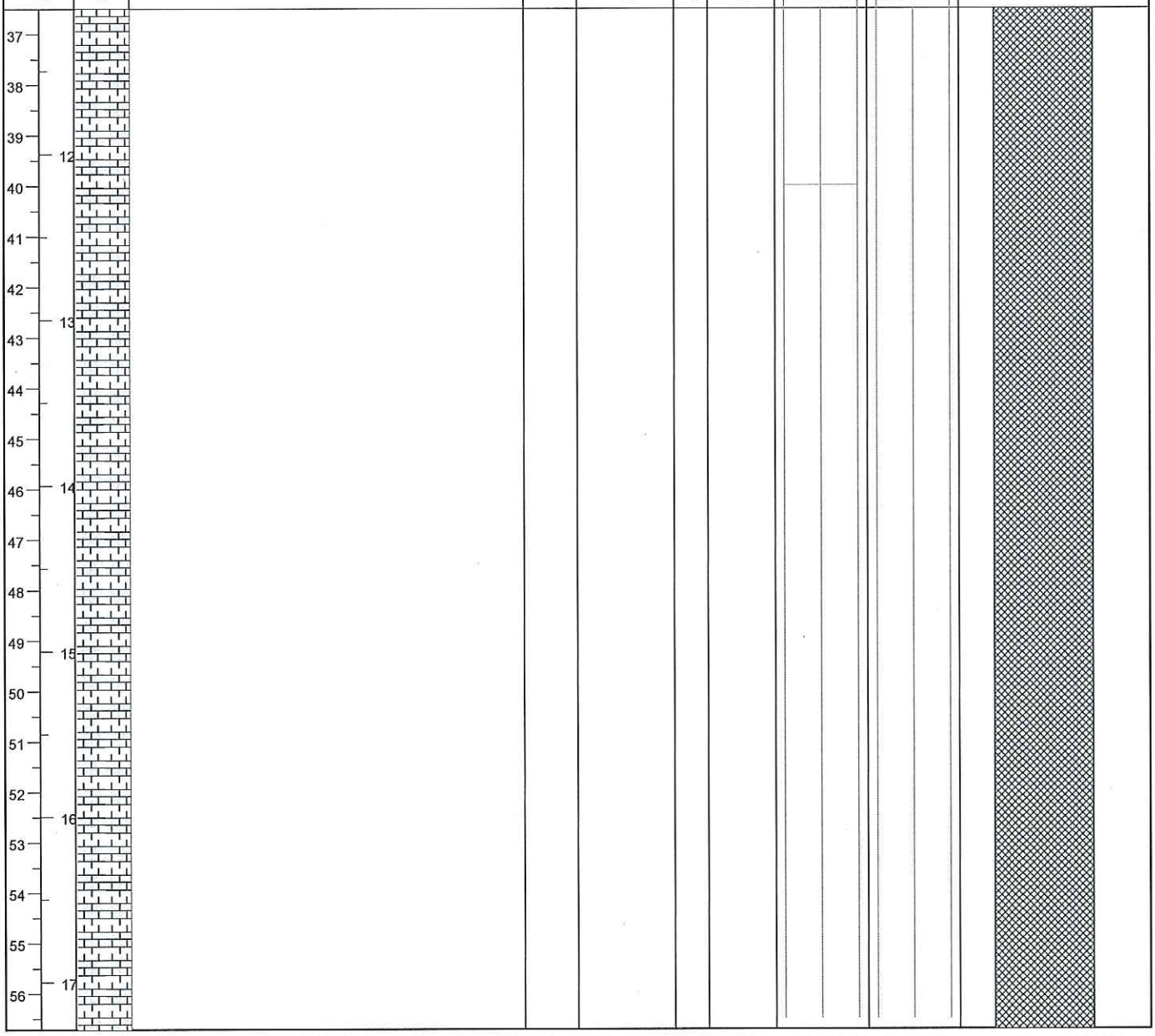
Site Location: Elkford, BC

Drilling Company: JR Drilling

Drilling Method: Dual Rotary

Logged by: TK

SUBSURFACE PROFILE			SAMPLE						
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details



Well location: Porter Creek

Depth to water level (TOC): 3.852

Date of water level: September 6th, 2016

Borehole diameter: 15.24

Well casing diameter: 50.8mm

Well casing material: Schedule 40 PVC

Well screen slot size: 0.25mm

Well screen interval (bgs): 3.5-6.5

Depth of well (TOC): 7.601

Well Elevation (TOC): -

Ground Elevation: -

Log of Monitoring Well: GH_MW-PC

HEMMERA

Project Name/No: 577-016.07

Client: Teck Coal Greenhills Operation

Date Drilled: September 2nd, 2016

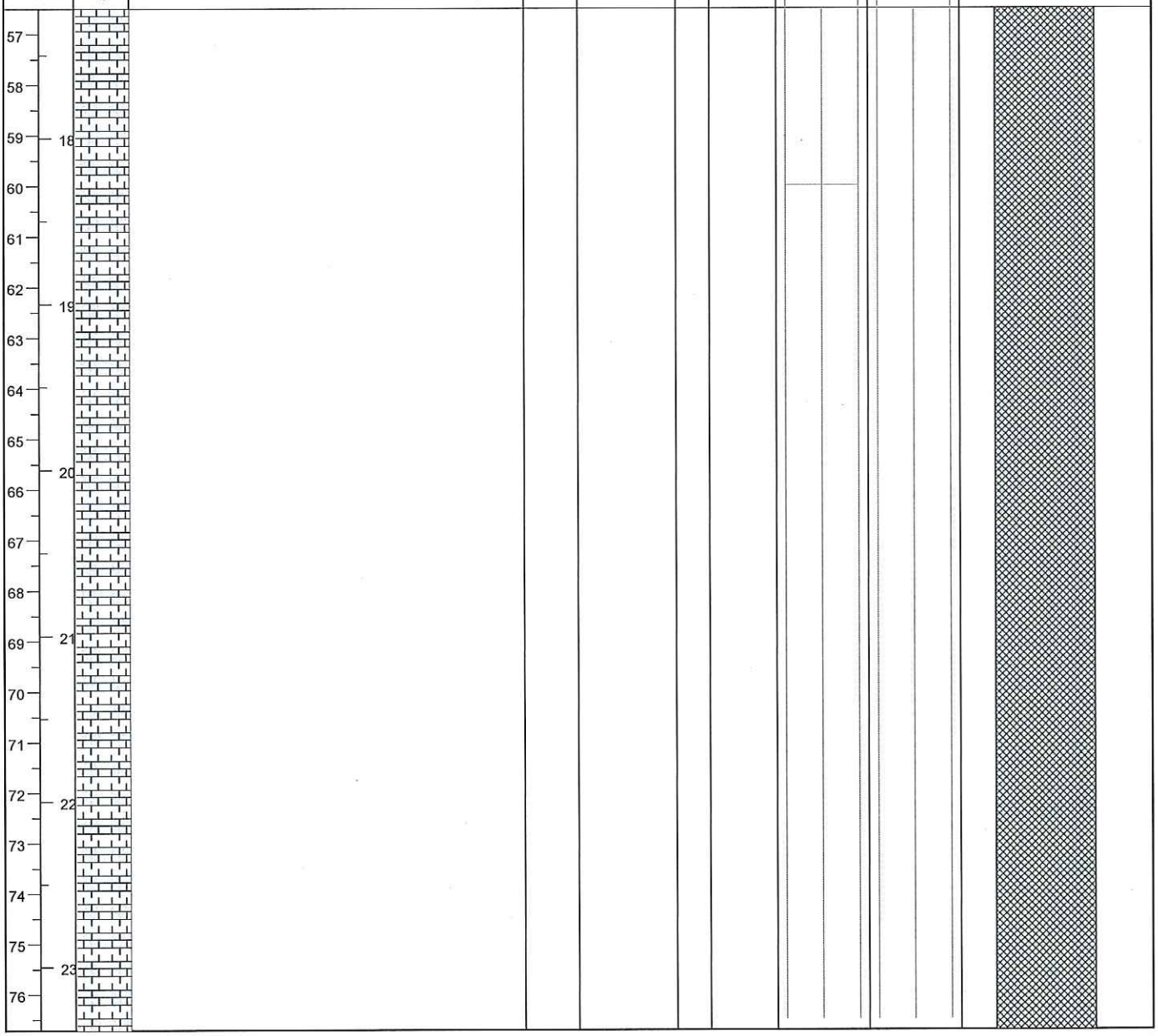
Site Location: Elkford, BC

Drilling Company: JR Drilling

Drilling Method: Dual Rotary

Logged by: TK

SUBSURFACE PROFILE			SAMPLE						Backfill details
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	



Well location: Porter Creek

Depth to water level (TOC): 3.852

Date of water level: September 6th, 2016

Borehole diameter: 15.24

Well casing diameter: 50.8mm

Well casing material: Schedule 40 PVC

Well screen slot size: 0.25mm

Well screen interval (bgs): 3.5-6.5

Depth of well (TOC): 7.601

Well Elevation (TOC): -

Ground Elevation: -

Log of Monitoring Well: GH_MW-PC

HEMMERA

Project Name/No: 577-016.07

Client: Teck Coal Greenhills Operation

Date Drilled: September 2nd, 2016

Site Location: Elkford, BC

Drilling Company: JR Drilling

Drilling Method: Dual Rotary

Logged by: TK

SUBSURFACE PROFILE			SAMPLE						
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
77									
78									
24		Small fracture encountered at 24 mbgs but was not found to have enough water to conduct a flow test							
79									
80									
81									
82									
25									
83									
84									
85									
26									
86									
87									
88									
27									
89									
90		From 27.5 mbgs drilling was noted to be smoother/easier; no observable change was identified in rock chips							
91									
92									
28									
93									
94									
95									
29									
96									

Well location: Porter Creek

Depth to water level (TOC): 3.852

Date of water level: September 6th, 2016

Borehole diameter: 15.24

Well casing diameter: 50.8mm

Well casing material: Schedule 40 PVC

Well screen slot size: 0.25mm

Well screen interval (bgs): 3.5-6.5

Depth of well (TOC): 7.601

Well Elevation (TOC): -

Ground Elevation: -

Log of Monitoring Well: GH_MW-PC

HEMMERA

Project Name/No: 577-016.07

Client: Teck Coal Greenhills Operation

Date Drilled: September 2nd, 2016

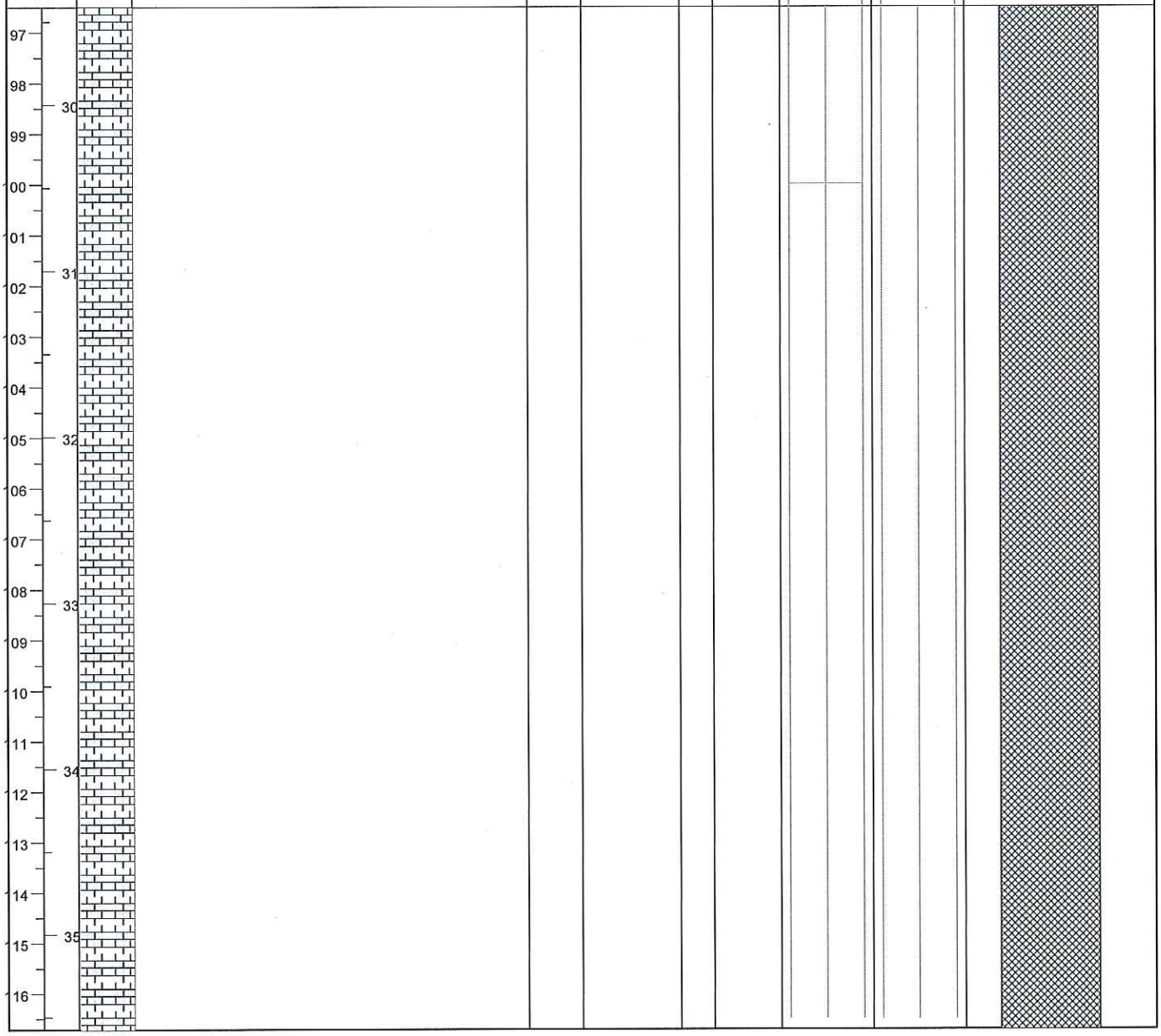
Site Location: Elkford, BC

Drilling Company: JR Drilling

Drilling Method: Dual Rotary

Logged by: TK

SUBSURFACE PROFILE			SAMPLE						
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details



Well location: Porter Creek

Depth to water level (TOC): 3.852

Date of water level: September 6th, 2016

Borehole diameter: 15.24

Well casing diameter: 50.8mm

Well casing material: Schedule 40 PVC

Well screen slot size: 0.25mm

Well screen interval (bgs): 3.5-6.5

Depth of well (TOC): 7.601

Well Elevation (TOC): -

Ground Elevation: -

Log of Monitoring Well: GH_MW-PC

HEMMERA

Project Name/No: 577-016.07

Client: Teck Coal Greenhills Operation

Date Drilled: September 2nd, 2016

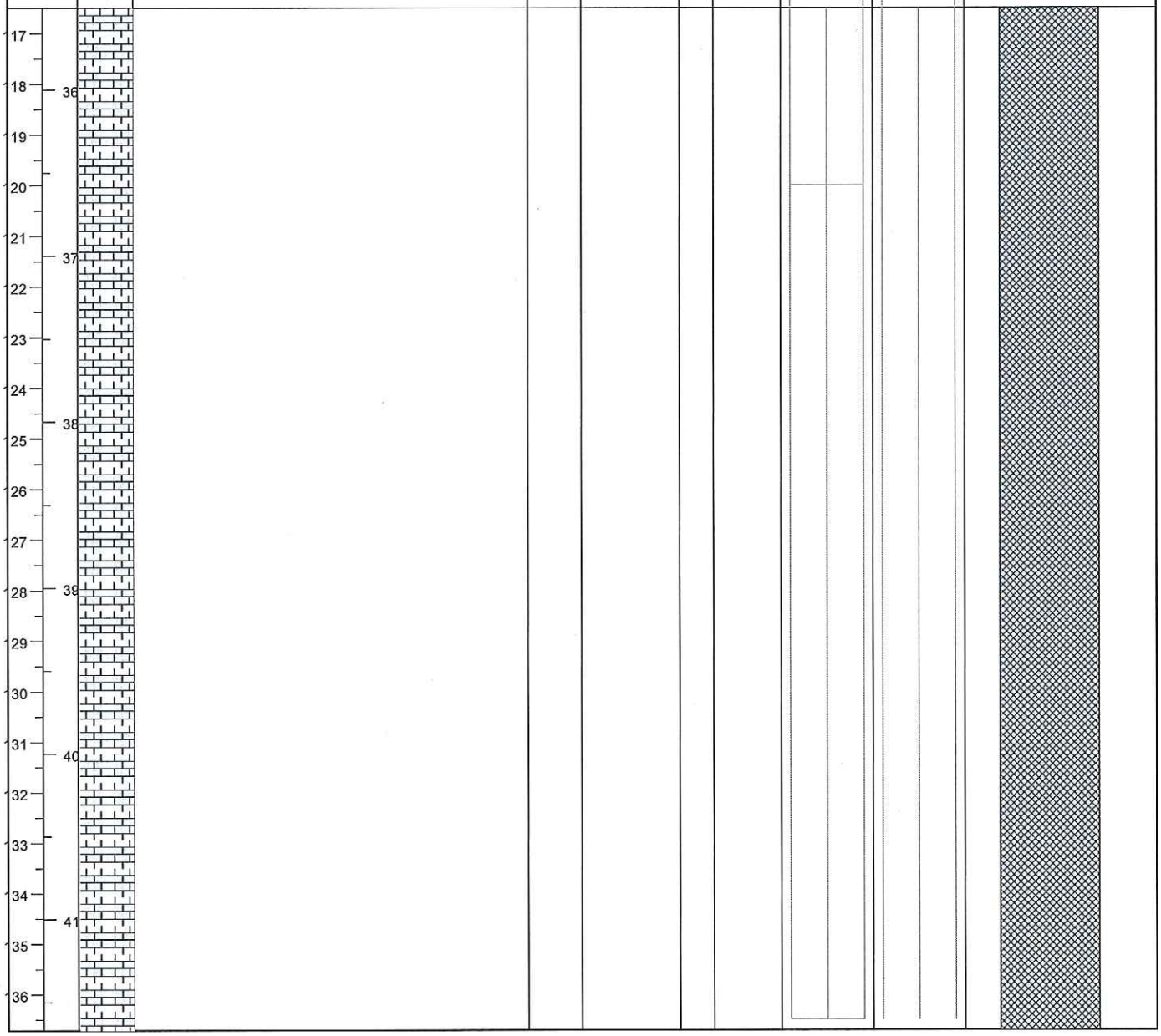
Site Location: Elkford, BC

Drilling Company: JR Drilling

Drilling Method: Dual Rotary

Logged by: TK

SUBSURFACE PROFILE			SAMPLE						
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details



Well location: Porter Creek

Depth to water level (TOC): 3.852

Date of water level: September 6th, 2016

Borehole diameter: 15.24

Well casing diameter: 50.8mm

Well casing material: Schedule 40 PVC

Well screen slot size: 0.25mm

Well screen interval (bgs): 3.5-6.5

Depth of well (TOC): 7.601

Well Elevation (TOC): -

Ground Elevation: -

Log of Monitoring Well: GH_MW-PC

HEMMERA

Project Name/No: 577-016.07

Client: Teck Coal Greenhills Operation

Date Drilled: September 2nd, 2016

Site Location: Elkford, BC

Drilling Company: JR Drilling

Drilling Method: Dual Rotary

Logged by: TK

SUBSURFACE PROFILE			SAMPLE						
Depth	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
37									
38	42								
39									
40									
41	43								
42									
43									
44	44								
45									
46									
47	45		-45.00						
48		End of Log	45.00						
49									
50									
51	46								
52									
53									
54	47								
55									
56									

Well location: Porter Creek

Depth to water level (TOC): 3.852

Date of water level: September 6th, 2016

Borehole diameter: 15.24

Well casing diameter: 50.8mm

Well casing material: Schedule 40 PVC

Well screen slot size: 0.25mm

Well screen interval (bgs): 3.5-6.5

Depth of well (TOC): 7.601

Well Elevation (TOC): -

Ground Elevation: -

DRAFT

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_RLP_2

PAGE 1 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2020 12 03	Project Number:	682279
Drilling Method	Odex	Ground Surface Elev. (m)	1492.250	Borehole Logged By:	VD
Borehole Dia. (m)	0.16	Top of Casing Elev. (m)	1493.080	Date Drilled:	2020 02 12
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5545343.000	Easting: 654075.000	Log Typed By:	VL

Drilling Legend: Sample Interval; Odex; Split Spoon

Water/NAPL Levels: Water Level 1; Water Level 2; NAPL; NAPL

Reading within indicated scale; Reading outside indicated scale

Solid PVC; Slotted PVC

Well Name 1: GH_MW_RLP_2

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SILT, sand, fine grained, gravel, dark brown, loose, dry.						
1	SILT, some sand, trace gravel, fine, black, wet, peaty, plant debris, coal dust.						
2	At 2.0 m - olive-dark grey.						
	SAND and SILT, fine grained sand, dark olive-grey, wet. At 2.7 m - saturated, flowing water.						
3	GRAVEL, subangular to subrounded, some sand, medium grained, poorly graded, flowing water. Below 3.5 m - containing cobbles.						
4				SS-01	4 10 9 8	20	
5							
	SAND and SILT, fine grained sand, dark olive-grey, very soft, wet, flowing.						
6				SS-02			
7							
8							
9							
10							

SAND
BENTONITE
GH_MW_RLP_2
SAND
BENTONITE
SLOUGH

NOTES
GPS coordinates recorded using hand held GPS.
Bolded sample denotes sample analyzed.

QA/QC: MB 2021 07 06 Print Date:2021-07-08

DRAFT

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : GH_BH_RLP_2

PAGE 2 OF 2

Drilling Contractor	Owen's Drilling	Date Monitored	2020 12 03	Project Number:	682279
Drilling Method	Odex	Ground Surface Elev. (m)	1492.250	Borehole Logged By:	VD
Borehole Dia. (m)	0.16	Top of Casing Elev. (m)	1493.080	Date Drilled:	2020 02 12
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5545343.000	Easting: 654075.000	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Odex
- Split Spoon

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Depth in Metres | Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- Reading within indicated scale
- Reading outside indicated scale
- 10^1 10^2 10^3 10^4

- Solid PVC
- Slotted PVC

Well Name 1: GH_MW_RLP_2

Depth	Soil Description	Well
10	SAND and SILT, fine grained sand, dark olive-grey, very soft, wet, flowing. *(continued)*	SLOUGH
	Bottom of hole at 10.6 m.	
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

NOTES
GPS coordinates recorded using hand held GPS.
Bolded sample denotes sample analyzed.

QA/QC: MB 2021 07 06 Print Date:2021-07-08

Log of Monitoring Well: GH_MW-ERSC-1

HEMMERA

Project Name/No: Greenhills Ops Elkford BC/577-016.04
Drilling Company: JR Drilling
Client: Teck Coal Ltd.
Drilling Method: Dual air rotary
Date Drilled: November 24, 2014
Logged by: RM
Site Location: Greenhills Operations, BC
Sheet: 1 of 1

SUBSURFACE PROFILE			SAMPLE						
Depth (ft / m)	Symbol	Description	Depth/Elev (m)	Sample ID	Analysed Y,N	Sample Type	Vapour ppm (0 250 500)	LEL % (0 50 100)	Backfill details
0 / 0		Ground Surface	1293.00						Bentonite
0 / 0		**TOPSOIL** Black, dry, loose, organic soil	0.00						
1 / 0		**TILL** Gravelly Till (rounded to subrounded, medium to coarse grain), brown, dry, dense, well graded, lots of rock cuttings.							
4 / 1									
13 / 4			1288.73						
14 / 4		Sandy Till (medium grain) and Gravel (rounded to subrounded, medium to coarse grain), brown, moist, dense, well graded, lots of rock cuttings.	4.27						
16 / 5			1287.82						
17 / 5		Below 5.2 m, a water bearing seam <0.31 m width.	5.18						
18 / 5			1287.51						
18 / 5		Sandy Till (medium grain) and Gravel (rounded to subrounded, medium to coarse grain), brown, moist, dense, well graded, lots of rock cuttings.	5.49						
20 / 6			1286.90						
20 / 6		**BEDROCK** Siltstone, grey, dry, competent, very hard	6.10						
22 / 6			1286.29						
22 / 7		Between 6.7 m and 7.0 m, fracture zone, moist	6.71						
23 / 7			1285.99						
23 / 7		Below 7.2 m material is dry, very hard, uniform size cuttings, dusty drilling conditions	7.01						
30 / 9			1283.86						Water level, 26 November, 2014
30 / 9		End of Log	9.14						Filter Sand 10/20
									Bentonite

Well location: 5,548,704 N, 649,081 E
Well casing diameter: 2"
Depth of well (TOC): 7.924 m
Depth to water level (TOC): 5.349 m
Well casing material: Sch. 80 PVC
Well Elevation (TOC): 1293.75 m
Date of water level: 26 November, 2014
Well screen slot size: 010
Ground Elevation: 1293 m
Borehole diameter: 0.17 m
Well screen interval (bgs): 4.12 m - 7.17 m

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations - Porter Creek

Borehole No. : GH_BH_PC4A

PAGE 1 OF 2

Drilling Contractor	JR Drilling	Date Monitored	n/a	Project Number:	683032
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	TBD	Borehole Logged By:	SE
Borehole Dia. (m)	0.18	Top of Casing Elev. (m)	TBD	Date Drilled:	2021 08 05
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: n/a	Easting: n/a	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_PC2A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular, trace silt, containing cobbles, dark brown, dry to damp.						
1							
2							
3							
4	At 3.7 m - light brown/grey, dry.						
5							
6	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular, trace silt, dark brown, loose, damp.						
7	At 6.6 m - containing cobbles. At 7.0 m - intermittent sand lenses.						
8	At 7.9 m - intermittent gravel layers.						
9	At 9.1 m - damp to moist.						
10							

BENTONITE

NOTES
Casing: 0 – 16.5 m; Screen Interval: 16.5 – 18.1 m; Total Depth: 18.1 m
Bentonite: 0 - 16.2 m; Sand Pack: 16.2 – 18.1 m
Casing: 2-inch Schedule 40 PVC; Screens: 2-inch Schedule 40 PVC, 0.100 slot size; Sand Pack: 10/20 Frac Sand

QA/QC: KH 2021 09 15 Print Date:2021-09-21

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations - Porter Creek

Borehole No. : GH_BH_PC4A

PAGE 2 OF 2

Drilling Contractor	JR Drilling	Date Monitored	n/a	Project Number:	683032
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	TBD	Borehole Logged By:	SE
Borehole Dia. (m)	0.18	Top of Casing Elev. (m)	TBD	Date Drilled:	2021 08 05
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: n/a	Easting: n/a	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: GH_MW_PC2A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	WEATHERED BEDROCK, siltstone.						
	Between 10.7 m and 12.2 m - dark grey, dry.						
11							
12							
13							
14							
15							
16	At 15.8 m - damp.						
17	At 17.1 m - water.						
18	Bottom of hole at 18.1 m.						
19							
20							

BENTONITE
GH_MW_PC4A
SAND

NOTES
Casing: 0 – 16.5 m; Screen Interval: 16.5 – 18.1 m; Total Depth: 18.1 m
Bentonite: 0 - 16.2 m; Sand Pack: 16.2 – 18.1 m
Casing: 2-inch Schedule 40 PVC; Screens: 2-inch Schedule 40 PVC, 0.100 slot size; Sand Pack: 10/20 Frac Sand

QA/QC: KH 2021 09 15 Print Date:2021-09-21

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations - Porter Creek

Borehole No. : GH_BH_PC4B

PAGE 1 OF 2

Drilling Contractor	JR Drilling	Date Monitored	n/a	Project Number:	683032
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	1575.35	Borehole Logged By:	SE
Borehole Dia. (m)	0.18	Top of Casing Elev. (m)	1576.36	Date Drilled:	2021 08 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5555426	Easting: 653497	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale
Soil Vapour (ppm)

Solid PVC
Slotted PVC

Well Name 1: GH_MW_PC4B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subangular, trace silt, dark brown, dry to damp. At 0.2 m - containing cobbles (approximately 50 cm).					
1						
2	At 1.8 m - dark brown, damp.					
3						
4						
5						
6						
7						
8						
9	At 8.8 m - gravel.					
10	WEATHERED BEDROCK, siltstone.					

BENTONITE
GH_MW_PC4B
SAND
BENTONITE

NOTES
Casing: 0 – 7.4 m; Screen Interval: 7.4 – 9 m; Total Depth: 10.4 m
Bentonite: 0 – 7.1 m; Sand Pack: 7.1 – 9.3 m
Casing: 2-inch Schedule 40 PVC; Screens: 2-inch Schedule 40 PVC, 0.100 slot size; Sand Pack: 10/20 Frac Sand

QA/QC: KH 2021 09 15 Print Date:2021-09-21

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Greenhills Operations - Porter Creek

Borehole No. : GH_BH_PC4B

PAGE 2 OF 2

Drilling Contractor	JR Drilling	Date Monitored	n/a	Project Number:	683032
Drilling Method	Dual Rotary	Ground Surface Elev. (m)	TBD	Borehole Logged By:	SE
Borehole Dia. (m)	0.18	Top of Casing Elev. (m)	TBD	Date Drilled:	2021 08 06
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: n/a	Easting: n/a	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Air Rotary

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Soil Description

Stratigraphy Plot | Sample Interval Core Run | Sample Number | Blow Count | % Recovery

Soil Vapour (ppm)
- Reading within indicated scale
- Reading outside indicated scale

10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: GH_MW_PC2B

Depth in Metres	Soil Description
10	BEDROCK.
	Bottom of hole at 10.4 m.
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	

BENTONITE

NOTES
Casing: 0 – 7.4 m; Screen Interval: 7.4 – 9 m; Total Depth: 10.4 m
Bentonite: 0 – 7.1 m; Sand Pack: 7.1 – 9.3 m
Casing: 2-inch Schedule 40 PVC; Screens: 2-inch Schedule 40 PVC, 0.100 slot size; Sand Pack: 10/20 Frac Sand

QA/QC: KH 2021 09 15 Print Date:2021-09-21

DATA ENTRY: IPG

PROJECT No.: 11.1422.0052

RECORD OF MONITORING WELL: GA-MW-04

SHEET 1 OF 2

LOCATION: See Location Plan
N: 5552963 E: 648217

BORING DATE: September 20, 2012

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES: NUMBER	SAMPLES: TYPE	SAMPLES: BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
0	Barber Rig – Air Rotary Tervita	Ground Surface		1304.00							Stick-up = 0.9 m
		(SP) GRAVELLY SAND, coarse-grained, fine gravel, sub-angular, poorly-graded, dark grey		0.00							
1											
2											
3											
4					1	GRAB					
5											Bentonite Pellets
6											24 Sep 2012 ▽
7											
8											
9				1295.00							
		(SM) SILTY SAND, medium to fine-grained, sub-rounded, poorly-graded, brown and dark grey		9.00	2	GRAB					
10				1294.00							
		CONTINUED NEXT PAGE									

DEPTH SCALE
1 : 50

Golder Associates

LOGGED: TG
CHECKED: JW

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1422.0052_BH LOGS.GPJ CALGARY.GDT 7/30/15

PROJECT No.: 11.1422.0052

RECORD OF MONITORING WELL: GA-MW-04

SHEET 2 OF 2

LOCATION: See Location Plan

N: 5552963 E: 648217

BORING DATE: September 20, 2012

DATUM: UTM Zone 11 (Nad 83)

DEPTH SCALE METRES	BORING METHOD	DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLES NUMBER	SAMPLES TYPE	SAMPLES BLOWS/0.3m	DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (20 40 60 80) nat V. + Q - ● rem V. ⊕ U - ○	HYDRAULIC CONDUCTIVITY, k, cm/s (10^{-6} 10^{-5} 10^{-4} 10^{-3}) / WATER CONTENT PERCENT Wp W Wl (10 20 30 40)	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
10	Barber Rig – Air Rotary Tervita	(SP) GRAVELLY SAND, coarse-grained, fine gravel, sub-angular, poorly-graded, dark grey		10.00							Bentonite Pellets
11											
12					3	GRAB					
13											10/20 Sand
14				1290.00							
		(SM) SILTY SAND, medium to fine-grained, sub-rounded, poorly-graded, brown and dark grey		14.00	4	GRAB					
				1289.50							
		(GW) GRAVEL, fine with coarse, sub-angular to sub-rounded, well graded, grey		14.50							
15											Slotted Section 10/20 Sand
16					5	GRAB					
17				1287.00							Bentonite Pellets
		(SP) GRAVELLY SAND, coarse-grained, fine gravel, poorly-graded, sub-angular, dark grey			6	GRAB					
				17.20							
		End of MONITORING WELL.									
18		NOTES: Standpipe installed to 16.7 m. Groundwater present at 6.0 m on September 24, 2012.									
19											
20											

DEPTH SCALE

1 : 50

Golder Associates

LOGGED: TG

CHECKED: JW

DATA ENTRY: IPG

BOREHOLE - EXPANDED ADD. LAB TESTING 11.1422.0052_BH LOGS.GPJ CALGARY.GDT 7/30/15

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR11A

PAGE 1 OF 3

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	n/a	Project Number:	683032
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1499.780	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1500.597	Date Drilled:	2021 09 11
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5545334.013	Easting: 652113.837	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR11A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
0	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded, some silt, brown, loose, damp, fill material.					100	
1	At 0.6 m - wood debris.						
2	GRAVELLY SILT, fine to coarse gravel, subangular, trace sand, fine to coarse grained, brown, dense, damp.						
3	At 2.7 m - orange oxidation.					100	
4	BEDROCK, siltstone, dark grey, competent, fine grained, thinly bedded, intensely fractured with calcite mineralization restricted.						
5							BENTONITE
6						100	
7							
8							
9						100	
10							

NOTES

QA/QC: KH 2022 01 25 Print Date:2022-03-17

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR11A

PAGE 2 OF 3

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	n/a	Project Number:	683032
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1499.780	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1500.597	Date Drilled:	2021 09 11
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5545334.013	Easting: 652113.837	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR11A

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	BEDROCK, siltstone, dark grey, competent, fine grained, thinly bedded, intensely fractured with calcite mineralization restricted. *(continued)*						
11	BEDROCK, siltstone, dark grey, competent, fine grained, thinly bedded, intensely fractured.						
12						100	
13							
14	BEDROCK, siltstone, dark grey, competent, fine grained, medium bedded, moderately fractured with calcite mineralization.						
15						100	
16							
17							
18	BEDROCK, siltstone, dark grey, competent, fine grained, thinly bedded, intensely fractured.					100	
19							
20							

BENTONITE

RG_MW_FR11A

SAND

NOTES

QA/QC: KH 2022 01 25 Print Date:2022-03-17

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR11A

PAGE 3 OF 3

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	n/a	Project Number:	683032
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1499.780	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1500.597	Date Drilled:	2021 09 11
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5545334.013	Easting: 652113.837	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

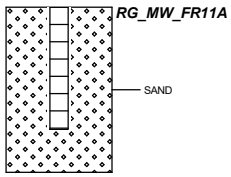
Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm)
20	BEDROCK, siltstone, dark grey, competent, fine grained, thinly bedded, intensely fractured. *(continued)*						
21	Bottom of hole at 21.4 m.						
22							
23							
24							
25							
26							
27							
28							
29							
30							

Soil Vapour (ppm): 10^1 10^2 10^3 10^4

- Reading within indicated scale
- Reading outside indicated scale

- Solid PVC
- Slotted PVC

Well Name 1: RG_MW_FR11A



NOTES

QA/QC: KH 2022 01 25 Print Date:2022-03-17

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR11B

PAGE 1 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	n/a	Project Number:	683032
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1499.791	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1500.662	Date Drilled:	2021 09 11
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5545335.311	Easting: 652112.884	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery
0	SAND and GRAVEL, fine to coarse grained sand, fine to coarse gravel, subrounded, some silt, brown, loose, damp, fill material.					100
2	GRAVELLY SILT, fine to coarse gravel, subangular, trace sand, fine to coarse grained, trace clay, brown, dense, damp.					100
3	WEATHERED BEDROCK, siltstone, dark grey with light grey with light brown oxidation, moderate strength, intensely fractured.					
4	BEDROCK, siltstone, dark grey, competent, fine grained, thinly bedded, intensely fractured with calcite mineralization restricted.					100
6						100
9						100
10						

Reading within indicated scale
Reading outside indicated scale

Soil Vapour (ppm)
10^1 10^2 10^3 10^4

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR11B

BENTONITE

NOTES

QA/QC: KH 2022 01 25 Print Date:2022-03-17

FINAL

SNC·LAVALIN

Client
Teck Coal Limited

Location
Regional Groundwater Monitoring

Borehole No. : RG_BH_FR11B

PAGE 2 OF 2

Drilling Contractor	Mud Bay Drilling Co. Ltd.	Date Monitored	n/a	Project Number:	683032
Drilling Method	Vibratory Sonic	Ground Surface Elev. (m)	1499.791	Borehole Logged By:	AH
Borehole Dia. (m)	0.15	Top of Casing Elev. (m)	1500.662	Date Drilled:	2021 09 11
Pipe/Slotted Pipe Dia. (m)	0.05/0.05	Northing: 5545335.311	Easting: 652112.884	Log Typed By:	VL

Drilling Legend
- Sample Interval
- Vibrasonic

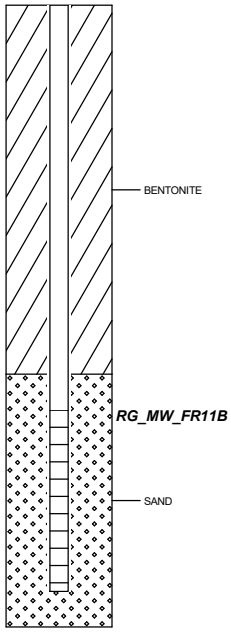
Water/NAPL Levels
- Water Level 1
- Water Level 2
- NAPL
- NAPL

Reading within indicated scale
Reading outside indicated scale

Solid PVC
Slotted PVC

Well Name 1: RG_MW_FR11B

Depth in Metres	Soil Description	Stratigraphy Plot	Sample Interval Core Run	Sample Number	Blow Count	% Recovery	Soil Vapour (ppm) 10^1 10^2 10^3 10^4
10	BEDROCK, siltstone, dark grey, competent, fine grained, thinly bedded, intensely fractured with calcite mineralization restricted. *(continued)*						
11							
12	BEDROCK, siltstone, dark grey, competent, fine grained, thinly bedded, intensely fractured.					100	
13							
14							
15	Bottom of hole at 15.2 m.						
16							
17							
18							
19							
20							



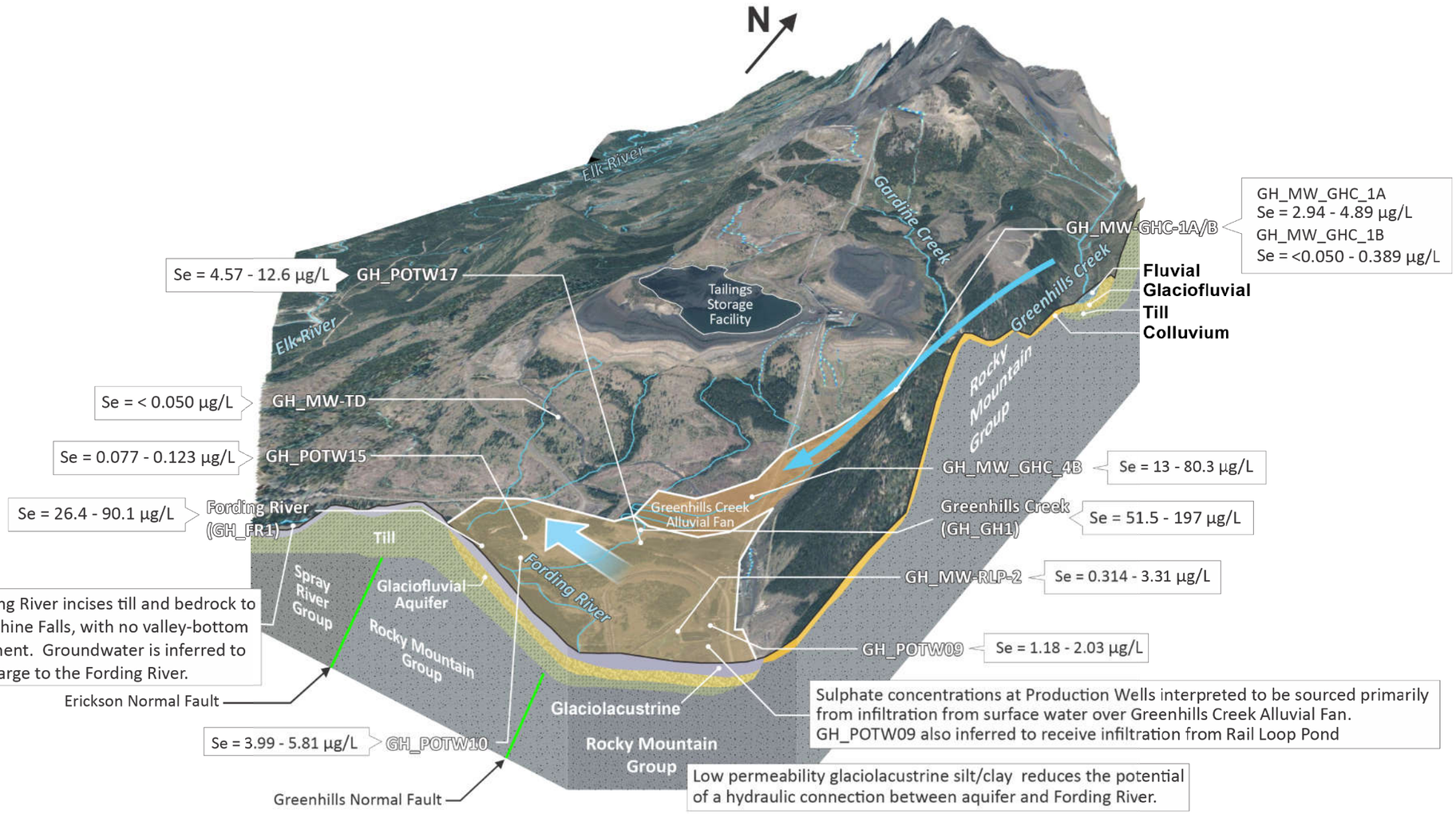
NOTES

QA/QC: KH 2022 01 25 Print Date:2022-03-17

Attachment II: Block Diagrams:

Diagram GH-01: Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways of Order Constituents at GHO – Fording River, Greenhills Creek and Study Area 3

Diagram GH-02: Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways of Order Constituents at GHO – Elk River and Study Area 4



Flow Legend

- Main Stem Down-Valley Groundwater
- Upland or Tributary Groundwater
- Surface Water

NOTES:
1. Original in colour.
2. All concentrations shown are for 2021 minimum and maximum unless otherwise stated.
3. Subsurface geology is not to scale.
4. Vertical exaggeration 2x for topographic profile.
5. Groundwater transport pathways are conceptual only.

References:
1. Graphics from Brick Tudor Studios, LLC.
2. Bedrock geology derived from Monahan, 2000, BC Government.

Revisions:
0 - CW - 20220225 - DRAFT - KH
1 - CW - 20220315 - FINAL - KH

CLIENT: Teck Coal Limited

PROJECT LOCATION: Elk Valley, BC

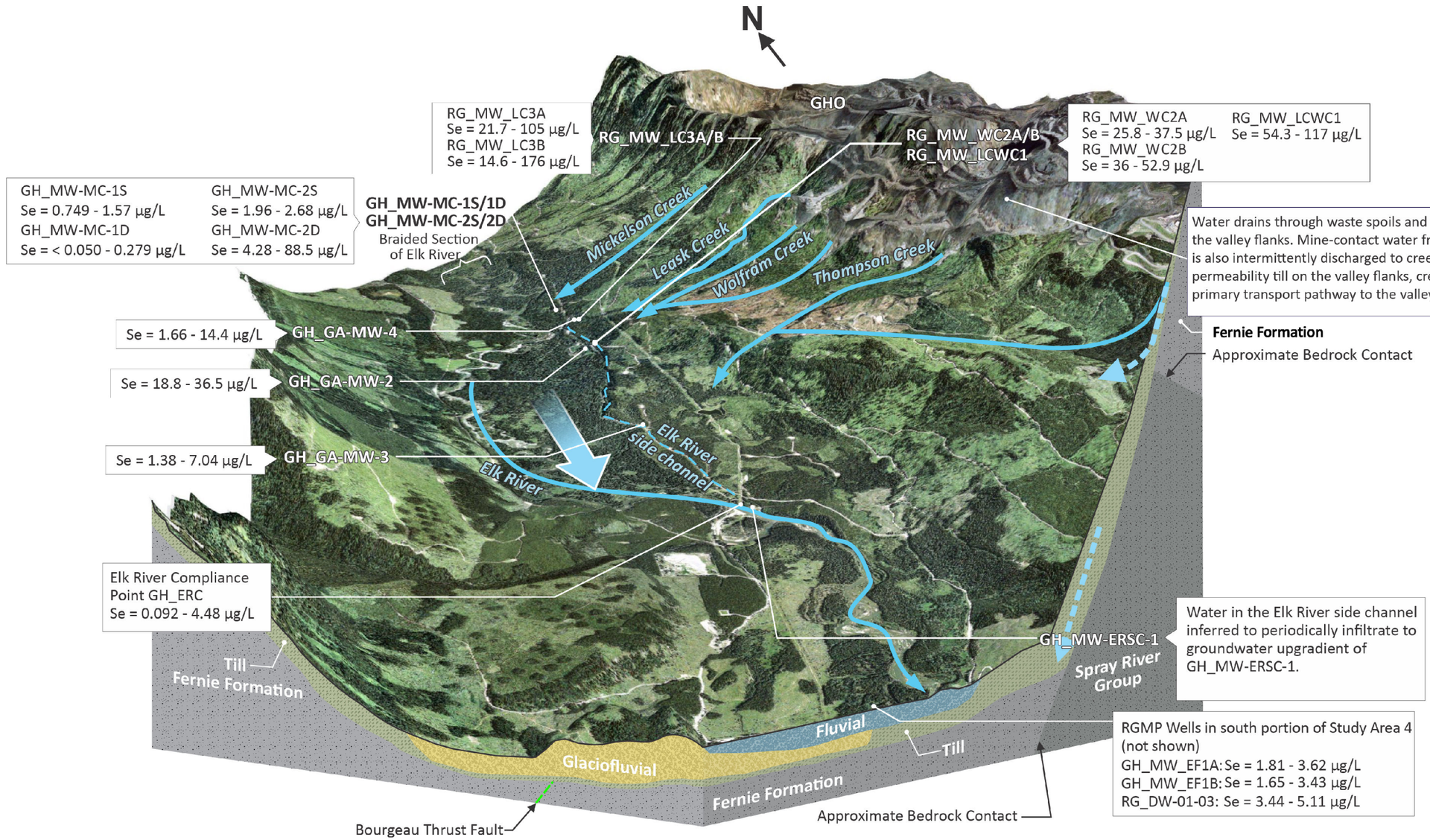
SNC·LAVALIN

Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways of Order Constituents at GHO - Fording River and Greenhills Creek and Study Area 3

BY: CW	SCALE:	DATE: 2022-03-15	REF No:
CHK'D: KH	Proj Coord Sys:		**DIAGRAM GH-01**

MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GIS\Map Series\635544_2021 RGMP SSGMP Annual Report\635544-BlockDiagram_GH01.mxd

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021



Flow Legend

- Main Stem Down-Valley Groundwater
- Upland or Tributary Groundwater
- Surface Water

NOTES:
1. Original in colour.
2. All concentrations shown are for 2021 minimum and maximum unless otherwise stated.
3. Subsurface geology is not to scale.
4. Vertical exaggeration 2x for topographic profile.
5. Groundwater transport pathways are conceptual only.

References:
1. Graphics from Brick Tudor Studios, LLC.
2. Bedrock geology derived from Monahan, 2000, BC Government.

Revisions:
0 - CW - 20220225 - DRAFT - KH
1 - CW - 20220315 - FINAL- KH

CLIENT: Teck Coal Limited

PROJECT LOCATION: Elk Valley, BC

SNC·LAVALIN

Block Diagram Showing 3D Conceptual Hydrogeology and Transport Pathways of Order Constituents at GHO - Elk River and Study Area 4

BY: CW	SCALE:	DATE: 2022-03-15	REF No:
CHK'D: KH	Proj Coord Sys:		**DIAGRAM GH-02**

Project Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\Exports\635544_SSGMP_RGMP_AnnualReport_2021

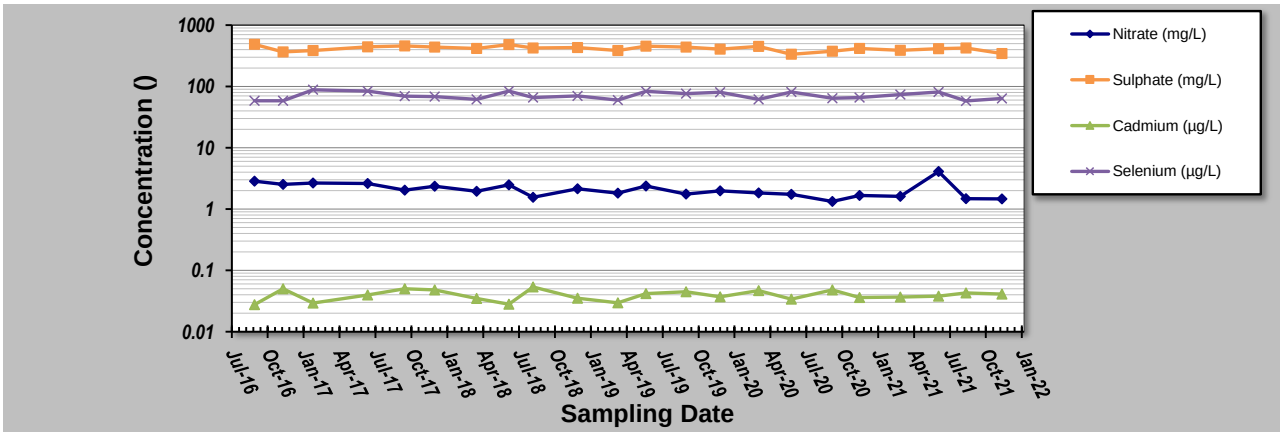
MXD Path: \\Sli4395\projects\Current Projects\Teck Coal Ltd\GISCAD\GISMap Series\635544_2021 RGMP SSGMP Annual Report\635544-BlockDiagram_GH02.mxd

Attachment III: Mann-Kendall Analyses

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_MW-PC
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	GH_MW-PC CONCENTRATION						
1	5-Sep-16	2.85	485	0.028	58.2			
2	17-Nov-16	2.52	366	0.05	58.4			
3	2-Feb-17	2.66	385	0.029	88.1			
4	22-Jun-17	2.61	442	0.04	83.7			
5	25-Sep-17	2.03	456	0.05	69.3			
6	11-Dec-17	2.36	440	0.048	68.1			
7	28-Mar-18	1.94	417	0.035	61.3			
8	19-Jun-18	2.49	481	0.028	84.0			
9	20-Aug-18	1.56	423	0.054	65.9			
10	12-Dec-18	2.14	430	0.035	70.3			
11	25-Mar-19	1.82	386	0.03	60.0			
12	5-Jun-19	2.37	452	0.042	83.3			
13	16-Sep-19	1.76	440	0.045	76.4			
14	12-Dec-19	1.99	407	0.037	80.5			
15	19-Mar-20	1.84	448	0.047	61.5			
16	11-Jun-20	1.74	334	0.034	81.2			
17	24-Sep-20	1.33	375	0.048	64.2			
18	3-Dec-20	1.67	416	0.036	66.1			
19	18-Mar-21	1.61	389	0.037	74.0			
20	24-Jun-21	4.09	413	0.038	81.4			
21	2-Sep-21	1.48	425	0.043	58.0			
22	3-Dec-21	1.46	345	0.041	63.7			
23								
24								
25								
Coefficient of Variation:		0.30	0.10	0.19	0.14			
Mann-Kendall Statistic (S):		-131	-62	21	-7			
Confidence Factor:		>99.9%	95.8%	71.1%	56.6%			
Concentration Trend:		Decreasing	Decreasing	No Trend	Stable			



Notes:

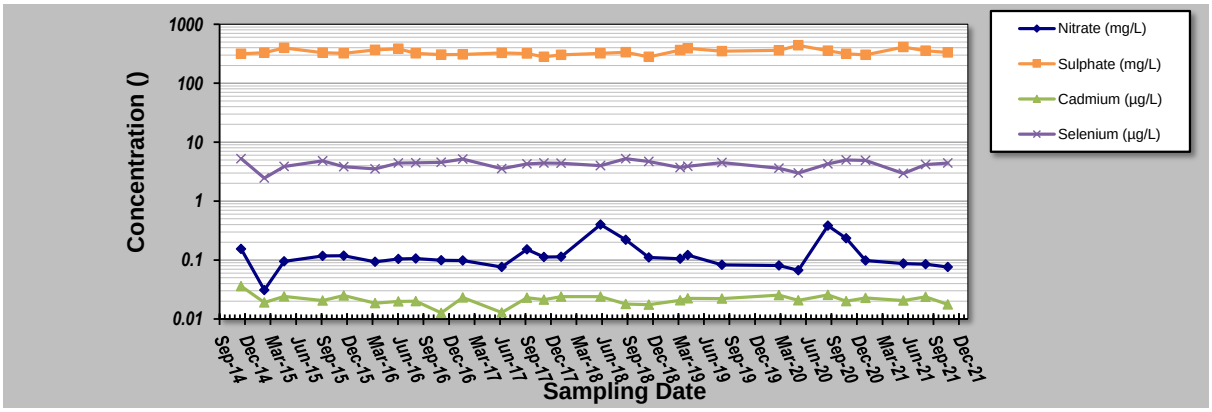
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 30-Jan-22
Facility Name: Teck Coal Regional Groundwater - GHO
Conducted By: KH

Job ID: 688847
Location GH_MW-GHC-1A

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	GH_MW-GHC-1A CONCENTRATION						
1	25-Nov-14	0.154	316	0.036	5.26			
2	17-Feb-15	0.031	328	0.019	2.45			
3	29-Apr-15	0.095	398	0.024	3.85			
4	15-Sep-15	0.117	329	0.021	4.81			
5	30-Nov-15	0.118	322	0.025	3.83			
6	22-Mar-16	0.093	369	0.019	3.51			
7	14-Jun-16	0.104	383	0.02	4.43			
8	16-Aug-16	0.106	320	0.02	4.46			
9	16-Nov-16	0.099	306	0.013	4.53			
10	2-Feb-17	0.098	307	0.023	5.15			
11	22-Jun-17	0.076	326	0.013	3.55			
12	21-Sep-17	0.151	317	0.023	4.27			
13	22-Nov-17	0.112	280	0.021	4.43			
14	23-Jan-18	0.113	302	0.024	4.37			
15	14-Jun-18	0.40	322	0.024	3.98			
16	13-Sep-18	0.221	334	0.018	5.24			
17	5-Dec-18	0.111	279	0.018	4.68			
18	28-Mar-19	0.105	365	0.021	3.7			
19	25-Apr-19	0.121	391	0.022	3.89			
20	26-Aug-19	0.083	349	0.022	4.51			
21	18-Mar-20	0.081	360	0.026	3.62			
22	27-May-20	0.067	438	0.021	3.0			
23	11-Sep-20	0.381	354	0.026	4.26			
24	16-Nov-20	0.233	314	0.020	4.99			
25	25-Jan-21	0.098	303	0.023	4.89			
26	11-Jun-21	0.088	410	0.021	2.94			
27	30-Aug-21	0.085	355	0.024	4.17			
28	18-Nov-21	0.076	333	0.018	4.42			
29								
30								
Coefficient of Variation:		0.65	0.11	0.20	0.17			
Mann-Kendall Statistic (S):		-35	35	3	-15			
Confidence Factor:		74.8%	74.8%	51.6%	60.8%			
Concentration Trend:		Stable	No Trend	No Trend	Stable			



Notes:

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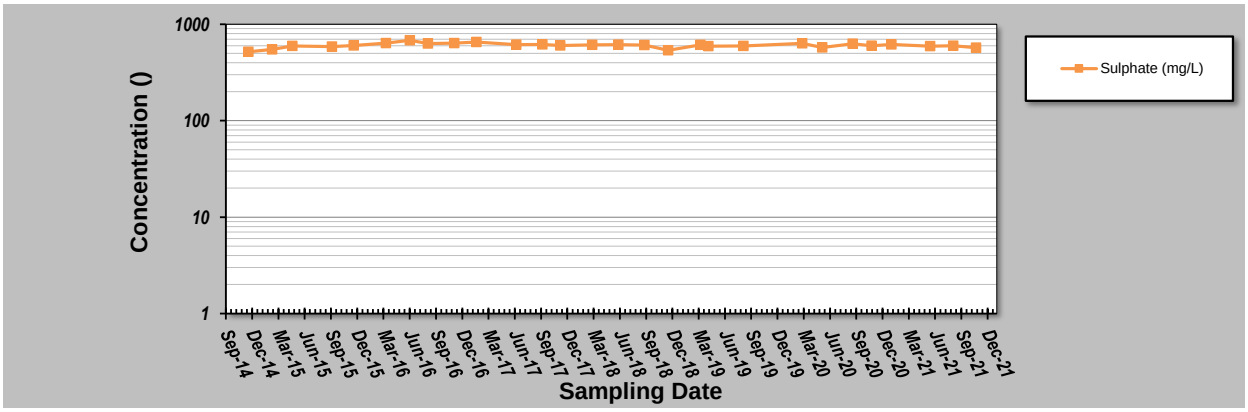
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_MW-GHC-1B
Conducted By:	KH		

Parameter (units)	Sulphate (mg/L)						

Sampling Event	Sampling Date	GH_MW-GHC-1B CONCENTRATION						
1	26-Nov-14	518						
2	17-Feb-15	548						
3	29-Apr-15	595						
4	15-Sep-15	587						
5	30-Nov-15	602						
6	22-Mar-16	638						
7	14-Jun-16	682						
8	16-Aug-16	629						
9	16-Nov-16	636						
10	2-Feb-17	655						
11	21-Jun-17	615						
12	21-Sep-17	619						
13	22-Nov-17	601						
14	14-Mar-18	610						
15	14-Jun-18	615						
16	13-Sep-18	608						
17	5-Dec-18	537						
18	28-Mar-19	612						
19	25-Apr-19	593						
20	26-Aug-19	595						
21	18-Mar-20	634						
22	27-May-20	574						
23	11-Sep-20	628						
24	16-Nov-20	598						
25	25-Jan-21	618						
26	10-Jun-21	591						
27	30-Aug-21	598						
28	18-Nov-21	571						
29								
30								
Coefficient of Variation:		0.06						
Mann-Kendall Statistic (S):		-39						
Confidence Factor:		77.2%						
Concentration Trend:		Stable						



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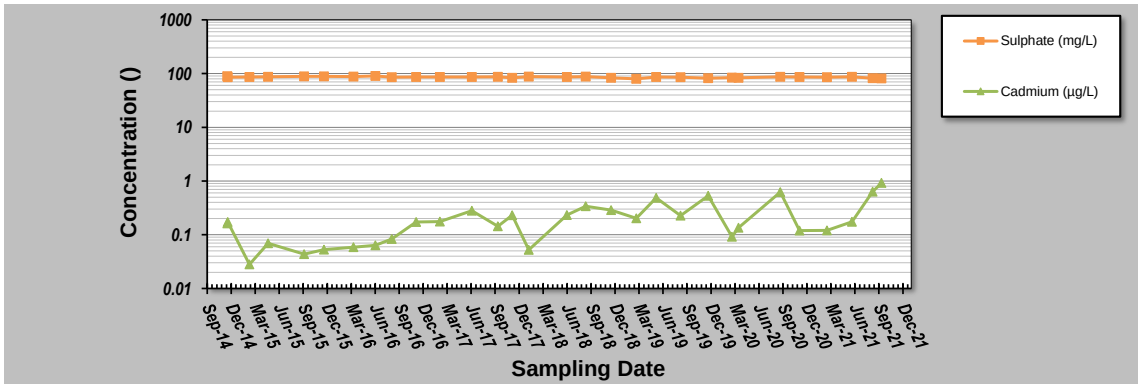
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_MW-TD
Conducted By:	KH		

Parameter (units)	Sulphate (mg/L)	Cadmium (µg/L)					

Sampling Event	Sampling Date	GH_MW-TD CONCENTRATION						
1	24-Nov-14	89.6	0.162					
2	26-Nov-14	85.8	0.173					
3	17-Feb-15	86.1	0.028					
4	29-Apr-15	87.4	0.069					
5	15-Sep-15	88.5	0.043					
6	30-Nov-15	88.3	0.053					
7	22-Mar-16	87.9	0.059					
8	14-Jun-16	90.2	0.064					
9	16-Aug-16	85.9	0.084					
10	17-Nov-16	86.1	0.173					
11	16-Feb-17	86.3	0.176					
12	19-Jun-17	86.6	0.281					
13	27-Sep-17	87.3	0.144					
14	21-Nov-17	83.4	0.230					
15	23-Jan-18	87.6	0.053					
16	18-Jun-18	86.6	0.232					
17	30-Aug-18	87.9	0.339					
18	5-Dec-18	83.6	0.288					
19	12-Mar-19	79.7	0.203					
20	27-May-19	86.7	0.488					
21	28-Aug-19	85.5	0.227					
22	12-Dec-19	81.8	0.530					
23	12-Mar-20	83.9	0.092					
24	6-Apr-20	83.6	0.135					
25	13-Sep-20	86.8	0.621					
26	26-Nov-20	86.3	0.120					
27	12-Mar-21	85.6	0.121					
28	16-Jun-21	86.9	0.175					
29	3-Sep-21	82.2	0.636					
30	7-Oct-21	81.1	0.921					
31								
32								
33								
34								
35								
Coefficient of Variation:		0.03	0.91					
Mann-Kendall Statistic (S):		-152	194					
Confidence Factor:		99.7%	>99.9%					
Concentration Trend:		Decreasing	Increasing					



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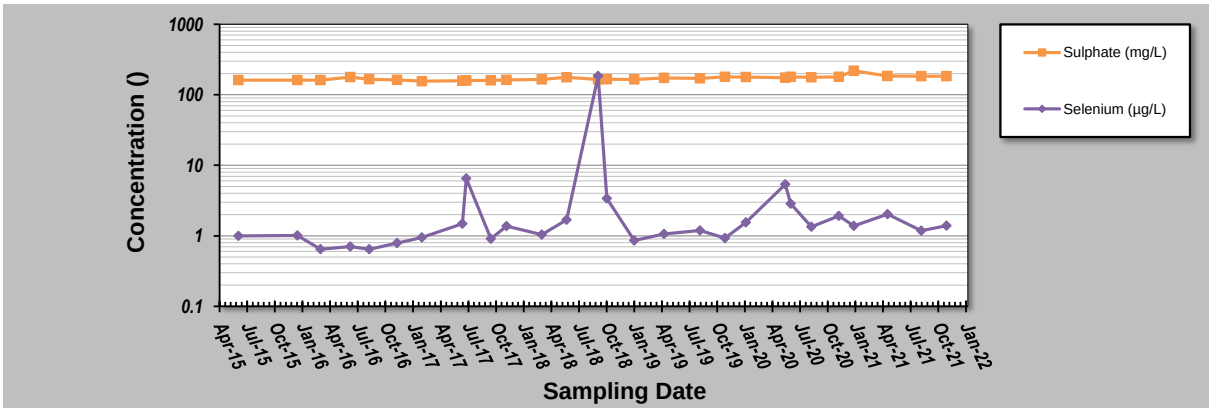
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_POTW09
Conducted By:	KH		

Parameter (units)	Sulphate (mg/L)	Selenium (µg/L)					

Sampling Event	Sampling Date	GH_POTW09 CONCENTRATION						
1	8-Jun-15	161	1.0					
2	21-Dec-15	161	1.01					
3	7-Mar-16	161	0.65					
4	14-Jun-16	178	0.71					
5	16-Aug-16	166	0.65					
6	17-Nov-16	163	0.79					
7	7-Feb-17	156	0.95					
8	22-Jun-17	158	1.48					
9	5-Jul-17	159	6.49					
10	25-Sep-17	160	0.91					
11	16-Nov-17	162	1.37					
12	13-Mar-18	165	1.04					
13	4-Jun-18	177	1.69					
14	17-Sep-18	165	185					
15	16-Oct-18	166	3.39					
16	15-Jan-19	165	0.86					
17	24-Apr-19	173	1.06					
18	22-Aug-19	171	1.19					
19	13-Nov-19	180	0.93					
20	21-Jan-20	178	1.55					
21	31-May-20	175	5.37					
22	18-Jun-20	179	2.86					
23	26-Aug-20	177	1.34					
24	25-Nov-20	179	1.92					
25	15-Jan-21	219	1.38					
26	7-May-21	184	2.03					
27	27-Aug-21	183	1.18					
28	19-Nov-21	183	1.39					
29								
30								
Coefficient of Variation:		0.07	4.22					
Mann-Kendall Statistic (S):		241	134					
Confidence Factor:		>99.9%	99.6%					
Concentration Trend:		Increasing	Increasing					



Notes:

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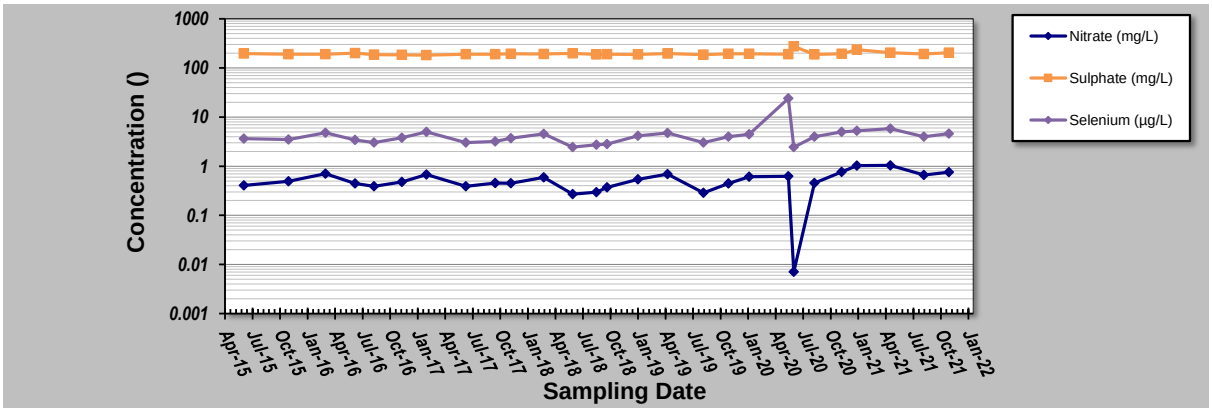
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_POTW10
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Selenium (µg/L)				

Sampling Event	Sampling Date	GH_POTW10 CONCENTRATION						
1	8-Jun-15	0.405	196	3.62				
2	4-Nov-15	0.493	190	3.49				
3	7-Mar-16	0.705	191	4.8				
4	14-Jun-16	0.445	200	3.42				
5	16-Aug-16	0.391	186	3.02				
6	17-Nov-16	0.478	185	3.8				
7	7-Feb-17	0.677	182	4.99				
8	19-Jun-17	0.39	190	3.03				
9	25-Sep-17	0.453	191	3.17				
10	16-Nov-17	0.448	195	3.71				
11	6-Mar-18	0.591	193	4.55				
12	11-Jun-18	0.269	198	2.45				
13	29-Aug-18	0.295	188	2.73				
14	4-Oct-18	0.369	191	2.82				
15	15-Jan-19	0.539	189	4.14				
16	24-Apr-19	0.688	197	4.72				
17	22-Aug-19	0.288	187	3.03				
18	13-Nov-19	0.445	194	4				
19	21-Jan-20	0.611	195	4.44				
20	31-May-20	0.621	191	23.9				
21	18-Jun-20	0.0071	275	2.44				
22	26-Aug-20	0.453	188	3.97				
23	25-Nov-20	0.764	195	5				
24	15-Jan-21	1.03	235	5.24				
25	7-May-21	1.04	204	5.81				
26	27-Aug-21	0.664	193	3.99				
27	19-Nov-21	0.754	205	4.6				
28								
29								
30								
Coefficient of Variation:		0.42	0.09	0.85				
Mann-Kendall Statistic (S):		85	97	84				
Confidence Factor:		96.0%	97.8%	95.8%				
Concentration Trend:		Increasing	Increasing	Increasing				



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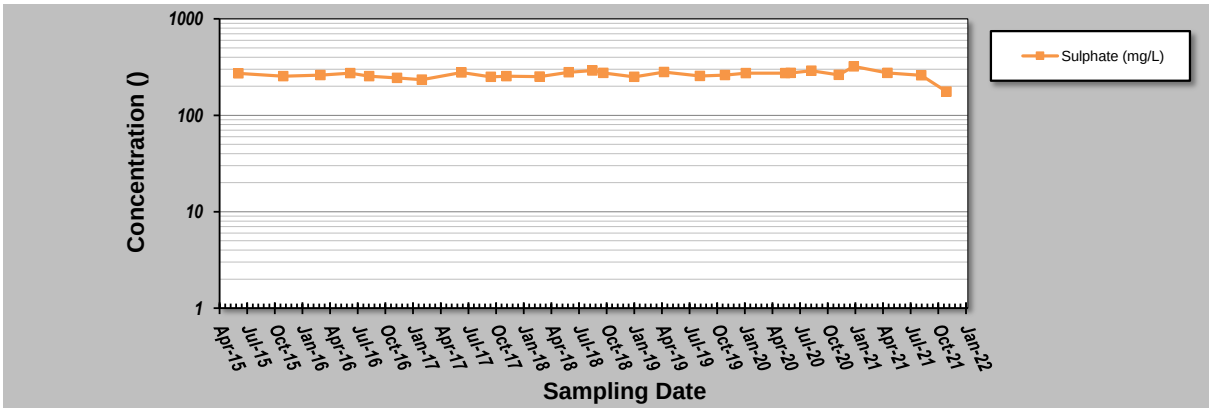
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_POTW15
Conducted By:	KH		
Parameter (units)	Sulphate (mg/L)		

Sampling Event	Sampling Date	GH_POTW15 CONCENTRATION
1	8-Jun-15	272
2	4-Nov-15	254
3	7-Mar-16	261
4	14-Jun-16	273
5	16-Aug-16	254
6	17-Nov-16	244
7	7-Feb-17	234
8	19-Jun-17	278
9	25-Sep-17	250
10	16-Nov-17	254
11	6-Mar-18	251
12	11-Jun-18	279
13	29-Aug-18	291
14	4-Oct-18	275
15	15-Jan-19	250
16	24-Apr-19	281
17	22-Aug-19	256
18	13-Nov-19	261
19	21-Jan-20	273
20	31-May-20	273
21	18-Jun-20	275
22	26-Aug-20	289
23	25-Nov-20	262
24	15-Jan-21	321
25	7-May-21	275
26	27-Aug-21	259
27	19-Nov-21	176
28		
29		
30		
Coefficient of Variation:		0.09
Mann-Kendall Statistic (S):		66
Confidence Factor:		91.2%
Concentration Trend:		Prob. Increasing



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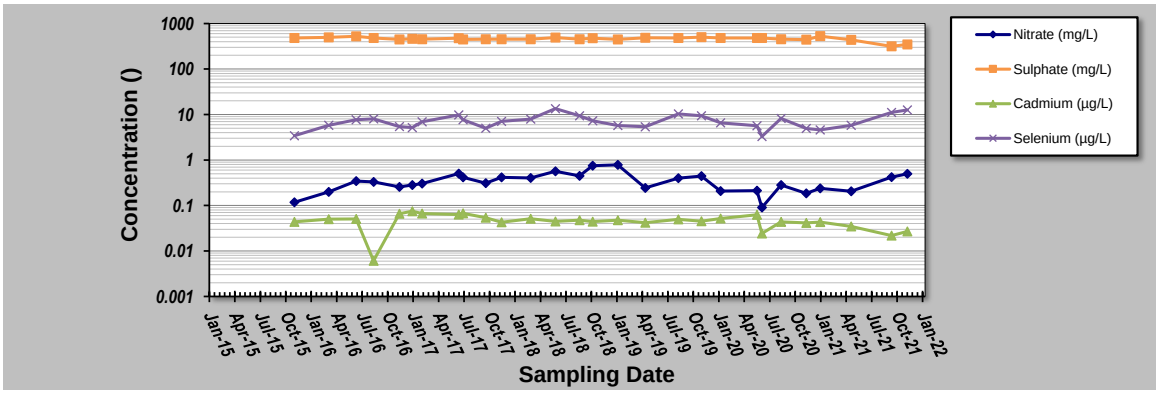
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date: 30-Jan-22
Facility Name: Teck Coal Regional Groundwater - GHO
Conducted By: KH

Job ID: 688847
Location GH_POTW17

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	GH_POTW17 CONCENTRATION						
3	4-Nov-15	0.118	482	0.044	3.4			
4	7-Mar-16	0.198	498	0.050	5.8			
5	14-Jun-16	0.345	522	0.051	7.7			
6	16-Aug-16	0.33	480	0.006	8.0			
7	17-Nov-16	0.255	448	0.066	5.4			
8	3-Jan-17	0.281	464	0.075	5.2			
9	7-Feb-17	0.302	450	0.067	6.9			
10	19-Jun-17	0.505	475	0.063	9.8			
11	5-Jul-17	0.414	448	0.067	7.7			
12	25-Sep-17	0.311	450	0.054	5.0			
13	21-Nov-17	0.415	450	0.043	7.1			
14	6-Mar-18	0.402	451	0.051	8.0			
15	4-Jun-18	0.563	492	0.044	13.5			
16	30-Aug-18	0.45	453	0.048	9.4			
17	16-Oct-18	0.752	475	0.044	7.3			
18	15-Jan-19	0.782	447	0.048	5.7			
19	24-Apr-19	0.244	489	0.042	5.4			
20	22-Aug-19	0.398	482	0.050	10.3			
21	13-Nov-19	0.443	504	0.045	9.4			
22	21-Jan-20	0.208	481	0.052	6.6			
23	31-May-20	0.212	482	0.062	5.7			
24	18-Jun-20	0.09	480	0.024	3.3			
25	26-Aug-20	0.282	453	0.044	8.2			
26	25-Nov-20	0.185	445	0.041	4.9			
27	15-Jan-21	0.237	528	0.043	4.6			
28	7-May-21	0.205	437	0.035	5.8			
29	30-Sep-21	0.421	315	0.022	11.1			
30	26-Nov-21	0.496	346	0.027	12.6			
31								
32								
33								
34								
35								
36								
37								
Confidence Factor:		57.0%	89.9%	99.9%	70.2%			
Concentration Trend:		No Trend	Stable	Decreasing	No Trend			



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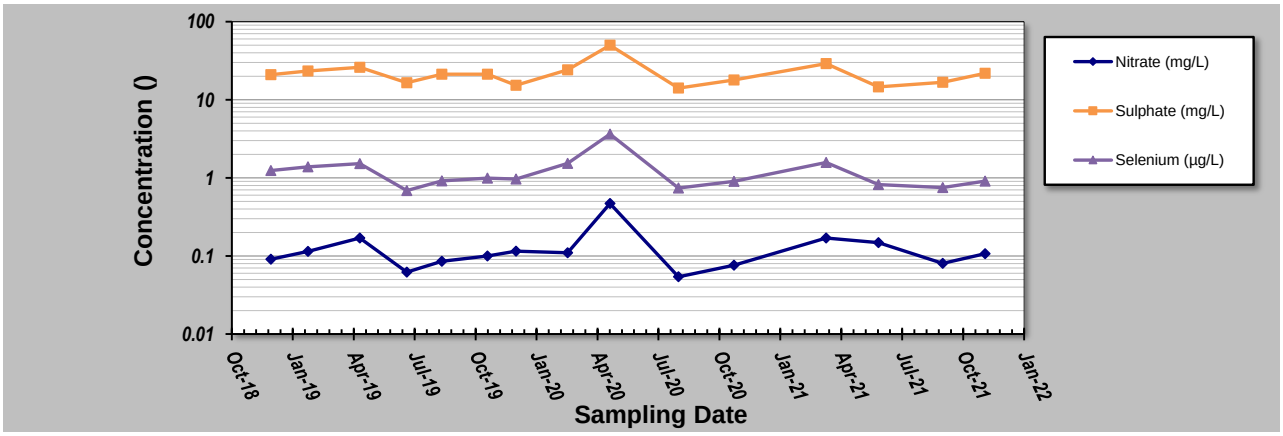
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_MW-MC-1S
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Selenium (µg/L)				

Sampling Event	Sampling Date	GH_MW-MC-1S CONCENTRATION						
1	05-Dec-18	0.091	21.0	1.24				
2	30-Jan-19	0.114	23.3	1.38				
3	18-Apr-19	0.169	26.1	1.52				
4	28-Jun-19	0.062	16.5	0.69				
5	20-Aug-19	0.085	21.3	0.91				
6	28-Oct-19	0.100	21.2	0.99				
7	10-Dec-19	0.115	15.3	0.96				
8	26-Feb-20	0.110	24.1	1.53				
9	30-Apr-20	0.469	49.9	3.63				
10	11-Aug-20	0.054	14.1	0.74				
11	03-Nov-20	0.076	17.9	0.90				
12	22-Mar-21	0.170	29.0	1.57				
13	09-Jun-21	0.148	14.6	0.82				
14	14-Sep-21	0.080	16.7	0.75				
15	17-Nov-21	0.107	21.9	0.91				
16								
17								
18								
19								
20								
Coefficient of Variation:		0.77	0.40	0.59				
Mann-Kendall Statistic (S):		5	-9	-15				
Confidence Factor:		57.7%	65.1%	75.2%				
Concentration Trend:		No Trend	Stable	Stable				



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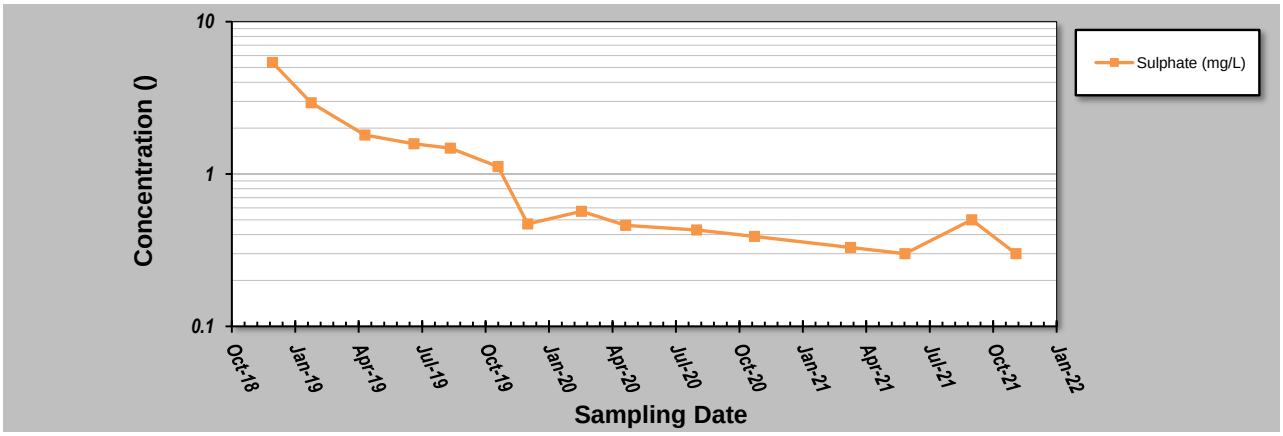
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_MW-MC-1D
Conducted By:	KH		

Parameter (units): Sulphate (mg/L)

Sampling Event	Sampling Date	GH_MW-MC-1D CONCENTRATION
1	05-Dec-18	5.39
2	30-Jan-19	2.94
3	18-Apr-19	1.80
4	28-Jun-19	1.58
5	20-Aug-19	1.48
6	28-Oct-19	1.12
7	10-Dec-19	0.47
8	26-Feb-20	0.57
9	30-Apr-20	0.46
10	11-Aug-20	0.43
11	03-Nov-20	0.39
12	22-Mar-21	0.33
13	09-Jun-21	0.30
14	14-Sep-21	0.50
15	17-Nov-21	0.30
16		
17		
18		
19		
20		
Coefficient of Variation:		1.15
Mann-Kendall Statistic (S):		-90
Confidence Factor:		>99.9%
Concentration Trend:		Decreasing



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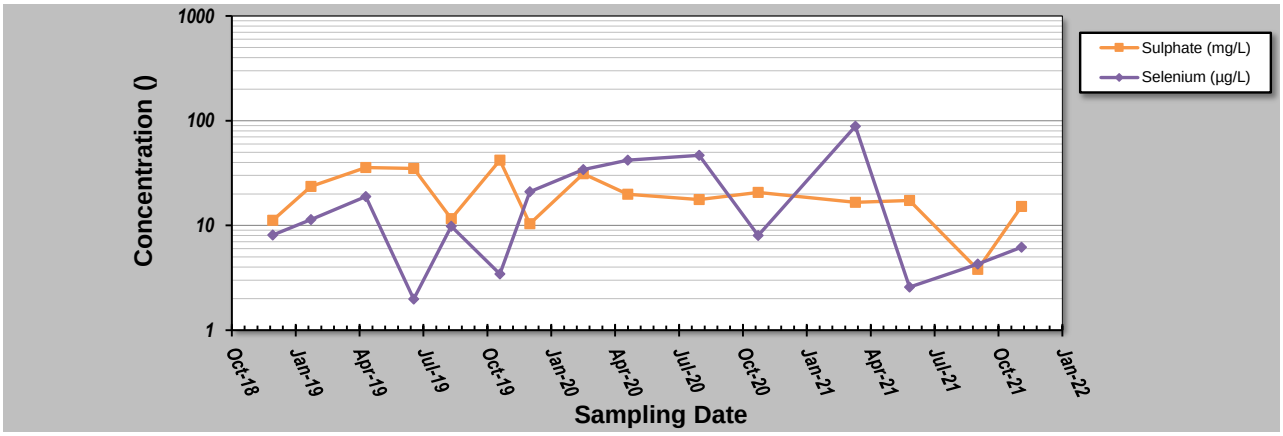
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_MW-MC-2D
Conducted By:	KH		

Parameter (units)	Sulphate (mg/L)	Selenium (µg/L)					

Sampling Event	Sampling Date	GH_MW-MC-2D CONCENTRATION						
1	05-Dec-18	11.2	8.11					
2	29-Jan-19	23.6	11.4					
3	18-Apr-19	35.8	18.9					
4	26-Jun-19	35	1.98					
5	19-Aug-19	11.6	9.8					
6	28-Oct-19	41.9	3.44					
7	10-Dec-19	10.4	21					
8	25-Feb-20	31.2	34.1					
9	29-Apr-20	19.9	42					
10	10-Aug-20	17.7	46.7					
11	03-Nov-20	20.7	8					
12	23-Mar-21	16.6	88.5					
13	09-Jun-21	17.3	2.58					
14	15-Sep-21	3.8	4.28					
15	17-Nov-21	15.2	6.19					
16								
17								
18								
19								
20								
Coefficient of Variation:		0.52	1.16					
Mann-Kendall Statistic (S):		-31	9					
Confidence Factor:		93.0%	65.1%					
Concentration Trend:		Prob. Decreasing	No Trend					



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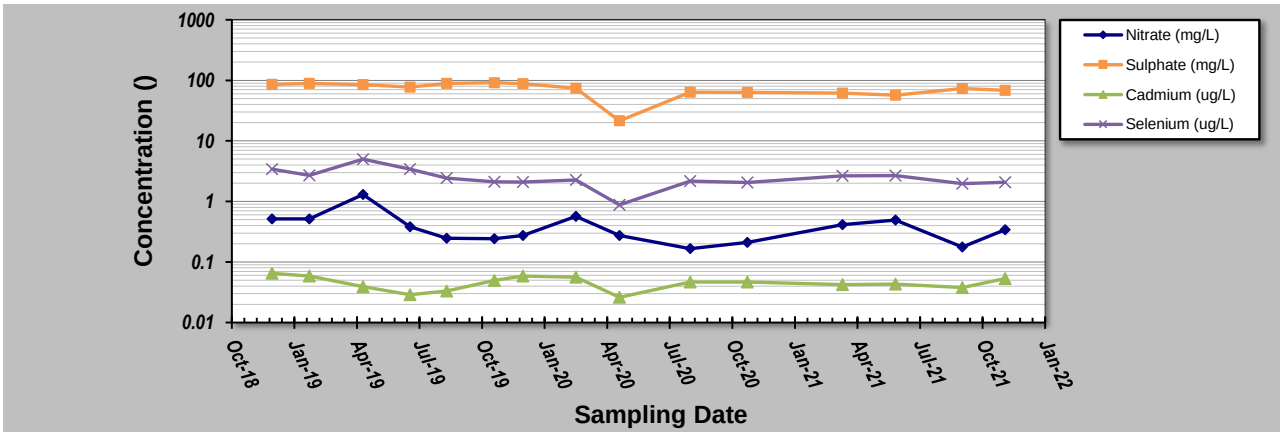
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_MW-MC-2S
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (ug/L)	Selenium (ug/L)			

Sampling Event	Sampling Date	GH_MW-MC-2S CONCENTRATION						
1	05-Dec-18	0.514	85.9	0.065	3.40			
2	29-Jan-19	0.516	88.5	0.059	2.70			
3	18-Apr-19	1.300	85.1	0.039	4.99			
4	26-Jun-19	0.383	77.5	0.029	3.41			
5	19-Aug-19	0.247	88.7	0.033	2.42			
6	28-Oct-19	0.243	91.4	0.049	2.11			
7	09-Dec-19	0.273	88.1	0.059	2.09			
8	25-Feb-20	0.568	73.7	0.056	2.27			
9	29-Apr-20	0.273	21.4	0.026	0.88			
10	11-Aug-20	0.166	63.6	0.047	2.16			
11	03-Nov-20	0.210	63.4	0.047	2.06			
12	23-Mar-21	0.414	61.7	0.043	2.65			
13	09-Jun-21	0.494	56.9	0.043	2.68			
14	15-Sep-21	0.176	73.1	0.038	1.96			
15	17-Nov-21	0.342	68.3	0.053	2.07			
16								
17								
18								
19								
20								
Coefficient of Variation:		0.69	0.25	0.25	0.36			
Mann-Kendall Statistic (S):		-30	-51	-20	-47			
Confidence Factor:		92.3%	99.4%	82.3%	99.0%			
Concentration Trend:		Prob. Decreasing	Decreasing	Stable	Decreasing			



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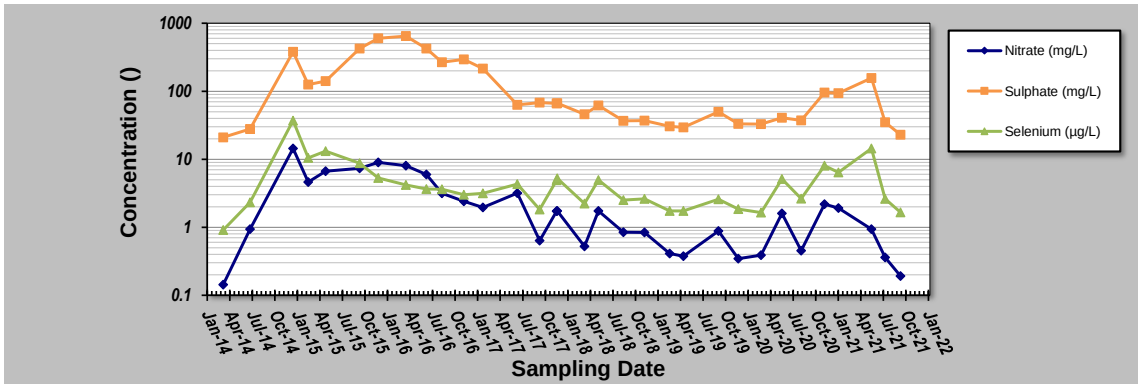
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_GA-MW-4
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Selenium (µg/L)				
Sampling Event	Sampling Date	GH_GA-MW-4 CONCENTRATION						
1	7-Mar-14	0.143	21	0.91				
2	25-Jun-14	0.936	27.8	2.32				
3	17-Dec-14	14.4	381	37.1				
4	17-Feb-15	4.63	125	10.5				
5	29-Apr-15	6.68	141	13.2				
6	15-Sep-15	7.35	425	8.74				
7	30-Nov-15	8.98	599	5.31				
8	22-Mar-16	8.02	646	4.19				
9	14-Jun-16	5.97	425	3.66				
10	16-Aug-16	3.16	266	3.62				
11	14-Nov-16	2.41	294	3				
12	30-Jan-17	1.96	215	3.16				
13	20-Jun-17	3.18	63	4.31				
14	19-Sep-17	0.638	68	1.83				
15	27-Nov-17	1.73	66.4	4.93				
16	30-Nov-17	1.74	66.7	5.23				
17	21-Mar-18	0.523	45.7	2.23				
18	17-May-18	1.74	61.6	4.95				
19	27-Aug-18	0.848	36.7	2.51				
20	21-Nov-18	0.838	37.1	2.61				
21	4-Mar-19	0.411	30.5	1.74				
22	29-Apr-19	0.375	29.4	1.74				
23	19-Sep-19	0.883	49.7	2.58				
24	9-Dec-19	0.345	33	1.85				
25	10-Mar-20	0.388	32.8	1.64				
26	3-Jun-20	1.6	40.7	5.14				
27	21-Aug-20	0.453	37.3	2.63				
28	24-Nov-20	2.19	95.7	8.04				
29	21-Jan-21	1.92	93.7	6.41				
30	4-Jun-21	0.935	156	14.4				
31	30-Jul-21	0.359	35.1	2.62				
32	1-Oct-21	0.191	23	1.66				
33								
34								
35								
Coefficient of Variation:		1.22	1.18	1.22				
Mann-Kendall Statistic (S):		-231	-169	-89				
Confidence Factor:		>99.9%	99.7%	92.3%				
Concentration Trend:		Decreasing	Decreasing	Prob. Decreasing				



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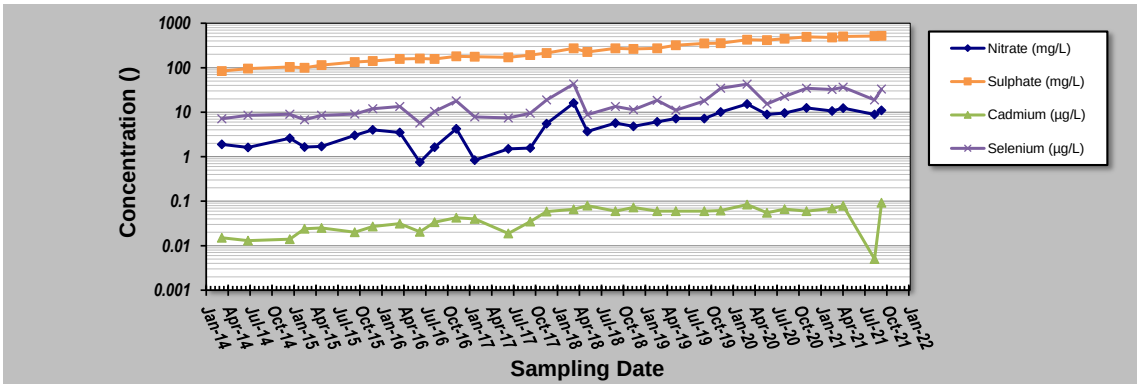
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_GA-MW-2
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	GH_GA-MW-2 CONCENTRATION						
1	7-Mar-14	1.89	84	0.015	7.09			
2	25-Jun-14	1.61	95.4	0.013	8.5			
3	17-Dec-14	2.61	104	0.014	8.99			
4	17-Feb-15	1.65	99.9	0.024	6.78			
5	29-Apr-15	1.7	115	0.0251	8.56			
6	15-Sep-15	3.01	134	0.02	9.13			
7	30-Nov-15	4	141	0.027	12			
8	22-Mar-16	3.49	158	0.0312	13.5			
9	14-Jun-16	0.751	160	0.0204	5.7			
10	15-Aug-16	1.63	157	0.0338	10.4			
11	14-Nov-16	4.22	181	0.0428	17.9			
12	30-Jan-17	0.837	176	0.0401	7.87			
13	20-Jun-17	1.5	171	0.0189	7.41			
14	20-Sep-17	1.56	192	0.035	9.49			
15	27-Nov-17	5.52	214	0.0584	18.9			
16	21-Mar-18	16.1	272	0.066	43.1			
17	17-May-18	3.7	226	0.08	8.78			
18	12-Sep-18	5.68	273	0.06	13.5			
19	26-Nov-18	4.8	265	0.072	11.3			
20	6-Mar-19	6.09	274	0.06	18.4			
21	23-May-19	7.23	320	0.06	11.1			
22	19-Sep-19	7.21	351	0.06	17.9			
23	27-Nov-19	10.1	354	0.0618	34.7			
24	16-Mar-20	15.2	427	0.0841	42.9			
25	7-Jun-20	8.9	415	0.055	15.2			
26	20-Aug-20	9.6	451	0.0663	22.6			
27	20-Nov-20	12.5	492	0.0599	34.6			
28	8-Mar-21	10.6	481	0.0688	32.4			
29	23-Apr-21	12.4	504	0.0787	36.5			
30	1-Sep-21	8.91	513	0.005	18.8			
31	1-Oct-21	11	519	0.092	33.2			
32								
33								
34								
35								
Coefficient of Variation:		0.74	0.54	0.52	0.65			
Mann-Kendall Statistic (S):		285	443	275	263			
Confidence Factor:		>99.9%	>99.9%	>99.9%	>99.9%			
Concentration Trend:		Increasing	Increasing	Increasing	Increasing			



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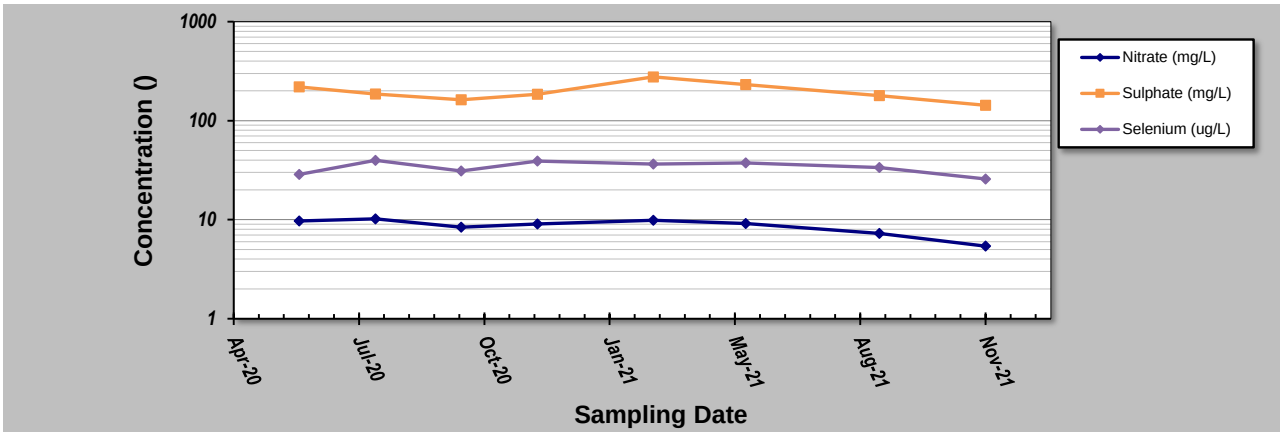
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	RG_MW_WC2A
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Selenium (ug/L)				

Sampling Event	Sampling Date	RG_MW_WC2A CONCENTRATION						
1	16-Jun-20	9.73	220	28.6				
2	11-Aug-20	10.2	186	39.8				
3	13-Oct-20	8.38	163	31.1				
4	08-Dec-20	9.05	185	39				
5	03-Mar-21	9.86	277	36.5				
6	10-May-21	9.14	231	37.5				
7	16-Aug-21	7.25	179	33.7				
8	02-Nov-21	5.41	143	25.8				
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.19	0.22	0.15				
Mann-Kendall Statistic (S):		-14	-8	-6				
Confidence Factor:		94.6%	80.1%	72.6%				
Concentration Trend:		Prob. Decreasing	Stable	Stable				



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GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	RG_MW_WC2B
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (ug/L)	Selenium (ug/L)			
Sampling Event	Sampling Date	RG_MW_WC2B CONCENTRATION						
1	16-Jun-20	6.6	135	0.029	23.5			
2	12-Aug-20	8.0	159	0.034	33.1			
3	13-Oct-20	19.0	381	0.053	78.9			
4	08-Dec-20	22.6	534	0.057	78.2			
5	03-Mar-21	14.3	405	0.056	52.9			
6	10-May-21	8.9	210	0.032	44.1			
7	16-Aug-21	6.6	130	0.032	36			
8	02-Nov-21	10.3	206	0.039	49			
9								
10								
11								
12								
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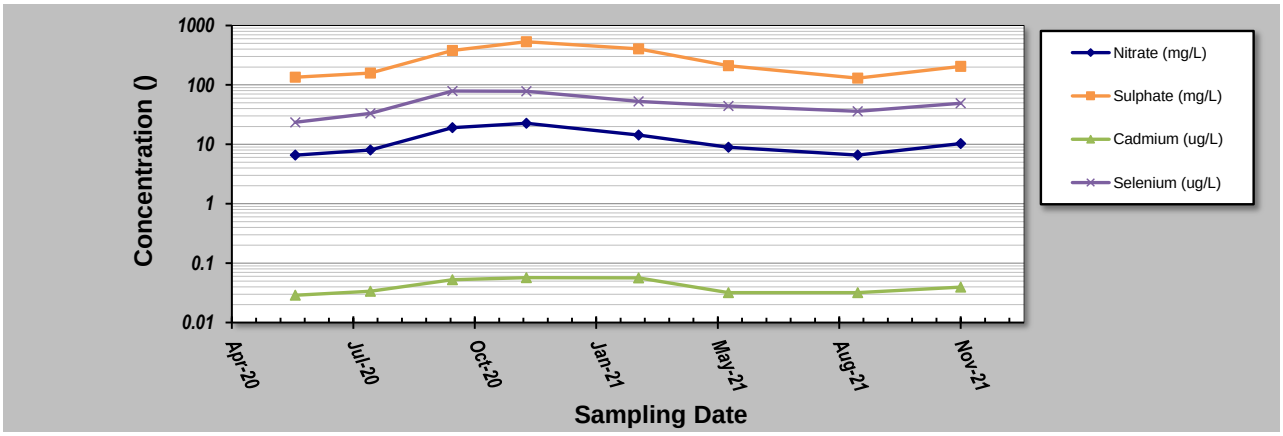
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.50	0.56	0.29	0.41			
Mann-Kendall Statistic (S):		2	0	3	2			
Confidence Factor:		54.8%	45.2%	59.4%	54.8%			
Concentration Trend:		No Trend	Stable	No Trend	No Trend			



Notes:

1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
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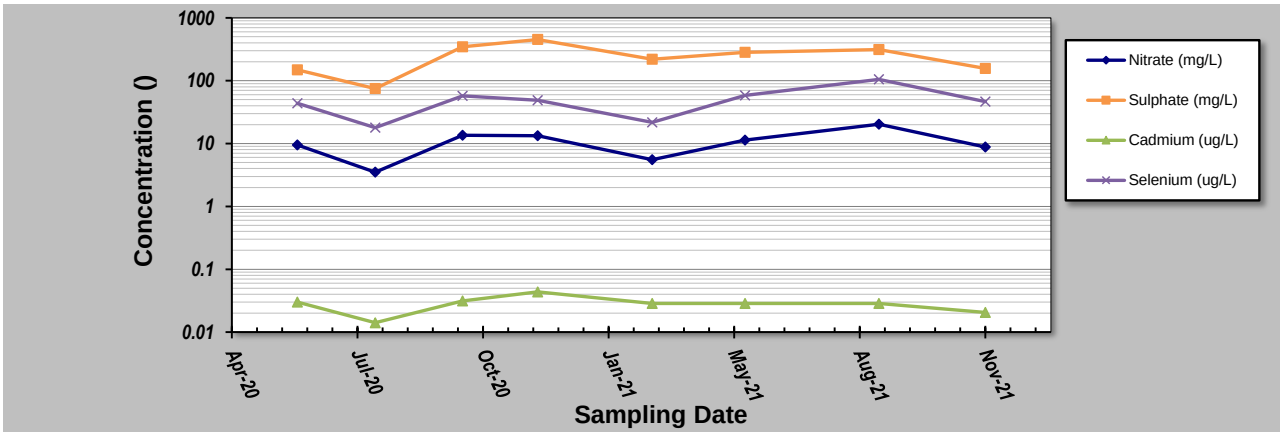
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water* , 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	RG_MW_LC3A
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (ug/L)	Selenium (ug/L)			

Sampling Event	Sampling Date	RG_MW_LC3A CONCENTRATION						
1	16-Jun-20	9.48	149	0.03	43.9			
2	12-Aug-20	3.5	74.9	0.0141	17.9			
3	15-Oct-20	13.5	347	0.0314	57.4			
4	09-Dec-20	13.3	452	0.0437	48.7			
5	03-Mar-21	5.55	220	0.0286	21.7			
6	10-May-21	11.3	284	0.0285	58.3			
7	16-Aug-21	20.3	313	0.0286	105			
8	02-Nov-21	8.84	156	0.0206	46.6			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.49	0.49	0.30	0.54			
Mann-Kendall Statistic (S):		4	4	-7	10			
Confidence Factor:		64.0%	64.0%	76.4%	86.2%			
Concentration Trend:		No Trend	No Trend	Stable	No Trend			



Notes:

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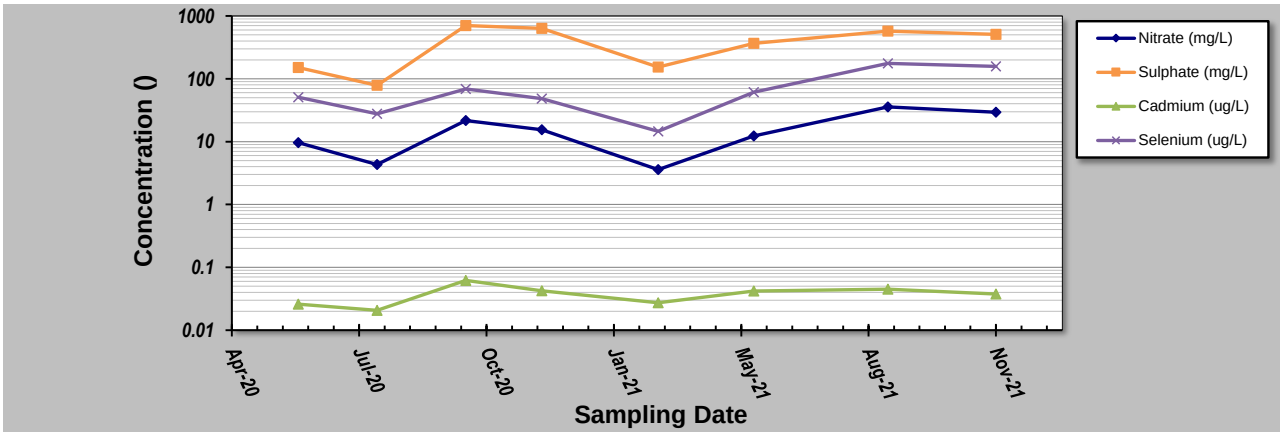
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	RG_MW_LC3B
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (ug/L)	Selenium (ug/L)			

Sampling Event	Sampling Date	RG_MW_LC3B CONCENTRATION						
1	16-Jun-20	9.63	151	0.026	50.7			
2	12-Aug-20	4.32	78.6	0.0207	27.8			
3	15-Oct-20	21.7	704	0.062	68.9			
4	09-Dec-20	15.5	634	0.0423	48.2			
5	03-Mar-21	3.59	154	0.0272	14.6			
6	11-May-21	12.3	367	0.0421	61.2			
7	16-Aug-21	35.7	574	0.045	176			
8	02-Nov-21	29.5	510	0.0375	158			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.70	0.61	0.35	0.78			
Mann-Kendall Statistic (S):		10	6	6	10			
Confidence Factor:		86.2%	72.6%	72.6%	86.2%			
Concentration Trend:		No Trend	No Trend	No Trend	No Trend			



Notes:

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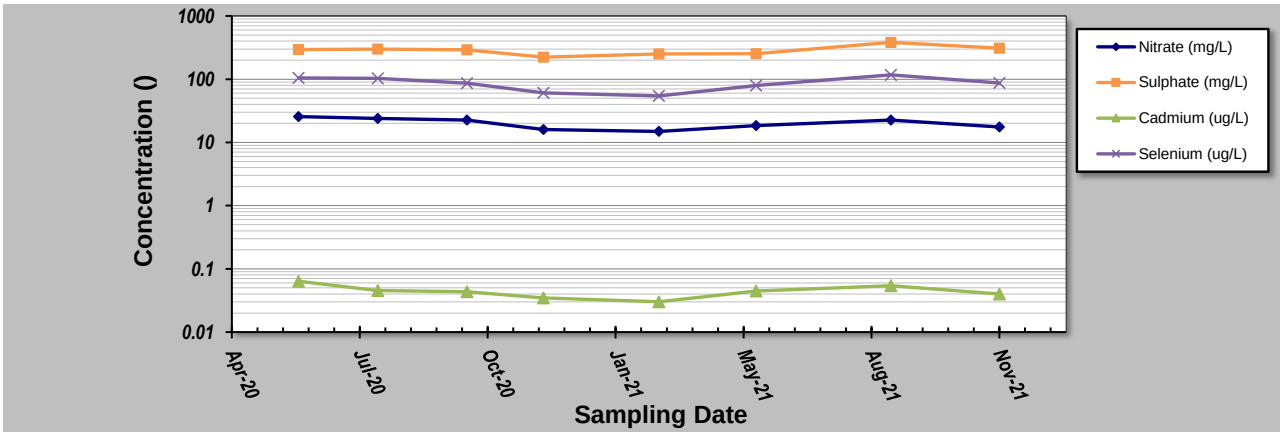
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	RG_MW_LCWC1
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (ug/L)	Selenium (ug/L)			

Sampling Event	Sampling Date	RG_MW_LCWC1 CONCENTRATION						
1	16-Jun-20	25.6	294	0.0637	105			
2	12-Aug-20	24	298	0.0454	103			
3	15-Oct-20	22.6	291	0.0435	86.6			
4	09-Dec-20	16	223	0.0347	60.6			
5	02-Mar-21	14.9	251	0.0302	54.3			
6	11-May-21	18.5	252	0.0445	79.3			
7	16-Aug-21	22.6	382	0.0541	117			
8	02-Nov-21	17.6	308	0.0399	87			
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
Coefficient of Variation:		0.20	0.17	0.24	0.25			
Mann-Kendall Statistic (S):		-13	4	-8	-4			
Confidence Factor:		92.9%	64.0%	80.1%	64.0%			
Concentration Trend:		Prob. Decreasing	No Trend	Stable	Stable			



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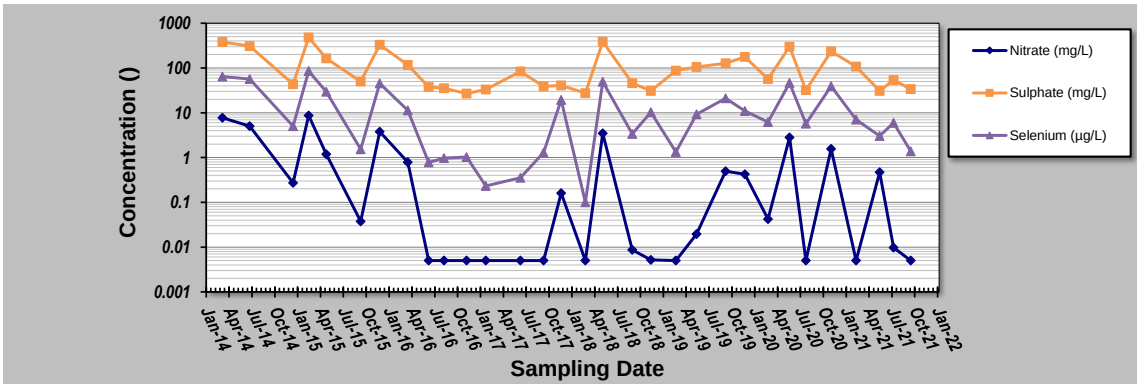
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_GA-MW-3
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Selenium (µg/L)				
Sampling Event	Sampling Date	GH_GA-MW-3 CONCENTRATION						
1	7-Mar-14	7.73	382	64.6				
2	25-Jun-14	5.04	310	56.9				
3	17-Dec-14	0.27	43.5	5.03				
4	17-Feb-15	8.71	481	85.3				
5	29-Apr-15	1.19	165	29.4				
6	15-Sep-15	0.04	50	1.53				
7	30-Nov-15	3.77	330	45.4				
8	22-Mar-16	0.79	117	11.3				
9	14-Jun-16	0.005	37.7	0.783				
10	15-Aug-16	0.005	35.3	0.972				
11	14-Nov-16	0.005	26.9	1.03				
12	30-Jan-17	0.005	33.3	0.231				
13	19-Jun-17	0.005	84	0.354				
14	20-Sep-17	0.005	38.7	1.29				
15	30-Nov-17	0.161	41.1	19.4				
16	7-Mar-18	0.005	27.4	0.1				
17	16-May-18	3.48	387	49.2				
18	12-Sep-18	0.0087	45.8	3.38				
19	26-Nov-18	0.0052	30.9	10.3				
20	6-Mar-19	0.005	87	1.33				
21	29-May-19	0.0196	106	9.26				
22	23-Sep-19	0.498	128	21.1				
23	9-Dec-19	0.422	177	11				
24	11-Mar-20	0.0421	56.4	6.23				
25	5-Jun-20	2.81	300	46.2				
26	11-Aug-20	0.005	32.2	5.69				
27	20-Nov-20	1.57	236	39.1				
28	1-Mar-21	0.005	108	7.04				
29	4-Jun-21	0.47	30.9	3.02				
30	30-Jul-21	0.0098	53.9	5.94				
31	7-Oct-21	0.005	34	1.38				
32								
33								
34								
35								
Coefficient of Variation:		1.91	1.01	1.30				
Mann-Kendall Statistic (S):		-88	-64	-47				
Confidence Factor:		93.0%	85.7%	78.1%				
Concentration Trend:		Prob. Decreasing	No Trend	No Trend				



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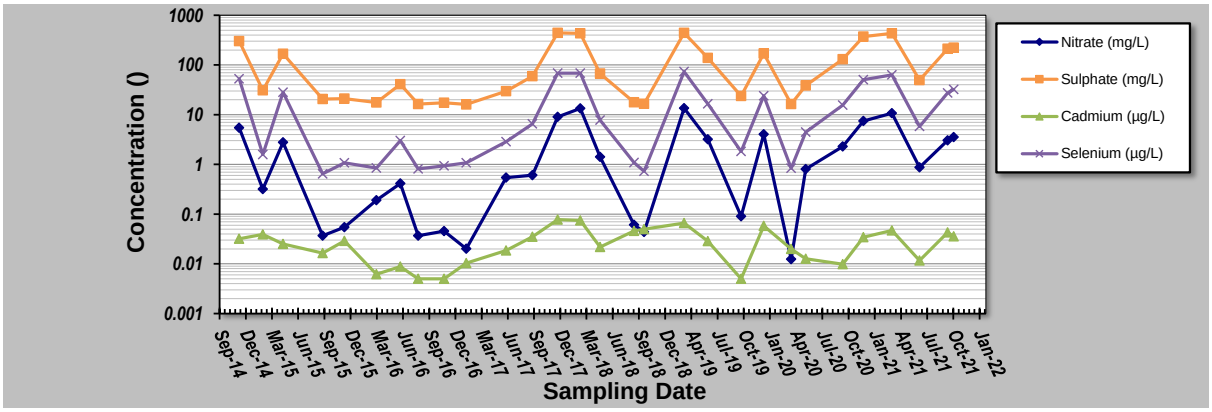
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	30-Jan-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	GH_MW-ERSC-1
Conducted By:	KH		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)	Selenium (µg/L)			
Sampling Event	Sampling Date	GH_MW-ERSC-1 CONCENTRATION						
1	26-Nov-14	5.44	301	0.032	52.6			
2	17-Feb-15	0.318	31	0.039	1.58			
3	29-Apr-15	2.79	168	0.0252	28.2			
4	15-Sep-15	0.0368	20.7	0.0164	0.646			
5	30-Nov-15	0.0543	21.1	0.029	1.08			
6	22-Mar-16	0.19	17.6	0.0062	0.847			
7	14-Jun-16	0.412	40.9	0.0088	3.01			
8	15-Aug-16	0.037	16.3	0.005	0.815			
9	14-Nov-16	0.0453	17.4	0.005	0.932			
10	31-Jan-17	0.0202	16.1	0.0103	1.08			
11	20-Jun-17	0.543	29.7	0.0185	2.85			
12	20-Sep-17	0.608	59.6	0.0349	6.53			
13	18-Dec-17	9.04	442	0.0777	68.7			
14	7-Mar-18	13.4	432	0.0747	68.1			
15	16-May-18	1.42	66.8	0.0219	7.75			
16	12-Sep-18	0.0609	17.7	0.0459	1.09			
17	17-Oct-18	0.0437	16.6	0.0497	0.73			
18	7-Mar-19	13.5	440	0.0662	73.2			
19	29-May-19	3.19	139	0.0285	16.6			
20	23-Sep-19	0.0903	23.7	0.005	1.82			
21	11-Dec-19	4.03	170	0.058	23.9			
22	16-Mar-20	0.0124	16.3	0.02	0.841			
23	6-May-20	0.8	38.4	0.0126	4.48			
24	13-Sep-20	2.29	130	0.0098	15.5			
25	25-Nov-20	7.42	372	0.0343	50.7			
26	5-Mar-21	10.7	434	0.0469	62.8			
27	10-Jun-21	0.872	49.3	0.0117	5.82			
28	17-Sep-21	3.05	212	0.0429	27.4			
29	8-Oct-21	3.54	222	0.0357	32			
30								
Coefficient of Variation:		1.41	1.12	0.70	1.27			
Mann-Kendall Statistic (S):		102	85	45	107			
Confidence Factor:		97.1%	94.2%	79.4%	97.7%			
Concentration Trend:		Increasing	Prob. Increasing	No Trend	Increasing			



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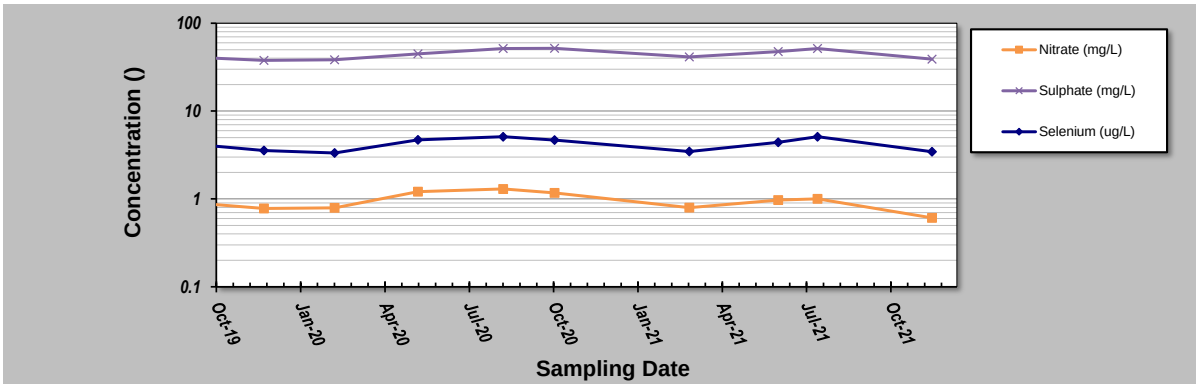
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Feb-22	Job ID:	688847
Facility Name:	Teck Coal Regional Groundwater - GHO	Location	RG_DW-01-03
Conducted By:	AP		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Selenium (ug/L)				
Sampling Event	Sampling Date	RG_DW-01-03 CONCENTRATION						
1	19-Feb-14	0.427	28.8	2.94				
2	03-Jul-14	0.701	36.1	3.9				
3	24-Nov-14	0.442	30	2.62				
4	09-Mar-15	0.413	29.4	2.98				
5	18-Jun-15	0.614	34.6	3.03				
6	24-Nov-15	0.473	32.4	2.91				
7	01-Jun-16	0.806	49.2	3.43				
8	29-Jun-16	0.833	50.7	2.92				
9	14-Sep-16	0.84	53.7	3.42				
10	12-Dec-16	0.61	46.5	2.77				
11	06-Mar-17	0.512	42.1	2.58				
12	31-May-17	0.596	46	2.8				
13	22-Aug-17	0.655	44.8	3.16				
14	21-Nov-17	0.47	35.7	2.53				
15	26-Feb-18	0.441	33	2.45				
16	30-Apr-18	0.591	34.4	3.25				
17	25-Sep-18	0.782	38.5	3.46				
18	26-Nov-18	0.67	35.4	2.98				
19	25-Feb-19	0.683	34.8	3.01				
20	27-May-19	0.913	41.6	4.18				
21	22-Aug-19	0.935	41.7	4.37				
22	25-Nov-19	0.777	37.8	3.56				
23	10-Feb-20	0.79	38.4	3.33				
24	11-May-20	1.21	44.7	4.71				
25	12-Aug-20	1.3	51.5	5.11				
26	7-Oct-20	1.17	51.9	4.67				
27	3-Mar-21	0.797	41.3	3.47				
28	8-Jun-21	0.969	47.5	4.4				
29	21-Jul-21	1	51.4	5.11				
30	23-Nov-21	0.609	39	3.44				
31								
32								
33								
34								
35								
Coefficient of Variation:		0.32	0.18	0.22				
Mann-Kendall Statistic (S):		199	125	187				
Confidence Factor:		>99.9%	98.7%	>99.9%				
Concentration Trend:		Increasing	Increasing	Increasing				



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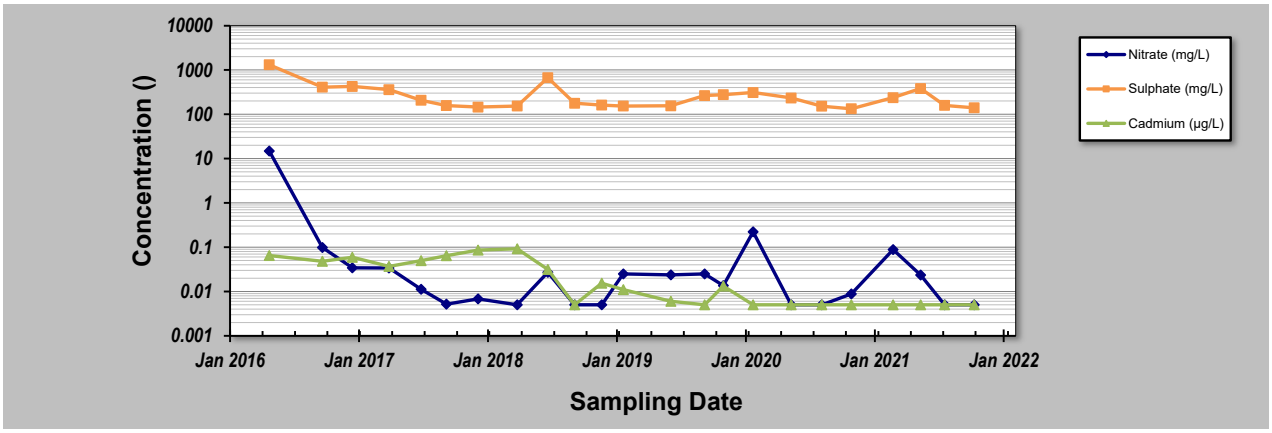
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - CMm	Location	CM_MW7-SH
Conducted By:	MTB		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)				
Sampling Event	Sampling Date	CM_MW7-SH CONCENTRATION						
1	21-Apr-16	14.8	1310	0.065				
2	19-Sep-16	0.0984	408	0.048				
3	13-Dec-16	0.0341	424	0.059				
4	27-Mar-17	0.034	359	0.0368				
5	26-Jun-17	0.0112	206	0.0496				
6	6-Sep-17	0.0052	157	0.0645				
7	5-Dec-17	0.0068	145	0.086				
8	26-Mar-18	0.005	153	0.0917				
9	21-Jun-18	0.027	667	0.0314				
10	5-Sep-18	0.005	177	0.005				
11	21-Nov-18	0.005	161	0.0154				
12	21-Jan-19	0.025	153	0.011				
13	5-Jun-19	0.0237	155	0.006				
14	9-Sep-19	0.025	264	0.005				
15	1-Nov-19	0.0136	276	0.0133				
16	24-Jan-20	0.222	309	0.005				
17	11-May-20	0.005	233	0.005				
18	6-Aug-20	0.005	152	0.005				
19	29-Oct-20	0.0088	133	0.005				
20	25-Feb-21	0.0881	237	0.005				
21	14-May-21	0.0235	380	0.005				
22	21-Jul-21	0.005	158	0.005				
23	13-Oct-21	0.005	140	0.005				
24								
25								
Coefficient of Variation:		4.58	0.87	1.06				
Mann-Kendall Statistic (S):		-77	-72	-154				
Confidence Factor:		97.8%	97.0%	>99.9%				
Concentration Trend:		Decreasing	Decreasing	Decreasing				



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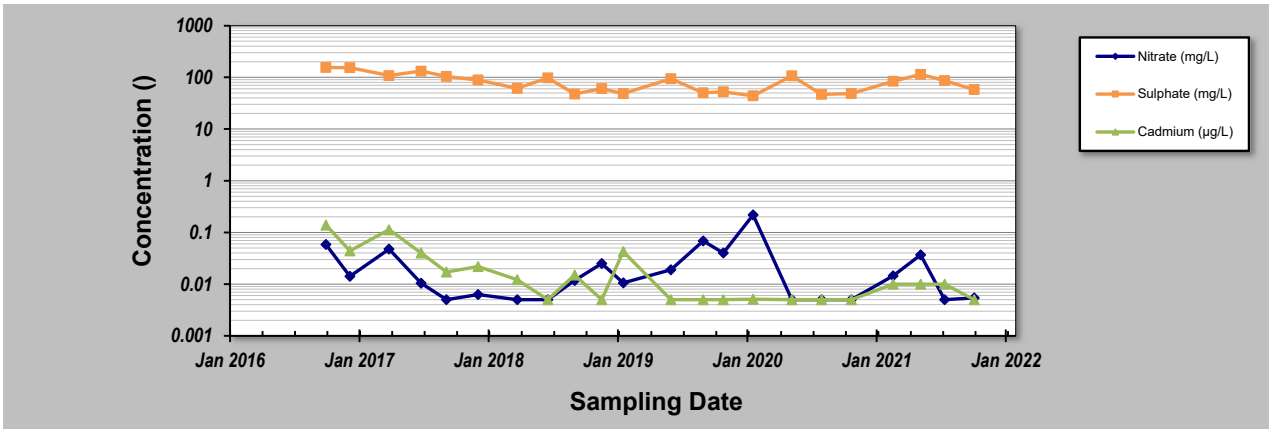
GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - CMm	Location	CM_MW8
Conducted By:	MTB		

Parameter (units)	Nitrate (mg/L)	Sulphate (mg/L)	Cadmium (µg/L)				
Sampling Event	Sampling Date	CM_MW8 CONCENTRATION						
1	29-Sep-16	0.0584	155	0.139				
2	6-Dec-16	0.0142	154	0.0439				
3	27-Mar-17	0.0475	108	0.113				
4	26-Jun-17	0.0104	132	0.04				
5	6-Sep-17	0.005	104	0.0172				
6	5-Dec-17	0.0063	89	0.0218				
7	26-Mar-18	0.005	61.2	0.0122				
8	21-Jun-18	0.005	97.6	0.005				
9	5-Sep-18	0.0118	47.6	0.015				
10	21-Nov-18	0.025	60.4	0.005				
11	21-Jan-19	0.0106	48.4	0.0428				
12	5-Jun-19	0.0189	94.3	0.005				
13	5-Sep-19	0.0684	50.2	0.005				
14	1-Nov-19	0.0402	52.5	0.005				
15	24-Jan-20	0.219	43.9	0.0051				
16	13-May-20	0.005	107	0.005				
17	6-Aug-20	0.005	46.9	0.005				
18	29-Oct-20	0.005	48.5	0.005				
19	25-Feb-21	0.0145	83.8	0.01				
20	14-May-21	0.0367	114	0.01				
21	21-Jul-21	0.005	86.2	0.01				
22	13-Oct-21	0.0054	58	0.005				
23								
24								
25								
Coefficient of Variation:		1.65	0.42	1.49				
Mann-Kendall Statistic (S):		-20	-85	-106				
Confidence Factor:		70.2%	99.2%	99.9%				
Concentration Trend:		No Trend	Decreasing	Decreasing				



Notes:

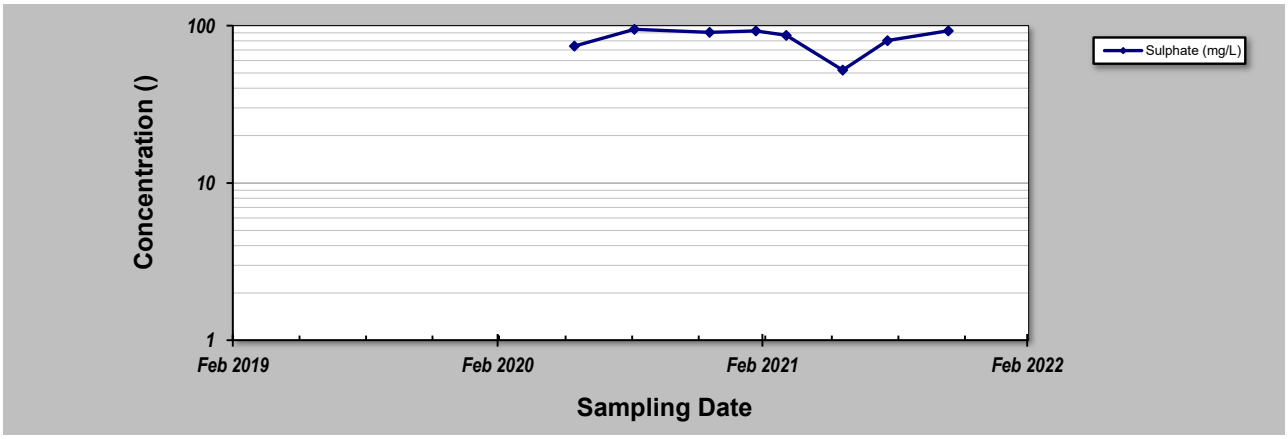
1. At least four independent sampling events per well are required for calculating the trend. *Methodology is valid for 4 to 40 samples.*
2. Confidence in Trend = Confidence (in percent) that constituent concentration is increasing (S>0) or decreasing (S<0): >95% = Increasing or Decreasing; ≥ 90% = Probably Increasing or Probably Decreasing; < 90% and S>0 = No Trend; < 90%, S≤0, and COV ≥ 1 = No Trend; < 90% and COV < 1 = Stable.
3. Methodology based on "MAROS: A Decision Support System for Optimizing Monitoring Plans", J.J. Aziz, M. Ling, H.S. Rifai, C.J. Newell, and J.R. Gonzales, *Ground Water*, 41(3):355-367, 2003.

GSI MANN-KENDALL TOOLKIT
for Constituent Trend Analysis

Evaluation Date:	15-Feb-22	Job ID:	635544
Facility Name:	Teck Coal Regional Groundwater - CMm	Location	CM_MW10
Conducted By:	MTB		

Parameter (units): Sulphate (mg/L)

Sampling Event	Sampling Date	CM_MW10 CONCENTRATION
1	21-May-20	74.1
2	12-Aug-20	94.8
3	24-Nov-20	90.7
4	27-Jan-21	92.6
5	10-Mar-21	86.8
6	27-May-21	52.2
7	28-Jul-21	80.4
8	20-Oct-21	92.7
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		
Coefficient of Variation:		0.17
Mann-Kendall Statistic (S):		-2
Confidence Factor:		54.8%
Concentration Trend:		Stable



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SNC-Lavalin Inc.
#3 - 520 Lake Street
Nelson, British Columbia, Canada V1L 4C6
250.354.1664 604.515.5150
www.snclavalin.com