

Old Cranbrook Landfill

2020 Groundwater Monitoring Annual Report



PREPARED FOR: REGIONAL DISTRICT OF EAST KOOTENAY

PREPARED BY: SPERLING HANSEN ASSOCIATES

February, 2021

PRJ20050



**SPERLING
HANSEN
ASSOCIATES**



- Landfill Engineering
- Solid Waste Planning
- Environmental Monitoring
- Landfill Fire Control

1. INTRODUCTION

Sperling Hansen Associates (SHA) was retained by the Regional District of East Kootenay (RDEK) in 2020 to develop an updated Groundwater Monitoring Program (GMP) for seven (7) Solid Waste Management facilities located within the RDEK. As part of this GMP update SHA, along with Subconsultant Bear Environmental Limited (BEAR), will conduct four (4) groundwater sampling events per year, and provide one interim report per event for each site. The goal of this program is to provide the RDEK with valuable information regarding the groundwater quality at disposal sites and to assist in developing appropriate monitoring and management measures for the next five years.

SHA was awarded this contract with the RDEK in April, 2020. The first two quarterly sampling events were completed by the previous consultant EcoLogic in January and April 2020. As SHA was brought on halfway through the year, the results of the first two sampling events were shared with SHA so that a complete data set for 2020 could be compiled, and that the complete data from all four events could be reviewed and included in this Annual report.

The final quarterly water sampling event for the year was completed in October, 2020 over a week period. Samples taken from each site are recorded below, and water quality analysis discussed in Section 4. This report details the sampling notes, lab analysis results, and trends observed at the wells throughout 2020. Section 5 presents recommendations for the next year of monitoring.

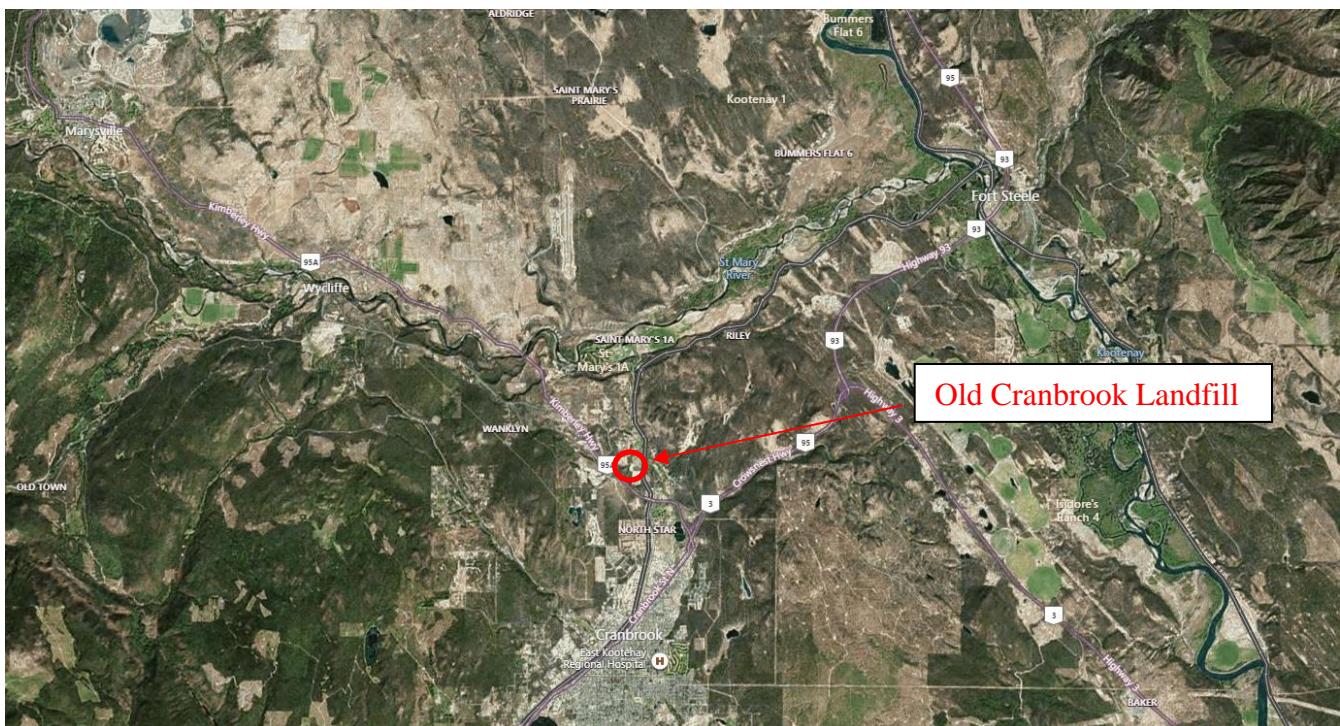


Photo 1-1. Old Cranbrook Landfill Site Location.

1.1 Location and Setting

The Cranbrook Landfill is located just north of the city of Cranbrook within the Central Subregion of East Kootenay. The site is situated off of Highway 95A at Corbett Rd. The latitude and longitude are 49.55358 N and -115.75853 W respectively.

The site is approximately 7 hectares in size and closure construction was completed in 2007.



Photo 1-2. Old Cranbrook Landfill Site Layout.

1.2 Site Operations

The landfill originally functioned as a natural attenuation landfill for 20 years, until the year 2000. The site was finally closed in 2007 and 2008 and revegetated. A passive gas collection system was installed during closure construction and has since been plumbed to a candlestick flare where the RDEK receive carbon offset credits for the methane destruction.

2. MONITORING PROGRAM

Site monitoring wells are shown on Figure 1. A total of six (6) monitoring wells exist at the Site and were sampling in accordance to the BC Field Sampling Manual in 2020. Note that in Q3 2020, five wells were sampled due to a sampling pump failure at E65127. However, field parameters for E65127 were recorded.

2.1 Methodology

Due to the nature of waste when it comes into contact with water, it is required to monitor the groundwater on and surrounding the site to observe impacts from the landfill to groundwater and surface water. In compliance with Landfill Criteria for Municipal Solid Waste, Sperling Hansen Associates (SHA) was retained to conduct the groundwater monitoring for the wells.

BEAR has been hired as a subconsultant to conduct field sampling. Each well sampled is tested for a set of parameters. Table 2-1 shows which parameters are tested Quarterly and Yearly.

Table 2-1. Groundwater Monitoring Parameters.

| Site | Quarterly Parameters | Yearly Parameters |
|--------------------|------------------------|------------------------|
| Cranbrook Landfill | Temperature | Temperature |
| | Conductivity | Conductivity |
| | pH | pH |
| | Nitrite (N) | Nitrite (N) |
| | Nitrate (N) | Nitrate (N) |
| | Ammonia Nitrogen (NH3) | Ammonia Nitrogen (NH3) |
| | Fluoride (F) | Fluoride (F) |
| | Sulphate (SO4) | Sulphate (SO4) |
| | Chloride (Cl) | Chloride (Cl) |
| | Hardness | Hardness |
| | Total Alkalinity | Total Alkalinity |
| | | |
| | Total Suspended Solids | Total Suspended Solids |
| | Turbidity | Turbidity |
| | Dissolved Metals | Dissolved Metals |
| | * LANDFILL GAS | * LANDFILL GAS |
| | | BTEX |
| | | EPH/VPH |

Analysis of the water samples was conducted by ALS Environmental, a CALA accredited laboratory. Samples were sent to ALS in Calgary via courier by BEAR. Certificate of Analysis (COA) are included in Appendix C. The COA for the January 2020 sampling event was not available to SHA. SHA reviewed available Laboratory COAs, based on internal laboratory QA/QC, the results are considered reliable.

2.2 Regulatory Criteria

In the absence of an OC, Permit or DOCP, SHA determined regulatory criteria based on site and surrounding area water use.

The CSR Protocol 21 indicates that Drinking Water (DW) Standards generally apply where drinking water sources are within 500m of a site, or if a property is situated on an aquifer that could be used in the future for Drinking Water. Information from the BC Water Atlas indicates that mapped Aquifer 524 underlies the Site. The *Aquifer Classification Worksheet* suggests that in areas, a deeper Aquifer 525 underlies Aquifer 524 where a water system exists. A search for water wells revealed approximately 5 water wells within 500m of the Site. Without further investigation, current and future DW standards are assumed to apply.

The BC Contaminated Sites Regulation (CSR) Protocol 21 indicates that Aquatic Life Standards (AW) generally apply to all groundwater located within 500 m of a surface water body containing aquatic life. The Site is located approximately 400m west of Joseph Creek, therefore the Aquatic Life for Freshwater (AW) standards will apply.

BC CSR Schedule 3.2 standards have been applied by SHA to include:

- The Schedule 3.2 of the BC CSR with consideration to Aquatic Life (AW) and Drinking Water (DW);

These standards are the most recent published by BC ENV used to assess groundwater at contaminated sites and the quality of drinking water.

2.3 Groundwater Flow

The Old Cranbrook site is located approximately 3 km south east of the St. Mary River and approximately 400m west of Joseph Creek. A pond/small lake is located 1.5 km south west of the Site.

Based on the regional topography, groundwater is inferred to flow west to Kootenay Lake. Locally, groundwater flow can be affected by building foundations, recharge areas, drainage and subsurface utilities. Depending on their depth, underground structures may significantly influence shallow groundwater flow in the vicinity of the Site. Local groundwater appears to flow towards the north east. Well details are shown in Table 2-2 below.

Table 2-2. Well Details and Water Level

| Well ID | Well Construction | Water Level (m) from EcoLogic Report | Water Level (m) from EcoLogic Report | Q3 Depth to Water BGS (m) | Q4 Depth to Water BGS (m) |
|---------|-------------------|-----------------------------------------|-----------------------------------------|---------------------------|---------------------------|
| E265127 | 2" PVC | 57.56 | 10.51 | 14.495 | 16.88 |
| E265122 | 2" PVC | 64.3 | 63.22 | 62.405 | 62.625 |
| E265123 | 2" PVC | 62.22 | 62.09 | 61.455 | 61.79 |
| E265124 | 2" PVC | 54.31 | 54.11 | 53.385 | 53.54 |
| E265125 | 2" PVC | 18.35 | 57.38 | 56.835 | 57.015 |
| E265129 | 2" PVC | 54.13 | 55.92 | 55.745 | 55.915 |

2.4 Nomenclature

The reporting of monitoring wells at the East Kootenay sites has previously been a combination of Environmental Monitoring System Numbers (EMSN) and site number names that are the more common naming convention (MW-1). The majority of sites have both, but some wells only have the E number. To avoid confusion and the potential of double counting the wells, SHA has decided to use the E numbers when referring to them. This way reports and analyses can be consistent, and can be traced to the OC or Permit for the site. The site maps attached to these Annual Reports as Figure 1 have been updated to reflect this change and now have the EMSN numbers labelled.

3. RESULTS

Parameters tested in this event included:

- Quarterly sampling parameters pH, conductivity, alkalinity, hardness, total suspended solids, turbidity, anions and nutrients, and dissolved metals;
- Annual parameters - benzene, toluene, ethylbenzene, and xylene (BTEX), volatile petroleum hydrocarbons, (VPH), and extractable petroleum hydrocarbons (EPH).

Results for the annual parameter testing were not available for 2020. The next annual sampling event will be in April, 2021.

All parameters tested were below applicable standards and guidelines with the exception of two parameters:

- Lithium
- Fluoride

Details are provided in the Sections below.

3.1 Exceedances

Table 3-1 below shows which wells sampled exhibited exceedances in select parameters. E265123 and E265125 exceeded the CSR DW limit for lithium for all quarterly sampling events.. Historically, the 2019 results for these wells also showed consistent lithium exceedances, when compared to the applicable standards (CSR DW limit = 0.008 mg/L). The maximum concentration of lithium was detected at E265123 in April 2020 with a concentration of 0.140mg/L versus the BC CSR DW standard of 0.008mg/L. This is approximately 17.5 times above the DW standard.

Fluoride concentrations at E265125 also exceeded the CSR DW limit in all quarters. Historically, the 2019 fluoride results for E265125 also showed concentrations above the applicable DW standard. The maximum concentration of fluoride at E265125 was 2.25mg/L in July 2020 versus the BC CSR DW standard of 1.50mg/L.

All other parameters tested were below applicable BC CSR AW and DW standards.

Table 3-1. Maximum Parameter Concentrations Above BC CSR DW Standards

| Parameter | BC CSR DW Standard | Maximum Concentration (mg/L) | Well Name |
|--------------|--------------------|------------------------------|-----------|
| Lithium (Li) | 0.008 mg/L | 0.14 | E265123 |
| Fluoride (F) | 1.5 mg/L | 2.25 | E265125 |

Table 3-2. Maximum Parameter Concentrations Above BC CSR AW Standards

| Parameter | BC CSR AW Standard | Maximum Concentration (mg/L) | Well Name |
|--------------|--------------------|------------------------------|-----------|
| Fluoride (F) | 2.0-3.0 mg/L (b) | 2.24 | E265125 |

(b) - Limit dependent upon hardness

The CSR AW Limit for fluoride is 2.0 mg/L at a hardness of less than 50 mg/L, and 3.0 mg/L at a hardness of greater than or equal to 50 mg/L. As the hardness at well E265125 was less than 50 mg/L, the limit of 2.0 mg/L of fluoride applies.

3.2 Notes on Regional Background Concentrations

As per the British Columbia Contaminated Sites Regulation (CSR) Schedule 3.2, 2019, the drinking water limit for Lithium (Li) is 8 µg/L or 0.008 mg/L. Many regions in B.C. have background concentrations of lithium that exceed this limit, which poses a complication for monitored sites that are required under Operation Certificates or Permits to avoid exceedances of harmful parameters. In response, the B.C. Ministry of Environment and Climate Change (BC ENV) published a document in 2018 qualifying the limit and providing background concentrations for three regions in the province for five metals, including lithium. The limits published in the *Technical Bulletin 3: Regional Background Concentrations for Select Inorganic Substances in Groundwater* account for naturally occurring levels of the five metals, and are therefore higher than the limit within the CSR currently.

However, these three regions only comprise the Lower Mainland, South Vancouver Island, and Thompson-Okanagan. SHA believes the exceedances in lithium observed at the RDEK sites may be attributable to natural background concentrations that are not accounted for in the CSR Schedule 3.2 or *Technical Bulletin 3*. It should be noted that Eco/Logic did not have a limit for lithium, which explains the discrepancy in exceedances despite there being little difference between 2019 and 2020 results.

Note that Thompson-Okanagan, the nearest region to the RDEK with a back ground concentration qualifier for lithium, has a qualified concentration in the Bulletin of 96 µg/L, or 0.096 mg/L . SHA does not believe the RD needs to look into remediation measures at this point, but recommends the RD flag

this exceedance history in the case that the Ministry publishes a background concentration for the Kootenay region. SHA recommends that future sampling at the Site be conducted utilizing low flow sampling methods to minimize the re-suspension of colloidal materials that can be caused during sampling with bailers and/or Waterra inertia pumps.

Technical Bulletin 3: Regional Background Concentrations for Select Inorganic Substances in Groundwater is attached to this report for the RD's information as Appendix C.

3.3 Landfill Gas

The landfill criteria stipulate that soil gas concentrations at the landfill site boundary must not exceed the lower explosive limit of methane (5% by volume) at any time. The landfill gas probes monitored in July and October showed to have well below the percent LEL limit. This is particularly important for the Cranbrook site as it is a closed natural attenuation site that is still producing landfill gas. In order to ensure that this requirement is met, these wells are monitored quarterly. As part of the quarterly monitoring program, Bear Environmental completed one round of landfill gas monitoring on July 24th, 2020 as the initial round in SHA's contract, and a second in October 2020. A Landtec GEM 2000 Plus landfill gas analyzer was used for the monitoring. Each measurement consisted of reading relative pressure in the probe, and purging the probe until stable readings has been established.

The results from the October 2020 monitoring event are presented in Appendix A, Table A-2. As can be seen in the table, all readings were well below the landfill criteria. It is recommended landfill gas monitoring continue in its current format. In the event that elevated levels of landfill gas are detected in any of the probes, the RDEK representative must be notified right away as further actions may be required.

4. DISCUSSION

All parameters tested were below applicable standards with the exception of the following parameters:

- Lithium and Fluoride

Historically, these parameters show elevated concentrations at wells E265123/E265125 and E265125 respectively. In 2020, the maximum concentration of lithium was found at E265123 at 0.140mg/L versus the BC CSR DW standard of 0.008 mg/L. The maximum concentration of fluoride was found at E265125 at 2.25 mg/L versus the BC CSR DW standard 1.50 mg/L. These maximums are calculated as 17.5 and 1.5 times respective standards.

Trends will continue to be monitored. As these parameters occur elevated but without the accompaniment of elevated typical landfill contaminants of concern, SHA considers the impacts to groundwater from the Old Cranbrook Landfill to be low.

Note that there is a history of fluoride loading in the upstream surrounding area as documented in the *BC Water Quality Ambient Water Quality Criteria for Fluoride*.

SHA recommends that as metals parameters, specifically lithium, appear elevated on-site, low flow monitoring methods should be implemented during sampling to minimize the re-suspension of colloidal materials that can be caused during sampling with bailers and/or Waterra inertia pumps.

4.1 Trend Analysis

To illustrate the trends observed in key parameters at the wells sampled, SHA has prepared figures that combine the 2020 analytical results with the applicable criteria limits.

- Figure 2 – Lithium concentrations
- Figure 3 – Sulfate concentrations
- Figure 4 – Sodium concentrations
- Figure 5 – Chloride concentrations
- Figure 6 – Nitrate concentrations
- Figure 7 – Specific conductance (Conductivity)
- Figure 8 – Fluoride concentrations

The red line on each figure represents the limit for that parameter according to the criteria, to show if wells are under or exceeding the maximum allowable concentration at the time of each quarterly sampling event.

Lithium is the parameter with an observable consistent trend above the CSR DW limit. Sulfate, sodium, chloride, nitrate, and conductivity are graphed because they are typical landfill indicators. As shown in the graphs, these parameters are below allowable limits and show the landfill is not impacting groundwater chemistry beyond regulatory standards. There is no limit for conductivity, but the consistently high trend shows that the presence of the landfill does impact groundwater relative to background or upgradient concentrations.

Please note that the graphs provided are for observing trends, and data less than or equal to the detection limit for a parameter appears on graphs as trace concentrations. If a well shows to have no data on the graph, please refer to the master data table for the exact parameter concentration.

5. CONCLUSIONS AND RECOMMENDATIONS

Of the six wells sampled, two include concentrations above BC CSR DW limits. Concentrations of lithium and fluoride were above BC CSR DW standards at wells E265123/E265125 and E265125. As these elevated parameters, lithium and fluoride, were detected without the accompaniment of elevated typical landfill contaminants of concern, SHA considers the impacts to groundwater from the Old Cranbrook Landfill to be low.

SHA recommends the following:

Slight metals parameter concentrations of lithium above applicable standards were detected in landfill wells E265123 and E265125, although, this was not accompanied with other elevated landfill contaminants such as chloride, sulfate, nitrate. SHA recommends that a future groundwater sampling events be conducted using a low flow method to minimize the re-suspension of colloidal materials that can be caused during sampling with bailers and/or Waterra inertia pumps. If this sampling method is effective in providing a more accurate interpretation of groundwater data and able to show the groundwater exceedances are a result of suspended materials from bailed sampling, then SHA could make a recommendation to the Regional District to implement this sampling method for the monitoring going forward.

SHA recommends continuing with the monitoring program as scheduled. The next event, Q2 in April 2021, will be the annual sampling and analysis event. This follows the same schedule of 2020 that EcoLogic followed. SHA believes this makes the most sense as spring is the most likely time of year that all wells are accessible and not dry

6. STATEMENT OF LIMITATIONS

This report has been prepared by Sperling Hansen Associates. (SHA) on behalf of the Regional District of East Kootenay (RDEK) in accordance with generally accepted engineering practices to a level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions in British Columbia.

The report is based on site visits, project experience, and analysis by SHA staff of data compiled during the preparation of this report from a number of sources. Except where specifically stated to the contrary, the information on which this study is based has been obtained from external sources. This external information has not been independently verified or otherwise examined by SHA to determine its accuracy and completeness. SHA has relied in good faith on this information and does not accept responsibility of any deficiency, misstatements or inaccuracies contained in the reports as a result of omissions, misinterpretation and/or fraudulent acts of the persons interviewed or contacted, or errors or omissions in the reviewed documentation.

The report is intended solely for the use of the RDEK. Any use which other parties makes of this report, or any reliance on, or decisions to be made based on it, are the responsibilities of such other parties. SHA does not accept any responsibility for other uses of the material contained herein nor for damages, if any, suffered by any third party because of decisions made or actions based on this report. Copying of this intellectual property for other purposes is not permitted.

The findings and conclusions of this report are valid only as of the date of this report. The interpretations presented in this report and the conclusions and recommendations that are drawn are based on information that was made available to SHA during the course of this project. Should additional new data become available in the future, SHA should be requested to re-evaluate the findings of this report and modify the conclusions and recommendations drawn, as required.

Should you have any questions on this report or require further assistance or information, please feel free to contact the undersigned at 778-471-7088 or 604-986-7723.

Report prepared by:



Chloe Hetherington
Environmental Analyst Assistant



Rahim Gaidhar, GIT
GIT, Project Geoscientist

Report reviewed by:



Scott Garthwaite, AScT
Sr. Civil Technologist



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PROJECT:

SOLID WASTE FACILITY
MONITORING
PROGRAM 2020-2025

TITLE:

OLD CRANBROOK LANDFILL
MONITORING LOCATIONS

SCALE:
N/A

DATE:
2020/10/01
yyyy/mm/dd

PROJECT NO:
20050

DESIGNED

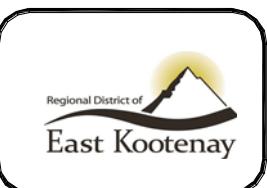
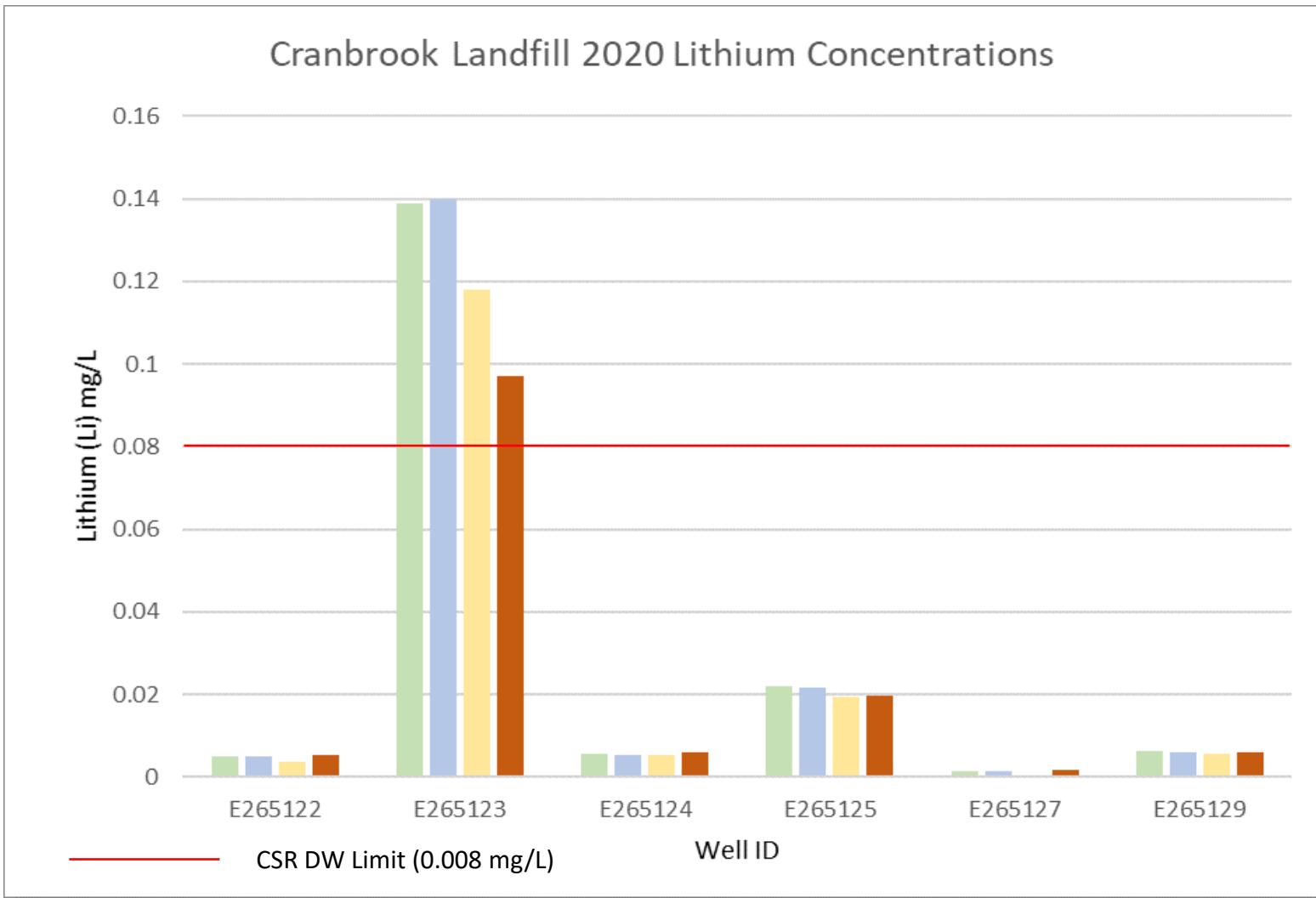
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Figure 1

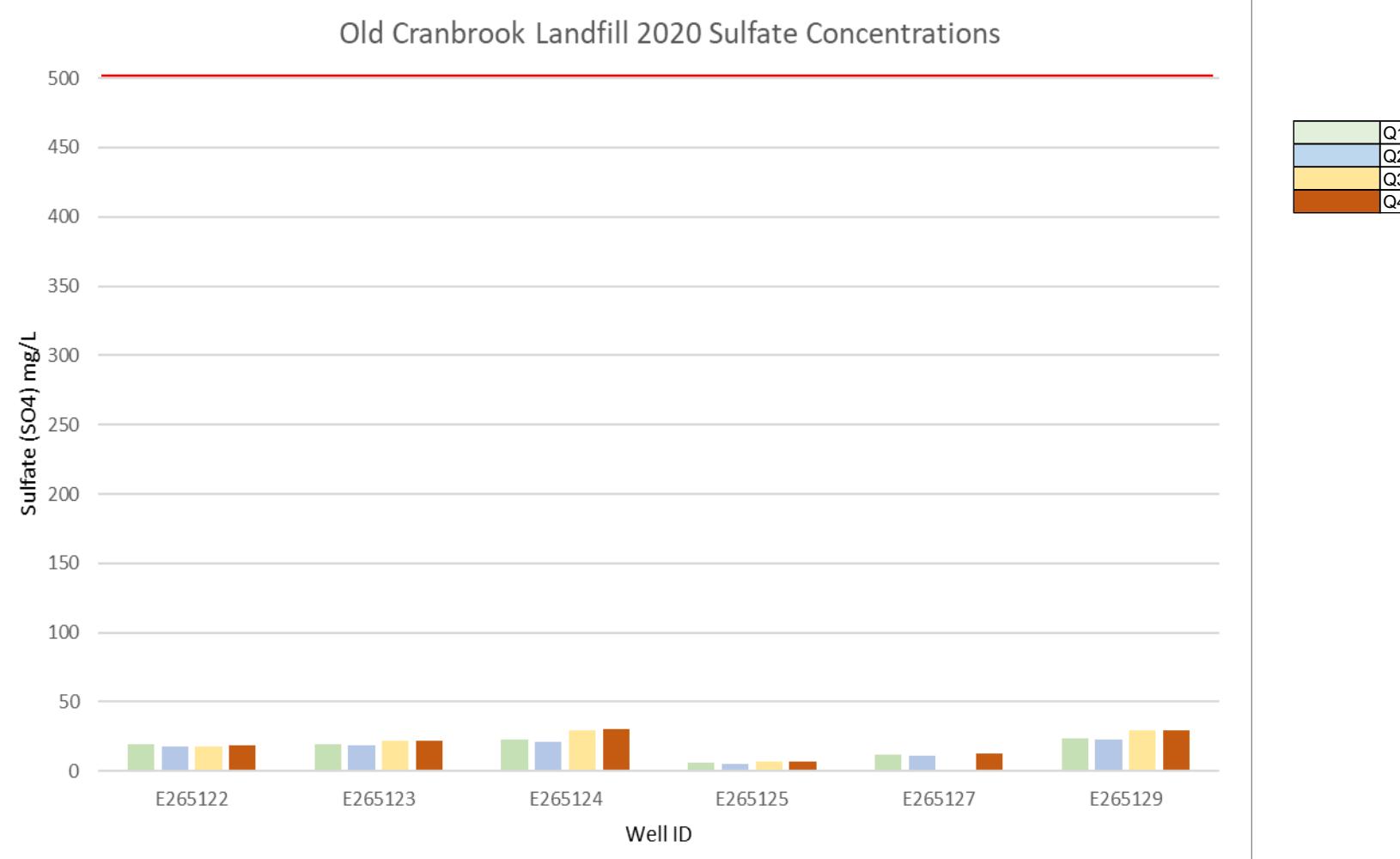


PROJECT:
**SOLID WASTE FACILITY
MONITORING
PROGRAM 2020-2025**

TITLE:
2020 Lithium Concentrations

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Figure 2



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Regional District of
East Kootenay

PROJECT:

**SOLID WASTE FACILITY
MONITORING
PROGRAM 2020-2025**

TITLE:

2020 Sulfate Concentrations

SCALE:

N/A

DATE:

28/01/2021

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PROJECT NO:

20050

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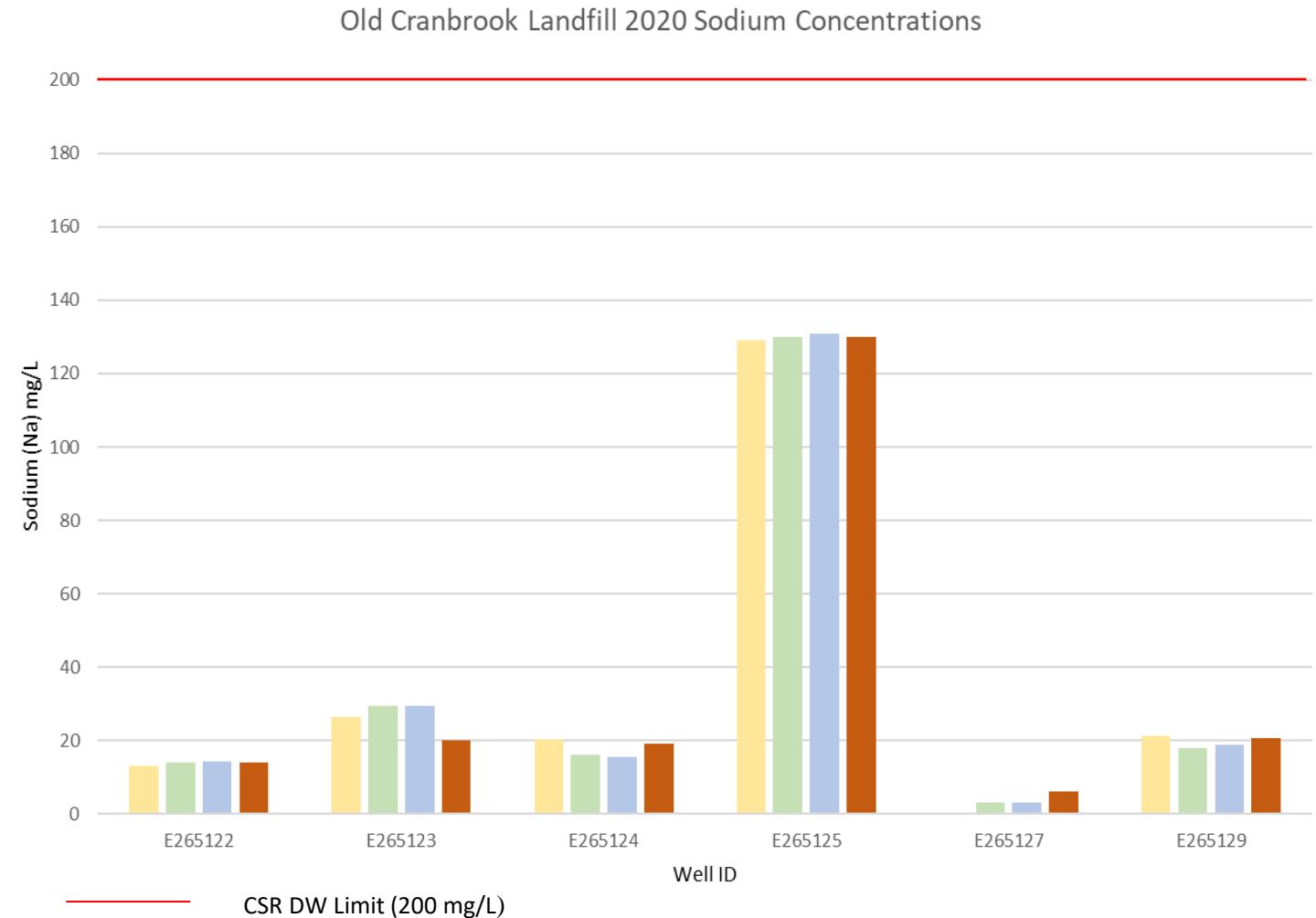
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Figure 3



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Regional District of
East Kootenay

PROJECT:

**SOLID WASTE FACILITY
MONITORING
PROGRAM 2020-2025**

TITLE:

2020 Sodium Concentrations

SCALE:

N/A

DATE:

28/01/2021
yyyy/mm/dd

PROJECT NO:

20050

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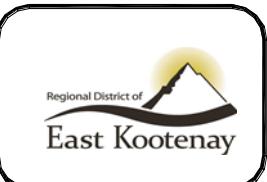
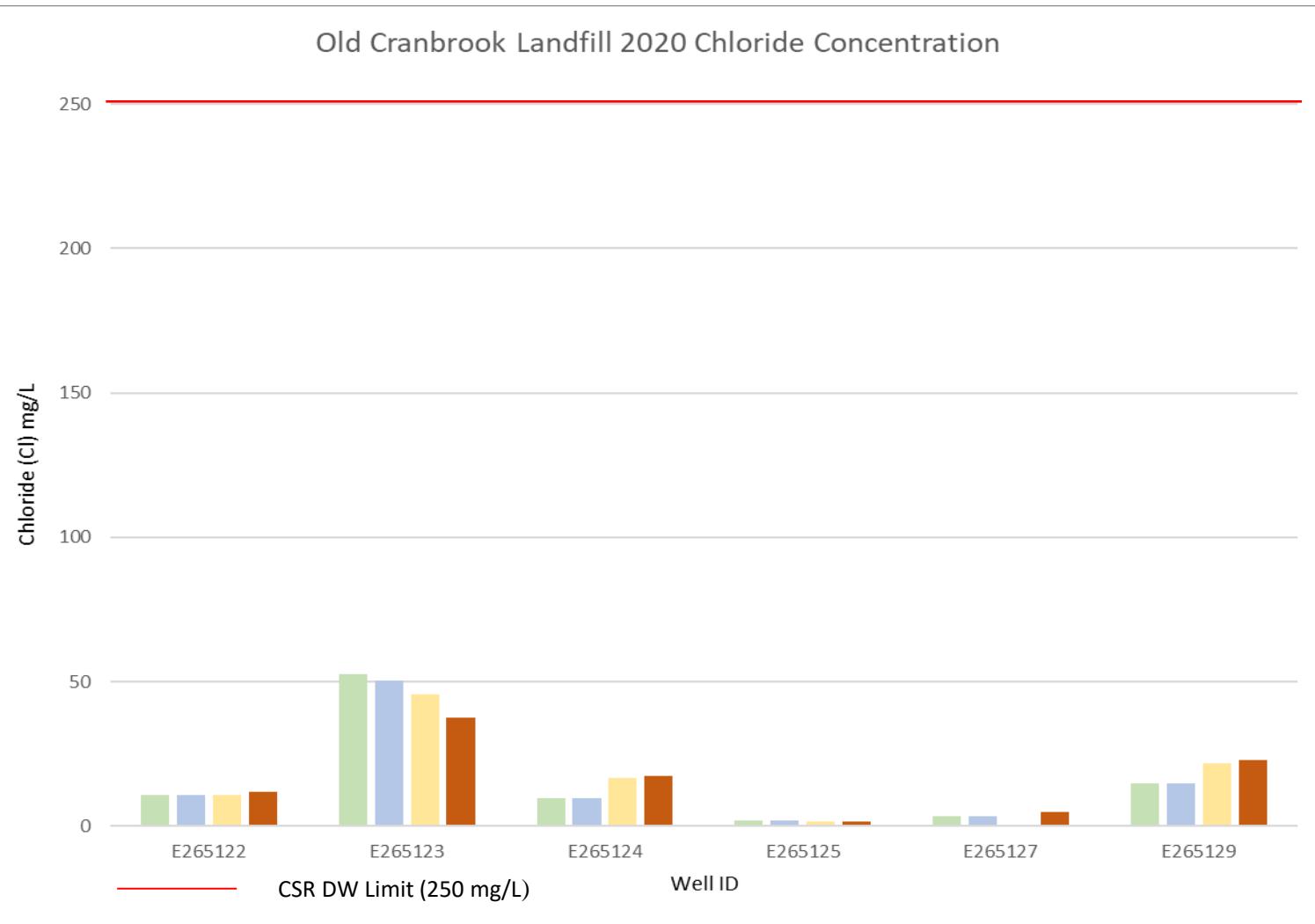
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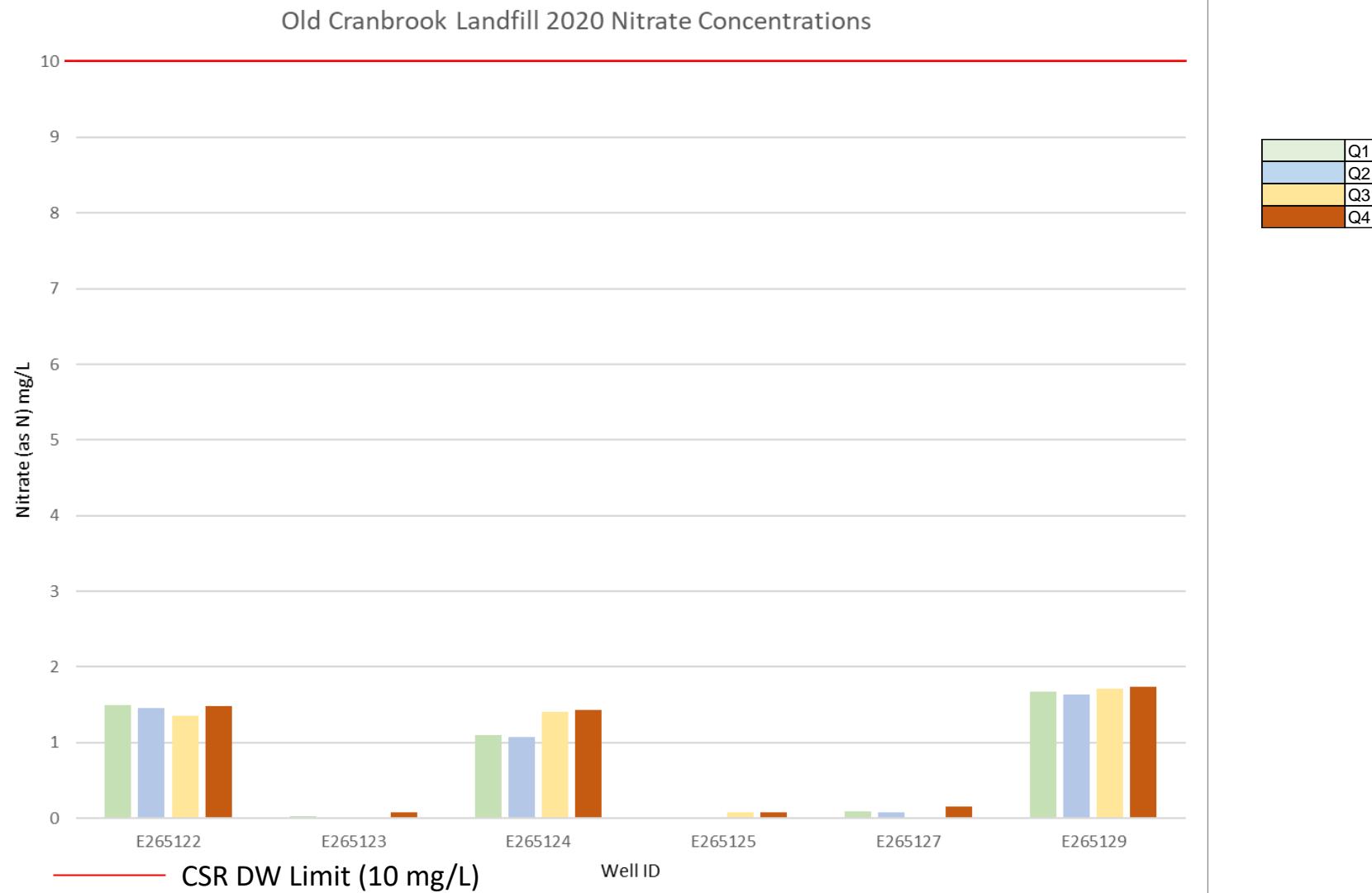


PROJECT:
**SOLID WASTE FACILITY
MONITORING
PROGRAM 2020-2025**

TITLE:
2020 Chloride Concentrations

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| DRAWN | CH | |
| CHECKED | SG | |

Figure 5



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PROJECT:

**SOLID WASTE FACILITY
MONITORING
PROGRAM 2020-2025**

TITLE:

2020 Nitrate Concentrations

SCALE:

N/A

DATE:

28/01/2021

yyyy/mm/dd

PROJECT NO:

20050

DESIGNED

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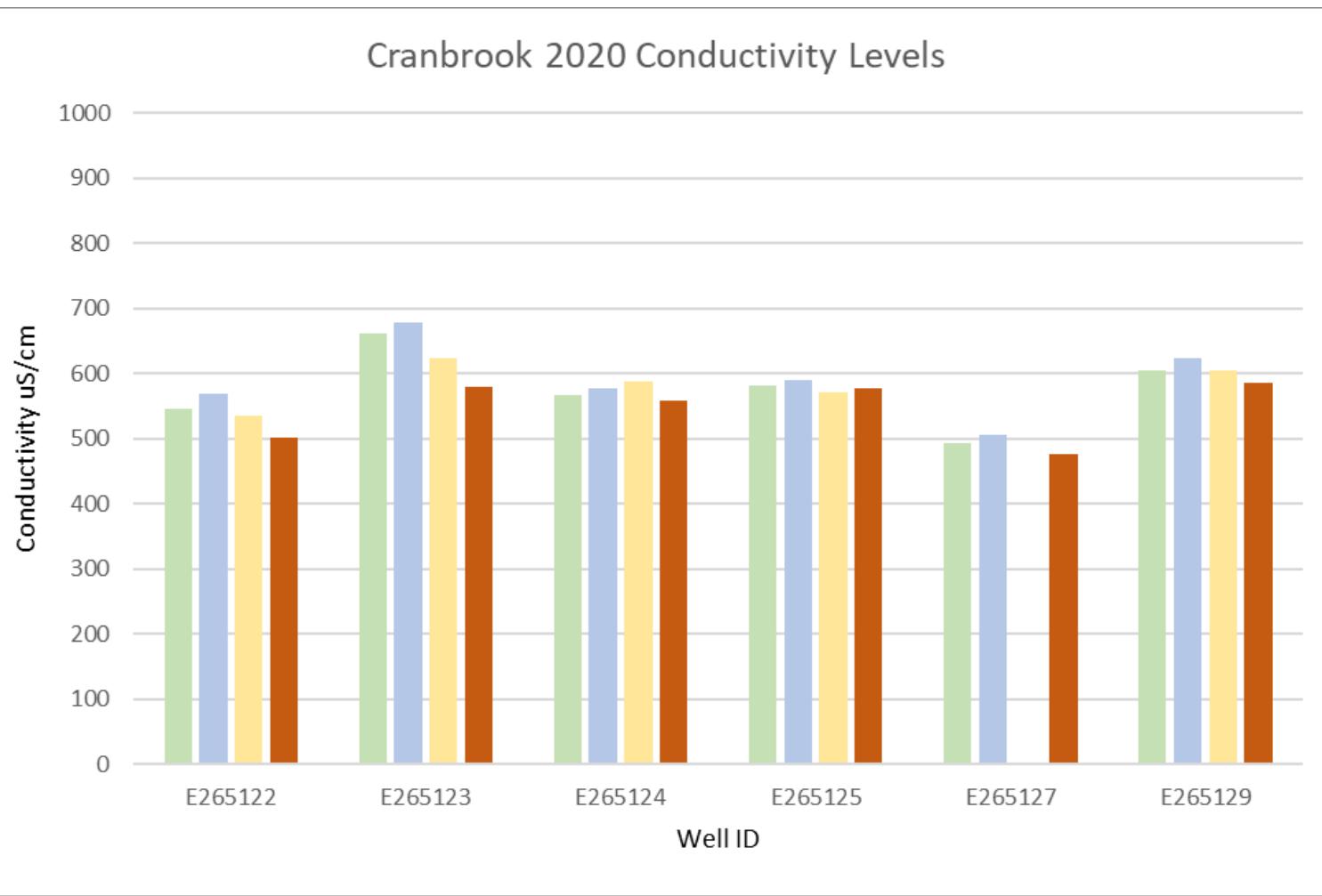
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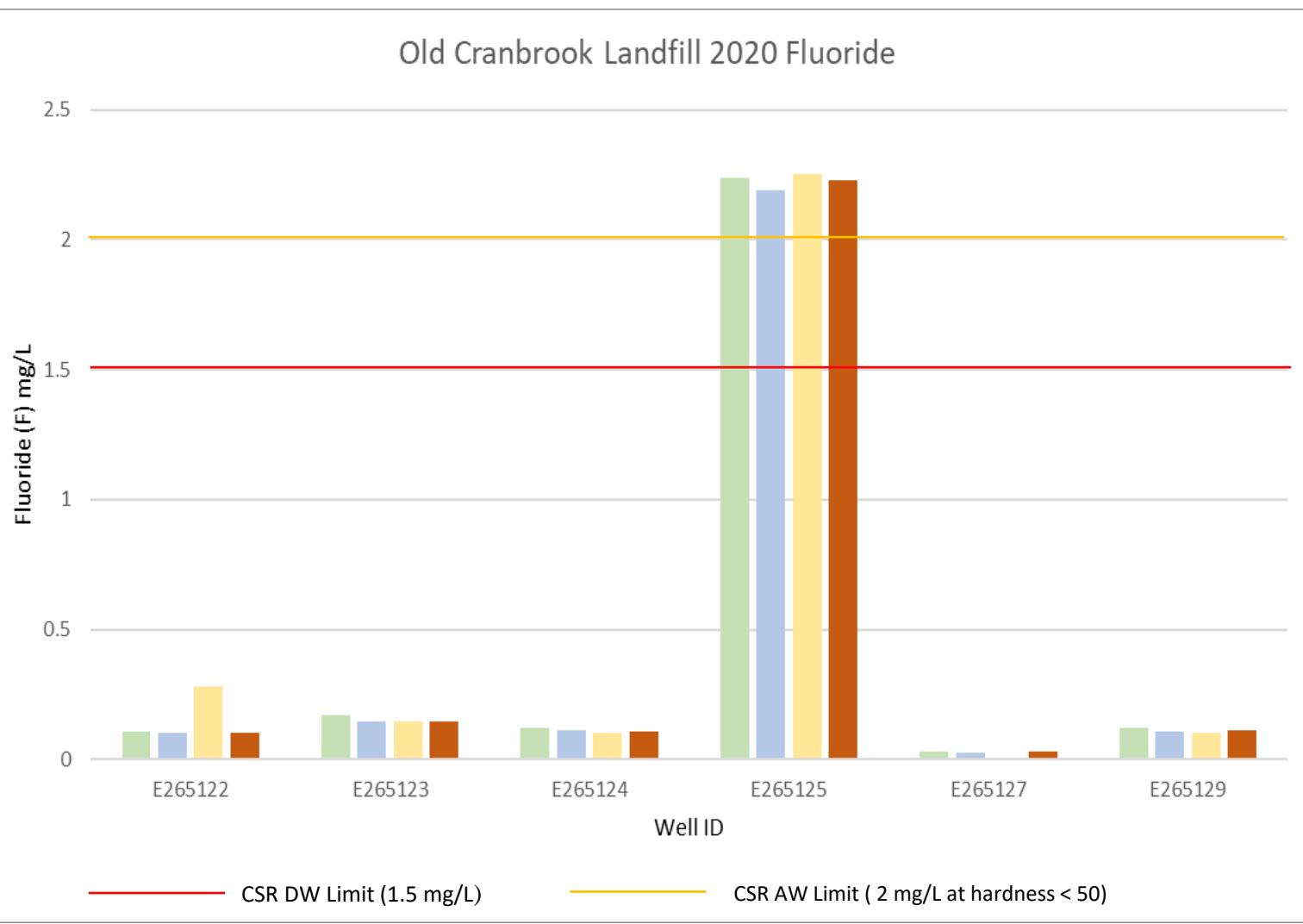
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Figure 6





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PROJECT:

**SOLID WASTE FACILITY
MONITORING
PROGRAM 2020-2025**

TITLE:

2020 Fluoride Concentrations

SCALE:

N/A

DATE:

28/01/2021

yyyy/mm/dd

PROJECT NO:

20050

DESIGNED

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Figure 8

Table A-2. 2020 Landfill Gas Monitoring Results

| Well ID | Depth (m) | Q1 January | | Q2 April 2020 | | Q3 July 2020 | | | | | | | | Q4 October 2020 | | | | | | | | | | | |
|-----------|-----------|-----------------------|--------------------------|-----------------------|--------------------------|---------------------|---------------------|--------------------|---------|---------------------------|----------|------------------------|---------|-------------------|--------------------|---------------------|---------------------|--------------------|---------|----------------------|----------|------------------------|---------|-------------------|--------------------|
| | | Combustible Gas % LEL | Methane Conversion % LEL | Combustible Gas % LEL | Methane Conversion % LEL | CH ₄ (%) | CO ₂ (%) | O ₂ (%) | BAL (%) | H ₂ (low/high) | CO (ppm) | H ₂ S (ppm) | LEL (%) | Relative Pressure | Barometric Presure | CH ₄ (%) | CO ₂ (%) | O ₂ (%) | BAL (%) | H ₂ (ppm) | CO (ppm) | H ₂ S (ppm) | LEL (%) | Relative Pressure | Barometric Presure |
| E265122-S | 25 | NM | NM | trace | trace | 0.2 | 0 | 19.2 | 80.6 | low | 0 | 0 | 4% | 1.04 | 27 | 0.4 | 1.1 | 17.2 | 81.2 | low | 0 | 0 | 8 | 0.47 | 26.88 |
| E265122-D | 49.8 | NM | NM | trace | trace | 0.2 | 0 | 19.2 | 80.6 | low | 0 | 0 | 5% | 1.04 | 27 | 0.5 | 1.1 | 17.0 | 81.4 | low | 0 | 0 | 10 | 0.47 | 26.88 |
| E265123 | 76 | trace | trace | 22% | 9.20% | 0.3 | 0 | 18.7 | 81.0 | low | 0 | 0 | 7% | 1.04 | 27 | 1.5 | 2.8 | 15.9 | 79.8 | low | 0 | 0 | 30 | 0 | 26.88 |
| E265124-S | 31.2 | trace | trace | trace | trace | 0.4 | 0 | 19.0 | 80.6 | low | 0 | 0 | 8% | 1.04 | 27 | 0 | 0.1 | 19.5 | 80.4 | low | 0 | 0 | 1 | 0 | 26.94 |
| E265124-D | 43.4 | trace | trace | trace | trace | 0.4 | 0.1 | 18.7 | 80.8 | low | 0 | 0 | 7% | 1.04 | 27 | 0.2 | 0.5 | 19.0 | 80.3 | low | 0 | 0 | 4 | 0 | 26.94 |
| TH-4 | 14.9 | NM | NM | 5% | 2.10% | 0.3 | 0.4 | 18.9 | 80.4 | low | 0 | 0 | 6% | 0.38 | 26.96 | 0.4 | 0.6 | 19.1 | 79.9 | low | 0 | 0 | 8 | 0.5 | 26.9 |
| TH4-A | 14.6 | ND | ND | trace | trace | 0.2 | 2.4 | 15.1 | 82.3 | low | 0 | 0 | 4% | 0.38 | 26.96 | 0.2 | 3.7 | 13.1 | 82.9 | low | 0 | 0 | 3 | 0.5 | 26.92 |
| TH-6 | 3.2 | trace | trace | trace | trace | 0.1 | 3.6 | 16.7 | 79.6 | low | 0 | 0 | 2% | 0 | 26.94 | 0.1 | 2.1 | 18.9 | 78.9 | low | 0 | 0 | 2 | 0 | 26.91 |
| TH-1-S | 14.9 | NM | NM | 11% | 4.60% | 0.8 | 4.1 | 13.2 | 82.1 | low | 0 | 0 | 17% | 0.47 | 26.9 | 0.6 | 3.7 | 14.8 | 80.9 | low | 0 | 0 | 13 | 0.24 | 26.9 |
| TH-1-D | 54.5 | NM | NM | trace | trace | 0.2 | 0 | 19.6 | 80.1 | low | 0 | 0 | 4% | 0.47 | 26.9 | 0.5 | 0.3 | 19.4 | 79.9 | low | 0 | 0 | 9 | 0.24 | 26.9 |

NM - Not Monitored

LEL - Lower Explosive Limit

trace - less than 2% LEL

ND - Not Detectable

Instrument used:

APPENDICES

APPENDIX A
Water Quality Analysis

Results Summary VA20A0174

Project Cranbrook
Report To Ron Mickel, Eco/Logic Environmental

| Client Sample ID | | BCE STANDARDS | | E265123 | E265122 | E265124 | E264125 | E264127 | E265129 | Lowest Detection Limit |
|---------------------------------------------|----------|---------------|-----------|---------------|---------------|---------------|---------------|---------------|---------------|------------------------|
| Date Sampled | | DRINKING | AQUATIC | 6-Jan-20 | 6-Jan-20 | 6-Jan-20 | 6-Jan-20 | 6-Jan-20 | 6-Jan-20 | |
| ALS Sample ID | Units | | | VA20A0174-001 | VA20A0174-002 | VA20A0174-003 | VA20A0174-004 | VA20A0174-005 | VA20A0174-006 | |
| Physical Tests (Matrix: Water) | | | | | | | | | | |
| alkalinity, total (as CaCO ₃) | mg/L | na | na | 279 | 280 | 292 | 308 | 280 | 302 | 1.0 |
| conductivity | µS/cm | 700 | na | 661 | 547 | 567 | 581 | 493 | 605 | 2.0 |
| hardness (as CaCO ₃), dissolved | mg/L | 500 | na | 283 | 275 | 276 | 32.4 | 259 | 294 | 0.60 |
| pH | pH units | 6.5-8.5 | 6.5-9 | 8.09 | 8.26 | 8.19 | 9.77 | 8.24 | 8.11 | 0.10 |
| solids, total suspended | mg/L | na | na | 13.3 | 5.1 | <3.0 | 3.5 | <3.0 | <3.0 | 3.0 |
| Anions and Nutrients (Matrix: Water) | | | | | | | | | | |
| ammonia, total (as N) | mg/L | na | 0.75-27.7 | 0.137 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0050 |
| chloride | mg/L | 250 | na | 52.7 | 10.8 | 9.72 | 1.92 | 3.59 | 14.9 | 0.50 |
| fluoride | mg/L | 1.5 | na | 0.172 | 0.108 | 0.120 | 2.24 | 0.033 | 0.120 | 0.020 |
| nitrate (as N) | mg/L | 10 | 200 | 0.0284 | 1.49 | 1.10 | <0.0050 | 0.0930 | 1.67 | 0.0050 |
| sulfate (as SO ₄) | mg/L | 500 | 100 | 19.6 | 19.4 | 22.4 | 5.93 | 11.9 | 23.8 | 0.30 |

| Dissolved Metals (Matrix: Water) | DRINKING | AQUATIC | E265123 | E265122 | E265124 | E264125 | E264127 | E265129 | LDL | |
|----------------------------------|----------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
| aluminum, dissolved | mg/L | 0.2 | 0.1 | <0.0010 | 0.0021 | <0.0010 | 0.0037 | 0.0017 | 0.0012 | 0.0010 |
| antimony, dissolved | mg/L | 0.006 | na | <0.00010 | 0.00025 | <0.00010 | 0.00027 | 0.00016 | 0.00049 | 0.00010 |
| arsenic, dissolved | mg/L | 0.025 | 0.005 | 0.00014 | 0.00011 | 0.00012 | 0.00118 | 0.00010 | 0.00012 | 0.00010 |
| barium, dissolved | mg/L | 1 | na | 0.112 | 0.126 | 0.155 | 0.110 | 0.390 | 0.165 | 0.00010 |
| beryllium, dissolved | mg/L | na | na | <0.000100 | <0.000100 | <0.000100 | <0.000100 | <0.000100 | <0.000100 | 0.000100 |
| bismuth, dissolved | mg/L | na | na | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | 0.000050 |
| boron, dissolved | mg/L | 5 | 0.12 | 0.035 | <0.010 | <0.010 | 0.104 | <0.010 | 0.011 | 0.010 |
| cadmium, dissolved | mg/L | 0.005 | 0.2 | 0.0000109 | 0.000214 | 0.0000348 | 0.0000626 | 0.000239 | 0.000713 | 0.0000050 |
| calcium, dissolved | mg/L | na | na | 51.0 | 57.5 | 56.3 | 2.45 | 49.6 | 59.1 | 0.050 |
| cesium, dissolved | mg/L | na | na | <0.000010 | <0.000010 | 0.000020 | 0.000050 | 0.000012 | 0.000094 | 0.000010 |
| chromium, dissolved | mg/L | na | 1 | <0.00010 | 0.00238 | 0.00073 | 0.00038 | 0.00054 | 0.00207 | 0.00010 |
| cobalt, dissolved | mg/L | na | na | 0.00068 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00010 |
| copper, dissolved | mg/L | 5 | 0.09 | <0.00020 | 0.0167 | 0.00300 | 0.00299 | 0.0105 | 0.0298 | 0.00020 |
| iron, dissolved | mg/L | 0.03 | na | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | 0.010 |
| lead, dissolved | mg/L | 0.01 | 3 | <0.000050 | 0.000066 | <0.000050 | 0.000117 | 0.000177 | 0.000051 | 0.000050 |
| lithium, dissolved | mg/L | na | na | 0.139 | 0.0050 | 0.0056 | 0.0220 | 0.0013 | 0.0063 | 0.0010 |
| magnesium, dissolved | mg/L | na | na | 37.7 | 32.0 | 32.9 | 6.37 | 32.9 | 35.6 | 0.0050 |
| manganese, dissolved | mg/L | 0.05 | na | 0.594 | 0.00104 | 0.00022 | 0.00062 | 0.00040 | 0.00155 | 0.00010 |

| | | | | | | | | | | |
|-----------------------|------|-------|--------|------------|------------|------------|------------|------------|------------|-----------|
| mercury, dissolved | mg/L | 0.001 | 0.0006 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | 0.0000050 |
| molybdenum, dissolved | mg/L | 0.25 | 2 | 0.00116 | 0.000872 | 0.000709 | 0.00130 | 0.000191 | 0.00109 | 0.000050 |
| nickel, dissolved | mg/L | 0.025 | na | 0.00301 | 0.00697 | <0.00050 | 0.00128 | 0.00059 | 0.0155 | 0.00050 |
| phosphorus, dissolved | mg/L | na | na | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | 0.050 |
| potassium, dissolved | mg/L | na | na | 2.33 | 2.30 | 2.24 | 1.59 | 2.10 | 2.39 | 0.050 |
| rubidium, dissolved | mg/L | na | na | 0.00049 | 0.00099 | 0.00074 | 0.00084 | 0.00141 | 0.00098 | 0.00020 |
| selenium, dissolved | mg/L | 0.01 | na | 0.000056 | 0.000302 | 0.000350 | <0.000050 | 0.000292 | 0.000400 | 0.000050 |
| silicon, dissolved | mg/L | na | na | 5.36 | 7.08 | 7.10 | 4.35 | 5.26 | 7.08 | 0.050 |
| silver, dissolved | mg/L | na | na | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000010 |
| sodium, dissolved | mg/L | 200 | na | 29.4 | 13.9 | 16.0 | 130 | 3.06 | 18.1 | 0.050 |
| strontium, dissolved | mg/L | na | na | 0.326 | 0.207 | 0.232 | 0.0538 | 0.174 | 0.244 | 0.00020 |
| sulfur, dissolved | mg/L | 500 | na | 6.60 | 6.77 | 7.39 | 2.48 | 4.11 | 7.95 | 0.50 |
| tellurium, dissolved | mg/L | na | na | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00020 |
| thallium, dissolved | mg/L | na | na | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000010 |
| thorium, dissolved | mg/L | na | na | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00010 |
| tin, dissolved | mg/L | na | na | 0.00044 | 0.00182 | 0.00030 | 0.00103 | 0.00045 | 0.00080 | 0.00010 |
| titanium, dissolved | mg/L | na | na | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | 0.00030 |
| tungsten, dissolved | mg/L | na | na | <0.00010 | <0.00010 | 0.00017 | 0.00106 | 0.00022 | <0.00010 | 0.00010 |
| uranium, dissolved | mg/L | 0.015 | na | 0.00189 | 0.00389 | 0.00524 | 0.000036 | 0.00348 | 0.00502 | 0.000010 |
| vanadium, dissolved | mg/L | na | na | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00050 |
| zinc, dissolved | mg/L | na | 0.03 | <0.0010 | 0.0422 | 0.0038 | 0.0022 | 0.0131 | 0.0501 | 0.0010 |
| zirconium, dissolved | mg/L | na | na | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00020 |

| FIELD TESTS | | | | | | | |
|--------------|-------|---------|---------|---------|---------|---------|---------|
| PARAMETERS | Units | E265123 | E265122 | E265124 | E264125 | E264127 | E265129 |
| Water Level | m | 62.22 | 64.3 | 54.31 | 18.35 | 57.56 | 54.13 |
| Temperature | c | 8 | 8.3 | 7.6 | 7.2 | 8.2 | 7.5 |
| pH | Units | 8.09 | 8.26 | 8.19 | 9.77 | 8.24 | 8.11 |
| Conductivity | uS/cm | 630 | 550 | 555 | 590 | 480 | 630 |
| TDS | mg/L | 312 | 278 | 275 | 295 | 246 | 315 |
| Clarity | | C | C | C | C | C | C |

Results Summary VA20A4318

| | |
|----------------------|-------------------|
| Project | RDEK CRANBROOK |
| Date Received | 02-Apr-2020 08:25 |
| Issue Date | 13-Apr-2020 10:12 |

| Client Sample ID | | | BCE STANDARDS | | E265123 | E265122 | E265124 | E265125 | E265127 | E265129 | FIELD BLANK |
|---------------------------------------------|--------|----------|---------------|-----------|----------|----------|----------|----------|----------|----------|-------------|
| Date Sampled | | | DRINKING | AQUATIC | 1-Apr-20 |
| Physical Tests | LDL | UNITS | | | | | | | | | |
| alkalinity, total (as CaCO3) | 1.0 | mg/L | na | na | 283 | 294 | 297 | 316 | 281 | 312 | <1.0 |
| conductivity | 2.0 | µS/cm | 700 | na | 679 | 570 | 578 | 591 | 505 | 624 | <2.0 |
| hardness (as CaCO3), diss | 0.60 | mg/L | 500 | na | 302 | 289 | 283 | 34.4 | 286 | 328 | <0.60 |
| pH | 0.10 | pH units | 6.5-8.5 | 6.5-9 | 8.00 | 8.16 | 8.16 | 9.79 | 8.16 | 8.05 | 5.36 |
| solids total suspended [TSS] | 3.0 | mg/L | na | na | 19.2 | 35.6 | <3.0 | 4.6 | <3.0 | 3.6 | <3.0 |
| | | | | | | | | | | | |
| Anions and Nutrients (Matrix: Water) | | | | | | | | | | | |
| ammonia, total (as N) | 0.0050 | mg/L | na | 0.75-27.7 | 0.139 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| chloride | 0.50 | mg/L | 250 | na | 50.5 | 10.9 | 9.62 | 1.83 | 3.54 | 14.7 | <0.50 |
| fluoride | 0.020 | mg/L | 1.5 | na | 0.145 | 0.101 | 0.112 | 2.19 | 0.028 | 0.110 | <0.020 |
| nitrate (as N) | 0.0050 | mg/L | 10 | 200 | 0.0086 | 1.46 | 1.07 | <0.0050 | 0.0832 | 1.63 | <0.0050 |
| sulfate (as SO4) | 0.30 | mg/L | 500 | 100 | 18.6 | 18.1 | 21.1 | 5.30 | 11.0 | 22.4 | <0.30 |

Results Summary L2480533

Job Reference

Report To David Kvick, Sperling Hansen Associates Inc.

Date Received 28-Jul-2020 8:50

Report Date 7-Aug-2020 9:51

Report Version 1

| Client Sample ID | E265122 | E265123 | E265124 | E265125 | TH4-A |
|------------------|------------------------|-------------|-------------|-------------|-------------|
| Date Sampled | 25-Jul-2020 | 25-Jul-2020 | 25-Jul-2020 | 25-Jul-2020 | 25-Jul-2020 |
| Time Sampled | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 |
| ALS Sample ID | L2480533-4 | L2480533-5 | L2480533-6 | L2480533-7 | L2480533-8 |
| Parameter | Lowest Detection Limit | Units | Water | Water | Water |

Physical Tests (Water)

| | | | | | | |
|------------------------|------|-------|-----|-----|------|------|
| Conductivity (@ 25C) | 2.0 | uS/cm | | | | |
| Hardness (as CaCO3) | 0.50 | mg/L | 295 | 304 | 328 | 59.7 |
| pH | 0.10 | pH | | | | |
| Total Suspended Solids | 1.0 | mg/L | 109 | 191 | 1240 | 4.1 |

Anions and Nutrients (Water)

| | | | | | | | |
|------------------------------|--------|-------|---------|---------|---------|---------|---------|
| Alkalinity, Total (as CaCO3) | 2.0 | mg/L | 289 | 275 | 395 | 327 | 331 |
| Ammonia as N | 0.0050 | mg/L | 0.0093 | 0.131 | 0.0292 | 0.0257 | 0.0120 |
| Bicarbonate (HCO3) | 5.0 | mg/L | 352 | 336 | 481 | 399 | 403 |
| Carbonate (CO3) | 5.0 | mg/L | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| Chloride (Cl) | 0.10 | mg/L | 10.6 | 45.7 | 16.5 | 1.58 | 21.9 |
| Conductivity (EC) | 2.0 | uS/cm | 536 | 624 | 589 | 571 | 605 |
| Fluoride (F) | 0.020 | mg/L | 0.279 | 0.147 | 0.103 | 2.25 | 0.101 |
| Hydroxide (OH) | 5.0 | mg/L | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| Nitrate (as N) | 0.0050 | mg/L | 1.35 | <0.0050 | 1.41 | 0.0815 | 1.71 |
| Nitrite (as N) | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| pH | 0.10 | pH | 8.01 | 8.06 | 7.90 | 8.43 | 7.88 |
| Sulfate (SO4) | 0.050 | mg/L | 17.5 | 21.5 | 29.8 | 6.49 | 29.1 |

Total Metals (Water)

| | | | | | | |
|----------------------|-----------|------|--|--|--|--|
| Aluminum (Al)-Total | 0.0030 | mg/L | | | | |
| Antimony (Sb)-Total | 0.00010 | mg/L | | | | |
| Arsenic (As)-Total | 0.00010 | mg/L | | | | |
| Barium (Ba)-Total | 0.00010 | mg/L | | | | |
| Beryllium (Be)-Total | 0.000020 | mg/L | | | | |
| Bismuth (Bi)-Total | 0.000050 | mg/L | | | | |
| Boron (B)-Total | 0.010 | mg/L | | | | |
| Cadmium (Cd)-Total | 0.0000050 | mg/L | | | | |
| Calcium (Ca)-Total | 0.050 | mg/L | | | | |
| Chromium (Cr)-Total | 0.00010 | mg/L | | | | |
| Cobalt (Co)-Total | 0.00010 | mg/L | | | | |
| Copper (Cu)-Total | 0.00050 | mg/L | | | | |
| Iron (Fe)-Total | 0.010 | mg/L | | | | |
| Lead (Pb)-Total | 0.000050 | mg/L | | | | |
| Lithium (Li)-Total | 0.0010 | mg/L | | | | |
| Magnesium (Mg)-Total | 0.0050 | mg/L | | | | |
| Manganese (Mn)-Total | 0.00010 | mg/L | | | | |

Results Summary L2480533

Job Reference

Report To David Kvick, Sperling Hansen Associates Inc.
 Date Received 28-Jul-2020 8:50
 Report Date 7-Aug-2020 9:51
 Report Version 1

| Client Sample ID | | E265122 | E265123 | E265124 | E265125 | TH4-A |
|-----------------------|------------------------|-------------|-------------|-------------|-------------|-------------|
| Date Sampled | | 25-Jul-2020 | 25-Jul-2020 | 25-Jul-2020 | 25-Jul-2020 | 25-Jul-2020 |
| Time Sampled | | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 |
| ALS Sample ID | | L2480533-4 | L2480533-5 | L2480533-6 | L2480533-7 | L2480533-8 |
| Parameter | Lowest Detection Limit | Units | Water | Water | Water | Water |
| Molybdenum (Mo)-Total | 0.000050 | mg/L | | | | |
| Nickel (Ni)-Total | 0.00050 | mg/L | | | | |
| Phosphorus (P)-Total | 0.050 | mg/L | | | | |
| Potassium (K)-Total | 0.10 | mg/L | | | | |
| Selenium (Se)-Total | 0.000050 | mg/L | | | | |
| Silicon (Si)-Total | 0.050 | mg/L | | | | |
| Silver (Ag)-Total | 0.000010 | mg/L | | | | |
| Sodium (Na)-Total | 0.050 | mg/L | | | | |
| Strontium (Sr)-Total | 0.00020 | mg/L | | | | |
| Sulfur (S)-Total | 0.50 | mg/L | | | | |
| Thallium (Tl)-Total | 0.000010 | mg/L | | | | |
| Tin (Sn)-Total | 0.00010 | mg/L | | | | |
| Titanium (Ti)-Total | 0.00030 | mg/L | | | | |
| Uranium (U)-Total | 0.000010 | mg/L | | | | |
| Vanadium (V)-Total | 0.00050 | mg/L | | | | |
| Zinc (Zn)-Total | 0.0030 | mg/L | | | | |
| Zirconium (Zr)-Total | 0.00030 | mg/L | | | | |

Dissolved Metals (Water)

| | | | | | | | |
|--------------------------------------|-----------|-------|-----------|------------|------------|-----------|------------|
| Dissolved Metals Filtration Location | - | FIELD | FIELD | FIELD | FIELD | FIELD | |
| Dissolved Metals Filtration Location | - | FIELD | FIELD | FIELD | FIELD | FIELD | |
| Aluminum (Al)-Dissolved | 0.0010 | mg/L | 0.0092 | 0.0019 | 0.0055 | 0.0091 | 0.0033 |
| Antimony (Sb)-Dissolved | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Arsenic (As)-Dissolved | 0.00010 | mg/L | 0.00017 | 0.00052 | 0.00019 | 0.00089 | 0.00015 |
| Barium (Ba)-Dissolved | 0.00010 | mg/L | 0.152 | 0.145 | 0.188 | 0.212 | 0.187 |
| Beryllium (Be)-Dissolved | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Bismuth (Bi)-Dissolved | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Boron (B)-Dissolved | 0.010 | mg/L | <0.010 | 0.032 | <0.010 | 0.096 | <0.010 |
| Cadmium (Cd)-Dissolved | 0.0000050 | mg/L | 0.0000116 | <0.0000050 | <0.0000050 | 0.0000244 | <0.0000050 |
| Calcium (Ca)-Dissolved | 0.050 | mg/L | 60.6 | 48.5 | 64.0 | 10.5 | 64.2 |
| Chromium (Cr)-Dissolved | 0.00010 | mg/L | 0.00197 | 0.00061 | 0.00073 | 0.00128 | 0.00136 |
| Cobalt (Co)-Dissolved | 0.00010 | mg/L | 0.00042 | 0.00078 | 0.00065 | 0.00016 | 0.00025 |
| Copper (Cu)-Dissolved | 0.00020 | mg/L | 0.00134 | 0.00025 | 0.00067 | 0.00152 | 0.00021 |
| Iron (Fe)-Dissolved | 0.010 | mg/L | 0.057 | 1.80 | 0.025 | 0.021 | 0.055 |
| Lead (Pb)-Dissolved | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | 0.000077 | <0.000050 |
| Lithium (Li)-Dissolved | 0.0010 | mg/L | 0.0038 | 0.118 | 0.0055 | 0.0194 | 0.0057 |
| Magnesium (Mg)-Dissolved | 0.0050 | mg/L | 34.9 | 44.3 | 40.8 | 8.12 | 42.0 |
| Manganese (Mn)-Dissolved | 0.00010 | mg/L | 0.00623 | 0.557 | 0.0132 | 0.00353 | 0.00650 |
| Molybdenum (Mo)-Dissolved | 0.000050 | mg/L | 0.00272 | 0.00227 | 0.00479 | 0.00111 | 0.00251 |

Results Summary L2519605

Job Reference 20050 CRANBROOK
Report To Scott Garthwaite, Sperling Hansen Associates Inc.
Date Received 21-Oct-2020 8:30
Report Date 27-Oct-2020 16:35
Report Version 1

| Client Sample ID | E265129 | E265122 | E265123 | E265124 | E265125 | E265127 |
|-------------------------------------------|------------------------|-------------|-------------|-------------|-------------|-------------|
| Date Sampled | 19-Oct-2020 | 19-Oct-2020 | 19-Oct-2020 | 19-Oct-2020 | 19-Oct-2020 | 19-Oct-2020 |
| Time Sampled | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 | 12:00 |
| ALS Sample ID | L2519605-1 | L2519605-2 | L2519605-3 | L2519605-4 | L2519605-5 | L2519605-6 |
| Parameter | Lowest Detection Limit | Units | Water | Water | Water | Water |
| Physical Tests (Water) | | | | | | |
| Hardness (as CaCO ₃) | 0.50 | mg/L | 323 | 290 | 295 | 313 |
| Total Suspended Solids | 1.0 | mg/L | 337 | 15.8 | 179 | 552 |
| Anions and Nutrients (Water) | | | | | | |
| Alkalinity, Total (as CaCO ₃) | 2.0 | mg/L | 294 | 264 | 266 | 318 |
| Bicarbonate (HCO ₃) | 5.0 | mg/L | 359 | 321 | 319 | 387 |
| Carbonate (CO ₃) | 5.0 | mg/L | <5.0 | <5.0 | <5.0 | 9.4 |
| Chloride (Cl) | 0.10 | mg/L | 22.8 | 12.0 | 37.6 | 17.4 |
| Conductivity (EC) | 2.0 | µS/cm | 587 | 502 | 580 | 559 |
| Fluoride (F) | 0.020 | mg/L | 0.112 | 0.101 | 0.147 | 0.108 |
| Hydroxide (OH) | 5.0 | mg/L | <5.0 | <5.0 | <5.0 | <5.0 |
| Nitrate (as N) | 0.0050 | mg/L | 1.74 | 1.48 | 0.0834 | 1.43 |
| Nitrite (as N) | 0.0010 | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| pH | 0.10 | pH | 8.02 | 8.07 | 8.33 | 7.99 |
| Sulfate (SO ₄) | 0.050 | mg/L | 29.4 | 18.3 | 22.3 | 30.4 |
| Dissolved Metals (Water) | | | | | | |
| Dissolved Mercury Filtration Location | - | FIELD | FIELD | FIELD | FIELD | FIELD |
| Dissolved Metals Filtration Location | - | FIELD | FIELD | FIELD | FIELD | FIELD |
| Dissolved Metals Filtration Location | - | FIELD | FIELD | FIELD | FIELD | FIELD |
| Aluminum (Al)-Dissolved | 0.0010 | mg/L | 0.0018 | 0.0022 | 0.0021 | 0.0013 |
| Antimony (Sb)-Dissolved | 0.00010 | mg/L | <0.00010 | <0.00010 | 0.00017 | <0.00010 |
| Arsenic (As)-Dissolved | 0.00010 | mg/L | 0.00016 | 0.00012 | 0.00043 | 0.00015 |
| Barium (Ba)-Dissolved | 0.00010 | mg/L | 0.184 | 0.146 | 0.115 | 0.183 |
| Beryllium (Be)-Dissolved | 0.000020 | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Bismuth (Bi)-Dissolved | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| Boron (B)-Dissolved | 0.010 | mg/L | <0.010 | <0.010 | 0.031 | <0.010 |
| Cadmium (Cd)-Dissolved | 0.0000050 | mg/L | 0.00000115 | 0.0000061 | 0.0000230 | 0.0000105 |
| Calcium (Ca)-Dissolved | 0.050 | mg/L | 63.8 | 58.4 | 47.5 | 62.1 |
| Chromium (Cr)-Dissolved | 0.00010 | mg/L | 0.00218 | 0.00342 | 0.00035 | 0.00149 |
| Cobalt (Co)-Dissolved | 0.00010 | mg/L | 0.00014 | 0.00011 | 0.00047 | 0.00011 |
| Copper (Cu)-Dissolved | 0.00020 | mg/L | <0.00020 | 0.00031 | 0.00077 | <0.00020 |
| Iron (Fe)-Dissolved | 0.010 | mg/L | 0.038 | 0.027 | 0.365 | 0.022 |
| Lead (Pb)-Dissolved | 0.000050 | mg/L | <0.000050 | 0.000109 | <0.000050 | <0.000050 |
| Lithium (Li)-Dissolved | 0.0010 | mg/L | 0.0060 | 0.0052 | 0.0972 | 0.0060 |
| Magnesium (Mg)-Dissolved | 0.0050 | mg/L | 39.7 | 34.9 | 42.8 | 38.3 |
| Manganese (Mn)-Dissolved | 0.00010 | mg/L | 0.00202 | 0.00162 | 0.137 | 0.00179 |
| Mercury (Hg)-Dissolved | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| Molybdenum (Mo)-Dissolved | 0.000050 | mg/L | 0.00198 | 0.00178 | 0.00314 | 0.00199 |
| Nickel (Ni)-Dissolved | 0.00050 | mg/L | 0.00479 | 0.00382 | 0.00611 | 0.00369 |
| Phosphorus (P)-Dissolved | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 |
| Potassium (K)-Dissolved | 0.10 | mg/L | 2.42 | 2.20 | 2.45 | 2.33 |
| Selenium (Se)-Dissolved | 0.000050 | mg/L | 0.000453 | 0.000291 | 0.000436 | 0.000596 |
| Silicon (Si)-Dissolved | 0.050 | mg/L | 7.07 | 6.79 | 5.67 | 6.96 |
| Silver (Ag)-Dissolved | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Sodium (Na)-Dissolved | 0.050 | mg/L | 20.8 | 14.0 | 20.2 | 19.3 |
| Strontrium (Sr)-Dissolved | 0.00020 | mg/L | 0.264 | 0.225 | 0.320 | 0.261 |
| Sulfur (S)-Dissolved | 0.50 | mg/L | 10.2 | 6.41 | 7.94 | 10.8 |
| Thallium (Tl)-Dissolved | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Tin (Sn)-Dissolved | 0.00010 | mg/L | <0.0010 | <0.0010 | 0.0029 | <0.0010 |
| Titanium (Ti)-Dissolved | 0.000030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| Uranium (U)-Dissolved | 0.000010 | mg/L | 0.00535 | 0.00411 | 0.00421 | 0.00580 |
| Vanadium (V)-Dissolved | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Zinc (Zn)-Dissolved | 0.0010 | mg/L | 0.0110 | 0.0032 | 0.0187 | 0.0145 |
| Zirconium (Zr)-Dissolved | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 |

APPENDIX C
Certificate of Analysis

| | | | |
|---------------------|----------------------------------------------------------------------------------|----------------------|-------------------|
| Report To | Ron Mickel, Eco/Logic Environmental PO Box 1112 Nelson, BC V1L 6H3, Canada | Date Received | 08-Jan-2020 12:50 |
| | | Issue Date | 14-Jan-2020 15:38 |
| | | Amendment | 0 |
| | | Version | FINAL |
| Client Phone | (250) 354-3406 | | |

Certificate of Analysis

| | |
|-------------------------------|-----------|
| Lab Work Order # | VA20A0174 |
| Project PO # | |
| Project | Cranbrook |
| Legal Site Description | |
| C of C Numbers | 17-785813 |

Temperature 4

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| <u>Signatories</u> | <u>Position</u> | <u>Laboratory Department</u> |
|--------------------|----------------------------------------|-------------------------------------------------------|
| Tracy | Supervisor - Water Quality Instruments | Inorganics - Water Quality, Burnaby, British Columbia |
| Evan | Metal Analyst | Metals, Burnaby, British Columbia |
| Angela | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Robin | Team Leader - Metals | Metals, Burnaby, British Columbia |
| Ilnaz | Team Leader - Metals preparation | Metals, Burnaby, British Columbia |
| Omar | Lab Assistant | Metals, Burnaby, British Columbia |
| Jonald | Lab Assistant | Metals, Burnaby, British Columbia |

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Results Summary VA20A0174

| | | | | | | | | |
|---------------------------------------------|-------------------------------------|---------------|-------------------|-------------------|-------------------|-------------------|-------------------|------------|
| Project | Cranbrook | | | | | | | |
| Report To | Ron Mickel, Eco/Logic Environmental | | | | | | | |
| Date Received | 08-Jan-2020 12:50 | | | | | | | |
| Issue Date | 14-Jan-2020 15:38 | | | | | | | |
| Amendment | 0 | | | | | | | |
| Client Sample ID | | E265123 | E265122 | E265124 | E264125 | E264127 | E265129 | |
| Date Sampled | | 06-Jan-2020 | 06-Jan-2020 | 06-Jan-2020 | 06-Jan-2020 | 06-Jan-2020 | 06-Jan-2020 | |
| Time Sampled | | 09:00 | 09:30 | 10:00 | 10:45 | 11:15 | 12:30 | |
| ALS Sample ID | | VA20A0174-001 | VA20A0174-002 | VA20A0174-003 | VA20A0174-004 | VA20A0174-005 | VA20A0174-006 | |
| Analyte | Lowest Detection Limit | Units | Sub-Matrix: Water | |
| Physical Tests (Matrix: Water) | | | | | | | | |
| alkalinity, total (as CaCO ₃) | 1.0 | mg/L | 279 | 280 | 292 | 308 | 280 | 302 |
| conductivity | 2.0 | µS/cm | 661 | 547 | 567 | 581 | 493 | 605 |
| hardness (as CaCO ₃), dissolved | 0.60 | mg/L | 283 | 275 | 276 | 32.4 | 259 | 294 |
| pH | 0.10 | pH units | 8.09 | 8.26 | 8.19 | 9.77 | 8.24 | 8.11 |
| solids, total suspended [TSS] | 3.0 | mg/L | 13.3 | 5.1 | <3.0 | 3.5 | <3.0 | <3.0 |
| Anions and Nutrients (Matrix: Water) | | | | | | | | |
| ammonia, total (as N) | 0.0050 | mg/L | 0.137 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| chloride | 0.50 | mg/L | 52.7 | 10.8 | 9.72 | 1.92 | 3.59 | 14.9 |
| fluoride | 0.020 | mg/L | 0.172 | 0.108 | 0.120 | 2.24 | 0.033 | 0.120 |
| nitrate (as N) | 0.0050 | mg/L | 0.0284 | 1.49 | 1.10 | <0.0050 | 0.0930 | 1.67 |
| sulfate (as SO ₄) | 0.30 | mg/L | 19.6 | 19.4 | 22.4 | 5.93 | 11.9 | 23.8 |
| Dissolved Metals (Matrix: Water) | | | | | | | | |
| aluminum, dissolved | 0.0010 | mg/L | <0.0010 | 0.0021 | <0.0010 | 0.0037 | 0.0017 | 0.0012 |
| antimony, dissolved | 0.00010 | mg/L | <0.00010 | 0.00025 | <0.00010 | 0.00027 | 0.00016 | 0.00049 |
| arsenic, dissolved | 0.00010 | mg/L | 0.00014 | 0.00011 | 0.00012 | 0.00118 | 0.00010 | 0.00012 |
| barium, dissolved | 0.00010 | mg/L | 0.112 | 0.126 | 0.155 | 0.110 | 0.390 | 0.165 |
| beryllium, dissolved | 0.000100 | mg/L | <0.000100 | <0.000100 | <0.000100 | <0.000100 | <0.000100 | <0.000100 |
| bismuth, dissolved | 0.000050 | mg/L | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| boron, dissolved | 0.010 | mg/L | 0.035 | <0.010 | <0.010 | 0.104 | <0.010 | 0.011 |
| cadmium, dissolved | 0.0000050 | mg/L | 0.0000109 | 0.000214 | 0.0000348 | 0.0000626 | 0.000239 | 0.000713 |
| calcium, dissolved | 0.050 | mg/L | 51.0 | 57.5 | 56.3 | 2.45 | 49.6 | 59.1 |
| cesium, dissolved | 0.000010 | mg/L | <0.000010 | <0.000010 | 0.000020 | 0.000050 | 0.000012 | 0.000094 |
| chromium, dissolved | 0.00010 | mg/L | <0.00010 | 0.00238 | 0.00073 | 0.00038 | 0.00054 | 0.00207 |
| cobalt, dissolved | 0.00010 | mg/L | 0.0068 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| copper, dissolved | 0.00020 | mg/L | <0.00020 | 0.0167 | 0.00300 | 0.00299 | 0.0105 | 0.0298 |
| dissolved mercury filtration location | | Laboratory | Laboratory | Laboratory | Laboratory | Laboratory | Laboratory | |
| dissolved metals filtration location | | Laboratory | Laboratory | Laboratory | Laboratory | Laboratory | Laboratory | |
| iron, dissolved | 0.010 | mg/L | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| lead, dissolved | 0.000050 | mg/L | <0.000050 | 0.000066 | <0.000050 | 0.000117 | 0.000177 | 0.000051 |
| lithium, dissolved | 0.0010 | mg/L | 0.139 | 0.0050 | 0.0056 | 0.0220 | 0.0013 | 0.0063 |
| magnesium, dissolved | 0.0050 | mg/L | 37.7 | 32.0 | 32.9 | 6.37 | 32.9 | 35.6 |
| manganese, dissolved | 0.00010 | mg/L | 0.594 | 0.00104 | 0.00022 | 0.00062 | 0.00040 | 0.00155 |
| mercury, dissolved | 0.0000050 | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| molybdenum, dissolved | 0.000050 | mg/L | 0.00116 | 0.000872 | 0.000709 | 0.00130 | 0.000191 | 0.00109 |
| nickel, dissolved | 0.00050 | mg/L | 0.00301 | 0.00697 | <0.00050 | 0.00128 | 0.00059 | 0.0155 |
| phosphorus, dissolved | 0.050 | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| potassium, dissolved | 0.050 | mg/L | 2.33 | 2.30 | 2.24 | 1.59 | 2.10 | 2.39 |
| rubidium, dissolved | 0.00020 | mg/L | 0.00049 | 0.00099 | 0.00074 | 0.00084 | 0.00141 | 0.00098 |
| selenium, dissolved | 0.000050 | mg/L | 0.000056 | 0.000302 | 0.000350 | <0.000050 | 0.000292 | 0.000400 |
| silicon, dissolved | 0.050 | mg/L | 5.36 | 7.08 | 7.10 | 4.35 | 5.26 | 7.08 |
| silver, dissolved | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| sodium, dissolved | 0.050 | mg/L | 29.4 | 13.9 | 16.0 | 130 | 3.06 | 18.1 |
| strontium, dissolved | 0.00020 | mg/L | 0.326 | 0.207 | 0.232 | 0.0538 | 0.174 | 0.244 |
| sulfur, dissolved | 0.50 | mg/L | 6.60 | 6.77 | 7.39 | 2.48 | 4.11 | 7.95 |
| tellurium, dissolved | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| thallium, dissolved | 0.000010 | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| thorium, dissolved | 0.00010 | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| tin, dissolved | 0.00010 | mg/L | 0.00044 | 0.00182 | 0.00030 | 0.00103 | 0.00045 | 0.00080 |
| titanium, dissolved | 0.00030 | mg/L | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| tungsten, dissolved | 0.00010 | mg/L | <0.00010 | <0.00010 | 0.00017 | 0.00106 | 0.00022 | <0.00010 |
| uranium, dissolved | 0.000010 | mg/L | 0.00189 | 0.00389 | 0.00524 | 0.000036 | 0.00348 | 0.00502 |
| vanadium, dissolved | 0.00050 | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| zinc, dissolved | 0.0010 | mg/L | <0.0010 | 0.0422 | 0.0038 | 0.0022 | 0.0131 | 0.0501 |
| zirconium, dissolved | 0.00020 | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |

| | | | |
|---------------------|----------------------------------------------------------------------------------|----------------------|-------------------|
| Report To | Ron Mickel, Eco/Logic Environmental PO Box 1112 Nelson, BC V1L 6H3, Canada | Date Received | 02-Apr-2020 08:25 |
| | | Issue Date | 13-Apr-2020 10:12 |
| | | Amendment | 0 |
| | | Version | FINAL |
| Client Phone | (250) 354-3406 | | |

Certificate of Analysis

| | |
|-------------------------------|----------------|
| Lab Work Order # | VA20A4318 |
| Project PO # | |
| Project | RDEK CRANBROOK |
| Legal Site Description | |
| C of C Numbers | 17-836301 |

Temperature 7.8°

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

| <i>Signatories</i> | <i>Position</i> | <i>Laboratory Department</i> |
|--------------------|-----------------------------------------|-------------------------------------------------------|
| Bruna Botti | Analyst | Inorganics - Water Quality, Burnaby, British Columbia |
| Robin Weeks | Team Leader - Metals | Inorganics - Water Quality, Burnaby, British Columbia |
| Shaneel Dayal | Metal Analyst | Metals, Burnaby, British Columbia |
| Cristina Alexandre | Supervisor - Metals ICP Instrumentation | Metals, Burnaby, British Columbia |
| Omar Beydoun | Lab Assistant | Metals, Burnaby, British Columbia |

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Results Summary VA20A4318

Project RDEK CRANBROOK
Report To Ron Mickel, Eco/Logic Environmental
Date Received 02-Apr-2020 08:25
Issue Date 13-Apr-2020 10:12
Amendment 0



Sperling Hansen Associates Inc.
ATTN: David Kvick
#8 - 1225 East Keith Road
North Vancouver BC V7J 1J3

Date Received: 28-JUL-20
Report Date: 07-AUG-20 09:51 (MT)
Version: FINAL

Client Phone: 604-986-7723

Certificate of Analysis

Lab Work Order #: L2480533
Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers:
Legal Site Desc:



Patryk Wojciak, B.Sc., P.Chem.
Account Manager

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2480533-1 WATER 24-JUL-20 12:00 E241348 | L2480533-2 WATER 24-JUL-20 12:00 E238208 | L2480533-3 WATER 24-JUL-20 12:00 E238207 | L2480533-4 WATER 25-JUL-20 12:00 E265122 | L2480533-5 WATER 25-JUL-20 12:00 E265123 |
|-----------------------------|-----------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Grouping | Analyte | | | | | |
| | WATER | | | | | |
| Physical Tests | Conductivity (@ 25C) (uS/cm) | 1020 | 396 | 495 | | |
| | Hardness (as CaCO3) (mg/L) | 403 | 10.9 | 262 | 295 | 304 |
| | pH (pH) | 8.40 | 9.67 | 8.48 | | |
| | Total Suspended Solids (mg/L) | 337 | 23.0 | 213 | 109 | 191 |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | | | | 289 | 275 |
| | Ammonia as N (mg/L) | | | | 0.0093 | 0.131 |
| | Bicarbonate (HCO3) (mg/L) | | | | 352 | 336 |
| | Carbonate (CO3) (mg/L) | | | | <5.0 | <5.0 |
| | Chloride (Cl) (mg/L) | 24.9 | DLHC | 7.02 | 3.23 | 10.6 |
| | Conductivity (EC) (uS/cm) | | | | 536 | 624 |
| | Fluoride (F) (mg/L) | 0.21 | DLHC | 0.521 | 0.073 | 0.279 |
| | Hydroxide (OH) (mg/L) | | | | <5.0 | <5.0 |
| | Nitrate (as N) (mg/L) | <0.025 | DLHC | <0.0050 | <0.0050 | 1.35 |
| | Nitrite (as N) (mg/L) | <0.0050 | DLHC | <0.0010 | <0.0010 | <0.0010 |
| | pH (pH) | | | | 8.01 | 8.06 |
| | Sulfate (SO4) (mg/L) | 118 | DLHC | 17.2 | 22.9 | 17.5 |
| Total Metals | Aluminum (Al)-Total (mg/L) | | 0.0256 | 0.601 | | |
| | Antimony (Sb)-Total (mg/L) | | <0.00010 | 0.00021 | | |
| | Arsenic (As)-Total (mg/L) | | 0.00030 | 0.00145 | | |
| | Barium (Ba)-Total (mg/L) | | 0.0146 | 0.0169 | | |
| | Beryllium (Be)-Total (mg/L) | | <0.000020 | 0.000033 | | |
| | Bismuth (Bi)-Total (mg/L) | | <0.000050 | <0.000050 | | |
| | Boron (B)-Total (mg/L) | | 0.046 | 0.021 | | |
| | Cadmium (Cd)-Total (mg/L) | | 0.0000087 | 0.000106 | | |
| | Calcium (Ca)-Total (mg/L) | | 1.41 | 16.1 | | |
| | Chromium (Cr)-Total (mg/L) | | 0.00257 | 0.0341 | | |
| | Cobalt (Co)-Total (mg/L) | | 0.00070 | 0.00132 | | |
| | Copper (Cu)-Total (mg/L) | | 0.00114 | 0.00905 | | |
| | Iron (Fe)-Total (mg/L) | | 8.24 | 68.2 | | |
| | Lead (Pb)-Total (mg/L) | | 0.0193 | 0.00245 | | |
| | Lithium (Li)-Total (mg/L) | | 0.0040 | 0.0094 | | |
| | Magnesium (Mg)-Total (mg/L) | | 1.80 | 53.8 | | |
| | Manganese (Mn)-Total (mg/L) | | 0.0795 | 0.580 | | |
| | Molybdenum (Mo)-Total (mg/L) | | 0.00613 | 0.00331 | | |
| | Nickel (Ni)-Total (mg/L) | | 0.00151 | 0.0213 | | |
| | Phosphorus (P)-Total (mg/L) | | 0.052 | 0.056 | | |
| | Potassium (K)-Total (mg/L) | | 0.39 | 2.82 | | |

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

L2480533 CONTD....
PAGE 3 of 9
07-AUG-20 09:51 (MT)
Version: FINAL

| | Sample ID Description Sampled Date Sampled Time Client ID | L2480533-6 WATER 25-JUL-20 12:00 E265124 | L2480533-7 WATER 25-JUL-20 12:00 E265125 | L2480533-8 WATER 25-JUL-20 12:00 TH4-A | | |
|-----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| Grouping | Analyte | | | | | |
| | WATER | | | | | |
| Physical Tests | Conductivity (@ 25C) (uS/cm) Hardness (as CaCO3) (mg/L) pH (pH) Total Suspended Solids (mg/L) | 328 1240 | 59.7 ^{DLHC} 4.1 | 333 683 | | |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) Ammonia as N (mg/L) Bicarbonate (HCO3) (mg/L) Carbonate (CO3) (mg/L) Chloride (Cl) (mg/L) Conductivity (EC) (uS/cm) Fluoride (F) (mg/L) Hydroxide (OH) (mg/L) Nitrate (as N) (mg/L) Nitrite (as N) (mg/L) pH (pH) Sulfate (SO4) (mg/L) | 395 0.0292 481 <5.0 16.5 589 0.103 <5.0 1.41 <0.0010 7.90 29.8 | 327 0.0257 399 <5.0 1.58 571 2.25 <5.0 0.0815 <0.0010 8.43 6.49 | 331 0.0120 403 <5.0 21.9 605 0.101 <5.0 1.71 <0.0010 7.88 29.1 | | |
| Total Metals | Aluminum (Al)-Total (mg/L) Antimony (Sb)-Total (mg/L) Arsenic (As)-Total (mg/L) Barium (Ba)-Total (mg/L) Beryllium (Be)-Total (mg/L) Bismuth (Bi)-Total (mg/L) Boron (B)-Total (mg/L) Cadmium (Cd)-Total (mg/L) Calcium (Ca)-Total (mg/L) Chromium (Cr)-Total (mg/L) Cobalt (Co)-Total (mg/L) Copper (Cu)-Total (mg/L) Iron (Fe)-Total (mg/L) Lead (Pb)-Total (mg/L) Lithium (Li)-Total (mg/L) Magnesium (Mg)-Total (mg/L) Manganese (Mn)-Total (mg/L) Molybdenum (Mo)-Total (mg/L) Nickel (Ni)-Total (mg/L) Phosphorus (P)-Total (mg/L) Potassium (K)-Total (mg/L) | | | | | |

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2480533-1 WATER 24-JUL-20 12:00 E241348 | L2480533-2 WATER 24-JUL-20 12:00 E238208 | L2480533-3 WATER 24-JUL-20 12:00 E238207 | L2480533-4 WATER 25-JUL-20 12:00 E265122 | L2480533-5 WATER 25-JUL-20 12:00 E265123 |
|-------------------------|-----------------------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|------------------------------------------------------|
| Grouping | Analyte | | | | | |
| | WATER | | | | | |
| Total Metals | Selenium (Se)-Total (mg/L) | | <0.000050 | <0.000050 | | |
| | Silicon (Si)-Total (mg/L) | | 0.399 | 5.47 | | |
| | Silver (Ag)-Total (mg/L) | | 0.000049 | 0.000121 | | |
| | Sodium (Na)-Total (mg/L) | | 71.9 | 26.3 | | |
| | Strontium (Sr)-Total (mg/L) | | 0.0931 | 0.111 | | |
| | Sulfur (S)-Total (mg/L) | | 7.39 | 10.1 | | |
| | Thallium (Tl)-Total (mg/L) | | <0.000010 | 0.000013 | | |
| | Tin (Sn)-Total (mg/L) | | <0.00010 | 0.00023 | | |
| | Titanium (Ti)-Total (mg/L) | | 0.00057 | 0.00826 | | |
| | Uranium (U)-Total (mg/L) | | <0.000010 | 0.00138 | | |
| | Vanadium (V)-Total (mg/L) | | <0.00050 | 0.00108 | | |
| | Zinc (Zn)-Total (mg/L) | | 0.0033 | 0.140 | | |
| | Zirconium (Zr)-Total (mg/L) | | <0.00030 | <0.00030 | | |
| Dissolved Metals | Dissolved Metals Filtration Location | FIELD | | | FIELD | FIELD |
| | Aluminum (Al)-Dissolved (mg/L) | 0.0084 | | | 0.0092 | 0.0019 |
| | Antimony (Sb)-Dissolved (mg/L) | <0.00010 | | | <0.00010 | <0.00010 |
| | Arsenic (As)-Dissolved (mg/L) | 0.00071 | | | 0.00017 | 0.00052 |
| | Barium (Ba)-Dissolved (mg/L) | 0.0951 | | | 0.152 | 0.145 |
| | Beryllium (Be)-Dissolved (mg/L) | <0.000020 | | | <0.000020 | <0.000020 |
| | Bismuth (Bi)-Dissolved (mg/L) | <0.000050 | | | <0.000050 | <0.000050 |
| | Boron (B)-Dissolved (mg/L) | 0.020 | | | <0.010 | 0.032 |
| | Cadmium (Cd)-Dissolved (mg/L) | <0.0000050 | | | 0.0000116 | <0.0000050 |
| | Calcium (Ca)-Dissolved (mg/L) | 23.7 | | | 60.6 | 48.5 |
| | Chromium (Cr)-Dissolved (mg/L) | 0.00071 | | | 0.00197 | 0.00061 |
| | Cobalt (Co)-Dissolved (mg/L) | 0.00088 | | | 0.00042 | 0.00078 |
| | Copper (Cu)-Dissolved (mg/L) | 0.00029 | | | 0.00134 | 0.00025 |
| | Iron (Fe)-Dissolved (mg/L) | 0.096 | | | 0.057 | 1.80 |
| | Lead (Pb)-Dissolved (mg/L) | 0.000135 | | | <0.000050 | <0.000050 |
| | Lithium (Li)-Dissolved (mg/L) | 0.0281 | | | 0.0038 | 0.118 |
| | Magnesium (Mg)-Dissolved (mg/L) | 83.5 | | | 34.9 | 44.3 |
| | Manganese (Mn)-Dissolved (mg/L) | 0.400 | | | 0.00623 | 0.557 |
| | Molybdenum (Mo)-Dissolved (mg/L) | 0.00581 | | | 0.00272 | 0.00227 |
| | Nickel (Ni)-Dissolved (mg/L) | 0.00357 | | | 0.00837 | 0.00766 |
| | Phosphorus (P)-Dissolved (mg/L) | <0.050 | | | <0.050 | <0.050 |
| | Potassium (K)-Dissolved (mg/L) | 4.64 | | | 2.22 | 2.53 |
| | Selenium (Se)-Dissolved (mg/L) | <0.000050 | | | 0.000300 | 0.000157 |
| | Silicon (Si)-Dissolved (mg/L) | 4.59 | | | 7.00 | 5.83 |

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

L2480533 CONTD....
PAGE 5 of 9
07-AUG-20 09:51 (MT)
Version: FINAL

| | Sample ID | L2480533-6 | L2480533-7 | L2480533-8 | | |
|-------------------------|--------------------------------------|------------|------------|------------|--|--|
| | Description | WATER | WATER | WATER | | |
| | Sampled Date | 25-JUL-20 | 25-JUL-20 | 25-JUL-20 | | |
| | Sampled Time | 12:00 | 12:00 | 12:00 | | |
| | Client ID | E265124 | E265125 | TH4-A | | |
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Total Metals | Selenium (Se)-Total (mg/L) | | | | | |
| | Silicon (Si)-Total (mg/L) | | | | | |
| | Silver (Ag)-Total (mg/L) | | | | | |
| | Sodium (Na)-Total (mg/L) | | | | | |
| | Strontium (Sr)-Total (mg/L) | | | | | |
| | Sulfur (S)-Total (mg/L) | | | | | |
| | Thallium (Tl)-Total (mg/L) | | | | | |
| | Tin (Sn)-Total (mg/L) | | | | | |
| | Titanium (Ti)-Total (mg/L) | | | | | |
| | Uranium (U)-Total (mg/L) | | | | | |
| | Vanadium (V)-Total (mg/L) | | | | | |
| | Zinc (Zn)-Total (mg/L) | | | | | |
| | Zirconium (Zr)-Total (mg/L) | | | | | |
| Dissolved Metals | Dissolved Metals Filtration Location | FIELD | FIELD | FIELD | | |
| | Aluminum (Al)-Dissolved (mg/L) | 0.0055 | 0.0091 | 0.0033 | | |
| | Antimony (Sb)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | | |
| | Arsenic (As)-Dissolved (mg/L) | 0.00019 | 0.00089 | 0.00015 | | |
| | Barium (Ba)-Dissolved (mg/L) | 0.188 | 0.212 | 0.187 | | |
| | Beryllium (Be)-Dissolved (mg/L) | <0.000020 | <0.000020 | <0.000020 | | |
| | Bismuth (Bi)-Dissolved (mg/L) | <0.000050 | <0.000050 | <0.000050 | | |
| | Boron (B)-Dissolved (mg/L) | <0.010 | 0.096 | <0.010 | | |
| | Cadmium (Cd)-Dissolved (mg/L) | <0.0000050 | 0.0000244 | <0.0000050 | | |
| | Calcium (Ca)-Dissolved (mg/L) | 64.0 | 10.5 | 64.2 | | |
| | Chromium (Cr)-Dissolved (mg/L) | 0.00073 | 0.00128 | 0.00136 | | |
| | Cobalt (Co)-Dissolved (mg/L) | 0.00065 | 0.00016 | 0.00025 | | |
| | Copper (Cu)-Dissolved (mg/L) | 0.00067 | 0.00152 | 0.00021 | | |
| | Iron (Fe)-Dissolved (mg/L) | 0.025 | 0.021 | 0.055 | | |
| | Lead (Pb)-Dissolved (mg/L) | <0.000050 | 0.000077 | <0.000050 | | |
| | Lithium (Li)-Dissolved (mg/L) | 0.0055 | 0.0194 | 0.0057 | | |
| | Magnesium (Mg)-Dissolved (mg/L) | 40.8 | 8.12 | 42.0 | | |
| | Manganese (Mn)-Dissolved (mg/L) | 0.0132 | 0.00353 | 0.00650 | | |
| | Molybdenum (Mo)-Dissolved (mg/L) | 0.00479 | 0.00111 | 0.00251 | | |
| | Nickel (Ni)-Dissolved (mg/L) | 0.0167 | 0.00146 | 0.00905 | | |
| | Phosphorus (P)-Dissolved (mg/L) | <0.050 | <0.050 | <0.050 | | |
| | Potassium (K)-Dissolved (mg/L) | 2.55 | 1.67 | 2.56 | | |
| | Selenium (Se)-Dissolved (mg/L) | 0.000528 | <0.000050 | 0.000436 | | |
| | Silicon (Si)-Dissolved (mg/L) | 7.28 | 4.57 | 7.41 | | |

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

L2480533 CONTD....

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Version: FINAL

| | Sample ID Description | L2480533-1 WATER | L2480533-2 WATER | L2480533-3 WATER | L2480533-4 WATER | L2480533-5 WATER |
|---------------------------|----------------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Grouping | Analyte | | | | | |
| | WATER | | | | | |
| Dissolved Metals | Silver (Ag)-Dissolved (mg/L) | <0.000010 | | | <0.000010 | <0.000010 |
| | Sodium (Na)-Dissolved (mg/L) | 121 | | | 13.1 | 26.3 |
| | Strontium (Sr)-Dissolved (mg/L) | 0.509 | | | 0.219 | 0.338 |
| | Sulfur (S)-Dissolved (mg/L) | 43.1 | | | 8.29 | 9.30 |
| | Thallium (Tl)-Dissolved (mg/L) | <0.000010 | | | <0.000010 | <0.000010 |
| | Tin (Sn)-Dissolved (mg/L) | 0.00012 | | | 0.00010 | 0.00011 |
| | Titanium (Ti)-Dissolved (mg/L) | <0.00030 | | | <0.00030 | <0.00030 |
| | Uranium (U)-Dissolved (mg/L) | 0.0102 | | | 0.00389 | 0.00269 |
| | Vanadium (V)-Dissolved (mg/L) | <0.00050 | | | <0.00050 | <0.00050 |
| | Zinc (Zn)-Dissolved (mg/L) | 0.0031 | | | 0.0043 | 0.0036 |
| | Zirconium (Zr)-Dissolved (mg/L) | <0.00030 | | | <0.00030 | <0.00030 |
| Aggregate Organics | Biochemical Oxygen Demand (mg/L) | <2.0 | <2.0 | <2.0 | | |
| | Chemical Oxygen Demand (mg/L) | 27 | <10 | 10 | | |

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

L2480533 CONTD....
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Version: FINAL

| | Sample ID Description | L2480533-6 WATER | L2480533-7 WATER | L2480533-8 WATER | | |
|---------------------------|--------------------------------------------|---------------------|---------------------|---------------------|--|--|
| | Sampled Date Sampled Time | 25-JUL-20 12:00 | 25-JUL-20 12:00 | 25-JUL-20 12:00 | | |
| | Client ID | E265124 | E265125 | TH4-A | | |
| Grouping | Analyte | | | | | |
| | WATER | | | | | |
| Dissolved Metals | Silver (Ag)-Dissolved (mg/L) | <0.000010 | <0.000010 | <0.000010 | | |
| | Sodium (Na)-Dissolved (mg/L) | 20.5 | 129 | 21.3 | | |
| | Strontium (Sr)-Dissolved (mg/L) | 0.261 | 0.0740 | 0.257 | | |
| | Sulfur (S)-Dissolved (mg/L) | 12.3 | 4.29 | 12.3 | | |
| | Thallium (Tl)-Dissolved (mg/L) | <0.000010 | <0.000010 | <0.000010 | | |
| | Tin (Sn)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | | |
| | Titanium (Ti)-Dissolved (mg/L) | <0.00030 | <0.00030 | <0.00030 | | |
| | Uranium (U)-Dissolved (mg/L) | 0.00558 | 0.00116 | 0.00513 | | |
| | Vanadium (V)-Dissolved (mg/L) | <0.00050 | <0.00050 | <0.00050 | | |
| | Zinc (Zn)-Dissolved (mg/L) | 0.0030 | 0.0059 | 0.0049 | | |
| | Zirconium (Zr)-Dissolved (mg/L) | <0.00030 | <0.00030 | <0.00030 | | |
| Aggregate Organics | Biochemical Oxygen Demand (mg/L) | | | | | |
| | Chemical Oxygen Demand (mg/L) | | | | | |

Reference Information

Additional Comments for Sample Listed:

| Samplenum | Matrix | Report Remarks | Sample Comment: |
|------------|--------|----------------|-----------------|
| L2480533-6 | Water | Note: DLHC | |

QC Samples with Qualifiers & Comments:

| QC Type Description | Parameter | Qualifier | Applies to Sample Number(s) |
|---------------------|--------------------------|-----------|--------------------------------|
| Matrix Spike | Calcium (Ca)-Dissolved | MS-B | L2480533-1, -4, -5, -6, -7, -8 |
| Matrix Spike | Magnesium (Mg)-Dissolved | MS-B | L2480533-1, -4, -5, -6, -7, -8 |
| Matrix Spike | Manganese (Mn)-Dissolved | MS-B | L2480533-1, -4, -5, -6, -7, -8 |
| Matrix Spike | Strontium (Sr)-Dissolved | MS-B | L2480533-1, -4, -5, -6, -7, -8 |
| Matrix Spike | Sodium (Na)-Total | MS-B | L2480533-2, -3 |

Qualifiers for Individual Parameters Listed:

| Qualifier | Description |
|-----------|------------------------------------------------------------------------------------------------------------------------------|
| DLHC | Detection Limit Raised: Dilution required due to high concentration of test analyte(s). |
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|---------------------------|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| BE-D-L-CCMS-CL | Water | Diss. Be (low) in Water by CRC ICPMS Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | APHA 3030B/6020A (mod) |
| BE-T-L-CCMS-CL | Water | Total Be (Low) in Water by CRC ICPMS Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | EPA 200.2/6020A (mod) |
| BOD-BC-CL | Water | Biochemical Oxygen Demand (BOD) This analysis is carried out using procedures adapted from APHA Method 5210B - "Biochemical Oxygen Demand (BOD)". All forms of biochemical oxygen demand (BOD) are determined by diluting and incubating a sample for a specified time period, and measuring the oxygen depletion using a dissolved oxygen meter. Dissolved BOD (SOLUBLE) is determined by filtering the sample through a glass fibre filter prior to dilution. Carbonaceous BOD (CBOD) is determined by adding a nitrification inhibitor to the diluted sample prior to incubation. | APHA 5210 B-5 day Incub.-O2 electrode |
| CL-L-IC-N-CL | Water | Chloride in Water by IC Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | EPA 300.1 (mod) |
| COD-T-COL-CL | Water | Chemical Oxygen Demand (COD) Samples are analyzed using the closed reflux colourimetric method | APHA 5220 D Colorimetry |
| EC-CL | Water | Electrical Conductivity (EC) Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25C. | APHA 2510B |
| F-L-IC-CL | Water | Fluoride | APHA 4110 B-Ion Chromatography |
| HARDNESS-CALC-CL | Water | Hardness | APHA 2340 B |
| IONBAL-INTCHECK-CL | Water | | APHA 1030E |
| MET-D-CCMS-CL | Water | Dissolved Metals in Water by CRC ICPMS Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | APHA 3030B/6020A (mod) |
| MET-T-CCMS-CL | Water | Total Metals in Water by CRC ICPMS Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | EPA 200.2/6020A (mod) |
| NH3-L-F-CL | Water | Ammonia, Total (as N) | J. ENVIRON. MONIT., 2005, 7, 37-42, RSC |

Reference Information

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

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

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

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

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

PH-CL Water pH APHA 4500 H-Electrode

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

PH/EC/ALK-CL Water pH, Conductivity and Total Alkalinity APHA 4500H,2510,2320

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

pH measurement is determined from the activity of the hydrogen ions using a hydrogen electrode and a reference electrode.

Alkalinity measurement is based on the sample's capacity to neutralize acid

Conductivity measurement is based on the sample's capacity to convey an electric current

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

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

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

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

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

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

| Laboratory Definition Code | Laboratory Location |
|----------------------------|---------------------|
|----------------------------|---------------------|

| | |
|----|----------------------------------------------|
| CL | ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA |
|----|----------------------------------------------|

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

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

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

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

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

mg/L - milligrams per litre.

< - Less than.

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

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

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

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

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

Quality Control Report

Workorder: L2480533

Report Date: 07-AUG-20

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Client: Sperling Hansen Associates Inc.
 #8 - 1225 East Keith Road
 North Vancouver BC V7J 1J3

Contact: David Kvick

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|-----------------------------|----------|------------|-----------|-----------|-------|-----|---------|-----------|
| BE-D-L-CCMS-CL Water | | | | | | | | |
| Batch | R5174184 | | | | | | | |
| WG3376114-2 | LCS | TMRM | | | | | | |
| Beryllium (Be)-Dissolved | | | 102.9 | | % | | 80-120 | 04-AUG-20 |
| WG3376114-1 | MB | | | | | | | |
| Beryllium (Be)-Dissolved | | | <0.000020 | | mg/L | | 0.00002 | 04-AUG-20 |
| BE-T-L-CCMS-CL Water | | | | | | | | |
| Batch | R5172318 | | | | | | | |
| WG3373753-2 | LCS | TMRM | | | | | | |
| Beryllium (Be)-Total | | | 96.6 | | % | | 80-120 | 30-JUL-20 |
| WG3373753-1 | MB | | | | | | | |
| Beryllium (Be)-Total | | | <0.000020 | | mg/L | | 0.00002 | 30-JUL-20 |
| Batch | R5173047 | | | | | | | |
| WG3373753-6 | LCS | TMRM | | | | | | |
| Beryllium (Be)-Total | | | 102.9 | | % | | 80-120 | 31-JUL-20 |
| WG3373753-5 | MB | | | | | | | |
| Beryllium (Be)-Total | | | <0.000020 | | mg/L | | 0.00002 | 31-JUL-20 |
| BOD-BC-CL Water | | | | | | | | |
| Batch | R5174016 | | | | | | | |
| WG3375960-2 | LCS | | | | | | | |
| Biochemical Oxygen Demand | | | 89.8 | | % | | 85-115 | 29-JUL-20 |
| WG3375960-1 | MB | | | | | | | |
| Biochemical Oxygen Demand | | | <2.0 | | mg/L | | 2 | 29-JUL-20 |
| CL-L-IC-N-CL Water | | | | | | | | |
| Batch | R5171433 | | | | | | | |
| WG3372895-7 | DUP | L2480533-8 | | | | | | |
| Chloride (Cl) | | | 21.9 | | mg/L | | 0.3 | 20 |
| WG3372895-6 | LCS | | | | | | | |
| Chloride (Cl) | | | 101.9 | | % | | 85-115 | 28-JUL-20 |
| WG3372895-5 | MB | | | | | | | |
| Chloride (Cl) | | | <0.10 | | mg/L | | 0.1 | 28-JUL-20 |
| WG3372895-8 | MS | L2480533-8 | | | | | | |
| Chloride (Cl) | | | 113.3 | | % | | 75-125 | 28-JUL-20 |
| COD-T-COL-CL Water | | | | | | | | |
| Batch | R5172139 | | | | | | | |
| WG3373451-2 | LCS | | | | | | | |
| Chemical Oxygen Demand | | | 100.9 | | % | | 85-115 | 29-JUL-20 |
| WG3373451-1 | MB | | | | | | | |
| Chemical Oxygen Demand | | | <10 | | mg/L | | 10 | 29-JUL-20 |

Quality Control Report

Workorder: L2480533

Report Date: 07-AUG-20

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---------------------------|--------|------------|--------|-----------|-------|-----|--------|-----------|
| EC-CL | | | | | | | | |
| Water | | | | | | | | |
| Batch R5171895 | | | | | | | | |
| WG3373465-2 LCS | | | | | | | | |
| Conductivity (@ 25C) | | | 99.9 | | % | | 90-110 | 29-JUL-20 |
| WG3373465-1 MB | | | | | | | | |
| Conductivity (@ 25C) | | | <2.0 | | uS/cm | | 2 | 29-JUL-20 |
| F-L-IC-CL | | | | | | | | |
| Water | | | | | | | | |
| Batch R5171433 | | | | | | | | |
| WG3372895-7 DUP | | | | | | | | |
| Fluoride (F) | | L2480533-8 | 0.101 | 0.103 | mg/L | 2.2 | 20 | 28-JUL-20 |
| WG3372895-6 LCS | | | | | | | | |
| Fluoride (F) | | | | 101.1 | % | | 85-115 | 28-JUL-20 |
| WG3372895-5 MB | | | | | | | | |
| Fluoride (F) | | | | <0.020 | mg/L | | 0.02 | 28-JUL-20 |
| WG3372895-8 MS | | | | | | | | |
| Fluoride (F) | | L2480533-8 | | 108.8 | % | | 75-125 | 28-JUL-20 |
| MET-D-CCMS-CL | | | | | | | | |
| Water | | | | | | | | |
| Batch R5174184 | | | | | | | | |
| WG3376114-2 LCS | | | | | | | | |
| Aluminum (Al)-Dissolved | | TMRM | | 113.5 | % | | 80-120 | 04-AUG-20 |
| Antimony (Sb)-Dissolved | | | | 109.0 | % | | 80-120 | 04-AUG-20 |
| Arsenic (As)-Dissolved | | | | 107.2 | % | | 80-120 | 04-AUG-20 |
| Barium (Ba)-Dissolved | | | | 115.3 | % | | 80-120 | 04-AUG-20 |
| Bismuth (Bi)-Dissolved | | | | 103.5 | % | | 80-120 | 04-AUG-20 |
| Boron (B)-Dissolved | | | | 93.4 | % | | 80-120 | 04-AUG-20 |
| Cadmium (Cd)-Dissolved | | | | 107.3 | % | | 80-120 | 04-AUG-20 |
| Calcium (Ca)-Dissolved | | | | 107.2 | % | | 80-120 | 04-AUG-20 |
| Chromium (Cr)-Dissolved | | | | 109.7 | % | | 80-120 | 04-AUG-20 |
| Cobalt (Co)-Dissolved | | | | 104.2 | % | | 80-120 | 04-AUG-20 |
| Copper (Cu)-Dissolved | | | | 106.9 | % | | 80-120 | 04-AUG-20 |
| Iron (Fe)-Dissolved | | | | 102.4 | % | | 80-120 | 04-AUG-20 |
| Lead (Pb)-Dissolved | | | | 101.5 | % | | 80-120 | 04-AUG-20 |
| Lithium (Li)-Dissolved | | | | 100.2 | % | | 80-120 | 04-AUG-20 |
| Magnesium (Mg)-Dissolved | | | | 114.4 | % | | 80-120 | 04-AUG-20 |
| Manganese (Mn)-Dissolved | | | | 102.6 | % | | 80-120 | 04-AUG-20 |
| Molybdenum (Mo)-Dissolved | | | | 103.4 | % | | 80-120 | 04-AUG-20 |
| Nickel (Ni)-Dissolved | | | | 103.5 | % | | 80-120 | 04-AUG-20 |
| Phosphorus (P)-Dissolved | | | | 111.5 | % | | 70-130 | 04-AUG-20 |

Quality Control Report

Workorder: L2480533

Report Date: 07-AUG-20

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---------------------------|-----------------|-------------|------------|-----------|-------|-----|----------|-----------|
| MET-D-CCMS-CL | Water | | | | | | | |
| Batch | R5174184 | | | | | | | |
| WG3376114-2 LCS | | TMRM | | | | | | |
| Potassium (K)-Dissolved | | | 114.3 | | % | | 80-120 | 04-AUG-20 |
| Selenium (Se)-Dissolved | | | 104.2 | | % | | 80-120 | 04-AUG-20 |
| Silicon (Si)-Dissolved | | | 108.3 | | % | | 60-140 | 04-AUG-20 |
| Silver (Ag)-Dissolved | | | 101.8 | | % | | 80-120 | 04-AUG-20 |
| Sodium (Na)-Dissolved | | | 107.8 | | % | | 80-120 | 04-AUG-20 |
| Strontium (Sr)-Dissolved | | | 107.2 | | % | | 80-120 | 04-AUG-20 |
| Sulfur (S)-Dissolved | | | 105.3 | | % | | 80-120 | 04-AUG-20 |
| Thallium (Tl)-Dissolved | | | 103.2 | | % | | 80-120 | 04-AUG-20 |
| Tin (Sn)-Dissolved | | | 103.8 | | % | | 80-120 | 04-AUG-20 |
| Titanium (Ti)-Dissolved | | | 104.2 | | % | | 80-120 | 04-AUG-20 |
| Uranium (U)-Dissolved | | | 98.8 | | % | | 80-120 | 04-AUG-20 |
| Vanadium (V)-Dissolved | | | 108.5 | | % | | 80-120 | 04-AUG-20 |
| Zinc (Zn)-Dissolved | | | 103.6 | | % | | 80-120 | 04-AUG-20 |
| Zirconium (Zr)-Dissolved | | | 97.8 | | % | | 80-120 | 04-AUG-20 |
| WG3376114-1 MB | | | | | | | | |
| Aluminum (Al)-Dissolved | | | <0.0010 | | mg/L | | 0.001 | 04-AUG-20 |
| Antimony (Sb)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 04-AUG-20 |
| Arsenic (As)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 04-AUG-20 |
| Barium (Ba)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 04-AUG-20 |
| Bismuth (Bi)-Dissolved | | | <0.000050 | | mg/L | | 0.00005 | 04-AUG-20 |
| Boron (B)-Dissolved | | | <0.010 | | mg/L | | 0.01 | 04-AUG-20 |
| Cadmium (Cd)-Dissolved | | | <0.0000050 | | mg/L | | 0.000005 | 04-AUG-20 |
| Calcium (Ca)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 04-AUG-20 |
| Chromium (Cr)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 04-AUG-20 |
| Cobalt (Co)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 04-AUG-20 |
| Copper (Cu)-Dissolved | | | <0.00020 | | mg/L | | 0.0002 | 04-AUG-20 |
| Iron (Fe)-Dissolved | | | <0.010 | | mg/L | | 0.01 | 04-AUG-20 |
| Lead (Pb)-Dissolved | | | <0.000050 | | mg/L | | 0.00005 | 04-AUG-20 |
| Lithium (Li)-Dissolved | | | <0.0010 | | mg/L | | 0.001 | 04-AUG-20 |
| Magnesium (Mg)-Dissolved | | | <0.0050 | | mg/L | | 0.005 | 04-AUG-20 |
| Manganese (Mn)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 04-AUG-20 |
| Molybdenum (Mo)-Dissolved | | | <0.000050 | | mg/L | | 0.00005 | 04-AUG-20 |
| Nickel (Ni)-Dissolved | | | <0.00050 | | mg/L | | 0.0005 | 04-AUG-20 |
| Phosphorus (P)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 04-AUG-20 |

Quality Control Report

Workorder: L2480533

Report Date: 07-AUG-20

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|--------------------------|--------|-----------|-----------|-----------|-------|-----|---------|-----------|
| MET-D-CCMS-CL | | | | | | | | |
| Water | | | | | | | | |
| Batch R5174184 | | | | | | | | |
| WG3376114-1 MB | | | | | | | | |
| Potassium (K)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 04-AUG-20 |
| Selenium (Se)-Dissolved | | | <0.000050 | | mg/L | | 0.00005 | 04-AUG-20 |
| Silicon (Si)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 04-AUG-20 |
| Silver (Ag)-Dissolved | | | <0.000010 | | mg/L | | 0.00001 | 04-AUG-20 |
| Sodium (Na)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 04-AUG-20 |
| Strontium (Sr)-Dissolved | | | <0.00020 | | mg/L | | 0.0002 | 04-AUG-20 |
| Sulfur (S)-Dissolved | | | <0.50 | | mg/L | | 0.5 | 04-AUG-20 |
| Thallium (Tl)-Dissolved | | | <0.000010 | | mg/L | | 0.00001 | 04-AUG-20 |
| Tin (Sn)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 04-AUG-20 |
| Titanium (Ti)-Dissolved | | | <0.00030 | | mg/L | | 0.0003 | 04-AUG-20 |
| Uranium (U)-Dissolved | | | <0.000010 | | mg/L | | 0.00001 | 04-AUG-20 |
| Vanadium (V)-Dissolved | | | <0.00050 | | mg/L | | 0.0005 | 04-AUG-20 |
| Zinc (Zn)-Dissolved | | | <0.0010 | | mg/L | | 0.001 | 04-AUG-20 |
| Zirconium (Zr)-Dissolved | | | <0.00020 | | mg/L | | 0.0002 | 04-AUG-20 |
| MET-T-CCMS-CL | | | | | | | | |
| Water | | | | | | | | |
| Batch R5172318 | | | | | | | | |
| WG3373753-2 LCS | | | | | | | | |
| TMRM | | | | | | | | |
| Aluminum (Al)-Total | | | 93.1 | | % | | 80-120 | 30-JUL-20 |
| Antimony (Sb)-Total | | | 102.2 | | % | | 80-120 | 30-JUL-20 |
| Arsenic (As)-Total | | | 91.4 | | % | | 80-120 | 30-JUL-20 |
| Barium (Ba)-Total | | | 94.6 | | % | | 80-120 | 30-JUL-20 |
| Bismuth (Bi)-Total | | | 99.5 | | % | | 80-120 | 30-JUL-20 |
| Boron (B)-Total | | | 90.7 | | % | | 80-120 | 30-JUL-20 |
| Cadmium (Cd)-Total | | | 88.5 | | % | | 80-120 | 30-JUL-20 |
| Calcium (Ca)-Total | | | 100.9 | | % | | 80-120 | 30-JUL-20 |
| Chromium (Cr)-Total | | | 92.3 | | % | | 80-120 | 30-JUL-20 |
| Cobalt (Co)-Total | | | 90.8 | | % | | 80-120 | 30-JUL-20 |
| Copper (Cu)-Total | | | 93.2 | | % | | 80-120 | 30-JUL-20 |
| Iron (Fe)-Total | | | 97.6 | | % | | 80-120 | 30-JUL-20 |
| Lead (Pb)-Total | | | 99.7 | | % | | 80-120 | 30-JUL-20 |
| Lithium (Li)-Total | | | 93.8 | | % | | 80-120 | 30-JUL-20 |
| Magnesium (Mg)-Total | | | 90.5 | | % | | 80-120 | 30-JUL-20 |
| Manganese (Mn)-Total | | | 92.1 | | % | | 80-120 | 30-JUL-20 |
| Molybdenum (Mo)-Total | | | 98.1 | | % | | 80-120 | 30-JUL-20 |

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|------------------------|-----------------|-------------|------------|-----------|-------|-----|----------|-----------|
| MET-T-CCMS-CL | Water | | | | | | | |
| Batch | R5172318 | | | | | | | |
| WG3373753-2 LCS | | TMRM | | | | | | |
| Nickel (Ni)-Total | | | 90.0 | | % | | 80-120 | 30-JUL-20 |
| Phosphorus (P)-Total | | | 93.6 | | % | | 70-130 | 30-JUL-20 |
| Potassium (K)-Total | | | 91.7 | | % | | 80-120 | 30-JUL-20 |
| Selenium (Se)-Total | | | 91.8 | | % | | 80-120 | 30-JUL-20 |
| Silicon (Si)-Total | | | 95.4 | | % | | 60-140 | 30-JUL-20 |
| Silver (Ag)-Total | | | 102.2 | | % | | 80-120 | 30-JUL-20 |
| Sodium (Na)-Total | | | 89.9 | | % | | 80-120 | 30-JUL-20 |
| Strontium (Sr)-Total | | | 103.2 | | % | | 80-120 | 30-JUL-20 |
| Sulfur (S)-Total | | | 90.2 | | % | | 80-120 | 30-JUL-20 |
| Thallium (Tl)-Total | | | 97.7 | | % | | 80-120 | 30-JUL-20 |
| Tin (Sn)-Total | | | 88.7 | | % | | 80-120 | 30-JUL-20 |
| Titanium (Ti)-Total | | | 87.2 | | % | | 80-120 | 30-JUL-20 |
| Uranium (U)-Total | | | 100.3 | | % | | 80-120 | 30-JUL-20 |
| Vanadium (V)-Total | | | 91.9 | | % | | 80-120 | 30-JUL-20 |
| Zinc (Zn)-Total | | | 89.5 | | % | | 80-120 | 30-JUL-20 |
| Zirconium (Zr)-Total | | | 101.9 | | % | | 80-120 | 30-JUL-20 |
| WG3373753-1 MB | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 30-JUL-20 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 30-JUL-20 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 30-JUL-20 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 30-JUL-20 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 30-JUL-20 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 30-JUL-20 |
| Cadmium (Cd)-Total | | | <0.0000050 | | mg/L | | 0.000005 | 30-JUL-20 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 30-JUL-20 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 30-JUL-20 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 30-JUL-20 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 30-JUL-20 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 30-JUL-20 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 30-JUL-20 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 30-JUL-20 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 30-JUL-20 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 30-JUL-20 |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 30-JUL-20 |

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|-----------------------|--------|-------------|-----------|-----------|-------|-----|---------|-----------|
| MET-T-CCMS-CL | | Water | | | | | | |
| Batch R5172318 | | | | | | | | |
| WG3373753-1 MB | | | | | | | | |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 30-JUL-20 |
| Phosphorus (P)-Total | | | <0.050 | | mg/L | | 0.05 | 30-JUL-20 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 30-JUL-20 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 30-JUL-20 |
| Silicon (Si)-Total | | | <0.050 | | mg/L | | 0.05 | 30-JUL-20 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 30-JUL-20 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 30-JUL-20 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 30-JUL-20 |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 30-JUL-20 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 30-JUL-20 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 30-JUL-20 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 30-JUL-20 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 30-JUL-20 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 30-JUL-20 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 30-JUL-20 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 30-JUL-20 |
| Batch R5173047 | | | | | | | | |
| WG3373753-6 LCS | | TMRM | | | | | | |
| Aluminum (Al)-Total | | | 101.8 | | % | | 80-120 | 31-JUL-20 |
| Antimony (Sb)-Total | | | 99.3 | | % | | 80-120 | 31-JUL-20 |
| Arsenic (As)-Total | | | 101.3 | | % | | 80-120 | 31-JUL-20 |
| Barium (Ba)-Total | | | 107.4 | | % | | 80-120 | 31-JUL-20 |
| Bismuth (Bi)-Total | | | 98.8 | | % | | 80-120 | 31-JUL-20 |
| Boron (B)-Total | | | 99.3 | | % | | 80-120 | 31-JUL-20 |
| Cadmium (Cd)-Total | | | 101.6 | | % | | 80-120 | 31-JUL-20 |
| Calcium (Ca)-Total | | | 106.8 | | % | | 80-120 | 31-JUL-20 |
| Chromium (Cr)-Total | | | 103.4 | | % | | 80-120 | 31-JUL-20 |
| Cobalt (Co)-Total | | | 98.4 | | % | | 80-120 | 31-JUL-20 |
| Copper (Cu)-Total | | | 101.5 | | % | | 80-120 | 31-JUL-20 |
| Iron (Fe)-Total | | | 103.5 | | % | | 80-120 | 31-JUL-20 |
| Lead (Pb)-Total | | | 102.4 | | % | | 80-120 | 31-JUL-20 |
| Lithium (Li)-Total | | | 107.0 | | % | | 80-120 | 31-JUL-20 |
| Magnesium (Mg)-Total | | | 104.6 | | % | | 80-120 | 31-JUL-20 |
| Manganese (Mn)-Total | | | 103.5 | | % | | 80-120 | 31-JUL-20 |

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|-----------------------|----------|-----------|------------|-----------|-------|-----|----------|-----------|
| MET-T-CCMS-CL | Water | | | | | | | |
| Batch | R5173047 | | | | | | | |
| WG3373753-6 LCS | | TMRM | | | | | | |
| Molybdenum (Mo)-Total | | | 102.4 | | % | | 80-120 | 31-JUL-20 |
| Nickel (Ni)-Total | | | 101.8 | | % | | 80-120 | 31-JUL-20 |
| Phosphorus (P)-Total | | | 105.6 | | % | | 70-130 | 31-JUL-20 |
| Potassium (K)-Total | | | 107.9 | | % | | 80-120 | 31-JUL-20 |
| Selenium (Se)-Total | | | 99.0 | | % | | 80-120 | 31-JUL-20 |
| Silicon (Si)-Total | | | 104.5 | | % | | 60-140 | 31-JUL-20 |
| Silver (Ag)-Total | | | 100.4 | | % | | 80-120 | 31-JUL-20 |
| Sodium (Na)-Total | | | 93.8 | | % | | 80-120 | 31-JUL-20 |
| Strontium (Sr)-Total | | | 109.6 | | % | | 80-120 | 31-JUL-20 |
| Sulfur (S)-Total | | | 91.5 | | % | | 80-120 | 31-JUL-20 |
| Thallium (Tl)-Total | | | 98.1 | | % | | 80-120 | 31-JUL-20 |
| Tin (Sn)-Total | | | 99.3 | | % | | 80-120 | 31-JUL-20 |
| Titanium (Ti)-Total | | | 99.5 | | % | | 80-120 | 31-JUL-20 |
| Uranium (U)-Total | | | 97.3 | | % | | 80-120 | 31-JUL-20 |
| Vanadium (V)-Total | | | 104.7 | | % | | 80-120 | 31-JUL-20 |
| Zinc (Zn)-Total | | | 109.3 | | % | | 80-120 | 31-JUL-20 |
| Zirconium (Zr)-Total | | | 96.6 | | % | | 80-120 | 31-JUL-20 |
| WG3373753-5 MB | | | | | | | | |
| Aluminum (Al)-Total | | | <0.0030 | | mg/L | | 0.003 | 31-JUL-20 |
| Antimony (Sb)-Total | | | <0.00010 | | mg/L | | 0.0001 | 31-JUL-20 |
| Arsenic (As)-Total | | | <0.00010 | | mg/L | | 0.0001 | 31-JUL-20 |
| Barium (Ba)-Total | | | <0.00010 | | mg/L | | 0.0001 | 31-JUL-20 |
| Bismuth (Bi)-Total | | | <0.000050 | | mg/L | | 0.00005 | 31-JUL-20 |
| Boron (B)-Total | | | <0.010 | | mg/L | | 0.01 | 31-JUL-20 |
| Cadmium (Cd)-Total | | | <0.0000050 | | mg/L | | 0.000005 | 31-JUL-20 |
| Calcium (Ca)-Total | | | <0.050 | | mg/L | | 0.05 | 31-JUL-20 |
| Chromium (Cr)-Total | | | <0.00010 | | mg/L | | 0.0001 | 31-JUL-20 |
| Cobalt (Co)-Total | | | <0.00010 | | mg/L | | 0.0001 | 31-JUL-20 |
| Copper (Cu)-Total | | | <0.00050 | | mg/L | | 0.0005 | 31-JUL-20 |
| Iron (Fe)-Total | | | <0.010 | | mg/L | | 0.01 | 31-JUL-20 |
| Lead (Pb)-Total | | | <0.000050 | | mg/L | | 0.00005 | 31-JUL-20 |
| Lithium (Li)-Total | | | <0.0010 | | mg/L | | 0.001 | 31-JUL-20 |
| Magnesium (Mg)-Total | | | <0.0050 | | mg/L | | 0.005 | 31-JUL-20 |
| Manganese (Mn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 31-JUL-20 |

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|----------------------------|--------|------------|-----------|-----------|--------|------|---------|-----------|
| MET-T-CCMS-CL Water | | | | | | | | |
| Batch R5173047 | | | | | | | | |
| WG3373753-5 MB | | | | | | | | |
| Molybdenum (Mo)-Total | | | <0.000050 | | mg/L | | 0.00005 | 31-JUL-20 |
| Nickel (Ni)-Total | | | <0.00050 | | mg/L | | 0.0005 | 31-JUL-20 |
| Phosphorus (P)-Total | | | <0.050 | | mg/L | | 0.05 | 31-JUL-20 |
| Potassium (K)-Total | | | <0.050 | | mg/L | | 0.05 | 31-JUL-20 |
| Selenium (Se)-Total | | | <0.000050 | | mg/L | | 0.00005 | 31-JUL-20 |
| Silicon (Si)-Total | | | <0.050 | | mg/L | | 0.05 | 31-JUL-20 |
| Silver (Ag)-Total | | | <0.000010 | | mg/L | | 0.00001 | 31-JUL-20 |
| Sodium (Na)-Total | | | <0.050 | | mg/L | | 0.05 | 31-JUL-20 |
| Strontium (Sr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 31-JUL-20 |
| Sulfur (S)-Total | | | <0.50 | | mg/L | | 0.5 | 31-JUL-20 |
| Thallium (Tl)-Total | | | <0.000010 | | mg/L | | 0.00001 | 31-JUL-20 |
| Tin (Sn)-Total | | | <0.00010 | | mg/L | | 0.0001 | 31-JUL-20 |
| Titanium (Ti)-Total | | | <0.00030 | | mg/L | | 0.0003 | 31-JUL-20 |
| Uranium (U)-Total | | | <0.000010 | | mg/L | | 0.00001 | 31-JUL-20 |
| Vanadium (V)-Total | | | <0.00050 | | mg/L | | 0.0005 | 31-JUL-20 |
| Zinc (Zn)-Total | | | <0.0030 | | mg/L | | 0.003 | 31-JUL-20 |
| Zirconium (Zr)-Total | | | <0.00020 | | mg/L | | 0.0002 | 31-JUL-20 |
| NH3-L-F-CL Water | | | | | | | | |
| Batch R5175008 | | | | | | | | |
| WG3376944-19 DUP | | | | | | | | |
| Ammonia as N | | L2480533-4 | 0.0093 | 0.0097 | mg/L | 4.2 | 20 | 06-AUG-20 |
| WG3376944-18 LCS | | | | | | | | |
| Ammonia as N | | | | 106.5 | % | | 85-115 | 05-AUG-20 |
| WG3376944-17 MB | | | | | | | | |
| Ammonia as N | | | | <0.0050 | mg/L | | 0.005 | 05-AUG-20 |
| WG3376944-20 MS | | | | | | | | |
| Ammonia as N | | L2480533-4 | | 105.5 | % | | 75-125 | 05-AUG-20 |
| NO2-L-IC-N-CL Water | | | | | | | | |
| Batch R5171433 | | | | | | | | |
| WG3372895-7 DUP | | | | | | | | |
| Nitrite (as N) | | L2480533-8 | <0.0010 | <0.0010 | RPD-NA | mg/L | N/A | 20 |
| WG3372895-6 LCS | | | | | | | | |
| Nitrite (as N) | | | | 100.3 | % | | 90-110 | 28-JUL-20 |
| WG3372895-5 MB | | | | | | | | |
| Nitrite (as N) | | | | <0.0010 | mg/L | | 0.001 | 28-JUL-20 |
| WG3372895-8 | | | | | | | | |
| | | L2480533-8 | | | | | | |

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|-------------------------------------------|--------------|-----------|---------|-----------|-------|-----|---------|-----------|
| NO2-L-IC-N-CL | Water | | | | | | | |
| Batch R5171433 | | | | | | | | |
| WG3372895-8 MS | L2480533-8 | | | | | | | |
| Nitrite (as N) | | | 113.3 | | % | | 75-125 | 28-JUL-20 |
| NO3-L-IC-N-CL | Water | | | | | | | |
| Batch R5171433 | | | | | | | | |
| WG3372895-7 DUP | L2480533-8 | | | | | | | |
| Nitrate (as N) | 1.71 | 1.71 | | | mg/L | 0.1 | 20 | 28-JUL-20 |
| WG3372895-6 LCS | | | | | | | | |
| Nitrate (as N) | | | 102.2 | | % | | 90-110 | 28-JUL-20 |
| WG3372895-5 MB | | | | | | | | |
| Nitrate (as N) | | | <0.0050 | | mg/L | | 0.005 | 28-JUL-20 |
| WG3372895-8 MS | L2480533-8 | | | | | | | |
| Nitrate (as N) | | | 111.8 | | % | | 75-125 | 28-JUL-20 |
| PH-CL | Water | | | | | | | |
| Batch R5171895 | | | | | | | | |
| WG3373465-2 LCS | | | | | | | | |
| pH | | | 6.94 | | pH | | 6.9-7.1 | 29-JUL-20 |
| PH/EC/ALK-CL | Water | | | | | | | |
| Batch R5171895 | | | | | | | | |
| WG3373465-2 LCS | | | | | | | | |
| Conductivity (EC) | | | 99.9 | | % | | 90-110 | 29-JUL-20 |
| Alkalinity, Total (as CaCO ₃) | | | 99.96 | | % | | 85-115 | 29-JUL-20 |
| WG3373465-1 MB | | | | | | | | |
| Conductivity (EC) | | | <2.0 | | uS/cm | | 2 | 29-JUL-20 |
| Bicarbonate (HCO ₃) | | | <5.0 | | mg/L | | 5 | 29-JUL-20 |
| Carbonate (CO ₃) | | | <5.0 | | mg/L | | 5 | 29-JUL-20 |
| Hydroxide (OH) | | | <5.0 | | mg/L | | 5 | 29-JUL-20 |
| Alkalinity, Total (as CaCO ₃) | | | <2.0 | | mg/L | | 2 | 29-JUL-20 |
| SO4-L-IC-N-CL | Water | | | | | | | |
| Batch R5171433 | | | | | | | | |
| WG3372895-7 DUP | L2480533-8 | | | | | | | |
| Sulfate (SO ₄) | 29.1 | 29.2 | | | mg/L | 0.1 | 20 | 28-JUL-20 |
| WG3372895-6 LCS | | | | | | | | |
| Sulfate (SO ₄) | | | 103.0 | | % | | 85-115 | 28-JUL-20 |
| WG3372895-5 MB | | | | | | | | |
| Sulfate (SO ₄) | | | <0.050 | | mg/L | | 0.05 | 28-JUL-20 |

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|------------------------|--------|------------|--------|-----------|-------|-----|--------|-----------|
| SO4-L-IC-N-CL | Water | | | | | | | |
| Batch R5171433 | | | | | | | | |
| WG3372895-8 MS | | L2480533-8 | | | | | | |
| Sulfate (SO4) | | | 113.2 | | % | | 75-125 | 28-JUL-20 |
| TSS-L-CL | Water | | | | | | | |
| Batch R5171631 | | | | | | | | |
| WG3371660-8 LCS | | | | | | | | |
| Total Suspended Solids | | | 112.8 | | % | | 85-115 | 28-JUL-20 |
| WG3371660-7 MB | | | | | | | | |
| Total Suspended Solids | | | <1.0 | | mg/L | | 1 | 28-JUL-20 |
| Batch R5172465 | | | | | | | | |
| WG3372550-2 LCS | | | | | | | | |
| Total Suspended Solids | | | 88.5 | | % | | 85-115 | 29-JUL-20 |
| WG3372550-1 MB | | | | | | | | |
| Total Suspended Solids | | | <1.0 | | mg/L | | 1 | 29-JUL-20 |

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Legend:

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

Sample Parameter Qualifier Definitions:

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

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Hold Time Exceedances:

| ALS Product Description | Sample ID | Sampling Date | Date Processed | Rec. HT | Actual HT | Units | Qualifier |
|------------------------------------|-----------|-----------------|-----------------|---------|-----------|-------|-----------|
| Physical Tests | | | | | | | |
| pH | | | | | | | |
| | 1 | 24-JUL-20 12:00 | 29-JUL-20 14:00 | 0.25 | 122 | hours | EHTR-FM |
| | 2 | 24-JUL-20 12:00 | 29-JUL-20 14:00 | 0.25 | 122 | hours | EHTR-FM |
| | 3 | 24-JUL-20 12:00 | 29-JUL-20 14:00 | 0.25 | 122 | hours | EHTR-FM |
| Anions and Nutrients | | | | | | | |
| Nitrate in Water by IC (Low Level) | | | | | | | |
| | 1 | 24-JUL-20 12:00 | 28-JUL-20 07:43 | 3 | 4 | days | EHTR |
| | 2 | 24-JUL-20 12:00 | 28-JUL-20 07:43 | 3 | 4 | days | EHTR |
| | 3 | 24-JUL-20 12:00 | 28-JUL-20 07:43 | 3 | 4 | days | EHTR |
| Nitrite in Water by IC (Low Level) | | | | | | | |
| | 1 | 24-JUL-20 12:00 | 28-JUL-20 07:43 | 3 | 4 | days | EHTR |
| | 2 | 24-JUL-20 12:00 | 28-JUL-20 07:43 | 3 | 4 | days | EHTR |
| | 3 | 24-JUL-20 12:00 | 28-JUL-20 07:43 | 3 | 4 | days | EHTR |

Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

Rec. HT: ALS recommended hold time (see units).

Notes*:

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

Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2480533 were received on 28-JUL-20 08:50.

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

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

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



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2480533-COFC

COC Number: 15 -

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www.alsglobal.com

| | | | | | | | | |
|-----------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|-------------|-------------|
| Report To | | Contact and company name below will appear on the final report | | Report Format | | Select all E&P TATs with your AM - surcharges will apply | | |
| Company: | Sperling Hansen Associates Inc. | | | Select Report Format: <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) | | | | |
| Contact: | David Kvick | | | Quality Control (QC) Report with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO | | | | |
| Phone: | 604-813-8476 | | | <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked | | | | |
| Company address below will appear on the final report | | | | Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX | | | | |
| Street: | 8-1225 East Keith Road | | | Email 1 or Fax | | | | |
| City/Province: | North Vancouver B.C. | | | Email 2 | | | | |
| Postal Code: | V7J 1J3 | | | Email 3 | | | | |
| Invoice To | Same as Report To <input checked="" type="checkbox"/> <input type="checkbox"/> NO | | Invoice Distribution | | Analysis Request | | | |
| | Copy of Invoice with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO | | Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX | | Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below | | | |
| Company: | | | | Email 1 or Fax | | | | |
| Contact: | | | | Email 2 | | | | |
| Project Information | | | | Oil and Gas Required Fields (client use) | | | | |
| ALS Account # / Quote #: | Q80923 | | | AFE/Cost Center: | PO# | | | |
| Job #: | | | | Major/Minor Code: | Routing Code: | | | |
| PO / AFE: | | | | Requisitioner: | | | | |
| LSD: | | | | Location: <i>Central / Cranbrook.</i> | | | | |
| ALS Lab Work Order # (lab use only) | | ALS Contact: | | Sampler: | | <i>Conductivity pH Anions Metals (F/P) Metals (P) TSS COD BOD NH3 Total Alkalinity</i> | | |
| ALS Sample # (lab use only) | Sample Identification and/or Coordinates (This description will appear on the report) | | | Date (dd-mmm-yy) | Time (hh:mm) | | | Sample Type |
| 1 | E241348 | | | 24/7/20 | 11 | | | water |
| 2 | E238208 | | | " | " | | | " |
| 3 | E238207 | | | " | " | | | " |
| 4 | E265122 | | | 25/7/20 | 11 | | | " |
| 5 | E265123 | | | " | " | | | " |
| 6 | E265124 | | | " | " | | | " |
| 7 | E265125 | | | " | " | | | " |
| 8 | TH4-A | | | " | " | " | 4 | |
| Drinking Water (DW) Samples ¹ (client use) | | Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) | | | | | | |
| Are samples taken from a Regulated DW System? | | | | | | | | |
| <input type="checkbox"/> <input checked="" type="checkbox"/> NO | | | | | | | | |
| Are samples for human drinking water use? | | | | | | | | |
| <input type="checkbox"/> <input checked="" type="checkbox"/> NO | | | | | | | | |
| SHIPMENT RELEASE (client use) | | | | INITIAL SHIPMENT RECEIPTION (lab use only) | | | | |
| Released by: <i>J. Sdmars</i> | Date: <i>25/7/20</i> | Time: <i>1700</i> | Received by: <i>ym</i> | Date: <i>7/26</i> | Time: <i>1700</i> | Received by: | Date: Time: | |
| | | | | FINAL SHIPMENT RECEIPTION (lab use only) | | | | |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

Number of Containers

| | | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------|--|--|
| SAMPLE CONDITION AS RECEIVED (lab use only) | | | |
| Frozen <input type="checkbox"/> | SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> | | |
| Ice Packs <input type="checkbox"/> Ice Cubes <input checked="" type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> | | | |
| Cooling Initiated <input type="checkbox"/> | | | |
| INITIAL COOLER TEMPERATURES °C | | | |
| <i>4</i> | | | |
| FINAL COOLER TEMPERATURES °C | | | |
| | | | |

OCTOBER 2015 FRONT

WHITE - LABORATORY COPY YELLOW - CLIENT COPY



Sperling Hansen Associates Inc.
ATTN: Scott Garthwaite
#8 - 1225 East Keith Road
North Vancouver BC V7J 1J3

Date Received: 21-OCT-20
Report Date: 27-OCT-20 16:35 (MT)
Version: FINAL

Client Phone: 604-986-7723

Certificate of Analysis

Lab Work Order #: L2519605

Project P.O. #: NOT SUBMITTED

Job Reference: 20050 CRANBROOK

C of C Numbers:

Legal Site Desc:

A handwritten signature in black ink, appearing to read "Patryk Wojciak".

Patryk Wojciak, B.Sc., P.Chem.
Account Manager

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

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

L2519605 CONTD....

PAGE 2 of 7

27-OCT-20 16:35 (MT)

Version: FINAL

| | Sample ID Description Sampled Date Sampled Time Client ID | L2519605-1 GW 19-OCT-20 12:00 E265129 | L2519605-2 GW 19-OCT-20 12:00 E265122 | L2519605-3 GW 19-OCT-20 12:00 E265123 | L2519605-4 GW 19-OCT-20 12:00 E265124 | L2519605-5 GW 19-OCT-20 12:00 E265125 |
|-----------------------------|-----------------------------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|---------------------------------------------------|
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Physical Tests | Hardness (as CaCO ₃) (mg/L) | 323 | 290 | 295 | 313 | 58.4 |
| | Total Suspended Solids (mg/L) | 337 | 15.8 | 179 | 552 | 6.9 |
| Anions and Nutrients | Alkalinity, Total (as CaCO ₃) (mg/L) | 294 | 264 | 266 | 318 | 328 |
| | Bicarbonate (HCO ₃) (mg/L) | 359 | 321 | 319 | 387 | 381 |
| | Carbonate (CO ₃) (mg/L) | <5.0 | <5.0 | <5.0 | <5.0 | 9.4 |
| | Chloride (Cl) (mg/L) | 22.8 | 12.0 | 37.6 | 17.4 | 1.68 |
| | Conductivity (EC) (uS/cm) | 587 | 502 | 580 | 559 | 578 |
| | Fluoride (F) (mg/L) | 0.112 | 0.101 | 0.147 | 0.108 | 2.23 |
| | Hydroxide (OH) (mg/L) | <5.0 | <5.0 | <5.0 | <5.0 | <5.0 |
| | Nitrate (as N) (mg/L) | 1.74 | 1.48 | 0.0834 | 1.43 | 0.0732 |
| | Nitrite (as N) (mg/L) | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| | pH (pH) | 8.02 | 8.07 | 8.33 | 7.99 | 8.55 |
| | Sulfate (SO ₄) (mg/L) | 29.4 | 18.3 | 22.3 | 30.4 | 6.50 |
| Dissolved Metals | Dissolved Mercury Filtration Location | FIELD | FIELD | FIELD | FIELD | FIELD |
| | Dissolved Metals Filtration Location | FIELD | FIELD | FIELD | FIELD | FIELD |
| | Aluminum (Al)-Dissolved (mg/L) | 0.0018 | 0.0022 | 0.0021 | 0.0013 | 0.0027 |
| | Antimony (Sb)-Dissolved (mg/L) | <0.00010 | <0.00010 | 0.00017 | <0.00010 | <0.00010 |
| | Arsenic (As)-Dissolved (mg/L) | 0.00016 | 0.00012 | 0.00043 | 0.00015 | 0.00085 |
| | Barium (Ba)-Dissolved (mg/L) | 0.184 | 0.146 | 0.115 | 0.183 | 0.207 |
| | Beryllium (Be)-Dissolved (mg/L) | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| | Bismuth (Bi)-Dissolved (mg/L) | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| | Boron (B)-Dissolved (mg/L) | <0.010 | <0.010 | 0.031 | <0.010 | 0.096 |
| | Cadmium (Cd)-Dissolved (mg/L) | 0.0000115 | 0.0000061 | 0.0000230 | 0.0000105 | 0.0000094 |
| | Calcium (Ca)-Dissolved (mg/L) | 63.8 | 58.4 | 47.5 | 62.1 | 10.9 |
| | Chromium (Cr)-Dissolved (mg/L) | 0.00218 | 0.00342 | 0.00035 | 0.00149 | 0.00191 |
| | Cobalt (Co)-Dissolved (mg/L) | 0.00014 | 0.00011 | 0.00047 | 0.00011 | <0.00010 |
| | Copper (Cu)-Dissolved (mg/L) | <0.00020 | 0.00031 | 0.00077 | <0.00020 | 0.00022 |
| | Iron (Fe)-Dissolved (mg/L) | 0.038 | 0.027 | 0.365 | 0.022 | 0.011 |
| | Lead (Pb)-Dissolved (mg/L) | <0.000050 | 0.000109 | <0.000050 | <0.000050 | 0.000101 |
| | Lithium (Li)-Dissolved (mg/L) | 0.0060 | 0.0052 | 0.0972 | 0.0060 | 0.0197 |
| | Magnesium (Mg)-Dissolved (mg/L) | 39.7 | 34.9 | 42.8 | 38.3 | 7.61 |
| | Manganese (Mn)-Dissolved (mg/L) | 0.00202 | 0.00162 | 0.137 | 0.00179 | 0.00169 |
| | Mercury (Hg)-Dissolved (mg/L) | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 |
| | Molybdenum (Mo)-Dissolved (mg/L) | 0.00198 | 0.00178 | 0.00314 | 0.00199 | 0.00113 |
| | Nickel (Ni)-Dissolved (mg/L) | 0.00479 | 0.00382 | 0.00611 | 0.00369 | 0.00081 |
| | Phosphorus (P)-Dissolved (mg/L) | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| | Potassium (K)-Dissolved (mg/L) | 2.42 | 2.20 | 2.45 | 2.33 | 1.47 |

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID Description Sampled Date Sampled Time Client ID | L2519605-6 GW 19-OCT-20 12:00 E265127 | | | | |
|-----------------------------|--------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------|--|--|--|--|
| Grouping | Analyte | | | | | | |
| WATER | | | | | | | |
| Physical Tests | Hardness (as CaCO ₃) (mg/L) | | 321 | | | | |
| | Total Suspended Solids (mg/L) | | 10.5 | | | | |
| Anions and Nutrients | Alkalinity, Total (as CaCO ₃) (mg/L) | | 279 | | | | |
| | Bicarbonate (HCO ₃) (mg/L) | | 330 | | | | |
| | Carbonate (CO ₃) (mg/L) | | <5.0 | | | | |
| | Chloride (Cl) (mg/L) | | 4.98 | | | | |
| | Conductivity (EC) (uS/cm) | | 477 | | | | |
| | Fluoride (F) (mg/L) | | 0.032 | | | | |
| | Hydroxide (OH) (mg/L) | | <5.0 | | | | |
| | Nitrate (as N) (mg/L) | | 0.154 | | | | |
| | Nitrite (as N) (mg/L) | | 0.0034 | | | | |
| | pH (pH) | | 8.38 | | | | |
| | Sulfate (SO ₄) (mg/L) | | 12.7 | | | | |
| Dissolved Metals | Dissolved Mercury Filtration Location | | FIELD | | | | |
| | Dissolved Metals Filtration Location | | FIELD | | | | |
| | Aluminum (Al)-Dissolved (mg/L) | | 0.0021 | | | | |
| | Antimony (Sb)-Dissolved (mg/L) | | <0.00010 | | | | |
| | Arsenic (As)-Dissolved (mg/L) | | 0.00014 | | | | |
| | Barium (Ba)-Dissolved (mg/L) | | 0.405 | | | | |
| | Beryllium (Be)-Dissolved (mg/L) | | <0.000020 | | | | |
| | Bismuth (Bi)-Dissolved (mg/L) | | <0.000050 | | | | |
| | Boron (B)-Dissolved (mg/L) | | <0.010 | | | | |
| | Cadmium (Cd)-Dissolved (mg/L) | | 0.0000215 | | | | |
| | Calcium (Ca)-Dissolved (mg/L) | | 60.2 | | | | |
| | Chromium (Cr)-Dissolved (mg/L) | | 0.00241 | | | | |
| | Cobalt (Co)-Dissolved (mg/L) | | <0.00010 | | | | |
| | Copper (Cu)-Dissolved (mg/L) | | 0.00069 | | | | |
| | Iron (Fe)-Dissolved (mg/L) | | 0.020 | | | | |
| | Lead (Pb)-Dissolved (mg/L) | | 0.000160 | | | | |
| | Lithium (Li)-Dissolved (mg/L) | | 0.0017 | | | | |
| | Magnesium (Mg)-Dissolved (mg/L) | | 41.5 | | | | |
| | Manganese (Mn)-Dissolved (mg/L) | | 0.00195 | | | | |
| | Mercury (Hg)-Dissolved (mg/L) | | <0.0000050 | | | | |
| | Molybdenum (Mo)-Dissolved (mg/L) | | 0.000815 | | | | |
| | Nickel (Ni)-Dissolved (mg/L) | | 0.00173 | | | | |
| | Phosphorus (P)-Dissolved (mg/L) | | <0.050 | | | | |
| | Potassium (K)-Dissolved (mg/L) | | 2.18 | | | | |

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

L2519605 CONTD....

PAGE 4 of 7

27-OCT-20 16:35 (MT)

Version: FINAL

| | Sample ID Description | L2519605-1 GW | L2519605-2 GW | L2519605-3 GW | L2519605-4 GW | L2519605-5 GW |
|-------------------------|---------------------------------|------------------|------------------|------------------|------------------|------------------|
| Grouping | Analyte | | | | | |
| | WATER | | | | | |
| Dissolved Metals | Selenium (Se)-Dissolved (mg/L) | 0.000453 | 0.000291 | 0.000436 | 0.000596 | <0.000050 |
| | Silicon (Si)-Dissolved (mg/L) | 7.07 | 6.79 | 5.67 | 6.96 | 4.33 |
| | Silver (Ag)-Dissolved (mg/L) | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| | Sodium (Na)-Dissolved (mg/L) | 20.8 | 14.0 | 20.2 | 19.3 | 130 |
| | Strontium (Sr)-Dissolved (mg/L) | 0.264 | 0.225 | 0.320 | 0.261 | 0.0730 |
| | Sulfur (S)-Dissolved (mg/L) | 10.2 | 6.41 | 7.94 | 10.8 | 2.34 |
| | Thallium (Tl)-Dissolved (mg/L) | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| | Tin (Sn)-Dissolved (mg/L) | <0.00010 | <0.00010 | 0.00029 | <0.00010 | <0.00010 |
| | Titanium (Ti)-Dissolved (mg/L) | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |
| | Uranium (U)-Dissolved (mg/L) | 0.00535 | 0.00411 | 0.00421 | 0.00580 | 0.00119 |
| | Vanadium (V)-Dissolved (mg/L) | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Zinc (Zn)-Dissolved (mg/L) | 0.0110 | 0.0032 | 0.0187 | 0.0145 | 0.0089 |
| | Zirconium (Zr)-Dissolved (mg/L) | <0.00030 | <0.00030 | <0.00030 | <0.00030 | <0.00030 |

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample ID Description Sampled Date Sampled Time Client ID | L2519605-6 GW 19-OCT-20 12:00 E265127 | | | | |
|-----------------------------------------------------------------------|---------------------------------------------------|-----------|--|--|--|
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Dissolved Metals | Selenium (Se)-Dissolved (mg/L) | 0.000241 | | | |
| | Silicon (Si)-Dissolved (mg/L) | 5.22 | | | |
| | Silver (Ag)-Dissolved (mg/L) | <0.000010 | | | |
| | Sodium (Na)-Dissolved (mg/L) | 6.05 | | | |
| | Strontium (Sr)-Dissolved (mg/L) | 0.205 | | | |
| | Sulfur (S)-Dissolved (mg/L) | 6.30 | | | |
| | Thallium (Tl)-Dissolved (mg/L) | <0.000010 | | | |
| | Tin (Sn)-Dissolved (mg/L) | <0.00010 | | | |
| | Titanium (Ti)-Dissolved (mg/L) | <0.00030 | | | |
| | Uranium (U)-Dissolved (mg/L) | 0.00398 | | | |
| | Vanadium (V)-Dissolved (mg/L) | <0.00050 | | | |
| | Zinc (Zn)-Dissolved (mg/L) | 0.0154 | | | |
| | Zirconium (Zr)-Dissolved (mg/L) | <0.00030 | | | |

Reference Information

QC Samples with Qualifiers & Comments:

| QC Type Description | Parameter | Qualifier | Applies to Sample Number(s) |
|---------------------|--------------------------|-----------|--------------------------------|
| Matrix Spike | Calcium (Ca)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Calcium (Ca)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Calcium (Ca)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Magnesium (Mg)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Magnesium (Mg)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Magnesium (Mg)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Magnesium (Mg)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Sodium (Na)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Sodium (Na)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Sodium (Na)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Strontium (Sr)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Strontium (Sr)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |
| Matrix Spike | Strontium (Sr)-Dissolved | MS-B | L2519605-1, -2, -3, -4, -5, -6 |

Qualifiers for Individual Parameters Listed:

| Qualifier | Description |
|-----------|----------------------------------------------------------------------------------------------------|
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|----------------------------------------|--------------------------------|
| BE-D-L-CCMS-CL | Water | Diss. Be (low) in Water by CRC ICPMS | APHA 3030B/6020A (mod) |
| Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| CL-L-IC-N-CL | Water | Chloride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| F-L-IC-CL | Water | Fluoride | APHA 4110 B-Ion Chromatography |
| HARDNESS-CALC-CL | Water | Hardness | APHA 2340 B |
| Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation. | | | |
| HG-D-CVAA-CL | Water | Dissolved Mercury in Water by CVAAS | APHA 3030B/EPA 1631E (mod) |
| Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS. | | | |
| MET-D-CCMS-CL | Water | Dissolved Metals in Water by CRC ICPMS | APHA 3030B/6020A (mod) |
| Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| NO2-L-IC-N-CL | Water | Nitrite in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| NO3-L-IC-N-CL | Water | Nitrate in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| PH/EC/ALK-CL | Water | pH, Conductivity and Total Alkalinity | APHA 4500H,2510,2320 |
| All samples analyzed by this method for pH will have exceeded the 15 minute recommended hold time from time of sampling (field analysis is recommended for pH where highly accurate results are needed) | | | |
| pH measurement is determined from the activity of the hydrogen ions using a hydrogen electrode and a reference electrode. | | | |
| Alkalinity measurement is based on the sample's capacity to neutralize acid | | | |
| Conductivity measurement is based on the sample's capacity to convey an electric current | | | |
| SO4-L-IC-N-CL | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| TSS-L-CL | Water | Total Suspended Solids | APHA 2540 D-Gravimetric |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C. | | | |

Reference Information

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

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

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

Chain of Custody Numbers:**GLOSSARY OF REPORT TERMS**

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

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

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

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

mg/L - milligrams per litre.

< - Less than.

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

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

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

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

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

Quality Control Report

Workorder: L2519605

Report Date: 27-OCT-20

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Client: Sperling Hansen Associates Inc.
 #8 - 1225 East Keith Road
 North Vancouver BC V7J 1J3

Contact: Scott Garthwaite

| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|-----------------------------|----------|-----------|------------|-----------|-------|----------|-----------|----------|
| BE-D-L-CCMS-CL Water | | | | | | | | |
| Batch | R5267236 | | | | | | | |
| WG3431348-10 | LCS | TMRM | 102.2 | % | | 80-120 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| WG3431348-14 | LCS | TMRM | 103.6 | % | | 80-120 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| WG3431348-18 | LCS | TMRM | 105.2 | % | | 80-120 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| WG3431348-2 | LCS | TMRM | 106.6 | % | | 80-120 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| WG3431348-6 | LCS | TMRM | 101.9 | % | | 80-120 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| WG3431348-1 | MB | | <0.000020 | mg/L | | 0.00002 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| WG3431348-13 | MB | | <0.000020 | mg/L | | 0.00002 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| WG3431348-17 | MB | | <0.000020 | mg/L | | 0.00002 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| WG3431348-5 | MB | | <0.000020 | mg/L | | 0.00002 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| WG3431348-9 | MB | | <0.000020 | mg/L | | 0.00002 | 23-OCT-20 | |
| Beryllium (Be)-Dissolved | | | | | | | | |
| CL-L-IC-N-CL Water | | | | | | | | |
| Batch | R5263857 | | | | | | | |
| WG3429997-6 | LCS | | | | | | | |
| Chloride (Cl) | | | 102.4 | % | | 85-115 | 21-OCT-20 | |
| WG3429997-5 | MB | | | | | | | |
| Chloride (Cl) | | | <0.10 | mg/L | | 0.1 | 21-OCT-20 | |
| F-L-IC-CL Water | | | | | | | | |
| Batch | R5263857 | | | | | | | |
| WG3429997-6 | LCS | | | | | | | |
| Fluoride (F) | | | 105.9 | % | | 85-115 | 21-OCT-20 | |
| WG3429997-5 | MB | | | | | | | |
| Fluoride (F) | | | <0.020 | mg/L | | 0.02 | 21-OCT-20 | |
| HG-D-CVAA-CL Water | | | | | | | | |
| Batch | R5269634 | | | | | | | |
| WG3433221-10 | LCS | | | | | | | |
| Mercury (Hg)-Dissolved | | | 101.0 | % | | 80-120 | 27-OCT-20 | |
| WG3433221-9 | MB | | | | | | | |
| Mercury (Hg)-Dissolved | | | <0.000005C | mg/L | | 0.000005 | 27-OCT-20 | |

Quality Control Report

Workorder: L2519605

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---------------------------|----------|-----------|--------|-----------|-------|--------|-----------|----------|
| MET-D-CCMS-CL | Water | | | | | | | |
| Batch | R5267236 | | | | | | | |
| WG3431348-10 LCS | | TMRM | | | | | | |
| Aluminum (Al)-Dissolved | | | 109.5 | % | | 80-120 | 23-OCT-20 | |
| Antimony (Sb)-Dissolved | | | 99.7 | % | | 80-120 | 23-OCT-20 | |
| Arsenic (As)-Dissolved | | | 104.7 | % | | 80-120 | 23-OCT-20 | |
| Barium (Ba)-Dissolved | | | 106.5 | % | | 80-120 | 23-OCT-20 | |
| Bismuth (Bi)-Dissolved | | | 99.8 | % | | 80-120 | 23-OCT-20 | |
| Boron (B)-Dissolved | | | 93.2 | % | | 80-120 | 23-OCT-20 | |
| Cadmium (Cd)-Dissolved | | | 105.8 | % | | 80-120 | 23-OCT-20 | |
| Calcium (Ca)-Dissolved | | | 101.4 | % | | 80-120 | 23-OCT-20 | |
| Chromium (Cr)-Dissolved | | | 107.0 | % | | 80-120 | 23-OCT-20 | |
| Cobalt (Co)-Dissolved | | | 105.1 | % | | 80-120 | 23-OCT-20 | |
| Copper (Cu)-Dissolved | | | 104.6 | % | | 80-120 | 23-OCT-20 | |
| Iron (Fe)-Dissolved | | | 101.4 | % | | 80-120 | 23-OCT-20 | |
| Lead (Pb)-Dissolved | | | 99.3 | % | | 80-120 | 23-OCT-20 | |
| Lithium (Li)-Dissolved | | | 100.8 | % | | 80-120 | 23-OCT-20 | |
| Magnesium (Mg)-Dissolved | | | 111.4 | % | | 80-120 | 23-OCT-20 | |
| Manganese (Mn)-Dissolved | | | 107.9 | % | | 80-120 | 23-OCT-20 | |
| Molybdenum (Mo)-Dissolved | | | 99.7 | % | | 80-120 | 23-OCT-20 | |
| Nickel (Ni)-Dissolved | | | 105.7 | % | | 80-120 | 23-OCT-20 | |
| Phosphorus (P)-Dissolved | | | 106.0 | % | | 70-130 | 23-OCT-20 | |
| Potassium (K)-Dissolved | | | 108.0 | % | | 80-120 | 23-OCT-20 | |
| Selenium (Se)-Dissolved | | | 98.5 | % | | 80-120 | 23-OCT-20 | |
| Silicon (Si)-Dissolved | | | 101.2 | % | | 60-140 | 23-OCT-20 | |
| Silver (Ag)-Dissolved | | | 100.0 | % | | 80-120 | 23-OCT-20 | |
| Sodium (Na)-Dissolved | | | 106.8 | % | | 80-120 | 23-OCT-20 | |
| Strontium (Sr)-Dissolved | | | 104.0 | % | | 80-120 | 23-OCT-20 | |
| Sulfur (S)-Dissolved | | | 104.7 | % | | 80-120 | 23-OCT-20 | |
| Thallium (Tl)-Dissolved | | | 99.7 | % | | 80-120 | 23-OCT-20 | |
| Tin (Sn)-Dissolved | | | 100.5 | % | | 80-120 | 23-OCT-20 | |
| Titanium (Ti)-Dissolved | | | 102.0 | % | | 80-120 | 23-OCT-20 | |
| Uranium (U)-Dissolved | | | 99.6 | % | | 80-120 | 23-OCT-20 | |
| Vanadium (V)-Dissolved | | | 107.1 | % | | 80-120 | 23-OCT-20 | |
| Zinc (Zn)-Dissolved | | | 103.2 | % | | 80-120 | 23-OCT-20 | |
| Zirconium (Zr)-Dissolved | | | 96.2 | % | | 80-120 | 23-OCT-20 | |
| WG3431348-14 LCS | | TMRM | | | | | | |

Quality Control Report

Workorder: L2519605

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---------------------------|----------|-----------|--------|-----------|-------|--------|-----------|----------|
| MET-D-CCMS-CL | Water | | | | | | | |
| Batch | R5267236 | | | | | | | |
| WG3431348-14 LCS | | TMRM | | | | | | |
| Aluminum (Al)-Dissolved | | | 113.7 | % | | 80-120 | 23-OCT-20 | |
| Antimony (Sb)-Dissolved | | | 105.4 | % | | 80-120 | 23-OCT-20 | |
| Arsenic (As)-Dissolved | | | 109.7 | % | | 80-120 | 23-OCT-20 | |
| Barium (Ba)-Dissolved | | | 110.4 | % | | 80-120 | 23-OCT-20 | |
| Bismuth (Bi)-Dissolved | | | 102.7 | % | | 80-120 | 23-OCT-20 | |
| Boron (B)-Dissolved | | | 96.1 | % | | 80-120 | 23-OCT-20 | |
| Cadmium (Cd)-Dissolved | | | 112.4 | % | | 80-120 | 23-OCT-20 | |
| Calcium (Ca)-Dissolved | | | 102.8 | % | | 80-120 | 23-OCT-20 | |
| Chromium (Cr)-Dissolved | | | 112.8 | % | | 80-120 | 23-OCT-20 | |
| Cobalt (Co)-Dissolved | | | 109.5 | % | | 80-120 | 23-OCT-20 | |
| Copper (Cu)-Dissolved | | | 109.5 | % | | 80-120 | 23-OCT-20 | |
| Iron (Fe)-Dissolved | | | 105.7 | % | | 80-120 | 23-OCT-20 | |
| Lead (Pb)-Dissolved | | | 102.2 | % | | 80-120 | 23-OCT-20 | |
| Lithium (Li)-Dissolved | | | 103.6 | % | | 80-120 | 23-OCT-20 | |
| Magnesium (Mg)-Dissolved | | | 114.1 | % | | 80-120 | 23-OCT-20 | |
| Manganese (Mn)-Dissolved | | | 111.4 | % | | 80-120 | 23-OCT-20 | |
| Molybdenum (Mo)-Dissolved | | | 104.9 | % | | 80-120 | 23-OCT-20 | |
| Nickel (Ni)-Dissolved | | | 110.5 | % | | 80-120 | 23-OCT-20 | |
| Phosphorus (P)-Dissolved | | | 110.5 | % | | 70-130 | 23-OCT-20 | |
| Potassium (K)-Dissolved | | | 112.9 | % | | 80-120 | 23-OCT-20 | |
| Selenium (Se)-Dissolved | | | 101.2 | % | | 80-120 | 23-OCT-20 | |
| Silicon (Si)-Dissolved | | | 106.4 | % | | 60-140 | 23-OCT-20 | |
| Silver (Ag)-Dissolved | | | 105.4 | % | | 80-120 | 23-OCT-20 | |
| Sodium (Na)-Dissolved | | | 108.7 | % | | 80-120 | 23-OCT-20 | |
| Strontium (Sr)-Dissolved | | | 108.1 | % | | 80-120 | 23-OCT-20 | |
| Sulfur (S)-Dissolved | | | 106.0 | % | | 80-120 | 23-OCT-20 | |
| Thallium (Tl)-Dissolved | | | 103.7 | % | | 80-120 | 23-OCT-20 | |
| Tin (Sn)-Dissolved | | | 106.1 | % | | 80-120 | 23-OCT-20 | |
| Titanium (Ti)-Dissolved | | | 106.3 | % | | 80-120 | 23-OCT-20 | |
| Uranium (U)-Dissolved | | | 102.9 | % | | 80-120 | 23-OCT-20 | |
| Vanadium (V)-Dissolved | | | 112.2 | % | | 80-120 | 23-OCT-20 | |
| Zinc (Zn)-Dissolved | | | 112.6 | % | | 80-120 | 23-OCT-20 | |
| Zirconium (Zr)-Dissolved | | | 102.6 | % | | 80-120 | 23-OCT-20 | |
| WG3431348-18 LCS | | TMRM | | | | | | |

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---------------------------|----------|-----------|--------|-----------|-------|--------|-----------|----------|
| MET-D-CCMS-CL | Water | | | | | | | |
| Batch | R5267236 | | | | | | | |
| WG3431348-18 LCS | | TMRM | | | | | | |
| Aluminum (Al)-Dissolved | | | 111.5 | % | | 80-120 | 23-OCT-20 | |
| Antimony (Sb)-Dissolved | | | 105.5 | % | | 80-120 | 23-OCT-20 | |
| Arsenic (As)-Dissolved | | | 108.0 | % | | 80-120 | 23-OCT-20 | |
| Barium (Ba)-Dissolved | | | 110.2 | % | | 80-120 | 23-OCT-20 | |
| Bismuth (Bi)-Dissolved | | | 103.1 | % | | 80-120 | 23-OCT-20 | |
| Boron (B)-Dissolved | | | 97.5 | % | | 80-120 | 23-OCT-20 | |
| Cadmium (Cd)-Dissolved | | | 108.3 | % | | 80-120 | 23-OCT-20 | |
| Calcium (Ca)-Dissolved | | | 105.7 | % | | 80-120 | 23-OCT-20 | |
| Chromium (Cr)-Dissolved | | | 110.2 | % | | 80-120 | 23-OCT-20 | |
| Cobalt (Co)-Dissolved | | | 107.7 | % | | 80-120 | 23-OCT-20 | |
| Copper (Cu)-Dissolved | | | 106.5 | % | | 80-120 | 23-OCT-20 | |
| Iron (Fe)-Dissolved | | | 104.1 | % | | 80-120 | 23-OCT-20 | |
| Lead (Pb)-Dissolved | | | 103.3 | % | | 80-120 | 23-OCT-20 | |
| Lithium (Li)-Dissolved | | | 106.6 | % | | 80-120 | 23-OCT-20 | |
| Magnesium (Mg)-Dissolved | | | 112.0 | % | | 80-120 | 23-OCT-20 | |
| Manganese (Mn)-Dissolved | | | 108.6 | % | | 80-120 | 23-OCT-20 | |
| Molybdenum (Mo)-Dissolved | | | 106.1 | % | | 80-120 | 23-OCT-20 | |
| Nickel (Ni)-Dissolved | | | 107.0 | % | | 80-120 | 23-OCT-20 | |
| Phosphorus (P)-Dissolved | | | 108.2 | % | | 70-130 | 23-OCT-20 | |
| Potassium (K)-Dissolved | | | 110.7 | % | | 80-120 | 23-OCT-20 | |
| Selenium (Se)-Dissolved | | | 100.1 | % | | 80-120 | 23-OCT-20 | |
| Silicon (Si)-Dissolved | | | 105.5 | % | | 60-140 | 23-OCT-20 | |
| Silver (Ag)-Dissolved | | | 105.5 | % | | 80-120 | 23-OCT-20 | |
| Sodium (Na)-Dissolved | | | 108.9 | % | | 80-120 | 23-OCT-20 | |
| Strontium (Sr)-Dissolved | | | 110.9 | % | | 80-120 | 23-OCT-20 | |
| Sulfur (S)-Dissolved | | | 100.4 | % | | 80-120 | 23-OCT-20 | |
| Thallium (Tl)-Dissolved | | | 102.5 | % | | 80-120 | 23-OCT-20 | |
| Tin (Sn)-Dissolved | | | 105.6 | % | | 80-120 | 23-OCT-20 | |
| Titanium (Ti)-Dissolved | | | 98.3 | % | | 80-120 | 23-OCT-20 | |
| Uranium (U)-Dissolved | | | 101.3 | % | | 80-120 | 23-OCT-20 | |
| Vanadium (V)-Dissolved | | | 108.3 | % | | 80-120 | 23-OCT-20 | |
| Zinc (Zn)-Dissolved | | | 106.7 | % | | 80-120 | 23-OCT-20 | |
| Zirconium (Zr)-Dissolved | | | 103.3 | % | | 80-120 | 23-OCT-20 | |
| WG3431348-2 LCS | | TMRM | | | | | | |

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Workorder: L2519605

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---------------------------|----------|-----------|--------|-----------|-------|--------|-----------|----------|
| MET-D-CCMS-CL | Water | | | | | | | |
| Batch | R5267236 | | | | | | | |
| WG3431348-2 LCS | | TMRM | | | | | | |
| Aluminum (Al)-Dissolved | | | 117.0 | % | | 80-120 | 23-OCT-20 | |
| Antimony (Sb)-Dissolved | | | 105.1 | % | | 80-120 | 23-OCT-20 | |
| Arsenic (As)-Dissolved | | | 113.4 | % | | 80-120 | 23-OCT-20 | |
| Barium (Ba)-Dissolved | | | 112.4 | % | | 80-120 | 23-OCT-20 | |
| Bismuth (Bi)-Dissolved | | | 102.2 | % | | 80-120 | 23-OCT-20 | |
| Boron (B)-Dissolved | | | 101.9 | % | | 80-120 | 23-OCT-20 | |
| Cadmium (Cd)-Dissolved | | | 112.5 | % | | 80-120 | 23-OCT-20 | |
| Calcium (Ca)-Dissolved | | | 106.9 | % | | 80-120 | 23-OCT-20 | |
| Chromium (Cr)-Dissolved | | | 115.1 | % | | 80-120 | 23-OCT-20 | |
| Cobalt (Co)-Dissolved | | | 113.8 | % | | 80-120 | 23-OCT-20 | |
| Copper (Cu)-Dissolved | | | 112.9 | % | | 80-120 | 23-OCT-20 | |
| Iron (Fe)-Dissolved | | | 106.9 | % | | 80-120 | 23-OCT-20 | |
| Lead (Pb)-Dissolved | | | 105.0 | % | | 80-120 | 23-OCT-20 | |
| Lithium (Li)-Dissolved | | | 104.8 | % | | 80-120 | 23-OCT-20 | |
| Magnesium (Mg)-Dissolved | | | 100.3 | % | | 80-120 | 23-OCT-20 | |
| Manganese (Mn)-Dissolved | | | 115.9 | % | | 80-120 | 23-OCT-20 | |
| Molybdenum (Mo)-Dissolved | | | 104.7 | % | | 80-120 | 23-OCT-20 | |
| Nickel (Ni)-Dissolved | | | 113.4 | % | | 80-120 | 23-OCT-20 | |
| Phosphorus (P)-Dissolved | | | 116.1 | % | | 70-130 | 23-OCT-20 | |
| Potassium (K)-Dissolved | | | 118.7 | % | | 80-120 | 23-OCT-20 | |
| Selenium (Se)-Dissolved | | | 102.7 | % | | 80-120 | 23-OCT-20 | |
| Silicon (Si)-Dissolved | | | 108.0 | % | | 60-140 | 23-OCT-20 | |
| Silver (Ag)-Dissolved | | | 105.2 | % | | 80-120 | 23-OCT-20 | |
| Sodium (Na)-Dissolved | | | 113.1 | % | | 80-120 | 23-OCT-20 | |
| Strontium (Sr)-Dissolved | | | 107.8 | % | | 80-120 | 23-OCT-20 | |
| Sulfur (S)-Dissolved | | | 105.2 | % | | 80-120 | 23-OCT-20 | |
| Thallium (Tl)-Dissolved | | | 104.1 | % | | 80-120 | 23-OCT-20 | |
| Tin (Sn)-Dissolved | | | 104.5 | % | | 80-120 | 23-OCT-20 | |
| Titanium (Ti)-Dissolved | | | 106.1 | % | | 80-120 | 23-OCT-20 | |
| Uranium (U)-Dissolved | | | 104.1 | % | | 80-120 | 23-OCT-20 | |
| Vanadium (V)-Dissolved | | | 114.5 | % | | 80-120 | 23-OCT-20 | |
| Zinc (Zn)-Dissolved | | | 111.9 | % | | 80-120 | 23-OCT-20 | |
| Zirconium (Zr)-Dissolved | | | 102.1 | % | | 80-120 | 23-OCT-20 | |
| WG3431348-6 LCS | | TMRM | | | | | | |

Quality Control Report

Workorder: L2519605

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---------------------------|----------|-----------|--------|-----------|-------|--------|-----------|----------|
| MET-D-CCMS-CL | Water | | | | | | | |
| Batch | R5267236 | | | | | | | |
| WG3431348-6 | LCS | TMRM | | | | | | |
| Aluminum (Al)-Dissolved | | 107.9 | | % | | 80-120 | 23-OCT-20 | |
| Antimony (Sb)-Dissolved | | 97.1 | | % | | 80-120 | 23-OCT-20 | |
| Arsenic (As)-Dissolved | | 104.9 | | % | | 80-120 | 23-OCT-20 | |
| Barium (Ba)-Dissolved | | 103.3 | | % | | 80-120 | 23-OCT-20 | |
| Bismuth (Bi)-Dissolved | | 97.2 | | % | | 80-120 | 23-OCT-20 | |
| Boron (B)-Dissolved | | 91.3 | | % | | 80-120 | 23-OCT-20 | |
| Cadmium (Cd)-Dissolved | | 105.7 | | % | | 80-120 | 23-OCT-20 | |
| Calcium (Ca)-Dissolved | | 101.4 | | % | | 80-120 | 23-OCT-20 | |
| Chromium (Cr)-Dissolved | | 106.3 | | % | | 80-120 | 23-OCT-20 | |
| Cobalt (Co)-Dissolved | | 105.3 | | % | | 80-120 | 23-OCT-20 | |
| Copper (Cu)-Dissolved | | 105.0 | | % | | 80-120 | 23-OCT-20 | |
| Iron (Fe)-Dissolved | | 99.3 | | % | | 80-120 | 23-OCT-20 | |
| Lead (Pb)-Dissolved | | 98.8 | | % | | 80-120 | 23-OCT-20 | |
| Lithium (Li)-Dissolved | | 99.7 | | % | | 80-120 | 23-OCT-20 | |
| Magnesium (Mg)-Dissolved | | 107.9 | | % | | 80-120 | 23-OCT-20 | |
| Manganese (Mn)-Dissolved | | 107.4 | | % | | 80-120 | 23-OCT-20 | |
| Molybdenum (Mo)-Dissolved | | 98.6 | | % | | 80-120 | 23-OCT-20 | |
| Nickel (Ni)-Dissolved | | 105.7 | | % | | 80-120 | 23-OCT-20 | |
| Phosphorus (P)-Dissolved | | 105.9 | | % | | 70-130 | 23-OCT-20 | |
| Potassium (K)-Dissolved | | 107.9 | | % | | 80-120 | 23-OCT-20 | |
| Selenium (Se)-Dissolved | | 95.5 | | % | | 80-120 | 23-OCT-20 | |
| Silicon (Si)-Dissolved | | 99.5 | | % | | 60-140 | 23-OCT-20 | |
| Silver (Ag)-Dissolved | | 99.4 | | % | | 80-120 | 23-OCT-20 | |
| Sodium (Na)-Dissolved | | 105.8 | | % | | 80-120 | 23-OCT-20 | |
| Strontium (Sr)-Dissolved | | 103.8 | | % | | 80-120 | 23-OCT-20 | |
| Sulfur (S)-Dissolved | | 102.5 | | % | | 80-120 | 23-OCT-20 | |
| Thallium (Tl)-Dissolved | | 98.6 | | % | | 80-120 | 23-OCT-20 | |
| Tin (Sn)-Dissolved | | 98.7 | | % | | 80-120 | 23-OCT-20 | |
| Titanium (Ti)-Dissolved | | 98.9 | | % | | 80-120 | 23-OCT-20 | |
| Uranium (U)-Dissolved | | 97.8 | | % | | 80-120 | 23-OCT-20 | |
| Vanadium (V)-Dissolved | | 107.4 | | % | | 80-120 | 23-OCT-20 | |
| Zinc (Zn)-Dissolved | | 104.7 | | % | | 80-120 | 23-OCT-20 | |
| Zirconium (Zr)-Dissolved | | 96.9 | | % | | 80-120 | 23-OCT-20 | |
| WG3431348-1 | MB | | | | | | | |



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Environmental

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|---------------------------|--------|--------------|------------|-----------|-------|-----|----------|-----------|
| MET-D-CCMS-CL | | Water | | | | | | |
| Batch R5267236 | | | | | | | | |
| WG3431348-9 | MB | | | | | | | |
| Aluminum (Al)-Dissolved | | | <0.0010 | | mg/L | | 0.001 | 23-OCT-20 |
| Antimony (Sb)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 23-OCT-20 |
| Arsenic (As)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 23-OCT-20 |
| Barium (Ba)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 23-OCT-20 |
| Bismuth (Bi)-Dissolved | | | <0.000050 | | mg/L | | 0.00005 | 23-OCT-20 |
| Boron (B)-Dissolved | | | <0.010 | | mg/L | | 0.01 | 23-OCT-20 |
| Cadmium (Cd)-Dissolved | | | <0.0000050 | | mg/L | | 0.000005 | 23-OCT-20 |
| Calcium (Ca)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 23-OCT-20 |
| Chromium (Cr)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 23-OCT-20 |
| Cobalt (Co)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 23-OCT-20 |
| Copper (Cu)-Dissolved | | | <0.00020 | | mg/L | | 0.0002 | 23-OCT-20 |
| Iron (Fe)-Dissolved | | | <0.010 | | mg/L | | 0.01 | 23-OCT-20 |
| Lead (Pb)-Dissolved | | | <0.000050 | | mg/L | | 0.00005 | 23-OCT-20 |
| Lithium (Li)-Dissolved | | | <0.0010 | | mg/L | | 0.001 | 23-OCT-20 |
| Magnesium (Mg)-Dissolved | | | <0.0050 | | mg/L | | 0.005 | 23-OCT-20 |
| Manganese (Mn)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 23-OCT-20 |
| Molybdenum (Mo)-Dissolved | | | <0.000050 | | mg/L | | 0.00005 | 23-OCT-20 |
| Nickel (Ni)-Dissolved | | | <0.00050 | | mg/L | | 0.0005 | 23-OCT-20 |
| Phosphorus (P)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 23-OCT-20 |
| Potassium (K)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 23-OCT-20 |
| Selenium (Se)-Dissolved | | | <0.000050 | | mg/L | | 0.00005 | 23-OCT-20 |
| Silicon (Si)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 23-OCT-20 |
| Silver (Ag)-Dissolved | | | <0.000010 | | mg/L | | 0.00001 | 23-OCT-20 |
| Sodium (Na)-Dissolved | | | <0.050 | | mg/L | | 0.05 | 23-OCT-20 |
| Strontium (Sr)-Dissolved | | | <0.00020 | | mg/L | | 0.0002 | 23-OCT-20 |
| Sulfur (S)-Dissolved | | | <0.50 | | mg/L | | 0.5 | 23-OCT-20 |
| Thallium (Tl)-Dissolved | | | <0.000010 | | mg/L | | 0.00001 | 23-OCT-20 |
| Tin (Sn)-Dissolved | | | <0.00010 | | mg/L | | 0.0001 | 23-OCT-20 |
| Titanium (Ti)-Dissolved | | | <0.00030 | | mg/L | | 0.0003 | 23-OCT-20 |
| Uranium (U)-Dissolved | | | <0.000010 | | mg/L | | 0.00001 | 23-OCT-20 |
| Vanadium (V)-Dissolved | | | <0.00050 | | mg/L | | 0.0005 | 23-OCT-20 |
| Zinc (Zn)-Dissolved | | | <0.0010 | | mg/L | | 0.001 | 23-OCT-20 |
| Zirconium (Zr)-Dissolved | | | <0.00020 | | mg/L | | 0.0002 | 23-OCT-20 |
| NO2-L-IC-N-CL | | Water | | | | | | |

NO2-L-IC-N-CL

Water

Quality Control Report

Workorder: L2519605

Report Date: 27-OCT-20

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|-------------------------------------------|--------------|-----------|---------|-----------|-------|-----|--------|-----------|
| NO2-L-IC-N-CL | Water | | | | | | | |
| Batch | R5263857 | | | | | | | |
| WG3429997-6 | LCS | | | | | | | |
| Nitrite (as N) | | | 103.0 | | % | | 90-110 | 21-OCT-20 |
| WG3429997-5 | MB | | | | | | | |
| Nitrite (as N) | | | <0.0010 | | mg/L | | 0.001 | 21-OCT-20 |
| NO3-L-IC-N-CL | Water | | | | | | | |
| Batch | R5263857 | | | | | | | |
| WG3429997-6 | LCS | | | | | | | |
| Nitrate (as N) | | | 103.4 | | % | | 90-110 | 21-OCT-20 |
| WG3429997-5 | MB | | | | | | | |
| Nitrate (as N) | | | <0.0050 | | mg/L | | 0.005 | 21-OCT-20 |
| PH/EC/ALK-CL | Water | | | | | | | |
| Batch | R5265957 | | | | | | | |
| WG3430715-11 | LCS | | | | | | | |
| Conductivity (EC) | | | 95.1 | | % | | 90-110 | 22-OCT-20 |
| Alkalinity, Total (as CaCO ₃) | | | 100.7 | | % | | 85-115 | 22-OCT-20 |
| WG3430715-14 | LCS | | | | | | | |
| Conductivity (EC) | | | 95.2 | | % | | 90-110 | 22-OCT-20 |
| Alkalinity, Total (as CaCO ₃) | | | 99.7 | | % | | 85-115 | 22-OCT-20 |
| WG3430715-10 | MB | | | | | | | |
| Conductivity (EC) | | | <2.0 | | uS/cm | | 2 | 22-OCT-20 |
| Bicarbonate (HCO ₃) | | | <5.0 | | mg/L | | 5 | 22-OCT-20 |
| Carbonate (CO ₃) | | | <5.0 | | mg/L | | 5 | 22-OCT-20 |
| Hydroxide (OH) | | | <5.0 | | mg/L | | 5 | 22-OCT-20 |
| Alkalinity, Total (as CaCO ₃) | | | <2.0 | | mg/L | | 2 | 22-OCT-20 |
| WG3430715-13 | MB | | | | | | | |
| Conductivity (EC) | | | <2.0 | | uS/cm | | 2 | 22-OCT-20 |
| Bicarbonate (HCO ₃) | | | <5.0 | | mg/L | | 5 | 22-OCT-20 |
| Carbonate (CO ₃) | | | <5.0 | | mg/L | | 5 | 22-OCT-20 |
| Hydroxide (OH) | | | <5.0 | | mg/L | | 5 | 22-OCT-20 |
| Alkalinity, Total (as CaCO ₃) | | | <2.0 | | mg/L | | 2 | 22-OCT-20 |
| SO4-L-IC-N-CL | Water | | | | | | | |
| Batch | R5263857 | | | | | | | |
| WG3429997-6 | LCS | | | | | | | |
| Sulfate (SO ₄) | | | 100.6 | | % | | 85-115 | 21-OCT-20 |
| WG3429997-5 | MB | | | | | | | |
| Sulfate (SO ₄) | | | <0.050 | | mg/L | | 0.05 | 21-OCT-20 |
| TSS-L-CL | Water | | | | | | | |

Quality Control Report

Workorder: L2519605

Report Date: 27-OCT-20

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| Test | Matrix | Reference | Result | Qualifier | Units | RPD | Limit | Analyzed |
|------------------------|------------|-----------|--------|-----------|-------|-----|--------|-----------|
| TSS-L-CL | Water | | | | | | | |
| Batch | R5268009 | | | | | | | |
| WG3429618-23 | LCS | | | | | | | |
| Total Suspended Solids | | | 85.9 | | % | | 85-115 | 22-OCT-20 |
| WG3429618-22 | MB | | | | | | | |
| Total Suspended Solids | | | <1.0 | | mg/L | | 1 | 22-OCT-20 |

Quality Control Report

Workorder: L2519605

Report Date: 27-OCT-20

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Legend:

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

Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

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

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

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



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 -

Canada Toll Free: 1 800 668 9878

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| | | | | | |
|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------|
| Report To Contact and company name below will appear on the final report | | Reports / Recipients | | Turnaround Time (TAT) Requested | |
| Company: Sperling Hansen Associates Inc. | | Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA: <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A | | <input checked="" type="checkbox"/> Routine [R] if received <input type="checkbox"/> 4 day [P4] if received <input type="checkbox"/> 3 day [P3] if received <input type="checkbox"/> 2 day [P2] if received <input type="checkbox"/> 1 day [E] if received & <input type="checkbox"/> Same day [E2] if received & fees may apply to rush | |
| Contact: Scott Garthwaite | | Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX | |  L2519605-COEC | |
| Phone: 778-471-7088 | | Email 1 or Fax sgarthwaite@sperlinghansen.com | | | |
| Company address below will appear on the final report | | Email 2 chetherington@sperlinghansen.com | | | |
| Street: 1225 East Keith Road | | Email 3 | | | |
| City/Province: North Vancouver, B.C. | | | | | |
| Postal Code: V7J 1J3 | | | | | |
| Invoice To Same as Report To <input checked="" type="checkbox"/> <input type="checkbox"/> NO | | Invoice Recipients | | dd-mmm-yy hh:mm am/pm | |
| Copy of Invoice with Report <input checked="" type="checkbox"/> <input type="checkbox"/> NO | | Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX | | For all tests with rush TATs requested, please contact your AM to confirm availability. | |
| Company: | | Email 1 or Fax rhajjafari@sperlinghansen.com | | | |
| Contact: | | Email 2 | | | |
| Project Information | | | | | |
| Oil and Gas Required Fields (client use) | | | | | |
| ALS Account # / Quote #: | | AFE/Cost Center: PO# | | | |
| Job #: 20050 Cranbrook | | Major/Minor Code: Routing Code: | | | |
| PO / AFE: | | Requisitioner: | | | |
| LSD: | | Location: | | | |
| ALS Lab Work Order # (ALS use only): | | ALS Contact: Dean Watt | Sampler: <i>Tyler McBride</i> | | |
| ALS Sample # (ALS use only) | Sample Identification and/or Coordinates (This description will appear on the report) | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | SAMPLES ON HOLD |
| | TH4-A E865129 | 19-10-20 | | Groundwater | |
| | E265122 | 11 | | Groundwater | |
| | E265123 | 11 | | Groundwater | |
| | E265124 | 11 | | Groundwater | |
| | E265125 | 11 | | Groundwater | |
| | E265127 | 11 | | Groundwater | |
| | | | | | |
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| | | | | | |
| | | | | | |
| Drinking Water (DW) Samples ¹ (client use) | | Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only) | | | |
| Are samples taken from a Regulated DW System? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES | | British Columbia Contaminated Sites Regulation Stage 10 Amendment (NOV, 2017) | | | |
| Are samples for human consumption/ use? <input type="checkbox"/> NO <input checked="" type="checkbox"/> YES | | British Columbia Approved and Working Water Quality Guidelines (MAY, 2015) | | | |
| SHIPMENT RELEASE (client use) INITIAL SHIPMENT RECEPTION (ALS use only) FINAL SHIPMENT RECEPTION (ALS use only) | | | | | |
| Released by: <i>Tyler McBride</i> | | Date: Oct 20, 2020 | Time: Received by: <i>B</i> | Date: <i>10/21</i> | Time: <i>8:30</i> Received by: Date: Time: |
| WHITE - LABORATORY COPY YELLOW - CLIENT COPY | | | | | |

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

END OF REPORT
