

APPENDIX E.12

2020 Groundwater Monitoring Report

2020 GROUNDWATER MONITORING PROGRAM MARY RIVER MINE PROJECT



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LIMITATIONS OF REPORT

This report and its contents are intended for the sole use of Baffinland Iron Mines Corporation and their agents. Tetra Tech Canada Inc. (Tetra Tech) does not accept any responsibility for the accuracy of any of the data, the analysis, or the recommendations contained or referenced in the report when the report is used or relied upon by any Party other than Baffinland Iron Mines Corporation, or for any Project other than the proposed development at the subject site. Any such unauthorized use of this report is at the sole risk of the user. Use of this document is subject to the Limitations on the Use of this Document attached in the Appendix or Contractual Terms and Conditions executed by both parties.

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Baffinland Iron Mines Corporation (Baffinland) for the provision of environmental consulting services pertaining to Baffinland's 2020 Groundwater Monitoring Program (2020 Monitoring Program) at the Non-Hazardous Waste Landfill Facility (the Landfill Facility) located at the Mary River Mine Project (the Project). The Project site is located at the northern end of Baffin Island in the Qikiqtaaluk Region of Nunavut, Canada and approximately 550 km north of the Arctic Circle (Figure 1).

The 2020 Monitoring Program is a requirement of Baffinland's Project Certification No. 005 – Amendment No. 2 issued to Baffinland by the Nunavut Impact Review Board (NIRB) for the Project. Tetra Tech conducted the 2020 Monitoring Program in accordance with Condition 23 of Project Certification No. 005 – Amendment No. 2 and focused on the assessment of potential impacts to groundwater as a result of the operations of the Landfill Facility at the Project.

This document was prepared under Tetra Tech's Limitations on the Use of this Document (Appendix A).

1.1 Objective

The objectives of the 2020 Monitoring Program were to:

- Evaluate the effectiveness of Baffinland's groundwater monitoring program and make recommendations for updates to the monitoring program; and
- Continue to monitor, prevent, and/or mitigate any potential effects on groundwater within the Landfill Facility area of the Project.

1.2 Scope of Work

To meet the objectives, the scope of work for the 2020 Monitoring Program included the following tasks:

Task 1 – Desktop Review

This task included the following sub-tasks:

- Sub-task 1: Review of groundwater monitoring data from 2017 through 2019 to identify any trends in groundwater quality, groundwater flow, and any discernable information about the condition of subsurface and stratigraphy of the investigated area; and
- Sub-task 2: Review the methodologies used in the execution of the 2017 to 2019 monitoring programs including the use of drive-point piezometers and low-flow sampling techniques and provide recommendations to improve sample collection methods, repeatability of sample collection, and installation methodologies and materials within the context of assessing shallow groundwater flow in a permafrost condition.

Tetra Tech completed Sub-task 1 prior to initiating Sub-task 2 and documented the methods, results, and recommendations for Sub-task 2 in the report Desktop Review 2020 Groundwater Monitoring Program Mary River Mine Project, Nunavut dated August 14, 2020 (Appendix B). The report identifies deficiencies based on the review of the 2017 through 2019 monitoring program reports and provides recommendations to be implemented in the 2020 Monitoring Program and in future monitoring programs.

The recommendations for the 2020 Monitoring Program were implemented under Task 2 and Task 3 of the project as discussed in this report.

Task 2 – Fieldwork

The fieldwork included a site visit and implementation of the 2020 Monitoring Program. The site visit was conducted to evaluate the findings of the desktop review report (Tetra Tech, 2020), and the ability to implement the recommendations.

The 2020 Monitoring Program was implemented during the site visit, and consisted of:

- Used temporary drive-point piezometers at the locations monitored in previous monitoring programs and the installation of additional drive-point piezometers at locations proposed in the desktop review report;
- Measurement of groundwater levels in all piezometers; and
- Collection of groundwater samples from all piezometers as per the analytical methodology discussed in Section 3.1.2.

Task 3 – Data Analysis and Reporting

The methods applied to conduct Task 2 and the results are provided in the following sections. The report also includes an interpretation of the data collected and recommendations to implement during future monitoring programs.

2.0 BACKGROUND INFORMATION

2.1 Site Description

The Mary River Mine is a high-grade iron ore mine on Baffin Island, approximately 1,000 km north of Iqaluit. The Landfill Facility located at the Project receives inert, non-combustible waste generated by Project activities including plastics, cement, used construction materials, scrap metal, pipes, glass, wood etc. Hazardous wastes are stored in lined Hazardous Waste Berms (HWBs) or other suitable storage locations onsite and shipped off-site to approved hazardous waste disposal and recycling facilities. Combustible non-hazardous waste generated at the Project, such as food waste, food packaging, paper products, and cigarette butts are incinerated onsite in incinerators located in waste management buildings.

Baffinland has been conducting groundwater monitoring and sampling at the Landfill Facility since 2017, using temporary drive-point piezometers to monitor and collect groundwater samples near the bottom of the active layer (the layer above the permafrost; approximately 1.1 to 1.8 meters below ground [mbg]) in the vicinity of the Landfill Facility.

A geotechnical investigation conducted by Tetra Tech at the Project airstrip (located approximately 2 km from the Landfill Facility) in February 2019 concluded that the overburden overlying the ground ice consists of a gravelly sand (Tetra Tech 2019).

Photographs of each monitoring location are provided in Appendix C.

2.2 Monitoring Network

Baffinland monitored groundwater levels and groundwater quality during the 2017 to 2019 monitoring programs using temporary drive-point piezometers advanced to depths of refusal; inferred to be the bottom of the active layer and the top of the permafrost.

Due to the variability in groundwater quality, and to improve data collection repeatability, it was recommended in Task 1 that permanent monitoring wells be drilled, installed, and developed at the existing and proposed monitoring locations. In addition to use for collecting water level measurements and groundwater quality data, the permanent monitoring wells would be used to conduct hydraulic conductivity tests. Due to the logistical difficulties in obtaining a drilling rig, and personnel on short notice for remote work permanent wells could not be installed during the 2020 Monitoring Program. The installation of permanent monitoring wells will be considered in 2021 and, if feasible, incorporated into the 2021 Monitoring Program and subsequent monitoring programs. The rationale for use of permanent wells is provided in the Desktop Review (Appendix B).

The 2020 Monitoring Program was conducted using the same methodology as the 2017 to 2019 monitoring programs and involved the installation of temporary drive-point piezometers up-gradient and down-gradient of the Landfill Facility and collection of water samples near the depth of the active layer (approximately 1.1 to 1.8 meters). During the site visit, the drive-point piezometers installed in 2019 were observed to be still present and intact; therefore, they were utilized for the 2020 Monitoring Program. Three (3) additional drive-point piezometers, as recommended in Task 1, were installed to further establish and validate current background conditions and further assess down-gradient groundwater quality.

Table A summarizes information about the piezometers monitored during the 2017 to 2019 monitoring programs and the additional piezometers installed during the 2020 Monitoring Program, including piezometer depth. The locations of the piezometers monitored during the 2017 to 2020 monitoring programs are shown in Figure 2. The reporting nomenclature used for monitoring location and sampling identity (Sampling ID) in the 2017 to 2019 monitoring programs was followed in the 2020 Monitoring Program. Similar to the 2017 to 2019 monitoring programs, the 2020 Monitoring Program was conducted in September; the time at which the permafrost active layer within the Project area is expected to be at its maximum depth during the year.

Depths of the active layer during the 2020 Monitoring Program ranged between 1.08 m at MS-LF-GW-REF1 to 1.80 at MS-LF-GW1 and MS-LF-GW-3, which is consistent with active layer depths measured during 2019 and generally consistent with those measured in previous years.

Table A: Summary of Monitoring Locations and Depths

Monitoring Location	Sampling ID	Sample Year	Easting (UTM; NAD83; Zone 17 N)	Northing (UTM; NAD83; Zone 17 N)	Distance Between Monitoring Events (m)	Monitoring Depth (mbg) ¹
Down-gradient – GW1	MS-LF-GW1-17	2017	560809	7912608	-	1.3
	MS-LF-GW1-18	2018	560817	7912598	12	1.1
	MS-LF-GW1-19	2019	560816	7912599	1	1.8
	MS-LF-GW1-20	2020	560816	7912599	0	1.8
Down-gradient – GW2	MS-LF-GW2-17	2017	560811	7912487	-	1.3
	MS-LF-GW2-18	2018	560812	7912487	0.5	1.2
	MS-LF-GW3-19 ²	2019	560812	7912486	1	1.6
	MS-LF-GW2-20	2020	560812	7912486	0	1.6
Down-gradient – GW3	MS-LF-GW3-17	2017	560825	7912467	-	1.1
	MS-LF-GW3-18	2018	560822	7912461	7	1.0
	MS-LF-GW2-19 ²	2019	560823	7912460	0.7	1.8

Monitoring Location	Sampling ID	Sample Year	Easting (UTM; NAD83; Zone 17 N)	Northing (UTM; NAD83; Zone 17 N)	Distance Between Monitoring Events (m)	Monitoring Depth (mbg) ¹
	MS-LF-GW3-20	2020	560823	7912460	0	1.8
Down-gradient – GW4 ³	MS-LF-GW4-20	2020	560753	7912485	-	1.6
Down-gradient – GW5 ³	MS-LF-GW5-20	2020	560714	7912483	-	1.7
Up-gradient – REF1	MS-LF-GW-REF1-18	2018	560840	7912639	-	0.8
	MS-LF-GW-REF1-19	2019	560838	7912637	2	1.1
	MS-LF-GW-REF1-20	2020	560838	7912637	0	1.1
Up-gradient – REF2 south	MS-LF-GW-REF2-17	2017	561118	7912248	-	1.5
Up-gradient – REF2	MS-LF-GW-REF2-18	2018	560875	7912406	-	1.1
	MS-LF-GW-REF2-19	2019	560878	7912408	4	1.6
	MS-LF-GW-REF2-20	2020	560878	7912408	0	1.6
Up-gradient – REF3 ³	MS-LF-GW-REF3-20	2020	560959	7912585	-	1.1

1 Meters below ground (mbg)

2 Samples collected from MS-LF-GW2 and MS-LF-GW3 during the September 2019 groundwater sampling event are suspected to have been interchanged as detailed in Appendix B.

3 Additional piezometers installed in 2020.

3.0 METHODS

The following sections describe the methods followed during the fieldwork and data evaluation portions of the 2020 Monitoring Program at the Project.

3.1 Fieldwork Program

3.1.1 Drive-Point Piezometer Installation

On September 3, 2020, Tetra Tech personnel assisted Baffinland personnel with the installation of the drive-point piezometers at the three (3) additional monitoring locations (MS-LF-GW-REF3, MS-LF-GW4, and MS-LF-GW5).

The additional up-gradient piezometer (MS-LF-GW-REF3) was recommended to further establish background conditions and to validate the results from the current background locations. This piezometer was installed in the east to northeast area of the site, and further up-gradient of the existing reference piezometer MS-LF-GW-REF1

(Figure 2). The two (2) additional down-gradient piezometers (MS-LF-GW4 and MS-LF-GW5) were installed to improve the data set for groundwater quality monitoring. These piezometers were installed to the west of the existing MS-LF-GW2 and MS-LF-GW3 piezometers and in the estimated direction of groundwater flow (Figure 2). The down-gradient monitoring locations were established within approximately 1 m (MS-LF-GW3) to 90 m (MS-LF-GW5) of the limits of the Landfill Facility (wire fence).

Piezometer MS-LF-GW-REF3 was found to be dry following installation despite installation at three different locations within approximately 10 m in attempts to intersect the groundwater table. The down-gradient locations (MS-LF-GW4 and MS-LF-GW5) were adjusted slightly due to topographic restrictions based on field observations and installed cross-gradient along the hilled ridge southeast of the Landfill Facility.

Each drive-point piezometer was installed by advancing it by hand into the ground until the depth of refusal was reached. Depth of refusal was inferred to be the bottom of the active zone (top of the permafrost zone). Upon reaching the depth of refusal, the depth was recorded and the location was assigned a well ID. The installation depths are presented in Table A (Section 2.0). Similar to the previous years, the drive-point piezometers installed in 2020 were Solinst Model 615 Drive-Point Piezometers equipped with 5/8-inch x 1/2 inch low density polyethylene (LDPE) open tubing. Drive-point piezometers installed in 2019 were still present and intact and were therefore used for measuring water level depths and collecting groundwater samples during the 2020 Monitoring Program.

3.1.2 Groundwater Monitoring and Sampling

The low-flow sampling method used in the 2019 Monitoring Program was continued in the 2020 Monitoring Program. On September 8, 2020, Tetra Tech and Baffinland personnel conducted the groundwater monitoring and sampling in accordance with Tetra Tech's monitoring and sampling work methods which meet industry standards and include:

- Measuring groundwater levels within each drive-point piezometer using a Solinst Model 102 Coaxial Water Level Meter.
- Purging groundwater from each drive-point piezometer to remove the standing well water until field parameters (pH, electrical conductivity [EC], temperature) stabilized prior to sampling. The purged volume is provided in Table 2.

The parameters were considered stable when:

- temperature readings are within 0.2°C
 - pH readings are within 0.2 pH units
 - EC readings are within 3%
- Purging was completed using a Solinst Model 410 Peristaltic Pump equipped with 5/8" outside diameter (OD) silicone open tubing. Discharge rate was kept at the lowest rate.
 - Measuring field parameters (temperature, pH, and EC) using portable field equipment (YSI ProDSS Handheld Water Quality Meter) from a sample collected at each drive-point piezometer.
 - Collecting groundwater samples in laboratory-supplied sampling containers, filtering and/or preserving samples as required by the laboratory and storing and transporting samples on ice in laboratory provided coolers. The groundwater samples collected were submitted by Baffinland personnel to ALS Environmental (ALS) in Yellowknife, Northwest Territories under Chain-of-Custody (CoC) for laboratory chemical analyses of the parameters as recommended in the desktop review report (Tetra Tech 2020). Groundwater sample analysis included routine water quality parameters (pH, EC, TSS, TDS, turbidity, and major ions), nutrients (TKN, ammonia, nitrate, total organic carbon, total phosphorus, dissolved organic carbon), dissolved and total metals including mercury, oil and grease, and petroleum hydrocarbon (PHC) fractions F1 to F4. Information on the analytical methods is provided with the ALS analytical reports attached in Appendix D.

Due to a field error in the CoC, the hydrocarbon samples were analyzed for total organic carbon (TOC) and dissolved organic carbon (DOC) and not for BTEX. In 2021, samples will also be analyzed for BTEX.

3.2 Data Evaluation

Currently, there are no established groundwater guidelines for Nunavut. In recognizing the need for a nationally consistent approach for assessing and managing groundwater at federal contaminated sites, Environment Canada developed the Federal Interim Groundwater Quality (FIGQ) Guidelines which are based on a critical review and evaluation of existing approaches used by other jurisdictions in Canada and in other countries. The FIGQ Guidelines were developed as an interim measure until Canadian Environmental Quality Guidelines (CEQGs) for groundwater are available.

In Canada, the Canadian Water Quality Guidelines (WQGs) provide a consistent basis for assessing water quality conditions. These WQGs are derived for the protection of four major water uses (CCME 1999), including: (i) Drinking water supply; (ii) Recreational use and aesthetics; (iii) Freshwater and marine aquatic life and wildlife; and, (iv) Agricultural water uses (irrigation and livestock watering). The Canadian WQGs are intended to protect the designated uses of aquatic ecosystems throughout the country. Nevertheless, it is possible that the guidelines are over- or under-protective at sites with unique conditions. In developing site-specific WQG, objectives are developed by identifying the most sensitive water use and adjusting the WQG for that water use to account for the site-specific factors. While this approach is effective at most sites, atypical conditions exist at certain locations which necessitate further modification of the generic WQGs.

The current land use at the Project is industrial. As per the geotechnical investigation conducted in 2019, the overburden overlying the ground ice consists of a gravelly sand (Tetra Tech 2019). Therefore, the groundwater quality at the Project was compared to the FIGQ Tier 1 (generic groundwater guidelines) for Industrial/Commercial land use based on coarse soil type and if absent, the 2019 Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Aquatic Life (Freshwater, Updated 2019) was used for comparison purposes.

3.3 Quality Assurance / Quality Control

As part of the Quality Assurance/Quality Control (QA/QC) program for the Project, the following protocols were used by Tetra Tech during the 2020 Monitoring Program:

- All drive-point piezometers were purged prior to sampling using dedicated tubing;
- All monitoring and sampling equipment were cleaned or changed between monitoring locations to minimize the potential for cross-contamination;
- One blind duplicate sample was collected during the sampling event;
- A field blank sample was collected;
- A laboratory-prepared trip blank sample was transported with the samples; and
- Groundwater samples were collected in laboratory supplied bottles and preserved as required, stored in a cooler at 4°C, and transported to ALS for chemical analysis.

Additionally, laboratory and field quality QA/QC procedures were followed to ensure analytical results were accurate and precise. The laboratory QA/QC program included the analysis of laboratory method blanks, duplicates, surrogate recovery, and chemical spikes. Surrogate recovery is analyzed by spiking samples with known quantities of surrogate chemicals which have similar chemical properties to the parameters being analyzed. The reported

recovery provides an indication of the analytical method accuracy. Chemical spikes are conducted by adding known concentrations of the analyte of interest to a sample to evaluate the effects of the sample matrix on the analytical method. ALS is a Canadian Association for Laboratory Accreditation Inc. certified laboratory that uses recognized and certified methods to conduct laboratory analyses.

3.4 Groundwater Response Plan

The Groundwater Response Plan provides a framework of actions that are to be followed in the event that analyzed groundwater parameter concentrations exceed the FIGQ Guidelines, are considered to be outside of the historical concentration ranges for the particular monitoring location, and/or significant increasing concentration trends (reportable statistical increasing trend) are observed within the monitoring network.

When a guideline exceedance, data outlier, or increasing concentration trend is detected at a monitoring location, the response action order as proposed in the desktop review report (Tetra Tech 2020) is as follows:

1. Review the sampling and laboratory methods, procedures, results, and QA/QC results;
2. Review the historical results and baseline conditions for the locations exhibiting exceedances or increasing trends;
3. Review the historical and current site operations and activities to assess potential causes;
4. Resample, if feasible and seasonal restrictions allow, and analyze the groundwater from the locations where parameters of potential concern were identified; and
5. Assess the options for prevention, control, risk management, or remediation of identified contamination.

3.5 Site Reconnaissance for Additional Monitoring Areas

To date, the Monitoring Program at Mary River has focused on the landfill facility and this report provides an assessment of potential impacts to groundwater as a result of the operations of the Landfill Facility. Tetra Tech, however, conducted a site reconnaissance survey on September 4, 6, and 9, 2020 to determine if other Project areas could potentially affect the groundwater and if future Monitoring Programs will be required for these areas.

Potential areas, in addition to the landfill, Tetra Tech surveyed in 2020 included the Mine Site Quarry, Mine Site Crusher Facility, Mine Site Waste Rock Facility, and Milne Port Site. Air photos with description on overall slopes, surficial material type, and feasibility for installation of push probes as well as site reconnaissance photographs of the areas are provided in Appendix E. The information obtained during the reconnaissance survey will be assessed in conjunction with available geological, hydrogeological, topographical, and other relevant information to determine potential sources of groundwater impacts, existing pathways, and potential nearby receptors. Based on the review of information, future Monitoring Programs for these areas will be developed and submitted in a separate cover for implementation in 2021 and subsequent years.

4.0 RESULTS

The results of the 2020 Monitoring Program are presented in Section 4.1 and Section 4.2.

4.1 Groundwater Elevations and Flow Direction

A summary of the drive-point piezometer installations, groundwater level measurements collected between 2017 and 2020, and calculated groundwater elevations are provided in Table 1. The groundwater elevation contours for the 2020 Monitoring Program are illustrated in Figure 3. Hydrographs of each well is presented in Figure 4.

Depth to groundwater at the Project site measured during the 2020 Monitoring Program ranged from 0.78 mbg to 1.27 mbg.

The contoured groundwater elevations suggest that the shallow groundwater flow direction across the Landfill Facility during the 2020 Monitoring Program was towards the southwest under an estimated horizontal hydraulic gradient of 0.03 m/m (Figure 3). This result is consistent with the local surface slope in the area, demonstrating that the shallow groundwater flow within the active zone is influenced by the local topography.

Groundwater elevations at the drive-point piezometers have remained generally stable since monitoring began in 2017 (Figure 4).

As per the recommendation of the desktop review report (Tetra Tech 2020), once permanent monitoring wells are installed, hydraulic conductivity tests of the active zone will be conducted to estimate groundwater flow velocity.

4.2 Groundwater Analytical Results

In September 2020, groundwater samples were collected from the five (5) piezometers down-gradient of the Landfill Facility and at two (2) reference monitoring piezometers (MW-LF-GW-REF1 and MW-LF-GW-REF2) up-gradient of the Landfill Facility. Analytical groundwater quality results for the samples collected during the 2020 Monitoring Program are presented in Table 2. The 2020 Monitoring Program laboratory certificate of analysis is presented in Appendix D.

All parameters were within the FIGQ Guidelines with the exception of:

- Chloride concentrations ranged from 1.97 mg/L to 531 mg/L and were greater than the FIGQ Guideline (120 mg/L) at MS-LF-GW1 (233 mg/L), MS-LF-GW2 (131 mg/L), and MS-LF-GW3 (531 mg/L).
- Sulphate concentrations ranged from 13.3 mg/L to 937 mg/L and were greater than the FIGQ Guideline (100 mg/L) at MS-LF-GW1 (1,150 mg/L), MS-LF-GW2 (937 mg/L), MS-LF-GW3 (300 mg/L), MS-LF-GW4 (227 mg/L), and MW-LF-GW-REF1 (144 mg/L).
- Ammonia as N concentrations ranged from 0.025 mg/L to 7.27 mg/L and were greater than the FIGQ Guideline (2.96 mg/L) at MS-LF-GW1 (7.27 mg/L) and MS-LF-GW2 (4.13 mg/L).
- Dissolved metal parameters including boron, cadmium, iron, lead, mercury, nickel, silver, and uranium, and total metal parameters including boron, mercury, silver, and uranium concentrations were greater than their respective FIGQ Guidelines at one or more of the down-gradient drive-point piezometers during the 2020 Monitoring Program, but not at the reference locations.
- Dissolved copper, and total metal parameters including aluminum, arsenic, cadmium, chromium, copper, iron, lead, nickel, and titanium were greater than their respective FIGQ Guidelines at one or more drive-point piezometers during the 2020 Monitoring Program, including at both the reference locations.

During the 2020 Monitoring Program, all hydrocarbon parameters (PHC F1 to F4) were less than their respective laboratory detection limit (LDL) with the exception of hydrocarbon fraction F1 at MS-LF-GW1, which was above the LDL however remained less than the FIGQ Guideline.

DOC concentrations at the down-gradient monitoring locations ranged from 2.68 mg/L (MS-LF-GW5) to 35.2 mg/L (MS-LF-GW2) during the 2020 Monitoring Program. DOC concentrations at the reference locations ranged from 4.26 to 5.34 mg/L. The greatest concentrations were measured at down-gradient locations MS-LF-GW1 and MS-LF-GW2. DOC concentrations at both of these locations were approximately an order of magnitude greater than the reference location concentrations.

TOC concentrations at the down-gradient monitoring locations ranged from 2.01 mg/L (MS-LF-GW5) to 38.1 mg/L (MS-LF-GW1). TOC concentrations at the reference locations ranged from 3.38 to 6.34 mg/L. The greatest concentrations were reported at down-gradient locations MS-LF-GW1 and MS-LF-GW2. Similar to DOC, TOC concentrations at both of these locations were approximately an order of magnitude greater than the reference location concentrations. There are no FIGQ Guidelines for DOC or TOC.

Statistical analysis was conducted to evaluate the significance of changes in groundwater quality over time. Parameters selected for trend analysis included chloride, sulphate, and dissolved metals parameters: boron, cadmium, iron, lead, manganese, nickel, and uranium. These parameters were greater than the FIGQ Guidelines at one or more of the piezometers. The trend analysis was conducted using the non-parametric Mann Kendall method for results of all previously installed piezometers with sufficient data points. The piezometers installed in 2020 had only one data point and therefore were not included in the trend analysis. The Mann Kendall analysis was conducted with a confidence level of 95%. The results of the trend analysis are provided in Table 2 following the analytical results. Graphs showing concentration over time for chloride, sulphate, and select dissolved metals parameters are presented in Figure 6.

A summary of the trend analysis results is provided in Table B.

Table B: Summary of Statistical Trend Analysis Results

Parameter	Location with Increasing Trend	Greater than FIGQ Guideline (yes/no)	Comment
Dissolved Iron	MS-LF-GW1	Yes	Greater than the guideline in 2020 only
Dissolved Nickel	MS-LF-GW2	Yes	Greater than the guideline since 2019
Dissolved Uranium	MS-LF-GW1	Yes	Greater than the guideline since 2019
	MS-LF-GW2	Yes	Greater than the guideline since 2019

4.2.1 Quality Assurance and Quality Control

The groundwater QA/QC analytical results for 2020 are presented in Table 3. The field QA/QC program included the collection of a blind duplicate sample, the submission of blind travel and field blanks, and the use of CoC forms to track sample handling between the field and the laboratory. In addition, sample hold times and temperatures were evaluated to determine if these parameters exceeded Tetra Tech, laboratory, or method QA/QC limits.

Tetra Tech collected duplicate groundwater samples from MS-LF-GW3 (MS-LF-GW301) on September 8, 2020 as part of the QA/QC program for the 2020 Monitoring Program and submitted the duplicate sample to ALS for chemical analysis. Most parameters analyzed in the duplicate sample had a relative percent difference (RPD) less than 30%, with the exception of total phosphorus (RPD 30%).

The travel blank reported all parameters less than their respective detection limits with the exception of alkalinity, DOC, TOC, and dissolved zinc, suggesting potential laboratory influence on the analysis of these parameters. The field blank also reported dissolved zinc greater than the detection limit.

All samples were received by the laboratory at temperatures below the alert limit of 10°C and were analyzed within the method hold time. Based on the results of the QA/QC program, the analytical results are considered to be reliable. No other field or laboratory QA/QC issues were identified.

5.0 DISCUSSION

5.1 Routine Water Chemistry

No trends in chloride concentrations were observed at the three (3) piezometers (MS-LF-GW1, MS-LF-GW2, and MS-LF-GW3) where chloride concentrations exceeded the FIGQ Guideline, suggesting the presence of chloride concentrations at the down-gradient piezometers is stable.

The greatest chloride concentration was reported at down-gradient piezometer MS-LF-GW3 (531 mg/L), located along the southwest side of the Landfill Facility. The chloride exceedances at MS-LF-GW1, MS-LF-GW2, and MS-LF-GW3, located in the immediate vicinity of the Landfill Facility, are one (1) order of magnitude greater than the reference location concentrations. At further down-gradient piezometers (MS-LF-GW4 and MS-LF-GW5), chloride concentrations did not exceed the FIGQ Guideline, suggesting a potential chloride impact which is limited to the immediate vicinity of the Landfill Facility.

Sulphate concentrations reported in 2020 at the two (2) reference locations sampled ranged from 100 to 144 mg/L which is equal to or slightly greater than the FIGQ Guideline of 100 mg/L and suggests the sulphate concentrations at the Project site are naturally elevated. However, sulphate concentrations reported at the down-gradient locations MS-LF-GW1, MS-LF-GW2, and MS-LF-GW3 have increased since monitoring began in 2017 by one (1) to two (2) orders of magnitude and are up to an order of magnitude higher than the reference locations. At the further down-gradient location (MS-LF-GW5), the sulphate concentration during the 2020 sampling event was reported to be 13.3 mg/L, significantly below the FIGQ Guideline, indicating the presence of any potential sulphate impact is limited to the immediate vicinity of the Landfill Facility.

During the 2020 Monitoring Program, ammonia as N concentrations exceeded the FIGQ Guideline at MS-LF-GW1 and MS-LF-GW2. Ammonia as N concentrations were detected at all monitoring locations since monitoring began in 2017 and were greater than the FIGQ Guideline in 2019 at reference location MS-LF-GW-REF1, suggesting ammonia as N may be naturally occurring at elevated concentrations at the Project site.

5.2 Dissolved Metals

Dissolved copper, and total metals including aluminum, arsenic, cadmium, chromium, copper, iron, lead, nickel, and, titanium were greater than their respective FIGQ Guidelines at one (1) or more drive-point piezometers, including at the reference locations, during the 2020 Monitoring Program. Dissolved copper is interpreted to be naturally occurring at elevated concentrations at the Project site due to the elevated presence at the background locations. The concentrations of total metals above the FIGQ Guidelines are interpreted to be due to potential sorption to soil particles and are not representative of an impact at the Project site. Total metals typically do not quantitatively provide information of facility impacts as the results could be influenced by other factors such as turbidity, and sediment content, surface water infiltration, etc. Total metals are not analyzed unless a direct consumption of water is anticipated (e.g., if a domestic use aquifer is involved). Dissolved metals results are more representative of the constituents in groundwater and, therefore, it is recommended to discontinue the analysis of total metals. As detailed in the Guidance Document on FIGQG for Federal Contaminated Sites, for inorganics, the

FIGQG generally apply to dissolved concentrations and therefore filtration for dissolved parameter analysis is required (Environment Canada 2016).

Dissolved metals including boron, cadmium, iron, manganese, lead, nickel, and uranium concentrations were greater than their respective FIGQ Guideline at one (1) or more down-gradient piezometers during the 2020 Monitoring Program and were less than the respective FIGQ at the reference location piezometers. Trend analysis was performed on dissolved metals parameters boron, cadmium, iron, lead, manganese, nickel, and uranium (Table 2).

Increasing trends in dissolved iron and dissolved uranium concentrations were observed at MS-LF-GW1 with concentrations greater than the FIGQ in 2020 (Table 2). Increasing trends in dissolved nickel and dissolved uranium concentrations were observed at MS-LF-GW2 with concentrations greater than the FIGQ Guidelines and reference location concentrations since 2019 (Table 2). The dissolved metals showing increasing trends and concentrations greater than the FIGQ Guidelines and reference locations may indicate groundwater quality impacts due to dissolution from the metal debris that has been disposed in the Landfill Facility; however, additional monitoring is recommended to verify whether a trend is occurring.

5.3 Hydrocarbons and Oil and Grease

PHC fractions F1 to F4 were non-detect in all samples analyzed except PHC fraction F1. PHC fraction F1 was detected at MS-LF-GW1 during the 2020 Monitoring Program; however, was less than the FIGQ Guideline.

TOC and DOC concentrations measured at MS-LF-GW1 and MS-LF-GW2 are one (1) order of magnitude greater than the concentrations measured at other locations.

The elevated TOC and DOC detected during the 2020 Monitoring Program combined with historical detection of oil and grease in 2017 and 2018 suggests the presence of potential petroleum hydrocarbon impacts in the groundwater at the two (2) piezometers (MS-LF-GW1 and MS-LF-GW2) located in close vicinity of the Landfill Facility. To further evaluate PHC impacts, BTEX will be analyzed in conjunction with TOC and DOC in 2021.

6.0 CONCLUSIONS

Groundwater monitoring conducted from 2017 to 2020 suggests that landfill operations have impacted the groundwater quality at the monitoring locations in the immediate vicinity of the Landfill Facility (MS-LF-GW1, MS-LF-GW2, and MS-LF-GW1 and MS-LF-GW3).

Pertinent findings of the 2020 Monitoring Program are:

- The contoured elevations for 2020 suggest that the shallow groundwater flow direction across the Landfill Facility is towards the southwest under an estimated horizontal hydraulic conductivity of 0.03 m/m. This result is consistent with the local surface topography in the area.
- At MS-LF-GW1, MS-LF-GW2, and MS-LF-GW3, located in the vicinity of the Landfill Facility, the chloride and sulphate concentrations were greater than the FIGQ Guidelines and were elevated compared to concentrations observed at the reference locations and further down-gradient piezometers. This suggests the presence of groundwater impacts due to landfill operations; however, the results suggest the potential impacts are limited to the immediate vicinity of the Landfill Facility.
- Dissolved metal parameters including boron, cadmium, iron, lead, mercury, nickel, silver, and uranium exceeded their respective FIGQ Guideline at one (1) or more down-gradient monitoring locations MS-LF-GW1, MS-LF-GW2 and MS-LF-GW3. Also increasing trends in select dissolved metals parameters were observed at

MS-LF-GW1, and MS-LF-GW2. This also suggests the presence of groundwater impacts due to landfill operations; however, these results also suggest the potential impacts are limited to the immediate vicinity of the Landfill Facility.

- The presence of elevated ammonia, and dissolved copper at hydraulically up-gradient reference locations suggests that these parameters may be naturally occurring at elevated levels at the down-gradient monitoring locations.

7.0 RECOMMENDATIONS

Based on analysis of the monitoring results from the 2017 to 2020 monitoring programs, the recommendations for the 2021 monitoring program and future monitoring programs are:

- Install permanent monitoring wells at the same locations monitored during the 2020 Monitoring Program. The permanent monitoring wells will be used to collect water level measurements and groundwater quality data, and to conduct hydraulic conductivity tests to estimate groundwater flow velocity.
- Continue the annual monitoring program in 2021 to better understand the natural groundwater chemistry at the Project site and to confirm water quality concentrations and potential trends between 2017 and 2020.
- Incorporate BTEX analysis into the analytical schedule.
- Collection of an equipment blank.
- Discontinue the analysis of total metals as dissolved metals results are more representative for assessing groundwater quality impacts.
- Analytical parameters recommended for analysis in 2021 and in subsequent years are:
 - Routine chemistry including all hardness, and major ions;
 - Nutrients (ammonia and nitrate);
 - Dissolved metals;
 - TOC and DOC;
 - Oil and grease;
 - BTEX; and
 - PHC fractions F1 to F4.
- Due to the challenges associated with sampling methodologies for groundwater data collection in a permafrost environment and the challenges in interpreting this data, further statistical trend analysis is recommended to evaluate the significance of changes in water quality between up-gradient and down-gradient monitoring locations as additional water quality data is collected in future years.
- Assess the potential for installation of a third reference point (MS-LF-GW-REF3) at a suitable topographic location in 2021.
- If groundwater quality impacts and trends are confirmed during the 2021 Monitoring Program, a risk assessment is recommended to assess potential impacts to any nearby receptor(s) at the Project site. If risks to nearby receptor(s) are identified through the risk assessment process, implementation of a risk management plan/remediation action plan is recommended.
- Complete desktop reviews in conjunction with site reconnaissance survey results of the four areas at Mary River including the Mine Site Quarry, Mine Site Crusher Facility, Mine Site Waste Rock Facility, and Milne Port Site to develop Monitoring Programs for these areas.

8.0 CLOSURE

We trust this document meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.

FILE: 704-ENG.EARC03209-01
FILE: 704-ENG.EARC03209-01
FILE: 704-ENG.EARC03209-01

Prepared by:
Andrea McMillan, B.Sc., P.Geo.
Hydrogeologist
Environment & Water Practice
Direct Line: 403.723.1559
Andrea.Mcmillan@tetrattech.com

FILE: 704-ENG.EARC03209-01
FILE: 704-ENG.EARC03209-01
FILE: 704-ENG.EARC03209-01

Reviewed by:
Fai Ndofor, M.Sc., P.Geo., PMP
Manager
Edmonton Arctic Group
Direct Line: 587.460.3486
Fai.Ndofor@tetrattech.com

/jmt

FILE: 704-ENG.EARC03209-01
FILE: 704-ENG.EARC03209-01
FILE: 704-ENG.EARC03209-01
FILE: 704-ENG.EARC03209-01

Reviewed by:
Aziz Shaikh, M.Sc., P.Eng.
Principal Engineer – Hydrogeology
Environment & Water Practice
Direct Line: 403.723.3262
Aziz.Shaikh@tetrattech.com

PERMIT TO PRACTICE TETRA TECH CANADA INC.	
Signature	
Date	March 24, 2021
PERMIT NUMBER: P 018 NT/NU Association of Professional Engineers and Geoscientists	

REFERENCES

- Baffinland Iron Mines Corporation. 2017. *2017 Groundwater Monitoring Pilot Program Report. Baffinland Iron Mines Corporation, Mary River Project*. Baffinland Iron Mines Corporation. March 31, 2018.
- Baffinland Iron Mines Corporation. 2018. *2018 Groundwater Monitoring Program Report. Baffinland Iron Mines Corporation, Mary River Project*. Baffinland Iron Mines Corporation. March 31, 2019.
- Baffinland Iron Mines Corporation. 2019. *Groundwater 2019 Monitoring Program Report". Baffinland Iron Mines Corporation, Mary River Project*. Baffinland Iron Mines Corporation. March 31, 2020.
- Canadian Council of Ministers of the Environment (CCME) (Updated 2019). *Water Quality Guidelines for the Protection of Aquatic Life (Freshwater and Marine)*.
- Environment Canada. 2016. Environment Canada. *Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites*. June 2016
- Tetra Tech Canada Inc. 2019. *Mary River Airstrip Geotechnical Site Investigation and Ground Temperature Cable Installation Data Report, Mary River Mine, NU*. Prepared for Baffinland Iron Mines Inc. Tetra Tech Canada Inc. Issued for Use April 18, 2019.

TABLES

Table 1	Groundwater Monitoring Data
Table 2	Groundwater Analytical Results
Table 3	Groundwater Quality Assurance/Quality Control Analytical Results

Table 1: Groundwater Monitoring Data

Well Location	Coordinates ¹		Drive-Point Piezometer Installation Summary					Groundwater Monitoring			
	Easting*	Northing*	Installation Date	Top of Casing Elevation* (masl)	Ground Surface Elevation* (masl)	Stick Up (m)	Piezometer Total Depth (mbTOC)	Date Monitored	Groundwater levels (mbTOC)	Groundwater Levels (mbg)	Groundwater Elevation (masl)
MS-LF-GW1	560815.921	7912598.776	27-Sep-19	179.35	179.23	0.12	2.10	15-Sep-2018 ²	-	-	179.09
								27-Sep-2019 ³	-	-	178.58
								13-Sep-20	1.26	1.15	178.09
MS-LF-GW2	560811.958	7912485.875	28-Sep-19	178.49	178.13	0.36	2.10	16-Sep-2018 ²	-	-	177.25
								28-Sep-2019 ³	-	-	177.01
								13-Sep-20	1.54	1.18	176.95
MS-LF-GW3	560822.564	7912460.266	28-Sep-19	178.22	178.05	0.18	2.10	16-Sep-2018 ²	-	-	177.66
								28-Sep-2019 ³	-	-	177.30
								13-Sep-20	0.97	0.80	177.25
MS-LF-GW4	560751.706	7912492.710	3-Sep-20	176.19	175.79	0.40	1.61	13-Sep-20	1.41	1.01	174.78
MS-LF-GW5	560715.134	7912483.861	3-Sep-20	173.03	172.70	0.33	1.72	13-Sep-20	Dry	Dry	Dry
MS-LF-GW-REF1	560838.181	7912637.291	27-Sep-19	179.83	179.78	0.05	1.50	15-Sep-2018 ²	-	-	179.62
								27-Sep-2019 ³	-	-	179.19
								13-Sep-20	0.83	0.78	179.00
MS-LF-GW-REF2	560877.464	7912408.379	28-Sep-20	179.69	179.30	0.39	2.10	15-Sep-2018 ²	-	-	177.97
								28-Sep-2019 ³	-	-	178.60
								13-Sep-20	1.66	1.27	178.03
MS-LF-GW-REF3	560950.906	7912606.076	3-Sep-20	187.88	186.98	0.90	1.21	13-Sep-20	Dry	Dry	Dry

Notes:

¹ UTM Zone 17W, NAD83

² Baffinland Iron Mines Corporation (Baffinland). 2019. 2018 Groundwater Monitoring Program Report. Table 1 - Field Measurements and Elevations
Groundwater elevations shown are for wells MS-LF-GW-REF1-18, MS-LF-GW-REF1-18, MS-LF-GW1-18, MS-LF-GW2-18, and MS-LF-GW3-18

³ Baffinland Iron Mines Corporation (Baffinland). 2020. Groundwater 2019 Monitoring Program Report. Table 1 - Field Measurements and Elevations - 2019 Groundwater Monitoring Program
Groundwater elevations shown are for wells MS-LF-GW-REF1-19, MS-LF-GW-REF2-19, MS-LF-GW1-19, MS-LF-GW2-19 and MS-LF-GW3-19

masl - metres above sea level

mbTOC - metres below top of casing.

mbg - metres below grade

*Survey data provided by client

FIGURES

Figure 1	Site Location
Figure 2	Current and Historical Groundwater Monitoring Network
Figure 3	Groundwater Elevation, Contour Map, September 13, 2020
Figure 4	Hydrographs
Figure 5	Chloride Concentration in Groundwater, September 8, 2020
Figure 6	Trends Graphs



LEGEND

-  Site Location
-  Watercourse

NOTES

Base data source: CanVec (2019)
Imagery from ESRI; Maxar (2019).

STATUS
ISSUED FOR USE

2020 GROUNDWATER MONITORING PROGRAM MARY RIVER MINE PROJECT, NUNAVUT

Site Location

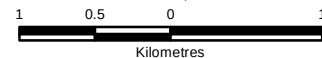
PROJECTION
UTM Zone 17

DATUM
NAD83

CLIENT

Baffinland Iron Mines Corporation

Scale: 1:50,000



FILE NO.
EARC03209-01_Figure01_SiteLoc.mxd

 **TETRA TECH**

OFFICE
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DATE
November 18, 2020

PROJECT NO.
ENG.EARC03209-01

Figure 1



LEGEND

- 2020 Drive-point Piezometer Location
- 2019 Drive-point Piezometer Location
- 2018 Drive-point Piezometer Location
- 2017 Drive-point Piezometer Location

NOTES
Base data source:
Imagery from ESRI; Maxar (2019).

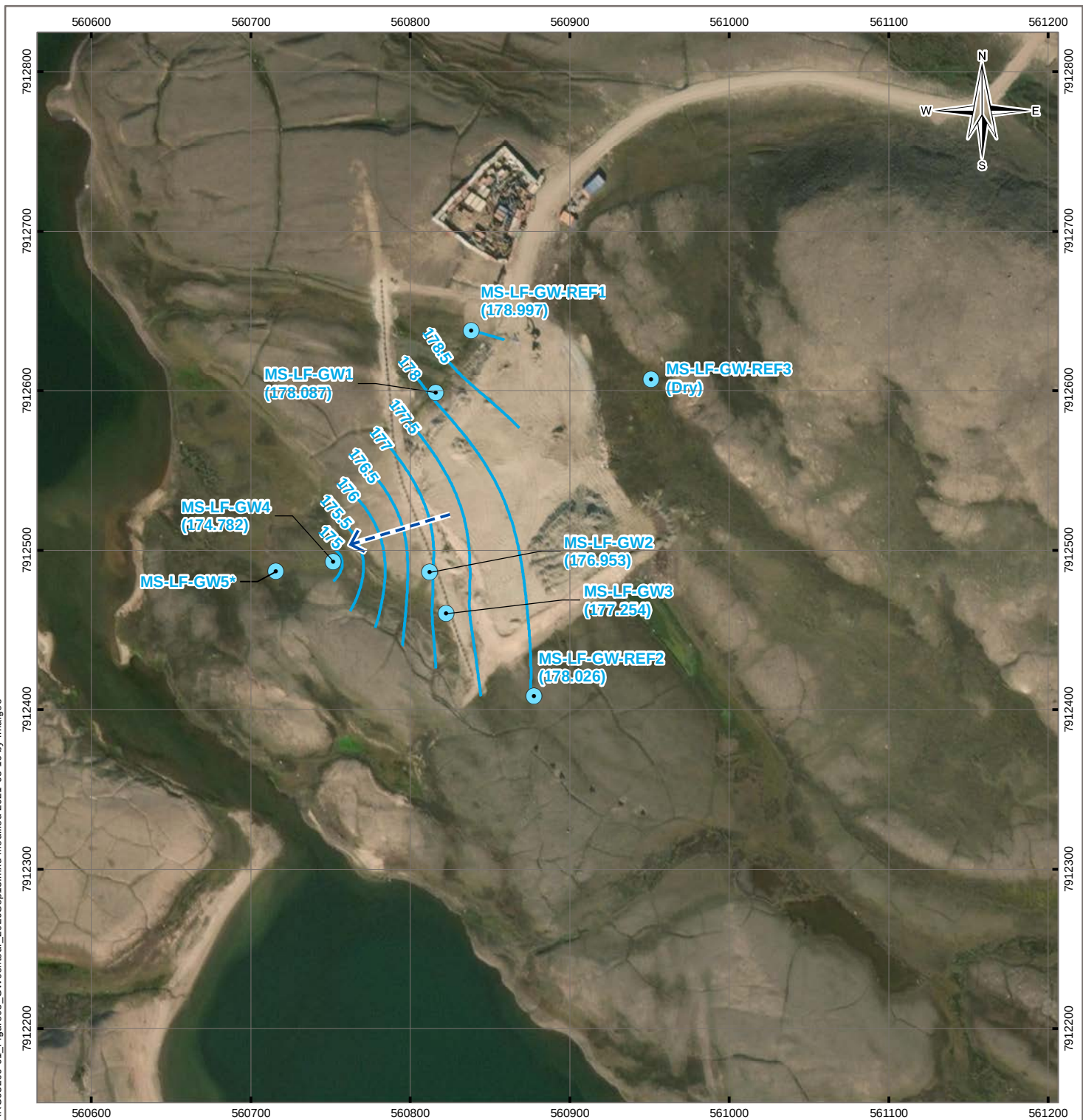
STATUS
ISSUED FOR USE

2020 GROUNDWATER MONITORING PROGRAM MARY RIVER MINE PROJECT, NUNAVUT

Current and Historical Groundwater Monitoring Network

PROJECTION UTM Zone 17		DATUM NAD83		CLIENT Baffinland Iron Mines Corporation	
Scale: 1:5,000 100 50 0 100  Metres				 TETRA TECH	
FILE NO. EARC03209-01_Figure02_GWMonitoring.mxd					
OFFICE Tl-VANC	DWN RG	CKD XX	APVD AM	REV 0	Figure 2
DATE November 18, 2020	PROJECT NO. ENG.EARC03209-01				

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LEGEND

- Drive-point Piezometer Location
- ~ Groundwater Elevation Contour (masl)
- (xxx.xx) Groundwater Elevation (masl)
- * Not Used In Groundwater Contouring
- -> Interpreted Direction of Groundwater Flow

NOTES
Base data source:
Imagery from ESRI; Maxar (2019).

STATUS
ISSUED FOR USE

2020 GROUNDWATER MONITORING PROGRAM MARY RIVER MINE PROJECT, NUNAVUT

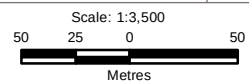
Groundwater Elevation Contour Map September 13, 2020

PROJECTION
UTM Zone 17

DATUM
NAD83

CLIENT

**Baffinland Iron Mines
Corporation**



FILE NO.
EARC03209-01_Figure03_GWcontour_2020Sep13.mxd

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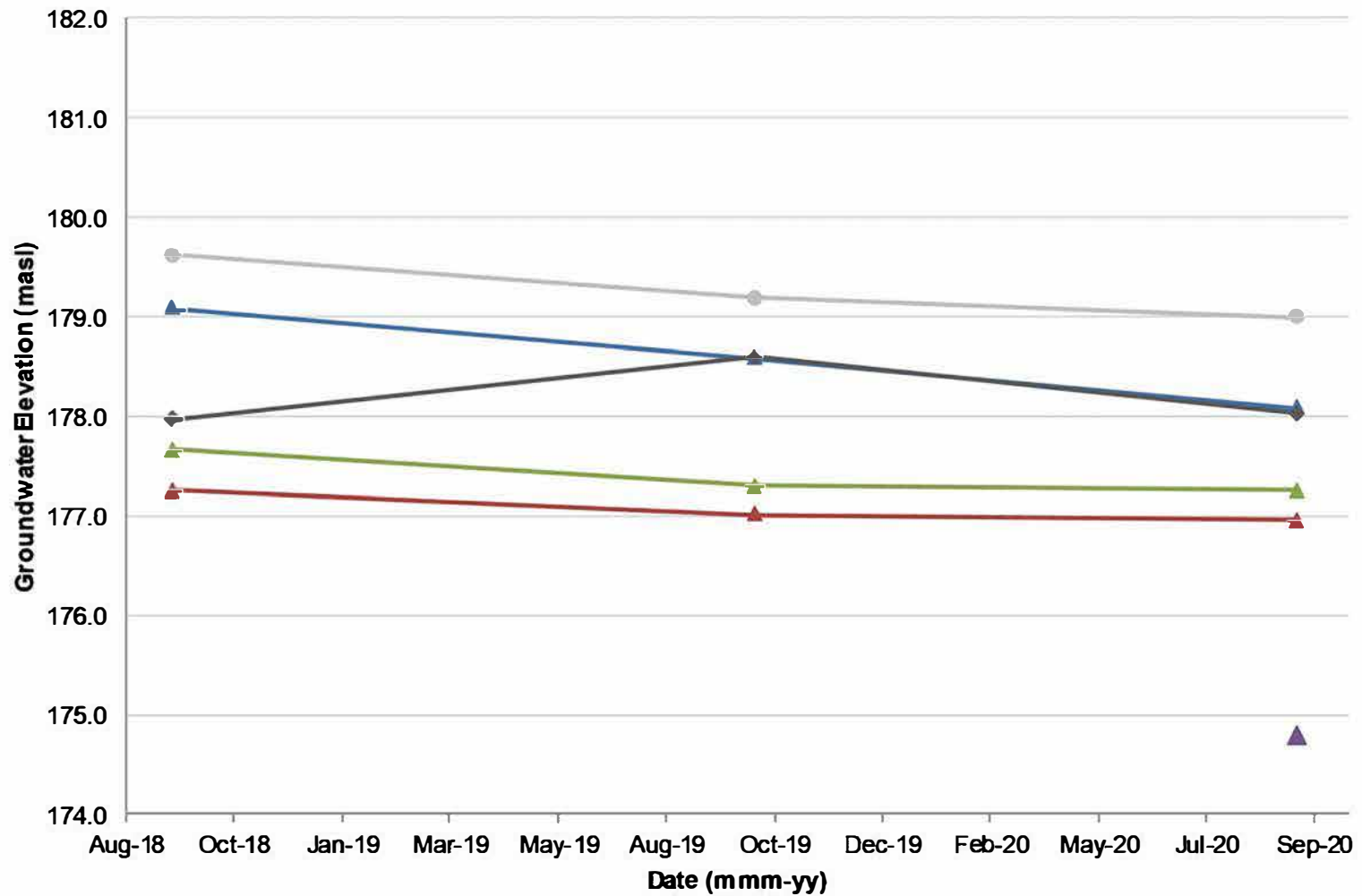
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DATE
March 16, 2021

PROJECT NO.
ENG.EARC03209-01

Figure 3



LEGEND

- MS-LF-GW1
- MS-LF-GW2
- MS-LF-GW3
- MS-LF-GW4
- MS-LF-GW5
- MS-LF-GW-REF1
- MS-LF-GW-REF2

CLIENT

Baffinland Iron Mines Corporation

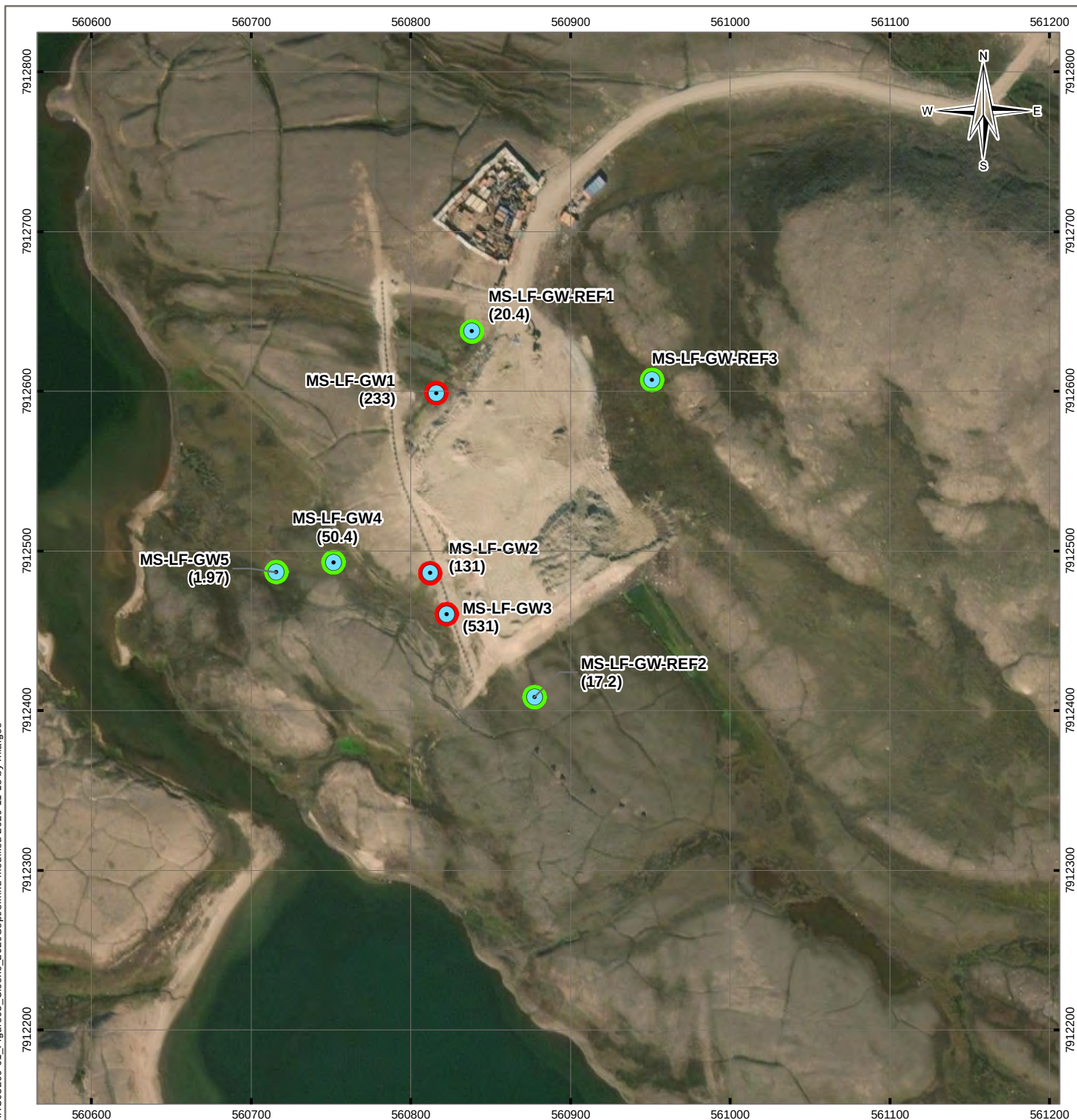


**2020 GROUNDWATER MONITORING PROGRAM
MARY RIVER MINE PROJECT, NUNAVUT**

Hydrographs

PROJECT NO. ENG.EARC03209-01	DWN MR	CKD AM	APVD AS	REV 0	Figure 4
OFFICE TI-CAL	DATE November 18, 2020		STATUS Issued for Use		

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LEGEND

- 2020 Drive-point Piezometer Location
- (xxx.xx) Chloride Concentration (mg/L)
- Below Federal Guideline*
- Exceeds Federal Guideline*

NOTES

*Federal Interim Groundwater Quality Guidelines (FIGQG) for coarse textured soil under Commercial/Industrial land use of 120 mg/L

Base data source: Imagery from ESRI; Maxar (2019).

STATUS
ISSUED FOR USE

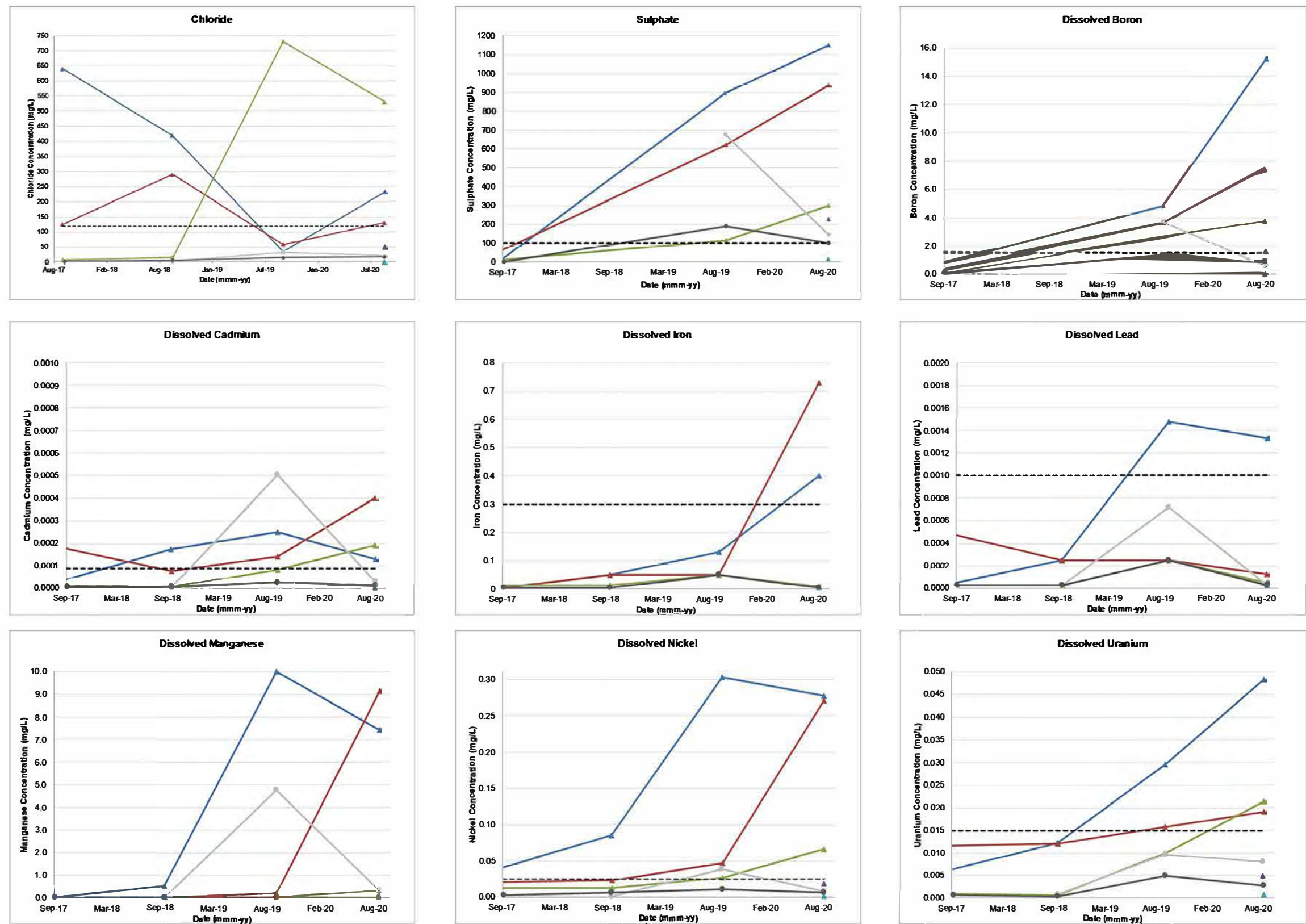
2020 GROUNDWATER MONITORING PROGRAM MARY RIVER MINE PROJECT, NUNAVUT

Chloride Concentration in Groundwater September 8, 2020

PROJECTION UTM Zone 17		DATUM NAD83		CLIENT Baffinland Iron Mines Corporation  TETRA TECH	
Scale: 1:3,500 50 25 0 50  Metres					
FILE NO. EARC03209-01_Figure05_Clconc_2020Sep08.mxd					
OFFICE Ti-VANC	DWN RG	CKD SL	APVD AM	REV 0	Figure 5
DATE November 18, 2020	PROJECT NO. ENG. EARC03209-01				



filepath : W:\Environment\EnvData\gmt\Lab Data\02.ENG.EAR\03209-01 (Mary_River_Mine_ShinikAB)



LEGEND

- MS-LF-GW1
- MS-LF-GW2
- MS-LF-GW3
- MS-LF-GW4
- MS-LF-GW5
- MS-LF-GW-REF1
- MS-LF-GW-REF2
- FIGQ and CCME Guideline

CLIENT

Baffinland Iron Mines Corporation



2020 GROUNDWATER MONITORING PROGRAM
MARY RIVER MINE PROJECT, NUNAVUT

Trend Graphs

PROJECT NO. ENG.EARC03209-01	DWN MR	CKD AM	APVD AS	REV 000	Figure 6
OFFICE Tt-CAL	DATE Nov. 25, 2020		STATUS Issued for Use		

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOENVIRONMENTAL

1.1 USE OF DOCUMENT AND OWNERSHIP

This document pertains to a specific site, a specific development, and a specific scope of work. The document may include plans, drawings, profiles and other supporting documents that collectively constitute the document (the "Professional Document").

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Where TETRA TECH submits electronic file and/or hard copy versions of the Professional Document or any drawings or other project-related documents and deliverables (collectively termed TETRA TECH's "Instruments of Professional Service"), only the signed and/or sealed versions shall be considered final. The original signed and/or sealed electronic file and/or hard copy version archived by TETRA TECH shall be deemed to be the original. TETRA TECH will archive a protected digital copy of the original signed and/or sealed version for a period of 10 years.

Both electronic file and/or hard copy versions of TETRA TECH's Instruments of Professional Service shall not, under any circumstances, be altered by any party except TETRA TECH. TETRA TECH's Instruments of Professional Service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner

consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by third parties other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

APPENDIX B

DESKTOP REVIEW

March 24, 2021

Baffinland Iron Mines Corporation
2275 Upper Middle Road East, Suite 300
Oakville, ON L6H 0C3

ISSUED FOR USE

FILE: ENG.EARC03209-01

Via Email: Connor.Devereaux@baffinland.com

Attention: Connor Devereaux/ Aaron MacDonell
Environmental Superintendent, Mary River Mine Site

Subject: Desktop Review
2020 Groundwater Monitoring Program
Mary River Mine Project, Nunavut

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained by Baffinland Iron Mines Corporation (Baffinland) for the provision of environmental consulting services pertaining to Baffinland's 2020 Monitoring Program at the Mary River Mine Project (the Project). The Project site is located at the northern end of Baffin Island in the Qikiqtaaluk Region of Nunavut, Canada and approximately 550 km north of the Arctic Circle.

The 2020 Monitoring Program for the Project is a requirement of Baffinland's Project Certification No. 005 – Amendment No. 2 issued by the Nunavut Impact Review Board (NIRB). Baffinland has conducted groundwater monitoring in accordance with Condition 23 of Project Certification No. 005 – Amendment No. 2 since 2017. The 2020 Monitoring Program focuses on the detection of potential impacts to groundwater as a result of the landfill operations at the Project. Potential sources of project-related effects on groundwater include ore handling facilities, waste rock facility, maintenance facilities, landfill, landfarm, hazardous waste storage, and bulk fuel storage. To date, the Monitoring Program at Mary River has focused on the landfill facility only.

Tetra Tech prepared and submitted a proposal in response to the Scope of Work – 2020 Groundwater Program Consultancy Services (SOW) for the Project issued in June 2020. The SOW requires conducting the 2020 Monitoring Program at the landfill at the Project in the following tasks:

- Task 1 – Desktop Review
- Task 2 – Fieldwork
 - Task 2a – Site Visit
 - Task 2b – 2020 Monitoring Program Implementation
- Task 3 – 2020 Reporting Deliverables

This letter report presents the results of Task 1 – Desktop Review. This project was completed under Tetra Tech's Limitations on Use of this Document (Appendix A).

1.1 Objectives

As per the SOW, a desktop review of monitoring data from 2017 through 2019 and the methodologies utilized in the execution of the previous monitoring program including the use of drive-point piezometers and low-flow sampling techniques was required to:

- Identify any trends in groundwater quality, groundwater flow, and any discernable information about the condition of the subsurface and stratigraphy of the investigated area; and
- Provide recommendations to improve sample collection, repeatability of sample collection, installation methodologies, and materials, all in the context of assessing shallow groundwater flow in a permafrost environment.

1.2 Scope of Work

The scope of work for the desktop review included the following:

- Review of the available information provided by Baffinland, and relevant geological and hydrogeological information/literature available in the public domain;
- Import the data into a Tetra Tech database;
- Assess the data; and
- Prepare the desktop review report including the following:
 - List of the information reviewed and sources of information,
 - Deficiencies identified in sample collection, repeatability, and installation methodologies, if observed and recommendations to improve,
 - Data gaps identified and recommendations on the assessment of any additional areas,
 - Appropriateness of the applied groundwater thresholds and/or site-specific guidelines and recommendations for any changes, if required, and
 - A comprehensive study design for the 2020 Monitoring Program and future groundwater monitoring programs.

2.0 SUMMARY OF FINDINGS

Sections 2.1 to 2.5 present a summary of findings from the Desktop Review, which include the list of information reviewed, deficiencies identified, data gaps, groundwater thresholds and/or site-specific guidelines, and a comprehensive study design for the 2020 Monitoring Program and future groundwater monitoring programs, respectively.

2.1 Information Reviewed

Tetra Tech reviewed the following documents:

- “2017 Groundwater Monitoring Pilot Program Report”. Baffinland Iron Mines Corporation, Mary River Project. March 31, 2018.
- “2018 Groundwater Monitoring Program Report”. Baffinland Iron Mines Corporation, Mary River Project. March 31, 2019.

- “Mary River Airstrip Geotechnical Site Investigation and Ground Temperature Cable Installation Data Report, Mary River Mine, NU”. Tetra Tech Canada Inc. Prepared for Baffinland Iron Mines Inc. Issued for Use April 18, 2019.
- “2019 Inspection of the Milne Inlet Tote Road and Associated Borrow Sources”. Tetra Tech Canada Inc. Prepared for Baffinland Iron Mines Inc. Issued for Use December 19, 2019.
- “2019 Evaluation of the Mary River to Milne Inlet Railway Cuts as Sources of Tote Road Borrow Site Reclamation Materials”. Tetra Tech Canada Inc. Prepared for Baffinland Iron Mines Inc. Issued for Use December 19, 2019.
- “Groundwater 2019 Monitoring Program Report”. Baffinland Iron Mines Corporation, Mary River Project. March 31, 2020.

2.2 Deficiencies Identified

From the review of the 2017, 2018, and 2019 Groundwater Monitoring Program Reports, the following deficiencies were identified:

- Sample collection depth and location changed from year to year;
- Field parameters were collected, but not reported;
- No hydraulic conductivity tests were conducted; and
- No contour maps were prepared depicting groundwater flow direction.

The following subsections provide details of the deficiencies observed.

2.2.1 Sample Collection Locations and Depths

The repeatability of the drive-point piezometers sample collection method is not reliable. Table A below summarizes monitoring well locations and depths as reported in 2017 to 2019 groundwater monitoring reports.

Table A: Summary of Monitoring Locations and Depths

Well Name	Sampling ID	Sample Year	Easting (UTM; NAD83; Zone 17 N)	Northing (UTM; NAD83; Zone 17 N)	Monitoring Depth (mbg)	Approximate Difference in Monitoring Location (m)*
Down-gradient (exposed) – GW1	MS-LF-GW1-17	2017	560809	7912608	1.3	-
	MS-LF-GW1-18	2018	560817	7912598	1.1	12
	MS-LF-GW1-19	2019	560816	7912599	1.8	1
Down-gradient (exposed) – GW2	MS-LF-GW2-17	2017	560811	7912487	1.3	-
	MS-LF-GW2-18	2018	560812	7912487	1.2	0.5
	MS-LF-GW3-19	2019	560812	7912486	1.6	1
Down-gradient (exposed) – GW3	MS-LF-GW3-17	2017	560825	7912467	1.1	-
	MS-LF-GW3-18	2018	560822	7912461	1.0	7
	MS-LF-GW2-19	2019	560823	7912460	1.8	0.7

Table A: Summary of Monitoring Locations and Depths

Well Name	Sampling ID	Sample Year	Easting (UTM; NAD83; Zone 17 N)	Northing (UTM; NAD83; Zone 17 N)	Monitoring Depth (mbg)	Approximate Difference in Monitoring Location (m)*
Up-gradient (reference) – REF1	MS-LF-GW-REF1-18	2018	560840	7912639	0.8	-
	MS-LF-GW-REF1-19	2019	560838	7912637	1.1	2
Up-gradient (reference) – REF2	MS-LF-GW-REF2-17	2017	561118	7912248	1.5	-
	MS-LF-GW-REF2-18	2018	560875	7912406	1.1	290
	MS-LF-GW-REF2-19	2019	560878	7912408	1.6	4

Notes: *The approximate difference in monitoring location was calculated using GPS coordinates (which has limitations on the accuracy limitation of a few meters) provided in the previous Monitoring Program reports.

Considering the depth of monitoring changes each year, dependent on the drive-point refusal depth, as shown in Table A above, samples are being collected from up to 0.8 m variations in depth. The difference in sample collection locations vary up to 12 m between sampling events. One reference location (REF2) in 2017 was 290 m to the south of the sample location in 2018 and 2019 (Table A). It is understood that when this location was installed in 2017, it was quite far away from the landfill to be representative and therefore the location in 2018 and 2019 was moved closer to the landfill.

It was noted that the sample ID at location GW-2 was inadvertently switched to GW-3 in 2019. For ease in comparison and sample tracking, it is recommended that the sample ID corresponds to the same location for each year.

In reviewing the historical groundwater analytical laboratory data, a difference of one order of magnitude is reported for several parameters at all locations, including the reference (up-gradient) locations (Table 1). The variation in concentrations through the three sampling events demonstrates the current sampling method (drive-point piezometer) is not repeatable, and therefore, the result precision is in question. It is imperative that samples be collected from the same location and depth each year to ensure repeatability for more accurate comparison and trend analysis over time.

2.2.2 Field Parameter Recording and Stabilization

The sample collection method of low-flow sampling was reviewed and found to be technically viable and applicable. However, field parameters including pH, temperature, and electrical conductivity (EC) are recommended to be collected at the time of sample collection and reported for comparison. Also, it is recommended to purge until field parameter stabilization rather than the fixed volume purging. Low-flow purging and sampling involves extracting groundwater at rates comparable to ambient groundwater flow (typically less than 500 ml/min), so that the drawdown of the water level is minimized, and the mixing of stagnant water with water from the screened intake area is reduced. Stabilization of parameters (pH, EC, and temperature) of the purged water are monitored, and indicative of the water changing from stagnant well water to formation water from the screened aquifer. Thus, low-flow methods facilitate equilibrium with the surrounding formation and produce samples that are truly representative of the formation water.

2.2.3 Hydraulic Conductivity Measurements

Due to the use of drive-point piezometers, hydraulic conductivity testing has not been completed at the site to date. Hydraulic conductivity is required to estimate the groundwater flow velocity and provide a better understanding of the local hydrogeology at the Project. It is recommended that hydraulic conductivity testing be conducted.

2.2.4 Groundwater Elevation Contour Map

It is recommended that the groundwater elevations be measured and contoured on a site plan; which will help to determine the groundwater flow direction, hydraulic gradient, and groundwater flow velocity. The groundwater levels should be measured directly following installation, prior to purging, and be representative of static conditions. A local permanent benchmark should be established.

2.3 Data Gaps

From the review of the 2017, 2018, and 2019 Groundwater Monitoring Programs, the following data gaps were identified:

- Background water quality;
- Missing major ions; and
- Missing historical laboratory analytical data.

2.3.1 Background Groundwater Quality

In order to assess potential impacts of the Project to groundwater, background (or reference) groundwater quality data is required for comparison of down-gradient monitoring locations. Currently only three sampling events have been conducted for the established reference (background) locations. In order to conduct trend analysis, a minimum of six to eight sampling events is required. If feasible (due to limited/shallow active zone), it is recommended to conduct groundwater monitoring and sampling twice yearly to establish the required amount of monitoring events to establish background groundwater quality conditions and seasonal differences in flow direction, if any. Once background groundwater quality is established, groundwater monitoring can be reduced to once per year.

However, if additional sampling events are not feasible during the summer months, additional background locations, proposed in Section 2.5.1, may assist in establishing more reliable background conditions.

2.3.2 Major Ions

The major dissolved components of groundwaters include the negatively charged anions bicarbonate, chloride, and sulphate, and the positively charged cations sodium, calcium, magnesium, and potassium. Major ions in groundwater can be used to:

- Identify trends;
- Identify geochemical processes that may affect the groundwater chemistry; or
- Reveal certain useful properties of the total ion relationships that may be applied in the hydrogeological understanding of the site.

Tetra Tech recommends analyzing all major ions in groundwater, which include bicarbonate, chloride, sulphate, sodium, calcium, magnesium, and potassium. These concentrations may be plotted on a Piper Diagram, which

plots the major ions of multiple samples, showing the clustering of samples and thereby revealing hydrogeological information of water sourcing, water evolution, and water mixing. Considering the flow dynamics at the Project are driven primarily by permafrost and the challenges associated with groundwater quality interpretation, a Piper Diagram would be useful in the hydrogeological interpretation of the Project.

2.3.3 Historical Data

In order to identify trends or changes to groundwater quality, the groundwater data of the year in each report should be presented with the historical data. Additionally, any changes from the previous years' concentrations should be discussed in the report.

2.4 Groundwater Thresholds and/or Site-Specific Guidelines

Due to the limited groundwater quality data set for the Project, Project specific guidelines for groundwater quality based on baseline data and/or Canadian environmental guidelines have not been developed for the Project to date.

Currently there are no established groundwater criteria or guidelines for Nunavut. In recognizing the need for a nationally consistent approach for assessing and managing groundwater at federal contaminated sites, Environment Canada developed the Federal Interim Groundwater Quality (FIGQ) Guidelines which are based on a critical review and evaluation of existing approaches used by other jurisdictions in Canada and in other countries. The FIGQ Guidelines were developed as an interim measure until Canadian Environmental Quality Guidelines for groundwater are available.

In Canada, the Canadian Water Quality Guidelines (WQGs) provide a consistent basis for assessing water quality conditions. These WQGs are derived for the protection of four major water uses (CCME 1999), including: (i) Drinking water supply; (ii) Recreational use and aesthetics; (iii) Freshwater and marine aquatic life and wildlife; and, (iv) Agricultural water uses (irrigation and livestock watering). The Canadian WQGs are intended to protect the designated uses of aquatic ecosystems throughout the country. Nevertheless, it is possible that the guidelines are over- or under-protective at sites with unique conditions. In developing site-specific WQG, objectives are developed by identifying the most sensitive water use and adjusting the WQG for that water use to account for the site-specific factors. While this approach is effective at most sites, atypical conditions exist at certain locations which necessitate further modification of the generic WQGs.

The current land use at the Project is industrial. As per the geotechnical investigation conducted in 2019, the overburden overlying the ground ice consists of a gravelly sand (Tetra Tech 2019). Therefore, the groundwater quality at the Project will be compared to the FIGQ Tier 1 (generic groundwater guidelines) for Industrial/Commercial land use based on coarse soil type and if absent, the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Aquatic Life (Freshwater, Updated 2019) will be used for comparison purposes.

2.5 Study Design for 2020 and Future Monitoring Programs

The primary objective of a Monitoring Program is to determine if the Project activities are affecting groundwater. To achieve this objective, the 2020 and future Monitoring Programs have been developed based on an understanding of the primary sources of risk to groundwater quality posed by operations at the Project. Potential sources of project-related effects on groundwater include ore handling facilities, waste rock facility, maintenance facilities, landfill, landfarm, hazardous waste storage, and bulk fuel storage. To date, the Monitoring Program at Mary River has focused on the landfill facility only.

The 2020 Monitoring Program for the landfill area has been structured to provide detection of impacts resulting from the Project activities and incorporates a groundwater quality monitoring program that will be used to establish baseline groundwater quality conditions and to assess any change to groundwater quality.

Collected data will be stored in a database that can be used to assess deviations from baseline conditions and the occurrence of any trends, to assess potential effects to groundwater quality.

2.5.1 Existing and Proposed Monitoring Locations

For consistency, it is recommended that the existing five locations continued to be monitored, as shown on Figure 1.

Based on the information reviewed, we propose that three additional monitoring points be established. Table B provides the proposed monitoring location name, UTM coordinates, and rationale for establishing monitoring locations. These proposed locations will be monitored and sampled via drive-point piezometers in 2020 and via permanent monitoring wells in 2021.

Table B: Proposed Monitoring Well Locations

Proposed Name	Proposed Easting (UTM NAD83 Zone 17N)	Proposed Northing (UTM NAD83 Zone 17N)	Rational
MS-LF-GW-REF3	560915	7912620	Further establish background conditions and validate current background (reference) locations.
MS-LF-GW4	560772	7912465	MS-LF-GW2 has elevated chloride concentrations. Additional down-gradient location.
MS-LF-GW5	560805	7912424	MS-LF-GW3 has increasing chloride concentrations. Additional down-gradient location.

The accessibility to the proposed locations will be evaluated during the site visit to be conducted in September 2020.

The existing and additional proposed monitoring locations are shown on Figure 1.

2.5.2 Monitoring Well Installation

Baffinland currently monitors groundwater quality with one-time use drive-point piezometers, advanced to depth of refusal which is inferred to be the depth (lower limit) of the active layer. Due to the variability in groundwater quality, and to improve data collection repeatability, it is recommended that permanent monitoring wells be drilled, installed, and developed at the existing and proposed monitored locations. The permanent monitoring wells will be used to collect water level measurements, and groundwater quality data and conduct hydraulic conductivity tests. It is understood that due to logistic difficulty in obtaining a drilling rig on short notice for remote work, the permanent monitoring wells will be installed in 2021 and incorporated into the 2021 and subsequent Monitoring Programs. The 2020 Monitoring Program will be conducted same way as was conducted in 2017 to 2019 using temporary drive-point piezometers by minimizing the depth and location variation from previous year. The study area will be reviewed during 2020 monitoring for suitable locations for future permanent wells.

Drive-Point Piezometers (2020 Monitoring Program)

Just as in previous years, the drive-point piezometers to be used in the 2020 Monitoring Program will be Solinst Model 615 Drive-Point Piezometers equipped with 5/8 inch x 1/2 inch low density polyethylene (LDPE) open tubing. Three drive-point piezometers will be installed at the established locations inferred to be down-gradient of the

Landfill Facility (MS-LF-GW1, MS-LF-GW2, and MS-LF-GW3) and two drive-point piezometers will be installed as reference wells in established locations inferred to be up-gradient of the Landfill Facility (MS-LF-GW-REF1 and MS-LF-GW-REF2). All drive-point piezometers will be installed at as close as possible to the locations reported in 2019.

Installation will involve advancing drive-point piezometers by hand into the ground until the depth of refusal is reached. Depth of refusal will be inferred to be the top of the permafrost zone (lower limit of the active layer). Upon reaching the depth of refusal, the depth will be recorded in a field sheet and the location assigned a well ID corresponding to previous years ID.

Permanent Monitoring Well Installation (2021 and Subsequent Monitoring Programs)

Boreholes will be drilled at each location by using a suitable rig (e.g., air rotary). Borehole depths from the ground surface will be approximately two times the active layer thickness. This is to anchor the wells in permafrost to minimize frost jacking and provide long-term stability. Each well will be completed with a solid steel or PVC casing within the permafrost section and a perforated steel or PVC screen within the active layer section. The section within permafrost will be sealed with bentonite or grout. The wells will be completed as stickup (approximately 1 m above the ground level), with surface steel casing and a lock to protect the well. A well sketch will be provided in a drilling work plan.

2.5.3 Sample Collection Method

The low-flow sampling method utilized in 2019 is recommended to be continued in 2020 and future years. It is recommended that the monitoring wells be purged of standing well water until field parameters (pH, EC, temperature) stabilize prior to sampling.

As part of the quality assurance and quality control (QA/QC) program for the Project, the following protocols should be used during the monitoring and sampling program:

- All monitoring and sampling equipment should be cleaned or changed between monitoring locations to minimize the potential for cross-contamination.
- One blind duplicate sample should be collected during the sampling event.
- Groundwater samples should be collected in laboratory supplied bottles and preserved as required, stored on ice in a laboratory provided cooler at 4°C, and transported to an accredited laboratory for chemical analysis.

2.5.4 Analytical Schedule

In 2019, groundwater samples were collected and submitted for laboratory analysis of the following parameters:

- Routine chemistry (pH, conductivity);
- Nutrients (ammonia and nitrate);
- Chloride;
- Total metals;
- Dissolved metals;
- Total dissolved solids;
- Oil and grease; and
- Petroleum hydrocarbon fractions (PHC) F2-F4.

The addition of major ions is recommended and discussed in Section 2.3.2.

Total metals typically do not quantitatively provide information of facility impacts as the results could be influenced by other factors such as surface water infiltration etc. Total metals are not analyzed unless a direct consumption of water is anticipated e.g., if domestic use aquifer is involved. Dissolved metals results are more representative of the constituents in groundwater and therefore, it is recommended to discontinue the analysis of total metals. As detailed in the Guidance Document on FIGQG for Federal Contaminated Sites, for inorganics, the FIGQG generally apply to dissolved concentrations and therefore filtration for dissolved parameter analysis is required (Environment Canada 2016).

Due to the detection of oil and grease in 2017 and 2018, it is recommended that BTEX and F1 be incorporated into the analytical schedule.

The analytical schedule for 2020 and subsequent future years is proposed to be:

- Routine chemistry including all major ions;
- Nutrients (ammonia and nitrate);
- Dissolved metals;
- Oil and grease; and
- Benzene, toluene, ethylbenzene, xylenes (BTEX) and PHC Fraction F1 to F4.

For QA/QC purposes, a field blank, an equipment blank, trip blank, and a one blind duplicate sample should be collected and submitted for the same analytical schedule.

2.5.5 Trend Analysis and Reporting

Due to the limited water quality data set for groundwater at the Project, statistical trend analysis cannot be completed at this stage. However, it is recommended in coming years that robust statistical analysis be completed to evaluate the significance of changes in water quality between up-gradient and downgradient locations.

A Groundwater Monitoring Program Report should be prepared as per the requirements of Baffinland's Project Certification No. 005 – Amendment No. 2 issued by NIRB, documenting the methods applied during the field work and results. The report should include analysis and interpretation of the results including trend analysis. The report should also include recommendations for future Monitoring Programs to reduce data gaps, if observed and to improve data quality.

2.5.6 Groundwater Response Plan

The groundwater response plan provides a framework of actions that are to be followed in the event that analyzed groundwater parameter concentrations either exceed the FIGQ Guidelines Tier 1 guidelines, considered to be outside of the historical concentration ranges for the particular monitoring well in question, and/or significant increasing concentration trends (reportable statistical increasing trend) are observed within the monitoring well network.

When a guideline exceedance, data outlier, or increasing concentration trend is detected at a monitoring well, the response action order is as follows:

1. Review of the sampling and laboratory methods, procedures, and results, and QA/QC results;
2. Review of historical results and baseline conditions for the wells exhibiting exceedances or increasing trends;

3. Review of historical and current site operations and activities to assess possible causes;
4. Resample, if feasible and seasonal restrictions allow, and analyze the groundwater from the wells where parameters of potential concern have been identified; and
5. Assessment of available options of prevention, control, risk management, or remediation of identified contamination.

3.0 SUMMARY

The following is a summary of the recommended 2020 and future Monitoring Programs:

- For consistency, it is recommended to continue monitoring the existing five locations.
- To further establish background conditions and validate the current background (reference) locations, it is recommended that an additional up-gradient monitoring location be established east to north-east (up-gradient) of the current up-gradient reference location MS-LF-GW-REF1 (Figure 1).
- In order to reduce data gaps for groundwater quality monitoring, it is recommended that two additional down-gradient monitoring location be established south to southwest (down-gradient) of the current locations MS-LF-GW2 and MS-LF-GW3 (Figure 1).
- Due to the variability in groundwater quality, and to improve data collection repeatability, it is recommended that permanent monitoring wells be drilled, installed, and developed at the existing and proposed monitored locations. However, it is understood that due to logistic difficulty in obtaining a drilling rig on short notice for remote work, the permanent monitoring wells will be installed in 2021 and incorporated into the 2021 and subsequent Monitoring Programs. Therefore, the 2020 Monitoring Program will be conducted same way as was conducted in 2017 to 2019 using temporary drive-point piezometers by minimizing the depth and location variation from previous year.
- The permanent monitoring wells will be used to collect water level measurements, and groundwater quality data and conduct hydraulic conductivity tests.
- The analytical schedule for 2020 and subsequent future years is proposed to be:
 - Routine chemistry including all major ions,
 - Nutrients (ammonia and nitrate),
 - Dissolved metals,
 - Oil and grease, and
 - Benzene, toluene, ethylbenzene, xylenes (BTEX) and PHC Fraction F1 to F4.
- It is recommended in coming years that robust statistical analysis be completed to evaluate the significance of changes in water quality between up-gradient and down-gradient locations. A Monitoring Program report should be prepared as per the requirements of the Baffinland's Project Certification No. 005 – Amendment No. 2 issued by NIRB, documenting the methods and results. The report also should contain recommendations for the improvement of the future Monitoring Programs.
- A groundwater response plan is in place that provides a framework of actions that are to be followed in the event that analyzed groundwater parameter concentrations either exceed the Tier 1 FIGQ Guidelines, are considered to be outside of the historical concentration ranges for the particular monitoring well in question, and/or significant increasing concentration trends are observed within the monitoring well network. A site-specific pathway assessment should be considered to assess potential impacts to applicable pathways.

4.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully Submitted,
Tetra Tech Canada Inc.

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Prepared by:
Andrea McMillan, B.Sc., P.Geo.
Hydrogeologist
Environment & Water Practice
Direct Line: 403.723.1559
Andrea.Mcmillan@tetrattech.com

Reviewed by:
Fai Ndofor, M.Sc., P.Geo., PMP
Manager
Edmonton Arctic Group
Direct Line: 587.460.3486
Fai.Ndofor@tetrattech.com

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Reviewed by:
Aziz Shaikh, M.Sc., P.Eng.
Principal Consultant - Hydrogeology
Environment & Water Practice
Direct Line: 403.723.3262
Aziz.Shaikh@tetrattech.com

Reviewed by:
Brian C. Adeney, P.Eng.
Manager, Northern AB & NT/NU
Environment & Water Practice
Direct Line: 587.460.3445
Brian.Adeney@tetrattech.com

/jf:jmt

PERMIT TO PRACTICE TETRA TECH CANADA INC.	
Signature	
Date	March 24, 2021
PERMIT NUMBER: P 018 NT/NU Association of Professional Engineers and Geoscientists	

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TABLE

Table 1 Groundwater Analytical Results

Table 1: Groundwater Analytical Results

					Routine										Nutrients			Carbon		Dissolved Metals													
					pH	Electrical Conductivity (EC)	Total Dissolved Solids (TDS)	Alkalinity (total as CaCO ₃)	Alkalinity (Carbonate as CaCO ₃)	Alkalinity (Bicarbonate as CaCO ₃)	Alkalinity (Hydroxide) as CaCO ₃	Bromide	Chloride	Fluoride	Sulphate	Total Phosphorus	Ammonia as N	Total Kjeldahl Nitrogen (TKN)	Nitrate (as NO ₃ -N)	Dissolved Organic Carbon (DOC)	Total Organic Carbon (TOC)	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Cesium		
					pH Units	µmhos/cm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L				
Federal Interim Guideline ¹			Residential/Parkland		6.5-9	-	-	-	-	-	-	-	120	0.12	100	-	0.021 ⁵	-	-	-	-	0.100 ³	2	0.005	0.5	0.0053	-	1.5	0.00009	-	-		
			Commercial/Industrial		6.5-9	-	-	-	-	-	-	-	120	0.12	100	-	0.021 ⁵	-	-	-	-	0.100 ³	2	0.005	0.5	0.0053	-	1.5	0.00009	-	-		
			Freshwater		6.5-9	-	-	-	-	-	-	-	120	0.12	-	0.004 ⁶	0.021 ⁵	-	-	-	-	0.100 ³	-	0.005	-	-	-	1.5	0.00009	-	-		
CCME - AW ²			Marine		7.0-8.7	-	-	-	-	-	-	-	-	-	0.004 ⁶	-	-	-	-	-	-	-	0.0125	-	-	-	-	0.00012	-	-			
Location Code	Field ID	Sample Date	Laboratory Report Number	Laboratory ID																													
MS-LF-GW1	MS-LF-GW1	07/Sep/2017	L1988863	L1988863-1	6.95	2360	-	243	<10	243	<10	0.94	639	<0.10	15.1	0.0597	<0.020	0.59	<0.10	6.9	-	<0.0050	0.00015	0.00024	0.216	<0.00010	<0.000050	0.787	0.000041	315	0.000173		
		15/Sep/2018	L2167895	L2167895-3	8.03	1940	-	-	-	-	-	-	420	-	-	-	0.062	-	<0.020	-	-	<0.050	<0.0010	<0.0010	0.211	-	-	-	0.000174	-	-		
		27/Sep/2019	L2356948	L2356948-4	6.94	1970	1660	416	-	-	-	<0.50	35.5	<0.10	896	0.11	5.1	6.18	<0.10	15.2	20.6	<0.050	<0.0010	0.0017	0.186	<0.0010	<0.00050	4.87	0.000251	362	0.00042		
MS-LF-GW2	MS-LF-GW2	07/Sep/2017	L1988863	L1988863-2	7.37	1120	-	291	<10	291	<10	0.54	126	<0.020	64.2	0.145	0.091	1.00	0.402	11.4	-	<0.0050	0.00026	0.00073	0.0782	<0.00010	<0.000050	0.28	0.000177	80.8	0.000062		
		16/Sep/2018	L2167895	L2167895-5	8.05	1390	-	-	-	-	-	-	290	-	-	-	0.102	-	3.09	-	-	<0.050	<0.0010	<0.0010	0.0892	-	-	-	0.000079	-	-		
		28/Sep/2019	L2356948	L2356948-6	7.27	1470	1120	305	-	-	-	<0.50	59.2	<0.10	620	0.108	0.019	0.89	<0.10	8.59	9.31	<0.050	<0.0010	<0.0010	0.121	<0.0010	<0.00050	3.66	0.000142	150	<0.00010		
MS-LF-GW3	MS-LF-GW3	07/Sep/2017	L1988863	L1988863-3	8.05	379	-	200	<10	200	<10	<0.10	6.33	0.021	10.3	0.147	<0.020	0.17	0.422	4.4	-	<0.0050	<0.00010	0.00018	0.0183	<0.00010	<0.000050	<0.010	0.000011	31.3	0.000019		
		16/Sep/2018	L2167895	L2167895-6	8.21	375	-	-	-	-	-	-	15.3	-	-	-	0.147	-	0.148	-	-	0.0056	<0.00010	0.00016	0.0229	-	-	-	<0.000010	-	-		
		28/Sep/2019	L2356948	L2356948-5	7.21	2440	1350	185	-	-	-	2.62	730	<0.10	113	0.0302	0.88	1.02	2.14	4.86	5.43	<0.050	<0.0010	<0.0010	0.120	<0.0010	<0.00050	2.69	0.000083	192	0.00014		
MS-LF-GW-REF1	MS-LF-GW-REF1	15/Sep/2018	L2167895	L2167895-1	8.25	258	-	-	-	-	-	-	1.74	-	-	-	<0.020	-	0.276	-	-	0.0072	<0.00010	<0.00010	0.0107	-	-	-	<0.000010	-	-		
		27/Sep/2019	L2356948	L2356948-1	6.82	1700	1350	356	-	-	-	<0.50	32.3	<0.10	675	0.070	5.15	6.22	<0.10	14.2	21.6	<0.050	<0.0010	<0.0010	0.230	<0.0010	<0.00050	3.67	0.000505	293	<0.00010		
MS-LF-GW-REF2	MS-LF-GW-REF2	12/Sep/2017	L1988863	L1988863-4	7.94	314	-	165	<10	165	<10	<0.50	<2.5	<0.10	1.8	0.0363	<0.020	0.22	<0.10	7.1	-	0.0062	<0.00010	0.00012	0.0116	<0.00010	<0.000050	<0.010	<0.000010	34.3	0.000010		
		15/Sep/2018	L2167895	L2167895-2	8.25	313	-	-	-	-	-	-	4.81	-	-	-	<0.020	-	0.115	-	-	<0.0050	<0.00010	0.00029	0.0255	-	-	-	<0.000010	-	-		
		28/Sep/2019	L2356948	L2356948-3	7.86	762	519	221	-	-	-	<0.10	13.6	0.031	191	0.0537	0.018	0.47	0.285	5.24	6.12	<0.050	<0.0010	<0.0010	0.0602	<0.0010	<0.00050	1.39	<0.000050	65.8	<0.00010		

Notes:

¹ Environment Canada (June 2016). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, for coarse textured soil under Residential/Parkland and Commercial/Industrial land use

² Canadian Council of Ministers of the Environment (CCME) (Updated 2018). Water Quality Guidelines for the Protection of Aquatic Life (Freshwater and Marine)

³ Guideline varies with pH. Values shown based on site pH range of 6.82 to 8.25.

⁴ Guideline varies with hardness. Hardness not analyzed; most strinent guideline applied.

⁵ Guideline varies with pH and temperature.

⁶ Trigger ranges of total phosphorus for the trophic level status of wetlands are as follows (mg/L): <0.004 - ultra-oligotrophic; 0.004-0.01 - oligotrophic; 0.01-0.02 - mesotrophic; 0.02-0.035 - meso-eutrophic; 0.035-0.1 - eutrophic; >0.1 hyper-eutrophic

⁷ Chromium VI guideline applied.

** Sample names MS-LF-GW2 and MS-LF-GW3 were switched for the September 2019 Groundwater Sampling Event.

-" No applicable guideline or not analyzed

Shaded - Greater than Federal Interim Residential/Parkland and/or Commercial/Industrial Guideline

Bold - Greater than CCME Aquatic Life Freshwater and/or Marine Guideline

Italic - Detection limit greater than guideline

Table 1: Groundwater Analytical Results

					Dissolved Metals																										
					Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Rubidium	Selenium	Silicon	Silver	Sodium	Strontium	Sulphur	Tellurium	Thallium	Thorium	Tin	Titanium	Tungsten	Uranium
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Federal Interim Guideline ¹		Residential/Parkland			0.0089	-	0.002 - 0.004 ⁴	0.3	0.001 - 0.007 ⁴	-	-	-	0.000016	0.073	0.025 - 0.15 ⁴	-	-	-	0.001	-	0.00025	-	-	-	-	0.0008	-	-	0.1	-	0.015
		Commercial/Industrial			0.0089	-	0.002 - 0.004 ⁴	0.3	0.001 - 0.007 ⁴	-	-	-	0.000016	0.073	0.025 - 0.15 ⁴	-	-	-	0.001	-	0.00025	-	-	-	-	0.0008	-	-	0.1	-	0.015
CCME - AW ²		Freshwater			0.001 ⁷	-	0.002 - 0.004 ⁴	0.3	0.001 - 0.007 ⁴	-	-	-	0.000026	0.073	0.025 - 0.15 ⁴	-	-	-	0.001	-	0.00025	-	-	-	-	0.0008	-	-	-	-	0.015
		Marine			0.0015 ⁷	-	-	-	-	-	-	-	-	0.000016	-	-	-	-	-	-	0.0075	-	-	-	-	-	-	-	-	-	-
Location Code	Field ID	Sample Date	Laboratory Report Number	Laboratory ID																											
MS-LF-GW1	MS-LF-GW1	07/Sep/2017	L1988863	L1988863-1	0.00113	0.00047	0.00172	<0.010	0.000053	0.49	67.3	0.0184	<0.000010	0.000701	0.0407	<0.050	5.61	0.0202	0.000104	4.89	<0.000050	34	0.24	6.23	<0.0002	0.000104	<0.00010	<0.00010	<0.00030	<0.00010	0.00625
		15/Sep/2018	L2167895	L2167895-3	<u><0.0050</u>	0.0103	0.0074	<0.10	<0.000050	0.672	-	0.517	<0.000010	0.00152	0.085	-	-	-	<0.000050	-	-	-	0.224	-	-	0.00013	-	<0.0010	<0.0030	-	0.0123
		27/Sep/2019	L2356948	L2356948-4	<u><0.0050</u>	0.0538	<0.0020	0.13	0.00148	0.059	62.3	9.99	<0.0000050	0.00173	0.303	<0.50	11.4	0.0581	<0.000050	8.64	<u><0.000050</u>	23.2	0.626	272	<0.0020	0.00028	<0.0010	<0.0010	<0.0030	<0.0010	0.0296
MS-LF-GW2	MS-LF-GW2	07/Sep/2017	L1988863	L1988863-2	0.00237	0.00034	0.00763	<0.010	0.000474	0.0089	61.5	0.00472	<0.000010	0.000733	0.0203	<0.050	5.09	0.0185	0.000175	5.46	<0.000050	50.5	0.0453	28.9	<0.0002	0.000096	<0.00010	0.00013	<0.00030	<0.00010	0.0117
		16/Sep/2018	L2167895	L2167895-5	<u><0.0050</u>	<0.0010	0.0054	<0.10	<0.000050	<0.010	-	<0.0050	<0.000010	0.00074	0.023	-	-	-	<0.000050	-	-	-	0.067	-	-	<0.00010	-	<0.0010	<0.0030	-	0.0122
		28/Sep/2019	L2356948	L2356948-6	<u><0.0050</u>	0.0011	0.0055	<0.10	<0.000050	<0.010	126	0.194	<0.0000050	0.00065	0.0474	<0.50	3.19	0.0137	<0.000050	5.74	<u><0.000050</u>	13.6	0.084	175	<0.0020	<0.00010	<0.0010	<0.0010	<0.0030	<0.0010	0.0159
MS-LF-GW3	MS-LF-GW3	07/Sep/2017	L1988863	L1988863-3	0.00153	0.0001	0.00176	0.014	<0.000050	0.0017	26.4	0.00346	<0.000010	0.000505	0.0122	<0.050	1.51	0.00524	0.000051	5.06	<0.000050	5.48	0.0162	3.41	<0.0002	0.000026	<0.00010	<0.00010	0.00041	<0.00010	0.000848
		16/Sep/2018	L2167895	L2167895-6	0.00064	<0.00010	0.00192	0.014	<0.000050	0.0013	-	0.00145	<0.000010	0.00068	0.0122	-	-	-	<0.000050	-	-	-	0.0169	-	-	0.000021	-	<0.00010	0.00045	-	0.000614
		28/Sep/2019	L2356948	L2356948-5	<u><0.0050</u>	<0.0010	0.0027	<0.10	<0.000050	1.23	148	0.029	<0.0000050	0.00066	0.0268	<0.50	8.78	0.0375	<0.000050	5.57	<u><0.000050</u>	42.4	0.126	32	<0.0020	0.00019	<0.0010	<0.0010	<0.0030	<0.0010	0.010
MS-LF-GW-REF1	MS-LF-GW-REF1	15/Sep/2018	L2167895	L2167895-1	<0.000050	<0.00010	0.00175	<0.010	<0.000050	0.0012	-	0.00091	<0.000010	0.000375	0.00083	-	-	-	0.000051	-	-	-	0.0152	-	-	<0.000010	-	<0.00010	0.00038	-	0.000753
		27/Sep/2019	L2356948	L2356948-1	<u><0.0050</u>	0.0284	0.0121	<0.10	0.00072	0.030	64.0	4.78	0.0000076	0.00057	0.0385	<0.50	8.46	0.0332	<0.000050	4.37	<u><0.000050</u>	20.7	0.298	227	<0.0020	0.00015	<0.0010	<0.0010	<0.0030	<0.0010	0.00969
MS-LF-GW-REF2	MS-LF-GW-REF2	12/Sep/2017	L1988863	L1988863-4	<0.000050	<0.00010	0.00248	<0.010	<0.000050	0.0015	20.2	0.00066	<0.000010	0.000124	0.00254	<0.050	0.823	0.00248	<0.000050	1.86	<0.000050	0.69	0.0166	0.78	<0.0002	0.000014	<0.00010	<0.00010	<0.00030	<0.00010	0.00064
		15/Sep/2018	L2167895	L2167895-2	0.00104	<0.00010	0.004	<0.010	<0.000050	0.0012	-	0.0011	<0.000010	0.000234	0.00603	-	-	-	0.000056	-	-	-	0.016	-	-	0.000015	-	<0.00010	<0.00030	-	0.000349
		28/Sep/2019	L2356948	L2356948-3	<u><0.0050</u>	<0.0010	0.0039	<0.10	<0.000050	<0.010	61.0	<0.0050	<0.0000050	<0.000050	0.0106	<0.50	2.07	0.0071	<0.000050	5.15	<u><0.000050</u>	4.47	0.037	64.9	<0.0020	<0.00010	<0.0010	<0.0010	<0.0030	<0.0010	0.00493

Notes:

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³ Guideline varies with pH. Values shown based on site pH range of 6.82 to 8.25.

⁴ Guideline varies with hardness. Hardness not analyzed; most stringent guideline applied.

⁵ Guideline varies with pH and temperature.

⁶ Trigger ranges of total phosphorus for the trophic level status of wetlands are as follows (mg/L): <0.004 - ultra-oligotrophic; 0.004-0.01 - oligotrophic; 0.01-0.02 - mesotrophic; 0.02-0.035 - meso-eutrophic; 0.035-0.1 - eutrophic; >0.1 hyper-eutrophic

⁷ Chromium VI guideline applied.

** Sample names MS-LF-GW2 and MS-LF-GW3 were switched for the September 2019 Groundwater Sampling Event.

-" No applicable guideline or not analyzed

Shaded - Greater than Federal Interim Residential/Parkland and/or Commercial/Industrial Guideline

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Italic - Detection limit greater than guideline

Table 1: Groundwater Analytical Results

					Dissolved Metals			Total Metals																							
					Vanadium	Zinc	Zirconium	Aluminum	Antimony	Arsenic	Barium	Beryllium	Bismuth	Boron	Cadmium	Calcium	Cesium	Chromium	Cobalt	Copper	Iron	Lead	Lithium	Magnesium	Manganese	Mercury	Molybdenum	Nickel	Phosphorus	Potassium	Rubidium
Federal Interim Guideline ¹		Residential/Parkland			-	0.01	-	0.100 ³	2	0.005	0.5	0.0053	-	1.5	0.00009	-	-	0.0089	-	0.002 - 0.004 ⁴	0.3	0.001 - 0.007 ⁴	-	-	-	0.000016	0.073	0.025 - 0.15 ⁴	-	-	-
		Commercial/Industrial			-	0.01	-	0.100 ³	2	0.005	0.5	0.0053	-	1.5	0.00009	-	-	0.0089	-	0.002 - 0.004 ⁴	0.3	0.001 - 0.007 ⁴	-	-	-	0.000016	0.073	0.025 - 0.15 ⁴	-	-	-
CCME - AW ²		Freshwater			-	0.007	-	0.100 ³	-	0.005	-	-	-	1.5	0.00009	-	-	0.001 ⁷	-	0.002 - 0.004 ⁴	0.3	0.001 - 0.007 ⁴	-	-	-	0.000026	0.073	0.025 - 0.15 ⁴	0.004 ⁶	-	-
		Marine			-	-	-	-	-	0.0125	-	-	-	-	0.00012	-	-	0.0015 ⁷	-	-	-	-	-	-	-	0.000016	-	-	0.004 ⁶	-	-
Location Code	Field ID	Sample Date	Laboratory Report Number	Laboratory ID																											
MS-LF-GW1	MS-LF-GW1	07/Sep/2017	L1988863	L1988863-1	<0.00050	0.0024	<0.00030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		15/Sep/2018	L2167895	L2167895-3	<0.0050	<u><0.010</u>	-	1.05	<0.0010	<0.0010	0.243	-	-	-	0.000164	-	-	0.0098	0.0131	0.015	1.86	0.00249	0.827	-	0.629	-	0.00184	0.113	-	-	-
		27/Sep/2019	L2356948	L2356948-4	<0.0050	0.017	<0.0020	18	<0.0010	0.0112	0.387	<0.0010	0.00116	4.62	0.000699	343	0.00426	0.318	0.0901	0.049	40	0.0442	0.082	107	9.52	<0.0000050	0.0033	0.706	<u><0.50</u>	15.1	0.089
MS-LF-GW2	MS-LF-GW2	07/Sep/2017	L1988863	L1988863-2	<0.00050	0.0024	0.00066	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		16/Sep/2018	L2167895	L2167895-5	<0.0050	<u><0.010</u>	-	0.337	<0.0010	0.001	0.0993	-	-	-	0.000092	-	-	<u><0.0050</u>	0.0013	<u><0.010</u>	0.87	0.00158	0.016	-	0.0247	-	0.00083	0.0318	-	-	-
		28/Sep/2019	L2356948	L2356948-6	<0.0050	<u><0.010</u>	<0.0020	1.67	<0.0010	0.0011	0.139	<0.0010	<0.00050	3.59	0.000266	147	0.00035	0.0102	0.0035	0.020	3.12	0.00732	<0.010	117	0.305	<0.0000050	0.00125	0.066	<u><0.50</u>	4.64	0.0191
MS-LF-GW3	MS-LF-GW3	07/Sep/2017	L1988863	L1988863-3	<0.00050	0.0036	<0.00030	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		16/Sep/2018	L2167895	L2167895-6	<0.00050	<0.0010	-	7.36	0.00017	0.00451	0.0722	-	-	-	0.000113	-	-	0.0734	0.0127	0.0276	20.4	0.0235	0.0138	-	0.337	-	0.000514	0.132	-	-	-
		28/Sep/2019	L2356948	L2356948-5	<0.0050	<u><0.010</u>	<0.0020	4.5	<0.0010	0.0041	0.167	<0.0010	<0.00050	2.64	0.000175	197	0.00114	0.0573	0.0112	0.023	11.4	0.0142	1.18	154	0.363	<0.0000050	0.00085	0.125	<u><0.50</u>	10.8	0.048
MS-LF-GW-REF1	MS-LF-GW-REF1	15/Sep/2018	L2167895	L2167895-1	<0.00050	<0.0010	-	1.67	<0.00010	0.00062	0.0222	-	-	-	0.000017	-	-	0.00604	0.00151	0.0068	2.32	0.00322	0.0041	-	0.0736	-	0.000353	0.00704	-	-	-
		27/Sep/2019	L2356948	L2356948-1	<0.0050	<u><0.010</u>	<0.0020	0.087	<0.0010	<0.0010	0.236	<0.0010	<0.00050	3.52	0.000446	270	<0.00010	<u><0.0050</u>	0.0283	0.016	0.14	0.00098	0.024	55.3	4.29	0.0000108	0.00069	0.0389	<u><0.50</u>	8.96	0.0332
MS-LF-GW-REF2	MS-LF-GW-REF2	12/Sep/2017	L1988863	L1988863-4	<0.00050	<0.0010	0.00068	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
		15/Sep/2018	L2167895	L2167895-2	<0.00050	<0.0010	-	0.15	<0.00010	0.00035	0.0251	-	-	-	<0.000010	-	-	0.00174	0.00018	0.0045	0.178	0.00028	0.0015	-	0.00613	-	0.000252	0.00688	-	-	-
		28/Sep/2019	L2356948	L2356948-3	<0.0050	<u><0.010</u>	<0.0020	0.212	<0.0010	<0.0010	0.0739	<0.0010	<0.00050	1.5	<0.000050	74.2	<0.00010	<u><0.0050</u>	<0.0010	<u><0.010</u>	0.37	0.00066	<0.010	63.3	0.0108	<0.0000050	<0.00050	0.0151	<u><0.50</u>	2.58	0.0089

Notes:
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³ Guideline varies with pH. Values shown based on site pH range of 6.82 to 8.25.
⁴ Guideline varies with hardness. Hardness not analyzed; most stringent guideline applied.
⁵ Guideline varies with pH and temperature.
⁶ Trigger ranges of total phosphorus for the trophic level status of wetlands are as follows (mg/L): <0.004 - ultra-oligotrophic; 0.004-0.01 - oligotrophic; 0.01-0.02 - mesotrophic; 0.02-0.035 - meso-eutrophic; 0.035-0.1 - eutrophic; >0.1 hyper-eutrophic
⁷ Chromium VI guideline applied.
** Sample names MS-LF-GW2 and MS-LF-GW3 were switched for the September 2019 Groundwater Sampling Event.
- " - No applicable guideline or not analyzed
Shaded - Greater than Federal Interim Residential/Parkland and/or Commercial/Industrial Guideline
Bold - Greater than CCME Aquatic Life Freshwater and/or Marine Guideline
Italic - Detection limit greater than guideline

Table 1: Groundwater Analytical Results

					Total Metals															Oil & Grease	Hydrocarbons				
					Selenium	Silicon	Silver	Sodium	Strontium	Sulphur	Tellurium	Thallium	Thorium	Tin	Titanium	Tungsten	Uranium	Vanadium	Zinc	Zirconium	Oil and Grease	F2 (C ₁₀ -C ₁₄)	F3 (C ₁₅ -C ₂₄)	F4 (C ₂₄ -C ₅₀)	Chrom. to baseline at nC ₅₀
Federal Interim Guideline ¹		Residential/Parkland			0.001	-	0.00025	-	-	-	-	0.0008	-	-	0.1	-	0.015	-	0.01	-	-	1.3	-	-	-
		Commercial/Industrial			0.001	-	0.00025	-	-	-	-	0.0008	-	-	0.1	-	0.015	-	0.01	-	-	1.3	-	-	-
CCME - AW ²		Freshwater			0.001	-	0.00025	-	-	-	-	0.0008	-	-	-	-	0.015	-	0.007	-	-	-	-	-	-
		Marine			-	-	0.0075	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Location Code	Field ID	Sample Date	Laboratory Report Number	Laboratory ID																					
MS-LF-GW1	MS-LF-GW1	07/Sep/2017	L1988863	L1988863-1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6.1	<0.100	<0.250	<0.250	Yes
		15/Sep/2018	L2167895	L2167895-3	<0.00050	-	-	-	0.286	-	-	0.00015	-	<0.0010	0.0719	-	0.0138	<0.0050	<u><0.030</u>	-	<2.0	<0.100	<0.250	<0.250	Yes
		27/Sep/2019	L2356948	L2356948-4	0.00051	49.4	<u><0.00050</u>	22.1	0.618	257	<0.0020	0.00063	0.0112	<0.0010	1.1	<0.0010	0.0323	0.0481	0.067	0.0114	<2.0	<0.100	<0.250	<0.250	Yes
MS-LF-GW2	MS-LF-GW2	07/Sep/2017	L1988863	L1988863-2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.0	<0.100	<0.250	<0.250	Yes	
		16/Sep/2018	L2167895	L2167895-5	<0.00050	-	-	-	0.08	-	-	0.00012	-	<0.0010	0.0213	-	0.0138	<0.0050	<u><0.030</u>	-	2.3	<0.100	<0.250	<0.250	Yes
	MS-LF-GW3 **	28/Sep/2019	L2356948	L2356948-6	<0.00050	9	<u><0.00050</u>	13.4	0.089	173	<0.0020	0.00012	<0.0010	<0.0010	0.101	<0.0010	0.0171	<0.0050	0.139	0.0022	<2.0	<0.100	<0.250	<0.250	Yes
MS-LF-GW3	MS-LF-GW3	07/Sep/2017	L1988863	L1988863-3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2.7	<0.100	<0.250	<0.250	Yes
		16/Sep/2018	L2167895	L2167895-6	0.000096	-	-	-	0.0237	-	-	0.000256	-	0.00044	0.455	-	0.00115	0.0276	0.0266	-	6.5	<0.100	<0.250	<0.250	Yes
	MS-LF-GW2 **	28/Sep/2019	L2356948	L2356948-5	<0.00050	16.7	<u><0.00050</u>	40.6	0.134	32.6	<0.0020	0.00032	0.0036	<0.0010	0.235	<0.0010	0.011	0.014	<u><0.030</u>	0.0021	<2.0	<0.100	<0.250	<0.250	Yes
MS-LF-GW-REF1	MS-LF-GW-REF1	15/Sep/2018	L2167895	L2167895-1	0.000053	-	-	-	0.0196	-	-	0.000064	-	0.00026	0.0913	-	0.000953	0.00449	0.0083	-	<2.0	<0.100	<0.250	<0.250	Yes
		27/Sep/2019	L2356948	L2356948-1	<0.00050	4.4	<u><0.00050</u>	19.3	0.292	212	<0.0020	0.00015	<0.0010	<0.0010	0.0051	<0.0010	0.0102	<0.0050	<u><0.030</u>	<0.0020	<2.0	<0.100	<0.250	<0.250	Yes
	LF-GW-REF2	12/Sep/2017	L1988863	L1988863-4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.0	<0.100	<0.250	<0.250	Yes	
MS-LF-GW-REF2	MS-LF-GW-REF2	15/Sep/2018	L2167895	L2167895-2	<0.000050	-	-	-	0.0163	-	-	0.000022	-	0.00016	0.00684	-	0.000367	0.00054	<0.0030	-	<2.0	<0.100	<0.250	<0.250	Yes
		28/Sep/2019	L2356948	L2356948-3	<0.00050	6.4	<u><0.00050</u>	5.33	0.043	68.8	<0.0020	<0.00010	<0.0010	<0.0010	0.0141	<0.0010	0.00591	<0.0050	<u><0.030</u>	<0.0020	<2.0	<0.100	<0.250	<0.250	Yes

Notes:
¹ Environment Canada (June 2016). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, for coarse textured soil under Residential/Parkland and Commercial/Industrial land use
² Canadian Council of Ministers of the Environment (CCME) (Updated 2018). Water Quality Guidelines for the Protection of Aquatic Life (Freshwater and Marine)
³ Guideline varies with pH. Values shown based on site pH range of 6.82 to 8.25.
⁴ Guideline varies with hardness. Hardness not analyzed; most strinent guideline applied.
⁵ Guideline varies with pH and temperature.
⁶ Trigger ranges of total phosphorus for the trophic level status of wetlands are as follows (mg/L): <0.004 - ultra-oligotrophic; 0.004-0.01 - oligotrophic; 0.01-0.02 - mesotrophic; 0.02-0.035 - meso-eutrophic; 0.035-0.1 - eutrophic; >0.1 hyper-eutrophic
⁷ Chromium VI guideline applied.
** Sample names MS-LF-GW2 and MS-LF-GW3 were switched for the September 2019 Groundwater Sampling Event.
* - No applicable guideline or not analyzed
Shaded - Greater than Federal Interim Residential/Parkland and/or Commercial/Industrial Guideline
Bold - Greater than CCME Aquatic Life Freshwater and/or Marine Guideline
Italic - Detection limit greater than guideline

FIGURE

Figure 1 Current and Proposed Groundwater Monitoring Network

Q:\Vancouver\GIS\ENGINEERING\EARC03209-01\Figure01_GWMonitoring.mxd modified 2020-08-13 by stephanie.leusink



LEGEND

- Proposed Drive-point Piezometer Location
- 2019 Drive-point Piezometer Location
- 2018 Drive-point Piezometer Location
- 2017 Drive-point Piezometer Location

NOTES

Base data source:
Imagery from ESRI; Maxar (2019).

2020 GROUNDWATER MONITORING PROGRAM MARY RIVER MINE PROJECT, NUNAVUT

Current and Proposed Groundwater Monitoring Network

PROJECTION UTM Zone 17	DATUM NAD83	CLIENT Baffinland Iron Mines Corporation
Scale: 1:5,000 100 50 0 100 Metres		
FILE NO. EARC03209-01_Figure01_GWMonitoring.mxd		
OFFICE Tl-VANC	DWN SL	CKD -
DATE August 13, 2020	APVD AM	REV 0
PROJECT NO. ENG.EARC03209-01		Figure 1

APPENDIX A

TETRA TECH'S LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOENVIRONMENTAL

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While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

1.6 GENERAL LIMITATIONS OF DOCUMENT

This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary exploration, investigation, and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

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In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

APPENDIX C

PHOTOGRAPHS



Photo 1: Monitoring location MS-LF-GW1, facing northeast. September 13, 2020



Photo 2: Monitoring location MS-LF-GW1, facing southeast. September 13, 2020



Photo 3: Monitoring location MS-LF-GW2, facing east. September 13, 2020



Photo 4: Monitoring location MS-LF-GW2, facing southwest. September 13, 2020



Photo 5: Monitoring location MS-LF-GW3, looking north. September 13, 2020



Photo 6: Monitoring location MS-LF-GW3, facing west. September 13, 2020



Photo 7: Monitoring location MS-LF-GW4, facing west. September 13, 2020



Photo 8: Monitoring location MS-LF-GW4, facing northwest. September 13, 2020



Photo 9: Monitoring location MS-LF-GW5, facing west. September 13, 2020



Photo 10: Monitoring location MS-LF-GW5, facing west. September 13, 2020



Photo 11: Monitoring location MS-LF-GW-REF1, facing southeast. September 13, 2020



Photo 12: Monitoring location MS-LF-GW-REF1, facing south. September 13, 2020



Photo 13: Monitoring location MS-LF-GW-REF2, facing south.



Photo 14: Monitoring location MS-LF-GW-REF2, facing south.



Photo 15: Monitoring location MS-LF-GW-REF3, facing north.



Photo 16: Monitoring location MS-LF-GW-REF3, facing northwest.

APPENDIX D

LABORATORY ANALYTICAL REPORT



Baffinland Iron Mine's Corporation
(Oakville)

ATTN: Connor Devereaux/Aaron
MacDonell

2275 Upper Middle Rd. E.
Suite #300
Oakville ON L6H 0C3

Date Received: 09-SEP-20

Report Date: 24-SEP-20 07:48 (MT)

Version: FINAL

Client Phone: 647-253-0596

Certificate of Analysis

Lab Work Order #: L2500859

Project P.O. #: 4500073372

Job Reference: LANDFILL GROUNDWATER

C of C Numbers:

Legal Site Desc:

Comments: ADDITIONAL 10-SEP-20 16:16

Rick Hawthorne
Account Manager

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

ADDRESS: 60 Northland Road, Unit 1, Waterloo, ON N2V 2B8 Canada | Phone: +1 519 886 6910 | Fax: +1 519 886 9047

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

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-1	MS-LF-GW3							
Sampled By: DZ/MD on 08-SEP-20 @ 11:05								
Matrix: Water								
Physical Tests								
Conductivity		2460		2.0	uS/cm		17-SEP-20	R5227776
pH		7.30		0.10	pH units		10-SEP-20	R5219407
Total Suspended Solids		34.4		2.0	mg/L		10-SEP-20	R5219410
Total Dissolved Solids		1730		10	mg/L		10-SEP-20	R5221380
Turbidity		57.4		0.10	NTU		10-SEP-20	R5219409
Anions and Nutrients								
Alkalinity, Total (as CaCO3)		247		1.0	mg/L		17-SEP-20	R5227776
Ammonia, Total (as N)		0.0395		0.0050	mg/L		20-SEP-20	R5231164
Bromide (Br)		<0.50	DLDS	0.50	mg/L		17-SEP-20	R5229497
Chloride (Cl)		531		5.0	mg/L		17-SEP-20	R5229497
Fluoride (F)		<0.20	DLDS	0.20	mg/L		17-SEP-20	R5229497
Nitrate (as N)		0.586		0.050	mg/L		17-SEP-20	R5229497
Total Kjeldahl Nitrogen		0.689		0.050	mg/L	21-SEP-20	21-SEP-20	R5231875
Phosphorus (P)-Total		0.153		0.020	mg/L		20-SEP-20	R5231619
Sulfate (SO4)		300		3.0	mg/L		17-SEP-20	R5229497
Organic / Inorganic Carbon								
Dissolved Organic Carbon		7.75		0.50	mg/L		20-SEP-20	R5231438
Total Organic Carbon		7.43		0.50	mg/L		20-SEP-20	R5231438
Total Metals								
Aluminum (Al)-Total		2.18		0.0060	mg/L		19-SEP-20	R5230865
Antimony (Sb)-Total		0.00025		0.00020	mg/L		19-SEP-20	R5230865
Arsenic (As)-Total		0.00114		0.00020	mg/L		19-SEP-20	R5230865
Barium (Ba)-Total		0.104		0.00020	mg/L		19-SEP-20	R5230865
Beryllium (Be)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Bismuth (Bi)-Total		<0.00010	DLA	0.00010	mg/L		19-SEP-20	R5230865
Boron (B)-Total		4.07		0.020	mg/L		19-SEP-20	R5230865
Cadmium (Cd)-Total		0.000239		0.000010	mg/L		19-SEP-20	R5230865
Calcium (Ca)-Total		222		0.10	mg/L		19-SEP-20	R5230865
Cesium (Cs)-Total		0.000508		0.000020	mg/L		19-SEP-20	R5230865
Chromium (Cr)-Total		0.0136		0.00020	mg/L		19-SEP-20	R5230865
Cobalt (Co)-Total		0.00357		0.00020	mg/L		19-SEP-20	R5230865
Copper (Cu)-Total		0.0094		0.0010	mg/L		19-SEP-20	R5230865
Iron (Fe)-Total		3.71		0.020	mg/L		19-SEP-20	R5230865
Lead (Pb)-Total		0.00708		0.00010	mg/L		19-SEP-20	R5230865
Lithium (Li)-Total		0.0184		0.0020	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total		163		0.010	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total		0.391		0.00020	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		21-SEP-20	R5231291
Molybdenum (Mo)-Total		0.00074		0.00010	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total		0.0839		0.0010	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total		0.16		0.10	mg/L		19-SEP-20	R5230865
Potassium (K)-Total		5.45		0.10	mg/L		19-SEP-20	R5230865

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-1	MS-LF-GW3							
Sampled By: DZ/MD on 08-SEP-20 @ 11:05								
Matrix: Water								
Total Metals								
Rubidium (Rb)-Total		0.0258		0.00040	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total		0.00018		0.00010	mg/L		19-SEP-20	R5230865
Silicon (Si)-Total		11.0		0.20	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		0.000040		0.000020	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		26.1		0.10	mg/L		19-SEP-20	R5230865
Strontium (Sr)-Total		0.122		0.00040	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		108		1.0	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00040	DLA	0.00040	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		0.000190		0.000020	mg/L		19-SEP-20	R5230865
Thorium (Th)-Total		0.00105		0.00020	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		0.160		0.00060	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		0.0224		0.000020	mg/L		19-SEP-20	R5230865
Vanadium (V)-Total		0.0066		0.0010	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		0.0110		0.0060	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		0.00224		0.00040	mg/L		19-SEP-20	R5230865
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					16-SEP-20	R5225101
Aluminum (Al)-Dissolved		<0.0020	DLA	0.0020	mg/L	16-SEP-20	18-SEP-20	R5230596
Antimony (Sb)-Dissolved		<0.00020	DLA	0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Arsenic (As)-Dissolved		0.00035		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Barium (Ba)-Dissolved		0.0888		0.00020	mg/L	16-SEP-20	18-SEP-20	R5230596
Beryllium (Be)-Dissolved		<0.00020	DLA	0.00020	mg/L	16-SEP-20	18-SEP-20	R5230596
Bismuth (Bi)-Dissolved		<0.00010	DLA	0.00010	mg/L	16-SEP-20	18-SEP-20	R5230596
Boron (B)-Dissolved		3.75		0.020	mg/L	16-SEP-20	18-SEP-20	R5230596
Cadmium (Cd)-Dissolved		0.000193		0.000010	mg/L	16-SEP-20	18-SEP-20	R5230596
Calcium (Ca)-Dissolved		231		0.10	mg/L	16-SEP-20	18-SEP-20	R5230596
Cesium (Cs)-Dissolved		0.000038		0.000020	mg/L	16-SEP-20	18-SEP-20	R5230596
Chromium (Cr)-Dissolved		0.00039		0.00020	mg/L	16-SEP-20	18-SEP-20	R5230596
Cobalt (Co)-Dissolved		0.00101		0.00020	mg/L	16-SEP-20	18-SEP-20	R5230596
Copper (Cu)-Dissolved		0.00430		0.00040	mg/L	16-SEP-20	18-SEP-20	R5230596
Iron (Fe)-Dissolved		<0.020	DLA	0.020	mg/L	16-SEP-20	18-SEP-20	R5230596
Lead (Pb)-Dissolved		<0.00010	DLA	0.00010	mg/L	16-SEP-20	18-SEP-20	R5230596
Lithium (Li)-Dissolved		0.0164		0.0020	mg/L	16-SEP-20	18-SEP-20	R5230596
Magnesium (Mg)-Dissolved		174		0.010	mg/L	16-SEP-20	18-SEP-20	R5230596
Manganese (Mn)-Dissolved		0.316		0.00020	mg/L	16-SEP-20	18-SEP-20	R5230596
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
Molybdenum (Mo)-Dissolved		0.00053		0.00010	mg/L	16-SEP-20	18-SEP-20	R5230596
Nickel (Ni)-Dissolved		0.0657		0.0010	mg/L	16-SEP-20	18-SEP-20	R5230596

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-1 MS-LF-GW3 Sampled By: DZ/MD on 08-SEP-20 @ 11:05 Matrix: Water Dissolved Metals Phosphorus (P)-Dissolved Potassium (K)-Dissolved Rubidium (Rb)-Dissolved Selenium (Se)-Dissolved Silicon (Si)-Dissolved Silver (Ag)-Dissolved Sodium (Na)-Dissolved Strontium (Sr)-Dissolved Sulfur (S)-Dissolved Tellurium (Te)-Dissolved Thallium (Tl)-Dissolved Thorium (Th)-Dissolved Tin (Sn)-Dissolved Titanium (Ti)-Dissolved Tungsten (W)-Dissolved Uranium (U)-Dissolved Vanadium (V)-Dissolved Zinc (Zn)-Dissolved Zirconium (Zr)-Dissolved Aggregate Organics Oil and Grease Volatile Organic Compounds F1 (C6-C10) Hydrocarbons F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Surrogate: 2-Bromobenzotrifluoride, F2-F4								
		<0.10	DLA	0.10	mg/L	16-SEP-20	20-SEP-20	R5231567
		4.49		0.10	mg/L	16-SEP-20	18-SEP-20	R5230596
		0.0186		0.00040	mg/L	16-SEP-20	18-SEP-20	R5230596
		<0.00010	DLA	0.00010	mg/L	16-SEP-20	18-SEP-20	R5230596
		6.37		0.10	mg/L	16-SEP-20	18-SEP-20	R5230596
		<0.000020	DLA	0.000020	mg/L	16-SEP-20	18-SEP-20	R5230596
		26.8		0.10	mg/L	16-SEP-20	18-SEP-20	R5230596
		0.123		0.00040	mg/L	16-SEP-20	18-SEP-20	R5230596
		108		1.0	mg/L	16-SEP-20	18-SEP-20	R5230596
		<0.00040	DLA	0.00040	mg/L	16-SEP-20	18-SEP-20	R5230596
		0.000118		0.000020	mg/L	16-SEP-20	18-SEP-20	R5230596
		<0.00020	DLA	0.00020	mg/L	16-SEP-20	18-SEP-20	R5230596
		<0.00020	DLA	0.00020	mg/L	16-SEP-20	18-SEP-20	R5230596
		<0.00060	DLA	0.00060	mg/L	16-SEP-20	18-SEP-20	R5230596
		<0.00020	DLA	0.00020	mg/L	16-SEP-20	18-SEP-20	R5230596
		0.0214		0.000020	mg/L	16-SEP-20	18-SEP-20	R5230596
		<0.0010	DLA	0.0010	mg/L	16-SEP-20	18-SEP-20	R5230596
		<0.0020	DLA	0.0020	mg/L	16-SEP-20	18-SEP-20	R5230596
		0.00046		0.00040	mg/L	16-SEP-20	18-SEP-20	R5230596
		<5.0		5.0	mg/L		22-SEP-20	R5232482
		<0.10		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
		91.3		60-140	%	21-SEP-20	22-SEP-20	R5231613
L2500859-2 MS-LF-GW301 Sampled By: DZ/MD on 08-SEP-20 @ 11:05 Matrix: Water Physical Tests Conductivity pH Total Suspended Solids Total Dissolved Solids Turbidity Anions and Nutrients Alkalinity, Total (as CaCO3) Ammonia, Total (as N) Bromide (Br) Chloride (Cl)								
		2450		2.0	uS/cm		17-SEP-20	R5227776
		7.30		0.10	pH units		10-SEP-20	R5219407
		27.6		2.0	mg/L		10-SEP-20	R5219410
		1730		10	mg/L		10-SEP-20	R5221380
		45.2		0.10	NTU		10-SEP-20	R5219409
		247		1.0	mg/L		17-SEP-20	R5227776
		0.0396		0.0050	mg/L		21-SEP-20	R5231506
		0.57		0.50	mg/L		17-SEP-20	R5229497
		527		5.0	mg/L		17-SEP-20	R5229497

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-2	MS-LF-GW301							
Sampled By:	DZ/MD on 08-SEP-20 @ 11:05							
Matrix:	Water							
Anions and Nutrients								
Fluoride (F)		<0.20	DLDS	0.20	mg/L		17-SEP-20	R5229497
Nitrate (as N)		0.582		0.050	mg/L		17-SEP-20	R5229497
Total Kjeldahl Nitrogen		0.684		0.050	mg/L	21-SEP-20	21-SEP-20	R5231875
Phosphorus (P)-Total		0.206		0.020	mg/L		20-SEP-20	R5231619
Sulfate (SO4)		297		3.0	mg/L		17-SEP-20	R5229497
Organic / Inorganic Carbon								
Dissolved Organic Carbon		7.92		0.50	mg/L		20-SEP-20	R5231438
Total Organic Carbon		7.60		0.50	mg/L		20-SEP-20	R5231438
Total Metals								
Aluminum (Al)-Total		2.50		0.0060	mg/L		19-SEP-20	R5230865
Antimony (Sb)-Total		0.00025		0.00020	mg/L		19-SEP-20	R5230865
Arsenic (As)-Total		0.00122		0.00020	mg/L		19-SEP-20	R5230865
Barium (Ba)-Total		0.107		0.00020	mg/L		19-SEP-20	R5230865
Beryllium (Be)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Bismuth (Bi)-Total		<0.00010	DLA	0.00010	mg/L		19-SEP-20	R5230865
Boron (B)-Total		4.19		0.020	mg/L		19-SEP-20	R5230865
Cadmium (Cd)-Total		0.000232		0.000010	mg/L		19-SEP-20	R5230865
Calcium (Ca)-Total		224		0.10	mg/L		19-SEP-20	R5230865
Cesium (Cs)-Total		0.000563		0.000020	mg/L		19-SEP-20	R5230865
Chromium (Cr)-Total		0.0144		0.00020	mg/L		19-SEP-20	R5230865
Cobalt (Co)-Total		0.00383		0.00020	mg/L		19-SEP-20	R5230865
Copper (Cu)-Total		0.0096		0.0010	mg/L		19-SEP-20	R5230865
Iron (Fe)-Total		4.21		0.020	mg/L		19-SEP-20	R5230865
Lead (Pb)-Total		0.00727		0.00010	mg/L		19-SEP-20	R5230865
Lithium (Li)-Total		0.0188		0.0020	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total		164		0.010	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total		0.398		0.00020	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		21-SEP-20	R5231291
Molybdenum (Mo)-Total		0.00071		0.00010	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total		0.0848		0.0010	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total		0.18		0.10	mg/L		19-SEP-20	R5230865
Potassium (K)-Total		5.55		0.10	mg/L		19-SEP-20	R5230865
Rubidium (Rb)-Total		0.0264		0.00040	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total		0.00013		0.00010	mg/L		19-SEP-20	R5230865
Silicon (Si)-Total		11.7		0.20	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		0.000041		0.000020	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		25.6		0.10	mg/L		19-SEP-20	R5230865
Strontium (Sr)-Total		0.124		0.00040	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		108		1.0	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00040	DLA	0.00040	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		0.000188		0.000020	mg/L		19-SEP-20	R5230865

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-2	MS-LF-GW301							
Sampled By:	DZ/MD on 08-SEP-20 @ 11:05							
Matrix:	Water							
Total Metals								
Thorium (Th)-Total		0.00113		0.00020	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		0.187		0.00060	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		0.0218		0.000020	mg/L		19-SEP-20	R5230865
Vanadium (V)-Total		0.0073		0.0010	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		0.0144		0.0060	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		0.00229		0.00040	mg/L		19-SEP-20	R5230865
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					16-SEP-20	R5225101
Aluminum (Al)-Dissolved		<0.0050	DLA	0.0050	mg/L	16-SEP-20	18-SEP-20	R5230596
Antimony (Sb)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	18-SEP-20	R5230596
Arsenic (As)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Barium (Ba)-Dissolved		0.0883		0.00050	mg/L	16-SEP-20	18-SEP-20	R5230596
Beryllium (Be)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	18-SEP-20	R5230596
Bismuth (Bi)-Dissolved		<0.00025	DLA	0.00025	mg/L	16-SEP-20	18-SEP-20	R5230596
Boron (B)-Dissolved		4.03		0.050	mg/L	16-SEP-20	18-SEP-20	R5230596
Cadmium (Cd)-Dissolved		0.000194		0.000025	mg/L	16-SEP-20	18-SEP-20	R5230596
Calcium (Ca)-Dissolved		234		0.25	mg/L	16-SEP-20	18-SEP-20	R5230596
Cesium (Cs)-Dissolved		<0.000050	DLA	0.000050	mg/L	16-SEP-20	18-SEP-20	R5230596
Chromium (Cr)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	18-SEP-20	R5230596
Cobalt (Co)-Dissolved		0.00102		0.00050	mg/L	16-SEP-20	18-SEP-20	R5230596
Copper (Cu)-Dissolved		0.0041		0.0010	mg/L	16-SEP-20	18-SEP-20	R5230596
Iron (Fe)-Dissolved		<0.050	DLA	0.050	mg/L	16-SEP-20	18-SEP-20	R5230596
Lead (Pb)-Dissolved		<0.00025	DLA	0.00025	mg/L	16-SEP-20	18-SEP-20	R5230596
Lithium (Li)-Dissolved		0.0162		0.0050	mg/L	16-SEP-20	18-SEP-20	R5230596
Magnesium (Mg)-Dissolved		174		0.025	mg/L	16-SEP-20	18-SEP-20	R5230596
Manganese (Mn)-Dissolved		0.312		0.00050	mg/L	16-SEP-20	18-SEP-20	R5230596
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
Molybdenum (Mo)-Dissolved		0.00052		0.00025	mg/L	16-SEP-20	18-SEP-20	R5230596
Nickel (Ni)-Dissolved		0.0645		0.0025	mg/L	16-SEP-20	18-SEP-20	R5230596
Phosphorus (P)-Dissolved		<0.25	DLA	0.25	mg/L	16-SEP-20	20-SEP-20	R5231567
Potassium (K)-Dissolved		4.40		0.25	mg/L	16-SEP-20	18-SEP-20	R5230596
Rubidium (Rb)-Dissolved		0.0192		0.0010	mg/L	16-SEP-20	18-SEP-20	R5230596
Selenium (Se)-Dissolved		<0.00025	DLA	0.00025	mg/L	16-SEP-20	18-SEP-20	R5230596
Silicon (Si)-Dissolved		6.09		0.25	mg/L	16-SEP-20	18-SEP-20	R5230596
Silver (Ag)-Dissolved		<0.000050	DLA	0.000050	mg/L	16-SEP-20	18-SEP-20	R5230596
Sodium (Na)-Dissolved		27.1		0.25	mg/L	16-SEP-20	18-SEP-20	R5230596
Strontium (Sr)-Dissolved		0.114		0.0010	mg/L	16-SEP-20	18-SEP-20	R5230596
Sulfur (S)-Dissolved		107		2.5	mg/L	16-SEP-20	18-SEP-20	R5230596

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-2 MS-LF-GW301 Sampled By: DZ/MD on 08-SEP-20 @ 11:05 Matrix: Water	Dissolved Metals							
	Tellurium (Te)-Dissolved	<0.0010	DLA	0.0010	mg/L	16-SEP-20	18-SEP-20	R5230596
	Thallium (Tl)-Dissolved	0.000115		0.000050	mg/L	16-SEP-20	18-SEP-20	R5230596
	Thorium (Th)-Dissolved	<0.00050	DLA	0.00050	mg/L	16-SEP-20	18-SEP-20	R5230596
	Tin (Sn)-Dissolved	<0.00050	DLA	0.00050	mg/L	16-SEP-20	18-SEP-20	R5230596
	Titanium (Ti)-Dissolved	<0.0015	DLA	0.0015	mg/L	16-SEP-20	18-SEP-20	R5230596
	Tungsten (W)-Dissolved	<0.00050	DLA	0.00050	mg/L	16-SEP-20	18-SEP-20	R5230596
	Uranium (U)-Dissolved	0.0210		0.000050	mg/L	16-SEP-20	18-SEP-20	R5230596
	Vanadium (V)-Dissolved	<0.0025	DLA	0.0025	mg/L	16-SEP-20	18-SEP-20	R5230596
	Zinc (Zn)-Dissolved	<0.0050	DLA	0.0050	mg/L	16-SEP-20	18-SEP-20	R5230596
	Zirconium (Zr)-Dissolved	<0.0010	DLA	0.0010	mg/L	16-SEP-20	18-SEP-20	R5230596
	Aggregate Organics							
	Oil and Grease	<5.0		5.0	mg/L		22-SEP-20	R5232482
	Volatile Organic Compounds							
	F1 (C6-C10)	<0.10		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
	Hydrocarbons							
	F2 (C10-C16)	<0.30		0.30	mg/L	20-SEP-20	22-SEP-20	R5231613
	F3 (C16-C34)	<0.30		0.30	mg/L	20-SEP-20	22-SEP-20	R5231613
	F4 (C34-C50)	<0.30		0.30	mg/L	20-SEP-20	22-SEP-20	R5231613
	Surrogate: 2-Bromobenzotrifluoride, F2-F4	72.6		60-140	%	20-SEP-20	22-SEP-20	R5231613
L2500859-3 MS-LF-GW2 Sampled By: DZ/MD on 08-SEP-20 @ 10:20 Matrix: Water	Physical Tests							
	Conductivity	2540		2.0	uS/cm		17-SEP-20	R5227776
	pH	7.22		0.10	pH units		10-SEP-20	R5219407
	Total Suspended Solids	22.4		2.0	mg/L		10-SEP-20	R5219410
	Total Dissolved Solids	1890		10	mg/L		10-SEP-20	R5221380
	Turbidity	13.6		0.10	NTU		10-SEP-20	R5219409
	Anions and Nutrients							
	Alkalinity, Total (as CaCO3)	491		1.0	mg/L		17-SEP-20	R5227776
	Ammonia, Total (as N)	4.13		0.13	mg/L		21-SEP-20	R5231506
	Bromide (Br)	0.58		0.50	mg/L		17-SEP-20	R5229497
	Chloride (Cl)	131		5.0	mg/L		17-SEP-20	R5229497
	Fluoride (F)	<0.20	DLDS	0.20	mg/L		17-SEP-20	R5229497
	Nitrate (as N)	<0.050	DLDS	0.050	mg/L		17-SEP-20	R5229497
	Total Kjeldahl Nitrogen	7.20		0.25	mg/L	21-SEP-20	21-SEP-20	R5231875
	Phosphorus (P)-Total	0.157		0.020	mg/L		20-SEP-20	R5231619
	Sulfate (SO4)	937		3.0	mg/L		17-SEP-20	R5229497
	Organic / Inorganic Carbon							
	Dissolved Organic Carbon	35.2		1.0	mg/L		21-SEP-20	R5232223
	Total Organic Carbon	35.9		1.0	mg/L		21-SEP-20	R5232223
	Total Metals							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-3	MS-LF-GW2							
Sampled By:	DZ/MD on 08-SEP-20 @ 10:20							
Matrix:	Water							
Total Metals								
Aluminum (Al)-Total		0.105		0.0060	mg/L		19-SEP-20	R5230865
Antimony (Sb)-Total		0.00177		0.00020	mg/L		19-SEP-20	R5230865
Arsenic (As)-Total		0.00241		0.00020	mg/L		19-SEP-20	R5230865
Barium (Ba)-Total		0.101		0.00020	mg/L		19-SEP-20	R5230865
Beryllium (Be)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Bismuth (Bi)-Total		<0.00010	DLA	0.00010	mg/L		19-SEP-20	R5230865
Boron (B)-Total		7.71		0.020	mg/L		19-SEP-20	R5230865
Cadmium (Cd)-Total		0.000401		0.000010	mg/L		19-SEP-20	R5230865
Calcium (Ca)-Total		309		0.10	mg/L		19-SEP-20	R5230865
Cesium (Cs)-Total		0.000088		0.000020	mg/L		19-SEP-20	R5230865
Chromium (Cr)-Total		0.00224		0.00020	mg/L		19-SEP-20	R5230865
Cobalt (Co)-Total		0.0639		0.00020	mg/L		19-SEP-20	R5230865
Copper (Cu)-Total		0.0902		0.0010	mg/L		19-SEP-20	R5230865
Iron (Fe)-Total		0.925		0.020	mg/L		19-SEP-20	R5230865
Lead (Pb)-Total		0.00073		0.00010	mg/L		19-SEP-20	R5230865
Lithium (Li)-Total		0.0668		0.0020	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total		150		0.010	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total		9.12		0.00020	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total		0.0000250		0.0000050	mg/L		21-SEP-20	R5231291
Molybdenum (Mo)-Total		0.00452		0.00010	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total		0.269		0.0010	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total		0.18		0.10	mg/L		19-SEP-20	R5230865
Potassium (K)-Total		24.4		0.10	mg/L		19-SEP-20	R5230865
Rubidium (Rb)-Total		0.0308		0.00040	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total		0.00026		0.00010	mg/L		19-SEP-20	R5230865
Silicon (Si)-Total		9.25		0.20	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		0.000753		0.000020	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		77.6		0.10	mg/L		19-SEP-20	R5230865
Strontium (Sr)-Total		0.398		0.00040	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		338		1.0	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00040	DLA	0.00040	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		0.000274		0.000020	mg/L		19-SEP-20	R5230865
Thorium (Th)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		0.00655		0.00060	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		0.0220		0.000020	mg/L		19-SEP-20	R5230865
Vanadium (V)-Total		0.0018		0.0010	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		<0.0060	DLA	0.0060	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		0.00267		0.00040	mg/L		19-SEP-20	R5230865
Dissolved Metals								

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-3	MS-LF-GW2							
Sampled By:	DZ/MD on 08-SEP-20 @ 10:20							
Matrix:	Water							
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					16-SEP-20	R5225101
Aluminum (Al)-Dissolved		0.0123		0.0050	mg/L	16-SEP-20	20-SEP-20	R5231567
Antimony (Sb)-Dissolved		0.00168		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Arsenic (As)-Dissolved		0.00206		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Barium (Ba)-Dissolved		0.0925		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Beryllium (Be)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Bismuth (Bi)-Dissolved		<0.00025	DLA	0.00025	mg/L	16-SEP-20	20-SEP-20	R5231567
Boron (B)-Dissolved		7.43		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Cadmium (Cd)-Dissolved		0.000401		0.000025	mg/L	16-SEP-20	20-SEP-20	R5231567
Calcium (Ca)-Dissolved		315		0.25	mg/L	16-SEP-20	20-SEP-20	R5231567
Cesium (Cs)-Dissolved		0.000057		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Chromium (Cr)-Dissolved		0.00122		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Cobalt (Co)-Dissolved		0.0623		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Copper (Cu)-Dissolved		0.0452		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Iron (Fe)-Dissolved		0.729		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Lead (Pb)-Dissolved		<0.00025	DLA	0.00025	mg/L	16-SEP-20	20-SEP-20	R5231567
Lithium (Li)-Dissolved		0.0709		0.0050	mg/L	16-SEP-20	20-SEP-20	R5231567
Magnesium (Mg)-Dissolved		152		0.025	mg/L	16-SEP-20	20-SEP-20	R5231567
Manganese (Mn)-Dissolved		9.15		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Mercury (Hg)-Dissolved		0.0000165		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
Molybdenum (Mo)-Dissolved		0.00407		0.00025	mg/L	16-SEP-20	20-SEP-20	R5231567
Nickel (Ni)-Dissolved		0.271		0.0025	mg/L	16-SEP-20	20-SEP-20	R5231567
Phosphorus (P)-Dissolved		<0.25	DLA	0.25	mg/L	16-SEP-20	20-SEP-20	R5231567
Potassium (K)-Dissolved		24.7		0.25	mg/L	16-SEP-20	20-SEP-20	R5231567
Rubidium (Rb)-Dissolved		0.0311		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Selenium (Se)-Dissolved		<0.00025	DLA	0.00025	mg/L	16-SEP-20	20-SEP-20	R5231567
Silicon (Si)-Dissolved		8.59		0.25	mg/L	16-SEP-20	20-SEP-20	R5231567
Silver (Ag)-Dissolved		0.000318		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Sodium (Na)-Dissolved		75.0		0.25	mg/L	16-SEP-20	20-SEP-20	R5231567
Strontium (Sr)-Dissolved		0.407		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Sulfur (S)-Dissolved		311		2.5	mg/L	16-SEP-20	20-SEP-20	R5231567
Tellurium (Te)-Dissolved		<0.0010	DLA	0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Thallium (Tl)-Dissolved		0.000232		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Thorium (Th)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Tin (Sn)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Titanium (Ti)-Dissolved		<0.0015	DLA	0.0015	mg/L	16-SEP-20	20-SEP-20	R5231567
Tungsten (W)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Uranium (U)-Dissolved		0.0191		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Vanadium (V)-Dissolved		<0.0025	DLA	0.0025	mg/L	16-SEP-20	20-SEP-20	R5231567
Zinc (Zn)-Dissolved		<0.0050	DLA	0.0050	mg/L	16-SEP-20	20-SEP-20	R5231567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-3 MS-LF-GW2 Sampled By: DZ/MD on 08-SEP-20 @ 10:20 Matrix: Water	Dissolved Metals							
	Zirconium (Zr)-Dissolved	0.0025		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Aggregate Organics							
	Oil and Grease	<5.0		5.0	mg/L		22-SEP-20	R5232482
	Volatile Organic Compounds							
	F1 (C6-C10)	<0.10		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
	Hydrocarbons							
	F2 (C10-C16)	<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
	F3 (C16-C34)	<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
	F4 (C34-C50)	<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
	Surrogate: 2-Bromobenzotrifluoride, F2-F4	86.5		60-140	%	21-SEP-20	22-SEP-20	R5231613
L2500859-4 MS-LF-GW-REF2 Sampled By: DZ/MD on 08-SEP-20 @ 11:55 Matrix: Water	Physical Tests							
	Conductivity	557		2.0	uS/cm		17-SEP-20	R5227776
	pH	7.93		0.10	pH units		10-SEP-20	R5219407
	Total Suspended Solids	286		2.0	mg/L		10-SEP-20	R5219410
	Total Dissolved Solids	380		10	mg/L		10-SEP-20	R5221380
	Turbidity	666		0.10	NTU		10-SEP-20	R5219409
	Anions and Nutrients							
	Alkalinity, Total (as CaCO3)	171		1.0	mg/L		17-SEP-20	R5227776
	Ammonia, Total (as N)	0.0329		0.0050	mg/L		20-SEP-20	R5231164
	Bromide (Br)	<0.050		0.050	mg/L		17-SEP-20	R5229497
	Chloride (Cl)	17.2		0.50	mg/L		17-SEP-20	R5229497
	Fluoride (F)	0.031		0.020	mg/L		17-SEP-20	R5229497
	Nitrate (as N)	0.884		0.0050	mg/L		17-SEP-20	R5229497
	Total Kjeldahl Nitrogen	0.497		0.050	mg/L	21-SEP-20	21-SEP-20	R5231875
	Phosphorus (P)-Total	4.65		0.10	mg/L		22-SEP-20	R5232409
	Sulfate (SO4)	100		0.30	mg/L		17-SEP-20	R5229497
	Organic / Inorganic Carbon							
	Dissolved Organic Carbon	5.34		0.50	mg/L		20-SEP-20	R5231438
	Total Organic Carbon	6.34		0.50	mg/L		20-SEP-20	R5231438
	Total Metals							
	Aluminum (Al)-Total	16.3		0.0030	mg/L		19-SEP-20	R5230865
	Antimony (Sb)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
	Arsenic (As)-Total	0.00518		0.00010	mg/L		19-SEP-20	R5230865
	Barium (Ba)-Total	0.208		0.00010	mg/L		19-SEP-20	R5230865
	Beryllium (Be)-Total	0.00132		0.00010	mg/L		19-SEP-20	R5230865
	Bismuth (Bi)-Total	0.000176		0.000050	mg/L		19-SEP-20	R5230865
	Boron (B)-Total	0.972		0.010	mg/L		19-SEP-20	R5230865
	Cadmium (Cd)-Total	0.000998		0.0000050	mg/L		19-SEP-20	R5230865
	Calcium (Ca)-Total	128		0.050	mg/L		19-SEP-20	R5230865

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-4	MS-LF-GW-REF2							
Sampled By:	DZ/MD on 08-SEP-20 @ 11:55							
Matrix:	Water							
Total Metals								
Cesium (Cs)-Total		0.00206		0.000010	mg/L		19-SEP-20	R5230865
Chromium (Cr)-Total		0.113		0.00010	mg/L		19-SEP-20	R5230865
Cobalt (Co)-Total		0.0300		0.00010	mg/L		19-SEP-20	R5230865
Copper (Cu)-Total		0.158		0.00050	mg/L		19-SEP-20	R5230865
Iron (Fe)-Total		24.9		0.010	mg/L		19-SEP-20	R5230865
Lead (Pb)-Total		0.0383		0.000050	mg/L		19-SEP-20	R5230865
Lithium (Li)-Total		0.0224		0.0010	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total		87.8		0.0050	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total		0.890		0.00010	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total		<0.00050	DLM	0.00050	mg/L		21-SEP-20	R5231291
Molybdenum (Mo)-Total		0.000259		0.000050	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total		0.245		0.00050	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total		2.97		0.050	mg/L		19-SEP-20	R5230865
Potassium (K)-Total		6.33		0.050	mg/L		19-SEP-20	R5230865
Rubidium (Rb)-Total		0.0822		0.00020	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total		0.000149		0.000050	mg/L		19-SEP-20	R5230865
Silicon (Si)-Total		34.7		0.10	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		0.000117		0.000010	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		5.68		0.050	mg/L		19-SEP-20	R5230865
Strontium (Sr)-Total		0.0870		0.00020	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		35.7		0.50	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		0.000517		0.000010	mg/L		19-SEP-20	R5230865
Thorium (Th)-Total		0.00563		0.00010	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		0.00056		0.00010	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		0.805		0.00030	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		0.00582		0.000010	mg/L		19-SEP-20	R5230865
Vanadium (V)-Total		0.0492		0.00050	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		0.132		0.0030	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		0.00550		0.00020	mg/L		19-SEP-20	R5230865
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					16-SEP-20	R5225101
Aluminum (Al)-Dissolved		0.0016		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Arsenic (As)-Dissolved		0.00022		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Barium (Ba)-Dissolved		0.0395		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Boron (B)-Dissolved		0.858		0.010	mg/L	16-SEP-20	20-SEP-20	R5231567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-4	MS-LF-GW-REF2							
Sampled By:	DZ/MD on 08-SEP-20 @ 11:55							
Matrix:	Water							
Dissolved Metals								
Cadmium (Cd)-Dissolved		0.0000101		0.0000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Calcium (Ca)-Dissolved		48.7		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Cesium (Cs)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Chromium (Cr)-Dissolved		0.00075		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Cobalt (Co)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Copper (Cu)-Dissolved		0.00316		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Iron (Fe)-Dissolved		<0.010		0.010	mg/L	16-SEP-20	20-SEP-20	R5231567
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Lithium (Li)-Dissolved		0.0022		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Magnesium (Mg)-Dissolved		39.6		0.0050	mg/L	16-SEP-20	20-SEP-20	R5231567
Manganese (Mn)-Dissolved		0.00075		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
Molybdenum (Mo)-Dissolved		0.000391	DTMF	0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Nickel (Ni)-Dissolved		0.00620		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Potassium (K)-Dissolved		1.98		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Rubidium (Rb)-Dissolved		0.00746		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Selenium (Se)-Dissolved		0.000113		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Silicon (Si)-Dissolved		4.91		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Silver (Ag)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Sodium (Na)-Dissolved		5.45		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Strontium (Sr)-Dissolved		0.0274		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Sulfur (S)-Dissolved		33.6		0.50	mg/L	16-SEP-20	20-SEP-20	R5231567
Tellurium (Te)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Thallium (Tl)-Dissolved		0.000015		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Thorium (Th)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Tin (Sn)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Titanium (Ti)-Dissolved		<0.00030		0.00030	mg/L	16-SEP-20	20-SEP-20	R5231567
Tungsten (W)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Uranium (U)-Dissolved		0.00281		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Vanadium (V)-Dissolved		<0.00050		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Zinc (Zn)-Dissolved		<0.0010		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Zirconium (Zr)-Dissolved		0.00022		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Aggregate Organics								
Oil and Grease		<5.0		5.0	mg/L		22-SEP-20	R5232482
Volatile Organic Compounds								
F1 (C6-C10)		<0.10		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
Hydrocarbons								
F2 (C10-C16)		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
F3 (C16-C34)		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
F4 (C34-C50)		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
Surrogate: 2-Bromobenzotrifluoride, F2-F4		82.4		60-140	%	21-SEP-20	22-SEP-20	R5231613

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-4	MS-LF-GW-REF2							
Sampled By:	DZ/MD on 08-SEP-20 @ 11:55							
Matrix:	Water							
Hydrocarbons								
L2500859-5	MS-LF-GW-REF1							
Sampled By:	DZ/MD on 08-SEP-20 @ 13:30							
Matrix:	Water							
Physical Tests								
Conductivity		712		2.0	uS/cm		17-SEP-20	R5227776
pH		7.40		0.10	pH units		10-SEP-20	R5219407
Total Suspended Solids		8.0		2.0	mg/L		10-SEP-20	R5219410
Total Dissolved Solids		460		10	mg/L		10-SEP-20	R5221380
Turbidity		3.60		0.10	NTU		10-SEP-20	R5219409
Anions and Nutrients								
Alkalinity, Total (as CaCO3)		209		1.0	mg/L		17-SEP-20	R5227776
Ammonia, Total (as N)		0.633		0.013	mg/L		21-SEP-20	R5231506
Bromide (Br)		<0.25	DLDS	0.25	mg/L		17-SEP-20	R5229497
Chloride (Cl)		20.4		2.5	mg/L		17-SEP-20	R5229497
Fluoride (F)		<0.10	DLDS	0.10	mg/L		17-SEP-20	R5229497
Nitrate (as N)		0.309		0.025	mg/L		17-SEP-20	R5229497
Total Kjeldahl Nitrogen		1.06		0.050	mg/L	21-SEP-20	21-SEP-20	R5231875
Phosphorus (P)-Total		0.0104		0.0020	mg/L		20-SEP-20	R5231619
Sulfate (SO4)		144		1.5	mg/L		17-SEP-20	R5229497
Organic / Inorganic Carbon								
Dissolved Organic Carbon		4.26	RRV	0.50	mg/L		21-SEP-20	R5232223
Total Organic Carbon		3.38	RRV	0.50	mg/L		21-SEP-20	R5232223
Total Metals								
Aluminum (Al)-Total		0.0219		0.0030	mg/L		19-SEP-20	R5230865
Antimony (Sb)-Total		0.00010		0.00010	mg/L		19-SEP-20	R5230865
Arsenic (As)-Total		0.00020		0.00010	mg/L		19-SEP-20	R5230865
Barium (Ba)-Total		0.0489		0.00010	mg/L		19-SEP-20	R5230865
Beryllium (Be)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Bismuth (Bi)-Total		<0.000050		0.000050	mg/L		19-SEP-20	R5230865
Boron (B)-Total		0.627		0.010	mg/L		19-SEP-20	R5230865
Cadmium (Cd)-Total		0.0000319		0.0000050	mg/L		19-SEP-20	R5230865
Calcium (Ca)-Total		87.0		0.050	mg/L		19-SEP-20	R5230865
Cesium (Cs)-Total		0.000013		0.000010	mg/L		19-SEP-20	R5230865
Chromium (Cr)-Total		0.00025		0.00010	mg/L		19-SEP-20	R5230865
Cobalt (Co)-Total		0.00126		0.00010	mg/L		19-SEP-20	R5230865
Copper (Cu)-Total		0.00271		0.00050	mg/L		19-SEP-20	R5230865
Iron (Fe)-Total		0.034		0.010	mg/L		19-SEP-20	R5230865
Lead (Pb)-Total		0.000077		0.000050	mg/L		19-SEP-20	R5230865
Lithium (Li)-Total		0.0067		0.0010	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total		28.2		0.0050	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total		0.358		0.00010	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		21-SEP-20	R5231291

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-5	MS-LF-GW-REF1							
Sampled By:	DZ/MD on 08-SEP-20 @ 13:30							
Matrix:	Water							
Total Metals								
Molybdenum (Mo)-Total		0.000896		0.000050	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total		0.00837		0.00050	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total		<0.050		0.050	mg/L		19-SEP-20	R5230865
Potassium (K)-Total		3.86		0.050	mg/L		19-SEP-20	R5230865
Rubidium (Rb)-Total		0.00753		0.00020	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total		0.000149		0.000050	mg/L		19-SEP-20	R5230865
Silicon (Si)-Total		2.36		0.10	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		<0.000010		0.000010	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		14.0		0.050	mg/L		19-SEP-20	R5230865
Strontium (Sr)-Total		0.140		0.00020	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		53.3		0.50	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		0.000050		0.000010	mg/L		19-SEP-20	R5230865
Thorium (Th)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		0.00154		0.00030	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		0.00026		0.00010	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		0.00914		0.000010	mg/L		19-SEP-20	R5230865
Vanadium (V)-Total		0.00066		0.00050	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		<0.0030		0.0030	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		0.00041		0.00020	mg/L		19-SEP-20	R5230865
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					16-SEP-20	R5225101
Aluminum (Al)-Dissolved		0.0023		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Arsenic (As)-Dissolved		0.00016		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Barium (Ba)-Dissolved		0.0445		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Boron (B)-Dissolved		0.581		0.010	mg/L	16-SEP-20	20-SEP-20	R5231567
Cadmium (Cd)-Dissolved		0.0000281		0.0000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Calcium (Ca)-Dissolved		88.2		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Cesium (Cs)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Chromium (Cr)-Dissolved		0.00014		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Cobalt (Co)-Dissolved		0.00116		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Copper (Cu)-Dissolved		0.00221		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Iron (Fe)-Dissolved		<0.010		0.010	mg/L	16-SEP-20	20-SEP-20	R5231567
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Lithium (Li)-Dissolved		0.0070		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Magnesium (Mg)-Dissolved		28.1		0.0050	mg/L	16-SEP-20	20-SEP-20	R5231567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-5 MS-LF-GW-REF1 Sampled By: DZ/MD on 08-SEP-20 @ 13:30 Matrix: Water	Dissolved Metals							
	Manganese (Mn)-Dissolved	0.335		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Mercury (Hg)-Dissolved	<0.0000050		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
	Molybdenum (Mo)-Dissolved	0.000841		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
	Nickel (Ni)-Dissolved	0.00798		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
	Phosphorus (P)-Dissolved	<0.050		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
	Potassium (K)-Dissolved	3.79		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
	Rubidium (Rb)-Dissolved	0.00727		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
	Selenium (Se)-Dissolved	0.000144		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
	Silicon (Si)-Dissolved	2.20		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
	Silver (Ag)-Dissolved	<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Sodium (Na)-Dissolved	13.8		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
	Strontium (Sr)-Dissolved	0.137		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
	Sulfur (S)-Dissolved	49.1		0.50	mg/L	16-SEP-20	20-SEP-20	R5231567
	Tellurium (Te)-Dissolved	<0.00020		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
	Thallium (Tl)-Dissolved	0.000039		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Thorium (Th)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Tin (Sn)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L	16-SEP-20	20-SEP-20	R5231567
	Tungsten (W)-Dissolved	<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Uranium (U)-Dissolved	0.00805		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Vanadium (V)-Dissolved	<0.00050		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
	Zinc (Zn)-Dissolved	<0.0010		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Zirconium (Zr)-Dissolved	0.00038		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
	Aggregate Organics							
	Oil and Grease	<5.0		5.0	mg/L		22-SEP-20	R5232482
	Volatile Organic Compounds							
	F1 (C6-C10)	<0.10		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
	Hydrocarbons							
	F2 (C10-C16)	<0.36	DLIS	0.36	mg/L	21-SEP-20	22-SEP-20	R5231613
	F3 (C16-C34)	<0.36	DLIS	0.36	mg/L	21-SEP-20	22-SEP-20	R5231613
	F4 (C34-C50)	<0.36	DLIS	0.36	mg/L	21-SEP-20	22-SEP-20	R5231613
	Surrogate: 2-Bromobenzotrifluoride, F2-F4	88.3		60-140	%	21-SEP-20	22-SEP-20	R5231613
L2500859-6 MS-LF-GW1 Sampled By: DZ/MD on 08-SEP-20 @ 13:55 Matrix: Water	Physical Tests							
	Conductivity	3020		2.0	uS/cm		17-SEP-20	R5227776
	pH	6.90		0.10	pH units		10-SEP-20	R5219407
	Total Suspended Solids	103		2.0	mg/L		10-SEP-20	R5219410
	Total Dissolved Solids	2660		10	mg/L		10-SEP-20	R5221380
	Turbidity	37.6		0.10	NTU		10-SEP-20	R5219409
	Anions and Nutrients							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-6	MS-LF-GW1							
Sampled By: DZ/MD on 08-SEP-20 @ 13:55								
Matrix: Water								
Anions and Nutrients								
Alkalinity, Total (as CaCO3)		431		1.0	mg/L		17-SEP-20	R5227776
Ammonia, Total (as N)		7.27		0.13	mg/L		20-SEP-20	R5231164
Bromide (Br)		1.4		1.0	mg/L		17-SEP-20	R5229497
Chloride (Cl)		233		10	mg/L		17-SEP-20	R5229497
Fluoride (F)		<0.40	DLDS	0.40	mg/L		17-SEP-20	R5229497
Nitrate (as N)		<0.10	DLDS	0.10	mg/L		17-SEP-20	R5229497
Total Kjeldahl Nitrogen		9.77		0.25	mg/L	21-SEP-20	21-SEP-20	R5231875
Phosphorus (P)-Total		0.223		0.020	mg/L		20-SEP-20	R5231619
Sulfate (SO4)		1150		6.0	mg/L		17-SEP-20	R5229497
Organic / Inorganic Carbon								
Dissolved Organic Carbon		34.7		1.0	mg/L		21-SEP-20	R5232223
Total Organic Carbon		38.1		1.0	mg/L		21-SEP-20	R5232223
Total Metals								
Aluminum (Al)-Total		3.17		0.0060	mg/L		19-SEP-20	R5230865
Antimony (Sb)-Total		0.00088		0.00020	mg/L		19-SEP-20	R5230865
Arsenic (As)-Total		0.00270		0.00020	mg/L		19-SEP-20	R5230865
Barium (Ba)-Total		0.122		0.00020	mg/L		19-SEP-20	R5230865
Beryllium (Be)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Bismuth (Bi)-Total		0.00012		0.00010	mg/L		19-SEP-20	R5230865
Boron (B)-Total		16.6		0.020	mg/L		19-SEP-20	R5230865
Cadmium (Cd)-Total		0.000483		0.000010	mg/L		19-SEP-20	R5230865
Calcium (Ca)-Total		508		0.10	mg/L		19-SEP-20	R5230865
Cesium (Cs)-Total		0.000852		0.000020	mg/L		19-SEP-20	R5230865
Chromium (Cr)-Total		0.0499		0.00020	mg/L		19-SEP-20	R5230865
Cobalt (Co)-Total		0.0393		0.00020	mg/L		19-SEP-20	R5230865
Copper (Cu)-Total		0.0128		0.0010	mg/L		19-SEP-20	R5230865
Iron (Fe)-Total		5.82		0.020	mg/L		19-SEP-20	R5230865
Lead (Pb)-Total		0.00834		0.00010	mg/L		19-SEP-20	R5230865
Lithium (Li)-Total		0.403		0.0020	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total		112		0.010	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total		7.59		0.00020	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total		<0.000050	DLM	0.000050	mg/L		21-SEP-20	R5231291
Molybdenum (Mo)-Total		0.00140		0.00010	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total		0.332		0.0010	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total		0.20		0.10	mg/L		19-SEP-20	R5230865
Potassium (K)-Total		19.8		0.10	mg/L		19-SEP-20	R5230865
Rubidium (Rb)-Total		0.0479		0.00040	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total		0.00032		0.00010	mg/L		19-SEP-20	R5230865
Silicon (Si)-Total		15.7		0.20	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		0.000093		0.000020	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		69.2		0.10	mg/L		19-SEP-20	R5230865

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-6	MS-LF-GW1							
Sampled By:	DZ/MD on 08-SEP-20 @ 13:55							
Matrix:	Water							
Total Metals								
Strontium (Sr)-Total		1.06		0.00040	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		435		1.0	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00040	DLA	0.00040	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		0.000390		0.000020	mg/L		19-SEP-20	R5230865
Thorium (Th)-Total		0.00119		0.00020	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		0.00046		0.00020	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		0.233		0.00060	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		<0.00020	DLA	0.00020	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		0.0552		0.000020	mg/L		19-SEP-20	R5230865
Vanadium (V)-Total		0.0104		0.0010	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		0.0195		0.0060	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		0.00396		0.00040	mg/L		19-SEP-20	R5230865
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					16-SEP-20	R5225101
Aluminum (Al)-Dissolved		0.020		0.010	mg/L	16-SEP-20	20-SEP-20	R5231567
Antimony (Sb)-Dissolved		<0.0010	DLA	0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Arsenic (As)-Dissolved		0.0016		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Barium (Ba)-Dissolved		0.0966		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Beryllium (Be)-Dissolved		<0.0010	DLA	0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Bismuth (Bi)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Boron (B)-Dissolved		15.2		0.10	mg/L	16-SEP-20	20-SEP-20	R5231567
Cadmium (Cd)-Dissolved		0.000131		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Calcium (Ca)-Dissolved		497		0.50	mg/L	16-SEP-20	20-SEP-20	R5231567
Cesium (Cs)-Dissolved		0.00037		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Chromium (Cr)-Dissolved		0.0025		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Cobalt (Co)-Dissolved		0.0326		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Copper (Cu)-Dissolved		0.0030		0.0020	mg/L	16-SEP-20	20-SEP-20	R5231567
Iron (Fe)-Dissolved		0.40		0.10	mg/L	16-SEP-20	20-SEP-20	R5231567
Lead (Pb)-Dissolved		0.00133		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Lithium (Li)-Dissolved		0.424		0.010	mg/L	16-SEP-20	20-SEP-20	R5231567
Magnesium (Mg)-Dissolved		106		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Manganese (Mn)-Dissolved		7.44		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
Molybdenum (Mo)-Dissolved		0.00095		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Nickel (Ni)-Dissolved		0.277		0.0050	mg/L	16-SEP-20	20-SEP-20	R5231567
Phosphorus (P)-Dissolved		<0.50	DLA	0.50	mg/L	16-SEP-20	20-SEP-20	R5231567
Potassium (K)-Dissolved		19.3		0.50	mg/L	16-SEP-20	20-SEP-20	R5231567
Rubidium (Rb)-Dissolved		0.0445		0.0020	mg/L	16-SEP-20	20-SEP-20	R5231567
Selenium (Se)-Dissolved		<0.00050	DLA	0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Silicon (Si)-Dissolved		7.34		0.50	mg/L	16-SEP-20	20-SEP-20	R5231567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-6 MS-LF-GW1 Sampled By: DZ/MD on 08-SEP-20 @ 13:55 Matrix: Water	Dissolved Metals							
	Silver (Ag)-Dissolved	<0.00010	DLA	0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Sodium (Na)-Dissolved	66.4		0.50	mg/L	16-SEP-20	20-SEP-20	R5231567
	Strontium (Sr)-Dissolved	1.05		0.0020	mg/L	16-SEP-20	20-SEP-20	R5231567
	Sulfur (S)-Dissolved	390		5.0	mg/L	16-SEP-20	20-SEP-20	R5231567
	Tellurium (Te)-Dissolved	<0.0020	DLA	0.0020	mg/L	16-SEP-20	20-SEP-20	R5231567
	Thallium (Tl)-Dissolved	0.00028		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Thorium (Th)-Dissolved	<0.0010	DLA	0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Tin (Sn)-Dissolved	<0.0010	DLA	0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Titanium (Ti)-Dissolved	<0.0030	DLA	0.0030	mg/L	16-SEP-20	20-SEP-20	R5231567
	Tungsten (W)-Dissolved	<0.0010	DLA	0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Uranium (U)-Dissolved	0.0483		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Vanadium (V)-Dissolved	<0.0050	DLA	0.0050	mg/L	16-SEP-20	20-SEP-20	R5231567
	Zinc (Zn)-Dissolved	<0.010	DLA	0.010	mg/L	16-SEP-20	20-SEP-20	R5231567
	Zirconium (Zr)-Dissolved	0.0026		0.0020	mg/L	16-SEP-20	20-SEP-20	R5231567
	Aggregate Organics							
	Oil and Grease	<5.0		5.0	mg/L		22-SEP-20	R5232482
	Volatile Organic Compounds							
	F1 (C6-C10)	0.27		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
	Hydrocarbons							
	F2 (C10-C16)	<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
	F3 (C16-C34)	<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
	F4 (C34-C50)	<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
	Surrogate: 2-Bromobenzotrifluoride, F2-F4	90.1		60-140	%	21-SEP-20	22-SEP-20	R5231613
L2500859-7 MS-LF-GW403 Sampled By: DZ/MD on 08-SEP-20 @ 14:40 Matrix: Water	Physical Tests							
	Conductivity	<2.0		2.0	uS/cm		17-SEP-20	R5227776
	pH	5.63		0.10	pH units		10-SEP-20	R5219407
	Total Suspended Solids	<2.0		2.0	mg/L		10-SEP-20	R5219410
	Total Dissolved Solids	<10		10	mg/L		10-SEP-20	R5221380
	Turbidity	<0.10		0.10	NTU		10-SEP-20	R5219409
	Anions and Nutrients							
	Alkalinity, Total (as CaCO3)	1.1		1.0	mg/L		18-SEP-20	R5230278
	Ammonia, Total (as N)	<0.0050		0.0050	mg/L		20-SEP-20	R5231164
	Bromide (Br)	<0.050		0.050	mg/L		17-SEP-20	R5229497
	Chloride (Cl)	<0.50		0.50	mg/L		17-SEP-20	R5229497
	Fluoride (F)	<0.020		0.020	mg/L		17-SEP-20	R5229497
	Nitrate (as N)	<0.0050		0.0050	mg/L		17-SEP-20	R5229497
	Total Kjeldahl Nitrogen	<0.050		0.050	mg/L	21-SEP-20	21-SEP-20	R5231875
	Phosphorus (P)-Total	<0.0020		0.0020	mg/L		20-SEP-20	R5231619
	Sulfate (SO4)	<0.30		0.30	mg/L		17-SEP-20	R5229497

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-7 MS-LF-GW403								
Sampled By: DZ/MD on 08-SEP-20 @ 14:40								
Matrix: Water								
Anions and Nutrients								
Organic / Inorganic Carbon								
Dissolved Organic Carbon		1.18		0.50	mg/L		20-SEP-20	R5231438
Total Organic Carbon		0.72		0.50	mg/L		20-SEP-20	R5231438
Total Metals								
Aluminum (Al)-Total		<0.0030		0.0030	mg/L		19-SEP-20	R5230865
Antimony (Sb)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Arsenic (As)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Barium (Ba)-Total		<0.00010		0.00010	mg/L		20-SEP-20	R5231162
Beryllium (Be)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Bismuth (Bi)-Total		<0.000050		0.000050	mg/L		19-SEP-20	R5230865
Boron (B)-Total		<0.010		0.010	mg/L		19-SEP-20	R5230865
Cadmium (Cd)-Total		<0.0000050		0.0000050	mg/L		19-SEP-20	R5230865
Calcium (Ca)-Total		<0.050		0.050	mg/L		19-SEP-20	R5230865
Cesium (Cs)-Total		<0.000010		0.000010	mg/L		19-SEP-20	R5230865
Chromium (Cr)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Cobalt (Co)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Copper (Cu)-Total		<0.00050		0.00050	mg/L		19-SEP-20	R5230865
Iron (Fe)-Total		<0.010		0.010	mg/L		19-SEP-20	R5230865
Lead (Pb)-Total		<0.000050		0.000050	mg/L		19-SEP-20	R5230865
Lithium (Li)-Total		<0.0010		0.0010	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total		<0.0050		0.0050	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		21-SEP-20	R5231291
Molybdenum (Mo)-Total		<0.000050		0.000050	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total		<0.00050		0.00050	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total		<0.050		0.050	mg/L		19-SEP-20	R5230865
Potassium (K)-Total		<0.050		0.050	mg/L		19-SEP-20	R5230865
Rubidium (Rb)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total		<0.000050		0.000050	mg/L		19-SEP-20	R5230865
Silicon (Si)-Total		<0.10		0.10	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		<0.000010		0.000010	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		<0.050		0.050	mg/L		19-SEP-20	R5230865
Strontium (Sr)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		<0.50		0.50	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		<0.000010		0.000010	mg/L		19-SEP-20	R5230865
Thorium (Th)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		<0.00030		0.00030	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		<0.000010		0.000010	mg/L		19-SEP-20	R5230865

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-7	MS-LF-GW403							
Sampled By:	DZ/MD on 08-SEP-20 @ 14:40							
Matrix:	Water							
Total Metals								
Vanadium (V)-Total		<0.00050		0.00050	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		<0.0030		0.0030	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					21-SEP-20	R5231886
Aluminum (Al)-Dissolved		<0.0010		0.0010	mg/L	21-SEP-20	22-SEP-20	R5232289
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Arsenic (As)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Barium (Ba)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Boron (B)-Dissolved		<0.010		0.010	mg/L	21-SEP-20	22-SEP-20	R5232289
Cadmium (Cd)-Dissolved		<0.0000050		0.0000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Calcium (Ca)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Cesium (Cs)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Chromium (Cr)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Cobalt (Co)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Copper (Cu)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Iron (Fe)-Dissolved		<0.010		0.010	mg/L	16-SEP-20	20-SEP-20	R5231567
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Lithium (Li)-Dissolved		<0.0010		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Magnesium (Mg)-Dissolved		<0.0050		0.0050	mg/L	16-SEP-20	20-SEP-20	R5231567
Manganese (Mn)-Dissolved		<0.00010		0.00010	mg/L	21-SEP-20	22-SEP-20	R5232289
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
Molybdenum (Mo)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Nickel (Ni)-Dissolved		<0.00050		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Potassium (K)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Rubidium (Rb)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Selenium (Se)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Silicon (Si)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Silver (Ag)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Sodium (Na)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Strontium (Sr)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Sulfur (S)-Dissolved		<0.50		0.50	mg/L	16-SEP-20	20-SEP-20	R5231567
Tellurium (Te)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Thallium (Tl)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Thorium (Th)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Tin (Sn)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Titanium (Ti)-Dissolved		<0.00030		0.00030	mg/L	16-SEP-20	20-SEP-20	R5231567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-7 MS-LF-GW403 Sampled By: DZ/MD on 08-SEP-20 @ 14:40 Matrix: Water Dissolved Metals Tungsten (W)-Dissolved Uranium (U)-Dissolved Vanadium (V)-Dissolved Zinc (Zn)-Dissolved Zirconium (Zr)-Dissolved Aggregate Organics Oil and Grease Volatile Organic Compounds F1 (C6-C10) Hydrocarbons F2 (C10-C16) F3 (C16-C34) F4 (C34-C50) Surrogate: 2-Bromobenzotrifluoride, F2-F4								
		<0.00010	RRV	0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
		<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
		<0.00050		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
		0.0011		0.0010	mg/L	21-SEP-20	22-SEP-20	R5232289
		<0.00020		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
		<5.0		5.0	mg/L		22-SEP-20	R5232482
		<0.10		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
		<0.36	DLIS	0.36	mg/L	21-SEP-20	22-SEP-20	R5231613
		<0.36	DLIS	0.36	mg/L	21-SEP-20	22-SEP-20	R5231613
		<0.36	DLIS	0.36	mg/L	21-SEP-20	22-SEP-20	R5231613
		105.6		60-140	%	21-SEP-20	22-SEP-20	R5231613
L2500859-8 MS-LF-GW4 Sampled By: DZ/MD on 08-SEP-20 @ 14:40 Matrix: Water Physical Tests Conductivity pH Total Suspended Solids Total Dissolved Solids Turbidity Anions and Nutrients Alkalinity, Total (as CaCO3) Ammonia, Total (as N) Bromide (Br) Chloride (Cl) Fluoride (F) Nitrate (as N) Total Kjeldahl Nitrogen Phosphorus (P)-Total Sulfate (SO4) Organic / Inorganic Carbon Dissolved Organic Carbon Total Organic Carbon Total Metals Aluminum (Al)-Total Antimony (Sb)-Total Arsenic (As)-Total Barium (Ba)-Total Beryllium (Be)-Total								
		976		2.0	uS/cm		17-SEP-20	R5227776
		7.35		0.10	pH units		10-SEP-20	R5219407
		10.8		2.0	mg/L		10-SEP-20	R5219410
		675		10	mg/L		10-SEP-20	R5221380
		33.3		0.10	NTU		10-SEP-20	R5219409
		241	DLDS	1.0	mg/L		17-SEP-20	R5227776
		0.0272		0.0050	mg/L		21-SEP-20	R5231506
		<0.25		0.25	mg/L		17-SEP-20	R5229497
		50.4		2.5	mg/L		17-SEP-20	R5229497
		<0.10		0.10	mg/L		17-SEP-20	R5229497
		0.029	DLDS	0.025	mg/L		17-SEP-20	R5229497
		0.394		0.050	mg/L	21-SEP-20	21-SEP-20	R5231875
		0.107		0.020	mg/L		20-SEP-20	R5231619
		227		1.5	mg/L		17-SEP-20	R5229497
		6.84		0.50	mg/L		20-SEP-20	R5231438
		5.85		0.50	mg/L		20-SEP-20	R5231438
		0.277		0.0030	mg/L		19-SEP-20	R5230865
		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
		0.00034		0.00010	mg/L		19-SEP-20	R5230865
		0.0427		0.00010	mg/L		19-SEP-20	R5230865
		<0.00010		0.00010	mg/L		19-SEP-20	R5230865

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-8	MS-LF-GW4							
Sampled By: DZ/MD on 08-SEP-20 @ 14:40								
Matrix: Water								
Total Metals								
Bismuth (Bi)-Total		<0.000050		0.000050	mg/L		19-SEP-20	R5230865
Boron (B)-Total		2.56		0.010	mg/L		19-SEP-20	R5230865
Cadmium (Cd)-Total		0.0000490		0.0000050	mg/L		19-SEP-20	R5230865
Calcium (Ca)-Total		83.6		0.050	mg/L		19-SEP-20	R5230865
Cesium (Cs)-Total		0.000051		0.000010	mg/L		19-SEP-20	R5230865
Chromium (Cr)-Total		0.00100		0.00010	mg/L		19-SEP-20	R5230865
Cobalt (Co)-Total		0.00045		0.00010	mg/L		19-SEP-20	R5230865
Copper (Cu)-Total		0.00549		0.00050	mg/L		19-SEP-20	R5230865
Iron (Fe)-Total		0.305		0.010	mg/L		19-SEP-20	R5230865
Lead (Pb)-Total		0.000267		0.000050	mg/L		19-SEP-20	R5230865
Lithium (Li)-Total		0.0045		0.0010	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total		66.2		0.0050	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total		0.145		0.00010	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total		<0.0000050		0.0000050	mg/L		21-SEP-20	R5231291
Molybdenum (Mo)-Total		0.000164		0.000050	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total		0.0292		0.00050	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total		0.091		0.050	mg/L		19-SEP-20	R5230865
Potassium (K)-Total		2.62		0.050	mg/L		19-SEP-20	R5230865
Rubidium (Rb)-Total		0.00894		0.00020	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total		0.000081		0.000050	mg/L		19-SEP-20	R5230865
Silicon (Si)-Total		6.41		0.10	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		<0.000010		0.000010	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		11.7		0.050	mg/L		19-SEP-20	R5230865
Strontium (Sr)-Total		0.0462		0.00020	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		81.9		0.50	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		0.000054		0.000010	mg/L		19-SEP-20	R5230865
Thorium (Th)-Total		0.00023		0.00010	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		0.0124		0.00030	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		0.00825		0.000010	mg/L		19-SEP-20	R5230865
Vanadium (V)-Total		0.00111		0.00050	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		<0.0030		0.0030	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		0.00079		0.00020	mg/L		19-SEP-20	R5230865
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					16-SEP-20	R5225101
Aluminum (Al)-Dissolved		0.0096		0.0020	mg/L	16-SEP-20	20-SEP-20	R5231567
Antimony (Sb)-Dissolved		<0.00020	DLA	0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Arsenic (As)-Dissolved		<0.00020	DLA	0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-8	MS-LF-GW4							
Sampled By:	DZ/MD on 08-SEP-20 @ 14:40							
Matrix:	Water							
Dissolved Metals								
Barium (Ba)-Dissolved		0.0267		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Beryllium (Be)-Dissolved		<0.00020	DLA	0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Bismuth (Bi)-Dissolved		<0.00010	DLA	0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Boron (B)-Dissolved		1.62		0.020	mg/L	16-SEP-20	20-SEP-20	R5231567
Cadmium (Cd)-Dissolved		0.000024		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Calcium (Ca)-Dissolved		59.7		0.10	mg/L	16-SEP-20	20-SEP-20	R5231567
Cesium (Cs)-Dissolved		<0.000020	DLA	0.000020	mg/L	16-SEP-20	20-SEP-20	R5231567
Chromium (Cr)-Dissolved		0.00022		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Cobalt (Co)-Dissolved		<0.00020	DLA	0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Copper (Cu)-Dissolved		0.00174		0.00040	mg/L	16-SEP-20	20-SEP-20	R5231567
Iron (Fe)-Dissolved		<0.020	DLA	0.020	mg/L	16-SEP-20	20-SEP-20	R5231567
Lead (Pb)-Dissolved		<0.00010	DLA	0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Lithium (Li)-Dissolved		0.0031		0.0020	mg/L	16-SEP-20	20-SEP-20	R5231567
Magnesium (Mg)-Dissolved		46.1		0.010	mg/L	16-SEP-20	20-SEP-20	R5231567
Manganese (Mn)-Dissolved		0.0911		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
Molybdenum (Mo)-Dissolved		<0.00010	DLA	0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Nickel (Ni)-Dissolved		0.0186		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Phosphorus (P)-Dissolved		<0.10	DLA	0.10	mg/L	16-SEP-20	20-SEP-20	R5231567
Potassium (K)-Dissolved		1.61		0.10	mg/L	16-SEP-20	20-SEP-20	R5231567
Rubidium (Rb)-Dissolved		0.00516		0.00040	mg/L	16-SEP-20	20-SEP-20	R5231567
Selenium (Se)-Dissolved		<0.00010	DLA	0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Silicon (Si)-Dissolved		3.71		0.10	mg/L	16-SEP-20	20-SEP-20	R5231567
Silver (Ag)-Dissolved		<0.000020	DLA	0.000020	mg/L	16-SEP-20	20-SEP-20	R5231567
Sodium (Na)-Dissolved		7.67		0.10	mg/L	16-SEP-20	20-SEP-20	R5231567
Strontium (Sr)-Dissolved		0.0300		0.00040	mg/L	16-SEP-20	20-SEP-20	R5231567
Sulfur (S)-Dissolved		48.1		1.0	mg/L	16-SEP-20	20-SEP-20	R5231567
Tellurium (Te)-Dissolved		<0.00040	DLA	0.00040	mg/L	16-SEP-20	20-SEP-20	R5231567
Thallium (Tl)-Dissolved		0.000023		0.000020	mg/L	16-SEP-20	20-SEP-20	R5231567
Thorium (Th)-Dissolved		<0.00020	DLA	0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Tin (Sn)-Dissolved		<0.00020	DLA	0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Titanium (Ti)-Dissolved		0.00073		0.00060	mg/L	16-SEP-20	20-SEP-20	R5231567
Tungsten (W)-Dissolved		<0.00020	DLA	0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Uranium (U)-Dissolved		0.00490		0.000020	mg/L	16-SEP-20	20-SEP-20	R5231567
Vanadium (V)-Dissolved		<0.0010	DLA	0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Zinc (Zn)-Dissolved		<0.0020	DLA	0.0020	mg/L	16-SEP-20	20-SEP-20	R5231567
Zirconium (Zr)-Dissolved		<0.00040	DLA	0.00040	mg/L	16-SEP-20	20-SEP-20	R5231567
Aggregate Organics								
Oil and Grease		<5.0		5.0	mg/L		22-SEP-20	R5232482
Volatile Organic Compounds								
F1 (C6-C10)		<0.10		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
Hydrocarbons								

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-8 MS-LF-GW4 Sampled By: DZ/MD on 08-SEP-20 @ 14:40 Matrix: Water	Hydrocarbons							
	F2 (C10-C16)	<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
	F3 (C16-C34)	<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
	F4 (C34-C50)	<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
	Surrogate: 2-Bromobenzotrifluoride, F2-F4	85.8		60-140	%	21-SEP-20	22-SEP-20	R5231613
L2500859-9 MS-LF-GW5 Sampled By: DZ/MD on 08-SEP-20 @ 09:30 Matrix: Water	Physical Tests							
	Conductivity	257		2.0	uS/cm		17-SEP-20	R5227776
	pH	8.07		0.10	pH units		10-SEP-20	R5219407
	Total Suspended Solids	30.4		2.0	mg/L		10-SEP-20	R5219410
	Total Dissolved Solids	168		10	mg/L		10-SEP-20	R5221380
	Turbidity	47.0		0.10	NTU		10-SEP-20	R5219409
	Anions and Nutrients							
	Alkalinity, Total (as CaCO3)	121		1.0	mg/L		17-SEP-20	R5227776
	Ammonia, Total (as N)	0.0250		0.0050	mg/L		21-SEP-20	R5231506
	Bromide (Br)	<0.050		0.050	mg/L		17-SEP-20	R5229497
	Chloride (Cl)	1.97		0.50	mg/L		17-SEP-20	R5229497
	Fluoride (F)	0.047		0.020	mg/L		17-SEP-20	R5229497
	Nitrate (as N)	0.312		0.0050	mg/L		17-SEP-20	R5229497
	Total Kjeldahl Nitrogen	0.141		0.050	mg/L	21-SEP-20	21-SEP-20	R5231875
	Phosphorus (P)-Total	0.0664		0.0020	mg/L		20-SEP-20	R5231619
	Sulfate (SO4)	13.3		0.30	mg/L		17-SEP-20	R5229497
	Organic / Inorganic Carbon							
	Dissolved Organic Carbon	2.68	RRV	0.50	mg/L		21-SEP-20	R5232223
	Total Organic Carbon	2.01	RRV	0.50	mg/L		21-SEP-20	R5232223
	Total Metals							
	Aluminum (Al)-Total	1.55		0.0030	mg/L		19-SEP-20	R5230865
	Antimony (Sb)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
	Arsenic (As)-Total	0.00051		0.00010	mg/L		19-SEP-20	R5230865
	Barium (Ba)-Total	0.0268		0.00010	mg/L		19-SEP-20	R5230865
	Beryllium (Be)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
	Bismuth (Bi)-Total	0.000062		0.000050	mg/L		19-SEP-20	R5230865
	Boron (B)-Total	0.020		0.010	mg/L		22-SEP-20	R5232586
	Cadmium (Cd)-Total	0.0000084		0.0000050	mg/L		19-SEP-20	R5230865
	Calcium (Ca)-Total	22.8		0.050	mg/L		19-SEP-20	R5230865
	Cesium (Cs)-Total	0.000518		0.000010	mg/L		19-SEP-20	R5230865
	Chromium (Cr)-Total	0.00655		0.00010	mg/L		19-SEP-20	R5230865
	Cobalt (Co)-Total	0.00219		0.00010	mg/L		19-SEP-20	R5230865
	Copper (Cu)-Total	0.00475		0.00050	mg/L		19-SEP-20	R5230865
	Iron (Fe)-Total	1.67		0.010	mg/L		19-SEP-20	R5230865
	Lead (Pb)-Total	0.00296		0.000050	mg/L		19-SEP-20	R5230865

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-9	MS-LF-GW5							
Sampled By:	DZ/MD on 08-SEP-20 @ 09:30							
Matrix:	Water							
Total Metals								
Lithium (Li)-Total		0.0043		0.0010	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total		19.4		0.0050	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total		0.0470		0.00010	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total		<0.000050	DLM	0.000050	mg/L		21-SEP-20	R5231291
Molybdenum (Mo)-Total		0.00116		0.000050	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total		0.0162		0.00050	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total		0.060		0.050	mg/L		19-SEP-20	R5230865
Potassium (K)-Total		2.34		0.050	mg/L		19-SEP-20	R5230865
Rubidium (Rb)-Total		0.00802		0.00020	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total		0.000121		0.000050	mg/L		19-SEP-20	R5230865
Silicon (Si)-Total		5.38		0.10	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		0.000028		0.000010	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		1.35		0.050	mg/L		19-SEP-20	R5230865
Strontium (Sr)-Total		0.0196		0.00020	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		4.36		0.50	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		0.000053		0.000010	mg/L		19-SEP-20	R5230865
Thorium (Th)-Total		0.00166		0.00010	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		0.0821		0.00030	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		0.000973		0.000010	mg/L		19-SEP-20	R5230865
Vanadium (V)-Total		0.00332		0.00050	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		0.0060		0.0030	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		0.00124		0.00020	mg/L		19-SEP-20	R5230865
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					16-SEP-20	R5225101
Aluminum (Al)-Dissolved		0.0020		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Arsenic (As)-Dissolved		0.00019		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Barium (Ba)-Dissolved		0.0158		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Boron (B)-Dissolved		0.017		0.010	mg/L	16-SEP-20	22-SEP-20	R5232586
Cadmium (Cd)-Dissolved		<0.0000050		0.0000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Calcium (Ca)-Dissolved		21.8		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Cesium (Cs)-Dissolved		0.000013		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Chromium (Cr)-Dissolved		0.00058		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Cobalt (Co)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Copper (Cu)-Dissolved		0.00097		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-9 MS-LF-GW5 Sampled By: DZ/MD on 08-SEP-20 @ 09:30 Matrix: Water								
Dissolved Metals								
Iron (Fe)-Dissolved		<0.010		0.010	mg/L	16-SEP-20	20-SEP-20	R5231567
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Lithium (Li)-Dissolved		0.0020		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Magnesium (Mg)-Dissolved		17.8		0.0050	mg/L	16-SEP-20	22-SEP-20	R5232586
Manganese (Mn)-Dissolved		0.00045		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
Molybdenum (Mo)-Dissolved		0.00117		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Nickel (Ni)-Dissolved		0.00161		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Potassium (K)-Dissolved		1.70		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Rubidium (Rb)-Dissolved		0.00289		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Selenium (Se)-Dissolved		0.000131		0.000050	mg/L	16-SEP-20	20-SEP-20	R5231567
Silicon (Si)-Dissolved		2.04		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Silver (Ag)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Sodium (Na)-Dissolved		1.24		0.050	mg/L	16-SEP-20	20-SEP-20	R5231567
Strontium (Sr)-Dissolved		0.0161		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Sulfur (S)-Dissolved		4.62		0.50	mg/L	16-SEP-20	20-SEP-20	R5231567
Tellurium (Te)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Thallium (Tl)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Thorium (Th)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Tin (Sn)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Titanium (Ti)-Dissolved		<0.00030		0.00030	mg/L	16-SEP-20	20-SEP-20	R5231567
Tungsten (W)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	20-SEP-20	R5231567
Uranium (U)-Dissolved		0.000737		0.000010	mg/L	16-SEP-20	20-SEP-20	R5231567
Vanadium (V)-Dissolved		<0.00050		0.00050	mg/L	16-SEP-20	20-SEP-20	R5231567
Zinc (Zn)-Dissolved		<0.0010		0.0010	mg/L	16-SEP-20	20-SEP-20	R5231567
Zirconium (Zr)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	20-SEP-20	R5231567
Aggregate Organics								
Oil and Grease		<5.0		5.0	mg/L		22-SEP-20	R5232482
Volatile Organic Compounds								
F1 (C6-C10)		<0.10		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
Hydrocarbons								
F2 (C10-C16)		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
F3 (C16-C34)		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
F4 (C34-C50)		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
Surrogate: 2-Bromobenzotrifluoride, F2-F4		86.8		60-140	%	21-SEP-20	22-SEP-20	R5231613
L2500859-10 MS-LF-GW102 Sampled By: DZ/MD on 08-SEP-20 @ 13:55 Matrix: Water								
Physical Tests								
Conductivity		<2.0		2.0	uS/cm		17-SEP-20	R5227776
pH		5.76		0.10	pH units		10-SEP-20	R5219407

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-10 MS-LF-GW102 Sampled By: DZ/MD on 08-SEP-20 @ 13:55 Matrix: Water							
Physical Tests							
Total Suspended Solids	<2.0		2.0	mg/L		10-SEP-20	R5219410
Total Dissolved Solids	<10		10	mg/L		10-SEP-20	R5221380
Turbidity	<0.10		0.10	NTU		10-SEP-20	R5219409
Anions and Nutrients							
Alkalinity, Total (as CaCO3)	<1.0		1.0	mg/L		17-SEP-20	R5227776
Ammonia, Total (as N)	<0.0050		0.0050	mg/L		20-SEP-20	R5231164
Bromide (Br)	<0.050		0.050	mg/L		17-SEP-20	R5229497
Chloride (Cl)	<0.50		0.50	mg/L		17-SEP-20	R5229497
Fluoride (F)	<0.020		0.020	mg/L		17-SEP-20	R5229497
Nitrate (as N)	<0.0050		0.0050	mg/L		17-SEP-20	R5229497
Total Kjeldahl Nitrogen	<0.050		0.050	mg/L	21-SEP-20	21-SEP-20	R5231875
Phosphorus (P)-Total	<0.0020		0.0020	mg/L		20-SEP-20	R5231619
Sulfate (SO4)	<0.30		0.30	mg/L		17-SEP-20	R5229497
Organic / Inorganic Carbon							
Dissolved Organic Carbon	<0.50		0.50	mg/L		20-SEP-20	R5231438
Total Organic Carbon	<0.50		0.50	mg/L		20-SEP-20	R5231438
Total Metals							
Aluminum (Al)-Total	<0.0030		0.0030	mg/L		19-SEP-20	R5230865
Antimony (Sb)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Arsenic (As)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Barium (Ba)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Beryllium (Be)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Bismuth (Bi)-Total	<0.000050		0.000050	mg/L		19-SEP-20	R5230865
Boron (B)-Total	<0.010		0.010	mg/L		19-SEP-20	R5230865
Cadmium (Cd)-Total	<0.0000050		0.0000050	mg/L		19-SEP-20	R5230865
Calcium (Ca)-Total	<0.050		0.050	mg/L		19-SEP-20	R5230865
Cesium (Cs)-Total	<0.000010		0.000010	mg/L		19-SEP-20	R5230865
Chromium (Cr)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Cobalt (Co)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Copper (Cu)-Total	<0.00050		0.00050	mg/L		19-SEP-20	R5230865
Iron (Fe)-Total	<0.010		0.010	mg/L		19-SEP-20	R5230865
Lead (Pb)-Total	<0.000050		0.000050	mg/L		19-SEP-20	R5230865
Lithium (Li)-Total	<0.0010		0.0010	mg/L		19-SEP-20	R5230865
Magnesium (Mg)-Total	<0.0050		0.0050	mg/L		19-SEP-20	R5230865
Manganese (Mn)-Total	<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Mercury (Hg)-Total	<0.0000050		0.0000050	mg/L		21-SEP-20	R5231291
Molybdenum (Mo)-Total	<0.000050		0.000050	mg/L		19-SEP-20	R5230865
Nickel (Ni)-Total	<0.00050		0.00050	mg/L		19-SEP-20	R5230865
Phosphorus (P)-Total	<0.050		0.050	mg/L		19-SEP-20	R5230865
Potassium (K)-Total	<0.050		0.050	mg/L		19-SEP-20	R5230865
Rubidium (Rb)-Total	<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Selenium (Se)-Total	<0.000050		0.000050	mg/L		19-SEP-20	R5230865

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-10	MS-LF-GW102							
Sampled By:	DZ/MD on 08-SEP-20 @ 13:55							
Matrix:	Water							
Total Metals								
Silicon (Si)-Total		<0.10		0.10	mg/L		19-SEP-20	R5230865
Silver (Ag)-Total		<0.000010		0.000010	mg/L		19-SEP-20	R5230865
Sodium (Na)-Total		<0.050		0.050	mg/L		19-SEP-20	R5230865
Strontium (Sr)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Sulfur (S)-Total		<0.50		0.50	mg/L		19-SEP-20	R5230865
Tellurium (Te)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Thallium (Tl)-Total		<0.000010		0.000010	mg/L		19-SEP-20	R5230865
Thorium (Th)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Tin (Sn)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Titanium (Ti)-Total		<0.00030		0.00030	mg/L		19-SEP-20	R5230865
Tungsten (W)-Total		<0.00010		0.00010	mg/L		19-SEP-20	R5230865
Uranium (U)-Total		<0.000010		0.000010	mg/L		19-SEP-20	R5230865
Vanadium (V)-Total		<0.00050		0.00050	mg/L		19-SEP-20	R5230865
Zinc (Zn)-Total		<0.0030		0.0030	mg/L		19-SEP-20	R5230865
Zirconium (Zr)-Total		<0.00020		0.00020	mg/L		19-SEP-20	R5230865
Dissolved Metals								
Dissolved Mercury Filtration Location		FIELD					21-SEP-20	R5231557
Dissolved Metals Filtration Location		FIELD					22-SEP-20	R5232588
Aluminum (Al)-Dissolved		<0.0010		0.0010	mg/L	16-SEP-20	22-SEP-20	R5232586
Antimony (Sb)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Arsenic (As)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Barium (Ba)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Beryllium (Be)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Bismuth (Bi)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	22-SEP-20	R5232586
Boron (B)-Dissolved		<0.010		0.010	mg/L	16-SEP-20	22-SEP-20	R5232586
Cadmium (Cd)-Dissolved		<0.0000050		0.0000050	mg/L	16-SEP-20	22-SEP-20	R5232586
Calcium (Ca)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	22-SEP-20	R5232586
Cesium (Cs)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	22-SEP-20	R5232586
Chromium (Cr)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Cobalt (Co)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Copper (Cu)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	22-SEP-20	R5232586
Iron (Fe)-Dissolved		<0.010		0.010	mg/L	16-SEP-20	22-SEP-20	R5232586
Lead (Pb)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	22-SEP-20	R5232586
Lithium (Li)-Dissolved		<0.0010		0.0010	mg/L	16-SEP-20	22-SEP-20	R5232586
Magnesium (Mg)-Dissolved		<0.0050		0.0050	mg/L	16-SEP-20	22-SEP-20	R5232586
Manganese (Mn)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Mercury (Hg)-Dissolved		<0.0000050		0.0000050	mg/L	21-SEP-20	22-SEP-20	R5231937
Molybdenum (Mo)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	22-SEP-20	R5232586
Nickel (Ni)-Dissolved		<0.00050		0.00050	mg/L	16-SEP-20	22-SEP-20	R5232586
Phosphorus (P)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	22-SEP-20	R5232586
Potassium (K)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	22-SEP-20	R5232586

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Sample Details/Parameters		Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2500859-10	MS-LF-GW102							
Sampled By:	DZ/MD on 08-SEP-20 @ 13:55							
Matrix:	Water							
Dissolved Metals								
Rubidium (Rb)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	22-SEP-20	R5232586
Selenium (Se)-Dissolved		<0.000050		0.000050	mg/L	16-SEP-20	22-SEP-20	R5232586
Silicon (Si)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	22-SEP-20	R5232586
Silver (Ag)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	22-SEP-20	R5232586
Sodium (Na)-Dissolved		<0.050		0.050	mg/L	16-SEP-20	22-SEP-20	R5232586
Strontium (Sr)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	22-SEP-20	R5232586
Sulfur (S)-Dissolved		<0.50		0.50	mg/L	16-SEP-20	22-SEP-20	R5232586
Tellurium (Te)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	22-SEP-20	R5232586
Thallium (Tl)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	22-SEP-20	R5232586
Thorium (Th)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Tin (Sn)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Titanium (Ti)-Dissolved		<0.00030		0.00030	mg/L	16-SEP-20	22-SEP-20	R5232586
Tungsten (W)-Dissolved		<0.00010		0.00010	mg/L	16-SEP-20	22-SEP-20	R5232586
Uranium (U)-Dissolved		<0.000010		0.000010	mg/L	16-SEP-20	22-SEP-20	R5232586
Vanadium (V)-Dissolved		<0.00050		0.00050	mg/L	16-SEP-20	22-SEP-20	R5232586
Zinc (Zn)-Dissolved		0.0018	RRV	0.0010	mg/L	22-SEP-20	23-SEP-20	R5233230
Zirconium (Zr)-Dissolved		<0.00020		0.00020	mg/L	16-SEP-20	22-SEP-20	R5232586
Aggregate Organics								
Oil and Grease		<5.0		5.0	mg/L		22-SEP-20	R5232482
Volatile Organic Compounds								
F1 (C6-C10)		<0.10		0.10	mg/L	20-SEP-20	21-SEP-20	R5204137
Hydrocarbons								
F2 (C10-C16)		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
F3 (C16-C34)		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
F4 (C34-C50)		<0.30		0.30	mg/L	21-SEP-20	22-SEP-20	R5231613
Surrogate: 2-Bromobenzotrifluoride, F2-F4		83.8		60-140	%	21-SEP-20	22-SEP-20	R5231613

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Dissolved Organic Carbon	MS-B	L2500859-1, -10, -2, -4, -7, -8
Matrix Spike	Total Organic Carbon	MS-B	L2500859-1, -10, -2, -4, -7, -8
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L2500859-10
Matrix Spike	Magnesium (Mg)-Dissolved	MS-B	L2500859-10
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L2500859-10
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L2500859-10
Matrix Spike	Barium (Ba)-Total	MS-B	L2500859-7
Matrix Spike	Calcium (Ca)-Total	MS-B	L2500859-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Total	MS-B	L2500859-7
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2500859-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Magnesium (Mg)-Total	MS-B	L2500859-7
Matrix Spike	Manganese (Mn)-Total	MS-B	L2500859-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Selenium (Se)-Total	MS-B	L2500859-7
Matrix Spike	Sodium (Na)-Total	MS-B	L2500859-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Total	MS-B	L2500859-7
Matrix Spike	Strontium (Sr)-Total	MS-B	L2500859-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Total	MS-B	L2500859-7
Matrix Spike	Sulfur (S)-Total	MS-B	L2500859-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Total	MS-B	L2500859-7

Sample Parameter Qualifier key listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLIS	Detection Limit Adjusted: Insufficient Sample
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ALK-TITR-VA	Water	Alkalinity Species by Titration	APHA 2320 Alkalinity This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
BR-L-IC-N-VA	Water	Bromide in Water by IC (Low Level)	EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
CARBONS-DOC-VA	Water	Dissolved organic carbon by combustion	APHA 5310B This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis.
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310B TOTAL ORGANIC CARBON (TOC) This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".
CL-IC-N-VA	Water	Chloride in Water by IC	EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc. This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.
F-IC-N-VA	Water	Fluoride in Water by IC	EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
F1-HSFID-VA	Water	CCME F1 By Headspace with GC/FID	EPA 5021A/CCME CWS PHC (Pub# 1310)

This analysis is based on the "Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil - Tier 1 Method, Canadian Council of Ministers of the Environment, December 2000." For F1 (C6-C10), the sample undergoes a headspace purge prior to analysis by GC/FID.

F1 (C6-C10): Sum of all hydrocarbons that elute between nC6 and nC10.

F2-F4-ME-FID-VA	Water	CCME F2-F4 Hydrocarbons in Water	CCME CWS-PHC, Pub #1310, Dec 2001
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F2-F4 is extracted from water using a hexane micro-extraction technique. Instrumental analysis is by GC-FID, as per the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Tier 1 Method, CCME, Dec 2001.

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

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

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

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

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
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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.

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

OGG-CL	Water	Oil and Grease-Gravimetric	BC MOE Lab Manual (Oil & Grease) (mod)
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This technique employs a hexane extraction of a water material, followed by filtration of the decanted solvent into an evaporation container. The solvent is evaporated in a pre-weighed dish, and the oil content is calculated from the weight of oil and grease recovered

P-T-PRES-COL-VA	Water	Total P in Water by Colour	APHA 4500-P Phosphorus
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This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample.
Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples.

Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis.

PH-BF	Water	pH	APHA 4500 H-Electrode
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Water samples are analyzed directly by a calibrated pH meter.

SO4-IC-N-VA	Water	Sulfate in Water by IC	EPA 300.1 (mod)
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Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

SOLIDS-TDS-BF	Water	Total Dissolved Solids	APHA 2540C
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A well-mixed sample is filtered though glass fibres filter. A known volume of the filtrate is evaporated and dried at 180 +/- 2C for 1hr.

SOLIDS-TSS-BF	Water	Suspended solids	APHA 2540 D-Gravimetric
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A well-mixed sample is filtered through a weighed standard glass fibre filter and the residue retained is dried in an oven at 104 +/- 1C for a minimum of four hours or until a constant weight is achieved.

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

TURBIDITY-BF	Water	Turbidity	APHA 2130 B
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Reference Information

Sample result is based on a comparison of the intensity of the light scattered by the sample under defined conditions with the intensity of light scattered by a standard reference suspension under the same conditions. Sample readings are obtained from a Nephelometer.

** 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
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
BF	ALS ENVIRONMENTAL - BAFFIN ISLAND, NUNAVUT, CANADA

Chain of Custody Numbers:

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample
mg/kg ww - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid weight of sample
mg/L - unit of concentration based on volume, parts per million.

< - Less than.
D.L. - The reporting limit.
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: L2500859

Report Date: 24-SEP-20

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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
ALK-TITR-VA		Water						
Batch	R5227776							
WG3406849-4	DUP	L2500859-1						
Alkalinity, Total (as CaCO3)		247	247		mg/L	0.2	20	17-SEP-20
WG3406849-3	LCS							
Alkalinity, Total (as CaCO3)			98.5		%		85-115	17-SEP-20
WG3406849-1	MB							
Alkalinity, Total (as CaCO3)			<1.0		mg/L		1	17-SEP-20
BR-L-IC-N-VA		Water						
Batch	R5229497							
WG3406828-3	DUP	L2500859-1						
Bromide (Br)		<0.50	0.51	RPD-NA	mg/L	N/A	20	17-SEP-20
WG3406828-2	LCS							
Bromide (Br)			96.6		%		85-115	17-SEP-20
WG3406828-1	MB							
Bromide (Br)			<0.050		mg/L		0.05	17-SEP-20
CARBONS-DOC-VA		Water						
Batch	R5231438							
WG3408200-3	DUP	L2500859-1						
Dissolved Organic Carbon		7.75	7.72		mg/L	0.4	20	20-SEP-20
WG3408200-2	LCS							
Dissolved Organic Carbon			106.0		%		80-120	20-SEP-20
WG3408200-1	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	20-SEP-20
WG3408200-4	MS	L2500859-2						
Dissolved Organic Carbon			N/A	MS-B	%		-	20-SEP-20
Batch	R5232223							
WG3408893-1	DUP	L2500859-3						
Dissolved Organic Carbon		35.2	35.2		mg/L	0.1	20	21-SEP-20
WG3408893-9	DUP	L2501221-3						
Dissolved Organic Carbon		2.35	2.53		mg/L	7.3	20	21-SEP-20
WG3408893-12	LCS							
Dissolved Organic Carbon			95.7		%		80-120	21-SEP-20
WG3408893-4	LCS							
Dissolved Organic Carbon			97.8		%		80-120	21-SEP-20
WG3408893-11	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-SEP-20
WG3408893-3	MB							
Dissolved Organic Carbon			<0.50		mg/L		0.5	21-SEP-20
WG3408893-10	MS	L2501221-4						



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CARBONS-DOC-VA		Water						
Batch	R5232223							
WG3408893-10 MS		L2501221-4						
Dissolved Organic Carbon			95.1		%		70-130	21-SEP-20
WG3408893-2 MS		L2500859-5						
Dissolved Organic Carbon			93.7		%		70-130	21-SEP-20
CARBONS-TOC-VA		Water						
Batch	R5231438							
WG3408186-3 DUP		L2500314-1						
Total Organic Carbon		6.83	6.69		mg/L	2.1	20	20-SEP-20
WG3408186-2 LCS								
Total Organic Carbon			104.9		%		80-120	20-SEP-20
WG3408186-1 MB								
Total Organic Carbon			<0.50		mg/L		0.5	20-SEP-20
WG3408186-4 MS		L2500314-2						
Total Organic Carbon			N/A	MS-B	%		-	20-SEP-20
Batch	R5232223							
WG3408893-1 DUP		L2500859-3						
Total Organic Carbon		35.9	36.0		mg/L	0.2	20	21-SEP-20
WG3408893-5 DUP		L2501101-5						
Total Organic Carbon		5.17	5.30		mg/L	2.4	20	21-SEP-20
WG3408893-9 DUP		L2501221-3						
Total Organic Carbon		2.34	2.29		mg/L	2.3	20	21-SEP-20
WG3408893-12 LCS								
Total Organic Carbon			95.0		%		80-120	21-SEP-20
WG3408893-4 LCS								
Total Organic Carbon			96.5		%		80-120	21-SEP-20
WG3408893-8 LCS								
Total Organic Carbon			99.6		%		80-120	21-SEP-20
WG3408893-11 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-SEP-20
WG3408893-3 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-SEP-20
WG3408893-7 MB								
Total Organic Carbon			<0.50		mg/L		0.5	21-SEP-20
WG3408893-10 MS		L2501221-4						
Total Organic Carbon			97.3		%		70-130	21-SEP-20
WG3408893-2 MS		L2500859-5						
Total Organic Carbon			100.2		%		70-130	21-SEP-20
WG3408893-6 MS		L2501101-6						



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CARBONS-TOC-VA								
Water								
Batch	R5232223							
WG3408893-6 MS		L2501101-6						
Total Organic Carbon			86.5		%		70-130	21-SEP-20
CL-IC-N-VA								
Water								
Batch	R5229497							
WG3406828-3 DUP		L2500859-1						
Chloride (Cl)		531	530		mg/L	0.1	20	17-SEP-20
WG3406828-2 LCS			101.8		%		90-110	17-SEP-20
Chloride (Cl)								
WG3406828-1 MB			<0.50		mg/L		0.5	17-SEP-20
Chloride (Cl)								
EC-PCT-VA								
Water								
Batch	R5227776							
WG3406849-4 DUP		L2500859-1						
Conductivity		2460	2460		uS/cm	0.0	10	17-SEP-20
WG3406849-3 LCS			99.7		%		90-110	17-SEP-20
Conductivity								
WG3406849-1 MB			<2.0		uS/cm		2	17-SEP-20
Conductivity								
F-IC-N-VA								
Water								
Batch	R5229497							
WG3406828-3 DUP		L2500859-1						
Fluoride (F)		<0.20	<0.20	RPD-NA	mg/L	N/A	20	17-SEP-20
WG3406828-2 LCS			99.6		%		90-110	17-SEP-20
Fluoride (F)								
WG3406828-1 MB			<0.020		mg/L		0.02	17-SEP-20
Fluoride (F)								
F1-HSFID-VA								
Water								
Batch	R5204137							
WG3408416-3 DUP		L2501785-1						
F1 (C6-C10)		<0.10	<0.10	RPD-NA	mg/L	N/A	30	21-SEP-20
WG3408416-2 LCS			102.1		%		70-130	21-SEP-20
F1 (C6-C10)								
WG3408416-1 MB			<0.10		mg/L		0.1	21-SEP-20
F1 (C6-C10)								
F2-F4-ME-FID-VA								
Water								



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
HG-T-CVAA-VA		Water						
Batch	R5231291							
WG3408426-2	LCS							
Mercury (Hg)-Total			98.5		%		80-120	21-SEP-20
WG3408426-1	MB							
Mercury (Hg)-Total			<0.0000050		mg/L		0.000005	21-SEP-20
WG3408426-10	MS	L2502470-1						
Mercury (Hg)-Total			101.6		%		70-130	21-SEP-20
WG3408426-6	MS	L2502545-2						
Mercury (Hg)-Total			97.2		%		70-130	21-SEP-20
WG3408426-8	MS	L2502455-4						
Mercury (Hg)-Total			94.2		%		70-130	21-SEP-20
MET-D-CCMS-VA		Water						
Batch	R5230167							
WG3406185-2	LCS							
Aluminum (Al)-Dissolved			104.8		%		80-120	18-SEP-20
Antimony (Sb)-Dissolved			102.4		%		80-120	18-SEP-20
Arsenic (As)-Dissolved			99.9		%		80-120	18-SEP-20
Barium (Ba)-Dissolved			105.3		%		80-120	18-SEP-20
Beryllium (Be)-Dissolved			99.8		%		80-120	18-SEP-20
Bismuth (Bi)-Dissolved			114.2		%		80-120	18-SEP-20
Boron (B)-Dissolved			92.6		%		80-120	18-SEP-20
Cadmium (Cd)-Dissolved			105.9		%		80-120	18-SEP-20
Calcium (Ca)-Dissolved			103.9		%		80-120	18-SEP-20
Cesium (Cs)-Dissolved			102.1		%		80-120	18-SEP-20
Chromium (Cr)-Dissolved			101.0		%		80-120	18-SEP-20
Cobalt (Co)-Dissolved			103.7		%		80-120	18-SEP-20
Copper (Cu)-Dissolved			101.7		%		80-120	18-SEP-20
Iron (Fe)-Dissolved			100.2		%		80-120	18-SEP-20
Lead (Pb)-Dissolved			104.1		%		80-120	18-SEP-20
Lithium (Li)-Dissolved			102.7		%		80-120	18-SEP-20
Magnesium (Mg)-Dissolved			98.9		%		80-120	18-SEP-20
Manganese (Mn)-Dissolved			103.9		%		80-120	18-SEP-20
Molybdenum (Mo)-Dissolved			106.2		%		80-120	18-SEP-20
Nickel (Ni)-Dissolved			104.7		%		80-120	18-SEP-20
Phosphorus (P)-Dissolved			108.7		%		70-130	18-SEP-20
Potassium (K)-Dissolved			100.2		%		80-120	18-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5230167							
WG3406185-2		LCS						
Rubidium (Rb)-Dissolved			105.2		%		80-120	18-SEP-20
Selenium (Se)-Dissolved			103.6		%		80-120	18-SEP-20
Silicon (Si)-Dissolved			104.5		%		60-140	18-SEP-20
Silver (Ag)-Dissolved			107.6		%		80-120	18-SEP-20
Sodium (Na)-Dissolved			107.7		%		80-120	18-SEP-20
Strontium (Sr)-Dissolved			108.0		%		80-120	18-SEP-20
Sulfur (S)-Dissolved			101.6		%		80-120	18-SEP-20
Tellurium (Te)-Dissolved			113.1		%		80-120	18-SEP-20
Thallium (Tl)-Dissolved			105.3		%		80-120	18-SEP-20
Thorium (Th)-Dissolved			94.3		%		80-120	18-SEP-20
Tin (Sn)-Dissolved			105.4		%		80-120	18-SEP-20
Titanium (Ti)-Dissolved			98.0		%		80-120	18-SEP-20
Tungsten (W)-Dissolved			105.4		%		80-120	18-SEP-20
Uranium (U)-Dissolved			106.1		%		80-120	18-SEP-20
Vanadium (V)-Dissolved			103.3		%		80-120	18-SEP-20
Zinc (Zn)-Dissolved			100.2		%		80-120	18-SEP-20
Zirconium (Zr)-Dissolved			103.8		%		80-120	18-SEP-20
WG3406185-1		MB						
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	18-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	18-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	18-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	18-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	18-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	18-SEP-20



Quality Control Report

Workorder: L2500859

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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5230167							
WG3406185-1	MB							
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	18-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	18-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	18-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	18-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	18-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	18-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	18-SEP-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	18-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	18-SEP-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	18-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	18-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	18-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	18-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	18-SEP-20
Batch	R5230596							
WG3406185-3	DUP	L2500859-1						
Aluminum (Al)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	18-SEP-20
Barium (Ba)-Dissolved		0.0888	0.0853		mg/L	4.0	20	18-SEP-20
Beryllium (Be)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	18-SEP-20
Bismuth (Bi)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-SEP-20
Boron (B)-Dissolved		3.75	3.69		mg/L	1.4	20	18-SEP-20
Cadmium (Cd)-Dissolved		0.000193	0.000193		mg/L	0.4	20	18-SEP-20
Calcium (Ca)-Dissolved		231	226		mg/L	2.1	20	18-SEP-20
Cesium (Cs)-Dissolved		0.000038	0.000031		mg/L	19	20	18-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5230596							
WG3406185-3	DUP	L2500859-1						
Chromium (Cr)-Dissolved		0.00039	0.00035		mg/L	13	20	18-SEP-20
Cobalt (Co)-Dissolved		0.00101	0.00097		mg/L	4.6	20	18-SEP-20
Copper (Cu)-Dissolved		0.00430	0.00395		mg/L	8.5	20	18-SEP-20
Iron (Fe)-Dissolved		<0.020	<0.020	RPD-NA	mg/L	N/A	20	18-SEP-20
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	18-SEP-20
Lithium (Li)-Dissolved		0.0164	0.0157		mg/L	4.3	20	18-SEP-20
Magnesium (Mg)-Dissolved		174	171		mg/L	1.7	20	18-SEP-20
Manganese (Mn)-Dissolved		0.316	0.308		mg/L	2.7	20	18-SEP-20
Molybdenum (Mo)-Dissolved		0.00053	0.00053		mg/L	0.3	20	18-SEP-20
Nickel (Ni)-Dissolved		0.0657	0.0635		mg/L	3.4	20	18-SEP-20
Potassium (K)-Dissolved		4.49	4.36		mg/L	2.7	20	18-SEP-20
Rubidium (Rb)-Dissolved		0.0186	0.0185		mg/L	0.5	20	18-SEP-20
Selenium (Se)-Dissolved		<0.00010	0.00012	RPD-NA	mg/L	N/A	20	18-SEP-20
Silicon (Si)-Dissolved		6.37	6.13		mg/L	3.8	20	18-SEP-20
Silver (Ag)-Dissolved		<0.000020	<0.000020	RPD-NA	mg/L	N/A	20	18-SEP-20
Sodium (Na)-Dissolved		26.8	26.2		mg/L	2.3	20	18-SEP-20
Strontium (Sr)-Dissolved		0.123	0.119		mg/L	3.3	20	18-SEP-20
Sulfur (S)-Dissolved		108	105		mg/L	2.1	20	18-SEP-20
Tellurium (Te)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	18-SEP-20
Thallium (Tl)-Dissolved		0.000118	0.000112		mg/L	5.2	20	18-SEP-20
Thorium (Th)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	18-SEP-20
Tin (Sn)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	18-SEP-20
Titanium (Ti)-Dissolved		<0.00060	<0.00060	RPD-NA	mg/L	N/A	20	18-SEP-20
Tungsten (W)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	18-SEP-20
Uranium (U)-Dissolved		0.0214	0.0206		mg/L	4.0	20	18-SEP-20
Vanadium (V)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	18-SEP-20
Zinc (Zn)-Dissolved		<0.0020	<0.0020	RPD-NA	mg/L	N/A	20	18-SEP-20
Zirconium (Zr)-Dissolved		0.00046	0.00046		mg/L	1.6	20	18-SEP-20
Batch	R5231567							
WG3406185-3	DUP	L2500859-1						
Antimony (Sb)-Dissolved		<0.00020	0.00024	RPD-NA	mg/L	N/A	20	20-SEP-20
Arsenic (As)-Dissolved		0.00035	0.00029		mg/L	20	20	20-SEP-20
Phosphorus (P)-Dissolved		<0.10	<0.10	RPD-NA	mg/L	N/A	20	20-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5232289							
WG3409357-3	DUP	L2500859-7						
Aluminum (Al)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-SEP-20
Antimony (Sb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Arsenic (As)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Barium (Ba)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-SEP-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-SEP-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	22-SEP-20
Calcium (Ca)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-SEP-20
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-SEP-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Copper (Cu)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-SEP-20
Iron (Fe)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	22-SEP-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-SEP-20
Lithium (Li)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	22-SEP-20
Magnesium (Mg)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	22-SEP-20
Manganese (Mn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Molybdenum (Mo)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-SEP-20
Nickel (Ni)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-SEP-20
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-SEP-20
Potassium (K)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-SEP-20
Rubidium (Rb)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-SEP-20
Selenium (Se)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	22-SEP-20
Silicon (Si)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-SEP-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-SEP-20
Sodium (Na)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	22-SEP-20
Strontium (Sr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-SEP-20
Sulfur (S)-Dissolved		<0.50	<0.50	RPD-NA	mg/L	N/A	20	22-SEP-20
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-SEP-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-SEP-20
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Tin (Sn)-Dissolved		<0.00010	<0.00010		mg/L			22-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5232289							
WG3409357-3 DUP		L2500859-7						
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	22-SEP-20
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	22-SEP-20
Uranium (U)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	22-SEP-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	22-SEP-20
Zinc (Zn)-Dissolved		0.0011	0.0010		mg/L	3.2	20	22-SEP-20
Zirconium (Zr)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	22-SEP-20
WG3409357-2 LCS								
Aluminum (Al)-Dissolved			103.1		%		80-120	22-SEP-20
Antimony (Sb)-Dissolved			103.4		%		80-120	22-SEP-20
Arsenic (As)-Dissolved			101.9		%		80-120	22-SEP-20
Barium (Ba)-Dissolved			103.1		%		80-120	22-SEP-20
Beryllium (Be)-Dissolved			92.7		%		80-120	22-SEP-20
Bismuth (Bi)-Dissolved			106.7		%		80-120	22-SEP-20
Boron (B)-Dissolved			91.6		%		80-120	22-SEP-20
Cadmium (Cd)-Dissolved			101.1		%		80-120	22-SEP-20
Calcium (Ca)-Dissolved			100.3		%		80-120	22-SEP-20
Cesium (Cs)-Dissolved			102.5		%		80-120	22-SEP-20
Chromium (Cr)-Dissolved			102.0		%		80-120	22-SEP-20
Cobalt (Co)-Dissolved			102.7		%		80-120	22-SEP-20
Copper (Cu)-Dissolved			100.7		%		80-120	22-SEP-20
Iron (Fe)-Dissolved			106.1		%		80-120	22-SEP-20
Lead (Pb)-Dissolved			104.2		%		80-120	22-SEP-20
Lithium (Li)-Dissolved			92.9		%		80-120	22-SEP-20
Magnesium (Mg)-Dissolved			104.2		%		80-120	22-SEP-20
Manganese (Mn)-Dissolved			102.2		%		80-120	22-SEP-20
Molybdenum (Mo)-Dissolved			98.9		%		80-120	22-SEP-20
Nickel (Ni)-Dissolved			99.4		%		80-120	22-SEP-20
Phosphorus (P)-Dissolved			106.6		%		70-130	22-SEP-20
Potassium (K)-Dissolved			105.6		%		80-120	22-SEP-20
Rubidium (Rb)-Dissolved			101.5		%		80-120	22-SEP-20
Selenium (Se)-Dissolved			101.9		%		80-120	22-SEP-20
Silicon (Si)-Dissolved			99.3		%		60-140	22-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5232289							
WG3409357-2 LCS								
Silver (Ag)-Dissolved			104.5		%		80-120	22-SEP-20
Sodium (Na)-Dissolved			102.4		%		80-120	22-SEP-20
Strontium (Sr)-Dissolved			104.9		%		80-120	22-SEP-20
Sulfur (S)-Dissolved			94.2		%		80-120	22-SEP-20
Tellurium (Te)-Dissolved			99.4		%		80-120	22-SEP-20
Thallium (Tl)-Dissolved			104.5		%		80-120	22-SEP-20
Thorium (Th)-Dissolved			100.1		%		80-120	22-SEP-20
Tin (Sn)-Dissolved			100.3		%		80-120	22-SEP-20
Titanium (Ti)-Dissolved			101.3		%		80-120	22-SEP-20
Tungsten (W)-Dissolved			103.3		%		80-120	22-SEP-20
Uranium (U)-Dissolved			105.0		%		80-120	22-SEP-20
Vanadium (V)-Dissolved			103.3		%		80-120	22-SEP-20
Zinc (Zn)-Dissolved			103.6		%		80-120	22-SEP-20
Zirconium (Zr)-Dissolved			96.5		%		80-120	22-SEP-20
WG3409357-1 MB								
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	22-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	22-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	22-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	22-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	22-SEP-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	22-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	22-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	22-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	22-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	22-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	22-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	22-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5232289							
WG3409357-1 MB								
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	22-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	22-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	22-SEP-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	22-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	22-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	22-SEP-20
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	22-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	22-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	22-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	22-SEP-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	22-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	22-SEP-20
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	22-SEP-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	22-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	22-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	22-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	22-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	22-SEP-20
WG3409357-4 MS		L2503201-6						
Aluminum (Al)-Dissolved			100.4		%		70-130	22-SEP-20
Antimony (Sb)-Dissolved			101.2		%		70-130	22-SEP-20
Arsenic (As)-Dissolved			97.5		%		70-130	22-SEP-20
Barium (Ba)-Dissolved			100.1		%		70-130	22-SEP-20
Beryllium (Be)-Dissolved			94.1		%		70-130	22-SEP-20
Bismuth (Bi)-Dissolved			96.8		%		70-130	22-SEP-20
Boron (B)-Dissolved			90.5		%		70-130	22-SEP-20
Cadmium (Cd)-Dissolved			100.6		%		70-130	22-SEP-20
Calcium (Ca)-Dissolved			98.7		%		70-130	22-SEP-20
Cesium (Cs)-Dissolved			101.1		%		70-130	22-SEP-20
Chromium (Cr)-Dissolved			98.8		%		70-130	22-SEP-20
Cobalt (Co)-Dissolved			99.3		%		70-130	22-SEP-20
Copper (Cu)-Dissolved			100.6		%		70-130	22-SEP-20



Quality Control Report

Workorder: L2500859

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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5232289							
WG3409357-4 MS		L2503201-6						
Iron (Fe)-Dissolved			98.3		%		70-130	22-SEP-20
Lead (Pb)-Dissolved			100.0		%		70-130	22-SEP-20
Lithium (Li)-Dissolved			92.2		%		70-130	22-SEP-20
Magnesium (Mg)-Dissolved			100.1		%		70-130	22-SEP-20
Manganese (Mn)-Dissolved			99.8		%		70-130	22-SEP-20
Molybdenum (Mo)-Dissolved			96.9		%		70-130	22-SEP-20
Nickel (Ni)-Dissolved			97.8		%		70-130	22-SEP-20
Phosphorus (P)-Dissolved			100.2		%		70-130	22-SEP-20
Potassium (K)-Dissolved			100.6		%		70-130	22-SEP-20
Rubidium (Rb)-Dissolved			100.9		%		70-130	22-SEP-20
Selenium (Se)-Dissolved			99.9		%		70-130	22-SEP-20
Silicon (Si)-Dissolved			92.7		%		70-130	22-SEP-20
Silver (Ag)-Dissolved			102.2		%		70-130	22-SEP-20
Sodium (Na)-Dissolved			99.8		%		70-130	22-SEP-20
Strontium (Sr)-Dissolved			99.9		%		70-130	22-SEP-20
Sulfur (S)-Dissolved			96.2		%		70-130	22-SEP-20
Tellurium (Te)-Dissolved			101.8		%		70-130	22-SEP-20
Thallium (Tl)-Dissolved			98.6		%		70-130	22-SEP-20
Thorium (Th)-Dissolved			101.2		%		70-130	22-SEP-20
Tin (Sn)-Dissolved			97.8		%		70-130	22-SEP-20
Titanium (Ti)-Dissolved			99.0		%		70-130	22-SEP-20
Tungsten (W)-Dissolved			97.4		%		70-130	22-SEP-20
Uranium (U)-Dissolved			99.1		%		70-130	22-SEP-20
Vanadium (V)-Dissolved			100.1		%		70-130	22-SEP-20
Zinc (Zn)-Dissolved			104.0		%		70-130	22-SEP-20
Zirconium (Zr)-Dissolved			98.8		%		70-130	22-SEP-20
Batch	R5233230							
WG3410263-3 DUP		L2504537-1						
Aluminum (Al)-Dissolved		0.0138	0.0131		mg/L	5.0	20	23-SEP-20
Antimony (Sb)-Dissolved		0.00042	0.00042		mg/L	1.1	20	23-SEP-20
Arsenic (As)-Dissolved		0.00217	0.00209		mg/L	3.6	20	23-SEP-20
Barium (Ba)-Dissolved		0.0114	0.0117		mg/L	2.6	20	23-SEP-20
Beryllium (Be)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-20

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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5233230							
WG3410263-3	DUP	L2504537-1						
Bismuth (Bi)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-20
Boron (B)-Dissolved		<0.010	<0.010	RPD-NA	mg/L	N/A	20	23-SEP-20
Cadmium (Cd)-Dissolved		<0.0000050	<0.0000050	RPD-NA	mg/L	N/A	20	23-SEP-20
Calcium (Ca)-Dissolved		10.5	10.6		mg/L	1.2	20	23-SEP-20
Cesium (Cs)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-20
Chromium (Cr)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-20
Cobalt (Co)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-20
Copper (Cu)-Dissolved		0.00082	0.00084		mg/L	2.4	20	23-SEP-20
Iron (Fe)-Dissolved		0.012	0.012		mg/L	1.9	20	23-SEP-20
Lead (Pb)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-20
Lithium (Li)-Dissolved		0.0021	0.0021		mg/L	1.1	20	23-SEP-20
Magnesium (Mg)-Dissolved		3.07	3.07		mg/L	0.0	20	23-SEP-20
Manganese (Mn)-Dissolved		0.00062	0.00064		mg/L	2.4	20	23-SEP-20
Molybdenum (Mo)-Dissolved		0.000532	0.000554		mg/L	4.0	20	23-SEP-20
Nickel (Ni)-Dissolved		0.00051	<0.00050	RPD-NA	mg/L	N/A	20	23-SEP-20
Phosphorus (P)-Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	20	23-SEP-20
Potassium (K)-Dissolved		1.19	1.19		mg/L	0.2	20	23-SEP-20
Rubidium (Rb)-Dissolved		0.00236	0.00195		mg/L	19	20	23-SEP-20
Selenium (Se)-Dissolved		0.000066	<0.000050	RPD-NA	mg/L	N/A	20	23-SEP-20
Silicon (Si)-Dissolved		0.492	0.525		mg/L	6.6	20	23-SEP-20
Silver (Ag)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-20
Sodium (Na)-Dissolved		3.84	3.64		mg/L	5.5	20	23-SEP-20
Strontium (Sr)-Dissolved		0.0518	0.0530		mg/L	2.2	20	23-SEP-20
Sulfur (S)-Dissolved		2.86	2.98		mg/L	4.0	20	23-SEP-20
Tellurium (Te)-Dissolved		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	23-SEP-20
Thallium (Tl)-Dissolved		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	23-SEP-20
Thorium (Th)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-20
Tin (Sn)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-20
Titanium (Ti)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	23-SEP-20
Tungsten (W)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	23-SEP-20
Uranium (U)-Dissolved		0.000208	0.000204		mg/L	1.9	20	23-SEP-20
Vanadium (V)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	23-SEP-20
Zinc (Zn)-Dissolved		<0.0010	<0.0010		mg/L			23-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5233230							
WG3410263-3	DUP	L2504537-1						
Zinc (Zn)-Dissolved		<0.0010	<0.0010	RPD-NA	mg/L	N/A	20	23-SEP-20
Zirconium (Zr)-Dissolved		<0.00030	<0.00030	RPD-NA	mg/L	N/A	20	23-SEP-20
WG3410263-2	LCS							
Aluminum (Al)-Dissolved			105.9		%		80-120	23-SEP-20
Antimony (Sb)-Dissolved			101.3		%		80-120	23-SEP-20
Arsenic (As)-Dissolved			103.8		%		80-120	23-SEP-20
Barium (Ba)-Dissolved			108.8		%		80-120	23-SEP-20
Beryllium (Be)-Dissolved			100.5		%		80-120	23-SEP-20
Bismuth (Bi)-Dissolved			102.2		%		80-120	23-SEP-20
Boron (B)-Dissolved			98.3		%		80-120	23-SEP-20
Cadmium (Cd)-Dissolved			106.5		%		80-120	23-SEP-20
Calcium (Ca)-Dissolved			105.6		%		80-120	23-SEP-20
Cesium (Cs)-Dissolved			107.1		%		80-120	23-SEP-20
Chromium (Cr)-Dissolved			105.4		%		80-120	23-SEP-20
Cobalt (Co)-Dissolved			104.8		%		80-120	23-SEP-20
Copper (Cu)-Dissolved			104.2		%		80-120	23-SEP-20
Iron (Fe)-Dissolved			105.7		%		80-120	23-SEP-20
Lead (Pb)-Dissolved			101.7		%		80-120	23-SEP-20
Lithium (Li)-Dissolved			98.5		%		80-120	23-SEP-20
Magnesium (Mg)-Dissolved			101.5		%		80-120	23-SEP-20
Manganese (Mn)-Dissolved			110.2		%		80-120	23-SEP-20
Molybdenum (Mo)-Dissolved			103.6		%		80-120	23-SEP-20
Nickel (Ni)-Dissolved			103.4		%		80-120	23-SEP-20
Phosphorus (P)-Dissolved			110.9		%		70-130	23-SEP-20
Potassium (K)-Dissolved			104.6		%		80-120	23-SEP-20
Rubidium (Rb)-Dissolved			113.4		%		80-120	23-SEP-20
Selenium (Se)-Dissolved			100.8		%		80-120	23-SEP-20
Silicon (Si)-Dissolved			103.0		%		60-140	23-SEP-20
Silver (Ag)-Dissolved			103.9		%		80-120	23-SEP-20
Sodium (Na)-Dissolved			106.9		%		80-120	23-SEP-20
Strontium (Sr)-Dissolved			103.6		%		80-120	23-SEP-20
Sulfur (S)-Dissolved			96.7		%		80-120	23-SEP-20
Tellurium (Te)-Dissolved			106.7		%		80-120	23-SEP-20
Thallium (Tl)-Dissolved			99.4		%		80-120	23-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5233230							
WG3410263-2	LCS							
Thorium (Th)-Dissolved			100.2		%		80-120	23-SEP-20
Tin (Sn)-Dissolved			99.8		%		80-120	23-SEP-20
Titanium (Ti)-Dissolved			104.5		%		80-120	23-SEP-20
Tungsten (W)-Dissolved			94.9		%		80-120	23-SEP-20
Uranium (U)-Dissolved			98.5		%		80-120	23-SEP-20
Vanadium (V)-Dissolved			106.2		%		80-120	23-SEP-20
Zinc (Zn)-Dissolved			104.9		%		80-120	23-SEP-20
Zirconium (Zr)-Dissolved			98.2		%		80-120	23-SEP-20
WG3410263-1	MB							
Aluminum (Al)-Dissolved			<0.0010		mg/L		0.001	23-SEP-20
Antimony (Sb)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Arsenic (As)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Beryllium (Be)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Bismuth (Bi)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-20
Boron (B)-Dissolved			<0.010		mg/L		0.01	23-SEP-20
Cadmium (Cd)-Dissolved			<0.0000050		mg/L		0.000005	23-SEP-20
Calcium (Ca)-Dissolved			<0.050		mg/L		0.05	23-SEP-20
Cesium (Cs)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-20
Chromium (Cr)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Copper (Cu)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-20
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	23-SEP-20
Lead (Pb)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-20
Lithium (Li)-Dissolved			<0.0010		mg/L		0.001	23-SEP-20
Magnesium (Mg)-Dissolved			<0.0050		mg/L		0.005	23-SEP-20
Manganese (Mn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Molybdenum (Mo)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-20
Nickel (Ni)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-20
Phosphorus (P)-Dissolved			<0.050		mg/L		0.05	23-SEP-20
Potassium (K)-Dissolved			<0.050		mg/L		0.05	23-SEP-20
Rubidium (Rb)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-20
Selenium (Se)-Dissolved			<0.000050		mg/L		0.00005	23-SEP-20
Silicon (Si)-Dissolved			<0.050		mg/L		0.05	23-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA								
Water								
Batch	R5233230							
WG3410263-1 MB								
Silver (Ag)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-20
Sodium (Na)-Dissolved			<0.050		mg/L		0.05	23-SEP-20
Strontium (Sr)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-20
Sulfur (S)-Dissolved			<0.50		mg/L		0.5	23-SEP-20
Tellurium (Te)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-20
Thallium (Tl)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-20
Thorium (Th)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Tin (Sn)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	23-SEP-20
Tungsten (W)-Dissolved			<0.00010		mg/L		0.0001	23-SEP-20
Uranium (U)-Dissolved			<0.000010		mg/L		0.00001	23-SEP-20
Vanadium (V)-Dissolved			<0.00050		mg/L		0.0005	23-SEP-20
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	23-SEP-20
Zirconium (Zr)-Dissolved			<0.00020		mg/L		0.0002	23-SEP-20
WG3410263-4 MS		L2504537-2						
Aluminum (Al)-Dissolved			98.2		%		70-130	23-SEP-20
Antimony (Sb)-Dissolved			101.6		%		70-130	23-SEP-20
Arsenic (As)-Dissolved			96.1		%		70-130	23-SEP-20
Barium (Ba)-Dissolved			99.0		%		70-130	23-SEP-20
Beryllium (Be)-Dissolved			99.5		%		70-130	23-SEP-20
Bismuth (Bi)-Dissolved			92.8		%		70-130	23-SEP-20
Boron (B)-Dissolved			94.8		%		70-130	23-SEP-20
Cadmium (Cd)-Dissolved			98.8		%		70-130	23-SEP-20
Calcium (Ca)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Cesium (Cs)-Dissolved			105.7		%		70-130	23-SEP-20
Chromium (Cr)-Dissolved			97.6		%		70-130	23-SEP-20
Cobalt (Co)-Dissolved			98.0		%		70-130	23-SEP-20
Copper (Cu)-Dissolved			97.9		%		70-130	23-SEP-20
Iron (Fe)-Dissolved			98.6		%		70-130	23-SEP-20
Lead (Pb)-Dissolved			93.3		%		70-130	23-SEP-20
Lithium (Li)-Dissolved			94.5		%		70-130	23-SEP-20
Magnesium (Mg)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Manganese (Mn)-Dissolved			99.6		%		70-130	23-SEP-20
Molybdenum (Mo)-Dissolved			99.5		%		70-130	23-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-CCMS-VA		Water						
Batch	R5233230							
WG3410263-4 MS		L2504537-2						
Nickel (Ni)-Dissolved			97.3		%		70-130	23-SEP-20
Phosphorus (P)-Dissolved			103.0		%		70-130	23-SEP-20
Potassium (K)-Dissolved			98.2		%		70-130	23-SEP-20
Rubidium (Rb)-Dissolved			105.0		%		70-130	23-SEP-20
Selenium (Se)-Dissolved			98.1		%		70-130	23-SEP-20
Silicon (Si)-Dissolved			89.6		%		70-130	23-SEP-20
Silver (Ag)-Dissolved			100.5		%		70-130	23-SEP-20
Sodium (Na)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Strontium (Sr)-Dissolved			N/A	MS-B	%		-	23-SEP-20
Sulfur (S)-Dissolved			94.8		%		70-130	23-SEP-20
Tellurium (Te)-Dissolved			100.9		%		70-130	23-SEP-20
Thallium (Tl)-Dissolved			95.2		%		70-130	23-SEP-20
Thorium (Th)-Dissolved			102.2		%		70-130	23-SEP-20
Tin (Sn)-Dissolved			96.9		%		70-130	23-SEP-20
Titanium (Ti)-Dissolved			97.3		%		70-130	23-SEP-20
Tungsten (W)-Dissolved			91.2		%		70-130	23-SEP-20
Uranium (U)-Dissolved			95.8		%		70-130	23-SEP-20
Vanadium (V)-Dissolved			98.8		%		70-130	23-SEP-20
Zinc (Zn)-Dissolved			99.4		%		70-130	23-SEP-20
Zirconium (Zr)-Dissolved			104.5		%		70-130	23-SEP-20
MET-T-CCMS-VA		Water						
Batch	R5230865							
WG3407708-3 DUP		L2501074-1						
Aluminum (Al)-Total		0.0269	0.0256		mg/L	4.9	20	19-SEP-20
Antimony (Sb)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-SEP-20
Arsenic (As)-Total		0.00377	0.00365		mg/L	3.1	20	19-SEP-20
Barium (Ba)-Total		0.0108	0.0106		mg/L	2.6	20	19-SEP-20
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-SEP-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-SEP-20
Boron (B)-Total		0.037	0.036		mg/L	3.2	20	19-SEP-20
Cadmium (Cd)-Total		0.0000540	0.0000543		mg/L	0.5	20	19-SEP-20
Calcium (Ca)-Total		38.6	36.9		mg/L	4.6	20	19-SEP-20
Cesium (Cs)-Total		0.000061	0.000058		mg/L	6.5	20	19-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5230865							
WG3407708-3	DUP	L2501074-1						
Chromium (Cr)-Total		0.00018	0.00011	J	mg/L	0.00006	0.0002	19-SEP-20
Cobalt (Co)-Total		0.00445	0.00440		mg/L	1.2	20	19-SEP-20
Copper (Cu)-Total		0.00140	0.00138		mg/L	1.6	20	19-SEP-20
Iron (Fe)-Total		0.219	0.213		mg/L	2.6	20	19-SEP-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-SEP-20
Lithium (Li)-Total		0.0172	0.0165		mg/L	4.3	20	19-SEP-20
Magnesium (Mg)-Total		6.77	6.51		mg/L	3.9	20	19-SEP-20
Manganese (Mn)-Total		0.180	0.176		mg/L	2.3	20	19-SEP-20
Molybdenum (Mo)-Total		0.000106	0.000097		mg/L	8.8	20	19-SEP-20
Nickel (Ni)-Total		0.0373	0.0364		mg/L	2.3	20	19-SEP-20
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	19-SEP-20
Potassium (K)-Total		3.10	2.99		mg/L	3.5	20	19-SEP-20
Rubidium (Rb)-Total		0.00219	0.00207		mg/L	5.5	20	19-SEP-20
Selenium (Se)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	19-SEP-20
Silicon (Si)-Total		1.45	1.42		mg/L	2.0	20	19-SEP-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	19-SEP-20
Sodium (Na)-Total		28.2	27.3		mg/L	3.2	20	19-SEP-20
Strontium (Sr)-Total		0.178	0.172		mg/L	3.5	20	19-SEP-20
Sulfur (S)-Total		51.3	50.2		mg/L	2.2	20	19-SEP-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	19-SEP-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	19-SEP-20
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-SEP-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-SEP-20
Titanium (Ti)-Total		0.00043	0.00037		mg/L	15	20	19-SEP-20
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	19-SEP-20
Uranium (U)-Total		0.000014	0.000013		mg/L	13	20	19-SEP-20
Vanadium (V)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	19-SEP-20
Zinc (Zn)-Total		0.0777	0.0749		mg/L	3.6	20	19-SEP-20
Zirconium (Zr)-Total		0.00220	0.00216		mg/L	1.9	20	19-SEP-20
WG3407708-2	LCS							
Aluminum (Al)-Total			95.5		%		80-120	19-SEP-20
Antimony (Sb)-Total			101.0		%		80-120	19-SEP-20
Arsenic (As)-Total			93.0		%		80-120	19-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5230865							
WG3407708-2		LCS						
Barium (Ba)-Total			97.4		%		80-120	19-SEP-20
Beryllium (Be)-Total			97.5		%		80-120	19-SEP-20
Bismuth (Bi)-Total			99.8		%		80-120	19-SEP-20
Boron (B)-Total			102.5		%		80-120	19-SEP-20
Cadmium (Cd)-Total			94.9		%		80-120	19-SEP-20
Calcium (Ca)-Total			97.4		%		80-120	19-SEP-20
Cesium (Cs)-Total			99.6		%		80-120	19-SEP-20
Chromium (Cr)-Total			94.6		%		80-120	19-SEP-20
Cobalt (Co)-Total			95.8		%		80-120	19-SEP-20
Copper (Cu)-Total			95.3		%		80-120	19-SEP-20
Iron (Fe)-Total			98.7		%		80-120	19-SEP-20
Lead (Pb)-Total			102.1		%		80-120	19-SEP-20
Lithium (Li)-Total			93.5		%		80-120	19-SEP-20
Magnesium (Mg)-Total			92.5		%		80-120	19-SEP-20
Manganese (Mn)-Total			99.2		%		80-120	19-SEP-20
Molybdenum (Mo)-Total			98.7		%		80-120	19-SEP-20
Nickel (Ni)-Total			94.1		%		80-120	19-SEP-20
Phosphorus (P)-Total			89.6		%		80-120	19-SEP-20
Potassium (K)-Total			95.4		%		80-120	19-SEP-20
Rubidium (Rb)-Total			96.2		%		80-120	19-SEP-20
Selenium (Se)-Total			95.4		%		80-120	19-SEP-20
Silicon (Si)-Total			95.4		%		80-120	19-SEP-20
Silver (Ag)-Total			101.8		%		80-120	19-SEP-20
Sodium (Na)-Total			98.5		%		80-120	19-SEP-20
Strontium (Sr)-Total			101.7		%		80-120	19-SEP-20
Sulfur (S)-Total			89.2		%		80-120	19-SEP-20
Tellurium (Te)-Total			96.1		%		80-120	19-SEP-20
Thallium (Tl)-Total			102.4		%		80-120	19-SEP-20
Thorium (Th)-Total			99.1		%		80-120	19-SEP-20
Tin (Sn)-Total			95.3		%		80-120	19-SEP-20
Titanium (Ti)-Total			94.8		%		80-120	19-SEP-20
Tungsten (W)-Total			99.8		%		80-120	19-SEP-20
Uranium (U)-Total			103.1		%		80-120	19-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5230865							
WG3407708-2	LCS							
Vanadium (V)-Total			96.4		%		80-120	19-SEP-20
Zinc (Zn)-Total			93.1		%		80-120	19-SEP-20
Zirconium (Zr)-Total			97.9		%		80-120	19-SEP-20
WG3407708-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	19-SEP-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Barium (Ba)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	19-SEP-20
Boron (B)-Total			<0.010		mg/L		0.01	19-SEP-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	19-SEP-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	19-SEP-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	19-SEP-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	19-SEP-20
Iron (Fe)-Total			<0.010		mg/L		0.01	19-SEP-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	19-SEP-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	19-SEP-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	19-SEP-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	19-SEP-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	19-SEP-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	19-SEP-20
Potassium (K)-Total			<0.050		mg/L		0.05	19-SEP-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	19-SEP-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	19-SEP-20
Silicon (Si)-Total			<0.10		mg/L		0.1	19-SEP-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	19-SEP-20
Sodium (Na)-Total			<0.050		mg/L		0.05	19-SEP-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	19-SEP-20
Sulfur (S)-Total			<0.50		mg/L		0.5	19-SEP-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	19-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5230865							
WG3407708-1 MB								
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	19-SEP-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	19-SEP-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	19-SEP-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	19-SEP-20
Vanadium (V)-Total			<0.00050		mg/L		0.0005	19-SEP-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	19-SEP-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	19-SEP-20
WG3407708-4 MS		L2501074-2						
Aluminum (Al)-Total			96.2		%		70-130	19-SEP-20
Antimony (Sb)-Total			94.9		%		70-130	19-SEP-20
Arsenic (As)-Total			93.4		%		70-130	19-SEP-20
Barium (Ba)-Total			93.8		%		70-130	19-SEP-20
Beryllium (Be)-Total			99.5		%		70-130	19-SEP-20
Bismuth (Bi)-Total			98.1		%		70-130	19-SEP-20
Boron (B)-Total			92.7		%		70-130	19-SEP-20
Cadmium (Cd)-Total			95.5		%		70-130	19-SEP-20
Calcium (Ca)-Total			N/A	MS-B	%		-	19-SEP-20
Cesium (Cs)-Total			97.2		%		70-130	19-SEP-20
Chromium (Cr)-Total			94.3		%		70-130	19-SEP-20
Cobalt (Co)-Total			96.9		%		70-130	19-SEP-20
Copper (Cu)-Total			98.0		%		70-130	19-SEP-20
Iron (Fe)-Total			94.8		%		70-130	19-SEP-20
Lead (Pb)-Total			98.5		%		70-130	19-SEP-20
Lithium (Li)-Total			90.5		%		70-130	19-SEP-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	19-SEP-20
Manganese (Mn)-Total			N/A	MS-B	%		-	19-SEP-20
Molybdenum (Mo)-Total			99.7		%		70-130	19-SEP-20
Nickel (Ni)-Total			95.8		%		70-130	19-SEP-20
Phosphorus (P)-Total			97.6		%		70-130	19-SEP-20
Potassium (K)-Total			94.7		%		70-130	19-SEP-20
Rubidium (Rb)-Total			98.3		%		70-130	19-SEP-20
Selenium (Se)-Total			100.6		%		70-130	19-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5230865							
WG3407708-4 MS		L2501074-2						
Silicon (Si)-Total			89.9		%		70-130	19-SEP-20
Silver (Ag)-Total			96.7		%		70-130	19-SEP-20
Sodium (Na)-Total			N/A	MS-B	%		-	19-SEP-20
Strontium (Sr)-Total			N/A	MS-B	%		-	19-SEP-20
Sulfur (S)-Total			N/A	MS-B	%		-	19-SEP-20
Tellurium (Te)-Total			90.9		%		70-130	19-SEP-20
Thallium (Tl)-Total			98.7		%		70-130	19-SEP-20
Thorium (Th)-Total			99.3		%		70-130	19-SEP-20
Tin (Sn)-Total			93.5		%		70-130	19-SEP-20
Titanium (Ti)-Total			96.9		%		70-130	19-SEP-20
Tungsten (W)-Total			98.3		%		70-130	19-SEP-20
Uranium (U)-Total			101.2		%		70-130	19-SEP-20
Vanadium (V)-Total			98.0		%		70-130	19-SEP-20
Zinc (Zn)-Total			95.1		%		70-130	19-SEP-20
Zirconium (Zr)-Total			100.7		%		70-130	19-SEP-20
Batch	R5231162							
WG3408343-3 DUP		L2504636-1						
Aluminum (Al)-Total		0.0295	0.0299		mg/L	1.4	20	20-SEP-20
Antimony (Sb)-Total		0.00048	0.00049		mg/L	1.7	20	20-SEP-20
Arsenic (As)-Total		0.00026	0.00023		mg/L	11	20	20-SEP-20
Barium (Ba)-Total		0.0790	0.0777		mg/L	1.7	20	20-SEP-20
Beryllium (Be)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-SEP-20
Bismuth (Bi)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-SEP-20
Boron (B)-Total		0.024	0.025		mg/L	2.2	20	20-SEP-20
Cadmium (Cd)-Total		<0.0000050	0.0000053	RPD-NA	mg/L	N/A	20	20-SEP-20
Calcium (Ca)-Total		112	113		mg/L	1.5	20	20-SEP-20
Cesium (Cs)-Total		0.000012	0.000014		mg/L	14	20	20-SEP-20
Chromium (Cr)-Total		0.00016	0.00018		mg/L	13	20	20-SEP-20
Cobalt (Co)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-SEP-20
Copper (Cu)-Total		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	20-SEP-20
Iron (Fe)-Total		0.012	0.012		mg/L	4.4	20	20-SEP-20
Lead (Pb)-Total		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	20-SEP-20
Lithium (Li)-Total		0.0301	0.0295		mg/L	2.3	20	20-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5231162							
WG3408343-3	DUP	L2504636-1						
Magnesium (Mg)-Total		73.2	73.0		mg/L	0.3	20	20-SEP-20
Manganese (Mn)-Total		0.00247	0.00248		mg/L	0.1	20	20-SEP-20
Molybdenum (Mo)-Total		0.00218	0.00219		mg/L	0.2	20	20-SEP-20
Nickel (Ni)-Total		0.00110	0.00117		mg/L	6.5	20	20-SEP-20
Phosphorus (P)-Total		<0.050	<0.050	RPD-NA	mg/L	N/A	20	20-SEP-20
Potassium (K)-Total		2.26	2.25		mg/L	0.5	20	20-SEP-20
Rubidium (Rb)-Total		0.00148	0.00144		mg/L	3.0	20	20-SEP-20
Selenium (Se)-Total		0.0817	0.0812		mg/L	0.6	20	20-SEP-20
Silicon (Si)-Total		3.19	3.12		mg/L	2.1	20	20-SEP-20
Silver (Ag)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	20-SEP-20
Sodium (Na)-Total		8.61	8.63		mg/L	0.2	20	20-SEP-20
Strontium (Sr)-Total		0.396	0.392		mg/L	1.1	20	20-SEP-20
Sulfur (S)-Total		130	128		mg/L	1.4	20	20-SEP-20
Tellurium (Te)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	20-SEP-20
Thallium (Tl)-Total		<0.000010	<0.000010	RPD-NA	mg/L	N/A	20	20-SEP-20
Thorium (Th)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-SEP-20
Tin (Sn)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-SEP-20
Titanium (Ti)-Total		<0.010	<0.010	RPD-NA	mg/L	N/A	20	20-SEP-20
Tungsten (W)-Total		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	20-SEP-20
Uranium (U)-Total		0.00359	0.00358		mg/L	0.1	20	20-SEP-20
Vanadium (V)-Total		0.00055	0.00057		mg/L	2.5	20	20-SEP-20
Zinc (Zn)-Total		<0.0030	<0.0030	RPD-NA	mg/L	N/A	20	20-SEP-20
Zirconium (Zr)-Total		<0.00020	<0.00020	RPD-NA	mg/L	N/A	20	20-SEP-20
WG3408343-2	LCS							
Aluminum (Al)-Total			102.3		%		80-120	20-SEP-20
Antimony (Sb)-Total			101.7		%		80-120	20-SEP-20
Arsenic (As)-Total			94.7		%		80-120	20-SEP-20
Barium (Ba)-Total			101.6		%		80-120	20-SEP-20
Beryllium (Be)-Total			97.6		%		80-120	20-SEP-20
Bismuth (Bi)-Total			99.2		%		80-120	20-SEP-20
Boron (B)-Total			92.0		%		80-120	20-SEP-20
Cadmium (Cd)-Total			100.9		%		80-120	20-SEP-20
Calcium (Ca)-Total			102.5		%		80-120	20-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5231162							
WG3408343-2	LCS							
Cesium (Cs)-Total			102.7		%		80-120	20-SEP-20
Chromium (Cr)-Total			96.8		%		80-120	20-SEP-20
Cobalt (Co)-Total			98.1		%		80-120	20-SEP-20
Copper (Cu)-Total			100.0		%		80-120	20-SEP-20
Iron (Fe)-Total			106.0		%		80-120	20-SEP-20
Lead (Pb)-Total			99.9		%		80-120	20-SEP-20
Lithium (Li)-Total			98.4		%		80-120	20-SEP-20
Magnesium (Mg)-Total			99.5		%		80-120	20-SEP-20
Manganese (Mn)-Total			100.0		%		80-120	20-SEP-20
Molybdenum (Mo)-Total			100.4		%		80-120	20-SEP-20
Nickel (Ni)-Total			97.2		%		80-120	20-SEP-20
Phosphorus (P)-Total			109.1		%		80-120	20-SEP-20
Potassium (K)-Total			106.0		%		80-120	20-SEP-20
Rubidium (Rb)-Total			99.4		%		80-120	20-SEP-20
Selenium (Se)-Total			99.5		%		80-120	20-SEP-20
Silicon (Si)-Total			101.9		%		80-120	20-SEP-20
Silver (Ag)-Total			105.8		%		80-120	20-SEP-20
Sodium (Na)-Total			99.3		%		80-120	20-SEP-20
Strontium (Sr)-Total			109.8		%		80-120	20-SEP-20
Sulfur (S)-Total			96.8		%		80-120	20-SEP-20
Tellurium (Te)-Total			96.0		%		80-120	20-SEP-20
Thallium (Tl)-Total			100.6		%		80-120	20-SEP-20
Thorium (Th)-Total			97.0		%		80-120	20-SEP-20
Tin (Sn)-Total			100.3		%		80-120	20-SEP-20
Titanium (Ti)-Total			94.8		%		80-120	20-SEP-20
Tungsten (W)-Total			96.9		%		80-120	20-SEP-20
Uranium (U)-Total			103.5		%		80-120	20-SEP-20
Vanadium (V)-Total			99.7		%		80-120	20-SEP-20
Zinc (Zn)-Total			101.3		%		80-120	20-SEP-20
Zirconium (Zr)-Total			100.9		%		80-120	20-SEP-20
WG3408343-1	MB							
Aluminum (Al)-Total			<0.0030		mg/L		0.003	20-SEP-20
Antimony (Sb)-Total			<0.00010		mg/L		0.0001	20-SEP-20
Arsenic (As)-Total			<0.00010		mg/L		0.0001	20-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5231162							
WG3408343-1 MB								
Barium (Ba)-Total			<0.00010		mg/L		0.0001	20-SEP-20
Beryllium (Be)-Total			<0.00010		mg/L		0.0001	20-SEP-20
Bismuth (Bi)-Total			<0.000050		mg/L		0.00005	20-SEP-20
Boron (B)-Total			<0.010		mg/L		0.01	20-SEP-20
Cadmium (Cd)-Total			<0.0000050		mg/L		0.000005	20-SEP-20
Calcium (Ca)-Total			<0.050		mg/L		0.05	20-SEP-20
Cesium (Cs)-Total			<0.000010		mg/L		0.00001	20-SEP-20
Chromium (Cr)-Total			<0.00010		mg/L		0.0001	20-SEP-20
Cobalt (Co)-Total			<0.00010		mg/L		0.0001	20-SEP-20
Copper (Cu)-Total			<0.00050		mg/L		0.0005	20-SEP-20
Iron (Fe)-Total			<0.010		mg/L		0.01	20-SEP-20
Lead (Pb)-Total			<0.000050		mg/L		0.00005	20-SEP-20
Lithium (Li)-Total			<0.0010		mg/L		0.001	20-SEP-20
Magnesium (Mg)-Total			<0.0050		mg/L		0.005	20-SEP-20
Manganese (Mn)-Total			<0.00010		mg/L		0.0001	20-SEP-20
Molybdenum (Mo)-Total			<0.000050		mg/L		0.00005	20-SEP-20
Nickel (Ni)-Total			<0.00050		mg/L		0.0005	20-SEP-20
Phosphorus (P)-Total			<0.050		mg/L		0.05	20-SEP-20
Potassium (K)-Total			<0.050		mg/L		0.05	20-SEP-20
Rubidium (Rb)-Total			<0.00020		mg/L		0.0002	20-SEP-20
Selenium (Se)-Total			<0.000050		mg/L		0.00005	20-SEP-20
Silicon (Si)-Total			<0.10		mg/L		0.1	20-SEP-20
Silver (Ag)-Total			<0.000010		mg/L		0.00001	20-SEP-20
Sodium (Na)-Total			<0.050		mg/L		0.05	20-SEP-20
Strontium (Sr)-Total			<0.00020		mg/L		0.0002	20-SEP-20
Sulfur (S)-Total			<0.50		mg/L		0.5	20-SEP-20
Tellurium (Te)-Total			<0.00020		mg/L		0.0002	20-SEP-20
Thallium (Tl)-Total			<0.000010		mg/L		0.00001	20-SEP-20
Thorium (Th)-Total			<0.00010		mg/L		0.0001	20-SEP-20
Tin (Sn)-Total			<0.00010		mg/L		0.0001	20-SEP-20
Titanium (Ti)-Total			<0.00030		mg/L		0.0003	20-SEP-20
Tungsten (W)-Total			<0.00010		mg/L		0.0001	20-SEP-20
Uranium (U)-Total			<0.000010		mg/L		0.00001	20-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5231162							
WG3408343-1 MB								
Vanadium (V)-Total			<0.00050		mg/L		0.0005	20-SEP-20
Zinc (Zn)-Total			<0.0030		mg/L		0.003	20-SEP-20
Zirconium (Zr)-Total			<0.00020		mg/L		0.0002	20-SEP-20
WG3408343-4 MS		L2504636-2						
Aluminum (Al)-Total			100.9		%		70-130	20-SEP-20
Antimony (Sb)-Total			101.1		%		70-130	20-SEP-20
Arsenic (As)-Total			98.8		%		70-130	20-SEP-20
Barium (Ba)-Total			N/A	MS-B	%		-	20-SEP-20
Beryllium (Be)-Total			99.5		%		70-130	20-SEP-20
Bismuth (Bi)-Total			91.1		%		70-130	20-SEP-20
Boron (B)-Total			96.6		%		70-130	20-SEP-20
Cadmium (Cd)-Total			99.9		%		70-130	20-SEP-20
Calcium (Ca)-Total			N/A	MS-B	%		-	20-SEP-20
Cesium (Cs)-Total			104.0		%		70-130	20-SEP-20
Chromium (Cr)-Total			98.6		%		70-130	20-SEP-20
Cobalt (Co)-Total			95.4		%		70-130	20-SEP-20
Copper (Cu)-Total			93.1		%		70-130	20-SEP-20
Iron (Fe)-Total			97.8		%		70-130	20-SEP-20
Lead (Pb)-Total			93.0		%		70-130	20-SEP-20
Lithium (Li)-Total			100.8		%		70-130	20-SEP-20
Magnesium (Mg)-Total			N/A	MS-B	%		-	20-SEP-20
Manganese (Mn)-Total			97.4		%		70-130	20-SEP-20
Molybdenum (Mo)-Total			104.1		%		70-130	20-SEP-20
Nickel (Ni)-Total			91.6		%		70-130	20-SEP-20
Phosphorus (P)-Total			109.1		%		70-130	20-SEP-20
Potassium (K)-Total			93.1		%		70-130	20-SEP-20
Rubidium (Rb)-Total			97.4		%		70-130	20-SEP-20
Selenium (Se)-Total			N/A	MS-B	%		-	20-SEP-20
Silicon (Si)-Total			94.2		%		70-130	20-SEP-20
Silver (Ag)-Total			100.2		%		70-130	20-SEP-20
Sodium (Na)-Total			N/A	MS-B	%		-	20-SEP-20
Strontium (Sr)-Total			N/A	MS-B	%		-	20-SEP-20
Sulfur (S)-Total			N/A	MS-B	%		-	20-SEP-20
Tellurium (Te)-Total			96.5		%		70-130	20-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-T-CCMS-VA		Water						
Batch	R5231162							
WG3408343-4 MS		L2504636-2						
Thallium (Tl)-Total			94.5		%		70-130	20-SEP-20
Thorium (Th)-Total			103.9		%		70-130	20-SEP-20
Tin (Sn)-Total			100.7		%		70-130	20-SEP-20
Titanium (Ti)-Total			100.8		%		70-130	20-SEP-20
Tungsten (W)-Total			97.1		%		70-130	20-SEP-20
Uranium (U)-Total			97.5		%		70-130	20-SEP-20
Vanadium (V)-Total			103.5		%		70-130	20-SEP-20
Zinc (Zn)-Total			94.6		%		70-130	20-SEP-20
Zirconium (Zr)-Total			104.6		%		70-130	20-SEP-20
NH3-F-VA		Water						
Batch	R5231164							
WG3408177-3 DUP		L2500314-1						
Ammonia, Total (as N)		0.0186	0.0188		mg/L	0.9	20	20-SEP-20
WG3408177-2 LCS								
Ammonia, Total (as N)			96.7		%		85-115	20-SEP-20
WG3408177-1 MB								
Ammonia, Total (as N)			<0.0050		mg/L		0.005	20-SEP-20
Batch	R5231506							
WG3408177-4 MS		L2500314-2						
Ammonia, Total (as N)			100.4		%		75-125	21-SEP-20
NO3-L-IC-N-VA		Water						
Batch	R5229497							
WG3406828-3 DUP		L2500859-1						
Nitrate (as N)		0.586	0.606		mg/L	3.5	20	17-SEP-20
WG3406828-2 LCS								
Nitrate (as N)			101.7		%		90-110	17-SEP-20
WG3406828-1 MB								
Nitrate (as N)			<0.0050		mg/L		0.005	17-SEP-20
OGG-CL		Water						
Batch	R5232482							
WG3409560-2 LCS								
Oil and Grease			74.0		%		70-130	22-SEP-20
WG3409560-1 MB								
Oil and Grease			<5.0		mg/L		5	22-SEP-20



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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

Contact: Connor Devereaux/Aaron MacDonell

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SOLIDS-TSS-BF	Water							
Batch	R5219410							
WG3401345-1 MB								
Total Suspended Solids			<2.0		mg/L		2	10-SEP-20
TKN-F-VA	Water							
Batch	R5231875							
WG3408193-3 DUP		L2500314-1						
Total Kjeldahl Nitrogen		0.364	0.355		mg/L	2.8	20	21-SEP-20
WG3408193-2 LCS								
Total Kjeldahl Nitrogen			97.5		%		75-125	21-SEP-20
WG3408193-1 MB								
Total Kjeldahl Nitrogen			<0.050		mg/L		0.05	21-SEP-20
WG3408193-4 MS		L2500314-2						
Total Kjeldahl Nitrogen			102.9		%		70-130	21-SEP-20
TURBIDITY-BF	Water							
Batch	R5219409							
WG3401361-3 DUP		L2500859-7						
Turbidity		<0.10	<0.10	RPD-NA	NTU	N/A	15	10-SEP-20
WG3401361-2 LCS								
Turbidity			99.8		%		85-115	10-SEP-20
WG3401361-1 MB								
Turbidity			<0.10		NTU		0.1	10-SEP-20

Quality Control Report

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Client: Baffinland Iron Mine's Corporation (Oakville)
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Contact: Connor Devereaux/Aaron MacDonell

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
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Quality Control Report

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Client: Baffinland Iron Mine's Corporation (Oakville)
2275 Upper Middle Rd. E. Suite #300
Oakville ON L6H 0C3

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Contact: Connor Devereaux/Aaron MacDonell

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Anions and Nutrients							
Nitrate in Water by IC (Low Level)							
	1	08-SEP-20 11:05	17-SEP-20 06:12	3	9	days	EHT
	2	08-SEP-20 11:05	17-SEP-20 06:12	3	9	days	EHT
	3	08-SEP-20 10:20	17-SEP-20 06:12	3	9	days	EHT
	4	08-SEP-20 11:55	17-SEP-20 06:12	3	9	days	EHT
	5	08-SEP-20 13:30	17-SEP-20 06:12	3	9	days	EHT
	6	08-SEP-20 13:55	17-SEP-20 06:12	3	9	days	EHT
	7	08-SEP-20 14:40	17-SEP-20 06:12	3	9	days	EHT
	8	08-SEP-20 14:40	17-SEP-20 06:12	3	9	days	EHT
	9	08-SEP-20 09:30	17-SEP-20 06:12	3	9	days	EHT
	10	08-SEP-20 13:55	17-SEP-20 06:12	3	9	days	EHT

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 L2500859 were received on 09-SEP-20 19:00.

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.

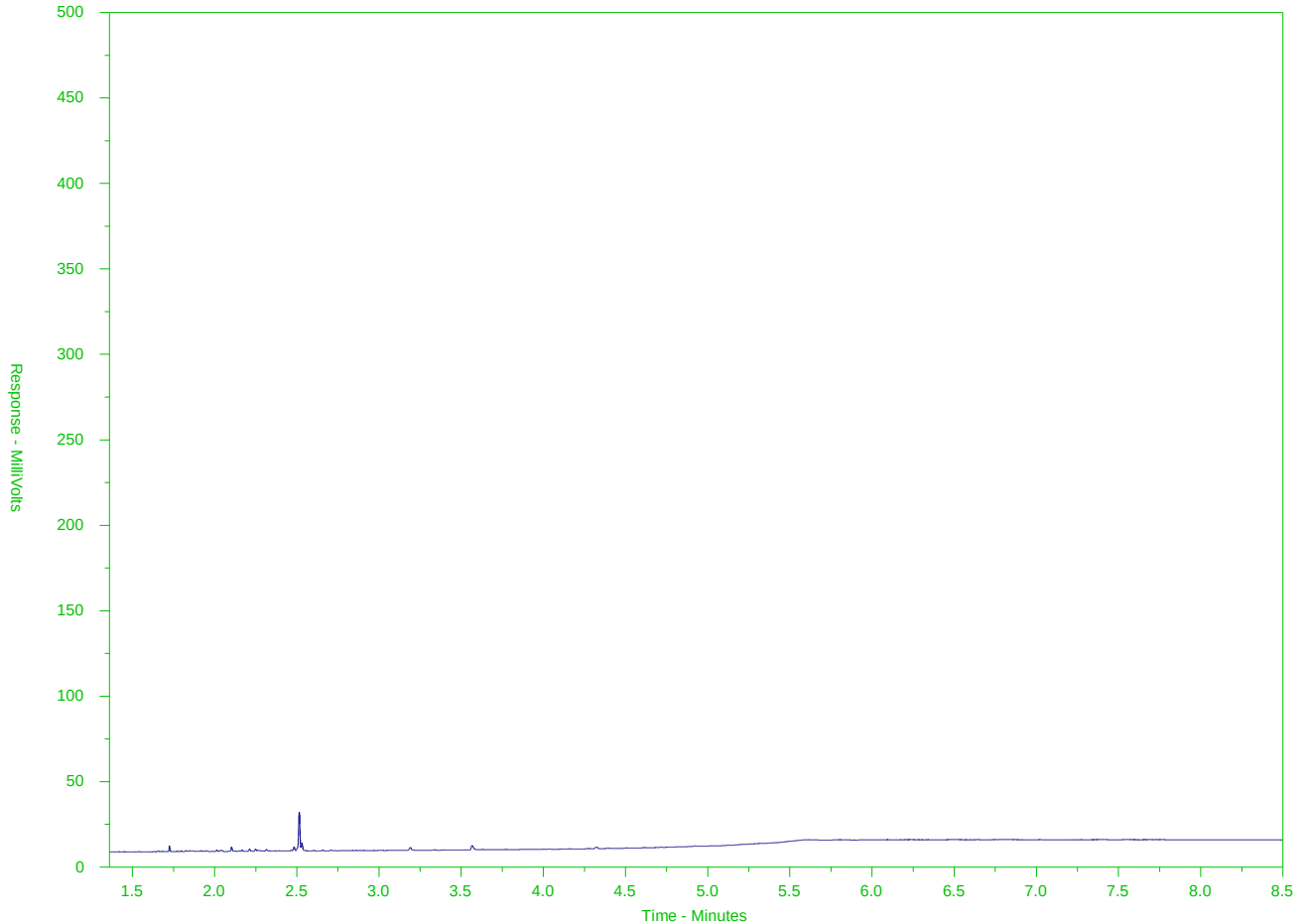
The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide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

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-1
Client Sample ID: MS-LF-GW3



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →		Motor Oils / Lubr Oils / Grease →		
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

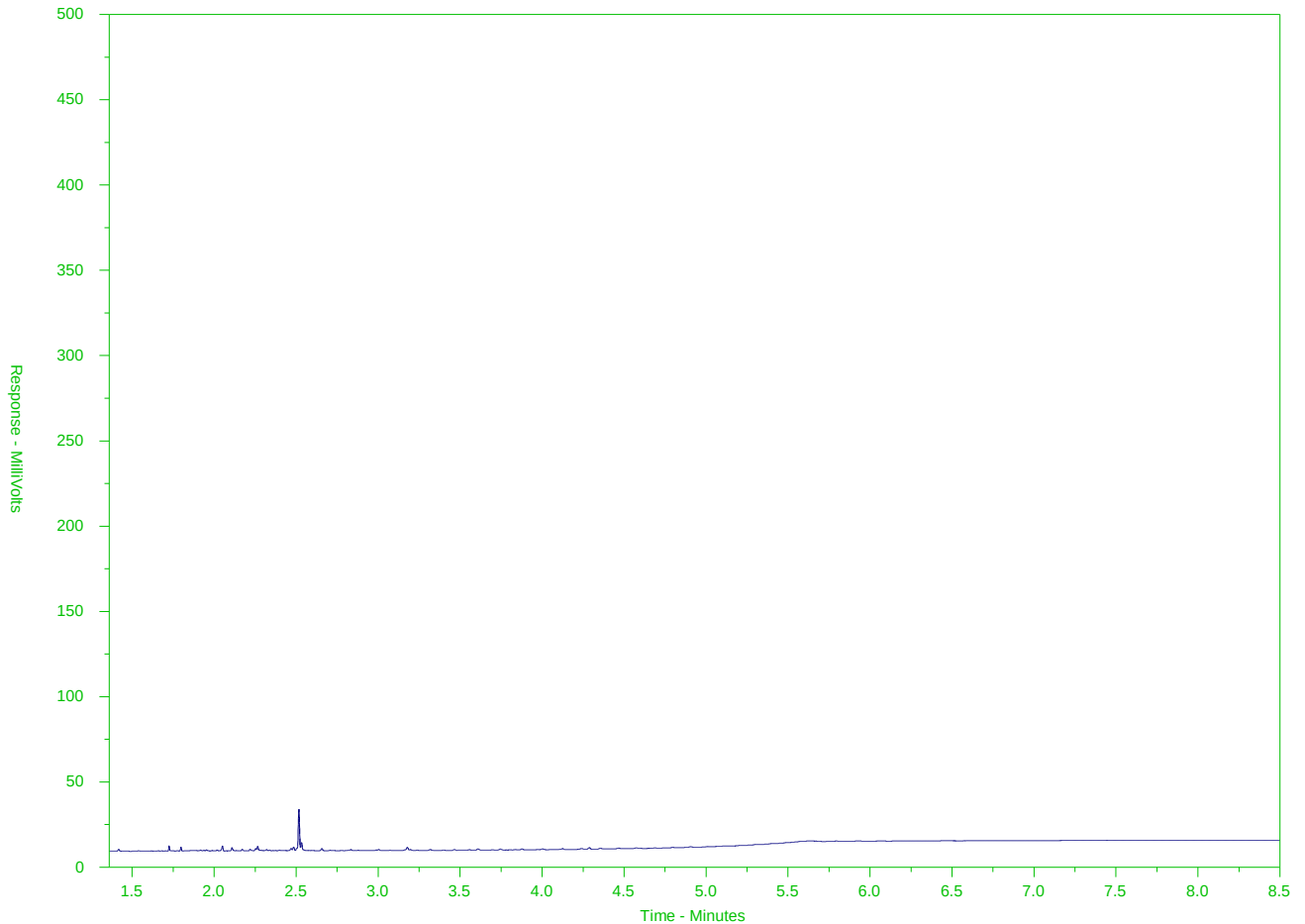
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-2
Client Sample ID: MS-LF-GW301



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →		Motor Oils / Lubr Oils / Grease →		
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

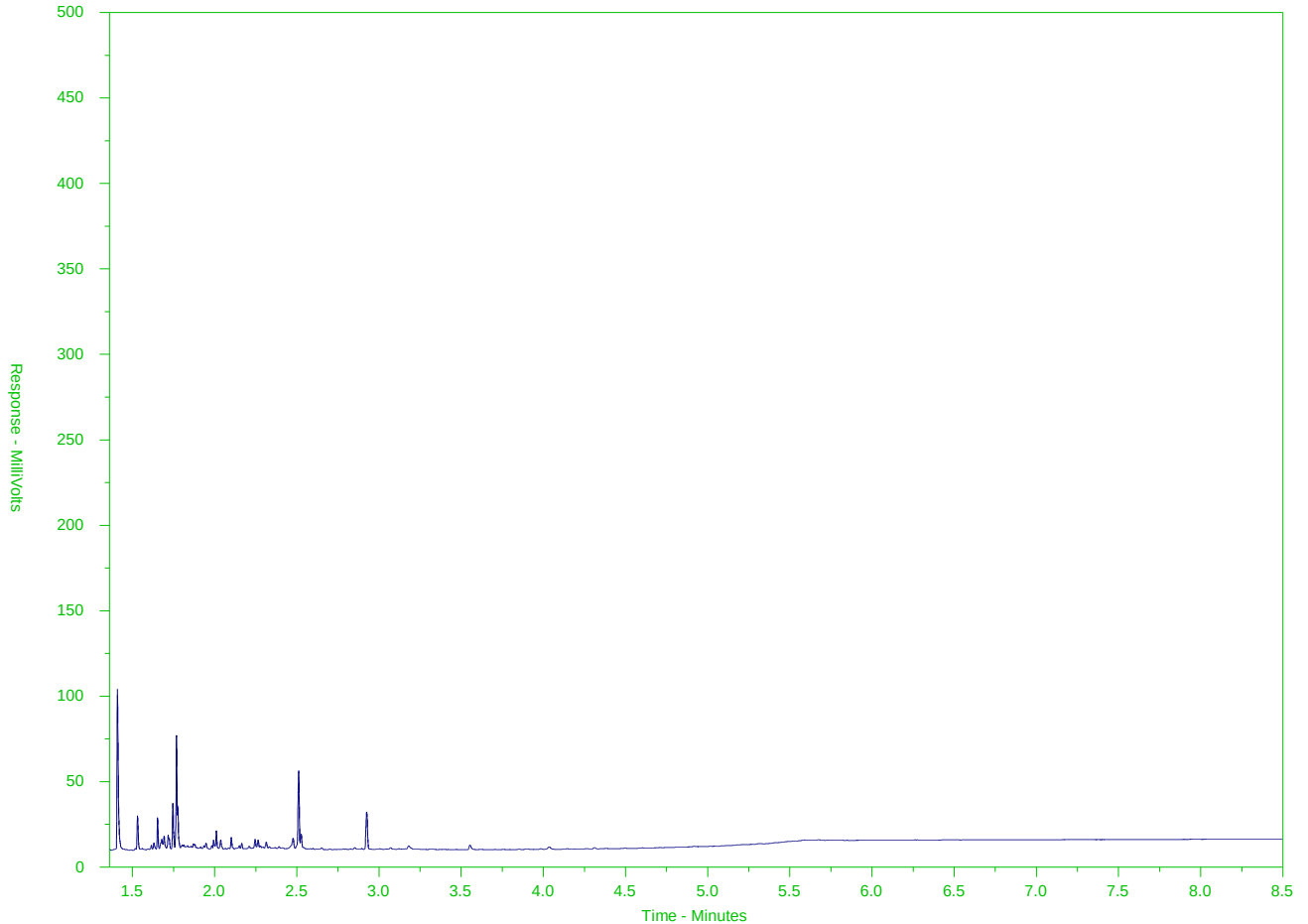
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-3
Client Sample ID: MS-LF-GW2



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →		Motor Oils / Lubricants / Grease →		
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

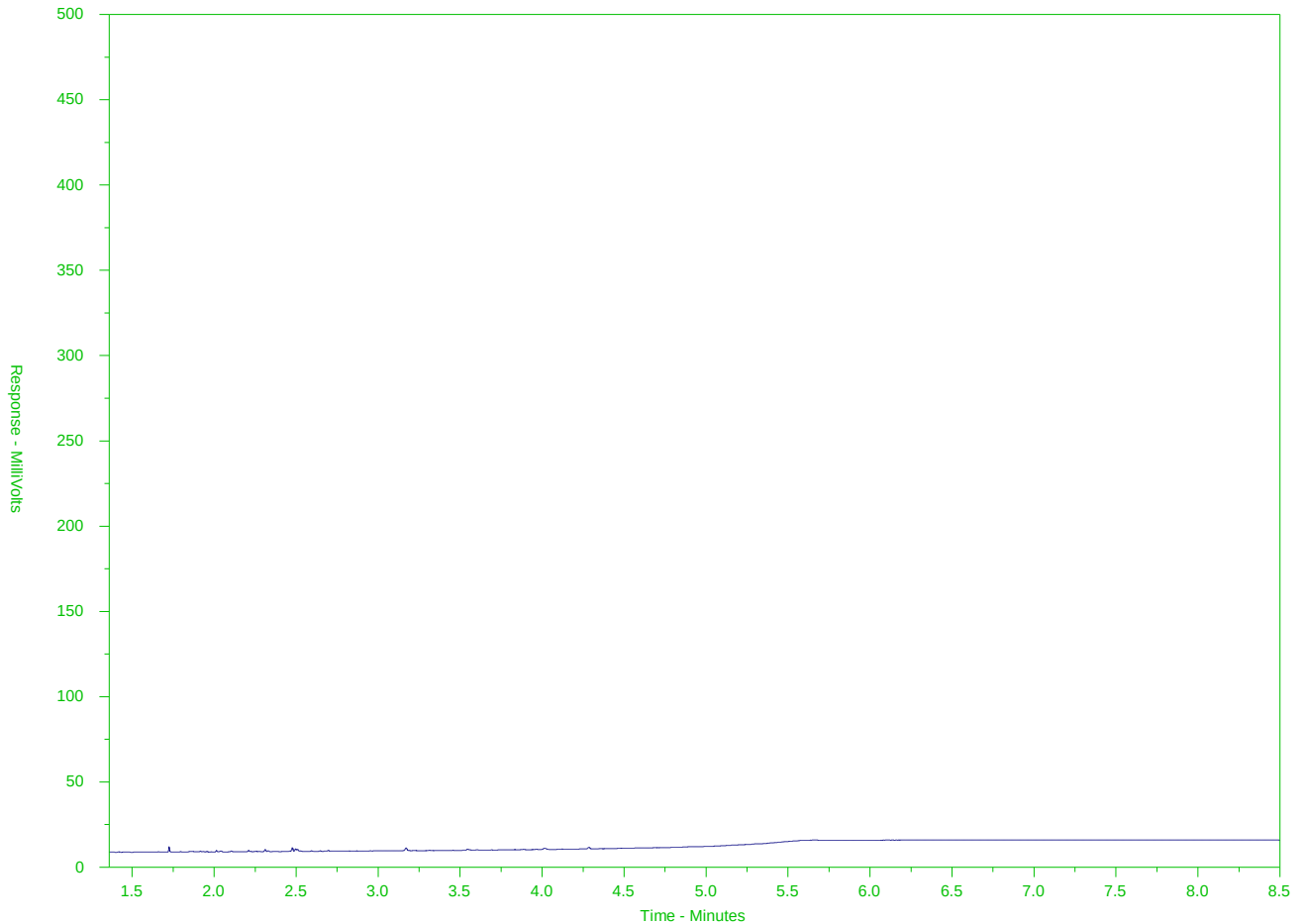
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-4
Client Sample ID: MS-LF-GW-REF2



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →			Motor Oils / Lubr Oils / Grease →	
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

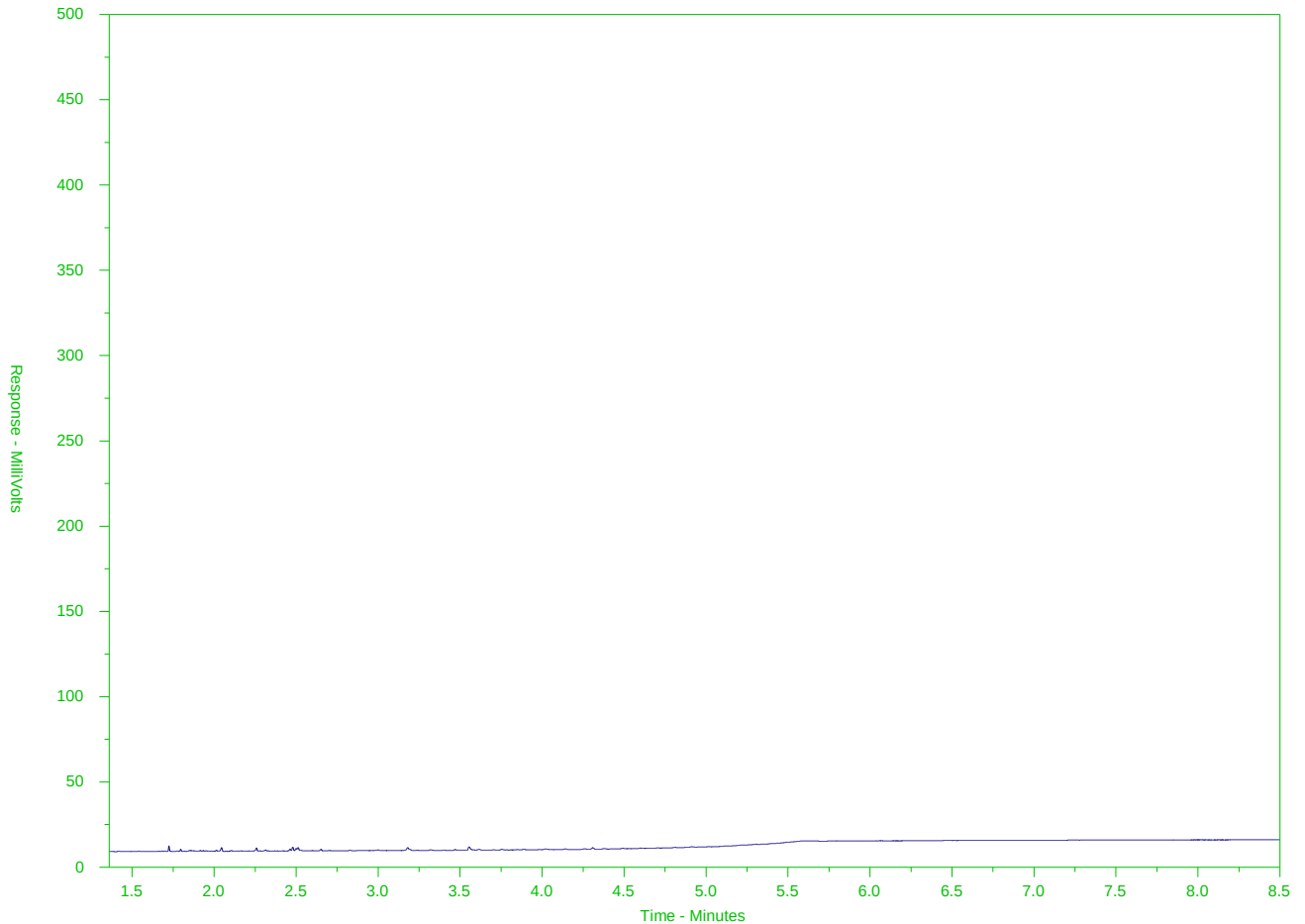
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-5
Client Sample ID: MS-LF-GW-REF1



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →		Motor Oils / Lubr Oils / Grease →		
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

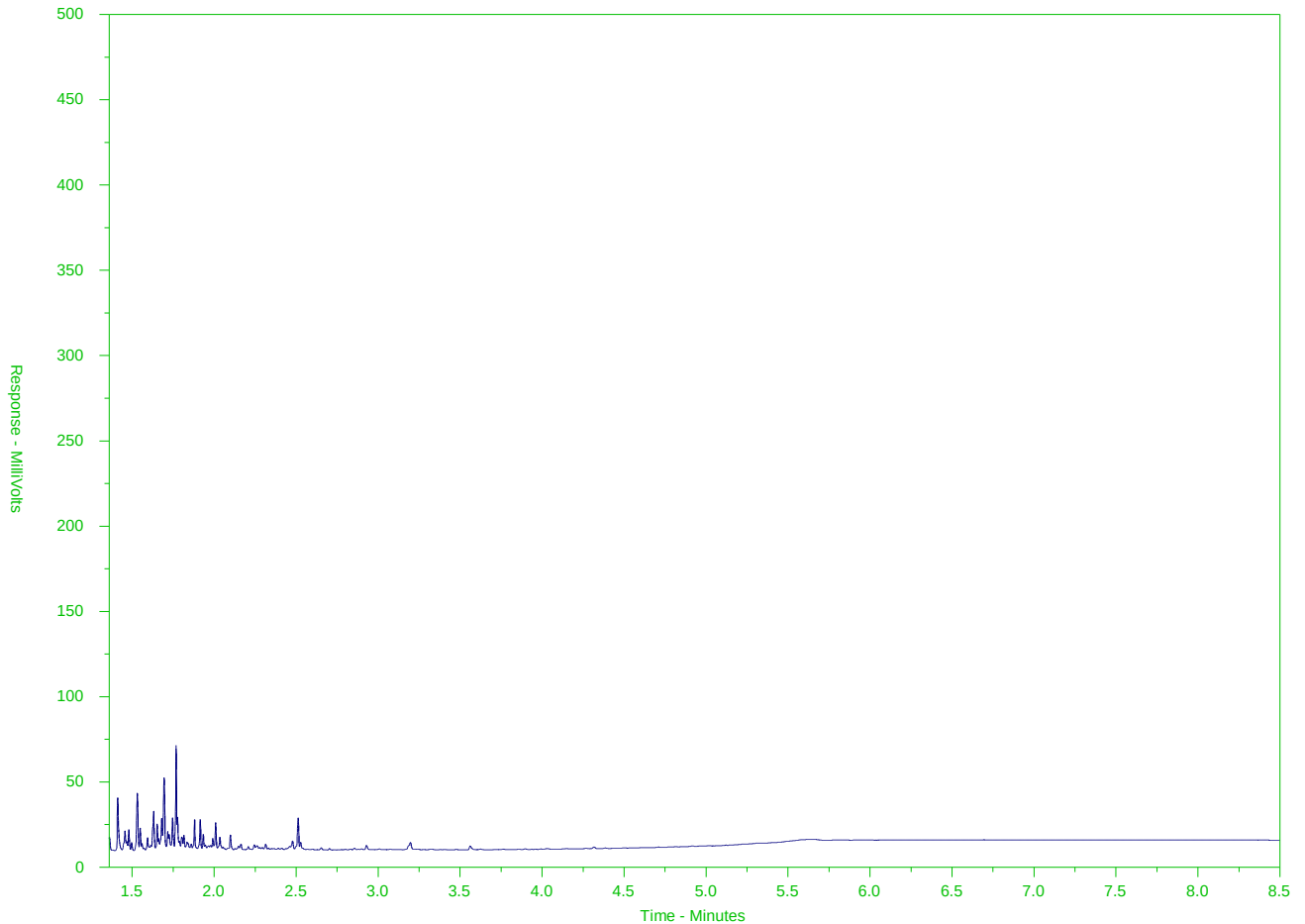
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-6
Client Sample ID: MS-LF-GW1



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →			Motor Oils / Lubricants / Grease →	
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

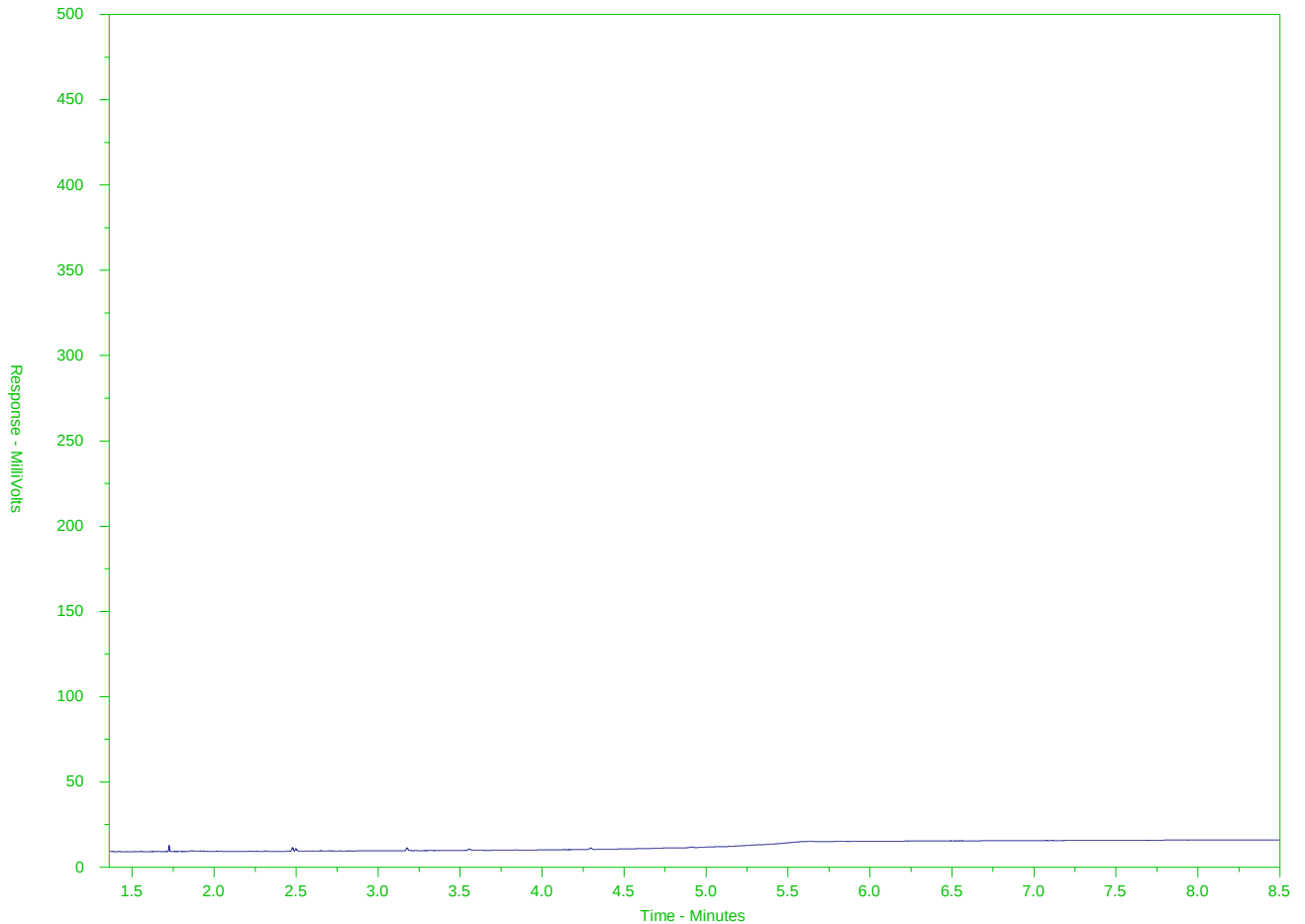
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-7
Client Sample ID: MS-LF-GW403



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →		Motor Oils / Lubr Oils / Grease →		
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

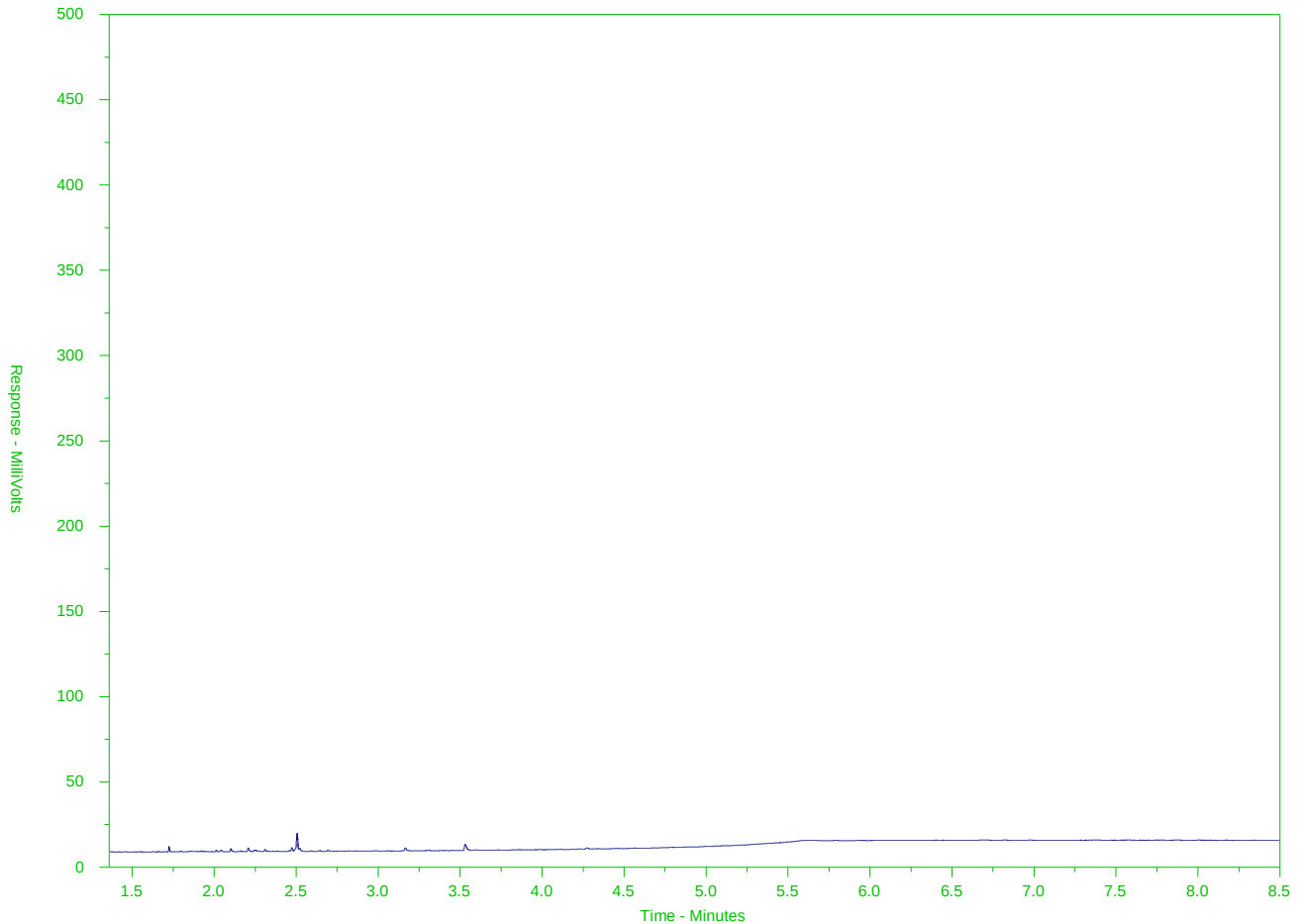
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-8
Client Sample ID: MS-LF-GW4



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →			Motor Oils / Lubr Oils / Grease →	
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

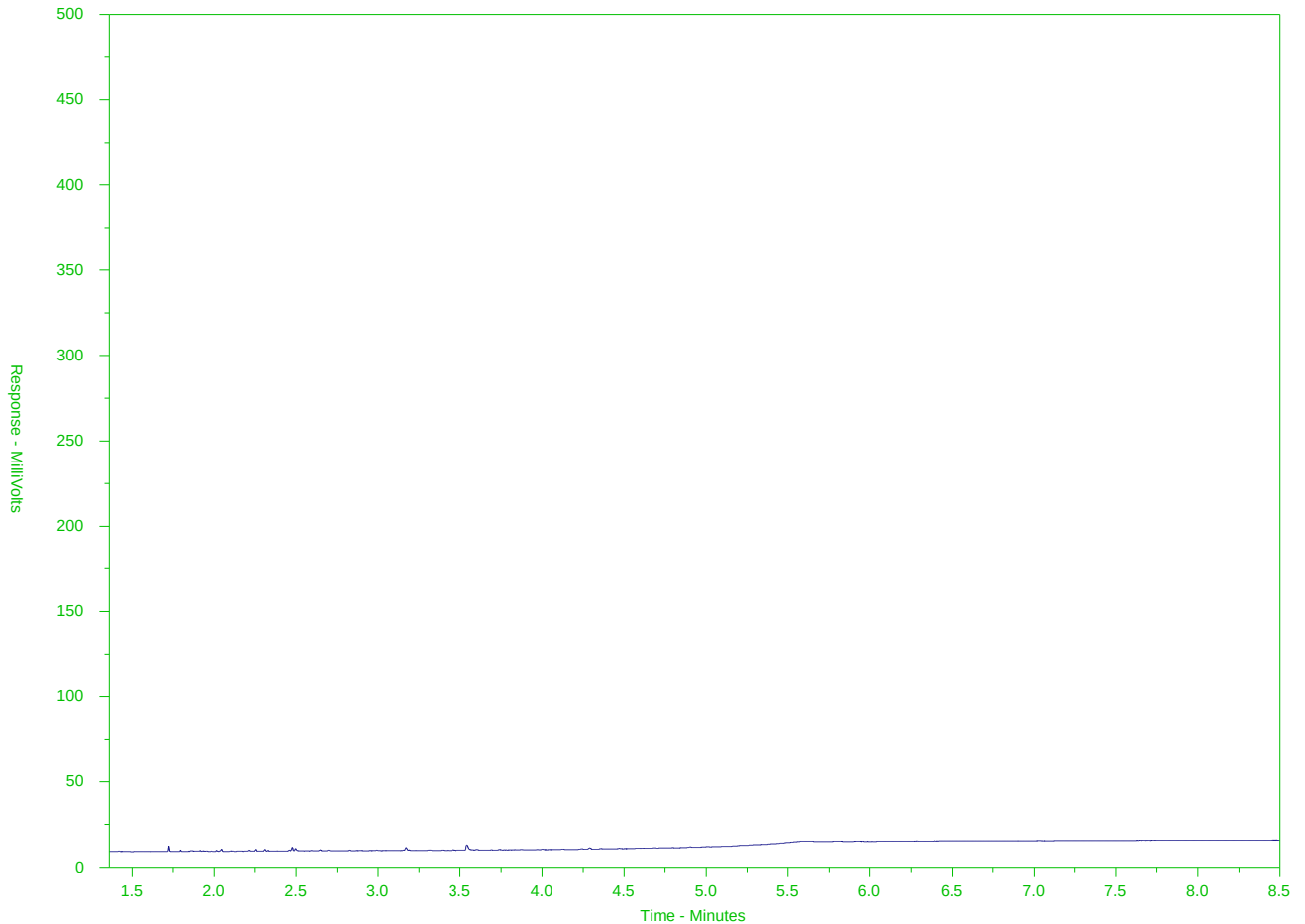
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-9
Client Sample ID: MS-LF-GW5



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →			Motor Oils / Lubr Oils / Grease →	
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

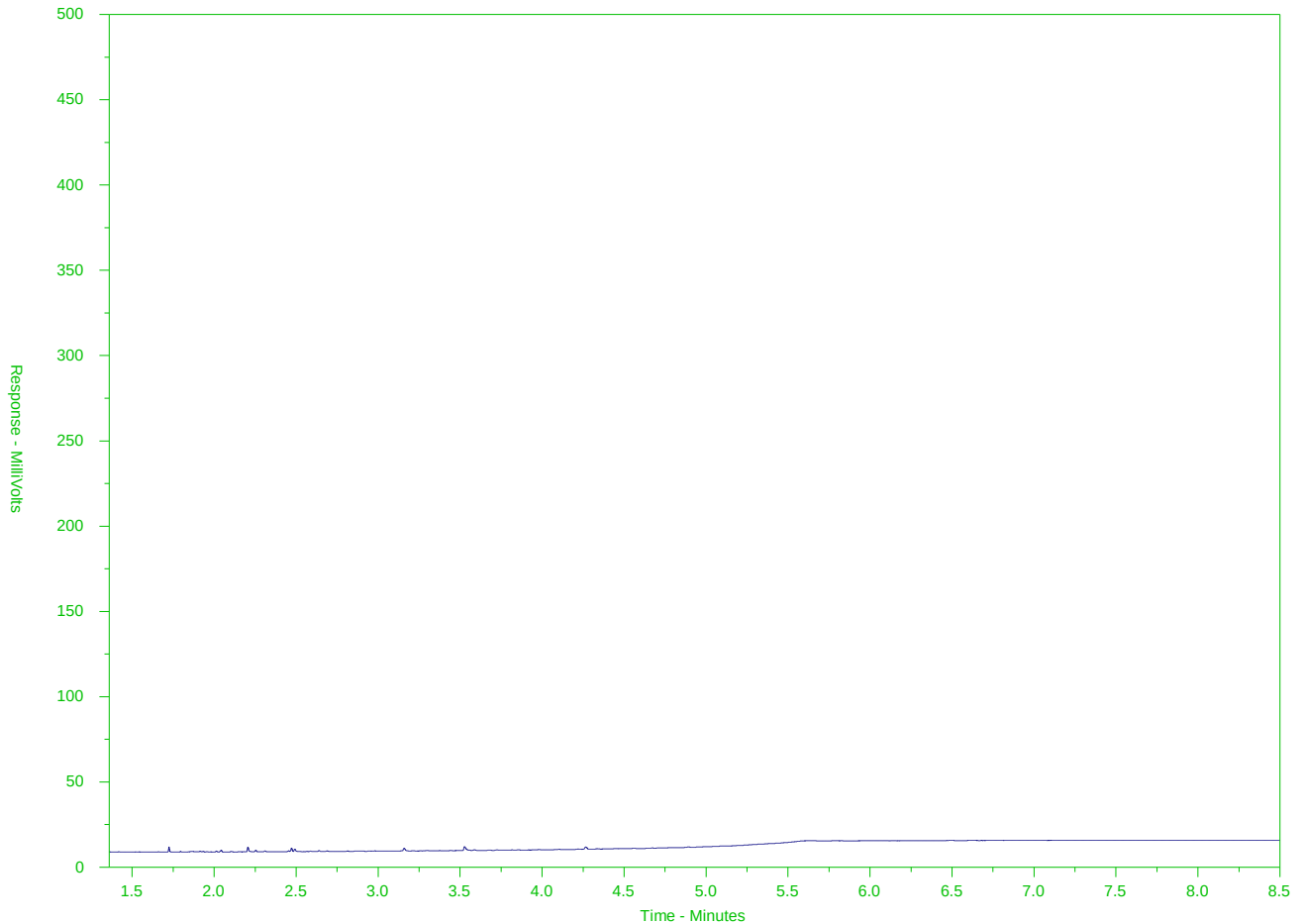
Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.

CCME F2-F4 HYDROCARBON DISTRIBUTION REPORT



ALS Sample ID: L2500859-C-10
Client Sample ID: MS-LF-GW102



F2		F3	F4	
nC10	nC16		nC34	nC50
174°C	287°C		481°C	575°C
346°F	549°F		898°F	1067°F
← Gasoline →		Motor Oils / Lubr Oils / Grease →		
← Diesel / Jet Fuels →				

The CCME F2-F4 Hydrocarbon Distribution Report (HDR) is intended to assist you in characterizing hydrocarbon products that may be present in your sample.

The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products and four n-alkane hydrocarbon marker compounds. Retention times may vary between samples, but general patterns and distributions will remain similar.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced using GC conditions that are specific to ALS Canada CCME F2-F4 method. Refer to the ALS Canada CCME F2-F4 Hydrocarbon Library for a collection of chromatograms from common reference samples (fuels, oils, etc.). The HDR library can be found at www.alsglobal.com.



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L2500859-COFC

Number: 17 -

Page 1 of 1

Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)																																																																																																																						
Company: Baffinland Iron Mines Corp.		Select Report Format: ☒ PDF ☒ EXCEL ☒ EDD (DIGITAL)		Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply																																																																																																																						
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Phone: 647-253-0596		☐ Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%] ☐ Same Day, Weekend or Statutory holiday [E2 -200%] ☐ (Laboratory opening fees may apply)																																																																																																																						
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Street: 2275 Upper Middle Rd. E., Suite #300		Email 1 or Fax bimcore@alsglobal.com		Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm																																																																																																																						
City/Province: Oakville, ON		Email 2		For tests that can not be performed according to the service level selected, you will be contacted.																																																																																																																						
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1	MS-LF-GW3	8-Sep-20	11:05	Water	14 R R																																																																																																																					
2	MS-LF-GW301	8-Sep-20	11:05	Water	14 R R																																																																																																																					
3	MS-LF-GW2	8-Sep-20	10:20	Water	14 R R																																																																																																																					
4	MS-LF-GW-REF2	8-Sep-20	11:55	Water	14 R R																																																																																																																					
5	MS-LF-GW-REF1	8-Sep-20	13:30	Water	14 R R																																																																																																																					
6	MS-LF-GW1	8-Sep-20	13:55	Water	14 R R																																																																																																																					
7	MW-LF-GW403	8-Sep-20	14:40	Water	14 R R																																																																																																																					
8	MW-LF-GW4	8-Sep-20	14:40	Water	14 R R																																																																																																																					
9	MW-LF-GW5	8-Sep-20	9:30	Water	14 R R																																																																																																																					
10	MS-LF-GW102	8-Sep-20	13:55	Water	14 R R																																																																																																																					
Drinking Water (DW) Samples¹ (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)																																																																																																																						
Are samples taken from a Regulated DW System? ☐ YES ☒ NO				Frozen ☐ SIF Observations Yes ☐ No ☐																																																																																																																						
Are samples for human consumption/ use? ☐ YES ☒ NO				Ice Packs ☒ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐																																																																																																																						
				Cooling Initiated ☐																																																																																																																						
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)																																																																																																																						
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Date: 9-Sep-20		Date: 9/Sep/20		Date: 15. Sept. 2020																																																																																																																						
Time: 19:00		Time: 19:00		Time: 12:45pm																																																																																																																						

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

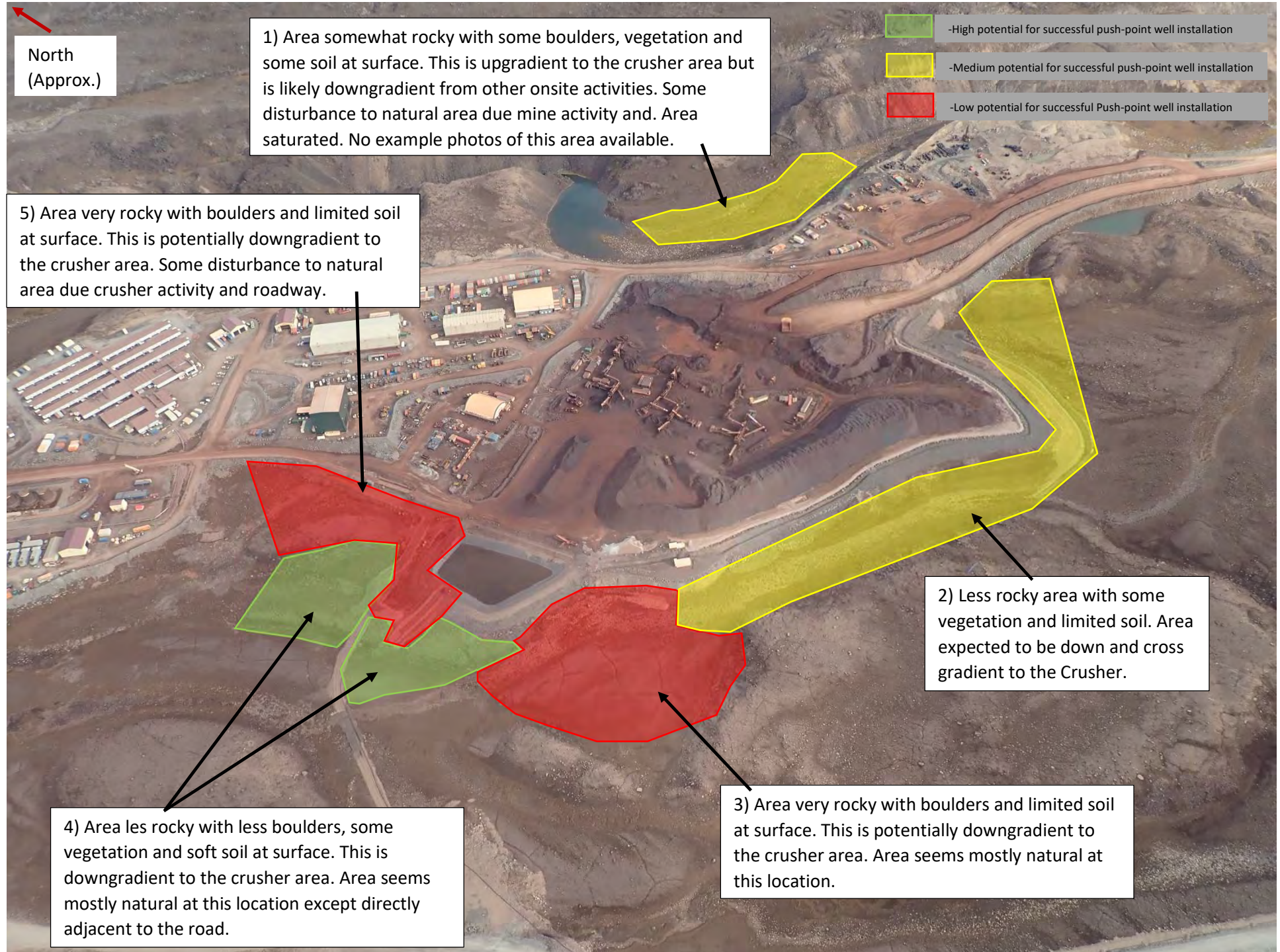
1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

NOV 2019 FRONT

APPENDIX E

SITE RECONNAISSANCE NOTES AND PHOTOGRAPHS

Mine Site Crusher Visual Observations of GW Well Install Locations



Mine Site Crusher Area – Visual Reconnaissance of Potential Push Point Well Installation

- 1) No photo example of terrain at area 1.
- 2) Example of terrain at area 2.



- 3) Example of area 3.



Mine Site Crusher Area – Visual Reconnaissance of Potential Push Point Well Installation

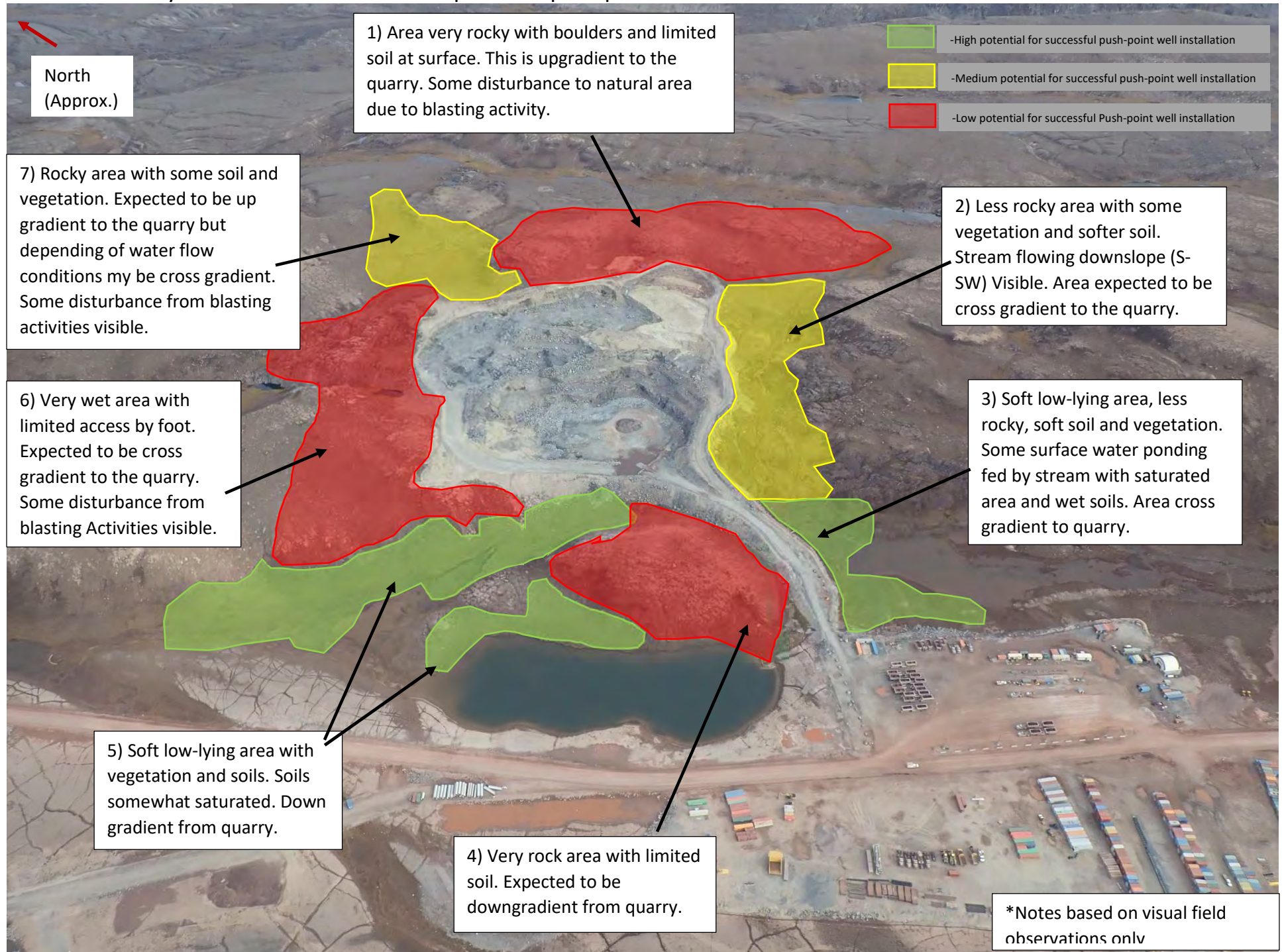
4) Example of terrain at area 4.



5) Example of terrain at area 5.



Mine Site Quarry – Visual reconnaissance of potential push point well installation



Mine Site Quarry – Visual reconnaissance of potential push point well installation

- 1) Example of terrain at area 1.



- 2) Example of terrain at area 2.



Mine Site Quarry – Visual reconnaissance of potential push point well installation

3) Example of area 3 Facing.



4) Example of terrain at area 4.



Mine Site Quarry – Visual reconnaissance of potential push point well installation

- 5) Example of terrain at area 5. Example of terrain at area 5 facing south.



- 6) Example of terrain at area 6.

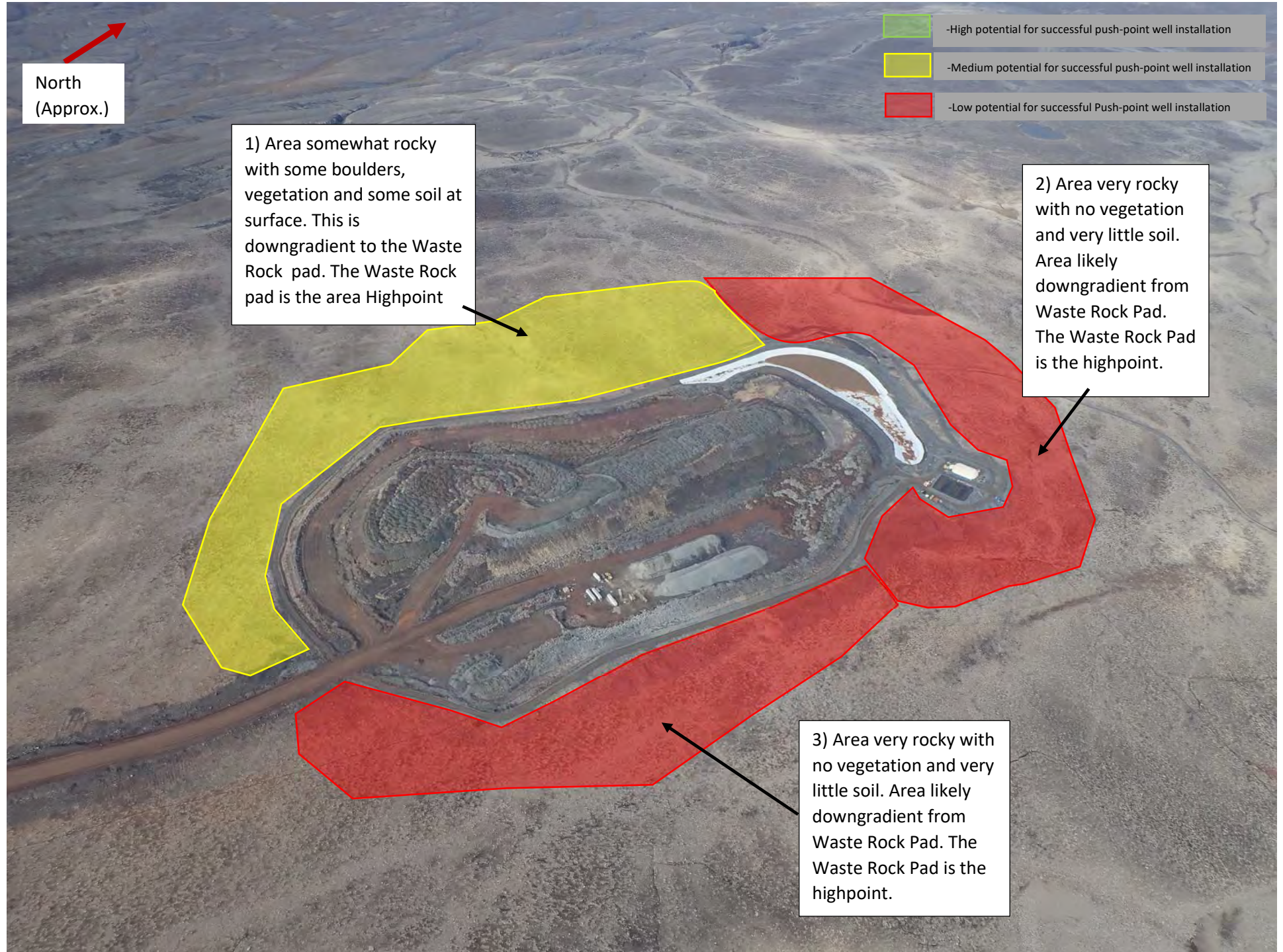


Mine Site Quarry – Visual reconnaissance of potential push point well installation

7) Example of Terrain at area 7.



Mine Site Waste Rock Pad Visual Observations of GW Well Install Locations



Mine Site Waste Rock Area – Visual Reconnaissance of Potential Push Point Well Installation

1) Example of terrain at area 1



2) Example of area 2.

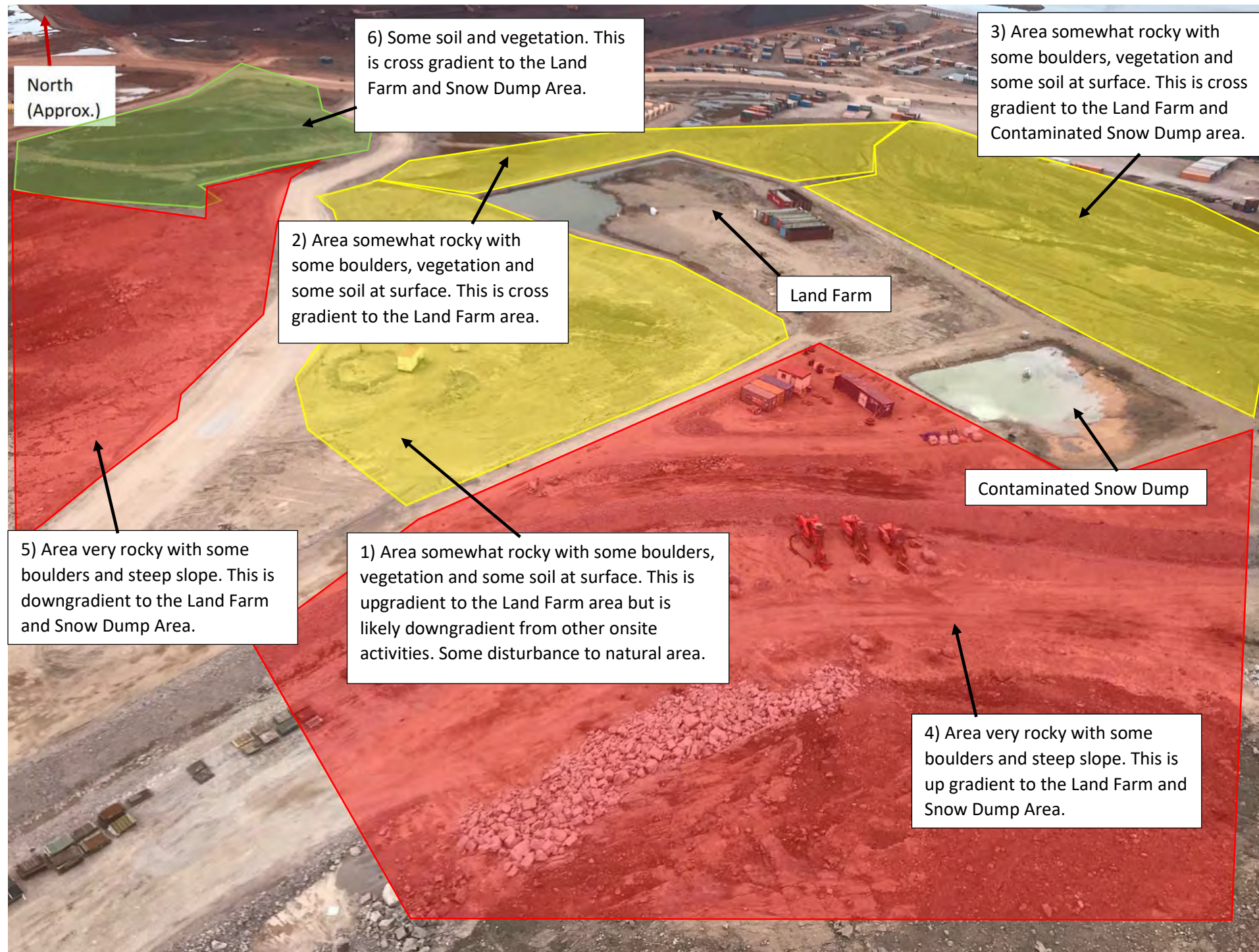


Mine Site Waste Rock Area – Visual Reconnaissance of Potential Push Point Well Installation

3) Example of terrain at area 3.



Port Site Land Farm and Contaminated Snow Dum Area – Visual Reconnaissance of Potential Push Point Well Installation



Port Site Land Farm and Contaminated Snow Dum Area – Visual Reconnaissance of Potential Push Point Well Installation

- 1) Example of terrain at area 1.



Port Site Land Farm and Contaminated Snow Dum Area – Visual Reconnaissance of Potential Push Point Well Installation

2) Example of terrain at area 2.



3) Example of terrain at area 3.

