Contaminants and Remediation Division
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Great Bear Lake Sites – 2019 Annual Water Licence Report (Licence #S17L8-002)

Prepared for: Sahtu Land and Water Board
Date: March 31, 2020

Version	Submission Date	Revisions
FINAL	March 31, 2020	Not Applicable

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) – Northwest Territories Region – Contaminants and Remediation Division (CARD) received a Water Licence renewal from the Sahtu Land and Water Board effective July 25, 2017 for the Great Bear Lake Sites (GBL Sites) Remediation Project. This Water Licence was subsequently amended on September 11, 2017 and again on October 30, 2017 to reflect minor administrative changes and carries Licence # S17L8-002. The Water Licence entitles the use of water and waste deposition in support of remediation and restoration activities at the Great Bear Lake Sites (GBL Sites), including the Silver Bear Mines, Contact Lake Mine, El Bonanza/Bonanza Mine and the Sawmill Bay site. Table 1 outlines the most current Water Licence details.

Table 1: Licence Information

Licensee	Department of Indian Affairs and Northern Development Canada * – Contaminants and Remediation Division
Licensee Mailing Address	Box 1500, Yellowknife, NT X1A 2R3
Licence Number	S17L8-002 – Admin Amend
Licence Type	B
Location	Great Bear Lake Mine Sites: Sawmill Bay, Silver Bear Mines, El Bonanza/Bonanza Mines and Contact Lake Mine
Purpose	Water use and Waste Disposal to support remediation works
Effective Date of Licence	October 30, 2017
Expiry Date of Licence	July 24, 2024

*Legal name of Crown-Indigenous Relations and Northern Affairs Canada

In accordance with the requirements of the Water Licence, CIRNAC-CARD has produced the following 2019 Annual Water Licence Report. This report follows the format as presented in the updated Water Licence S17L8-002 *Schedule 1, Part B: General Conditions*, in which requirements of the Annual Water Licence Report are outlined. Where necessary, additional information has been added which may be of interest to the Sahtu Land and Water Board.

It is important to note that the Water Licence was issued in support of upcoming remediation activities at the project sites. **However, during the 2019 period the sites remained in pre-remediation status and no site remediation occurred.** The sole on-site work activities were conducted during two short field programs which included the following tasks:

July 30-31, 2019 - Water Quality Monitoring

- Conducted the 2019 Water Quality Monitoring Program adhering to the *Great Bear Lake Sites Pre-Remediation Monitoring Plan* (as approved by the Sahtu Land and Water Board on July 3, 2018);
- Accessed sites daily from Délı̨nę using fixed-wing aircraft;
- Included Water Sampling Training Program with two Délı̨nę community members as part of the 2019 Water Quality Monitoring Program; and
- Inspection and/or servicing of select site vehicles and buildings.

September 11-15, 2019 – Roadway Brush Clearing Program

- Cleared existing roadways of encroaching vegetation in and around the Norex, Smallwood and Graham Vein mines, and the road to Terra Mine;
- Team consisted of four personnel from Délı̨nę, staying at Norex Mine for five days;
- Accessed sites via Délı̨nę by boat; and
- No heavy equipment required, utilizing chainsaws and other handheld equipment only.

Schedule 1 Part B: General Conditions

1. The **Annual Water Licence Report** referred to in Part B, Item 15 shall include, but not be limited to the following information:

a) A summary of the calibration and status of meters and devices referred to in Part B, Item 14 of this Licence;

Water Licence Part B, Item 14 states "The Licensee shall install, operate, and maintain meters, devices or other such methods used for measuring the volumes of Water and Waste discharged to the satisfaction of an Inspector". During the 2019 period the only water use was a small number of buckets to support camping for the September 11-15 brush clearing activities, and there were no remedial activities or associated remedial field camp requiring the use of devices/meters.

b) The monthly and annual quantities in cubic metres of fresh water obtained from all sources;

Approximately 0.2 m^3 of water was obtained from the Camsell River in the month of September, which represents the total fresh water use for the 2019 period.

*c) A summary of engagement activities conducted in accordance with the approved **Engagement Plan**, in Part B of this Licence, undertaken during the previous calendar year and shall include a brief description of activities planned for the forthcoming year;*

The following engagement activities were conducted during the 2019 period:

- A Leadership engagement meeting on the project was held on May 2nd, 2019 in Délı̨nę. This meeting provided updates on the activities conducted in 2018, results of 2018 water quality monitoring and a summary of planned 2019 activities. Discussions with Leadership were also conducted regarding the overall project updates, contribution agreements, and a new contracting tool from Public Services and Procurement Canada (which was also discussed in a Community presentation).

- In June 2019 a meeting was held in Yellowknife with CIRNAC-CARD and representatives of Dél̨ı̨nę Got'ı̨nę Government to discuss contribution agreement funding and scope relating to the GBL Project.
- In December 2019 Dél̨ı̨nę Leadership and senior management of CIRNAC-CARD met in Ottawa to further discuss opportunities, project concerns, and plans for moving forward.
- Funding was provided for a part-time Community Liaison Coordinator based in Dél̨ı̨nę through a contribution agreement. The position assisted in planning engagement meetings, communicating with community members about the project, and providing logistical support to the 2019 Water Quality Monitoring Program.
- As part of the July 2019 Water Quality Monitoring Program, a small-scale training program was implemented. This included training two Dél̨ı̨nę community members in water sampling protocols at the site. Pre-field training was conducted followed by field-based training during sample collection.
- A general project update was provided to the Waste Sites Management Committee in November 2019.

Engagement will continue in 2020 and is currently anticipated to include the following:

- Project updates will be provided to the Dél̨ı̨nę Got'ı̨nę Government according to the approved Engagement Plan.
- Project updates will be provided to the Tł̨ı̨chǫ Government according to the approved Engagement Plan.
- The Community Liaison Coordinator position will continue to be funded in Dél̨ı̨nę through a contribution agreement that assists in planning engagement meetings and communicating with community members about the project.
- Additional training opportunities will be provided during the 2020 Water Quality Monitoring Program and any additional monitoring or assessment programs.
- Project updates will continue being provided to the Waste Sites Management Committee when they meet.

*d) A summary of **Construction** activities conducted in accordance with Part F of this Licence, undertaken during the previous calendar year;*

No construction activities were conducted during the 2019 period.

e) An updated schedule of activities for the undertaking;

The CARD project team is finalizing the remediation delivery strategy, and remediation is anticipated to commence within the next two years. Once the schedule is confirmed, this information will be promptly provided to the Sahtu Land and Water Board.

*f) A summary of **Modification** activities and major maintenance work conducted in accordance with Part E of this Licence, undertaken during the previous calendar year;*

No modification activities or major maintenance work was conducted during the 2019 period.

*g) A summary of activities conducted in accordance with the approved **Waste Management Plan**, required in Part D, Item 3 of this Licence, undertaken during the previous calendar year, including:*

i. A summary of updates or changes to the process or facilities required for the management of Waste;

No updates or changes were required to waste management processes or facilities.

ii. The monthly and annual quantities in cubic metres of non-hazardous and hazardous Waste(s) generated and managed during Remediation Activities;

The project is in the pre-remediation phase and no remediation activities were conducted. During the 2019 period the sites were accessed daily as necessary to implement the Water Quality Monitoring Program and for a five day period to implement the Roadway Brush Clearing Program. The 2019 annual volume of waste generated from vehicle maintenance, water sampling, field lunches, etc. during the short duration field work was estimated to be less than 1 m^3 and was returned to Yellowknife and Dél̨ı̨nę for disposal.

iii. The monthly and annual quantities in cubic metres of all Waste deposited, identified by location;

No waste was deposited during the 2019 period.

iv. Monthly and annual quantities in cubic metres of all liquid Waste deposited, identified by location;

No liquid waste was deposited during the 2019 period.

v. Monthly and annual quantities and geochemical characteristics of all PAG and Metal Leaching Waste Rock, Tailings, soils and any other Mineral Materials deposited/managed, identified by location;

No PAG or Metal Leaching Waste Rock, Tailings, soils or any other Mineral Materials were deposited or managed during the 2019 period.

vi. The estimated monthly and annual quantities in cubic meters of Sewage deposited into the Sewage Disposal Facilities;

In the absence of active site remediation and an associated seasonal camp, no sewage was deposited in the Sewage Disposal Facility in the 2019 period.

vii. Monthly and annual quantities in cubic metres of Sewage Discharged from the Sewage Disposal Facilities, identified by disposal location;

In the absence of active site remediation and an associated seasonal camp, no Sewage Disposal Facility was in use during the 2019 period.

viii. Monthly and annual quantities in cubic metres of Wastewater Discharged from the Process Water Treatment Facilities, identified by disposal location; and

In the absence of active remediation, no process water was generated during the 2019 period.

ix. Any other item as directed by the Board.

No further requests have been received.

*h) A summary of activities conducted in accordance with the approved **Sediment and Erosion Control Plan**, as required in Part D, Item 5 of this Licence, including;*
i. A description of any erosion susceptible areas encountered, and a summary of activities undertaken to prevent or mitigate erosion;
ii. A report of the performance of erosion mitigations applied in previous years, if applicable; and
iii. Any other item as directed by the Board.

As indicated in the Water Licence, the Sediment and Erosion Control Plan is not required to be submitted to the Sahtu Land and Water Board until "60 days prior to the commencement of Remediation activities". Consequently, this Plan has not yet been developed and this requirement does not yet apply. However, there were no areas of increased erosion or changing ground conditions noted during the 2019 field program. Similarly, no previous erosion mitigations have been applied which would require performance monitoring.

*i) A summary of activities conducted in accordance with the approved **Landfarm Management Plan**, required in Part D, Item 7 of this Licence, undertaken during the previous calendar year, including:*
i. A summary of updates or changes to the process or facilities required for the treatment of PHC contaminated soil and rock;
ii. The monthly and annual quantities in cubic metres of PHC contaminated soil and rock placed in the Landfarms;
iii. The monthly and annual quantities in cubic metres of PHC contaminated Groundwater and free-phase product removed and a description of how this material was managed; and
iv. Any other item as directed by the Board.

As indicated in the Water Licence, the Landfarm Management Plan is not required to be

submitted to the Sahtu Land and Water Board until "60 days prior to Landfarm Construction". These facilities have not been constructed, the Landfarm Management Plan not yet developed, and there were no soil treatment activities during the 2019 period.

*j) A summary of activities conducted in accordance with the approved **Sediment and Erosion Control Plan**, as required in Part D, Item 5 of this Licence, including;*
i. A description of any erosion susceptible areas encountered, and a summary of activities undertaken to prevent or mitigate erosion;
ii. A report of the performance of erosion mitigations applied in previous years, if applicable; and
iii. Any other item as directed by the Board.

This requirement is a duplicate of Schedule 1, Part B, Item h. As discussed above, this requirement is not yet applicable.

*k) A summary of activities conducted in accordance with the approved **Spill Contingency Plan** required in Part G of this Licence, undertaken during the previous calendar year, including:*
i. A list of all Unauthorized Discharges that occurred during the previous calendar year, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken and status (i.e. open or closed), in accordance with the reporting requirements in Part G of this Licence; and

No Unauthorized Discharges occurred during the 2019 period.

ii. An outline of any spill training and communication exercises carried out during the previous calendar year.

At the commencement of the July field program, workers were provided with instruction on the requirements of the approved Interim Spill Contingency Plan. This included outlining the products on site (e.g. fuels), the approaches and supplies to prevent release to environment, the location of the spill response supplies and the procedures to follow in the event of the spill. Workers were briefed on the requirements of the Water Licence, Land Use Permit and applicable legislation. Emphasis was placed on spill prevention and measures such as the use of drip trays and preparations before handling fuel.

*l) A summary of all results in accordance with the approved **Geochemical Verification Program**, referred to under Part D, Item 8 and Schedule 2, Item 3 of this Licence;*

As indicated in the Water Licence, the Geochemical Verification Program is required to be submitted to the Sahtu Land and Water Board "90 days prior to the commencement of Remediation". Consequently, this Plan has not yet been developed and this requirement does not yet apply. There were no geochemical verification activities implemented in the 2019 period.

*m) A summary of all results in accordance with the approved **Pre-Construction Monitoring Plan**, referred to under Part D, Item 12 of this Licence;*

It is noted that Part D, Item 12 of the Water Licence refers to the Post-Construction Monitoring Plan, and the Pre-Construction/Remediation Monitoring Plan is instead referenced in Part D, Item 9. It is assumed that this request is in reference to the Pre-Construction (or Remediation) Monitoring Plan.

An initial DRAFT GBL Sites Pre-Remediation Monitoring Plan was submitted to the Sahtu Land and Water Board on June 8, 2018. Following reviews and recommendations through the Sahtu Land and Water Board, the plan was revised and submitted as the FINAL GBL Sites Pre-Remediation Monitoring Plan on June 29, 2018. On July 3, 2018 CIRNAC was provided notification that the Sahtu Land and Water Board approved the Pre-Remediation Monitoring Plan.

The Pre-Remediation Monitoring Plan includes prescribed sampling stations/parameters, as well as provision for "Responsive Monitoring" to address any concerns or questions from previous monitoring events. On July 22, 2019, the Sahtu Land and Water Board was notified that two stations at Northrim Mine (NO-5 and NO-27) were to be added to the 2019 monitoring program as responsive monitoring stations to address specific questions regarding metal concentrations. In addition, the sampling station on the north shore of the Contact Lake Mine Tailings Pond (CL-29) would be reactivated to allow comparison with the south shore SNP station, at which ongoing access challenges have been encountered.

The Pre-Remediation Monitoring Plan, with the responsive monitoring stations, was successfully implemented July 30-31, 2019. The associated Great Bear Lake Sites 2019 Water Quality Monitoring Report is provided as Appendix C of this report. The principal findings are as follows:

- Water levels in the Camsell River were higher than in previous sampling events, though ground conditions were drier than observed in 2018.
- Water sample results were below applicable Effluent Quality Criteria (EQC) at SNP Stations within the Water Licence.
- Consistent with previous monitoring events, elevated metal concentrations above background were reported in water samples in Ho Hum Tailings Containment Area (TCA), Hermandy Lake, waste rock seepage points, and the Contact Lake Tailings Pond. With the exception of a single elevated copper concentration at the Northrim Mine Camsell River station NO-5, metal concentrations in downstream receiving environments were below conservative generic guidelines (Canadian Council of Ministers of Environment – Protection of Aquatic Life Guidelines) and generally consistent with background stations.
- Despite analysis of multiple samples at each of the sites, there were no PHC concentrations above detection limits in any sample.
- At Contact Lake Mine, all radionuclide concentrations were below applicable guidelines and several results were below detection limits.

The Pre-Remediation Monitoring Plan employed the quality assurance and quality control procedures outlined in the revised Great Bear Lake Sites – Quality Assurance and Quality Control Plan (V2 dated April 30, 2018). The plan was first submitted on August 11, 2017 and was provided with interim approval. Following Sahtu Land and Water Board distribution and

review, the plan was revised and resubmitted on April 30, 2018. The Sahtu Land and Water Board provided notification to CIRNAC on May 30, 2018 that the revised plan was approved.

*n) A summary of all monitoring results and any Action Level exceedances in accordance with the approved **Construction Monitoring Plan**, referred to under Part D, Item 11 and Schedule 2, Item 4 of this Licence;*

As indicated in the Water Licence, the Construction Monitoring Plan is required to be submitted to the Sahtu Land and Water Board "90 days prior to the commencement of Remediation". The site is currently in pre-remediation (i.e. there were no construction activities) and this plan has not yet been developed.

*o) A summary of all monitoring results and Action Level exceedances in accordance with the approved **Post-Construction Monitoring Plan**, referred to under Part D, Item 13 and Schedule 2, Item 6 of this Licence;*

As indicated in the Water Licence, the Post-Construction Monitoring Plan is required to be submitted to the Sahtu Land and Water Board "90 days prior to demobilization". The site is currently in pre-remediation (i.e. there were no post-construction activities) and this plan has not yet been developed.

*q) A summary of activities conducted in accordance with the approved **Remedial Action Plans** undertaken during the previous calendar year, including;*

i. A summary of all Remediation and reclamation activities carried out at each site during the previous calendar year, as they relate to Water Use and Waste Disposal including progress made to develop the schedule for Phase II implementation,

ii. A summary of updates or changes to the process or facilities required for the management of Waste Rock and Tailings;

iii. The monthly and annual quantities in cubic metres of excavated Tailings for placement into Landfills and any excavation contingency measures implemented;

iv. The monthly and annual quantities in cubic metres of PAG Waste Rock excavated and deposited into trenches or adits;

v. The monthly and annual quantities in cubic metres of soil and rock placed below Waste Rock Covers, placed above Waste Rock Covers, and used elsewhere on site;

vi. Any geochemical inspection reports, as appendices to the Annual Water Licence Report;

viii. A camp set-up schematic;

viii. An outline of anticipated activities for the next year; and

ix. Any other item as directed by the Board.

The GBL Sites are currently in pre-remediation and no activities related to the Remedial Action Plans were implemented during the 2019 period.

r) Any other details on Water Use or Waste disposal requested by the Board by November 30 of the year being reported;

CIRNAC is not aware of any other information requests from the Board.

s) *Tabular summaries of all data and information generated under the Surveillance Network Program and graphical summaries of parameters with effluent quality criteria referred to in Part D, and the points of compliance (SNP Stations-001 (1), (2), (3), S17L8-002 (14l), (7A) and 7 (B), in excel or an electronic and printed format acceptable to the Board. The Licensee shall provide raw data in electronic form to the Board.*

The sampling requirements of the SNP were successfully implemented during the 2019 field program. SNP sampling was integrated with the larger pre-remediation water quality monitoring program. Results from both programs are included in the *2019 Water Quality Monitoring Report* provided in Appendix C. The report includes multi-year graphical summaries of applicable results, description of monitoring approach/methodologies, quality assurance and quality control (QA/QC) procedures/findings, field measurements/photographs and recommendations.

Appendix A of this report includes tabular summaries of all 2019 SNP monitoring data. As part of this submission, the Sahtu Land and Water Board will also be provided with an Excel file of all 2019 SNP data.

2019 SNP Sampling and Data

Currently in pre-remediation, many of the stations listed in the SNP are not yet active. This includes stations associated with discrete remedial activities (e.g. soil treatment areas, process water generation) and the operation of a remediation camp. For clarity, each of the SNP stations within Water Licence S17L8-002 is discussed below, including sampling rationale and results where applicable.

SNP Station S15L8-001 (1)

- Water Licence Description: Treated Sewage effluent prior to Discharge
- Water Licence Location: Camp Operations
- 2019 Sampling Rationale: Not sampled. Remediation camp and sewage treatment facility not yet constructed.

SNP Station S15L8-001 (2)

- Water Licence Description: Treated grey water prior to disposal
- Water Licence Location: Camp Operations
- 2019 Sampling Rationale: Not sampled. Remediation camp and grey water treatment facility not yet constructed.

SNP Station S15L8-001 (3 a, b, c, d....)

- Water Licence Description: Treated Process Water prior to disposal
- Water Licence Location: Camp Operations
- 2019 Sampling Rationale: Not sampled. No remediation activities conducted or process water generated.

SNP Station S15L8-001 (4)

- Water Licence Description: Camsell River Intake
- Water Licence Location: Camp Operations
- 2019 Sampling Rationale: Not sampled; Water Licence requires quantity measurement only.

SNP Station S15L8-001 (5)

- Water Licence Description: Great Bear Lake Intake
- Water Licence Location: Camp Operations
- 2019 Sampling Rationale: Not sampled. Water Licence requires quantity measurement only. No water use from Great Bear Lake in 2019.

SNP Station S17L8-002 (6)

- Water Licence Description: Contact Lake Intake
- Water Licence Location: Camp Operations
- 2019 Sampling Rationale: Not sampled. Water Licence requires quantity measurement only. No water use from Contact Lake in 2019.

SNP Station S17L8-002 (7A)

- Water Licence Description: Ho Hum Tailings Containment Area (TCA) – Corresponding with station T-8
- Water Licence Location: Silver Bear – Terra Mine
- 2019 Sampling Rationale: Sampled once in 2019 (July) and SNP data provided in Appendix A, Table A1. Multiple depth station with duplicate at surface. Complete dataset provided in Appendix C – 2019 Water Quality Monitoring Report.
- EQC Evaluation: Table A1 provides parameters as specified in the Water Licence with the EQC as indicated in Part D, Item 25. All sample results are below the EQC. Sample results are a maximum 42% of the EQC for copper, and all other parameters are a maximum of 11% of the respective EQCs. Given the order of magnitude difference between the sample results and the EQCs, graphical summaries are not beneficial.

SNP Station S17L8-002 (7B)

- Water Licence Description: Moose Bay – Corresponding with station T-10
- Water Licence Location: Silver Bear – Terra Mine
- 2019 Sampling Rationale: Sampled once in 2019 (July) and SNP data provided in Appendix A, Table A1. Complete dataset provided in Appendix C – 2019 Water Quality Monitoring Report.
- EQC Evaluation: Table A1 provides parameters as specified in the Water Licence with the EQC as indicated in Part D, Item 25. All sample results are below the EQC values. Sample results are a maximum of 5% of the respective EQCs. Given the order of magnitude difference between the sample results and the EQCs, graphical summaries are not beneficial.

SNP Station S17L8-002 (8C)

- Water Licence Description: Hermandy Lake – Corresponding with station NO-7
- Water Licence Location: Silver Bear – Northrim Mine
- 2019 Sampling Rationale: Sampled once in 2019 (July) and SNP data provided in

Appendix A, Table A2. Complete dataset provided in Appendix C – 2019 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (9D)
- Water Licence Description: Camsell River – Corresponding with station NO-6
- Water Licence Location: Silver Bear – Northrim Mine
- 2019 Sampling Rationale: Sampled once in 2019 (July) and SNP data provided in Appendix A, Table A2. Complete dataset provided in Appendix C – 2019 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (10E)
- Water Licence Description: Norex Waste Rock – Corresponding with station Norex-3 (also known as NX-3)
- Water Licence Location: Silver Bear – Norex Mine
- 2019 Sampling Rationale: Sampled once in 2019 (July) and SNP data provided in Appendix A, Table A2. Complete dataset provided in Appendix C – 2019 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (11F)
- Water Licence Description: Camsell River – Corresponding with station NX-12
- Water Licence Location: Silver Bear – Norex Mine
- 2019 Sampling Rationale: Sampled once in 2019 (July) and SNP data provided in Appendix A, Table A2. Complete dataset provided in Appendix C – 2019 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (12G)
- Water Licence Description: Tailings Pond – Corresponding with established station CL-3
- Water Licence Location: Contact Lake Mine
- 2019 Sampling Rationale: Sampled once in 2019 (July) and SNP data provided in Appendix A, Table A2. Complete dataset provided in Appendix C – 2019 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (13H)
- Water Licence Description: Contact Lake – Corresponding with established station CL-26
- Water Licence Location: Contact Lake Mine
- 2019 Sampling Rationale: Sampled once in 2019 (July) and SNP data provided in Appendix A, Table A2. Complete dataset provided in Appendix C – 2019 Water Quality Monitoring Report.
- EQC Evaluation: No EQC for this station.

SNP Station S17L8-002 (14I)

- Water Licence Description: Landfarm Discharge Water
- Water Licence Location: Landfarm at Silver Bear Mines, Sawmill Bay and El Bonanza/Bonanza
- 2019 Sampling Rationale: Not sampled. Landfarms not yet constructed.

2018 SNP Actions

All 2019 sampling results were below respective EQCs and no response actions were required.

t) A map depicting all the SNP Stations with GPS locations;

Maps depicting the location of all SNP stations sampled during the 2019 season are provided in Appendix B. These figures include station coordinates for future reference.

It is noted that stations which are not yet active (landfarm monitoring, process water, sewage treatment discharge, etc.) are not included in the figures. The exact coordinates will be determined during the start of active remediation and incorporated in future figures.

u) A summary of actions taken to address concerns, non-conformances or deficiencies in any report filed by an Inspector.

CIRNAC was not provided with an Inspection Report or any associated non-conformances/concerns.

Great Bear Lake Sites

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APPENDIX A – SNP Data Tables

Table A1 - Terra Mine: SNP Water Quality Data

SITE	Units	Lowest Detection Limit	SNP Effluent Quality Criteria (EQC) for T-8 and T-10	TERRA MINE				
STATION/Sample #				T-8-A	T-DUP-1	T-8-B	T-8-C	T-10
SNP Station #				S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7B)
Blind Sample #				GBL-2019-00001-001	GBL-2019-00001-014	GBL-2019-00001-002	GBL-2019-00001-003	GBL-2019-00001-004
Waterbody				Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Moose Bay
Sample Date				2019-07-31	2019-07-31	2019-07-31	2019-07-31	2019-07-31
Depth				1m	1m	5m	13m	Surface
Type				Sample	Duplicate of T-8-A	Sample	Sample	Sample
PARAMETER								
pH			Between 6.0 and 9.0	7.85	7.96	7.72	7.41	7.96
Specific Conductivity	(µS/cm)	0.4		189	191	187	191	144
Total Suspended Solids (TSS)	(mg/L)	3	30	6	<3	<3	<3	<3
Hardness, as CaCO3	(mg/L)	0.7		77	79.1	77.4	78.9	67.1
Sulphate	(mg/L)	1		18	18	18	18	16
Ammonia as Nitrogen	(mg/L)	0.005	10	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate, as N	(mg/L)	0.01	10	0.14	0.13	0.13	0.16	0.09
Nitrite, as N	(mg/L)	0.01	0.8	<0.01	<0.01	<0.01	<0.01	<0.01
Aluminum	(mg/L)	0.0006	0.8	0.0227	0.0243	0.0218	0.0232	0.0387
Arsenic	(mg/L)	0.0002	1.0 at 7A and 0.2 at 7B	0.058	0.0579	0.058	0.0619	0.0011
Copper	(mg/L)	0.0002	0.02	0.0084	0.0084	0.0083	0.0082	0.0009
Lead	(mg/L)	0.0001	0.02	0.0001	0.0001	0.0001	0.0001	<0.0001
Nickel	(mg/L)	0.0001	0.1	0.0038	0.0038	0.0037	0.0038	0.0002
Silver	(mg/L)	0.0001	0.004	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Zinc	(mg/L)	0.0004	0.04	0.0031	0.003	0.0036	0.0049	0.0005
Benzene	(mg/L)	0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	(mg/L)	0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	(mg/L)	0.00045		<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Total Xylene	(mg/L)	0.0005		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Hexane Extractable Material	(mg/L)	2	5	<2	<2	<2	<2	<2
F1(C6-C10)	(mg/L)	0.1		<0.1	<0.1	<0.1	<0.1	<0.1
F2 (>C10-C16)	(mg/L)	0.3		<0.3	<0.3	<0.3	<0.3	<0.3
F3 (C16-C34)	(mg/L)	0.3		<0.3	<0.3	<0.3	<0.3	<0.3
F4 (C34-C50)	(mg/L)	0.3		<0.3	<0.3	<0.3	<0.3	<0.3

Table A2 - Northrim Mine, Norex Mine and Contact Lake Mine: SNP Water Quality Data

SITE	Units	Lowest Detection Limit	NORTHRIM MINE		NOREX MINE		CONTACT LAKE MINE		
STATION/Sample #			NO-7	NO-6	NX-12	NX-3	CL-26	CL-3	CL-DUP-1
SNP Station #			S17L8-002 (8C)	S17L8-002 (9D)	S17L8-002 (11F)	S17L8-002 (10E)	S17L8-002 (13H)	S17L8-002 (12G)	S17L8-002 (12G)
Blind Sample #			GBL-2019-00001-005	GBL-2019-00001-006	GBL-2019-00001-007	GBL-2019-00001-008	GBL-2019-00001-010	GBL-2019-00001-009	GBL-2019-00001-015
Waterbody			Hermandy Lake	Camsell River	Camsell River	Waste Rock Seep	Contact Lake	Tailings Pond	Tailings Pond
Sample Date			2019-07-31	2019-07-31	2019-07-30	2019-07-30	2019-07-30	2019-07-30	2019-07-30
Depth			Surface	Surface	Surface	Surface	Surface	Surface	Surface
Type			Sample	Sample	Sample	Sample	Sample	Sample	Duplicate of CL-3
PARAMETER									
pH			7.91	7.9	8	7.12	7.61	7.79	7.82
Specific Conductivity	(µS/cm)	0.4	145	137	139	549	43.8	192	194
Total Suspended Solids (TSS)	(mg/L)	3	<3	<3	<3	17	<3	<3	<3
Hardness, as CaCO3	(mg/L)	0.7	74.4	60.1	62.9	260	21.7	92.4	92.1
Sulphate	(mg/L)	1	9	15	15	134	2	9	9
Aluminum	(mg/L)	0.0006	0.0257	0.0515	0.032	0.0222	0.0024	0.0119	0.0103
Antimony	(mg/L)	0.0001	0.0001	<0.0001	<0.0001	0.0006	<0.0001	0.0007	0.0007
Arsenic	(mg/L)	0.0002	0.005	<0.2	0.0002	0.0309	0.0002	0.0151	0.0151
Barium	(mg/L)	0.0001	0.0061	0.0104	0.0102	0.0355	0.0035	0.0245	0.0238
Beryllium	(mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bismuth	(mg/L)	0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Boron	(mg/L)	0.0009	0.0065	0.0108	0.0101	0.0679	0.0055	0.0319	0.0306
Cadmium	(mg/L)	0.00004	<0.00004	<0.00004	<0.00004	0.0001	<0.00004	<0.00004	<0.00004
Cesium	(mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Chromium	(mg/L)	0.0001	<0.0001	0.0001	0.0001	0.0005	<0.0001	0.0001	<0.0001
Cobalt	(mg/L)	0.0001	0.0001	<0.0001	<0.0001	0.014	<0.0001	0.0002	0.0002
Copper	(mg/L)	0.0002	0.0026	0.0008	0.0008	0.0007	0.0007	0.0165	0.0163
Iron	(mg/L)	0.005	0.047	0.061	0.039	2.28	<0.005	0.093	0.085
Lead	(mg/L)	0.0001	0.0003	<0.0001	<0.0001	0.0026	<0.0001	<0.0001	<0.0001
Lithium	(mg/L)	0.0002	0.0012	0.0021	0.0021	0.0083	0.0006	0.0022	0.0022
Manganese	(mg/L)	0.0001	0.0072	0.0024	0.0015	0.738	0.0008	0.0821	0.0655
Mercury	(mg/L)	0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	0.0000096	0.0000107
Molybdenum	(mg/L)	0.0001	0.0006	0.0003	0.0003	0.0027	0.0002	0.0005	0.0005
Nickel	(mg/L)	0.0001	0.0006	0.0002	0.0002	0.0036	<0.0001	0.0015	0.0015
Selenium	(mg/L)	0.0003	<0.0003	<0.0003	<0.0003	<0.0005	<0.0003	<0.0005	<0.0005
Silicon	(mg/L)	0.05	0.599	0.847	0.791	5.6	0.258	1.87	1.85
Silver	(mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001	0.0001
Strontium	(mg/L)	0.0001	0.0265	0.0491	0.0492	0.199	0.0105	0.058	0.0574
Sulfur	(mg/L)	0.5	3.13	4.733	4.334	53.3	<0.5	2.843	2.859
Thallium	(mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Tin	(mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Titanium	(mg/L)	0.0001	0.0004	0.0025	0.0013	0.002	<0.0001	0.0002	0.0001
Uranium	(mg/L)	0.0001	0.0002	0.0005	0.0005	0.0008	0.0002	0.0409	0.0404
Vanadium	(mg/L)	0.0001	0.0003	0.0002	0.0001	0.0012	<0.0001	0.0001	0.0001
Zinc	(mg/L)	0.0004	0.0013	0.0012	<0.0004	0.185	<0.0004	<0.005	<0.005
Zirconium	(mg/L)	0.0001	0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	0.0001
Benzene	(mg/L)	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	(mg/L)	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	(mg/L)	0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Total Xylene	(mg/L)	0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
F1(C6-C10)	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
F2 (>C10-C16)	(mg/L)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
F3 (C16-C34)	(mg/L)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
F4 (C34-C50)	(mg/L)	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3

Great Bear Lake Sites

2019 Annual Water Licence Report (# S17L8-002)

APPENDIX B – SNP Location Figures

Figure 1: Great Bear Lake - Site Overview

Contaminated Sites and Remediation Division

0 12.5 25 km

Coordinate System: NAD 1983 UTM Zone 11N

Date: 2/16/2018

Figure 2: Great Bear Lake Terra Mine SNP Stations

Contaminated Sites and Remediation Division

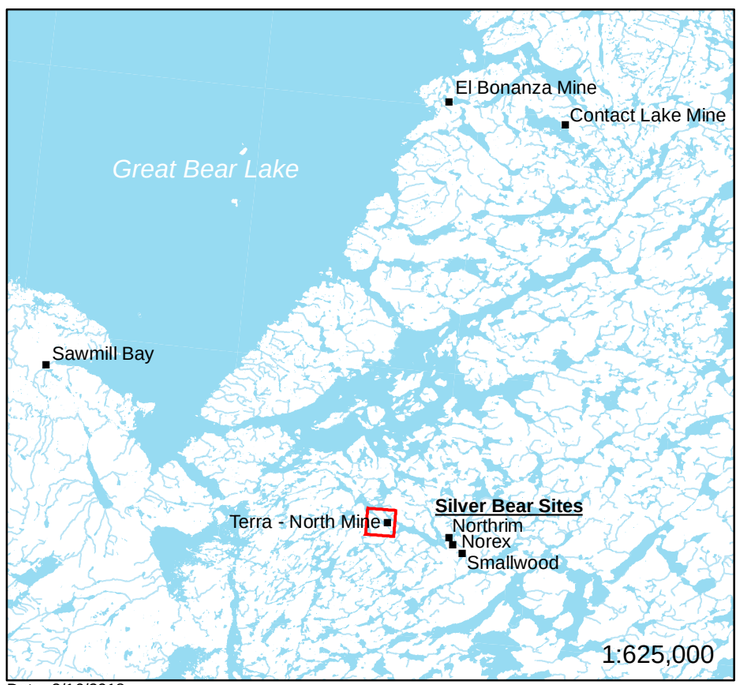
0 500 1,000 m

Coordinate System: NAD 1983 UTM Zone 11N

▲ SNP Sample Station

Station Name	SNP Number	Latitude [A]	Longitude [A]
T-8	S17L8-002 (7A)	65° 36′ 13.93″ N	118° 7′ 48.43" W
T-10	S17L8-002 (7B)	65° 36′ 37.30"N	118° 8′ 55.42" W

[A] Datum: NAD 83



Date: 2/16/2018

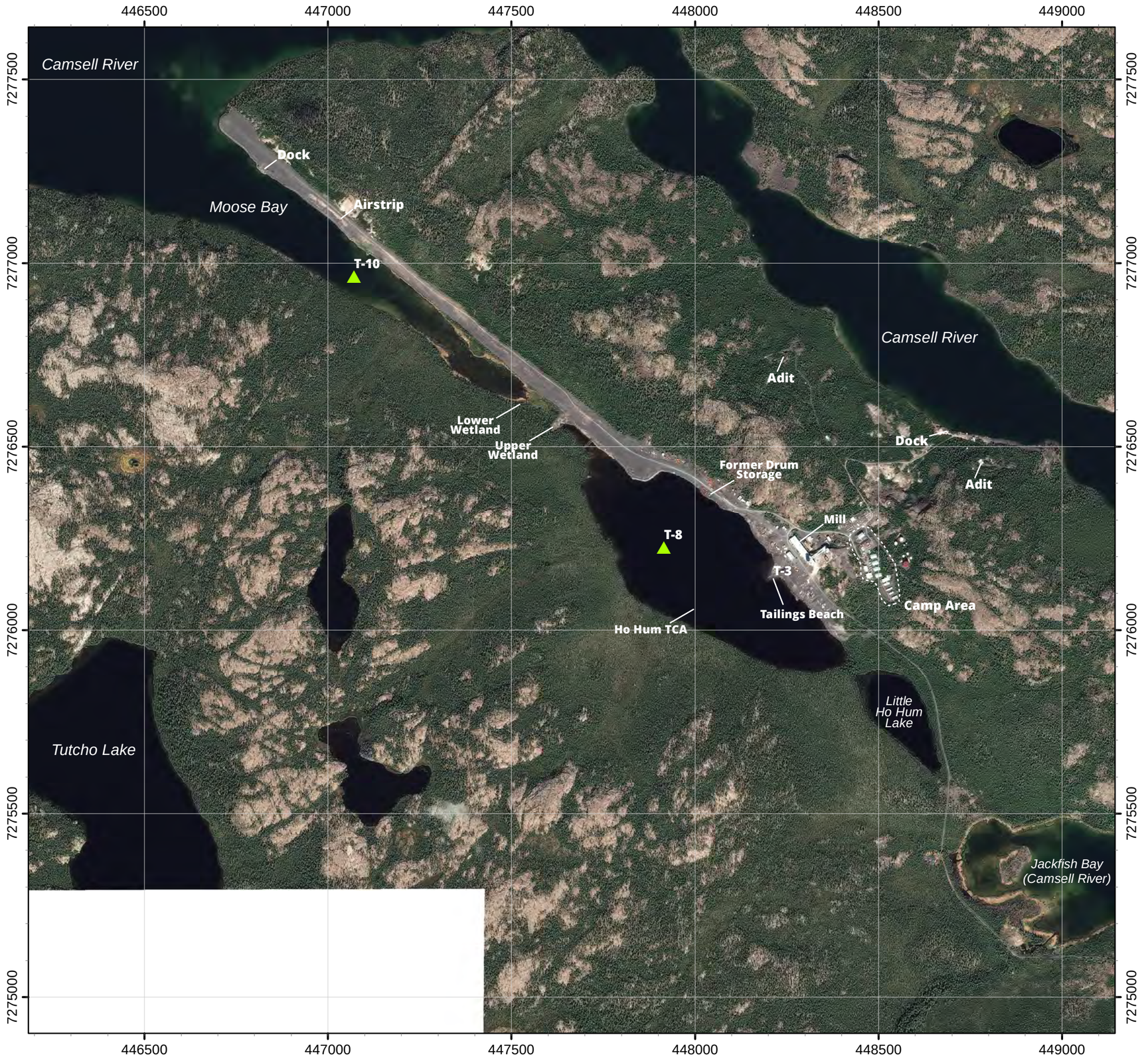


Figure 3: Great Bear Lake
Northrim & Norex Mine SNP Stations
Contaminated Sites and Remediation Division

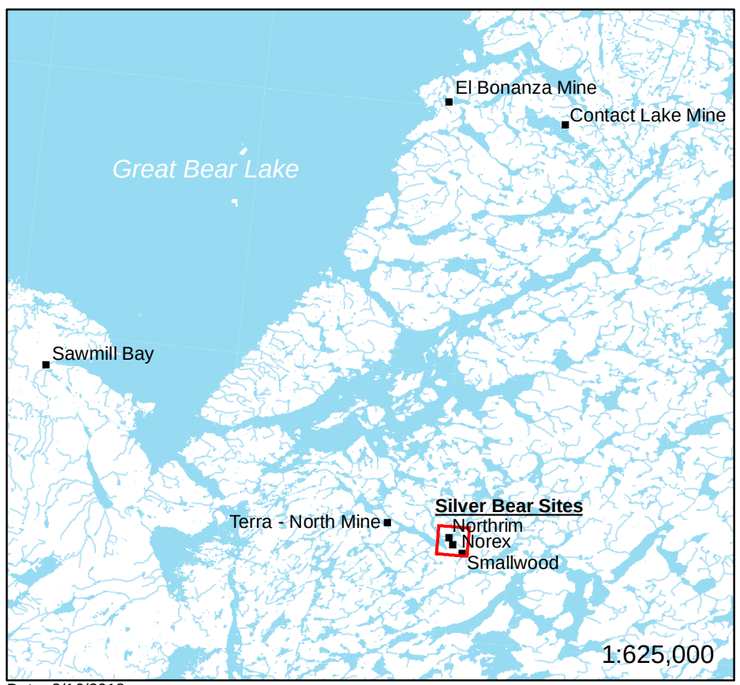
0 500 1,000 m

Coordinate System: NAD 1983 UTM Zone 11N

▲ SNP Station

Station Name	SNP Number	Latitude [A]	Longitude [A]
NO-7	S17L8-002 (8C)	65° 35' 51.25" N	117° 59' 3.80" W
NO-6	S17L8-002 (9D)	65° 35' 43.84" N	117° 58' 52.18" W
NX-3	S17L8-002 (10E)	65° 35' 22.20" N	117° 58' 6.00" W
NX-12	S17L8-002 (11F)	65° 35' 41.50" N	117° 58' 25.54" W

[A] Datum: NAD 83



Date: 2/16/2018

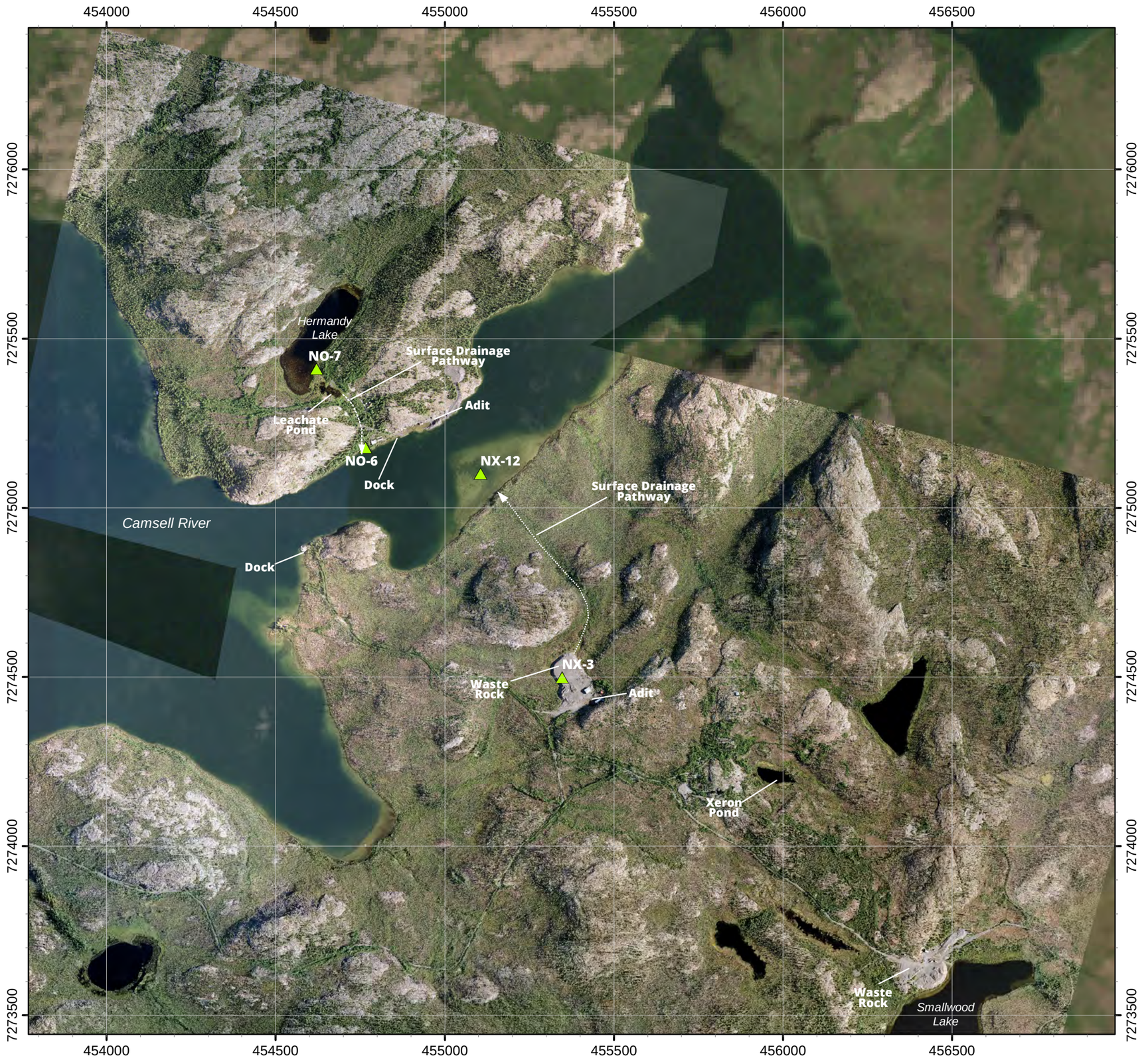


Figure 4: Great Bear Lake
Contact Lake Mine SNP Stations

Contaminated Sites and Remediation Division

0 250 500 m

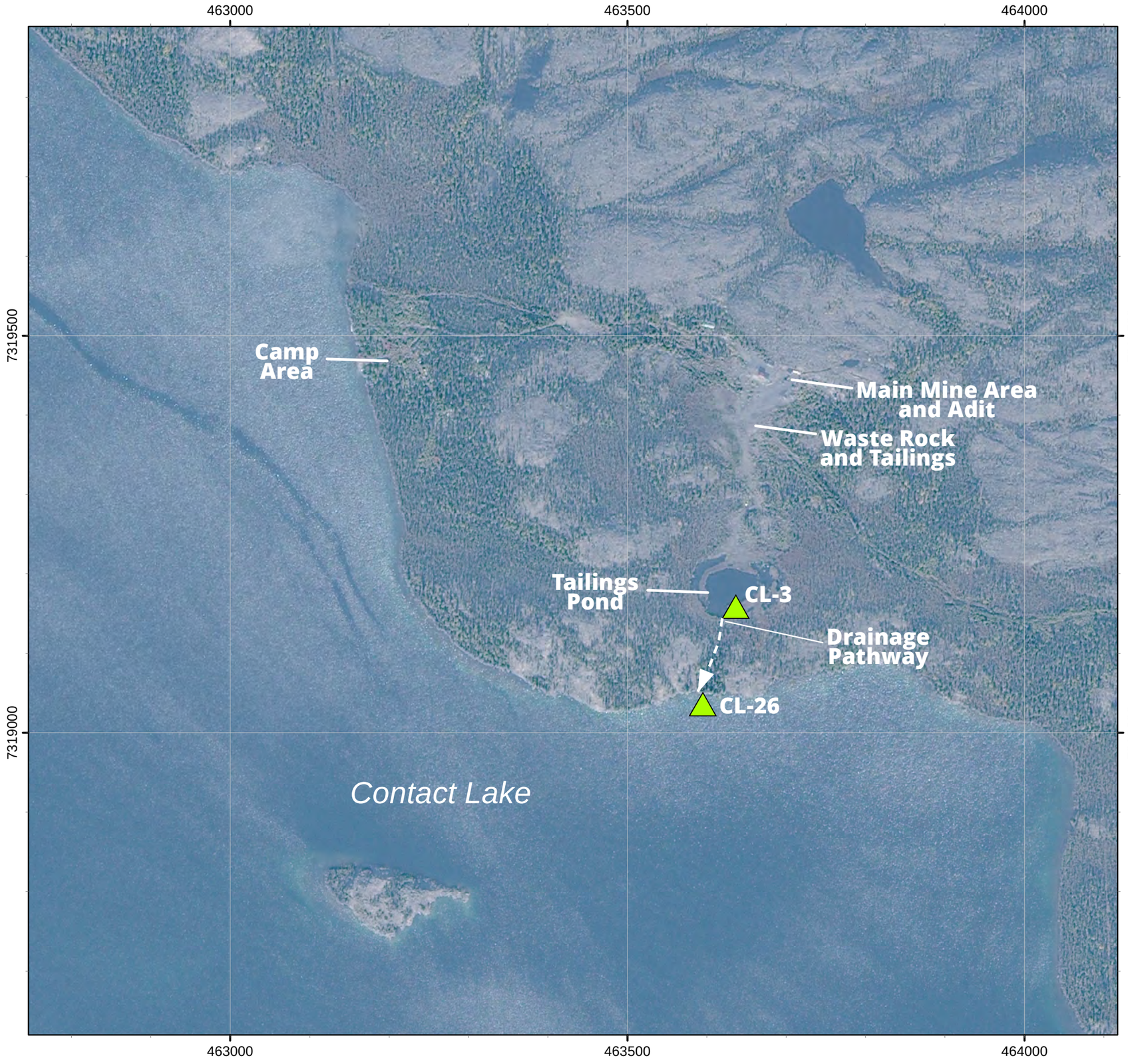
Coordinate System: NAD 1983 UTM Zone 11N

SNP Station

Station Name	SNP Number	Latitude [A]	Longitude [A]
CL-3	S17L8-002 (12G)	65° 59' 27.18" N	117° 48' 3.00" W
CL-26	S17L8-002 (13H)	65° 59' 23.21" N	117° 48' 6.16"W

[A] Datum: NAD 83

Date: 2/16/2018



Great Bear Lake Sites

2019 Annual Water Licence Report (# S17L8-002)

APPENDIX C – 2019 Water Quality Monitoring Report

Crown-Indigenous Relations and Northern Affairs Canada
Relations Couronne-Autochtones et Affaires du Nord Canada

GREAT BEAR LAKE SITES

2019 Water Quality Monitoring Report

FINAL

Prepared by: **Public Services and Procurement Canada**

With Support from DXB Projects Inc.

On Behalf of: **Crown-Indigenous Relations and Northern Affairs Canada**

Contaminants and Remediation Division

March 2020

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1 INTRODUCTION AND BACKGROUND

1.1 THE GREAT BEAR LAKE SITES

Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) has the responsibility to manage a number of contaminated sites that are no longer maintained by the original occupant. CIRNAC's portfolio of contaminated sites in the north originates from private sector mining, oil and gas activities, government, military activity and other users of the land dating back over half a century, many years before the environmental impacts of such activities were adequately understood. The abandoned Great Bear Lake (GBL) Sites are amongst these legacy properties. Under the Contaminated Sites Management Program (CSMP), the CIRNAC Contaminants and Remediation Division (CARD) aims to complete remediation of the GBL Sites to improve environmental conditions and reduce environmental/safety risks.

The GBL Sites refer collectively to the abandoned historic industrial properties of Silver Bear Mines (made up of the larger Terra Mine and smaller satellite sites of Northrim, Norex, Graham Vein and Smallwood), El Bonanza/Bonanza Mine, Contact Lake Mine and the Sawmill Bay site. The GBL Sites are located on or adjacent to the eastern shore of Great Bear Lake, within the Sahtu Region of the Northwest Territories (Appendix A, Figure A1). The properties lie within the boundaries of the Sahtu Dene and Metis Comprehensive Land Claim Agreement and a portion of the Silver Bear Mines also overlap with the Tłı̨chǫ Mǫwhì Gogha Dè Nı̨ı̨łèè Boundary. GBL Sites are 400-440 km north-northwest of Yellowknife, 175-220 km north of Gamètì and 215-275 km east of Délı̨ne (the nearest community within the Sahtu Land Claim). The sites are within 60 km of one another and have therefore been logically consolidated for the purposes of monitoring and remediation. While the properties are remote and none are accessible by public or private roadway, they may be reached by rotary wing, fixed wing (floats at all sites or wheels at the abandoned airstrips at Terra Mine and Sawmill Bay) or by barge/boat.

Silver Bear Mines were underground mining properties (with a small volume of surface work), which produced primarily silver, copper and bismuth and were in operation from 1969 to 1985. The Contact Lake Mine was significantly smaller in scale and was originally an underground silver mine during the 1930s which was also mined for uranium in 1949/50. El Bonanza and Bonanza Mines are both located on the Dowdell Peninsula and were small scale silver mines operational 1934-1936, 1956-1957, and in 1965. The Sawmill Bay Site was established as a sawmill in the 1930's, after which it was used for barging and air transportation of uranium ore from Port Radium (1940's-1950). It was subsequently used for various military activities (1950s) and, later, as a fishing lodge (late 1950s to 1987). All GBL Sites now fall under the custodial responsibility of CIRNAC-CARD.

The GBL Sites have been the subject of numerous assessments and studies to characterize the nature of environmental contamination and physical hazards. CIRNAC's efforts to date have included Site Assessments, Hazardous Material Surveys, Risk Assessments, focused geochemical studies, etc. Water quality monitoring has been conducted over multiple years, the results of which were relied upon to help determine the nature of site contamination, the impacts to the receiving environment and the requirements for site remediation. Efforts culminated in the production of Remedial Action Plans (RAPs) for each of the project sites, which summarized site conditions, interpreted results of sampling/assessment, evaluated remedial options and presented the selected remedial approach based on technical input and community consultations.

Remediation of the GBL Sites was first initiated as the Phase I Remediation Project, which was completed in 2010-2011. Efforts focussed on work activities which could be completed without mobilization of heavy equipment at Contact Lake Mine, El Bonanza/Bonanza Mine and Sawmill Bay. This included drum consolidation, product consolidation/removal, building destruction (Contact Lake and El Bonanza/Bonanza mines only) and debris consolidation. This was followed by ongoing consolidation and removal of drums with residual fuel/product in 2016 at the Contact Lake Mine, El Bonanza/Bonanza Mine, Sawmill Bay Site and Silver Bear Mines. While these efforts have reduced site risks, there have been no earthworks or other site alterations to date which could be expected to substantially alter the receiving environment or aquatic conditions.

Remaining work activities to complete the remediation as outlined in the RAPs will be completed as the GBL Sites Phase II Remediation Project, tentatively scheduled to require approximately five years. This will include completion of earthworks at Contact Lake Mine, El Bonanza/Bonanza Mine and Sawmill Bay, as well as the comprehensive remediation of the Silver Bear Mines.

1.2 THE 2019 WATER SAMPLING PROGRAM OVERVIEW

Water quality assessment and monitoring at the GBL sites has been conducted since the early 1990s, through which an extensive water quality database has been amassed. In keeping with CIRNAC's objectives of environmental management at its project sites and requirements of regulatory authorizations, water quality monitoring continued in 2019.

The scope of work and methodologies implemented in 2019 followed those presented within the *GBL Sites Pre-Remediation Monitoring Plan* (PRMP), dated June 28, 2018 and submitted to the Sahtu Land and Water Board (SLWB). Requirements of the PRMP (INAC-CARD 2018c) were

outlined within the renewed Project Water Licence S17L8-002 ("Admin Amend" version dated October 30, 2017). Following review and revision, the PRMP was approved by the SLWB on July 3, 2018 and is to serve as the principal guidance document in the implementation of monitoring prior to the commencement of the Phase II Remediation Project. As provided in the PRMP, the scope of the monitoring activities includes prescribed stations as well as responsive monitoring stations to address specific questions/concerns from ongoing sampling. On July 22, 2019 the SLWB was notified of the stations to be included as part of Responsive Monitoring program during the 2019 monitoring activities.

The program was implemented on behalf of CIRNAC-CARD by Public Services and Procurement Canada (PSPC) with assistance from DXB Projects and community members from Délı̨nę. The field program operated July 30-31, 2019, accessing the site daily with float-equipped fixed wing aircraft and using Délı̨nę as a base of operations. In keeping with the PRMP and the 2019 Responsive Monitoring program, sample collection and field measurements were collected at the Silver Bear Mines (Terra, Northrim and Norex) and Contact Lake Mine. No sampling was required at Smallwood Mine, El Bonanza/Bonanza Mine or Sawmill Bay. Samples were submitted to Taiga Environmental Laboratories (Taiga) Yellowknife laboratory for analysis. Based on the requirements of the *Great Bear Lake Sites – Quality Assurance and Quality Control Plan* (INAC-CARD 2018b), Taiga submitted select samples or subsamples to ALS Laboratories in Yellowknife (for forward to their Vancouver laboratory), to achieve all required analytes with the necessary detection limits. Samples for radionuclide analyses were forwarded by Taiga to SRC Environmental Analytical Laboratories in Saskatoon, Saskatchewan.

Upon completion of the field program, field observations and data were integrated with results of laboratory analyses. **The contents of this GBL Sites 2019 Water Quality Monitoring Report (WQMR) have been designed to meet the reporting requirements as outlined in the PRMP.** Per the requirements of the most recent Water Licence (S17L8-002, amended October 30, 2017), a *Baseline Water Quality Monitoring Report* will be produced at least six months prior to remediation which synthesizes the 2019 results with previous monitoring data to complete multi-year spatial and temporal trend analysis. While statistical analysis was not to be included within the 2019 data report, for the primary parameters of concern a summary level comparison of current and previous results was conducted.

The 2019 water sampling activities also met the requirements of the new *Great Bear Lake Sites – Quality Assurance and Quality Control Plan* (QA/QC Plan). The GBL Sites QA/QC is provided as an appendix to the PRMP. Following review and revision, the QA/QC Plan V2, dated April 30, 2018 (INAC-CARD 2018b), was approved by the SLWB on May 30, 2018 and outlines the sampling methodologies and testing requirements to evaluate the reliability of analytical data.

2 PREVIOUS MONITORING, OBJECTIVES AND SCOPE

2.1 PREVIOUS MONITORING AT THE GBL SITES

Water quality assessment first commenced at the GBL Sites in 1992, followed by monitoring programs on an ad-hoc basis. A full itemization of the reports which include water quality assessment and monitoring data is provided in Table 1 below. These work activities helped identify aquatic concerns at the project sites and characterize the mobility of contaminant sources.

Table 1 List of GBL Water Quality Assessment and Monitoring Reports

Year	Report Name	Author
1992	Environmental Assessment and Reclamation Options for Abandoned Mines in the Northwest Territories (Mine Sites in the Camsell River Area)	EBA Engineering Consultants Ltd.
1993	Site Characterization and Environmental Assessment of Seven Abandoned Mine Sites in the Northwest Territories, Volume 1 - Environmental Assessment Summary Report	EBA Engineering Consultants Ltd.
1993	Environmental Assessment of the Abandoned Contact Lake Mine Site. Prepared for Public Works Canada, Architecture and Engineering Services Architecture and Engineering Services Branch	EBA Engineering Consultants Ltd.
1997	1996 AES Abandoned Mine Assessments Volume II	Vista Engineering
2005	Silver Bear Mine Sites, Northwest Territories Water Quality Monitoring Program. Final Report 2002 to 2004.	INAC Water Resources Division
2005	Aquatic Pre-Remediation Studies 2004, Silver Bear Mines	Rescan Environmental Services Ltd.
2005	Enhanced Phase I Environmental Site Assessment (El Bonanza Mine).	Golder Associates Ltd.
2006	Summary Report Update: 2005 Monitoring Data for Contact Lake Mine.	INAC Water Resources Division
2006	Silver Bear Mine Sites, Northwest Territories, Hydrologic Monitoring Program	INAC Water Resources Division
2006	Silver Bear Mine Sites, Northwest Territories, Water Quality Monitoring Program	INAC Water Resources Division
2006	Phase I, II, and III Investigations of the Historic Northern Uranium Transportation Network in the Northwest Territories and Northern Alberta	SRK Consulting (Canada) Inc
2006	Contact Lake Mine Site Assessment Report on July 2006 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2007	Silver Bear Mine Sites, Northwest Territories, 2006 Hydrologic Monitoring Program	INAC Water Resources Division
2007	Silver Bear Mine Sites, Northwest Territories, 2006 Water Quality Monitoring Program	INAC Water Resources Division
2007	Contact Lake Mine Site Assessment Report on July 2006 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2007	El Bonanza Mine - Report on July 2006 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2007	Phase III Environmental Site Assessment, Sawmill Bay - SM 204, Northwest Territories, prepared by Franz Environmental Inc., 2007	FRANZ Environmental Inc. and Ecometrix Incorporated
2007	Contact Lake Mine Supplemental 2007 Site Assessment - June 2007 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2007	El Bonanza Mine Supplemental 2007 Site Assessment - June 2007 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2008	Silver Bear Mine Sites, Northwest Territories, 2007 Hydrologic Monitoring Program	INAC Water Resources Division

Year	Report Name	Author
2008	Silver Bear Mine Sites, Northwest Territories, 2007 Water Quality Monitoring Program,	INAC Water Resources Division
2008	Detailed Environmental Site Assessment, Sawmill Bay, Northwest Territories NM-180	FRANZ Environmental Inc. and EcoMetrix Incorporated
2009	Silver Bear Mine Sites, Northwest Territories, 2008 Water Quality Monitoring Program	INAC Water Resources Division
2009	Silver Bear Mine Sites, Northwest Territories, 2008 Hydrologic Monitoring Program	INAC Water Resources Division
2009	El Bonanza Mine Supplemental 2008 Site Assessment - June 2008 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2009	Contact Lake Supplemental Site Assessment - Report on June 2008 Field Activities and Follow-Up Site Assessment	SENES Consultants Ltd.
2010	Silver Bear Mine Sites, Northwest Territories, 2009 Hydrologic Monitoring Program	INAC Water Resources Division
2011	Silver Bear Mine Sites, Northwest Territories, 2009 Water Quality Monitoring Program	INAC Water Resources Division
2010	Great Bear Lake Sites 2009 Baseline Monitoring Program.	SENES Consultants Ltd.
2014	Silver Bear Mine Sites, Northwest Territories, 2013 Water Quality Monitoring Program	AANDC Water Resources Division
2016	2015 Water Quality Monitoring of Terra Mine	Arcadis Canada Inc.
2017	2016 Water Quality Monitoring Program at the Great Bear Lake Sites - Final Report	SLR Consulting (Canada) Ltd.
2018	2017 Water Quality Monitoring Report (as part of 2017 Annual Water Licence Report)	DXB Projects Inc.
2019	2018 Water Quality Monitoring Report (as part of 2018 Annual Water Licence Report)	CIRNAC with DXB Projects Inc.

The results of these assessment and monitoring campaigns informed remedial decision making, serve as a pre-remediation baseline and were also incorporated into on-going monitoring to evaluate the stability of pre-remediation site conditions and accuracy of remedial assumptions. The results of these efforts were used to formulate the PRMP, and subsequently, the sampling as conducted in 2019. As much as possible, the monitoring methodologies from these earlier programs were carried forward in 2019 to enable data comparison over the multi-year dataset.

2.2 MONITORING OBJECTIVES

Based on the predecessor documents, regulatory considerations and the pre-remediation status of the GBL sites, the following general monitoring objectives have formed the basis of the PRMP and 2019 monitoring:

- Meet the requirements of the Water Licence Surveillance Network Program (SNP) at the project sites, including compliance with the most recent Quality Assurance and Quality Control Plan (INAC-CARD 2018b);
- Respond to any anomalous data with increased sampling; and,

- Provide data which may be synthesized with previous findings to understand any trends in water quality.

It is important to note that pre-remediation monitoring is confirmatory in nature and not an attempt to generate additional assessment data for site characterization. All pre-remediation monitoring data will be incorporated with previous monitoring data and evaluated as part of the forthcoming Baseline Water Quality Monitoring Report.

2.3 SAMPLING SCOPE

In keeping with the objectives, the 2019 monitoring plan directly followed the sampling scope as identified in the PRMP (INAC-CARD 2018c). These prescribed stations are identified in Table 2 below.

As discussed in the PRMP, additional monitoring stations were to be added based on any anomalous results or indication of increasing concentrations from the previous year's monitoring. In 2019, this included sampling two previously established stations within the Camsell River at Northrim Mine (part of the Silver Bear sites). This was conducted to confirm 2018 results of copper, which were higher than documented in earlier sampling events (CIRNAC-CARD 2019). In addition, a previously sampled station on the north shore of the Contact Lake Mine Tailings Pond was sampled again in 2019. This was implemented due to ongoing access challenges at the Tailings Pond south shore SNP station (CL-3), and to determine if data would support sampling at a more accessible station (INAC-CARD 2018a, CIRNAC-CARD 2019). These stations have been incorporated within the prescribed PRMP stations in Table 2 below.

It is noted that based on the results of multi-year water sampling programs and the absence of any associated water quality concerns at El Bonanza/Bonanza Mine or Sawmill Bay, sampling at these sites is not incorporated in the PRMP.

Table 2 2019 Sampling Stations

Site	Waterbody	Station	SNP Station #	Sample Type	Depth	Location	Coordinates (Dec. Deg.)	Analysis	Rationale
Pre-Remediation Monitoring Plan (PRMP) Sampling									
TERRA	Ho Hum Tailings Containment Area (TCA)	**T-8**	**S17L8-002 (7A)**	Open Water	Surface (A) - 1 m Middle (B) - 5 m Bottom (C)-13 m	Open water west end, middle TCA	65.60387° 118.13012°	G, TM, DM, PHC, O&G	SNP requirement
	Moose Bay	**T-10**	**S17L8-002 (7B)**	Open Water	Surface	Moose Bay, halfway down airstrip, mid-bay	65.61036° 118.14873°	G, TM, DM, PHC, O&G	SNP requirement
NORTHRIM	Hermandy Lake	**NO-7**	**S17L8-002 (8C)**	Shoreline	Surface	Hermandy Lake, Southeast end	65.59757° 117.98439°	G, TM, DM, PHC	SNP requirement
	Camsell River	**NO-6**	**S17L8-002 (9D)**	Shoreline	Surface	Suspected entry point of current drainage pathway from Hermandy Lake	65.59551° 117.98116°	G, TM, DM, PHC	SNP requirement
NOREX	Camsell River	**NX-12**	**S17L8-002 (11F)**	Open Water	Surface	Camsell River, at drainage from Norex	65.59486° 117.97376°	G, TM, DM, PHC	SNP requirement
	On-Land	**NX-3**	**S17L8-002 (10E)**	On-land	Surface	Waste rock pile, west seep	65.589500° 117.968333°	G, TM, DM, PHC	SNP requirement
CONTACT LAKE MINE	Tailings Pond	**CL-3**	**S17L8-002 (12G)**	Shoreline	Surface	Tailings Pond; Outflow into stream flowing from pond	65.990883° 117.800833°	G, TM, DM, PHC, RAD	SNP requirement
	Contact Lake	**CL-26**	**S17L8-002 (13H)**	Open Water	Surface	Contact Lake; offshore at outflow of stream from tailings pond	65.98978° 117.80171°	G, TM, DM, PHC, RAD	SNP requirement

Site	Waterbody	Station	SNP Station #	Sample Type	Depth	Location	Coordinates (Dec. Deg.)	Analysis	Rationale
REFERENCE	Belachey Lake	R-2	N/A	Open Water	Surface	Belachey Lake outlet, upstream of Silver Bear Mines	65.63223° 117.91731°	G, TM	Background Conditions
	Tutcho Lake	R-3	N/A	Open Water	Surface	Tutcho Lake, elevated lake west of Terra Mine	65.59494° 118.15921°	G, TM, DM	Background Conditions
	Contact Lake (far end)	CL-8	N/A	Open Water	2 meters	Contact Lake; Background Station in far NW of Lake	66.00485° 117.89067°	G, TM	Background Conditions
QA/QC	Ho Hum TCA	Duplicate of T-8 (surface)	N/A	Open Water	1 m	Open water west end, middle TCA	65.60387° 118.13012°	G, TM, DM, PHC, O&G	QA/QC
	Contact Lake Tailings Pond	Duplicate of CL-3	N/A	Open Water	Surface	Contact Lake; offshore at outflow of stream from tailings pond	65.98978° 117.80171°	G, TM, DM, PHC, RAD	QA/QC
	N/A	SB-Field Blank	N/A	Blank	N/A	Silver Bear Mine Site	N/A	G, TM, DM, PHC, O&G	QA/QC
	N/A	CL-Field Blank	N/A	Blank	N/A	Contact Lake Mine Site	N/A	G, TM, DM, PHC, RAD	QA/QC
	N/A	Travel Blank	N/A	Blank	N/A	Travel Blank transported to sites	N/A	G, TM, DM, PHC	QA/QC
Responsive Sampling									
NORTHRIM MINE	Camsell River	NO-5	N/A	Shoreline	Surface	Camsell River, off Northrim Dock	65.59589° 117.97865°	G, TM	Responsive Sample
	Camsell River	NO-27	N/A	Open Water	Surface	Camsell River, mid river downstream of mine	65.59146° 117.99609°	G, TM	Responsive Sample
CONTACT LAKE MINE	Contact Lake Tailings Pond	CL-29	N/A	Shoreline	Surface	Contact Lake Tailings Pond, north shore	65.991383° 117.800800°	G, TM, DM, PHC, RAD	Responsive Sample

N/A = Not Applicable; G=General Chemistry; TM=Total Metals; DM=Dissolved Metals; PHC=PHC F1-F4 and BTEX; O&G=Oil and Grease; RAD=Radionuclides

3 GENERAL PROGRAM APPROACH

3.1 PROGRAM PLANNING, DATES AND ROLES

PSPC completed the program with project management assistance from DXB Projects Inc. and assistance/support from the Délı̨nę Got'ı̨nę Government (DGG) Lands Department. All activities were conducted on behalf of CIRNAC-CARD, with support and management provided by CIRNAC-CARD throughout. In addition to hiring of wildlife monitors from Délı̨nę, the program included a water sampling training program to provide two Délı̨nę community members with direct experience and training in water sampling protocols at the GBL Sites. Délı̨nę was used as a base of operations, with the sites accessed daily using float equipped fixed wing aircraft. The program commenced with preliminary training and meetings in Délı̨nę on July 29, 2019, followed by two days of field activities on July 30 and 31, 2019.

In addition to the resources of the CIRNAC-CARD Project Manager (Joel Gowman), CIRNAC-CARD Project Officer (Murray Sommers) and logistics support (Patricia Garbutt) in Yellowknife, a team of personnel mobilized to the GBL Sites daily to implement the water sampling program. The full list of personnel which participated in field activities (water quality sampling, support and ancillary tasks) is as follows:

- Rebecca Studer-Halbach (PSPC) – PSPC Project Manager
- Cassandra Kaminski (CIRNAC) – Project Assistant
- Claire Brown (DXB Projects) – Project Management Assistance
- Roddy Modeste (Délı̨nę Community Member) – Wildlife Monitor
- John Paul Yukon Jr. (Délı̨nę Community Member) – Wildlife Monitor
- Allison Tatti (Délı̨nę Community Member) – Water Sampling Trainee
- Lee Tutcho (Délı̨nę Community Member) – Water Sampling Trainee

Personnel were split into two separate water quality monitoring teams to accomplish the sampling plan. Each team was composed of one specialist, one water sampling trainee and one wildlife monitor/boat operator.

3.2 STATION ACCESS

As previously mentioned, the sites were accessed daily from Délı̨nę using float-equipped fixed wing aircraft. Within each project site, transport was conducted by foot, boat and truck (at Terra Mine only). On-site aluminum boats at Terra Mine and Contact Lake Mine were used to conduct open water sampling, while the remainder of off-shore samples were collected from the float-equipped aircraft.

3.3 FIELD DATA AND OBSERVATIONS

In addition to sample collection, *in situ* field data and observations were compiled to assist with the characterization of site conditions. These approaches met those outlined within the PRMP, in which approaches applied during earlier assessment programs and any recommendations were incorporated (SENES 2009). This included measurement of toxicity modifying factors which are required to calculate applicable guidelines (e.g., Canadian Council of Ministers of the Environment (CCME) Protection of Aquatic Life (PAL) - Freshwater Aquatic Life (FAL) guidelines). The following field measurements were collected at aquatic monitoring stations: temperature, pH, dissolved oxygen, turbidity and specific conductivity. The two water quality monitoring teams each used a YSI ProDSS Multiparameter Water Quality Meter provided with 1-10m cables for *in-situ* measurements at depth. These meters were provided serviced and calibrated by the respective rental companies. Field calibration was conducted daily for ongoing data quality.

At on-land water stations (e.g. waste rock seepage water), the shallow water depth limited the use of the large multiparameter units. Given these stations are not aquatic habitat, a smaller pen style Oakton meter was used to measure pH, conductivity and temperature.

For open water stations which required sampling at surface and depth, temperature measurements were collected at 1m intervals to approximately 10m (i.e. the limit of the apparatus). This was conducted to determine the stratification depths of the epilimnion, metalimnion or hypolimnion and for subsequent sampling in these stratifications.

Additional information recorded at each sampling station included: date/time, sample number for laboratory submission, sampling personnel, coordinates, general location description, access methodology (e.g. boat, shoreline), weather, waterbody condition (e.g. wave height estimate), potential contaminant sources (e.g. sheen, tailings), sampling methodology (syringe/pole/grab/column), water column depth, collection depth, number of sample bottles, sample parameters and any other pertinent information. This information was documented on pre-drafted field sheets to ensure consistency and provide concise instructions to trainees.

Figures documenting sample locations are provided in Appendix A. Compiled field data and observations, including GPS coordinates and *in situ* measurements are provided in Appendix C. Photographic documentation of sampling stations may be found in Appendix D.

3.4 SAMPLE COLLECTION

The methodologies listed below meet those outlined in the PRMP and were selected for consistency with earlier sampling programs, considerations of the receiving water body, access limitations, efficiency and cost.

Grab Sampling

Open water grab samples were collected by submerging bottles under the water surface. At shoreline stations, a sampling pole was used to enable collection of water samples while minimizing disruption of sediment in shallow water conditions. Similarly, when sampling shallow on-land standing water, sterile syringes were used to collect representative water samples.

Water Column Sampling

Water column sampling was performed using a vertical Van Dorn sampler with a metered line. The apparatus was rinsed in triplicate before sample collection. Sampling was conducted at prescribed depths, including surface, mid water column and near the sediment surface.

3.5 LABORATORY ANALYSIS

Analytical methods employed in the 2019 water sampling program were selected to meet the requirements as outlined in the PRMP (INAC-CARD 2018c). Analytical parameters in the PRMP were selected based on: a) regulatory requirements of the SNP program; b) historic land-use; c) terrestrial and aquatic contaminants of concern identified during site earlier aquatic monitoring; and d) recommendations within the *Proposed Long-Term, Status of Environment and Construction Monitoring Plans* (SENES 2009). To the extent possible, analytes were selected to be consistent with previous monitoring activities at the sites.

As indicated in the Water Licence (Annex A, Part A, Item 5), “All analyses shall be performed in a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA) for the specific analyses to be performed or as approved by an Analyst.”. Taiga Environmental Laboratories (Taiga) was selected based on this requirement, the availability of Yellowknife services, the promotion of Northern business opportunities, and the conditions as outlined in the GBL Sites QA/QC Plan (INAC-CARD 2018b). On July 22, 2019 the SLWB was notified of the selected laboratory, analytical methods and associated detection limits. The laboratory was required to outline their specific procedures during sample collection, such as sample preservation, headspace, filtration or refrigeration. Taiga worked with ALS Laboratories to

forward samples and subsamples as necessary to attain all required analytes and detection limits. These samples were submitted by Taiga to the ALS Environmental Yellowknife Laboratory and forwarded to their Vancouver Laboratory. It is noted that ALS Environmental was utilized during the 2017 and 2018 monitoring programs, ensuring the consistency in methodologies. Radionuclide analysis is a specialized service for which Taiga (and most other analytical laboratories), is not accredited. Consequently, samples for radionuclide analysis were forwarded by Taiga to SRC Environmental Analytical Laboratories in Saskatoon, Saskatchewan.

The laboratory parameters fall into the following categories discussed in sections below: General Chemistry, Metals, Petroleum Hydrocarbons, Radionuclides and specific SNP Parameters.

3.5.1 General Chemistry

General chemistry parameters for laboratory analysis are listed below, with any parameters with CCME-FAL guidelines underlined:

Physical Parameters	***Major Ions***	***Nutrients***
Alkalinity	Calcium	Ammonia (as N)
Conductivity	Chloride	Total Phosphorous
pH	Fluoride	Dissolved Phosphorous
Turbidity	Total Hardness	Nitrate
Total Dissolved Solids	Magnesium	Nitrite
Total Suspended Solids	Potassium	Total Organic Carbon
	Sodium	Dissolved Organic Carbon
	Sulphate	
	Sulphide	

3.5.2 Metals

As former mining properties, metals are the dominant constituent of concern (COC) at the GBL Sites. The current standard for metals analysis is inductively coupled plasma-mass spectrometry (ICP-MS), which was employed for all samples. In addition to the ICP-MS element scan, mercury analysis was conducted by Cold Vapour Atomic Absorption Spectroscopy (CVAAS) or Cold Vapour Atomic Fluorescence Spectroscopy (CVAFS). Standard ICP-MS scans for metals often include parameters that have not been assigned a relevant water quality criterion (CCME-FAL or otherwise). To address the potential that water quality criteria may be developed in the future as well as the requirements of the Water Licence SNP, the following metals were included in the suite (with those parameters possessing CCME-FAL guidelines underlined):

Aluminum	Cobalt	Silicon
Antimony	Copper	Silver
Arsenic	Iron	Strontium
Barium	Lead	Thallium
Beryllium	Lithium	Tin
Bismuth	Manganese	Titanium
Boron	Mercury	Uranium
Cadmium	Molybdenum	Vanadium
Cesium	Nickel	Zinc
Chromium	Selenium	Zirconium

While the total metal concentration measures all physical and chemical forms of the metal present in the water sample, the dissolved concentration includes only forms of the metal that are less than 0.45 µm in size. Based on this operational definition, dissolved concentrations generally exclude particle bound metals (>0.45 µm), which are more readily removed from the water column. Dissolved metal forms are also more readily available for uptake, although uptake is ultimately determined by many factors (SENES 2007). The total metal concentrations are of greater interest as CCME-FAL water quality guidelines are generally based on total concentrations; however, determining the proportions of particulate and dissolved metal phases of the total concentration may provide insight into the ultimate fate and transport of metals in the water body. Previous monitoring at the GBL Sites has included analysis of both total and dissolved metals from many stations and the relationship between the two fractions were generally observed to be similar. Those stations identified within the PRMP were sampled for dissolved metals, including SNP stations.

Avoiding sample contamination during the field filtration process has proven to be challenging during previous monitoring campaigns, thus putting some of the dissolved metal results into question (SENES 2009). Given all samples were submitted to the contract laboratory within 24 hours of collection, laboratory filtration/preservation was selected to reduce potential for sample contamination.

3.5.3 Petroleum Hydrocarbons

Site assessment work at the GBL Sites has confirmed the presence of petroleum hydrocarbon (PHC) contamination at some locations in or near receiving waters. Remedial measures will include excavation and treatment of soils with PHC concentrations above prescribed criteria. Areas with concentrations below criteria will typically be left in place and monitored to confirm that migration to receiving waters is not occurring. Monitoring has in the past been conducted in

receiving waters adjacent to locations with historic and/or residual PHC concentrations and where soil treatment areas are to be sited. An extensive number of water samples have been analyzed for PHCs and benzene, toluene, ethylbenzene and xylenes (BTEX) at the project sites, with only a small number found to be above detection limits. As outlined in the PRMP, monitoring for PHC/BTEX will continue at these locations.

Samples collected for the purpose of PHC monitoring were analyzed for F1 to F4 hydrocarbon fractions and BTEX, as well as specific parameters as outlined in the Water Licence SNP (i.e. Oil and Grease).

3.5.4 Radionuclides

In addition to uranium which was analyzed as part of the metals scan, previous monitoring activities at Contact Lake Mine and Sawmill Bay have measured radium-226 and lead-210 as surrogates for a full radionuclide scan. Although none of the receiving waters were found to have detectable concentrations of these parameters, elevated results were observed in mine drainage and groundwater monitoring wells at some locations at Contact Lake Mine. Historic uranium ore handing at Sawmill Bay has also led to monitoring of radionuclides in the aquatic environment, though no concerns were identified.

For consistency with previous monitoring, the PRMP includes the analysis of Contact Lake stations for both radium-226 and lead-210. Samples were tested using alpha spectrometry for radium-226 and gas flow proportional counting for lead-210.

3.5.5 Surveillance Network Protocol Parameters

The GBL Sites 2017 Water Licence (S17L8-002) includes an expanded SNP. In addition to the assessment of general chemistry, metals, petroleum hydrocarbons and radionuclides discussed above, the SNP requires analysis of the following parameters at discrete stations:

- Cesium, Lithium and Bismuth: In addition to the standard ICP-MS element scan;
- Oil and Grease: By Gravimetric Analysis
- Volatile Hydrocarbons: Head Space Trap Gas Chromatography/Flame Ionization Detector/Mass Spectrometry (HS GC/FID/MS)
- Extractable Hydrocarbons: Gas Chromatography/Flame Ionization Detector (GC/FID);
- Non-Aqueous Phase Liquid/Free Product: Visual Exam
- Phenols: By Colourimetry

- Biochemical Oxygen Demand (BOD): 5 day, Seeded Incubation
- Fecal Coliforms: Colilert-18
- Phenols: Colourimetric
- Polychlorinated Biphenyls (PCBs): Gas Chromatography – Election Capture Detection (GC-ECD)

It is important to note that many of these parameters were analyzed during site characterization studies and found not to be a concern at the GBL Sites. It is also noted that many of these parameters are specific to SNP stations which are not yet active (e.g. landfill monitoring, soil treatment monitoring).

3.6 QUALITY ASSURANCE AND QUALITY CONTROL

Adherence to best practices in Quality Assurance and Quality Control (QA/QC) is a crucial element of all sampling programs and provides confidence in data collection and analysis. In keeping with this consideration and as required within the Water Licence, CIRNAC has produced a site-specific *QA/QC Plan* (INAC-CARD 2018b) tailored to SNP sampling at the sites. These same approaches were applied to all 2019 water sampling activities, where applicable.

As part of this process, personnel experienced in sampling were a vital asset when implementing the sampling plan and facing unexpected field conditions. Notwithstanding the need to evaluate field conditions and apply additional QA/QC procedures accordingly, the following minimum QA/QC procedures were applied during sampling and analysis.

3.6.1 Sampling QA/QC

Field activities have the greatest potential to cause sample contamination and are a primary focus of QA procedures. The following QA approaches were applied during field sampling to reduce the risk of sample contamination and to ensure the reliability of data:

- Prior to sampling, all vehicles (e.g. boats, ATVs), work areas and equipment were inspected for potential contaminant sources, such as fuel leaks, fouled boat hulls or soiled sampling lines;
- All equipment used for the collection of field data (e.g. multi-meters) was calibrated per manufacturer specifications;
- As much as possible, single-use equipment and supplies were used to prevent cross contamination between sampling stations;

- Sampling equipment was an accepted brand, an approved design and made of non-contaminating materials;
- Where possible, sampling was conducted from the area of least impacts to greatest, thereby minimizing the potential for cross contamination;
- Any water sampling apparatus used (e.g. pole, Van Dorn) was decontaminated prior to initial use and triple rinsed prior to sampling at each station;
- Sample bottles and preservatives were single-use and provided by the contract laboratory;
- All sampling and sample bottle handling was conducted wearing single-use unpowdered nitrile gloves, replaced at each sampling station;
- Before, during and after collection, sample bottles were kept away from contaminant sources as much as possible (e.g. fuel, dust);
- Where not pre-charged with preservatives, sample bottles were triple rinsed with the sample water prior to filling;
- Rinse water was discarded away from the sampling station, without disrupting the water column or sediments;
- Where sampling by boat, collection was conducted from the front of the boat, with rinse water discarded at the back;
- All laboratory requirements for sample preservation, headspace, etc. were adhered to;
- Samples were labelled with (at minimum) the sample identifier (i.e. SNP station), date, time, project name, requested analyte, preservative and filtration;
- Samples were kept cool prior to and during transport to the laboratories;
- Every effort was made to enable sample analysis within recommended hold times (all samples provided to Taiga within 24 hours), and,
- Chain of Custody forms were completed for all samples, with one copy retained and another included in sealed sample coolers.

The 2019 sampling program also implemented “blind sampling protocols”. This involves using a systematic number for each sample submitted, with the prefix “GBL-2019-00001”, and a randomly assigned suffix (i.e. 001 through 021 for the current sampling program). However, the laboratory was not made aware of which multi-year sample station this corresponds with. For example, the sample collected at the Northrim Mine Hermandy Lake station NO-7 (SNP# S17L8-002 (8C)), was submitted to the laboratory as sample “GBL-2019-00001-005”. The Laboratory Certificates provided in Appendix E provide only the “blind number”; however, Appendix B Data Tables document both the “blind number” and corresponding “station number” with results.

Several standard QC approaches were used to confirm data precision and accuracy and to identify any potential field contamination:

- Duplicate samples were collected at a rate of 10% and submitted blind to the laboratory (i.e. the laboratory was not aware of which sample was duplicated).
- Field blanks (two full sets) were submitted to identify any potential contamination from the sampling procedures. Sampling methodology directly mirrored site samples (e.g. gloves, preservation); however, laboratory provided deionized water was used.
- Trip blanks were provided by the laboratory, transported to the field and returned unopened to identify any potential contamination from transport.

Evaluation of QC sample results is an important final step. Due to the natural heterogeneity of environmental media, duplicate samples generally will not correspond perfectly with the original sample. To validate the data, the relative percent difference (RPD) was calculated and evaluated, the results of which were presented in Section 5.0. Results of field blanks were also reviewed to ensure sample contamination was not occurring during collection, handling or transportation.

3.6.2 Laboratory QA/QC

All samples were submitted for analysis to a CALA accredited laboratory (ALS) that has an internal approved QA/QC plan. Laboratory procedures included equipment calibration, Certified Reference Materials, Laboratory Duplicates, Method Blanks and Matrix Spikes. Results of these procedures are provided in the appended Laboratory Certificates (Appendix E). The methods applied by contract laboratories may vary; however, as part of CALA accreditation, all must meet rigorous requirements in conformance to standard methods of analysis. A description of the Laboratory QA/QC results are provided in Section 5.0.

4 DATA EVALUATION METHODOLOGY

Evaluation of 2019 water sampling data was conducted using applicable Water Licence Effluent Quality Criteria, results from background/reference station sampling, federal CCME guidelines and in consideration of historic monitoring results.

4.1 WATER LICENCE EFFLUENT QUALITY CRITERIA

The renewed Water Licence (S17L8-002) includes Effluent Quality Criteria (EQC) for several stations within the associated SNP. The Mackenzie Valley Land and Water Board defines EQC as "Numerical or narrative limits on the quality or quantity of the waste deposited to the receiving environment" (MVLWB 2011).

While the Water Licence SNP includes numerous station-specific EQC, several of these stations only apply during and after site remediation (e.g. sewage, greywater, landfill, landfarm and process water effluent, as well as potable water sources). However, one station within the Ho-Hum TCA (S17L8-002(7A), corresponding with station T-8) and one downstream station within Moose Bay (S18L8-002(7B) corresponding with station T-10) were sampled in 2019. Data tables within Appendix B include the EQC at these discrete stations.

4.2 REFERENCE STATION SAMPLING

The PRMP includes previously established background or reference stations. In an effort to capture the natural influences of local mineralized zones, these stations are located upstream of historic site operations within the same watershed. Previous monitoring at these stations has confirmed the presence of naturally elevated metal concentrations in select waterbodies at the GBL Sites (SENES 2009), the results of which must be taken into consideration when evaluating results from potentially impacted stations. Due to the era of the industrial operations, baseline water quality sampling was not conducted prior to mining activities.

In addition to background stations upstream of project sites, sampling was also conducted at "reference lakes" that are further afield but still within the general project area.

Results of background and reference station sampling has been incorporated within the data tables found in Appendix B and are integral in understanding natural site conditions and anthropogenic effects at the sites. Figures provided in Appendix A display the location of these stations, with coordinates provided in Appendix C.

4.3 CCME GUIDELINES

The Northwest Territories does not at present have territorial water quality guidelines for the aquatic environment. However, at the federal level CCME have developed the Canadian Water Guidelines for the Protection of Aquatic Life (PAL), both for the freshwater and marine environments. The following excerpt from the *CCME Canadian Water Quality Guidelines for the Protection of Aquatic Life – Introduction* summarizes the intent and applicability of the guideline:

> "Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQGs-PAL) are nationally approved limits of substances and other attributes (such as pH and temperature) in the water column where no adverse toxic effects are expected to aquatic plants and animals. The guidelines are one of a set of management tools developed to ensure that societal stresses, particularly the introduction of toxic substances, do not lead to the degradation of Canadian fresh and marine waters." (CCME 1999)

CCME notes that these guidelines are generic national recommendations and meant to "protect all forms of aquatic life and all aspects of the aquatic life cycles, including the most sensitive life stage of the most sensitive species over the long term". CCME provides additional national guidelines to assist in the derivation of site-specific guidelines tailored to the species present and site conditions (CCME 1999).

While the "most sensitive species" used to develop the CCME-PAL may not be present at the GBL sites, the guidelines have been used as a primary data evaluation threshold to identify the potential for aquatic effects. Specifically, the Freshwater Aquatic Guidelines (FAL) were applied to samples from aquatic waterbodies and are provided within the data tables of Appendix B. Long-term exposure guidelines were selected as an appropriate and conservative measure.

CCME has developed guidelines for select total metal parameters, but not for dissolved metal fractions. Consequently, dissolved metal results have instead been used to understand the fractionation between total and dissolve metal phases.

As previously mentioned, CCME-FAL guidelines have been derived to ensure the protection of aquatic species. On-land stations, such as waste rock seepage and shallow standing water pools are not aquatic habitat and consequently CCME-FAL guidelines were not applied to these samples. Where the presence of aquatic life was in question, CCME-FAL guidelines were conservatively applied as a screening tool for elevated contaminant concentrations and do not indicate aquatic effects.

4.4 HISTORIC RESULTS

Full synthesis of 2019 data with historic sampling results is beyond the scope of the current data report. Instead, the synthesis will be implemented as part of a comprehensive Baseline Monitoring Report that will be prepared a minimum of six months prior to the commencement of site remediation.

While full historical data analysis was not conducted as part of the current study, elevated concentrations reported from 2019 sampling were evaluated within a historical context to confirm no new contaminants were identified at the sampling station (i.e. emerging contaminants). Where contaminants exceeded the CCME-FAL guidelines, concentrations were plotted with results of earlier sampling events to identify general trends.

5 QA/QC SAMPLE EVALUATION

In keeping with the requirements of the QA/QC Plan (INAC-CARD 2018b), duplicates, field blanks and travel blanks were collected during the 2019 monitoring program. In addition to field-based QA/QC procedures, the analytical laboratory instituted QA/QC procedures to assess and validate data. Both the field and laboratory QA/QC results are discussed below and are in keeping with the assessment methodologies presented in the site-specific QA/QC Plan (INAC-CARD 2018b).

5.1 FIELD QA/QC

5.1.1 Duplicate Evaluation

To assess the precision of sampling procedures and laboratory results, duplicate samples were collected at approximately 10% of sampling stations. During the 2019 monitoring program a total of two blind duplicate samples were collected, one at Terra Mine (T-DUP-1 corresponding to sample T-8-A from Ho Hum TCA) and one at Contact Lake Mine (CL-DUP-1 corresponding to sample CL-3 from the Contact Lake Tailings Pond). While duplicates were collected at the same location and using identical procedures, due to the natural heterogeneity of environmental media, duplicate samples generally will not correspond perfectly with the original sample. To validate the data, the relative percent difference (RPD) was calculated using the following equation:

$$RPD = \frac{|X_1 - X_2|}{X_{avg}} \times 100$$

Where X_1 and X_2 are the sample/duplicate results and X_{avg} is the mean of these values.

Evaluation of QC sample results is an important final step. As indicated in the QA/QC Plan (INAC-CARD 2018b), the RPD for duplicate samples should be less than 30% for aqueous samples; however, the RPD may only be calculated where the result is detected in both the original and the duplicate sample at a concentration five times greater than the detection limit (DL). Where one or more result is less than five times the DL, alternate criteria may be applied. If both are below, the RPD may not be calculated. The evaluation criteria are provided in Table 3 below. A passing rate of greater than or equal to 90% for all individual results would indicate an acceptable reliability in results (INAC-CARD 2018c).

Table 3 Duplicate Evaluation Criteria

Scenario	Result A	Result B	Criteria for Acceptance of Aqueous Samples
A	< RDL	< RDL	Acceptable precision
B	< RDL	Positive	Result B – (0.5x RDL) < RDL
C	Positive and ≤ 5x RDL	Positive	|Result B – Result A| < 2x RDL
D	Positive and >5x RDL	Positive and >5x RDL	RPD <30%

QA/QC sample and evaluation results are provided in Appendix B, Table B-5. A total of 189 individual results were evaluated for duplicate precision, with only five results exceeding the acceptability criteria presented in Table 3, and one equaling the acceptable level of precision. This represents a passing rate of 96.8% and demonstrates the high reliability of results, well in exceedance of the 90% threshold. A summary of these findings are as follows:

- Total Suspended Solids variability in sample T-8-A (GBL-2019-00001-001) and duplicate T-DUP-1 (GBL-2019-00001-014): Total suspended solids may vary due to field conditions and both results are well below the EQC.
- Titanium variability in sample T-8-A (GBL-2019-00001-001) and duplicate T-DUP-1 (GBL-2019-00001-014): While no guidelines/criteria exist for titanium, both results are <10x the DL and titanium is not a parameter of concern at the site. The source of this metal variability is unclear.
- Nitrate and Nitrate/Nitrate variability in sample CL-3 (GBL-2019-00001-009) and duplicate CL-DUP-1 (GBL-2019-00001-015): While 40% variability was reported, results are more than an order of magnitude below the CCME guideline and EQC.
- Dissolved phosphorous in sample CL-3 (GBL-2019-00001-009) and duplicate CL-DUP-1 (GBL-2019-00001-015): Comparison yields borderline acceptability. Both results are less than 2x the DL.
- Lead-210 in sample CL-3 (GBL-2019-00001-009) and duplicate CL-DUP-1 (GBL-2019-00001-015): Comparison yields unacceptable levels of precision; however, both results were below the Canadian Drinking Water Quality guideline value applied.

Analysis of these findings does not identify a pattern which would suggest field/laboratory contamination or analytical error.

5.1.2 Field and Travel Blank Evaluation

Tables B1-B4 provide the results of field blank analysis from the 2019 monitoring program. Two discrete field blanks were submitted, one from Silver Bear Mines (SB-FIELD BLANK) and one

from Contact Lake Mine (CL-FIELD BLANK). These samples were handled with the same procedures as site samples but were filled with laboratory provided deionized water.

A single travel blank (or trip blank) was also submitted to the laboratory. These samples were prepared by the laboratory and travelled with the field team for the duration of the field program.

Results of the travel and field blanks were assessed to identify any parameters above the DL. A total of 722 individual results were evaluated, of which only six were above detection:

- Turbidity: Field Blanks CL-Field Blank and SB-Field Blanks as well as the Travel Blank reported turbidity concentrations of 0.06-0.07 mg/L. This is marginally above the detection limit of 0.05 mg/L. Taiga was consulted and samples were reanalyzed, with the same results reported. While the exact cause has not been determined, Taiga postulates that this is due to trace iron in their deionized water.
- Ions: Several ions in both the Field and Travel Blanks initially reported concentrations above detection. Taiga was asked to conduct reanalysis, and all were found to be below detection with the exception of sulphide in CL-Field Blank. Sulphide concentrations in this sample were 0.0182 mg/L, approximately an order of magnitude greater than the detection limit (0.0018 mg/L). As this was observed in a single field blank, there is the potential for localized field level contamination; however, Taiga has also reported this issue with blanks for other recent projects.
- Radium-226: Sample CL-Field Blank and the Travel Blank both reported detectable levels of Radium 226 (0.006 and 0.007 Bq/L respectively). These concentrations are only marginally above the detection limit of 0.005 Bq/L and almost two orders of magnitude below the Canadian Drinking Water Quality Guideline (0.5 Bq/L). The presence of this parameter in the travel blank (which is not opened), suggests field level contamination is unlikely.

It is noted the pH values of 5.0-6.0 are typical for deionized water samples.

5.2 LABORATORY QA/QC

As indicated in the QA/QC Plan (INAC-CARD 2018b), samples were submitted to a laboratory accredited by the Canadian Association for Laboratory Accreditation (CALA). CALA is an internationally recognized not-for-profit accreditation body serving both public and private sector testing laboratories in Canada and abroad, providing Accreditation, Proficiency Testing and Training. Laboratory accreditation is a means of determining the technical competence of laboratories to perform specific types of testing and measurement, thereby provide formal recognition to competent laboratories. Accreditation itself is based on satisfactory participation

in the site assessment program and proficiency testing. The granting and maintenance of accreditation is made by the CALA Accreditation Council on the recommendation of the CALA Advisory Panel. CALA programs are endorsed by the Canadian Council of Ministers of the Environment.

As indicated in the Laboratory Certificates provided in Appendix E, the laboratory followed a robust QA/QC approach to verify the validity of data. This included internal duplicates, matrix spikes, laboratory control samples and certified reference materials. In keeping with QA/QC protocols, laboratories must document these findings and have met the acceptable thresholds (e.g. relative percent difference, percent recovery).

6 TERRA MINE – WATER QUALITY MONITORING

6.1 TERRA MINE – SITE SUMMARY

The Silver Bear Mines are five former mining properties located along the Camsell River, the largest of which is Terra Mine. Mineral claims in the area occupied by Terra Mine were first staked in the 1940's, though extensive exploration activities began decades later. Drilling completed in 1967 and 1968 indicated high-grade silver deposits and a decision was quickly made to put the site into production. The first large scale production began in 1969 and continued to 1985, though with several interruptions. By 1985 the Silver Bear Mines were abandoned by their developers and are now the responsibility of CIRNAC (SENES and SRK 2008).

The primary mining method used at Terra Mine was shrinkage stoping. Narrow stopes followed the mineralized veins and the stopes were typically left un-filled at the end of the process. Ore was drawn from the stopes and hauled to the surface with diesel-powered mobile equipment, using a network of inclined ramps. The original ore processing plant had a nominal capacity of 300 short tons per day. The plant employed gravity separation methods to produce a silver-bismuth concentrate and froth flotation to produce a silver-copper concentrate. The gravity concentration process did not require the use of chemicals to extract the minerals. However, the froth flotation process required the use of lime as a pH modifier, xanthates as mineral collectors, and polypropylene glycol as a frothing agent (SENES and SRK 2008).

In addition to the 460,000 t of ore produced from the Terra Mine, an additional 63,000 t of ore from Norex Mine and Smallwood Mine were processed in the mill at Terra Mine. The total tailings production from the processing of this ore was approximately 500,000 t (SENES and SRK 2008).

Currently, the site has several openings into the underground mine and a small open cut (referred to as the open pit). Surface facilities include an ore processing plant, assay lab, power/heating and compressor plants, fuel storage tanks, maintenance shops, warehouses, offices and a camp. A dock is located on the Camsell River and a 1,500 m long airstrip sits on the northern shore of Moose Bay. Tailings from ore processing have been disposed in and adjacent to Ho Hum Lake, now known as Ho Hum Tailings Containment Area (TCA). Waste rock has been placed on the shore of Ho Hum Lake TCA and levelled to create storage yards for mining equipment and supplies. Unpaved roads connect the various facilities including an 8 km haul road connecting the Terra Mine with the Northrim, Norex and Graham Vein sites to the east (SENES and SRK 2008).

6.2 TERRA MINE – WATERBODIES, CONCERNS AND MONITORING APPROACH

A large number of aquatic waterbodies lie within and surrounding Terra Mine. This includes the Camsell River, the largest of the Great Bear Lake tributaries (MacDonald *et al*. 2004), as well as numerous lakes, ponds and small streams. Some of these waterbodies have shorelines altered during operational periods (e.g. dykes, weirs, dock walls), or have been used to contain mine waste (e.g. tailings storage). However, the majority of waterbodies remain physically unaltered. Many of the waterbodies also lie downstream of previous mining/industrial activities and/or ongoing source terms such as waste rock, tailings or hydrocarbon impacted soils.

Aquatic assessment and monitoring has been conducted over many decades at Terra Mine. This has included water, sediment, benthos, fish and sediment pore water sampling. SLR provided a summary of the principal water related concerns identified at Terra Mine as follows (SLR 2017):

- The main contaminants of concern at the Terra Mine were arsenic and copper. Sampling results indicated there were elevated levels of arsenic, copper, aluminum and a small number of other metals in the inflow to Moose Bay from the Ho-Hum TCA.
- Sampling further downstream showed that metal concentrations reached background levels before the end of the airstrip, prior to entering the main flow of the Camsell River (SENES 2009). The elevated concentrations of arsenic in Ho-Hum TCA and Moose Bay were attributed primarily to tailings, and to a lesser extent to waste rock.
- Elevated metals were identified in waters from the adit and vent shaft samples with additional exceedances of cadmium, lead, silver and zinc in the Open Pit Adit, and copper and lead exceedances in the Vent Shaft (INAC–WRD 2011).
- Multi-year sampling reported little to no change in copper levels and a slight decrease in arsenic in Ho-Hum TCA.
- It was concluded that the berm and small wetland area above the outlet of Ho-Hum TCA is having a positive effect on water quality with respect to the uptake of metals. Metals concentrations return to background levels at the mid-way point of Moose Bay with generally good water quality found downstream in Camsell River (INAC-WRD 2014).
- The later desktop studies of arsenic at the Terra Mine indicate that the waste rock, exposed tailings and/or underground workings continue to be a source of arsenic loading at the site. Hemmera has suggested the submerged tailings in Ho-Hum TCA remains the major arsenic source, an order of magnitude greater than that of the waste rock or exposed tailings beaches combined (Hemmera 2015).

The 2019 sampling stations at Terra Mine are presented in Table 4 below and are in accordance with the PRMP (INAC 2018c). It is noted that reference stations R-2 and R-3 serve as applicable background stations for all Silver Bear Sites (per previous monitoring events).

Table 4 Terra Mine 2019 Sampling Stations

WATERBODY	STATION	SAMPLE TYPE	DEPTH	GENERAL LOCATION	General Chemistry	Total Metals	Dissolved Metals	PHC, BTEX	Oil & Grease	SNP Stn.	RATIONALE
Ho Hum Tailings Containment Area (TCA)	**T-8**	Open Water	Surface (A) - 1 m	Open water, west end, middle of lake	x	x	x	x	x	**Y**	Characterization of Ho Hum TCA water; SNP requirement (S17L8-002 (7A)), Duplicate collected of surface sample
			Middle (B) - 5 m		x	x	x	x	x		
			Bottom (C)-13 m		x	x	x	x	x		
Camsell River (Including Moose Bay)	**T-10**	Open Water	Surface	Moose Bay, halfway down airstrip	x	x	x	x	x	**Y**	Moose Bay downstream of Ho-Hum discharge, SNP requirement (S17L8-002 (7B))
Reference Sampling	**R-2**	Open Water	Surface	Belachey Lake	x	x					Background measurements
	R-3	Open Water	Surface	Tutcho Lake	x	x	x				Background measurements

6.3 TERRA MINE – 2019 MONITORING RESULTS

Sampling figures are provided in Appendix A, with Figure 1 documenting the location of Terra Mine within the larger GBL Sites project area, and Figures 2 and 3 the location of stations listed in Table 4. Results of sample analysis are provided in Appendix B, Tables B1-B3. Field data and observations are presented in Appendix C and site photographs in Appendix D.

6.3.1 Terra Mine – Aquatic Observations

During the 2019 field campaign, the Camsell River water level was found to be higher than documented during previous sampling campaigns (including 2017 and 2018, during which only minor water elevation was reported). However, it is important to note that 2019 sampling was implemented approximately a month earlier than preceding years.

The aquatic waterbodies within and surrounding Terra Mine were generally clear and consistent with earlier classifications of primarily oligotrophic conditions.

In keeping with previous monitoring programs, *in situ* measurements of temperature were collected to identify temperature stratifications in the water column. A YSI Instruments multi-meter probe was used at station T-8 to a depth of 10m (cable limit). Clear temperature changes were evident at depth and were used to determine sampling depths within the epilimnion, metalimnion and hypolimnion.

6.3.2 Terra Mine – General Chemistry

Both field and analytical results indicated neutral to slightly alkaline pH at the Ho Hum TCA station T-8, and at Moose Bay station T-10. This is consistent with reference stations and there is no evidence of acidic conditions at the sample sites. Water hardness ranged from soft to moderately hard. Electrical conductivity at Moose Bay station T-10 was consistent with reference stations, though higher in Ho Hum TCA (T-8). As expected, total dissolved solids were higher from all sample depths within the Ho Hum TCA (187-191 mg/L). However, total suspended solids were below detection or marginally above in all samples (<3 – 6 mg/L).

With respect to ions and nutrients, ammonia, chloride, nitrate, and nitrite were below the associated CCME-FAL guidelines or below detection limits. Fluoride concentrations exceeded the CCME-FAL guideline of 0.12 mg/L in both the Ho Hum TCA (all sample depths at station T-8), in Moose Bay (station T-10) and at reference sites (R-2 and R-3). Moose Bay fluoride concentrations at station T-10 were consistent with refence stations (~0.15 mg/L), while the Ho Hum TCA was 0.719-0.737 mg/L and consistent with 2018 monitoring results. The amount of fluoride in water is governed by climate, composition of rocks and hydrogeology. Sources of fluoride in surface water are the weathering or leaching of minerals fluorspar, fluorapalite, topaz and cryolite. Digging up of deeper aquifers during mining activities may result in higher levels of fluoride (Arcadis 2016), though the presence of tailings with high surface area may also provide opportunity for enhanced fluoride leaching. Based on elevated fluoride concentrations in reference station samples, local mineralogy may have resulted in elevated fluoride concentrations within the Ho Hum drainage pathway. However, additional contributions are possibly coming from mining activities and/or tailings deposition.

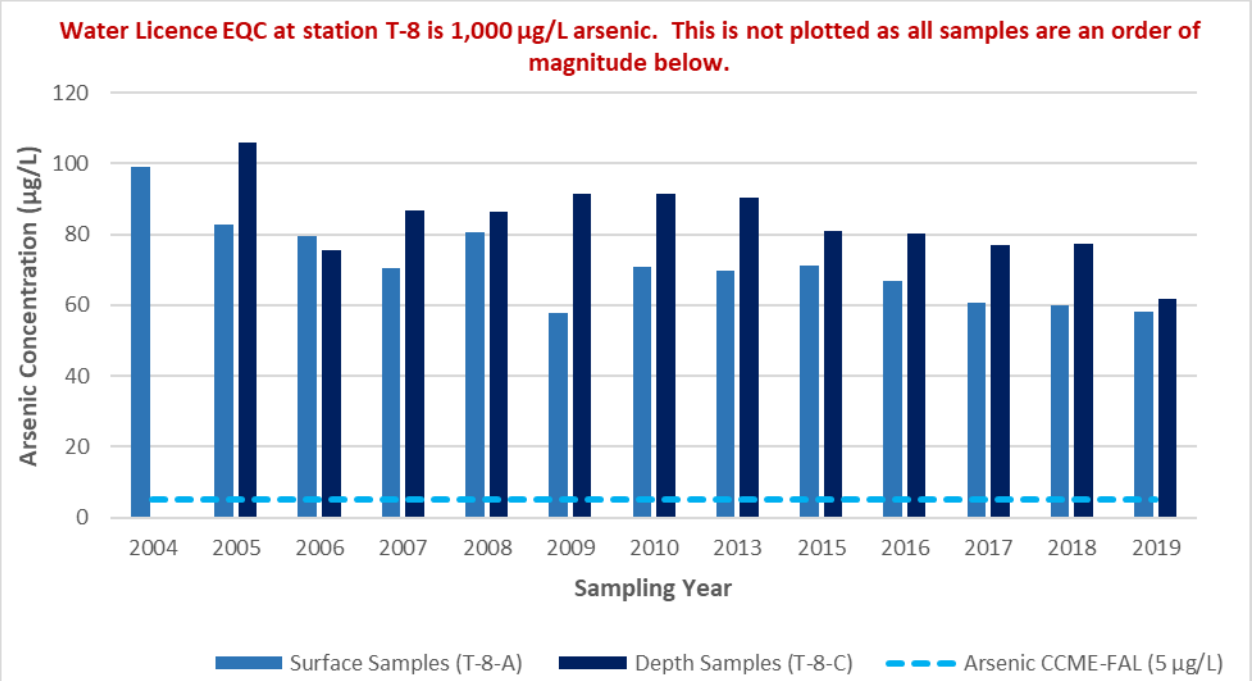
Sulphide concentrations were below detection limit for all samples. Sulphate concentrations in Ho Hum TCA at station T-8 were 18 mg/L, and 16 mg/L in Moose Bay at station T-10, approximately consistent with reference stations (3-15 mg/L). Both total and dissolved organic carbon were higher in Ho Hum TCA (T-8) with concentrations of approximately 13 mg/L, when compared with values of 5-9 mg/L in Moose Bay (T-10) and reference stations (R-2 and R-3). Results indicate carbon is found primarily in the dissolved phase.

All other general chemistry results were below applicable CCME-FAL guidelines. Results were also below the applicable SNP EQC (as provided in the updated water licence for stations T-8 and T-10).

6.3.3 Terra Mine – Total and Dissolved Metals

Total and dissolved metal samples were collected from Ho Hum TCA (station T-8 at three depths) and in Moose Bay (station T-10 at surface). Arsenic and copper have been identified in previous years as the main parameters of environmental concern in the Ho Hum drainage system. Water Licence S17L8-002 provides discrete EQC for stations T-8 and stations T-10. All metal concentrations, including arsenic and copper, were below the EQC provided for these stations.

The 2019 samples from the Ho Hum TCA station T-8 exceeded arsenic and copper CCME-FAL guidelines at all depths sampled. No other metal parameters exceeded these guideline values. Multi-year plots have been provided below for surface and depth samples at station T-8, for both arsenic (Figure 1) and for copper (Figure 2).



Where multiple samples were collected per year, samples from as near as possible to July 31 were selected for consistency with 2019 sampling events (to minimize the influence of seasonal fluctuations). Where duplicate/triplicate values were available, the maximum was selected.

Figure 1 Arsenic Concentrations in Ho Hum TCA (T-8)

Samples at station T-8 were collected at 1m, 5m and 13m depths, consistent with previous monitoring events. Arsenic concentrations were 58 µg/L, 58 µg/L and 61.9 µg/L respectively. As evidenced in Figure 1, arsenic concentrations at station T-8 were well below the Water

Licence EQC (1,000 µg/L), though above the CCME-FAL (5 µg/L). Depth samples (approximately 10-13 m below surface) are in all years higher in arsenic concentration than the corresponding surface sample. A general decrease in arsenic concentration is shown since sampling began at the station in 2004. As was documented in previous years, arsenic is found to be largely in the dissolved phase (Appendix B, Table B-2).

Copper concentrations within the Ho Hum TCA as documented in Figure 2, show little difference between surface and depth samples at Station T-8. Samples collected at 1m depth reported a copper concentration of 8.4 µg/L, 8.3 µg/L at 5m, and 8.2 µg/L at 13m. The 2019 concentrations are within the range of previous sampling events, though no trend in changing copper concentration over time is immediately apparent. All 2019 copper concentrations at Ho Hum station T-8, exceeded the CCME-FAL (2 µg/L); however, are well below the Water Licence EQC (20 µg/L). Concentrations of copper are principally in the dissolved phase (Appendix B, Table B-2).

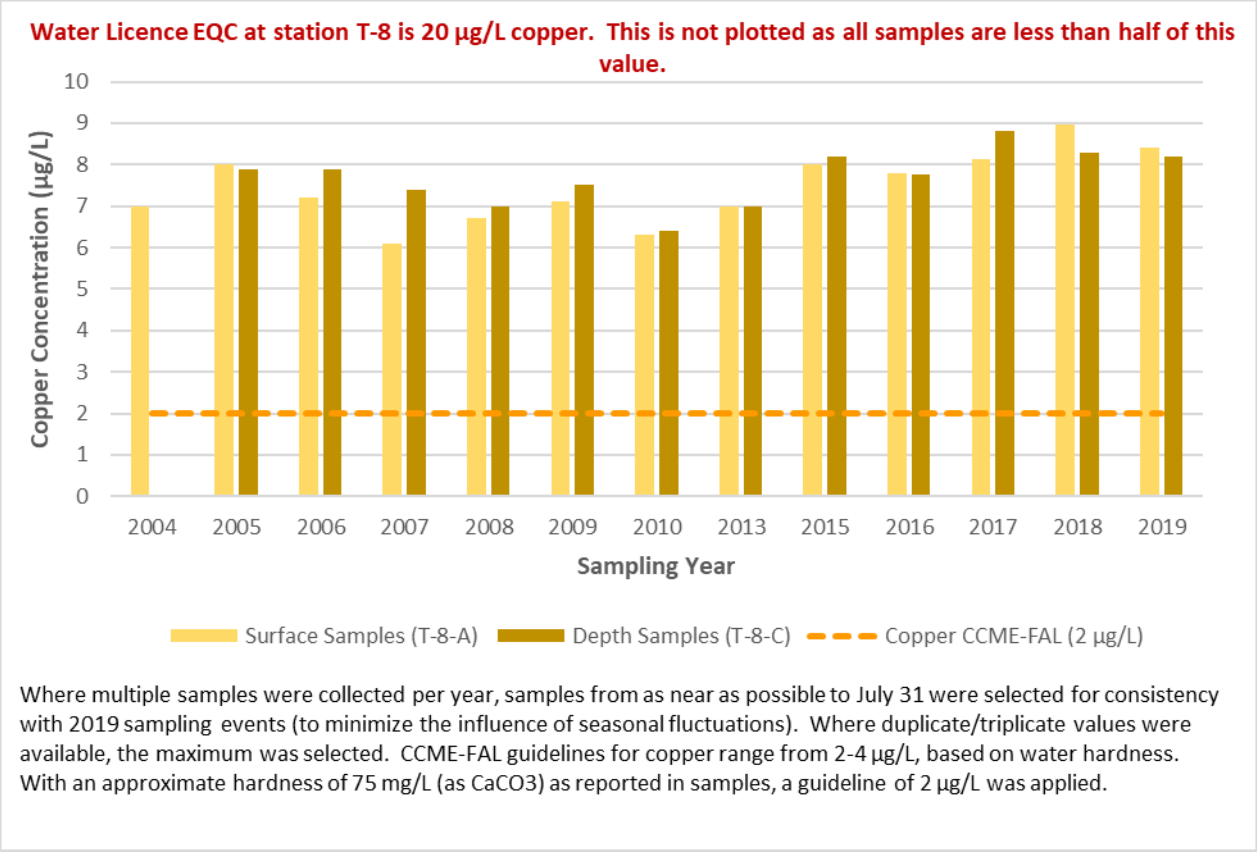


Figure 2 Copper Concentrations in Ho Hum TCA (T-8)

Sampling was also conducted downstream within Moose Bay at station T-10. Sample results were below the Water Licence EQC and CCME-FAL for all metal parameters.

6.3.4 Terra Mine – Hydrocarbons

Based on known PHC contamination of soils (e.g. from drum storage areas and fuel handing activities), reports of hydrocarbon sheens from earlier sampling campaigns, and analytical requirements of the Water Licence SNP, stations T-8 (at 3 depths) and T-10 were sampled for PHCs F1-F4, BTEX and Oil and Grease. Both stations were below detection limits (and EQC) for all parameters.

7 NORTHRIM MINE – WATER QUALITY MONITORING

7.1 NORTHRIM MINE – SITE SUMMARY

As summarized by SENES/SRK (2008), initial development and underground exploration of the Northrim Mine was completed 1933-1935, after which a new adit was driven by Silver Bear Mines Limited in 1968. Intermittent work continued until 1978 under various ownership, with underground workings reaching a depth of approximately 100 m. Milling was conducted onsite, including the use of a small portable mill beginning in 1971 and applying gravity separation methods. In 1972 a larger underground mill was constructed and used both gravity separation and froth flotation methods. Milling was conducted in 1971-1972 and again from 1976 to 1978. Historical documentation and sampling activities indicate that during initial milling activities tailings were deposited in Hermandy Lake before transitioning to the Camsell River (near the mine entrance). An estimated 10,800 t of ore was milled at Northrim Mine during the operational period, producing approximately 10,000 t of tailings (SENES/SRK 2008).

7.2 NORTHRIM MINE – WATERBODIES, CONCERNS AND MONITORING APPROACH

In addition to several dilapidated building structures, mine openings are found throughout the site and a dock is located on the Camsell River. Waste rock is found on the shore of the river and in a small pile to the southeast, above the river. As well as the deposition of tailings in Hermandy Lake and the Camsell River, the Leachate Pond immediately southeast of Hermandy Lake was used to contain smelter waste and discarded debris (e.g. crucibles on shoreline) and determined to be a potential source of metal loadings. Hermandy Lake currently discharges to the south-east, through the Leachate Pond and towards the Camsell River. However, historical documentation suggests the original drainage of Hermandy Lake may have been to the west, an alteration which would have been made during the operational period.

SLR provided a summary of Northrim Mine water quality monitoring data and trends up to 2016 (SLR 2017). From 2002 to 2004 concentrations of arsenic, copper, lead, iron and zinc regularly exceeded guidelines at Northrim Mine. From 2005 to 2007 these same exceedances were observed with the addition of aluminum and cadmium exceedances. It was determined that water with elevated concentrations of these metals was draining into the Camsell River from the mine adit and the Hermandy Lake outlet stream (INAC – WRD 2011); however, it did not appear to have a significant impact on the overall Camsell River water quality (SENES 2009).

Based on Water Resource Division (WRD) sampling and analysis, arsenic may be entering the system somewhere between Hermandy Lake and the Leachate Pond. Conversely, WRD concluded that copper concentrations were dropping between Hermandy Lake and the Leachate Pond, before increasing again between the pond and the outlet stream. Lead

concentrations were reportedly variable, fluctuating throughout the years and potential sources of zinc contamination were suggested between Hermandy Lake, the Leachate Pond and the outlet stream (INAC – WRD 2011).

Hydrocarbon contamination in the sediments in the area of the dock was also noted during earlier terrestrial and aquatic sampling events (INAC – WRD 2011).

The 2018 GBL Water Quality Monitoring Program included sampling at Northrim Mine (CIRNAC-CARD 2019). During this program, concentrations of copper in Station NO-6 (at the discharge of Hermandy Lake water to the Camsell River), was 2.69 µg/L. While only marginally above the CCME-FAL guideline of 2 µg/L, this value was higher than reported in 2017. Consequently, in 2019 two previously established "Responsive Monitoring" stations were sampled both upstream and downstream of station NO-6. Station NO-5 was sampled upstream of NO-6 and adjacent to the Northrim Dock. Station NO-27 was sampled mid-stream of the Camsell River and downstream from the site.

The 2019 sampling stations at Northrim Mine are presented in Table 5 below and are in accordance with the PRMP (INAC 2018b). It is noted that reference stations R-2 and R-3 serve as applicable background stations for all Silver Bear Sites (per previous monitoring events).

Table 5 Northrim Mine 2019 Sampling Stations

AREA	STATION	SAMPLE TYPE	DEPTH	GENERAL LOCATION	General Chemistry	Total Metals	Dissolved Metals	PHC, BTEX	SNP Station	RATIONALE
Hermandy Lake	**NO-7**	Shoreline	Surface	Hermandy Lake, Southeast end	x	x	x	x	**Y**	Current drainage pathway, near Leachate Pond, SNP requirement (S17L8-002 (8C))
Camsell River	**NO-6**	Shoreline	Surface	Suspected entry point of current drainage pathway from Hermandy Lake	x	x	x	x	**Y**	Metals and detectable hydrocarbons in drainage waters from Hermandy Lake and the Leachate Pond, SNP requirement (S17L8-002 (9D))
	NO-5	Shoreline	Surface	Camsell River, off Northrim Dock	x	x				Responsive Monitoring due to 2018 elevated copper concentration at NO-6
	NO-27	Shoreline	Surface	Camsell River, mid river downstream of mine	x	x				Responsive Monitoring due to 2018 elevated copper concentration at NO-6
Reference Sampling	**R-2**	Open Water	Surface	Belachey Lake	x	x				Background Measurements
	R-3	Open Water	Surface	Tutcho Lake	x	x	x			Background Measurements

7.3 NORTHRIM MINE – 2019 MONITORING RESULTS

Sampling figures are provided in Appendix A, with Figure 1 documenting the location of Northrim Mine within the larger GBL Sites project area, and Figure 3 the location of the individual Northrim Mine Sampling Stations. Results of sample analysis are provided in Appendix B, Tables B1-B3. Field data and observations are tabled in Appendix C and site photographs in Appendix D.

7.3.1 Northrim Mine – Aquatic Observations

During the 2019 field campaign the Camsell River water levels were significantly higher and topped the dock wall at the Northrim Mine. These water levels were higher than were observed in both 2017 (INAC-CARD 2018a) and 2018 (CIRNAC-CARD 2019).

7.3.2 Northrim Mine – General Chemistry

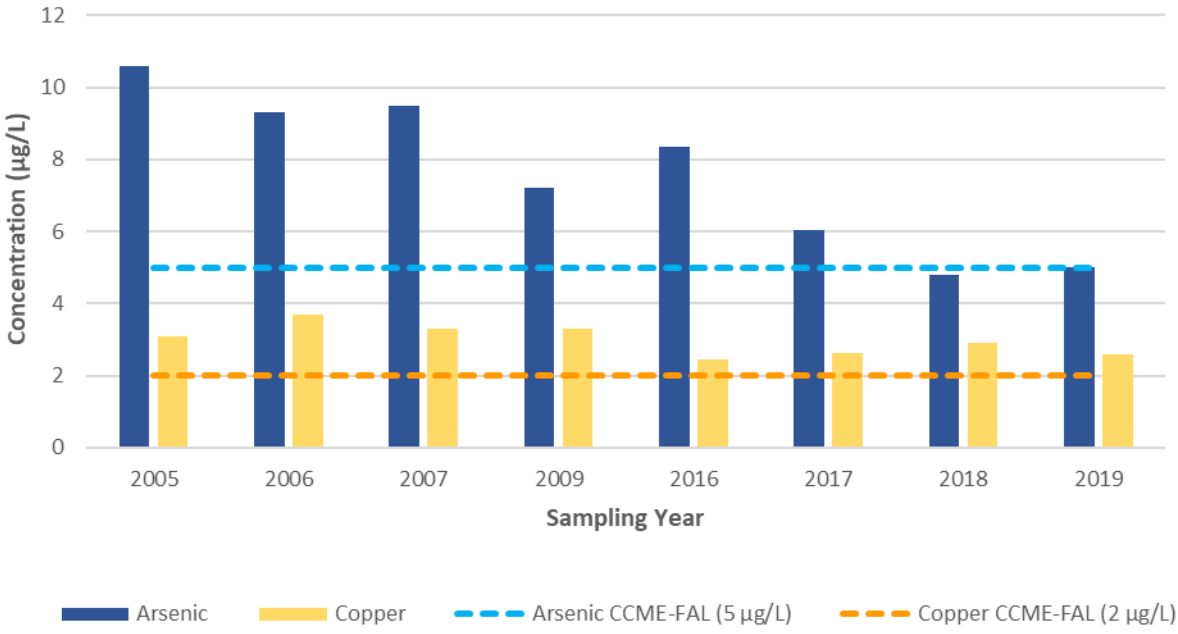
Both field and analytical results indicated neutral to slightly alkaline pH at the Hermandy Lake (NO-7) and Camsell River stations (NO-5, NO-6 and NO-27). This is consistent with reference stations (R-2 and R-3) and there is no evidence of acidic conditions at the sample sites. Water hardness was considered to be soft to moderately hard and electrical conductivity was consistent with the upstream Camsell River reference station (R-2). Total dissolved solids were 100 mg/L in Hermandy Lake (NO-7), 68 mg/L at the discharge of Hermandy Lake into the Camsell River (NO-6) and 91 mg/L at the Camsell River dock (NO-5). Both the upstream reference station (R-2) and downstream station (NO-27) reported total dissolved solids levels of 74 mg/L. Total suspended solids were below the detection limit at all stations, with the exception of 10 mg/L at the Camsell River dock (NO-5).

With respect to ions and nutrients, ammonia, chloride, nitrate, and nitrite were below the associated CCME-FAL guidelines. Fluoride concentrations exceeded the CCME guideline of 0.12 mg/L at all stations but were consistent with background (~0.15 mg/L) and anthropogenic influence is not suspected.

Total and dissolved organic carbon concentrations were low in Camsell River sampling stations NO-6, NO-5 and NO-27 (~5 mg/L), though higher in Hermandy Lake station NO-7 (~16 mg/L), with carbon primarily in the dissolved phase. Sulphide concentrations were below detection limit for all samples and sulphate concentrations were at or below concentrations reported from reference stations (~15 mg/L).

7.3.3 Northrim Mine – Total and Dissolved Metals

Copper concentrations in sample NO-7 (2.6 µg/L) from Hermandy Lake exceeded the CCME-FAL guideline for copper (2 µg/L), and arsenic concentrations (5 µg/L) equalled the CCME-FAL guideline. While the 2019 copper concentrations were similar to 2018, arsenic was slightly higher (CIRNAC-CARD 2019). To evaluate copper and arsenic trends, 2019 concentrations were plotted with the multi-year dataset (Figure 3). As demonstrated, both the 2019 arsenic and copper concentrations are within the range of normal from data collected at station NO-7.



Where multiple samples were collected per year, samples from as near as possible to July 31 were selected for consistency with 2019 sampling events (to minimize the influence of seasonal fluctuations). Where duplicate/triplicate values were available, the maximum was selected. CCME-FAL guidelines for copper range from 2-4 µg/L, based on water hardness. With an approximate hardness of 75 mg/L (as CaCO3) as reported in samples, a guideline of 2 µg/L was applied.

Figure 3 Copper and Arsenic Concentrations in Hermandy Lake (NO-7)

Three stations were assessed in the Camsell River at Northrim Mine. Station NO-6 (Hermandy Lake discharge point) as part of the routine PRMP, and responsive monitoring stations NO-5 (at the Camsell River dock) and NO-27 (mid-stream and downstream of Northrim Mine). All metal concentrations at the downstream station NO-27 were below CCME-FAL guidelines. While arsenic concentrations were equal to the CCME-FAL guideline of 5 µg/L in Hermandy Lake station NO-7, all arsenic concentrations in the Camsell River stations were below the CCME-FAL guideline. The 2018 copper concentrations at station NO-6 (2.69 µg/L) marginally

exceeded the copper guideline (2 µg/L); however, 2019 results (0.8 µg/L) were well below. In contrast, Responsive Monitoring station NO-5 was slightly elevated above the guideline (2.2 µg/L). The multi-year plot of copper concentrations at stations NO-5 and NO-6 are provided in Figure 4 below, which documents that 2019 findings are consistent with the historic dataset. As with other samples, copper was found to be primarily in the dissolved phase (Appendix B, Table B-2).

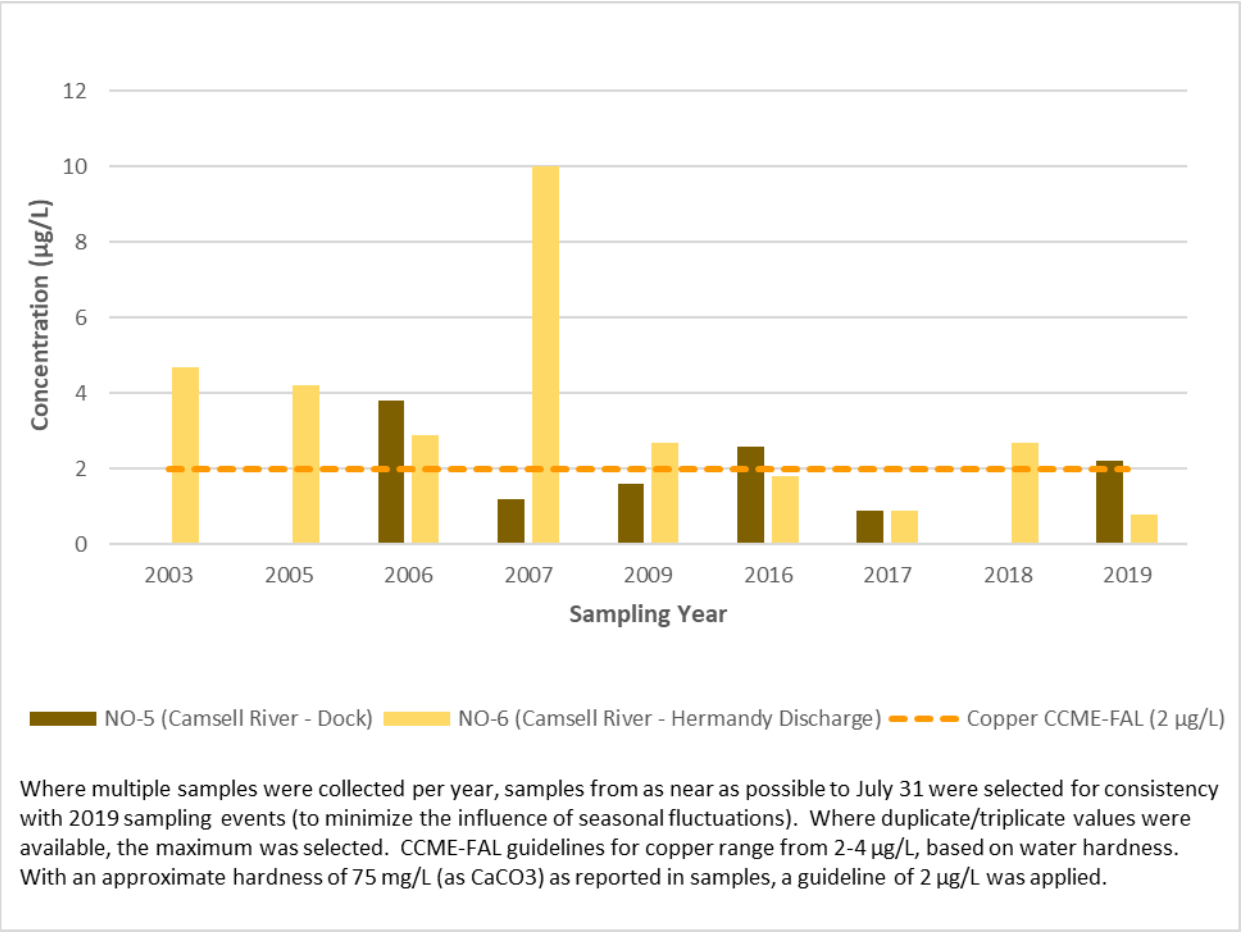


Figure 4 Copper Concentrations in the Camsell River at Northrim Mine (NO-5, NO-6)

Increasing water levels observed during 2018 and 2019 sampling events have resulted in forced collection of the shoreline samples landward and away from the active flow of the Camsell River. This may be a potential cause of the elevated copper concentrations when compared with 2017 results. The 2017 sampling activities were conducted in September, during which water levels are commonly lower.

All other total metal concentrations in 2019 Northrim Mine water samples were below the CCME-FAL guidelines.

7.3.4 Northrim Mine – Hydrocarbons

Based on findings of terrestrial PHC contamination, reports of detectable PHC concentrations during earlier water sampling campaigns, and analytical requirements of the Water Licence SNP, Hermandy Lake (station NO-7) and the Camsell River (station NO-6) were sampled for PHCs F1-F4 and BTEX. All 2019 water sample results were below detection limits for these parameters.

8 NOREX MINE – WATER QUALITY MONITORING

8.1 NOREX MINE – SITE SUMMARY

The development and operational history of the Norex Mine and associated Graham Vein Site is provided in the associated Remedial Action Plan (SENES/SRK 2008). The sites were amongst the last to be developed at the Silver Bear Mines. Ore was first mined using open pit methodology from Graham Vein in 1970-1971, during which a small test mill was used and applied gravity separation methods. It is believed these tailings were deposited in and around the adjacent Xeron Pond. During the same time period, excavation of the decline to Norex Mine was advanced. The Norex Mine and Graham Vein trench were originally mined independently and later connected when the Norex workings were used to mine the Graham Vein from below. In 1973 a small volume of ore was transported to Terra Mine for processing using a winter road, after which an all-weather road was constructed to facilitate transport. Continuous production began in 1977, during which underground workings reached a depth of 180 m. During these time periods, approximately 1,000 t of ore was milled on site and an additional 45,000 t of ore hauled to Terra Mine for processing (SENES/SRK 2008).

The current surface features at Norex include two portals, three ventilation raises, a waste rock pile of approximately 40,000 m^3 located just below the main adit entrance, a maintenance garage, a ventilation and compressor plant and fuel tanks. At Graham Vein, the features include an open mining trench, an old wooden ore bin, the remains of a crushing plant and approximately 4,000 m^3 of waste rock (SENES/SRK 2008).

8.2 NOREX MINE – WATERBODIES, CONCERNS AND MONITORING APPROACH

Seepages emerging from the Norex Mine waste rock pile have been routinely monitored since 2002. The majority of seepage occurs on the northeast side of the pile and was found to have elevated levels of arsenic, cadmium, copper, lead and zinc. The source of most of this water is drainage from the main portal, which enters the waste rock pile soon after it emerges from the mine. From June through August 2006, the volume of mine drainage was estimated to vary from 30 to 60 litres per minute, with the lower flow rate occurring later in the year. Significant geochemical changes are reported as the adit water flows through the waste rock pile. Iron, manganese and arsenic concentrations reduce, while concentrations of zinc and to a lesser extent copper, cobalt and lead, increase. The concentration of these metals was found not to have a material effect on the downstream Camsell River (SENES/SRK 2008).

Xeron pond is found down-gradient of the Graham Vein trench and workings. As previously mentioned, historical records suggest approximately 1,000 t of tailings were deposited in the

pond during early milling activities. Intermittent monitoring since 2002 indicates the tailings are having a limited impact on water quality and, with the exception of silver and one anomalous lead result, metal concentrations in water samples were either below CCME-FAL or consistent with background findings (SENES/SRK 2008).

The 2019 sampling stations at Norex Mine are presented in Table 6 below and are in accordance with the PRMP (INAC-CARD 2018c). It is noted that reference stations R-2 and R-3 serve as applicable background stations for all Silver Bear Sites (per previous monitoring events).

Table 6 Norex Mine 2019 Sampling Stations

AREA	STATION	SAMPLE TYPE	DEPTH	GENERAL LOCATION	General Chemistry	Total Metals	Dissolved Metals	PHC, BTEX	SNP Station	RATIONALE
Camsell River	**NX-12**	Open Water	Surface	NEW STATIION, Camsell River, at drainage from Norex	x	x	x	x	**Y**	Location where suspected Norex and Graham Vein drainage enters the Camsell River, SNP requirement S17L8-002 (11F))
On-land Water	**NX-3**	On-land	Surface	Waste rock pile, west seep	x	x	x	x	**Y**	Waste Rock seepage in area with hydrocarbon contamination, SNP Station (S17L8-002 (10E))
Reference Sampling	**R-2**	Open Water	Surface	Belachey Lake	x	x				Background Measurements
	R-3	Open Water	Surface	Tutcho Lake	x	x	x			Background Measurements

8.3 NOREX MINE – 2019 MONITORING RESULTS

Sampling figures are provided in Appendix A, with Figure A1 documenting the location of Norex Mine within the larger GBL Sites project area and Figure A3 the specific location of the sampling stations. Results of sample analysis are provided in Appendix B, Tables B1-B3. Field data and observations are tabled in Appendix C and site photographs in Appendix D.

8.3.1 Norex Mine – Aquatic Observations

During the 2019 field campaign the Camsell River water levels were high, though did not surpass the level of the Norex dock. At the mine area proper, water flow was observed coming from the adit and the ice plug was melted back from the portal opening. At the toe of the waste

rock slope, station NX-3 had ~10 cm of water and consequently was sampled using a syringe. This is higher than was reported in 2018 (CIRNAC-CARD 2019); however, as documented in other years, no visible flow could be discerned.

8.3.2 Norex Mine – General Chemistry

Both field and analytical results indicated neutral to slightly alkaline pH at the Camsell River station (NX-12) and within pooled standing water at the toe of the waste rock pile (NX-3). This is consistent with reference stations and despite obvious iron staining in water flowing from the adit, there is no evidence of acidic pH in the downstream seep. Electrical conductivity was elevated above reference stations in waters at the toe of the waste rock slope (549 µS/cm), though at station NX-12 was consistent with reference stations (139 µS/cm). Total dissolved solids at station NX-3 was elevated (381 mg/L), as was total suspended solids (17 mg/L) which were below detection in 2018 (CIRNAC-CARD 2019). Both total dissolved solids and total suspended solids were consistent with background at the discharge of these waters to the Camsell River (NX-12).

The fluoride concentration of Camsell River sample NX-12 (0.145mg/L) was above the CCME-FAL guideline of 0.12 mg/L; however, was approximately consistent with reference stations (~0.15 mg/L). In contrast, station NX-3 at the toe of the waste rock slope reported a fluoride concentration of 0.483 mg/L.

The sulphate concentrations in the Camsell River at station NX-12 were low and consistent with reference stations (15 mg/L), while sulphide (0.021 mg/L) was elevated above background (0.0018 mg/L) and higher than reported in 2018 (CIRNAC-CARD 2019). At the waste rock seepage station NX-3, sulphate concentrations (134 mg/L) and sulphide concentrations (1.3 mg/L) were expectedly higher.

8.3.3 Norex Mine – Total and Dissolved Metals

The 2019 samples from the Camsell River at station NX-12 (offshore of the discharge point of Norex Mine waters), were below CCME-FAL guidelines for all total metal parameters.

Consistent with earlier monitoring programs, elevated metals were identified in water discharging from the toe of the waste rock pile at station NX-3. While this shallow pooled water (~10 cm deep) is not aquatic habitat and CCME-FAL guidelines are therefore not applicable, using these guidelines as a screening tool identifies elevated concentrations of arsenic (30.9 µg/L) and iron (2,280 µg/L) in the 2019 sample. While above detection limit, copper

concentration is notably below the CCME-FAL guideline.

Minor differences were observed; however, metal trends were generally consistent with those reported in earlier monitoring programs.

8.3.4 Norex Mine – Hydrocarbons

Based on findings of terrestrial PHC contamination reported on the waste rock pile and analytical requirements of the Water Licence SNP, both the Camsell River station (NX-12) and the waste rock drainage station (NX-3) were sampled for PHC F1-F4 and BTEX.

During previous sampling events, low but detectable concentrations of F2 fraction hydrocarbons were reported at station NX-3. However, all hydrocarbon results, including F2, were below detection in 2019. This may be attributable to higher water levels (~10 cm) than were observed during previous sampling events (~5 cm) and subsequent hydrocarbon dilution; a decreasing trend in concentration; or the increased variability in results near detection limits.

9 CONTACT LAKE MINE – WATER QUALITY MONITORING

9.1 CONTACT LAKE MINE – SITE SUMMARY

The development and operational history of Contact Lake Mine is provided in the associated Remedial Action Plan (INAC-CARD and SENES 2008). The site operated intermittently from 1930 to 1980, after which the mine was finally abandoned. The property was first explored and mined for silver and a short adit developed underground. Milling activities began in 1935 and in 1938 the recovery of pitchblende, a uranium-rich mineral, became another focus of the operation. The site changed ownership multiple times, with exploration and underground development continuing intermittently. Milling of the silver and uranium ore was conducted both on site and in later years, was transported by barge and all-weather haul road to the Echo Bay Mines milling plant at Port Radium. During on-site milling activities, the tailings were contained within a pond immediately downgradient of the mine openings (i.e. the Tailings Pond), though in some areas were also left on ground surface. Waste rock was used to construct pads, roads and working areas throughout the site.

Upon abandonment, the large majority of site infrastructure remained standing though reached a dilapidated state. In 2010, the GBL Phase I Remediation Project was implemented and focussed on work activities which could be successfully completed without the use of heavy equipment. This included destruction of most buildings; burning of combustible building materials and debris; and consolidation of non-combustible materials (SENES 2011). In 2016 a drum removal program continued these efforts by removing all drums with residual product for off-site management. As with the other GBL Sites, completion of remediation will be conducted in the coming years per the approaches detailed within the Contact Lake Mine RAP (INAC-CARD and SENES 2008).

The Contact Lake Mine is distributed over three discrete areas: the Camp Area on the east shore of Contact Lake, the Mine Area on the bedrock ridge east of the lake and the Fuel Storage Area at Echo Bay (part of the East Arm of Great Bear Lake). These areas are connected by roadways which are now largely overgrown. In addition to the main adit, an open stope and raise/ventilation shaft are also observed in the Mine Area, as well as a small number of remaining buildings and debris piles. The total estimated volume of waste rock at the site is 29,000 m^3 and approximately 1,000 m^3 of gravity mill tailings are found as a thin layer (up to 20 cm) on ground surface between the mill and Tailings Pond, with additional tailings in the pond itself. At the Echo Bay East Arm Fuel Storage Area, a single above ground fuel storage tank and dock wall are the only significant items remaining.

9.2 CONTACT LAKE MINE – WATERBODIES, CONCERNS AND MONITORING APPROACH

Extensive study and monitoring of aquatic conditions have been conducted since 2002 at the Contact Lake Mine. Upper Lake is found topographically above the Contact Lake Mine and may represent aquatic conditions within the mineralized zone (due to uncertainty regarding deposition of dust from the mining operation, the site was not sampled as a reference station). The Mine Area lies on a tiered plateau, with water draining from the waste rock pile below the adit, through the tailings, and into the marsh area and Tailings Pond. The highest reported metal concentrations during assessment and monitoring at the Contact Lake Mine have been measured in this area, and from surrounding pools of standing water (SLR 2017). The principal concerns were arsenic, cadmium, copper, manganese, silver and uranium. Due to the presence of uranium rich minerals and processed tailings, assessment and monitoring has included radionuclides lead-210 and radium-226, which were similarly found to be exceeding applicable guidelines in the Tailings Pond and standing water within the main mine area (SENES 2007).

The Tailings Pond discharges to Contact Lake via a small cascading stream. Concentrations of metals and radionuclides in the stream were lower than documented in the Tailings Pond, though continued to exceed applicable guidelines for both the principal metals of concern and radionuclides. While this stream discharges into Contact Lake, no concerns were identified in shoreline or offshore samples in Contact Lake (SENES 2007).

The 2019 sampling stations at Contact Lake Mine are presented in Table 7 below and are in accordance with the PRMP (INAC 2018c). In addition, a previously sampled station on the north shore of the Contact Lake Mine Tailings Pond (CL-29) was sampled again in 2019. This was implemented due to ongoing access challenges at the Tailings Pond south shore SNP station (CL-3), and to determine if data would support sampling at a more accessible station.

Table 7 Contact Lake Mine 2019 Sampling Stations

AREA	STATION	SAMPLE TYPE	DEPTH	GENERAL LOCATION	General Chemistry	Total Metals	Dissolved Metals	PHC, BTEX	Radionuclides	SNP	RATIONALE
Contact Lake	**CL-26**	Open Water	Surface	Contact Lake; offshore at outflow of stream from tailings pond	x	x	x	x	x	**Y**	Offshore from tailings pond discharge, SNP Station (S17L8-002 (13H))
Tailings Pond	**CL-3**	Shoreline	Surface	Tailings Pond; Outflow into stream flowing from pond (south shore)	x	x	x	x	x	**Y**	Tailings pond monitoring, SNP Station (S17L8-002 (12G))
	CL-29	Shoreline	Surface	Tailings Pond; North shore	x	x	x	x	x		Responsive monitoring station for potential SNP station relocation
Reference	CL-8	Open Water	2 meters	Contact Lake; Background Station in far NW of Lake	x	x			x		Background conditions

9.3 CONTACT LAKE MINE – 2019 MONITORING RESULTS

Sampling figures are provided in Appendix A, with Figure 1 documenting the location of Contact Lake Mine within the larger GBL Sites project area, and Figure 4 the location of individual Contact Lake Mine sampling stations. Results of sample analysis are provided in Appendix B, Tables B1-B4. Field data and observations are tabled in Appendix C and site photographs in Appendix D.

9.3.1 Contact Lake Mine – Aquatic Observations

Ground conditions in 2019 were less wet than observed in 2018; however, there continued to be access challenges to station CL-3 due to saturated ground conditions.

9.3.2 Contact Lake Mine – General Chemistry

Field and analytical results indicated neutral to slightly alkaline pH at the Tailings Pond stations CL-3 and CL-29, and within Contact Lake at station CL-26, consistent with reference station CL-8. Water sampled from Contact Lake (CL-26 and CL-8) was classified as soft, in contrast to the Tailings Pond samples which were classified as moderately hard water. The same general trend is noted for electrical conductivity which is low and at reference station CL-8 and at Contact Lake station CL-26 (~45 µS/cm), and elevated in waters within the Tailings Pond (~190 µS/cm). Total dissolved solids within the Tailings Pond was elevated (~ 120 mg/L) relative to stations CL-26 and CL-8 within Contact Lake (~20 mg/L). All samples reported total suspended solids below detection.

Ammonia, chloride, nitrate, and nitrite were all below the associated CCME-FAL guidelines in the Tailings Pond (CL-3, CL-29) and in Contact Lake (CL-26 and reference station CL-8). Fluoride concentrations exceeded the CCME guideline of 0.12 mg/L in samples from the Tailings Pond (0.262 mg/L). However, at Contact Lake station CL-26, the fluoride concentration (0.111 mg/L) was consistent with background and below the CCME-FAL guideline. Sulphide concentrations were below detection limit for all samples. However, sulphate concentrations were significantly higher in the Tailings Pond samples CL-3 and CL-29 (9 mg/L), than were reported in the Contact Lake sample CL-26 and the reference station CL-8 (2 mg/L). Total and dissolved organic carbon concentrations were low at all stations in Contact Lake (~2.5 mg/L), though were ~11.5 mg/L at Tailings Pond stations CL-3 and CL-29.

9.3.3 Contact Lake Mine – Total and Dissolved Metals

As documented during earlier sampling events, select metals were found to be elevated in water samples from the Tailings Pond. Arsenic concentrations of 15.1-15.7 µg/L, copper concentrations of 16.3-17.8 µg/L and uranium concentrations of 40.4-41.8 µg/L exceeded the respective CCME-FAL guideline values of 5 µg/L, 2.6 µg/L and 15 µg/L respectively. For station CL-3 (the SNP station), these results were incorporated with multi-year results to identify any potential trends in these constituents (Figure 5).

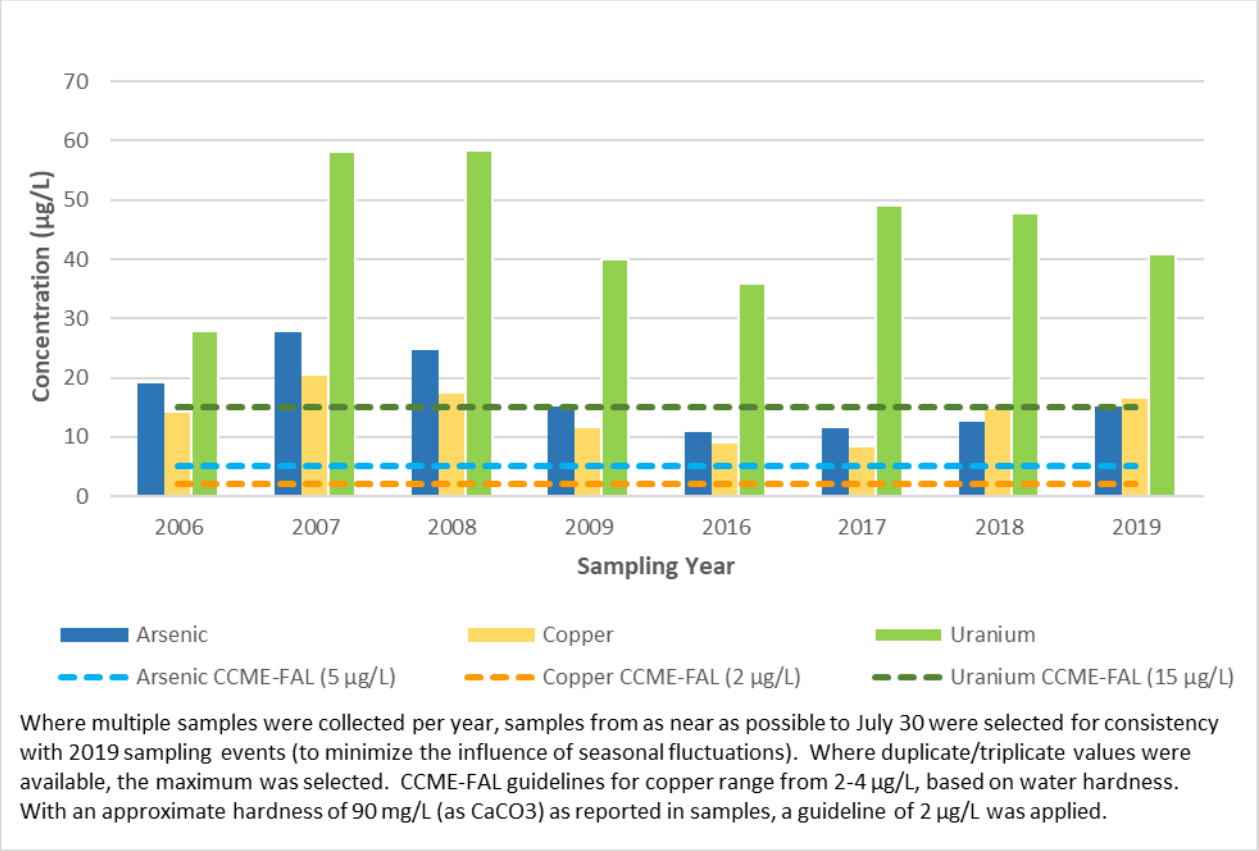


Figure 5 Arsenic, Copper and Uranium Concentrations in Tailings Pond (CL-3)

Both arsenic and copper concentrations are slightly higher than were reported in 2018, and in contrast, uranium is lower. All concentrations for arsenic, copper and uranium are within the range of normal for historical sampling data within the Tailings Pond. Results of dissolved metal analysis of sample CL-3 determined concentrations to be almost entirely in the dissolved phase for these parameters.

Sampling was also conducted at station CL-26 in Contact Lake, offshore of the discharge point of the Tailings Pond drainage pathway. All metal results were below CCME-FAL guidelines,

which is consistent with findings of previous sampling events.

9.3.4 Contact Lake Mine – Hydrocarbons

Based on findings of terrestrial PHC contamination reported at the main mine site, stations CL-3 and CL-29 at the Tailings Pond and CL-26 within Contact Lake were sampled for PHC F1-F4, and BTEX. All 2019 sample results were below detection limits for these parameters and consistent with previous sampling events.

9.3.5 Contact Lake Mine – Radionuclides

To date, environmental criteria for radionuclides in water have not been developed for protection of aquatic species. The measured concentration of radionuclides in water has instead been compared to Canadian Guidelines for Drinking Water Quality (CGDWQ) published by Health Canada on behalf of the Federal-Provincial-Territorial Committee on Drinking Water (Health Canada 2009). This approach was applied during previous assessment and monitoring, ensuring the consistency in result evaluation.

Station CL-3 and CL-29 within the Tailings Pond reported detectable concentrations of radium-226 and lead-210, though all were well below the CGDWQ. At the discharge of mine water to Contact Lake (station CL-26), both radium-226 and lead-210 concentrations were below detection limit in 2019 samples. At reference station CL-8, lead-210 and radium-226 reported concentrations of 0.05 Bq/L and 0.009 Bq/L respectively (below guidelines). It is unusual for radionuclide concentrations at station CL-26 to be lower than reference station CL-8; however, natural variability within any waterbody does occur. Radium-226 was reported in the Contact Lake Field Blank at a concentration of 0.006 Bq/L, slightly above the detection limit of 0.005 Bq/L. This may indicate a trace level of field contamination or increased error near to detection limits.

9.3.6 Contact Lake Mine – Tailings Pond Sampling Comparison (CL-3 and CL-29)

Sampling of station CL-3 on the southern margin of the Tailings Pond is heavily affected by water level. Access requires traversing shallow creeks and saturated ground, and during years of increased precipitation (as was observed in 2018), the water level within the Tailings Pond can be significantly higher and prevent access to the station. This can result in samples collected from shallow standing water at the edge of the Tailings Pond, rather than the pond

proper. While water levels were lower in 2019, station access was still challenging. It was recommended that consideration be given to requesting a change in SNP station to the northern shore of the Tailings Pond, at which steeper banks ensure the station may be reliably accessed (CIRNAC-CARD 2019).

In 2017 station CL-29 was established on the north shore of the Tailings Pond, which was sampled again in 2019 to determine if concentrations mirror those from SNP station CL-3. In total, 95 parameters were analyzed from the 2019 CL-3 and CL-29 samples (general chemistry, metals, hydrocarbons and radionuclides). The RPD was calculated between CL-3 and CL-29, of which only 16 parameters were greater than 10%. Of these, eight were higher at station CL-3, and eight higher at station CL-29. It is noted that the RPD for concentrations of arsenic, copper and uranium (the three parameters exceeding CCME-FAL), were all less than 10%. While there is natural variability between any two sampling stations (and in sample duplicates), results suggest water quality results from station CL-29 and CL-3 represent the same Contact Lake Tailings Pond water.

10 CONCLUSIONS AND RECOMMENDATIONS

10.1 CONCLUSIONS

The results of 2019 monitoring were generally consistent with findings from earlier aquatic assessment and monitoring campaigns. The principal conclusions of 2019 monitoring are summarized as follows:

- ***Terra Mine:***
  - There were no exceedances of the Water Licence EQC at the sampling stations.
  - pH measurements were neutral to slightly alkaline in the Ho Hum TCA (T-8) and Moose Bay (T-10).
  - Elevated fluoride above CCME-FAL guidelines was reported at all sampling stations (including reference stations), with the greatest concentrations in the Ho Hum TCA (station T-8). The extent to which fluoride concentrations are due to anthropogenic activity is difficult to confirm without pre-mining data.
  - The Ho Hum TCA (station T-8) demonstrated arsenic and copper concentrations in exceedance of CCME-FAL guidelines due to the presence of tailings (submerged and shoreline) and waste rock. Multi-year analysis indicates greater arsenic concentrations in the depth samples relative to surface samples at station T-8, and an overall decreasing trend in arsenic concentration since sampling began. No clear spatial or temporal trend is identified for copper concentrations at this station. Moose Bay station T-10 was below CCME-FAL guidelines for all metals and is generally consistent with reference stations (R-2 and R-3).
  - All PHC, BTEX and Oil and Grease samples from the Tailings Pond (T-8) and Moose Bay (T-10) were below detection limits.

- ***Northrim Mine:***
  - pH measurements were neutral to slightly alkaline in Hermandy Lake (NO-7) and the Camsell River (NO-6, NO-5 and NO-27).
  - Fluoride concentrations exceeded the CCME-FAL guidelines but were consistent with reference station concentrations.
  - Concentrations of copper marginally exceeded CCME-FAL guidelines in the Hermandy Lake TCA (station NO-7) and was generally consistent with earlier sampling events, while arsenic equalled the CCME-FAL guideline (which is higher than 2018 but lower than preceding years). At the discharge point of these waters into the Camsell River (station NO-6), all metals were below CCME-FAL guidelines, including arsenic and copper. Two additional Responsive Monitoring stations were added; NO-5 upstream at the Northrim dock, and NO-

27 downstream and offshore. Copper marginally exceeded the CCME-FAL guideline at station NO-5 and reported total suspended solids above detection, suggesting this may be attributable to shoreline action and particle suspension. All other metals at station NO-5 and in NO-27 were below CCME-FAL guidelines, and there does not appear to be evidence of increasing copper concentrations at Northrim Mine.

- All PHC and BTEX samples from the Hermandy Lake and Camsell River stations were below detection limits.

- ***Norex Mine:***
  - pH measurements were near neutral to slightly alkaline in the seepage from the waste rock pile (NX-3) and the Camsell River (NX-12).
  - Fluoride concentration within the Camsell River (station NX-12) was above the CCME-FAL guideline but consistent with reference stations. Alternatively, NX-3 waste rock seepage water reported fluoride concentrations approximately three times the CCME-FAL.
  - While CCME-FAL guidelines are not applicable to the shallow seepage water at the toe of the waste rock slope (NX-3), use as a screening tool identifies elevated arsenic and iron in the 2019 sample, consistent with earlier monitoring events. However, at the drainage point of Norex Mine water to the Camsell River at station NX-12, all metal results are below CCME-FAL guidelines.
  - Unlike earlier sampling events, all PHC and BTEX concentrations at station NX-3 were below detection, including F2 fraction hydrocarbons which were detected during earlier sampling events. This may be attributable to higher than normal water depths and subsequent dilution (sampling occurred one month earlier than in 2017 and 2018). All PHC and BTEX results from the Camsell River station NX-12 were also below detection.

- ***Contact Lake Mine:***
  - pH measurements were neutral to slightly alkaline in the Tailings Pond samples (CL-3 and CL-29) and offshore of the mine discharge point into Contact Lake (CL-26).
  - Fluoride concentrations exceeded the CCME-FAL guideline in the samples from the Tailings Pond, though not in the Contact Lake sample or reference sample (CL-8).
  - Concentrations of arsenic, copper and uranium in samples CL-3 and CL-29 from the Tailings Pond exceeded the CCME-FAL guidelines. Concentrations of arsenic and copper were slightly higher than reported in 2018; however, uranium was lower. All results were within the range of normal of the historical dataset. All metal results from Contact Lake (CL-26) and the reference station (CL-8)

were below CCME-FAL guidelines.

- Results of PHC and BTEX analysis were below detection limits for all parameters in both the Tailings Pond and Contact Lake samples.
- Station CL-3 and CL-29 within the Tailings Pond reported radium-226 and lead-210 concentrations above detection, but below the CGDWQ. At the discharge of mine water to Contact Lake (station CL-26), radionuclide concentrations were below detection and notably lower than the reference station CL-8.

The results of the 2019 Water Quality Monitoring Program fulfilled the requirements as outlined within the Pre-Remediation Monitoring Plan (INAC 2018c). Results were generally consistent with previous monitoring at the sites and no emergent concerns were identified.

10.2 RECOMMENDATIONS

At the Contact Lake Mine, results of 2019 sampling from Tailings Pond stations CL-3 (south shore SNP station) and CL-29 (north shore Responsive Monitoring station), suggest these two locations capture the same general findings from within the Tailings Pond. It is recommended that consideration be given to requesting a change in SNP station to the northern shore of the Tailings Pond, at which steeper banks ensure the station may be reliably accessed.

Flow conditions at the toe of the Norex Mine waste rock pile are often different during each sampling year. While in some years the flow is directed westward toward seep NX-3 (the SNP station); in other years this station is near dry and the seeps on the northern toe of the waste rock pile (NX-1 and NX-2) have significant flow. It is recommended that flexibility be incorporated in the SNP program to enable field personnel to sample/assess where flow conditions are greatest.

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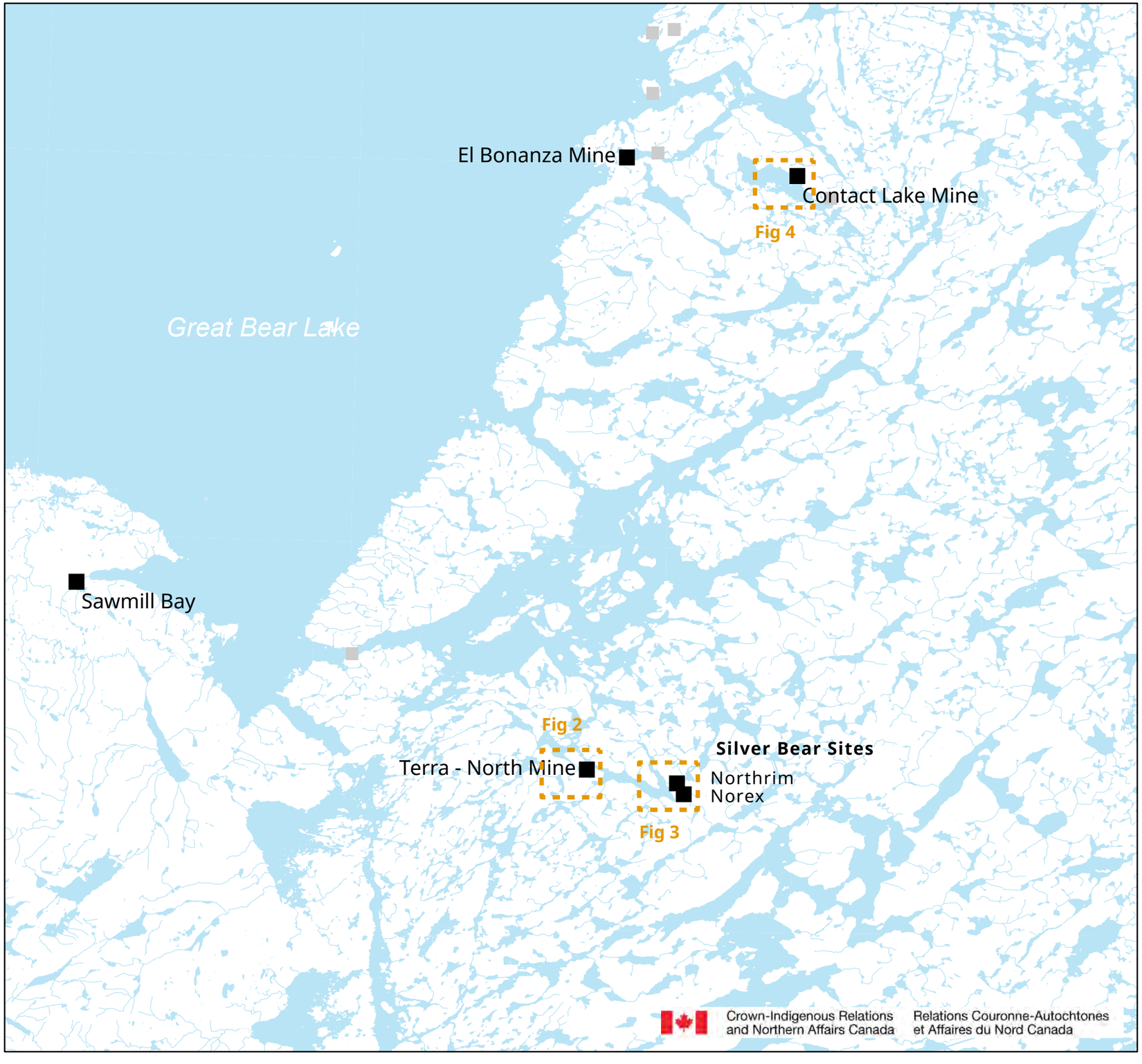
APPENDIX A – Figures

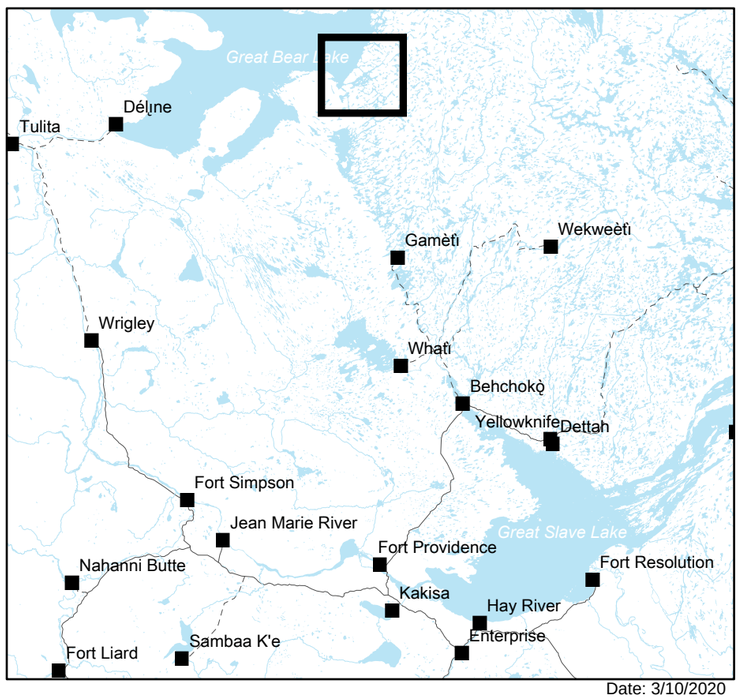
Figure 1: Great Bear Lake (GBL) Sites Location Overview

Contaminated Sites and Remediation Division

0 12.5 25
km

NAD 1983 UTM Zone 11N





Date: 3/10/2020

Figure 2: GBL Sites - Terra Mine 2019 Monitoring Stations

Contaminated Sites and Remediation Division

0 500 1,000 m

Name: NAD 1983 UTM Zone 11N

Reference Station

SNP Sample Station

Date: 3/10/2020

Figure 3: GBL Sites
Northrim, Norex and Smallwood Mines
2019 Monitoring Stations

Contaminated Sites and Remediation Division

0 500 1,000 m

Reference Station
SNP Station
Responsive Station

Date: 3/10/2020

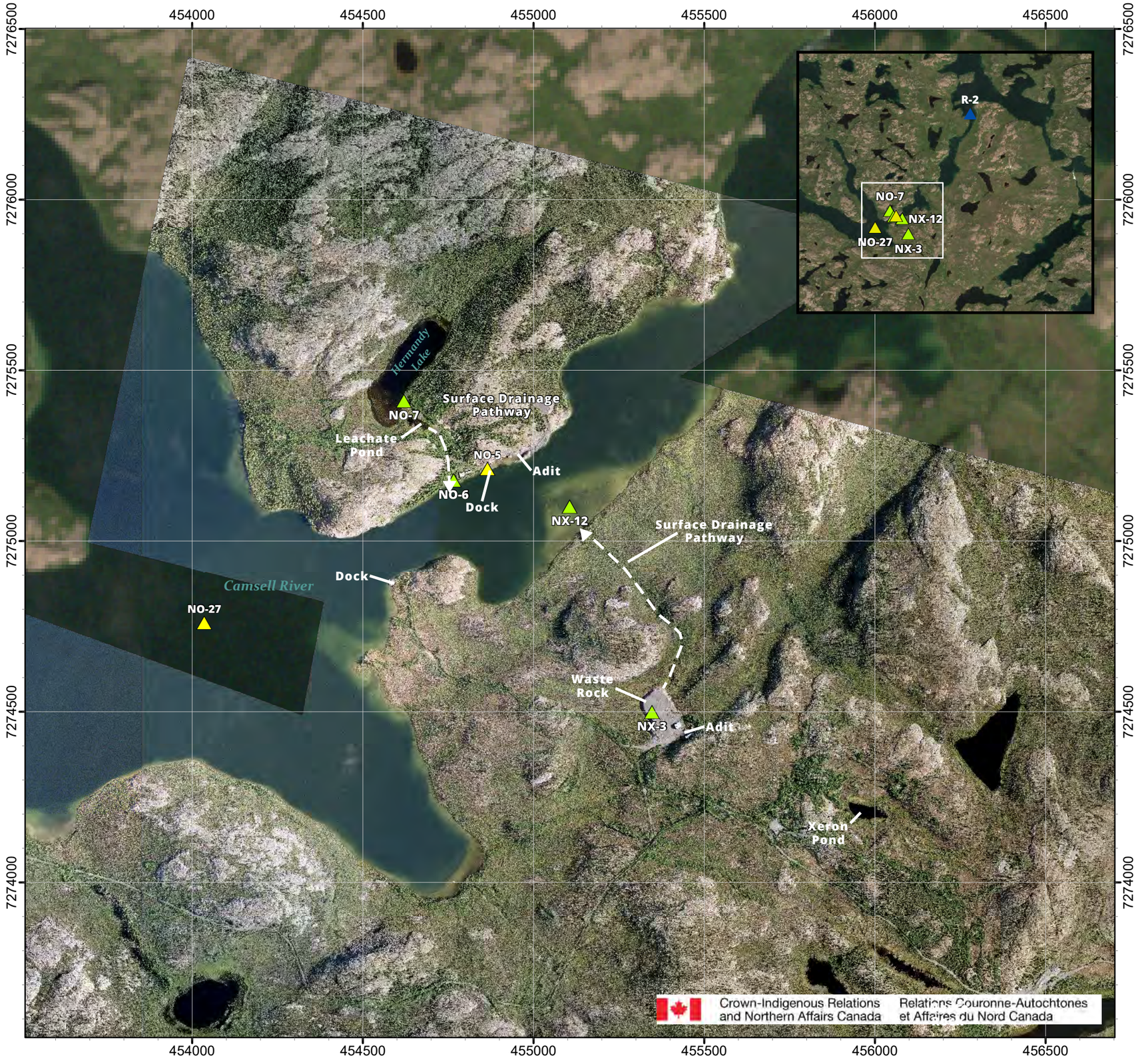


Figure 4: GBL Sites
Contact Lake Mine
2019 Monitoring Stations

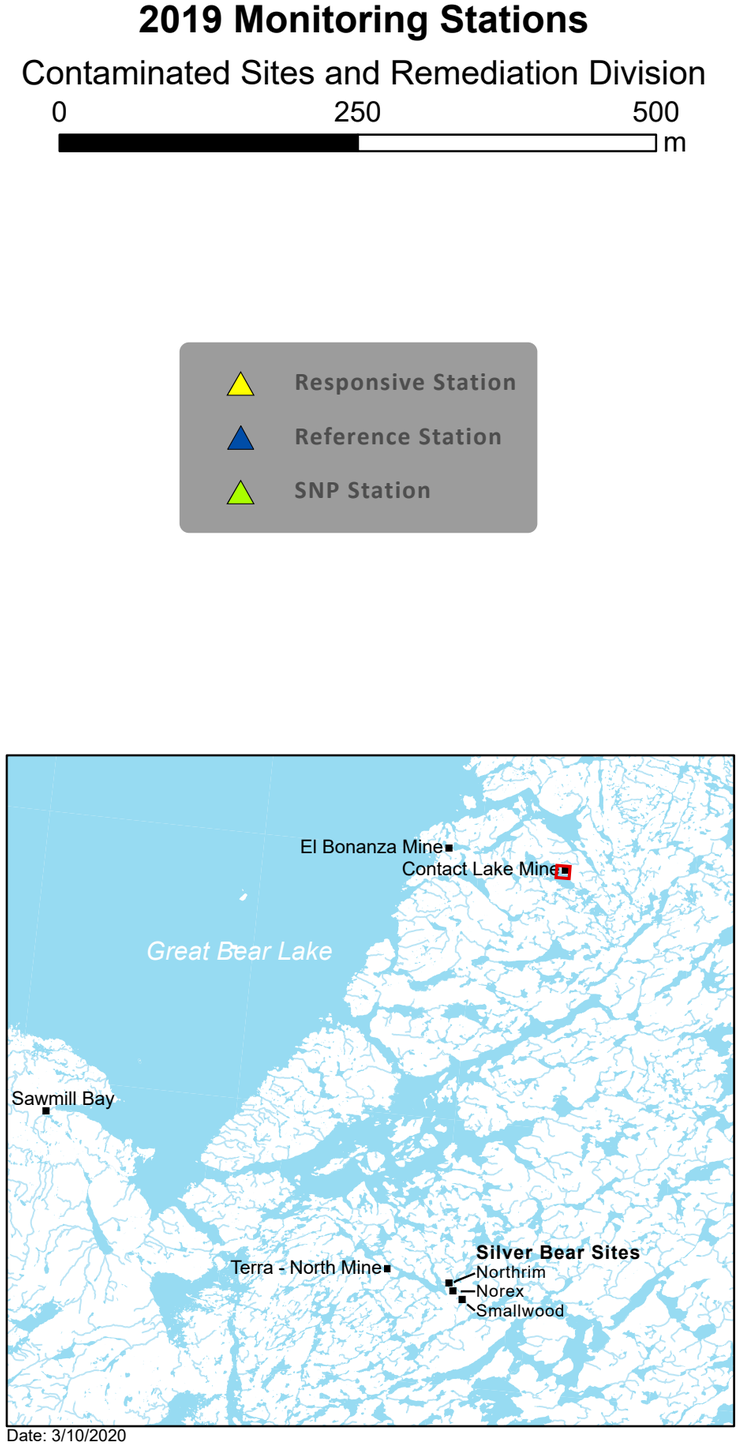
Contaminated Sites and Remediation Division

0 250 500 m

Responsive Station

Reference Station

SNP Station



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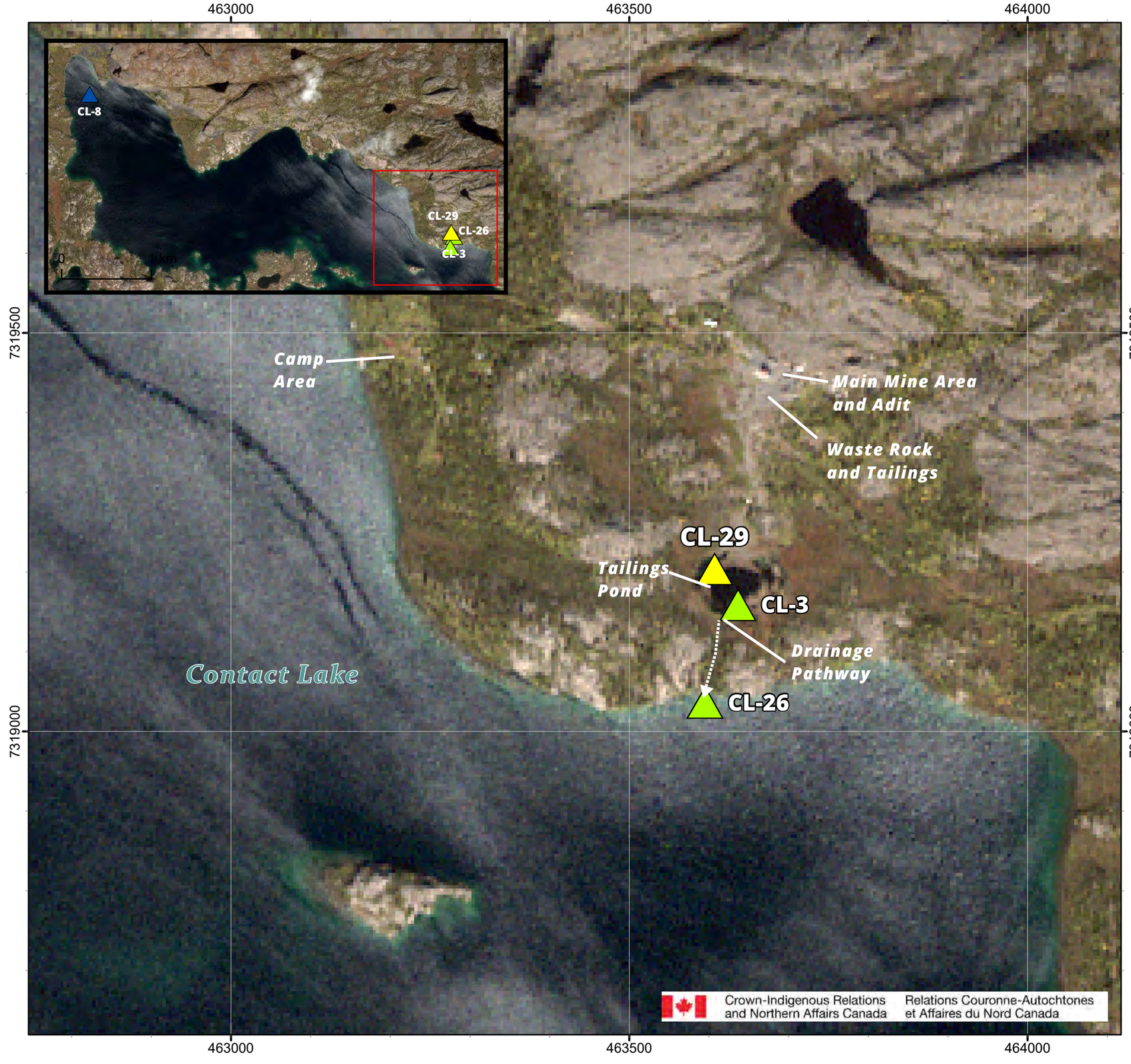

APPENDIX B – Data Tables

TABLE B-1 General Chemistry

SITE	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	TERRA MINE				
STATION/Sample #					**T-8-A**	**T-DUP-1**	**T-8-B**	**T-8-C**	**T-10**
SNP Station #					S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7B)
Blind Sample #					GBL-2019-00001-001	GBL-2019-00001-014	GBL-2019-00001-002	GBL-2019-00001-003	GBL-2019-00001-004
Waterbody					**Ho Hum TCA**	**Ho Hum TCA**	**Ho Hum TCA**	**Ho Hum TCA**	**Moose Bay**
Sample Date					2019-07-31	2019-07-31	2019-07-31	2019-07-31	2019-07-31
Depth					1m	1m	5m	13m	Surface
Type					Sample	Duplicate of T-8-A	Sample	Sample	Sample
PARAMETER									
Physical Parameters									
pH			Between 6.5 and 9.0	Between 6.0 and 9.0	7.85	7.96	7.72	7.41	7.96
Specific Conductivity	(µS/cm)	0.4			189	191	187	191	144
Total Suspended Solids (TSS)	(mg/L)	3		30	6	<3	<3	<3	<3
Total Dissolved Solids (TDS)	(mg/L)	10			127	98	123	112	70
Turbidity (NTU)	(NTU)	0.05			0.79	0.77	0.7	0.74	0.78
Major Ions									
Alkalinity (PP as CaCO3)	(mg/L)	1			61.7	62.2	60.3	62.1	56.2
Hardness, as CaCO3	(mg/L)	0.7			77	79.1	77.4	78.9	67.1
Calcium	(mg/L)	0.1			23.6	24.2	23.9	24.4	16.6
Chloride	(mg/L)	0.7	120		9.7	9.7	9.6	9.8	2.2
Fluoride	(mg/L)	0.02	0.12		0.721	0.737	0.719	0.721	0.162
Magnesium	(mg/L)	0.1			4.4	4.5	4.3	4.4	6.2
Potassium	(mg/L)	0.1			2	2	2	2	1
Sodium	(mg/L)	0.1			7.2	7.2	7.1	7.3	2.5
Sulphate	(mg/L)	1			18	18	18	18	16
Sulphide	(mg/L)	0.0018			<0.0018	<0.0018	<0.0018	<0.0018	<0.0018
Nutrients									
Ammonia as Nitrogen	(mg/L)	0.005	0.017 to 190 [D]	10	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate, as N	(mg/L)	0.01	13	10	0.14	0.13	0.13	0.16	0.09
Nitrate/Nitrite, as N	(mg/L)	0.01			0.14	0.13	0.13	0.16	0.09
Nitrite, as N	(mg/L)	0.01	0.06	0.8	<0.01	<0.01	<0.01	<0.01	<0.01
Total Phosphorus	(mg/L)	0.002			0.022	0.021	0.026	0.022	0.004
Dissolved Phosphorus	(mg/L)	0.002			0.012	0.01	0.011	0.013	<0.002
Organics									
Total Organic Carbon (TOC)	(mg/L)	0.5			13.6	13	12.7	13	5.6
Dissolved Organic Carbon (DOC)	(mg/L)	0.5			12.7	12.6	12.7	12.6	5.5

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed February 2020

B Water Licence S17L8-002 Admin Amend October 30, 2017)

D Guideline values converted from mg/L NH3 to mg/L total ammonia as N (x0.8224)

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

** pH of deionized water is 5-6

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-1 General Chemistry

SITE	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	NORTHRIM MINE				NOREX MINE	
STATION/Sample #					**NO-7**	**NO-6**	**NO-5**	**NO-27**	**NX-12**	**NX-3 ***
SNP Station #					S17L8-002 (8C)	S17L8-002 (9D)	N/A	N/A	S17L8-002 (11F)	S17L8-002 (10E)
Blind Sample #					GBL-2019-00001-005	GBL-2019-00001-006	GBL-2019-00001-019	GBL-2019-00001-020	GBL-2019-00001-007	GBL-2019-00001-008
Waterbody					**Hermandy Lake**	**Camsell River**	**Camsell River**	**Camsell River**	**Camsell River**	**Waste Rock Seep**
Sample Date					2019-07-31	2019-07-31	2019-07-31	2019-07-30	2019-07-30	2019-07-30
Depth					Surface	Surface	Surface	Surface	Surface	Surface
Type					Sample	Sample	Sample	Sample	Sample	Sample
PARAMETER										
Physical Parameters										
pH			Between 6.5 and 9.0	Between 6.0 and 9.0	7.91	7.9	7.9	7.94	8	7.12
Specific Conductivity	(µS/cm)	0.4			145	137	136	140	139	549
Total Suspended Solids (TSS)	(mg/L)	3		30	<3	<3	10	<3	<3	17
Total Dissolved Solids (TDS)	(mg/L)	10			100	68	91	88	78	381
Turbidity (NTU)	(NTU)	0.05			0.75	0.89	0.62	0.65	0.67	9.42
Major Ions										
Alkalinity (PP as CaCO3)	(mg/L)	1			64.9	52.9	53.1	54.4	53.5	155
Hardness, as CaCO3	(mg/L)	0.7			74.4	60.1	61.5	62.4	62.9	260
Calcium	(mg/L)	0.1			22	14.7	15	15.2	15.5	83.9
Chloride	(mg/L)	0.7	120		<0.7	2	1.8	1.9	1.9	<0.7
Fluoride	(mg/L)	0.02	0.12		0.146	0.156	0.152	0.154	0.145	0.483
Magnesium	(mg/L)	0.1			4.7	5.7	5.9	6	5.9	12.4
Potassium	(mg/L)	0.1			0.6	0.9	0.9	0.9	0.9	1.7
Sodium	(mg/L)	0.1			1.5	2.1	2.2	2.3	2.3	10.5
Sulphate	(mg/L)	1			9	15	15	15	15	134
Sulphide	(mg/L)	0.0018			<0.0018	<0.0018	<0.0018	<0.0018	0.021	1.3
Nutrients										
Ammonia as Nitrogen	(mg/L)	0.005	0.017 to 190 [D]	10	<0.005	<0.005	<0.005	<0.005	<0.005	0.051
Nitrate, as N	(mg/L)	0.01	13	10	0.09	0.15	0.09	0.15	0.16	0.56
Nitrate/Nitrite, as N	(mg/L)	0.01			0.09	0.15	0.09	0.15	0.16	0.56
Nitrite, as N	(mg/L)	0.01	0.06	0.8	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Total Phosphorus	(mg/L)	0.002			0.005	<0.002	<0.002	<0.002	<0.002	0.111
Dissolved Phosphorus	(mg/L)	0.002			<0.002	<0.002	<0.002	<0.002	<0.002	0.026
Organics										
Total Organic Carbon (TOC)	(mg/L)	0.5			16.4	5.5	5.4	5.3	5.5	31.4
Dissolved Organic Carbon (DOC)	(mg/L)	0.5			16	5.4	5.4	4.9	5.2	27.1

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed February 2020

B Water Licence S17L8-002 Admin Amend October 30, 2017)

D Guideline values converted from mg/L NH3 to mg/L total ammonia as N (x0.8224)

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

** pH of deionized water is 5-6

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-1 General Chemistry

SITE	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	SILVER BEAR REFERENCE		SILVER BEAR FIELD BLANK
STATION/Sample #					**R-2**	**R-3**	**SB-Field blank**
SNP Station #					N/A	N/A	N/A
Blind Sample #					GBL-2019-00001-011	GBL-2019-00001-012	GBL-2019-00001-016
Waterbody					**Belachey Lake (Ref**	**Tutcho Lake (Ref)**	**N/A**
Sample Date					2019-07-30	2019-07-30	2019-07-31
Depth					Surface	Surface	-
Type					Sample	Sample	Field Blank
PARAMETER							
Physical Parameters							
pH			Between 6.5 and 9.0	Between 6.0 and 9.0	7.97	7.84	5.78 **
Specific Conductivity	(µS/cm)	0.4			139	75.3	<0.4
Total Suspended Solids (TSS)	(mg/L)	3		30	<3	<3	<3
Total Dissolved Solids (TDS)	(mg/L)	10			74	53	<10
Turbidity (NTU)	(NTU)	0.05			0.49	0.38	0.07
Major Ions							
Alkalinity (PP as CaCO3)	(mg/L)	1			53.2	34.3	<1
Hardness, as CaCO3	(mg/L)	0.7			63.3	33.9	<0.7
Calcium	(mg/L)	0.1			15.4	9.3	<0.1
Chloride	(mg/L)	0.7	120		2	<0.7	<0.7
Fluoride	(mg/L)	0.02	0.12		0.155	0.148	<0.02
Magnesium	(mg/L)	0.1			6	2.6	<0.1
Potassium	(mg/L)	0.1			0.9	0.7	<0.1
Sodium	(mg/L)	0.1			2.3	1.6	<0.1
Sulphate	(mg/L)	1			15	3	<1
Sulphide	(mg/L)	0.0018			<0.0018	<0.0018	<0.0018
Nutrients							
Ammonia as Nitrogen	(mg/L)	0.005	0.017 to 190 [D]	10	<0.005	<0.005	<0.005
Nitrate, as N	(mg/L)	0.01	13	10	0.13	0.11	<0.01
Nitrate/Nitrite, as N	(mg/L)	0.01			0.13	0.11	<0.01
Nitrite, as N	(mg/L)	0.01	0.06	0.8	<0.01	<0.01	<0.01
Total Phosphorus	(mg/L)	0.002			<0.002	0.004	<0.002
Dissolved Phosphorus	(mg/L)	0.002			<0.002	<0.002	<0.002
Organics							
Total Organic Carbon (TOC)	(mg/L)	0.5			5.3	8.8	<0.5
Dissolved Organic Carbon (DOC)	(mg/L)	0.5			5.1	8.5	<0.5

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed February 2020

B Water Licence S17L8-002 Admin Amend October 30, 2017)

D Guideline values converted from mg/L NH3 to mg/L total ammonia as N (x0.8224)

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

** pH of deionized water is 5-6

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-1 General Chemistry

SITE	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	CONTACT LAKE MINE				CONTACT LAKE REFERENCE
STATION/Sample #					**CL-26**	**CL-3**	**CL-DUP-1**	**CL-29**	**CL-8**
SNP Station #					S17L8-002 (13H)	S17L8-002 (12G)	S17L8-002 (12G)	N/A	N/A
Blind Sample #					GBL-2019-00001-010	GBL-2019-00001-009	GBL-2019-00001-015	GBL-2019-00001-021	GBL-2019-00001-013
Waterbody					**Contact Lake**	**Tailings Pond**	**Tailings Pond**	**Tailings Pond**	**Contact Lake (Ref)**
Sample Date					2019-07-30	2019-07-30	2019-07-30	2019-07-30	2019-07-30
Depth					Surface	Surface	Surface	Surface	Surface
Type					Sample	Sample	Duplicate of CL-3	Sample	Reference Sample
PARAMETER									
Physical Parameters									
pH			Between 6.5 and 9.0	Between 6.0 and 9.0	7.61	7.79	7.82	7.93	7.62
Specific Conductivity	(µS/cm)	0.4			43.8	192	194	190	43.8
Total Suspended Solids (TSS)	(mg/L)	3		30	<3	<3	<3	<3	<3
Total Dissolved Solids (TDS)	(mg/L)	10			20	120	118	112	22
Turbidity (NTU)	(NTU)	0.05			0.18	0.51	0.45	0.55	0.19
Major Ions									
Alkalinity (PP as CaCO3)	(mg/L)	1			21.1	92.8	93.6	91.5	20.9
Hardness, as CaCO3	(mg/L)	0.7			21.7	92.4	92.1	90.7	21.2
Calcium	(mg/L)	0.1			5.4	23.9	23.6	23.2	5.3
Chloride	(mg/L)	0.7	120		<0.7	<0.7	<0.7	<0.7	<0.7
Fluoride	(mg/L)	0.02	0.12		0.111	0.262	0.262	0.262	0.111
Magnesium	(mg/L)	0.1			2	7.9	8.1	7.9	1.9
Potassium	(mg/L)	0.1			0.5	1	1	1	0.5
Sodium	(mg/L)	0.1			0.9	3.6	3.6	3.5	0.9
Sulphate	(mg/L)	1			2	9	9	9	2
Sulphide	(mg/L)	0.0018			<0.0018	<0.0018	<0.0018	<0.0018	<0.0018
Nutrients									
Ammonia as Nitrogen	(mg/L)	0.005	0.017 to 190 [D]	10	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrate, as N	(mg/L)	0.01	13	10	0.09	0.33	0.22	0.21	0.09
Nitrate/Nitrite, as N	(mg/L)	0.01			0.09	0.33	0.22	0.21	0.09
Nitrite, as N	(mg/L)	0.01	0.06	0.8	<0.01	<0.01	<0.01	<0.01	<0.01
Total Phosphorus	(mg/L)	0.002			<0.002	0.006	0.007	0.007	<0.002
Dissolved Phosphorus	(mg/L)	0.002			<0.002	0.003	<0.002	0.002	<0.002
Organics									
Total Organic Carbon (TOC)	(mg/L)	0.5			2.7	12.1	11.5	11.7	2.6
Dissolved Organic Carbon (DOC)	(mg/L)	0.5			2.4	11.6	11.3	11.5	2.4

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed February 2020

B Water Licence S17L8-002 Admin Amend October 30, 2017)

D Guideline values converted from mg/L NH3 to mg/L total ammonia as N (x0.8224)

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

** pH of deionized water is 5-6

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-1 General Chemistry

SITE	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	CONTACT LAKE FIELD BLANK	TRAVEL BLANK
STATION/Sample #					**CL-Field Blank**	**Travel Blank**
SNP Station #					N/A	N/A
Blind Sample #					GBL-2019-00001-017	GBL-2019-00001-018
Waterbody					**N/A**	**N/A**
Sample Date					2019-07-30	2019-07-31
Depth					N/A	-
Type					Field Blank	Travel Blank
PARAMETER						
Physical Parameters						
pH			Between 6.5 and 9.0	Between 6.0 and 9.0	5.8 **	5.67 **
Specific Conductivity	(µS/cm)	0.4			<0.4	<0.4
Total Suspended Solids (TSS)	(mg/L)	3		30	<3	<3
Total Dissolved Solids (TDS)	(mg/L)	10			<10	<10
Turbidity (NTU)	(NTU)	0.05			0.07	0.06
Major Ions						
Alkalinity (PP as CaCO3)	(mg/L)	1			<1	<1
Hardness, as CaCO3	(mg/L)	0.7			<0.7	<0.7
Calcium	(mg/L)	0.1			<0.1	<0.1
Chloride	(mg/L)	0.7	120		<0.7	<0.7
Fluoride	(mg/L)	0.02	0.12		<0.02	<0.02
Magnesium	(mg/L)	0.1			<0.1	<0.1
Potassium	(mg/L)	0.1			<0.1	<0.1
Sodium	(mg/L)	0.1			<0.1	<0.1
Sulphate	(mg/L)	1			<1	<1
Sulphide	(mg/L)	0.0018			0.0182	<0.0018
Nutrients						
Ammonia as Nitrogen	(mg/L)	0.005	0.017 to 190 [D]	10	<0.005	<0.005
Nitrate, as N	(mg/L)	0.01	13	10	<0.01	<0.01
Nitrate/Nitrite, as N	(mg/L)	0.01			<0.01	<0.01
Nitrite, as N	(mg/L)	0.01	0.06	0.8	<0.01	<0.01
Total Phosphorus	(mg/L)	0.002			<0.002	<0.002
Dissolved Phosphorus	(mg/L)	0.002			<0.002	<0.002
Organics						
Total Organic Carbon (TOC)	(mg/L)	0.5			<0.5	<0.5
Dissolved Organic Carbon (DOC)	(mg/L)	0.5			<0.5	<0.5

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed February 2020

B Water Licence S17L8-002 Admin Amend October 30, 2017)

D Guideline values converted from mg/L NH3 to mg/L total ammonia as N (x0.8224)

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

** pH of deionized water is 5-6

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-2 Total and Dissolved Metals

SITE	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	TERRA MINE				
STATION/Sample #					T-8-A	T-DUP-1	T-8-B	T-8-C	T-10
SNP Station #					S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7B)
Blind Sample #					GBL-2019-00001-001	GBL-2019-00001-014	GBL-2019-00001-002	GBL-2019-00001-003	GBL-2019-00001-004
Waterbody					Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Moose Bay
Sample Date					2019-07-31	2019-07-31	2019-07-31	2019-07-31	2019-07-31
Depth					1m	1m	5m	13m	Surface
Type					Sample	Duplicate of T-8-A	Sample	Sample	Sample
PARAMETER									
Total Metals									
Aluminum	(µg/L)	0.6	100 [E]	800	22.7	24.3	21.8	23.2	38.7
Antimony	(µg/L)	0.1			1.2	1.2	1.2	1.2	<0.1
Arsenic	(µg/L)	0.2	5	1000 at T-8 and 200 at T-10	58	57.9	58	61.9	1.1
Barium	(µg/L)	0.1			16.2	16.4	16	16.5	11.5
Beryllium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	(µg/L)	0.2			<0.2	<0.2	<0.2	<0.2	<0.2
Boron	(µg/L)	0.9	1,500		26.1	27	25.8	26.1	12.2
Cadmium	(µg/L)	0.04	0.04 to 0.37 [G]		<0.04	<0.04	<0.04	<0.04	<0.04
Cesium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	(µg/L)	0.1	1 [F]		<0.1	0.1	0.1	0.1	0.1
Cobalt	(µg/L)	0.1			0.2	0.2	0.2	0.2	<0.1
Copper	(µg/L)	0.2	2 to 4 [G]	20	8.4	8.4	8.3	8.2	0.9
Iron	(µg/L)	5	300		39	40	35	46	39
Lead	(µg/L)	0.1	1 to 7 [G]	20	0.1	0.1	0.1	0.1	<0.1
Lithium	(µg/L)	0.2			7	7.3	7.2	7.4	2.4
Manganese	(µg/L)	0.1			6.3	6.4	7.8	24	3
Mercury	(mg/L)	0.000005	0.000026		<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum	(µg/L)	0.1	73		2.6	2.6	2.4	2.5	0.3
Nickel	(µg/L)	0.1	25 to 150 [G]	100	3.8	3.8	3.7	3.8	0.2
Rubidium	(µg/L)	0.1							
Selenium	(µg/L)	0.3	1		<0.3	<0.3	<0.3	<0.3	<0.3
Silicon	(µg/L)	50			988	991	1020	1260	822
Silver	(µg/L)	0.1	0.25	4	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium	(µg/L)	0.1			72.2	72.7	71.4	73.5	54.4
Sulfur	(µg/L)	500			5541	5595	5375	5330	4717
Thallium	(µg/L)	0.1	0.8		<0.1	<0.1	<0.1	<0.1	<0.1
Tin	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	(µg/L)	0.1			0.7	0.4	0.4	0.5	1.8
Uranium	(µg/L)	0.1	15		2.1	2.1	2.1	2.2	0.5
Vanadium	(µg/L)	0.1			0.2	0.2	0.2	0.2	0.2
Zinc	(µg/L)	0.4	1.65 to 515 [H]	40	3.1	3	3.6	4.9	0.5
Zirconium	(µg/L)	0.1			0.2	0.2	0.2	0.2	<0.1
Dissolved Metals									
Aluminum	(µg/L)	0.6			12.3	10.8	11.2	13.4	3.6
Antimony	(µg/L)	0.1			1.2	1.2	1.2	1.2	<0.1
Arsenic	(µg/L)	0.2			55.8	56.1	51.3	59.1	1
Barium	(µg/L)	0.1			15.8	16.1	15.6	15.9	11
Beryllium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	(µg/L)	0.2			<0.2	<0.2	<0.2	<0.2	<0.2
Boron	(µg/L)	0.9			25.9	26.2	26.2	25.9	12.2
Cadmium	(µg/L)	0.04			<0.04	<0.04	<0.04	<0.04	<0.04
Cesium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Cobalt	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Copper	(µg/L)	0.2			7.8	7.8	7.7	7.8	0.8
Iron	(µg/L)	5			14	15	16	22	<5
Lead	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Lithium	(µg/L)	0.2			7.2	7.2	7.3	7.3	2.3
Manganese	(µg/L)	0.1			0.3	0.3	0.6	10.8	0.8
Mercury	(mg/L)	0.000005			<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum	(µg/L)	0.1			2.5	2.6	2.5	2.4	0.3
Nickel	(µg/L)	0.1			3.7	3.7	3.7	3.7	0.1
Selenium	(µg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3
Silicon	(µg/L)	50			951	967	1030	1250	734
Silver	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Strontium	(µg/L)	0.1			71.9	72.6	71	72.4	54.1
Sulfur	(µg/L)	500			5452	5599	5545	5206	4631
Thallium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Tin	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Thallium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Tin	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	(µg/L)	0.1			<0.1	<0.1	<0.1	0.1	<0.1
Uranium	(µg/L)	0.1			2.2	2.2	2.2	2.2	0.5
Vanadium	(µg/L)	0.1			0.2	0.2	0.1	0.2	0.1
Zinc	(µg/L)	0.4			2.2	2.2	2.9	4.3	<0.4
Zirconium	(µg/L)	0.1			0.2	0.2	0.2	0.2	<0.1

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed
B Water Licence S17L8-002 Admin Amend October 30, 2017)
E pH based guideline; all samples have pH greater than 6.5
F Hexavalent chromium guideline value applied to total chromium result as conservative measure
G Hardness based guideline; guideline value calculated from sample hardness to determine guideline
H New hardness, pH and DOC based guideline; guideline value calculated from sample parameters
^ Detection Limits raised in a small number of samples due to higher turbidity or interference
* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.
Exceedance of CCME
Exceedance of SNP EQC

TABLE B-2 Total and Dissolved Metals

SITE					NORTHRIM MINE				NOREX MINE	
STATION/Sample #	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	NO-7	NO-6	NO-5	NO-27	NX-12	NX-3 *
SNP Station #					S17L8-002 (8C)	S17L8-002 (9D)	N/A	N/A	S17L8-002 (11F)	S17L8-002 (10E)
Blind Sample #					GBL-2019-00001-005	GBL-2019-00001-006	GBL-2019-00001-019	GBL-2019-00001-020	GBL-2019-00001-007	GBL-2019-00001-008
Waterbody					Hermandy Lake	Camsell River	Camsell River	Camsell River	Camsell River	Waste Rock Seep
Sample Date					2019-07-31	2019-07-31	2019-07-31	2019-07-30	2019-07-30	2019-07-30
Depth					Surface	Surface	Surface	Surface	Surface	Surface
Type					Sample	Sample	Sample	Sample	Sample	Sample
PARAMETER										
Total Metals										
Aluminum	(µg/L)	0.6	100 [E]	800	25.7	51.5	33.9	24.7	32	22.2
Antimony	(µg/L)	0.1			0.1	<0.1	<0.1	<0.1	<0.1	0.6
Arsenic	(µg/L)	0.2	5	1000 at T-8 and 200 at T-10	5	<0.2	0.3	0.2	0.2	30.9
Barium	(µg/L)	0.1			6.1	10.4	10.3	10	10.2	35.5
Beryllium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Bismuth	(µg/L)	0.2			<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Boron	(µg/L)	0.9	1,500		6.5	10.8	9.9	10.8	10.1	67.9
Cadmium	(µg/L)	0.04	0.04 to 0.37 [G]		<0.04	<0.04	<0.04	<0.04	<0.04	0.1
Cesium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Chromium	(µg/L)	0.1	1 [F]		<0.1	0.1	0.1	<0.1	0.1	0.5
Cobalt	(µg/L)	0.1			0.1	<0.1	<0.1	<0.1	<0.1	14
Copper	(µg/L)	0.2	2 to 4 [G]	20	2.6	0.8	2.2	0.8	0.8	0.7
Iron	(µg/L)	5	300		47	61	34	28	39	2280
Lead	(µg/L)	0.1	1 to 7 [G]	20	0.3	<0.1	0.6	<0.1	<0.1	2.6
Lithium	(µg/L)	0.2			1.2	2.1	2.1	2.2	2.1	8.3
Manganese	(µg/L)	0.1			7.2	2.4	1.7	1.4	1.5	738
Mercury	(mg/L)	0.000005	0.000026		<0.000005	<0.000005	<0.000005	<0.000005	<0.000005	<0.000005
Molybdenum	(µg/L)	0.1	73		0.6	0.3	0.3	0.2	0.3	2.7
Nickel	(µg/L)	0.1	25 to 150 [G]	100	0.6	0.2	<0.1	0.2	0.2	3.6
Rubidium	(µg/L)	0.1							1.4	
Selenium	(µg/L)	0.3	1		<0.3	<0.3	<0.3	<0.3	<0.3	<0.5
Silicon	(µg/L)	50			599	847	821	769	791	5600
Silver	(µg/L)	0.1	0.25	4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Strontium	(µg/L)	0.1			26.5	49.1	50.4	49.6	49.2	199
Sulfur	(µg/L)	500			3130	4733	4420	4129	4334	53300
Thallium	(µg/L)	0.1	0.8		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Tin	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Titanium	(µg/L)	0.1			0.4	2.5	1.2	1.1	1.3	2
Uranium	(µg/L)	0.1	15		0.2	0.5	0.5	0.5	0.5	0.8
Vanadium	(µg/L)	0.1			0.3	0.2	0.1	0.1	0.1	1.2
Zinc	(µg/L)	0.4	1.65 to 515 [H]	40	1.3	1.2	1.7	<0.4	<0.4	185
Zirconium	(µg/L)	0.1			0.1	<0.1	0.9	<0.1	<0.1	0.4
Dissolved Metals										
Aluminum	(µg/L)	0.6			12.8	3.7			4.1	15.9
Antimony	(µg/L)	0.1			0.1	<0.1			<0.1	0.5
Arsenic	(µg/L)	0.2			4.9	<0.2			0.2	15.2
Barium	(µg/L)	0.1			6	10			9.8	33.6
Beryllium	(µg/L)	0.1			<0.1	<0.1			<0.1	<0.1
Bismuth	(µg/L)	0.2			<0.2	<0.2			<0.2	<0.2
Boron	(µg/L)	0.9			6.7	10.6			10.3	70.4
Cadmium	(µg/L)	0.04			<0.04	<0.04			<0.04	<0.04
Cesium	(µg/L)	0.1			<0.1	<0.1			<0.1	<0.1
Chromium	(µg/L)	0.1			<0.1	<0.1			<0.1	0.4
Cobalt	(µg/L)	0.1			<0.1	<0.1			<0.1	11.4
Copper	(µg/L)	0.2			2.5	0.7			0.7	<0.2
Iron	(µg/L)	5			23	5			<5	665
Lead	(µg/L)	0.1			<0.1	<0.1			<0.1	0.2
Lithium	(µg/L)	0.2			1.3	2.1			2.1	8.2
Manganese	(µg/L)	0.1			1	0.7			0.2	642
Mercury	(mg/L)	0.000005			<0.000005	<0.000005			<0.000005	<0.000005
Molybdenum	(µg/L)	0.1			0.6	0.3			0.2	2.5
Nickel	(µg/L)	0.1			0.6	0.1			0.2	3.3
Selenium	(µg/L)	0.3			<0.3	<0.3			<0.3	<0.3
Silicon	(µg/L)	50			580	726			719	5700
Silver	(µg/L)	0.1			<0.1	<0.1			<0.1	<0.1
Strontium	(µg/L)	0.1			26.2	48.7			48.7	198
Sulfur	(µg/L)	500			3112	4675			4128	48900
Thallium	(µg/L)	0.1			<0.1	<0.1			<0.1	<0.1
Tin	(µg/L)	0.1			<0.1	<0.1			<0.1	<0.1
Titanium	(µg/L)	0.1			<0.1	<0.1			<0.1	1.2
Uranium	(µg/L)	0.1			0.2	0.5			0.5	0.8
Vanadium	(µg/L)	0.1			0.2	<0.1			<0.1	0.6
Zinc	(µg/L)	0.4			0.9	<0.4			<0.4	17.3
Zirconium	(µg/L)	0.1			0.1	<0.1			<0.1	0.4

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed
B Water Licence S17L8-002 Admin Amend October 30, 2017)
E pH based guideline; all samples have pH greater than 6.5
F Hexavalent chromium guideline value applied to total chromium result as conservative measure
G Hardness based guideline; guideline value calculated from sample hardness to determine guideline
H New hardness, pH and DOC based guideline; guideline value calculated from sample parameters
^ Detection Limits raised in a small number of samples due to higher turbidity or interference
* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.
Exceedance of CCME
Exceedance of SNP EQC

TABLE B-2 Total and Dissolved Metals

SITE					SILVER BEAR REFERENCE		SILVER BEAR FIELD BLANK
STATION/Sample #					R-2	R-3	SB-Field blank
SNP Station #					N/A	N/A	N/A
Blind Sample #	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	GBL-2019-00001-011	GBL-2019-00001-012	GBL-2019-00001-016
Waterbody					Belachey Lake (Ref)	Tutcho Lake (Ref)	N/A
Sample Date					2019-07-30	2019-07-30	2019-07-31
Depth					Surface	Surface	-
Type					Sample	Sample	Field Blank
PARAMETER							
Total Metals							
Aluminum	(µg/L)	0.6	100 [E]	800	20.2	10.4	<0.6
Antimony	(µg/L)	0.1			<0.1	<0.1	<0.1
Arsenic	(µg/L)	0.2	5	1000 at T-8 and 200 at T-10	0.2	0.7	<0.2
Barium	(µg/L)	0.1			9.8	4.9	<0.1
Beryllium	(µg/L)	0.1			<0.1	<0.1	<0.1
Bismuth	(µg/L)	0.2			<0.2	<0.2	<0.2
Boron	(µg/L)	0.9	1,500		10.4	11.2	<0.9
Cadmium	(µg/L)	0.04	0.04 to 0.37 [G]		<0.04	<0.04	<0.04
Cesium	(µg/L)	0.1			<0.1	<0.1	<0.1
Chromium	(µg/L)	0.1	1 [F]		<0.1	<0.1	<0.1
Cobalt	(µg/L)	0.1			<0.1	<0.1	<0.1
Copper	(µg/L)	0.2	2 to 4 [G]	20	0.8	1.2	<0.2
Iron	(µg/L)	5	300		21	19	<5
Lead	(µg/L)	0.1	1 to 7 [G]	20	<0.1	<0.1	<0.1
Lithium	(µg/L)	0.2			2.1	1.1	<0.2
Manganese	(µg/L)	0.1			1.1	1.1	<0.1
Mercury	(mg/L)	0.000005	0.000026		<0.000005	<0.000005	<0.000005
Molybdenum	(µg/L)	0.1	73		0.2	0.2	<0.1
Nickel	(µg/L)	0.1	25 to 150 [G]	100	0.2	0.1	<0.1
Rubidium	(µg/L)	0.1					
Selenium	(µg/L)	0.3	1		<0.3	<0.3	<0.3
Silicon	(µg/L)	50			766	1020	<50
Silver	(µg/L)	0.1	0.25	4	<0.1	<0.1	<0.1
Strontium	(µg/L)	0.1			48.9	21.1	<0.1
Sulfur	(µg/L)	500			3968	518	<500
Thallium	(µg/L)	0.1	0.8		<0.1	<0.1	<0.1
Tin	(µg/L)	0.1			<0.1	<0.1	<0.1
Titanium	(µg/L)	0.1			1.2	0.2	<0.1
Uranium	(µg/L)	0.1	15		0.5	0.2	<0.1
Vanadium	(µg/L)	0.1			0.2	0.2	<0.1
Zinc	(µg/L)	0.4	1.65 to 515 [H]	40	<0.4	<0.4	<0.4
Zirconium	(µg/L)	0.1			0.2	<0.1	<0.1
Dissolved Metals							
Aluminum	(µg/L)	0.6				6.9	<0.6
Antimony	(µg/L)	0.1				<0.1	<0.1
Arsenic	(µg/L)	0.2				0.7	<0.2
Barium	(µg/L)	0.1				4.9	<0.1
Beryllium	(µg/L)	0.1				<0.1	<0.1
Bismuth	(µg/L)	0.2				<0.2	<0.2
Boron	(µg/L)	0.9				10.7	<0.9
Cadmium	(µg/L)	0.04				<0.04	<0.04
Cesium	(µg/L)	0.1				<0.1	<0.1
Chromium	(µg/L)	0.1				<0.1	<0.1
Cobalt	(µg/L)	0.1				<0.1	<0.1
Copper	(µg/L)	0.2				1.1	<0.2
Iron	(µg/L)	5				11	<5
Lead	(µg/L)	0.1				<0.1	<0.1
Lithium	(µg/L)	0.2				1.1	<0.2
Manganese	(µg/L)	0.1				0.1	<0.1
Mercury	(mg/L)	0.000005				<0.000005	<0.000005
Molybdenum	(µg/L)	0.1				0.3	<0.1
Nickel	(µg/L)	0.1				0.1	<0.1
Selenium	(µg/L)	0.3				<0.3	<0.3
Silicon	(µg/L)	50				1010	<50
Silver	(µg/L)	0.1				<0.1	<0.1
Strontium	(µg/L)	0.1				21.1	<0.1
Sulfur	(µg/L)	500				512	<500
Thallium	(µg/L)	0.1				<0.1	<0.1
Tin	(µg/L)	0.1				<0.1	<0.1
Titanium	(µg/L)	0.1				<0.1	<0.1
Uranium	(µg/L)	0.1				0.2	<0.1
Vanadium	(µg/L)	0.1				<0.1	<0.1
Zinc	(µg/L)	0.4				<0.4	<0.4
Zirconium	(µg/L)	0.1				<0.1	<0.1

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed

B Water Licence S17L8-002 Admin Amend October 30, 2017)

E pH based guideline; all samples have pH greater than 6.5

F Hexavalent chromium guideline value applied to total chromium result as conservative measure

G Hardness based guideline; guideline value calculated from sample hardness to determine guideline

H New hardness, pH and DOC based guideline; guideline value calculated from sample parameters

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-2 Total and Dissolved Metals

SITE					CONTACT LAKE MINE			
STATION/Sample #	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	CL-26	CL-3	CL-DUP-1	CL-29
SNP Station #					S17L8-002 (13H)	S17L8-002 (12G)	S17L8-002 (12G)	N/A
Blind Sample #					GBL-2019-00001-010	GBL-2019-00001-009	GBL-2019-00001-015	GBL-2019-00001-021
Waterbody					Contact Lake	Tailings Pond	Tailings Pond	Tailings Pond
Sample Date					2019-07-30	2019-07-30	2019-07-30	2019-07-30
Depth					Surface	Surface	Surface	Surface
Type					Sample	Sample	Duplicate of CL-3	Sample
PARAMETER								
Total Metals								
Aluminum	(µg/L)	0.6	100 [E]	800	2.4	11.9	10.3	10.3
Antimony	(µg/L)	0.1			<0.1	0.7	0.7	0.7
Arsenic	(µg/L)	0.2	5	1000 at T-8 and 200 at T-10	0.2	15.1	15.1	15.7
Barium	(µg/L)	0.1			3.5	24.5	23.8	24.3
Beryllium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1
Bismuth	(µg/L)	0.2			<0.2	<0.2	<0.2	<0.2
Boron	(µg/L)	0.9	1,500		5.5	31.9	30.6	31.3
Cadmium	(µg/L)	0.04	0.04 to 0.37 [G]		<0.04	<0.04	<0.04	<0.04
Cesium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1
Chromium	(µg/L)	0.1	1 [F]		<0.1	0.1	<0.1	<0.1
Cobalt	(µg/L)	0.1			<0.1	0.2	0.2	0.2
Copper	(µg/L)	0.2	2 to 4 [G]	20	0.7	16.5	16.3	17.8
Iron	(µg/L)	5	300		<5	93	85	91
Lead	(µg/L)	0.1	1 to 7 [G]	20	<0.1	<0.1	<0.1	<0.1
Lithium	(µg/L)	0.2			0.6	2.2	2.2	2.1
Manganese	(µg/L)	0.1			0.8	82.1	65.5	66.9
Mercury	(mg/L)	0.000005	0.000026		<0.000005	0.0000096	0.0000107	0.000011
Molybdenum	(µg/L)	0.1	73		0.2	0.5	0.5	0.5
Nickel	(µg/L)	0.1	25 to 150 [G]	100	<0.1	1.5	1.5	1.7
Rubidium	(µg/L)	0.1						
Selenium	(µg/L)	0.3	1		<0.3	<0.5	<0.5	<0.5
Silicon	(µg/L)	50			258	1870	1850	1840
Silver	(µg/L)	0.1	0.25	4	<0.1	0.1	0.1	0.1
Strontium	(µg/L)	0.1			10.5	58	57.4	56.3
Sulfur	(µg/L)	500			<500	2843	2859	2908
Thallium	(µg/L)	0.1	0.8		<0.1	<0.1	<0.1	<0.1
Tin	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1
Titanium	(µg/L)	0.1			<0.1	0.2	0.1	0.1
Uranium	(µg/L)	0.1	15		0.2	40.9	40.4	41.8
Vanadium	(µg/L)	0.1			<0.1	0.1	0.1	0.1
Zinc	(µg/L)	0.4	1.65 to 515 [H]	40	<0.4	<5	<5	<5
Zirconium	(µg/L)	0.1			<0.1	<0.1	0.1	0.1
Dissolved Metals								
Aluminum	(µg/L)	0.6			1.4	6.4	6.4	7.7
Antimony	(µg/L)	0.1			<0.1	0.7	0.7	0.7
Arsenic	(µg/L)	0.2			0.2	14.3	13.6	14.4
Barium	(µg/L)	0.1			3.5	24.2	23.7	24.1
Beryllium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1
Bismuth	(µg/L)	0.2			<0.2	<0.2	<0.2	<0.2
Boron	(µg/L)	0.9			5.3	29.8	28.7	29
Cadmium	(µg/L)	0.04			<0.04	<0.04	<0.04	<0.04
Cesium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1
Chromium	(µg/L)	0.1			0.4	<0.1	<0.1	<0.1
Cobalt	(µg/L)	0.1			<0.1	0.1	0.1	0.2
Copper	(µg/L)	0.2			0.8	14.6	14.3	16
Iron	(µg/L)	5			25	42	41	50
Lead	(µg/L)	0.1			0.6	<0.1	<0.1	<0.1
Lithium	(µg/L)	0.2			0.6	2.2	2.2	2.1
Manganese	(µg/L)	0.1			0.5	57.1	57.5	60.9
Mercury	(mg/L)	0.000005			<0.000005	0.0000062	0.0000055	0.0000063
Molybdenum	(µg/L)	0.1			0.2	0.5	0.5	0.4
Nickel	(µg/L)	0.1			<0.1	1.5	1.4	1.6
Selenium	(µg/L)	0.3			<0.3	<0.3	<0.3	<0.3
Silicon	(µg/L)	50			258	1860	1820	1840
Silver	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1
Strontium	(µg/L)	0.1			10.6	58.3	56.9	55.5
Sulfur	(µg/L)	500			<500	2299	2289	2429
Thallium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1
Tin	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1
Titanium	(µg/L)	0.1			<0.1	<0.1	<0.1	<0.1
Uranium	(µg/L)	0.1			0.2	40.9	39.8	40.9
Vanadium	(µg/L)	0.1			0.1	0.1	0.1	0.1
Zinc	(µg/L)	0.4			0.4	0.5	0.5	0.4
Zirconium	(µg/L)	0.1			<0.1	<0.1	0.1	0.1

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed

B Water Licence S17L8-002 Admin Amend October 30, 2017)

E pH based guideline; all samples have pH greater than 6.5

F Hexavalent chromium guideline value applied to total chromium result as conservative measure

G Hardness based guideline; guideline value calculated from sample hardness to determine guideline

H New hardness, pH and DOC based guideline; guideline value calculated from sample parameters

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-2 Total and Dissolved Metals

SITE	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	CONTACT LAKE REFERENCE	CONTACT LAKE FIELD BLANK	TRAVEL BLANK
STATION/Sample #					**CL-8**	**CL-Field Blank**	**Travel Blank**
SNP Station #					N/A	N/A	N/A
Blind Sample #					GBL-2019-00001-013	GBL-2019-00001-017	GBL-2019-00001-018
Waterbody					**Contact Lake (Ref)**	**N/A**	**N/A**
Sample Date					2019-07-30	2019-07-30	2019-07-31
Depth					Surface	N/A	-
Type					Reference Sample	Field Blank	Travel Blank
PARAMETER							
Total Metals							
Aluminum	(µg/L)	0.6	100 [E]	800	2.5	<0.6	<0.6
Antimony	(µg/L)	0.1			<0.1	<0.1	<0.1
Arsenic	(µg/L)	0.2	5	1000 at T-8 and 200 at T-10	0.2	<0.2	<0.2
Barium	(µg/L)	0.1			3.6	<0.1	<0.1
Beryllium	(µg/L)	0.1			<0.1	<0.1	<0.1
Bismuth	(µg/L)	0.2			<0.2	<0.2	<0.2
Boron	(µg/L)	0.9	1,500		5.1	<0.9	<0.9
Cadmium	(µg/L)	0.04	0.04 to 0.37 [G]		<0.04	<0.04	<0.04
Cesium	(µg/L)	0.1			<0.1	<0.1	<0.1
Chromium	(µg/L)	0.1	1 [F]		<0.1	<0.1	<0.1
Cobalt	(µg/L)	0.1			<0.1	<0.1	<0.1
Copper	(µg/L)	0.2	2 to 4 [G]	20	0.7	<0.2	<0.2
Iron	(µg/L)	5	300		<5	<5	<5
Lead	(µg/L)	0.1	1 to 7 [G]	20	<0.1	<0.1	<0.1
Lithium	(µg/L)	0.2			0.5	<0.2	<0.2
Manganese	(µg/L)	0.1			0.6	<0.1	<0.1
Mercury	(mg/L)	0.000005	0.000026		<0.000005	<0.000005	<0.000005
Molybdenum	(µg/L)	0.1	73		0.2	<0.1	<0.1
Nickel	(µg/L)	0.1	25 to 150 [G]	100	<0.1	<0.1	<0.1
Rubidium	(µg/L)	0.1				<0.1	
Selenium	(µg/L)	0.3	1		<0.3	<0.3	<0.3
Silicon	(µg/L)	50			261	<50	<50
Silver	(µg/L)	0.1	0.25	4	<0.1	<0.1	<0.1
Strontium	(µg/L)	0.1			10.5	<0.1	<0.1
Sulfur	(µg/L)	500			<500	<500	<500
Thallium	(µg/L)	0.1	0.8		<0.1	<0.1	<0.1
Tin	(µg/L)	0.1			<0.1	<0.1	<0.1
Titanium	(µg/L)	0.1			<0.1	<0.1	<0.1
Uranium	(µg/L)	0.1	15		0.2	<0.1	<0.1
Vanadium	(µg/L)	0.1			<0.1	<0.1	<0.1
Zinc	(µg/L)	0.4	1.65 to 515 [H]	40	<0.4	<0.4	<0.4
Zirconium	(µg/L)	0.1			<0.1	<0.1	<0.1
Dissolved Metals							
Aluminum	(µg/L)	0.6				<0.6	0.8
Antimony	(µg/L)	0.1				<0.1	<0.1
Arsenic	(µg/L)	0.2				<0.2	<0.2
Barium	(µg/L)	0.1				<0.1	<0.1
Beryllium	(µg/L)	0.1				<0.1	<0.1
Bismuth	(µg/L)	0.2				<0.2	<0.2
Boron	(µg/L)	0.9				<0.9	<0.9
Cadmium	(µg/L)	0.04				<0.04	<0.04
Cesium	(µg/L)	0.1				<0.1	<0.1
Chromium	(µg/L)	0.1				<0.1	<0.1
Cobalt	(µg/L)	0.1				<0.1	<0.1
Copper	(µg/L)	0.2				<0.2	<0.2
Iron	(µg/L)	5				<5	<5
Lead	(µg/L)	0.1				<0.1	<0.1
Lithium	(µg/L)	0.2				<0.2	<0.2
Manganese	(µg/L)	0.1				<0.1	<0.1
Mercury	(mg/L)	0.000005				<0.000005	<0.000005
Molybdenum	(µg/L)	0.1				<0.1	<0.1
Nickel	(µg/L)	0.1				<0.1	<0.1
Selenium	(µg/L)	0.3				<0.3	<0.3
Silicon	(µg/L)	50				<50	<50
Silver	(µg/L)	0.1				<0.1	<0.1
Strontium	(µg/L)	0.1				<0.1	<0.1
Sulfur	(µg/L)	500				<500	<500
Thallium	(µg/L)	0.1				<0.1	<0.1
Tin	(µg/L)	0.1				<0.1	<0.1
Titanium	(µg/L)	0.1				<0.1	<0.1
Uranium	(µg/L)	0.1				<0.1	<0.1
Vanadium	(µg/L)	0.1				<0.1	<0.1
Zinc	(µg/L)	0.4				<0.4	<0.4
Zirconium	(µg/L)	0.1				<0.1	<0.1

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed

B Water Licence S17L8-002 Admin Amend October 30, 2017)

E pH based guideline; all samples have pH greater than 6.5

F Hexavalent chromium guideline value applied to total chromium result as conservative measure

G Hardness based guideline; guideline value calculated from sample hardness to determine guideline

H New hardness, pH and DOC based guideline; guideline value calculated from sample parameters

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-3 Hydrocarbons

SITE					TERRA MINE				
STATION/Sample #	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	T-8-A	T-DUP-1	T-8-B	T-8-C	T-10
SNP Station #					S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7A)	S17L8-002 (7B)
Blind Sample #					GBL-2019-00001-001	GBL-2019-00001-014	GBL-2019-00001-002	GBL-2019-00001-003	GBL-2019-00001-004
Waterbody					Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Ho Hum TCA	Moose Bay
Sample Date					2019-07-31	2019-07-31	2019-07-31	2019-07-31	2019-07-31
Depth					1m	1m	5m	13m	Surface
Type					Sample	Duplicate of T-8-A	Sample	Sample	Sample
PARAMETER									
BTEX									
Benzene	(mg/L)	0.0005	0.37		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	(mg/L)	0.0005	0.09		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	(mg/L)	0.00045	0.002		<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Total Xylene	(mg/L)	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Hydrocarbon Fractions									
F1(C6-C10)	(mg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
F2 (>C10-C16)	(mg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3
F3 (C16-C34)	(mg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3
F4 (C34-C50)	(mg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3
Oil and Grease									
Hexane Extractable Material	(mg/L)	2		5	<2	<2	<2	<2	<2

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed February 2020

B Water Licence S17L8-002 Admin Amend October 30, 2017)

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-3 Hydrocarbons

SITE	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	NORTHRIM MINE		NOREX MINE		SILVER BEAR FIELD BLANK
STATION/Sample #					**NO-7**	**NO-6**	**NX-12**	**NX-3 ***	**SB-Field blank**
SNP Station #					S17L8-002 (8C)	S17L8-002 (9D)	S17L8-002 (11F)	S17L8-002 (10E)	N/A
Blind Sample #					GBL-2019-00001-005	GBL-2019-00001-006	GBL-2019-00001-007	GBL-2019-00001-008	GBL-2019-00001-016
Waterbody					**Hermandy Lake**	**Camsell River**	**Camsell River**	**Waste Rock Seep**	**N/A**
Sample Date					2019-07-31	2019-07-31	2019-07-30	2019-07-30	2019-07-31
Depth					Surface	Surface	Surface	Surface	-
Type					Sample	Sample	Sample	Sample	Field Blank
PARAMETER									
BTEX									
Benzene	(mg/L)	0.0005	0.37		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	(mg/L)	0.0005	0.09		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	(mg/L)	0.00045	0.002		<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Total Xylene	(mg/L)	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Hydrocarbon Fractions									
F1(C6-C10)	(mg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1
F2 (>C10-C16)	(mg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3
F3 (C16-C34)	(mg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3
F4 (C34-C50)	(mg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3
Oil and Grease									
Hexane Extractable Material	(mg/L)	2		5					<2

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed February 2020

B Water Licence S17L8-002 Admin Amend October 30, 2017)

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-3 Hydrocarbons

SITE					CONTACT LAKE MINE				CONTACT LAKE FIELD BLANK	TRAVEL BLANK
STATION/Sample #	Units	Detection Limit ^	CCME Criteria [A]	SNP Effluent Quality Criteria (EQC) for T-8 and T-10 [B]	CL-26	CL-3	CL-DUP-1	CL-29	CL-Field Blank	Travel Blank
SNP Station #					S17L8-002 (13H)	S17L8-002 (12G)	S17L8-002 (12G)	N/A	N/A	N/A
Blind Sample #					GBL-2019-00001-010	GBL-2019-00001-009	GBL-2019-00001-015	GBL-2019-00001-021	GBL-2019-00001-017	GBL-2019-00001-018
Waterbody					Contact Lake	Tailings Pond	Tailings Pond	Tailings Pond	N/A	N/A
Sample Date					2019-07-30	2019-07-30	2019-07-30	2019-07-30	2019-07-30	2019-07-31
Depth					Surface	Surface	Surface	Surface	N/A	-
Type					Sample	Sample	Duplicate of CL-3	Sample	Field Blank	Travel Blank
PARAMETER										
BTEX										
Benzene	(mg/L)	0.0005	0.37		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Ethylbenzene	(mg/L)	0.0005	0.09		<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Toluene	(mg/L)	0.00045	0.002		<0.00045	<0.00045	<0.00045	<0.00045	<0.00045	<0.00045
Total Xylene	(mg/L)	0.0005			<0.0005	<0.0005	<0.0005	<0.0005	<0.00045	<0.0005
Hydrocarbon Fractions										
F1(C6-C10)	(mg/L)	0.1			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
F2 (>C10-C16)	(mg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
F3 (C16-C34)	(mg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
F4 (C34-C50)	(mg/L)	0.3			<0.3	<0.3	<0.3	<0.3	<0.3	<0.3
Oil and Grease										
Hexane Extractable Material	(mg/L)	2		5						<2

A Canadian Council of Ministers of Enivronment - Water Quality Guidelines for the Protection of Aquatic Life (Freshwater), summary table accessed February 2020

B Water Licence S17L8-002 Admin Amend October 30, 2017)

^ Detection Limits raised in a small number of samples due to higher turbidity or interference

* Isolated pooled water ~ 5cm deep. CCME-FAL Guidelines not applicable.

Exceedance of CCME

Exceedance of SNP EQC

TABLE B-4 Radionuclides

SITE	Units	Detection Limit ^	Candian Drinking Water Quality Guidelines [C]	CONTACT LAKE MINE				CONTACT LAKE REFERENCE	CONTACT LAKE FIELD BLANK	TRAVEL BLANK
STATION/Sample #				**CL-26**	**CL-3**	**CL-DUP-1**	**CL-29**	**CL-8**	**CL-Field Blank**	**Travel Blank**
SNP Station #				S17L8-002 (13H)	S17L8-002 (12G)	S17L8-002 (12G)	N/A	N/A	N/A	N/A
Blind Sample #				GBL-2019-00001-010	GBL-2019-00001-009	GBL-2019-00001-015	GBL-2019-00001-021	GBL-2019-00001-013	GBL-2019-00001-017	GBL-2019-00001-018
Waterbody				**Contact Lake**	**Tailings Pond**	**Tailings Pond**	**Tailings Pond**	**Contact Lake (Ref)**	**N/A**	**N/A**
Sample Date				2019-07-30	2019-07-30	2019-07-30	2019-07-30	2019-07-30	2019-07-30	2019-07-31
Depth				Surface	Surface	Surface	Surface	Surface	N/A	-
Type				Sample	Sample	Duplicate of CL-3	Sample	Reference Sample	Field Blank	Travel Blank
PARAMETER										
Radionuclides										
Lead-210	(Bq/L)	0.02	0.2	<0.02	0.03	0.07	0.08	0.05	<0.02	<0.02
Radium-226	(Bq/L)	0.005	0.5	<0.005	0.08	0.1	0.11	0.009	0.006	0.007

C CCME guidelines not developed. Applied Canadian Drinking Water Guidelines (CDWG) for Radiological Parameters

Exceedance of CDWG

TABLE B-5 Duplicate Analysis

SITE	Units	Detection Limit ^	TERRA MINE					CONTACT LAKE MINE				
STATION/Sample #			T-8-A	T-DUP-1	Scenario	Calculation	Acceptability	CL-3	CL-DUP-1	Scenario	Calculation	Acceptability
SNP Station #			S17L8-002 (7A)	S17L8-002 (7A)				S17L8-002 (12G)	S17L8-002 (12G)			
Blind Sample #			GBL-2019-00001-001	GBL-2019-00001-014				GBL-2019-00001-009	GBL-2019-00001-015			
Waterbody			Ho Hum TCA	Ho Hum TCA				Tailings Pond	Tailings Pond			
Sample Date			2019-07-31	2019-07-31				2019-07-30	2019-07-30			
Depth			1m	1m				Surface	Surface			
Type			Sample	Duplicate of T-8-A				Sample	Duplicate of CL-3			
PARAMETER												
Physical Parameters												
pH			7.85	7.96	D	1.4%	Acceptable	7.79	7.82	D	0.4%	Acceptable
Specific Conductivity	(µS/cm)	0.4	189	191	D	1.1%	Acceptable	192	194	D	1.0%	Acceptable
Total Suspended Solids (TSS)	(mg/L)	3	6	<3	B	Result B - (0.5xDL) > DL	Unacceptable	<3	<3	A	N/A	Acceptable
Total Dissolved Solids (TDS)	(mg/L)	10	127	98	D	25.8%	Acceptable	120	118	D	1.7%	Acceptable
Turbidity (NTU)	(NTU)	0.05	0.79	0.77	D	2.6%	Acceptable	0.51	0.45	D	12.5%	Acceptable
Major Ions												
Alkalinity (PP as CaCO3)	(mg/L)	1	61.7	62.2	D	0.8%	Acceptable	92.8	93.6	D	0.9%	Acceptable
Hardness, as CaCO3	(mg/L)	0.7	77	79.1	D	2.7%	Acceptable	92.4	92.1	D	0.3%	Acceptable
Calcium	(mg/L)	0.1	23.6	24.2	D	2.5%	Acceptable	23.9	23.6	D	1.3%	Acceptable
Chloride	(mg/L)	0.7	9.7	9.7	D	0.0%	Acceptable	<0.7	<0.7	A	N/A	Acceptable
Fluoride	(mg/L)	0.02	0.721	0.737	D	2.2%	Acceptable	0.262	0.262	D	0.0%	Acceptable
Magnesium	(mg/L)	0.1	4.4	4.5	D	2.2%	Acceptable	7.9	8.1	D	2.5%	Acceptable
Potassium	(mg/L)	0.1	2	2	D	0.0%	Acceptable	1	1	D	0.0%	Acceptable
Sodium	(mg/L)	0.1	7.2	7.2	D	0.0%	Acceptable	3.6	3.6	D	0.0%	Acceptable
Sulphate	(mg/L)	1	18	18	D	0.0%	Acceptable	9	9	D	0.0%	Acceptable
Sulphide	(mg/L)	0.0018	<0.0018	<0.0018	A	N/A	Acceptable	<0.0018	<0.0018	A	N/A	Acceptable
Nutrients												
Ammonia as Nitrogen	(mg/L)	0.005	<0.005	<0.005	A	N/A	Acceptable	<0.005	<0.005	A	N/A	Acceptable
Nitrate, as N	(mg/L)	0.01	0.14	0.13	D	7.4%	Acceptable	0.33	0.22	D	40.0%	Unacceptable
Nitrate/Nitrite, as N	(mg/L)	0.01	0.14	0.13	D	7.4%	Acceptable	0.33	0.22	D	40.0%	Unacceptable
Nitrite, as N	(mg/L)	0.01	<0.01	<0.01	A	N/A	Acceptable	<0.01	<0.01	A	N/A	Acceptable
Total Phosphorus	(mg/L)	0.002	0.022	0.021	D	4.7%	Acceptable	0.006	0.007	C	| Result B - Result A | < 2x DL	Acceptable
Dissolved Phosphorus	(mg/L)	0.002	0.012	0.01	D	18.2%	Acceptable	0.003	<0.002	B	Result B - (0.5xDL) = DL	Borderline
Organics												
Total Organic Carbon (TOC)	(mg/L)	0.5	13.6	13	D	4.5%	Acceptable	12.1	11.5	D	5.1%	Acceptable
Dissolved Organic Carbon (DOC)	(mg/L)	0.5	12.7	12.6	D	0.8%	Acceptable	11.6	11.3	D	2.6%	Acceptable
BTEX												
Benzene	(mg/L)	0.0005	<0.0005	<0.0005	A	N/A	Acceptable	<0.0005	<0.0005	A	N/A	Acceptable
Ethylbenzene	(mg/L)	0.0005	<0.0005	<0.0005	A	N/A	Acceptable	<0.0005	<0.0005	A	N/A	Acceptable
Toluene	(mg/L)	0.00045	<0.00045	<0.00045	A	N/A	Acceptable	<0.00045	<0.00045	A	N/A	Acceptable
Total Xylene	(mg/L)	0.0005	<0.0005	<0.0005	A	N/A	Acceptable	<0.0005	<0.0005	A	N/A	Acceptable

TABLE B-5 Duplicate Analysis

SITE	Units	Detection Limit ^	TERRA MINE					CONTACT LAKE MINE				
STATION/Sample #			T-8-A	T-DUP-1	Scenario	Calculation	Acceptability	CL-3	CL-DUP-1	Scenario	Calculation	Acceptability
SNP Station #			S17L8-002 (7A)	S17L8-002 (7A)				S17L8-002 (12G)	S17L8-002 (12G)			
Blind Sample #			GBL-2019-00001-001	GBL-2019-00001-014				GBL-2019-00001-009	GBL-2019-00001-015			
Waterbody			Ho Hum TCA	Ho Hum TCA				Tailings Pond	Tailings Pond			
Sample Date			2019-07-31	2019-07-31				2019-07-30	2019-07-30			
Depth			1m	1m				Surface	Surface			
Type			Sample	Duplicate of T-8-A				Sample	Duplicate of CL-3			
PARAMETER												
Hydrocarbon Fractions												
F1(C6-C10)	(mg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
F2 (>C10-C16)	(mg/L)	0.3	<0.3	<0.3	A	N/A	Acceptable	<0.3	<0.3	A	N/A	Acceptable
F3 (C16-C34)	(mg/L)	0.3	<0.3	<0.3	A	N/A	Acceptable	<0.3	<0.3	A	N/A	Acceptable
F4 (C34-C50)	(mg/L)	0.3	<0.3	<0.3	A	N/A	Acceptable	<0.3	<0.3	A	N/A	Acceptable
Oil and Grease												
Hexane Extractable Material	(mg/L)	2	<2	<2	A	N/A	Acceptable					
Total Metals												
Aluminum	(µg/L)	0.6	22.7	24.3	D	6.8%	Acceptable	11.9	10.3	D	14.4%	Acceptable
Antimony	(µg/L)	0.1	1.2	1.2	D	0.0%	Acceptable	0.7	0.7	D	0.0%	Acceptable
Arsenic	(µg/L)	0.2	58	57.9	D	0.2%	Acceptable	15.1	15.1	D	0.0%	Acceptable
Barium	(µg/L)	0.1	16.2	16.4	D	1.2%	Acceptable	24.5	23.8	D	2.9%	Acceptable
Beryllium	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Bismuth	(µg/L)	0.2	<0.2	<0.2	A	N/A	Acceptable	<0.2	<0.2	A	N/A	Acceptable
Boron	(µg/L)	0.9	26.1	27	D	3.4%	Acceptable	31.9	30.6	D	4.2%	Acceptable
Cadmium	(µg/L)	0.04	<0.04	<0.04	A	N/A	Acceptable	<0.04	<0.04	A	N/A	Acceptable
Cesium	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Chromium	(µg/L)	0.1	<0.1	0.1	B	Result B - (0.5xDL) < DL	Acceptable	0.1	<0.1	B	Result B - (0.5xDL) < DL	Acceptable
Cobalt	(µg/L)	0.1	0.2	0.2	C	| Result B - Result A | < 2x DL	Acceptable	0.2	0.2	C	| Result B - Result A | < 2x DL	Acceptable
Copper	(µg/L)	0.2	8.4	8.4	D	0.0%	Acceptable	16.5	16.3	D	1.2%	Acceptable
Iron	(µg/L)	5	39	40	D	2.5%	Acceptable	93	85	D	9.0%	Acceptable
Lead	(µg/L)	0.1	0.1	0.1	C	| Result B - Result A | < 2x DL	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Lithium	(µg/L)	0.2	7	7.3	D	4.2%	Acceptable	2.2	2.2	D	0.0%	Acceptable
Manganese	(µg/L)	0.1	6.3	6.4	D	1.6%	Acceptable	82.1	65.5	D	22.5%	Acceptable
Mercury	(mg/L)	0.000005	<0.000005	<0.000005	A	N/A	Acceptable	0.0000096	0.0000107	C	| Result B - Result A | < 2x DL	Acceptable
Molybdenum	(µg/L)	0.1	2.6	2.6	D	0.0%	Acceptable	0.5	0.5	D	0.0%	Acceptable
Nickel	(µg/L)	0.1	3.8	3.8	D	0.0%	Acceptable	1.5	1.5	D	0.0%	Acceptable
Selenium	(µg/L)	0.3	<0.3	<0.3	A	N/A	Acceptable	<0.5	<0.5	A	N/A	Acceptable
Silicon	(µg/L)	50	988	991	D	0.3%	Acceptable	1870	1850	D	1.1%	Acceptable
Silver	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	0.1	0.1	C	| Result B - Result A | < 2x DL	Acceptable
Strontium	(µg/L)	0.1	72.2	72.7	D	0.7%	Acceptable	58	57.4	D	1.0%	Acceptable
Sulfur	(µg/L)	500	5541	5595	D	1.0%	Acceptable	2843	2859	D	0.6%	Acceptable
Thallium	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Tin	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Titanium	(µg/L)	0.1	0.7	0.4	C	| Result B - Result A | > 2x DL	Unacceptable	0.2	0.1	C	| Result B - Result A | < 2x DL	Acceptable
Uranium	(µg/L)	0.1	2.1	2.1	D	0.0%	Acceptable	40.9	40.4	D	1.2%	Acceptable
Vanadium	(µg/L)	0.1	0.2	0.2	C	| Result B - Result A | < 2x DL	Acceptable	0.1	0.1	C	| Result B - Result A | < 2x DL	Acceptable
Zinc	(µg/L)	0.4	3.1	3	D	3.3%	Acceptable	<5	<5	A	N/A	Acceptable
Zirconium	(µg/L)	0.1	0.2	0.2	C	| Result B - Result A | < 2x DL	Acceptable	<0.1	0.1	B	Result B - (0.5xDL) < DL	Acceptable

TABLE B-5 Duplicate Analysis

SITE	Units	Detection Limit ^	TERRA MINE					CONTACT LAKE MINE				
STATION/Sample #			T-8-A	T-DUP-1	Scenario	Calculation	Acceptability	CL-3	CL-DUP-1	Scenario	Calculation	Acceptability
SNP Station #			S17L8-002 (7A)	S17L8-002 (7A)				S17L8-002 (12G)	S17L8-002 (12G)			
Blind Sample #			GBL-2019-00001-001	GBL-2019-00001-014				GBL-2019-00001-009	GBL-2019-00001-015			
Waterbody			Ho Hum TCA	Ho Hum TCA				Tailings Pond	Tailings Pond			
Sample Date			2019-07-31	2019-07-31				2019-07-30	2019-07-30			
Depth			1m	1m				Surface	Surface			
Type			Sample	Duplicate of T-8-A				Sample	Duplicate of CL-3			
PARAMETER												
Dissolved Metals												
Aluminum	(µg/L)	0.6	12.3	10.8	A	N/A	Acceptable	6.4	6.4	D	0.0%	Acceptable
Antimony	(µg/L)	0.1	1.2	1.2	D	0.0%	Acceptable	0.7	0.7	D	0.0%	Acceptable
Arsenic	(µg/L)	0.2	55.8	56.1	D	0.5%	Acceptable	14.3	13.6	D	5.0%	Acceptable
Barium	(µg/L)	0.1	15.8	16.1	D	1.9%	Acceptable	24.2	23.7	D	2.1%	Acceptable
Beryllium	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Bismuth	(µg/L)	0.2	<0.2	<0.2	A	N/A	Acceptable	<0.2	<0.2	A	N/A	Acceptable
Boron	(µg/L)	0.9	25.9	26.2	D	1.2%	Acceptable	29.8	28.7	D	3.8%	Acceptable
Cadmium	(µg/L)	0.04	<0.04	<0.04	A	N/A	Acceptable	<0.04	<0.04	A	N/A	Acceptable
Cesium	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Chromium	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Cobalt	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	0.1	0.1	C	| Result B - Result A | < 2x DL	Acceptable
Copper	(µg/L)	0.2	7.8	7.8	D	0.0%	Acceptable	14.6	14.3	D	2.1%	Acceptable
Iron	(µg/L)	5	14	15	C	| Result B - Result A | < 2x DL	Acceptable	42	41	D	2.4%	Acceptable
Lead	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Lithium	(µg/L)	0.2	7.2	7.2	D	0.0%	Acceptable	2.2	2.2	D	0.0%	Acceptable
Manganese	(µg/L)	0.1	0.3	0.3	C	| Result B - Result A | < 2x DL	Acceptable	57.1	57.5	D	0.7%	Acceptable
Mercury	(mg/L)	0.000005	<0.000005	<0.000005	A	N/A	Acceptable	0.0000062	0.0000055	C	| Result B - Result A | < 2x DL	Acceptable
Molybdenum	(µg/L)	0.1	2.5	2.6	D	3.9%	Acceptable	0.5	0.5	D	0.0%	Acceptable
Nickel	(µg/L)	0.1	3.7	3.7	D	0.0%	Acceptable	1.5	1.4	D	6.9%	Acceptable
Selenium	(µg/L)	0.3	<0.3	<0.3	A	N/A	Acceptable	<0.3	<0.3	A	N/A	Acceptable
Silicon	(µg/L)	50	951	967	D	1.7%	Acceptable	1860	1820	D	2.2%	Acceptable
Silver	(µg/L)	0.1	<0.1	<0.1	A			<0.1	<0.1	A	N/A	Acceptable
Strontium	(µg/L)	0.1	71.9	72.6	D	1.0%	Acceptable	58.3	56.9	D	2.4%	Acceptable
Sulfur	(µg/L)	500	5452	5599	D	2.7%	Acceptable	2299	2289	C	| Result B - Result A | < 2x DL	Acceptable
Thallium	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Tin	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Titanium	(µg/L)	0.1	<0.1	<0.1	A	N/A	Acceptable	<0.1	<0.1	A	N/A	Acceptable
Uranium	(µg/L)	0.1	2.2	2.2	D	0.0%	Acceptable	40.9	39.8	D	2.7%	Acceptable
Vanadium	(µg/L)	0.1	0.2	0.2	C	| Result B - Result A | < 2x DL	Acceptable	0.1	0.1	C	| Result B - Result A | < 2x DL	Acceptable
Zinc	(µg/L)	0.4	2.2	2.2	D	0.0%	Acceptable	0.5	0.5	C	| Result B - Result A | < 2x DL	Acceptable
Zirconium	(µg/L)	0.1	0.2	0.2	C	| Result B - Result A | < 2x DL	Acceptable	<0.1	0.1	B	Result B - (0.5xDL) < DL	Acceptable
Radionuclides												
Lead-210	(Bq/L)	0.02						0.03	0.07	C	| Result B - Result A | > 2x DL	Unacceptable
Radium-226	(Bq/L)	0.005						0.08	0.1	D	22.2%	Acceptable

APPENDIX C – Field Data and Observations

2019 Water Quality Monitoring Field Notes

SITE	Terra Mine			Terra Mine	Silver Bear Reference	Silver Bear Refrence
STATION	**T-8**			**T-10**	**R-2**	**R-3**
Date	31-Jul-19			31-Jul-19	30-Jul-19	30-Jul-19
Personnel	Claire, John-Paul, Lee and Cassandra			Claire, Cassandra, Lee, John-Paul	Claire and Lee	Claire and Lee
Location Description	Ho Hum TCA - Mid Lake			Middle of Moose Bay, mid way down airstrip	Reference Station, Belachey Lake, upstream of rapids	Referece Station, Tutcho Lake, mid lake
Latitude (Dec. Deg. N)	65.60387°			65.61036°	65.63223°	65.59494°
Longitude (Dec. Deg. W)	118.13012°			118.14873°	117.91731°	118.15921°
Sample Type	Open Water			Open Water	Open Water	Open Water
Access	Boat			Boat	Float Plane	Float Plane
Method	Van Dorn			Grab	Grab	Grab
Water Column Depth	16 m			2m	N/A	N/A
Sample Depth	1m	5m	13m	Surface	Surface	Surface
Parameters	General, T.Metals, D.Metals, PHC/BTEX, O&G	General, T.Metals, D.Metals, PHC/BTEX, O&G	General, T.Metals, D.Metals, PHC/BTEX, O&G	General, T.Metals, D.Metals, PHC/BTEX, O&G	General, T.Metals	General, T.Metals, D.Metals
pH	7.76	7.76	7.6	7.91	8.18	8.25
Conductivity (µS/cm)	161.5	143.7	119	117.9	110.2	64.5
Temperature (^{o}C)	16.8	12.5	5.2	15.4	16.2	17.5
Dissolved Oxygen (mg/L)	9.6	9.34	7.79	10.13	10.33	9.72
Turbidity (NTU)	0.41	0.35	0.41	0.48	0.56	0.35
QA/QC Samples	T-DUP-1 GBL-2019-00001-014	None	None	None	None	None
Notes	Water level appears highe than seen in some other sampling events. Small fish.			No vegetation, water level higher than previous years.		

2019 Water Quality Monitoring Field Notes

SITE	Northrim Mine	Northrim Mine	Northrim Mine	Northrim Mine	Norex Mine	Norex Mine
STATION	**NO-7**	**NO-6**	**NO-5**	**NO-27**	**NX-3**	**NX-12**
Date	31-Jul-19	31-Jul-19	31-Jul-19	30-Jul-19	30-Jul-19	30-Jul-19
Personnel	Rebecca and Allison	Rebecca and Allison	Rebecca and Allison	Claire and Rebecca	Cassandra, Rebecca, Roddy and Allison	Claire and Lee
Location Description	Hermandy Lake, south end, east shore	Within Camsell River, where Hermandy Lake outlflows	Edge of Camsell River dock	Camsell River midstream downstream from Northrim/Norex	West seep of waste rock pile	Camsell River, offshore of Norex outflow
Latitude (Dec. Deg. N)	65.59757°	65.59551°	65.59589	65.59146	65.589532°	65.59486°
Longitude (Dec. Deg. W)	117.98439°	117.98116°	117.97865	117.99609	117.96862°	117.97376°
Sample Type	Shoreline	Shoreline	Shoreline	Open Water	On-land	Open Water
Access	Foot	Foot	Foot	Float Plane	Foot	Float Plane
Method	Grab	Grab-Pole	Grab-Pole	Grab	Grab-Syringe	Grab
Water Column Depth	0.5m	0.4m			0.10m	
Sample Depth	Surface	Surface	Surface	Surface	Surface	Surface
Parameters	General, T. Metals, D. Metals, PHC/BTEX	General, T. Metals, D. Metals, PHC/BTEX	General, T. Metals	General, T. Metals	General, T. Metals, D. Metals, PHC/BTEX	General, T. Metals, D. Metals, PHC/BTEX
pH	8.06	8.21	8.21	8.2	6.6	8.19
Conductivity (µS/cm)	120.2	114.7	113.4	110.7	485	110.9
Temperature (^{o}C)	16.7	16.3	15.9	15.3	12.3	15.5
Dissolved Oxygen (mg/L)	9.49	9.92	10.1	10.28	N/A	10.35
Turbidity (NTU)	0.71	1.68	0.85	0.71	N/A	0.71
QA/QC Samples	None	None	None	None	None	None
Notes	SNP sign present, but not attached to post.	Sample station had saturated ground conditions due to higher water level. Sample was collected landward away from main flow.	Water level higher than previous year and dock partially submerged.		Organics/sludge on surface, stagnant odour, collected 6m from SNP sign to capture maximum seepage volume.	Off shore, shallow, no visible vegetation.

2019 Water Quality Monitoring Field Notes

SITE	Contact Lake Mine	Contact Lake Mine	Contact Lake Mine	Contact Lake Reference
STATION	**CL-3**	**CL-29**	**CL-26**	**CL-8**
Date	30-Jul-19	30-Jul-19	30-Jul-19	30-Jul-19
Personnel	Rebecca, Allison and Roddy	Rebecca, Allison and Roddy	Claire, Lee and Cassandra	Claire and Rebecca
Location Description	Tailings Pond, south shore	Tailings Pond, north shore	Contact Lake, ~50m offshore of discharge point of stream from Tailings Pond	Reference Station, north end of Contact Lake
Latitude (Dec. Deg. N)	65.99091°	65.991383	65.98978°	66.00485°
Longitude (Dec. Deg. W)	117.80110°	117.8008	117.80171°	117.89067°
Sample Type	Shoreline	Shoreline	Open Water	Open Water
Access	Foot	Foot	Boat	Float Plane
Method	Grab-Pole	Gab-Pole	Grab	Grab
Water Column Depth	0.5m	3m	10m	NA
Sample Depth	0.5m	Surface	Surface	Surface
Parameters	General, T. Metals, D. Metals, Rad., PHC/BTEX	General, T. Metals, D. Metals, Rad., PHC/BTEX	General, T. Metals, D. Metals, PHC/BTEX Rads.	General, T. Metals, Rads.
pH	7.8	7.3	7.47	7.86
Conductivity (µS/cm)	158.2	149.6	36.6	33.8
Temperature (^{o}C)	16.5	15.6	14.4	11.9
Dissolved Oxygen (mg/L)	8.95	9.24	10.51	11.13
Turbidity (NTU)	0.79	0.69	0	0.27
QA/QC Samples	CL-DUP-1 GBL-2019-00001-015	None	None	None
Notes	Sample collected north of SNP sign due to standing water access challenges.	Across pond from CL-3. Visible turbidity and steep drop off from shore.	Could not hear stream discharge but was present (less than last year); though lake level appears the same.	Signficant wind and wave action.

APPENDIX D – Photo Log

2019 GBL Water Quality Monitoring Report – Photo Log

Photo 1 Terra Mine – Station T-8: Ho Hum TCA, mid

Photo 2 Terra Mine- Station T-10: Moose Bay, middle, mid-way down airstrip

Photo 3 Silver Bear Reference – Station R-2: Reference Station, Belachey Lake, upstream of rapids

Photo 4 Silver Bear Reference – Station R-3: Reference Station, Tutcho Lake, mid-lake

Photo 5 Northrim Mine - Station NO-7: Hermandy Lake, south end, east shore

Photo 6 Northrim Mine - Station NO-6: Camsell River, at point of discharge of Hermandy Lake drainage

Photo 7 Northrim Mine - Station NO-5: Camsell River, at dock

Photo 8 Northrim Mine - Station NO-27: Camsell River, mid stream, downstream of Northrim/Norex

Photo 9 Norex Mine – Station NX-3: West seep of waste rock pile

Photo 10 Norex Mine - Station NX-12: Camsell River, offshore of outflow from Norex Mine

Photo 11 Contact Lake Mine - Station CL-3: Tailings pond, south end of pond

Photo 12 Contact Lake Mine - Station CL-29: Tailings pond, north end of pond

Photo 13 Contact Lake Mine - Station CL-26: Contact Lake, offshore of discharge from Tailings Pond

Photo 14 Contact Lake Mine – Station CL-8: Reference Station, north end of Contact Lake

APPENDIX E – Laboratory Certificates

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190933

- FINAL REPORT -

Prepared For: Contaminants and Remediation Directorate

Address: Gallery Building
4923 - 52nd Street, Box 1500
Yellowknife,NT
X1A 2R3

Attn: **Murray Somers** **Facsimile: (867) 669-2721**

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Tuesday, October 01, 2019
Print Date: ***Tuesday, October 01, 2019***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190933

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-015 **Taiga Sample ID:** 001

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 30-Sep-19
Sampling Date: 30-Jul-19
Sampling Time: 11:00
Location:
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	04-Sep-19	SM4500-NH3:G	231

ReportDate: Tuesday, October 01, 2019
Print Date: ***Tuesday, October 01, 2019***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190933

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-017 **Taiga Sample ID:** 002

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 30-Sep-19
Sampling Date: 30-Jul-19
Sampling Time: 11:00
Location:
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Physicals						
Turbidity	0.07	0.05	NTU	09-Sep-19	SM2130:B	231
Major Ions						
Calcium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Hardness	< 0.7	0.7	mg/L	10-Sep-19	SM4110:B	231
Magnesium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Potassium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Sodium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Subcontracted Inorganics						
Sulphide	0.0182	0.0015	mg/L	17-Sep-19	APHA4500-S2	231

ReportDate: Tuesday, October 01, 2019
Print Date: ***Tuesday, October 01, 2019***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190933

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-017 **Taiga Sample ID:** 002

- DATA QUALIFERS -

Data Qualifier Descriptions:

231 *Sample was re-analyzed; result has been verified.*

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

Comments *Rerun results.*

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190934

- FINAL REPORT -

Prepared For: Contaminants and Remediation Directorate

Address: Gallery Building
4923 - 52nd Street, Box 1500
Yellowknife,NT
X1A 2R3

Attn: **Murray Somers** **Facsimile: (867) 669-2721**

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Tuesday, October 01, 2019
Print Date: ***Tuesday, October 01, 2019***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190934

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-006 **Taiga Sample ID:** 001

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 30-Sep-19
Sampling Date: 31-Jul-19
Sampling Time: 10:20
Location:
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Major Ions						
Calcium	14.7	0.1	mg/L	03-Sep-19	SM4110:B	231
Chloride	2.0	0.7	mg/L	03-Sep-19	SM4110:B	231
Fluoride	0.1	0.1	mg/L	03-Sep-19	SM4110:B	231
Hardness	60.1	0.7	mg/L	03-Sep-19	SM4110:B	231
Magnesium	5.7	0.1	mg/L	03-Sep-19	SM4110:B	231
Nitrate as Nitrogen	0.15	0.1	mg/L	03-Sep-19	SM4110:B	231
Nitrate+Nitrite as Nitrogen	0.15	0.1	mg/L	03-Sep-19	SM4110:B	231
Nitrite as Nitrogen	< 0.01	0.01	mg/L	03-Sep-19	SM4110:B	231
Potassium	0.9	0.1	mg/L	03-Sep-19	SM4110:B	231
Sodium	2.1	0.1	mg/L	03-Sep-19	SM4110:B	231
Sulphate	15	1	mg/L	03-Sep-19	SM4110:B	231

ReportDate: Tuesday, October 01, 2019
Print Date: ***Tuesday, October 01, 2019***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190934

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-019 **Taiga Sample ID:** 002

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 30-Sep-19
Sampling Date: 31-Jul-19
Sampling Time: 10:45
Location:
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Trace Metals, Total						
Aluminum	33.9	0.6	µg/L	03-Sep-19	EPA200.8	231
Antimony	< 0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Arsenic	0.3	0.2	µg/L	03-Sep-19	EPA200.8	231
Barium	10.3	0.1	µg/L	03-Sep-19	EPA200.8	231
Beryllium	< 0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Bismuth	< 0.2	0.2	µg/L	03-Sep-19	EPA200.8	231
Boron	9.9	0.9	µg/L	03-Sep-19	EPA200.8	231
Cadmium	< 0.04	0.04	µg/L	03-Sep-19	EPA200.8	231
Cesium	< 0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Chromium	0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Cobalt	< 0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Copper	2.2	0.2	µg/L	03-Sep-19	EPA200.8	231
Iron	34	5	ug/L	03-Sep-19	EPA200.8	231
Lead	0.6	0.1	µg/L	03-Sep-19	EPA200.8	231
Lithium	2.1	0.2	µg/L	03-Sep-19	EPA200.8	231
Manganese	1.7	0.1	µg/L	03-Sep-19	EPA200.8	231

ReportDate: Tuesday, October 01, 2019
Print Date: ***Tuesday, October 01, 2019***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190934

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-019 **Taiga Sample ID:** 002

Molybdenum	0.3	0.1	µg/L	03-Sep-19	EPA200.8	231
Nickel	< 0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Selenium	< 0.3	0.3	µg/L	03-Sep-19	EPA200.8	231
Silicon	821	50	µg/L	03-Sep-19	EPA200.8	231
Silver	< 0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Strontium	50.4	0.1	µg/L	03-Sep-19	EPA200.8	231
Sulfur	4,122	500	µg/L	03-Sep-19	EPA200.8	231
Thallium	< 0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Tin	< 0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Titanium	1.2	0.1	µg/L	03-Sep-19	EPA200.8	231
Uranium	0.5	0.1	µg/L	03-Sep-19	EPA200.8	231
Vanadium	0.1	0.1	µg/L	03-Sep-19	EPA200.8	231
Zinc	1.7	0.4	µg/L	03-Sep-19	EPA200.8	231
Zirconium	0.9	0.1	µg/L	03-Sep-19	EPA200.8	231

ReportDate: Tuesday, October 01, 2019
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Taiga Batch No.: 190934

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-016 **Taiga Sample ID:** 003

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 30-Sep-19
Sampling Date: 31-Jul-19
Sampling Time: 14:45
Location:
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Physicals						
Solids, Total Suspended	< 3	3	mg/L	10-Sep-19	SM2540:D	231
Turbidity	0.07	0.05	NTU	09-Sep-19	SM2130:B	231
Major Ions						
Calcium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Hardness	< 0.7	0.7	mg/L	10-Sep-19	SM4110:B	231
Magnesium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Potassium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Sodium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231

ReportDate: Tuesday, October 01, 2019
Print Date: ***Tuesday, October 01, 2019***

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Taiga Batch No.: 190934

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-018 **Taiga Sample ID:** 004

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 30-Sep-19
Sampling Date: 31-Jul-19
Sampling Time: 15:00
Location:
Report Status: **Final**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Physicals						
Solids, Total Suspended	< 3	3	mg/L	10-Sep-19	SM2540:D	231
Turbidity	0.06	0.05	NTU	09-Sep-19	SM2130:B	231
Major Ions						
Calcium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Hardness	< 0.7	0.7	mg/L	10-Sep-19	SM4110:B	231
Magnesium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Potassium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231
Sodium	< 0.1	0.1	mg/L	10-Sep-19	SM4110:B	231

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Taiga Batch No.: 190934

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-018 **Taiga Sample ID:** 004

- DATA QUALIFERS -

Data Qualifier Descriptions:

231 *Sample was re-analyzed; result has been verified.*

*** Taiga analytical methods are based on the following standard analytical methods**

SM - Standard Methods for the Examination of Water and Wastewater

EPA - United States Environmental Protection Agency

Comments *Rerun results.*

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Taiga Batch No.: 190622

- AMENDED REPORT -

Prepared For: Contaminants and Remediation Directorate

Address: Gallery Building
4923 - 52nd Street, Box 1500
Yellowknife,NT
X1A 2R3

Attn: **Murray Somers** **Facsimile: (867) 669-2721**

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Thursday, September 26, 2019
Print Date: ***Monday, September 30, 2019***

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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-007 **Taiga Sample ID:** 001

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 15:50
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	5.2	0.5	mg/L	06-Aug-19	SM5310:B	
Organic Carbon, Total	5.5	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	139	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	8.00		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	78	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.67	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	15.5	0.1	mg/L	31-Jul-19	SM4110:B	
Chloride	1.9	0.7	mg/L	31-Jul-19	SM4110:B	
Fluoride	0.1	0.1	mg/L	31-Jul-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-007 **Taiga Sample ID:** 001

Hardness	62.9	0.7	mg/L	31-Jul-19	SM4110:B
Magnesium	5.9	0.1	mg/L	31-Jul-19	SM4110:B
Nitrate as Nitrogen	0.16	0.01	mg/L	31-Jul-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.16	0.01	mg/L	31-Jul-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	31-Jul-19	SM4110:B
Potassium	0.9	0.1	mg/L	31-Jul-19	SM4110:B
Sodium	2.3	0.1	mg/L	31-Jul-19	SM4110:B
Sulphate	15	1	mg/L	31-Jul-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.145	0.02	mg/L	04-Aug-19	EPA300.1
Sulphide	0.0210	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	08-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	53.5	1	mg/L	11-Aug-19	APHA2320

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-007 **Taiga Sample ID:** 001

Trace Metals, Dissolved

Aluminum	4.1	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	0.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	9.8	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	10.3	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	0.7	0.2	µg/L	14-Aug-19	EPA200.8
Iron	< 5	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.1	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	719	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	48.7	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	4,128	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-007 **Taiga Sample ID:** 001

Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	32.0	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	0.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	10.2	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	10.1	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	0.8	0.2	µg/L	14-Aug-19	EPA200.8
Iron	39	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.1	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	1.5	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.3	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	0.2	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-007 **Taiga Sample ID:** 001

Rubidium	1.4	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	791	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	49.2	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	4,334	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	1.3	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-008 **Taiga Sample ID:** 002

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 14:10
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	0.051	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	27.1	0.5	mg/L	06-Aug-19	SM5310:B	
Organic Carbon, Total	31.4	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	0.026	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.111	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	549	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	7.12		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	381	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	17	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	9.42	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	83.9	0.1	mg/L	31-Jul-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	31-Jul-19	SM4110:B	
Fluoride	0.4	0.1	mg/L	31-Jul-19	SM4110:B	
Hardness	260	0.7	mg/L	31-Jul-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-008 **Taiga Sample ID:** 002

Magnesium	12.4	0.1	mg/L	31-Jul-19	SM4110:B
Nitrate as Nitrogen	0.56	0.01	mg/L	31-Jul-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.56	0.01	mg/L	31-Jul-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	31-Jul-19	SM4110:B
Potassium	1.7	0.1	mg/L	31-Jul-19	SM4110:B
Sodium	10.5	0.1	mg/L	31-Jul-19	SM4110:B
Sulphate	134	1	mg/L	31-Jul-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.483	0.02	mg/L	04-Aug-19	EPA300.1
Sulphide	1.30	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	08-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	155	1	mg/L	11-Aug-19	APHA2320
Trace Metals, Dissolved					

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Client Sample ID: GBL-2019-00001-008 **Taiga Sample ID:** 002

Aluminum	15.9	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	15.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	33.6	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	70.4	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	0.4	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	11.4	0.1	µg/L	14-Aug-19	EPA200.8
Copper	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Iron	665	5	ug/L	14-Aug-19	EPA200.8
Lead	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	8.2	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	642	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	2.5	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	3.3	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	5700	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	198	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	48900	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-008 **Taiga Sample ID:** 002

Titanium	1.2	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.8	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.6	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	17.3	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	22.2	5	µg/L	14-Aug-19	EPA200.8
Antimony	0.6	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	30.9	0.2	µg/L	14-Aug-19	EPA200.8
Barium	35.5	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	67.9	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	0.1	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	14.0	0.1	µg/L	14-Aug-19	EPA200.8
Copper	0.7	0.2	µg/L	14-Aug-19	EPA200.8
Iron	2280	5	µg/L	14-Aug-19	EPA200.8
Lead	2.6	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	8.3	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	738	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	2.7	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	3.6	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.5	0.5	µg/L	14-Aug-19	EPA200.8

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-008 **Taiga Sample ID:** 002

Silicon	5600	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	199	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	53300	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	2.0	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.8	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	1.2	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	185	5	µg/L	14-Aug-19	EPA200.8
Zirconium	0.4	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-009 **Taiga Sample ID:** 003

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 11:00
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	11.6	0.5	mg/L	06-Aug-19	SM5310:B	
Organic Carbon, Total	12.1	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	0.003	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.006	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	192	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	7.79		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	120	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.51	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	23.9	0.1	mg/L	31-Jul-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	31-Jul-19	SM4110:B	
Fluoride	0.2	0.1	mg/L	31-Jul-19	SM4110:B	
Hardness	92.4	0.7	mg/L	31-Jul-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-009 **Taiga Sample ID:** 003

Magnesium	7.9	0.1	mg/L	31-Jul-19	SM4110:B
Nitrate as Nitrogen	0.33	0.01	mg/L	31-Jul-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.33	0.01	mg/L	31-Jul-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	31-Jul-19	SM4110:B
Potassium	1.0	0.1	mg/L	31-Jul-19	SM4110:B
Sodium	3.6	0.1	mg/L	31-Jul-19	SM4110:B
Sulphate	9	1	mg/L	31-Jul-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.262	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	0.0000062	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	0.0000096	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	08-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	92.8	1	mg/L	08-Aug-19	APHA2320
Subcontracted Radiochemistry					

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-009 **Taiga Sample ID:** 003

Pb-210	0.03	0.02	Bq/L	23-Aug-19	CANMET 78-22
Ra-226	0.080	0.005	Bq/L	15-Aug-19	CANMET NUTP-3E
Trace Metals, Dissolved					
Aluminum	6.4	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	0.7	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	14.3	0.2	µg/L	14-Aug-19	EPA200.8
Barium	24.2	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	29.8	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	14.6	0.2	µg/L	14-Aug-19	EPA200.8
Iron	42	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.2	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	57.1	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	1.5	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	1860	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	58.3	0.1	µg/L	14-Aug-19	EPA200.8

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Client Sample ID: GBL-2019-00001-009 **Taiga Sample ID:** 003

Sulfur	2,299	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	40.9	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	0.5	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	11.9	5	µg/L	14-Aug-19	EPA200.8
Antimony	0.7	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	15.1	0.2	µg/L	14-Aug-19	EPA200.8
Barium	24.5	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	31.9	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.0	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Copper	16.5	0.2	µg/L	14-Aug-19	EPA200.8
Iron	93	5	µg/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.2	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	82.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-009 **Taiga Sample ID:** 003

Molybdenum	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	1.5	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.5	0.5	µg/L	14-Aug-19	EPA200.8
Silicon	1870	50	µg/L	14-Aug-19	EPA200.8
Silver	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	58.0	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	2,843	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	40.9	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 5.0	5	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-010 **Taiga Sample ID:** 004

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 10:40
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	2.4	0.5	mg/L	06-Aug-19	SM5310:B	
Organic Carbon, Total	2.7	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	43.8	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	7.61		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	20	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.18	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	5.4	0.1	mg/L	31-Jul-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	31-Jul-19	SM4110:B	
Fluoride	0.3	0.1	mg/L	31-Jul-19	SM4110:B	
Hardness	21.7	0.7	mg/L	31-Jul-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-010 **Taiga Sample ID:** 004

Magnesium	2.0	0.1	mg/L	31-Jul-19	SM4110:B
Nitrate as Nitrogen	0.09	0.01	mg/L	31-Jul-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.09	0.01	mg/L	31-Jul-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	31-Jul-19	SM4110:B
Potassium	0.5	0.1	mg/L	31-Jul-19	SM4110:B
Sodium	0.9	0.1	mg/L	31-Jul-19	SM4110:B
Sulphate	2	1	mg/L	31-Jul-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.111	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	08-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	21.1	1	mg/L	08-Aug-19	APHA2320
Subcontracted Radiochemistry					

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Client Sample ID: GBL-2019-00001-010 **Taiga Sample ID:** 004

Pb-210	< 0.02	0.02	Bq/L	23-Aug-19	CANMET 78-22
Ra-226	< 0.005	0.005	Bq/L	15-Aug-19	CANMET NUTP-3E
Trace Metals, Dissolved					
Aluminum	1.4	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	0.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	3.5	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	5.3	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	0.4	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	0.8	0.2	µg/L	14-Aug-19	EPA200.8
Iron	25	5	ug/L	14-Aug-19	EPA200.8
Lead	0.6	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	0.6	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	258	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	10.6	0.1	µg/L	14-Aug-19	EPA200.8

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Client Sample ID: GBL-2019-00001-010 **Taiga Sample ID:** 004

Sulfur	< 500	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	2.4	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	0.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	3.5	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	5.5	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	0.7	0.2	µg/L	14-Aug-19	EPA200.8
Iron	< 5	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	0.6	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	0.8	0.1	µg/L	14-Aug-19	EPA200.8

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Client Sample ID: GBL-2019-00001-010 **Taiga Sample ID:** 004

Molybdenum	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	258	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	10.5	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	< 500	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-011 **Taiga Sample ID:** 005

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 14:10
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	5.1	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	5.3	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	139	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	7.97		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	74	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.49	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	15.4	0.1	mg/L	31-Jul-19	SM4110:B	
Chloride	2.0	0.7	mg/L	31-Jul-19	SM4110:B	
Fluoride	0.1	0.1	mg/L	31-Jul-19	SM4110:B	
Hardness	63.3	0.7	mg/L	31-Jul-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-011 **Taiga Sample ID:** 005

Magnesium	6.0	0.1	mg/L	31-Jul-19	SM4110:B
Nitrate as Nitrogen	0.13	0.01	mg/L	31-Jul-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.13	0.01	mg/L	31-Jul-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	31-Jul-19	SM4110:B
Potassium	0.9	0.1	mg/L	31-Jul-19	SM4110:B
Sodium	2.3	0.1	mg/L	31-Jul-19	SM4110:B
Sulphate	15	1	mg/L	31-Jul-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.155	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	53.2	1	mg/L	06-Aug-19	APHA2320
Trace Metals, Total					
Aluminum	20.2	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	0.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	9.8	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	10.4	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-011 **Taiga Sample ID:** 005

Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	0.8	0.2	µg/L	14-Aug-19	EPA200.8
Iron	21	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.1	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	1.1	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	766	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	48.9	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	3,968	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	1.2	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	0.2	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-012 **Taiga Sample ID:** 006

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 14:30
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	8.5	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	8.8	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.004	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	75.3	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	7.84		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	53	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.38	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	9.3	0.1	mg/L	01-Aug-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	01-Aug-19	SM4110:B	
Fluoride	0.1	0.1	mg/L	01-Aug-19	SM4110:B	
Hardness	33.9	0.7	mg/L	01-Aug-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-012 **Taiga Sample ID:** 006

Magnesium	2.6	0.1	mg/L	01-Aug-19	SM4110:B
Nitrate as Nitrogen	0.11	0.01	mg/L	01-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.11	0.01	mg/L	01-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-Aug-19	SM4110:B
Potassium	0.7	0.1	mg/L	01-Aug-19	SM4110:B
Sodium	1.6	0.1	mg/L	01-Aug-19	SM4110:B
Sulphate	3	1	mg/L	01-Aug-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.148	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	08-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	34.3	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Dissolved					
Aluminum	6.9	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	0.7	0.2	µg/L	14-Aug-19	EPA200.8
Barium	4.9	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	10.7	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-012 **Taiga Sample ID:** 006

Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	1.1	0.2	µg/L	14-Aug-19	EPA200.8
Iron	11	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	1.1	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.3	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	1010	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	21.1	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	512	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	10.4	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	0.7	0.2	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-012 **Taiga Sample ID:** 006

Barium	4.9	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	11.2	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	1.2	0.2	µg/L	14-Aug-19	EPA200.8
Iron	19	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	1.1	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	1.1	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	1020	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	21.1	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	518	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-012 **Taiga Sample ID:** 006

Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-013 **Taiga Sample ID:** 007

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 12:45
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	2.4	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	2.6	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	43.8	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	7.62		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	22	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.19	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	5.3	0.1	mg/L	01-Aug-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	01-Aug-19	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	01-Aug-19	SM4110:B	
Hardness	21.2	0.7	mg/L	01-Aug-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-013 **Taiga Sample ID:** 007

Magnesium	1.9	0.1	mg/L	01-Aug-19	SM4110:B
Nitrate as Nitrogen	0.09	0.01	mg/L	01-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.09	0.01	mg/L	01-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-Aug-19	SM4110:B
Potassium	0.5	0.1	mg/L	01-Aug-19	SM4110:B
Sodium	0.9	0.1	mg/L	01-Aug-19	SM4110:B
Sulphate	2	1	mg/L	01-Aug-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.111	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	20.9	1	mg/L	06-Aug-19	APHA2320
Subcontracted Radiochemistry					
Pb-210	0.05	0.02	Bq/L	23-Aug-19	CANMET 78-22
Ra-226	0.009	0.005	Bq/L	15-Aug-19	CANMET NUTP-3E
Trace Metals, Total					
Aluminum	2.5	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	0.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	3.6	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	5.1	0.9	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-013 **Taiga Sample ID:** 007

Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	0.7	0.2	µg/L	14-Aug-19	EPA200.8
Iron	< 5	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	0.5	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	0.6	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	261	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	10.5	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	< 500	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-015 **Taiga Sample ID:** 008

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 11:00
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	11.3	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	11.5	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.007	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	194	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	7.82		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	118	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.45	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	23.6	0.1	mg/L	01-Aug-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	01-Aug-19	SM4110:B	
Fluoride	0.2	0.1	mg/L	01-Aug-19	SM4110:B	
Hardness	92.1	0.7	mg/L	01-Aug-19	SM4110:B	

ReportDate: Thursday, September 26, 2019
Print Date: ***Monday, September 30, 2019***

Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-015 **Taiga Sample ID:** 008

Magnesium	8.1	0.1	mg/L	01-Aug-19	SM4110:B
Nitrate as Nitrogen	0.22	0.01	mg/L	01-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.22	0.01	mg/L	01-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-Aug-19	SM4110:B
Potassium	1.0	0.1	mg/L	01-Aug-19	SM4110:B
Sodium	3.6	0.1	mg/L	01-Aug-19	SM4110:B
Sulphate	9	1	mg/L	01-Aug-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.262	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	17-Sep-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	0.0000055	0.000005	mg/L	08-Aug-19	APHA3030B/EPA163
Mercury, Total	0.0000107	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	08-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	93.6	1	mg/L	08-Aug-19	APHA2320
Subcontracted Radiochemistry					

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-015 **Taiga Sample ID:** 008

Pb-210	0.07	0.02	Bq/L	23-Aug-19	CANMET 78-22
Ra-226	0.100	0.005	Bq/L	15-Aug-19	CANMET NUTP-3E
Trace Metals, Dissolved					
Aluminum	6.4	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	0.7	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	13.6	0.2	µg/L	14-Aug-19	EPA200.8
Barium	23.7	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	28.7	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	14.3	0.2	µg/L	14-Aug-19	EPA200.8
Iron	41	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.2	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	57.5	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	1.4	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	1820	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	56.9	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-015 **Taiga Sample ID:** 008

Sulfur	2,289	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	39.8	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	0.5	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	10.3	5	µg/L	14-Aug-19	EPA200.8
Antimony	0.7	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	15.1	0.2	µg/L	14-Aug-19	EPA200.8
Barium	23.8	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	30.6	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.0	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Copper	16.3	0.2	µg/L	14-Aug-19	EPA200.8
Iron	85	5	µg/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.2	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	65.5	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-015 **Taiga Sample ID:** 008

Molybdenum	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	1.5	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.5	0.5	µg/L	14-Aug-19	EPA200.8
Silicon	1850	50	µg/L	14-Aug-19	EPA200.8
Silver	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	57.4	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	2,859	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	40.4	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 5.0	5	µg/L	14-Aug-19	EPA200.8
Zirconium	0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-017 **Taiga Sample ID:** 009

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 11:00
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	< 0.5	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	< 0.5	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	< 0.4	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	5.80		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	< 10	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	10-Sep-19	SM2540:D	
Turbidity	0.06	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	0.7	0.1	mg/L	01-Aug-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	01-Aug-19	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	01-Aug-19	SM4110:B	
Hardness	2.3	0.7	mg/L	01-Aug-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-017 **Taiga Sample ID:** 009

Magnesium	0.1	0.1	mg/L	01-Aug-19	SM4110:B
Nitrate as Nitrogen	< 0.01	0.01	mg/L	01-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-Aug-19	SM4110:B
Potassium	< 0.1	0.1	mg/L	01-Aug-19	SM4110:B
Sodium	< 0.1	0.1	mg/L	01-Aug-19	SM4110:B
Sulphate	< 1	1	mg/L	01-Aug-19	SM4110:B
Subcontracted Inorganics					
Fluoride	< 0.020	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	0.0220	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	08-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	08-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Xylenes	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	< 1.0	1	mg/L	08-Aug-19	APHA2320
Subcontracted Radiochemistry					

ReportDate: Thursday, September 26, 2019
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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-017 **Taiga Sample ID:** 009

Pb-210	< 0.02	0.02	Bq/L	23-Aug-19	CANMET 78-22
Ra-226	0.006	0.005	Bq/L	15-Aug-19	CANMET NUTP-3E
Trace Metals, Dissolved					
Aluminum	< 0.6	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	< 0.9	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Iron	< 5	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	< 50	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Client Sample ID: GBL-2019-00001-017 **Taiga Sample ID:** 009

Sulfur	< 500	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	< 0.6	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	< 0.9	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Iron	< 5	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-017 **Taiga Sample ID:** 009

Molybdenum	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Rubidium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	< 50	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	< 500	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-020 **Taiga Sample ID:** 010

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 16:10
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	4.9	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	5.3	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	140	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	7.94		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	88	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.65	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	15.2	0.1	mg/L	01-Aug-19	SM4110:B	
Chloride	1.9	0.7	mg/L	01-Aug-19	SM4110:B	
Fluoride	0.1	0.1	mg/L	01-Aug-19	SM4110:B	
Hardness	62.4	0.7	mg/L	01-Aug-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-020 **Taiga Sample ID:** 010

Magnesium	6.0	0.1	mg/L	01-Aug-19	SM4110:B
Nitrate as Nitrogen	0.15	0.01	mg/L	01-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.15	0.01	mg/L	01-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-Aug-19	SM4110:B
Potassium	0.9	0.1	mg/L	01-Aug-19	SM4110:B
Sodium	2.3	0.1	mg/L	01-Aug-19	SM4110:B
Sulphate	15	1	mg/L	01-Aug-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.154	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	54.4	1	mg/L	11-Aug-19	APHA2320
Trace Metals, Total					
Aluminum	24.7	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	0.2	0.2	µg/L	14-Aug-19	EPA200.8
Barium	10.0	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	10.8	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-020 **Taiga Sample ID:** 010

Cobalt	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Copper	0.8	0.2	µg/L	14-Aug-19	EPA200.8
Iron	28	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.2	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	1.4	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	769	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	49.6	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	4,129	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	1.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-021 **Taiga Sample ID:** 011

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 31-Jul-19
Sampling Date: 30-Jul-19
Sampling Time: 10:26
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	11.5	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	11.7	0.5	mg/L	07-Aug-19	SM5310:B	
Phosphorous, Dissolved	0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.007	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	190	0.4	µS/cm	31-Jul-19	SM2510:B	
pH	7.93		pH units	31-Jul-19	SM4500-H:B	
Solids, Total Dissolved	112	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.55	0.05	NTU	31-Jul-19	SM2130:B	
Major Ions						
Calcium	23.2	0.1	mg/L	01-Aug-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	01-Aug-19	SM4110:B	
Fluoride	0.2	0.1	mg/L	01-Aug-19	SM4110:B	
Hardness	90.7	0.7	mg/L	01-Aug-19	SM4110:B	

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-021 **Taiga Sample ID:** 011

Magnesium	7.9	0.1	mg/L	01-Aug-19	SM4110:B
Nitrate as Nitrogen	0.21	0.01	mg/L	01-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.21	0.01	mg/L	01-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	01-Aug-19	SM4110:B
Potassium	1.0	0.1	mg/L	01-Aug-19	SM4110:B
Sodium	3.5	0.1	mg/L	01-Aug-19	SM4110:B
Sulphate	9	1	mg/L	01-Aug-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.262	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	0.0000063	0.000005	mg/L	08-Aug-19	APHA3030B/EPA163
Mercury, Total	0.0000110	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	08-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	91.5	1	mg/L	11-Aug-19	APHA2320
Subcontracted Radiochemistry					

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-021 **Taiga Sample ID:** 011

Pb-210	0.08	0.02	Bq/L	23-Aug-19	CANMET 78-22
Ra-226	0.110	0.005	Bq/L	15-Aug-19	CANMET NUTP-3E
Trace Metals, Dissolved					
Aluminum	7.7	0.6	µg/L	14-Aug-19	EPA200.8
Antimony	0.7	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	14.4	0.2	µg/L	14-Aug-19	EPA200.8
Barium	24.1	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	29.0	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Copper	16.0	0.2	µg/L	14-Aug-19	EPA200.8
Iron	50	5	ug/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.1	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	60.9	0.1	µg/L	14-Aug-19	EPA200.8
Molybdenum	0.4	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	1.6	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	14-Aug-19	EPA200.8
Silicon	1840	50	µg/L	14-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	55.5	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-021 **Taiga Sample ID:** 011

Sulfur	2,429	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	40.9	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	0.4	0.4	µg/L	14-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	10.3	5	µg/L	14-Aug-19	EPA200.8
Antimony	0.7	0.1	µg/L	14-Aug-19	EPA200.8
Arsenic	15.7	0.2	µg/L	14-Aug-19	EPA200.8
Barium	24.3	0.1	µg/L	14-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	14-Aug-19	EPA200.8
Boron	31.3	0.9	µg/L	14-Aug-19	EPA200.8
Cadmium	< 0.0	0.04	µg/L	14-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Cobalt	0.2	0.1	µg/L	14-Aug-19	EPA200.8
Copper	17.8	0.2	µg/L	14-Aug-19	EPA200.8
Iron	91	5	µg/L	14-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Lithium	2.1	0.2	µg/L	14-Aug-19	EPA200.8
Manganese	66.9	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-021 **Taiga Sample ID:** 011

Molybdenum	0.5	0.1	µg/L	14-Aug-19	EPA200.8
Nickel	1.7	0.1	µg/L	14-Aug-19	EPA200.8
Selenium	< 0.5	0.5	µg/L	14-Aug-19	EPA200.8
Silicon	1840	50	µg/L	14-Aug-19	EPA200.8
Silver	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Strontium	56.3	0.1	µg/L	14-Aug-19	EPA200.8
Sulfur	2,908	500	µg/L	14-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	14-Aug-19	EPA200.8
Titanium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Uranium	41.8	0.1	µg/L	14-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	14-Aug-19	EPA200.8
Zinc	< 5.0	5	µg/L	14-Aug-19	EPA200.8
Zirconium	0.1	0.1	µg/L	14-Aug-19	EPA200.8

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Taiga Batch No.: 190622

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-021 **Taiga Sample ID:** 011

*** Taiga analytical methods are based on the following standard analytical methods**
SM - Standard Methods for the Examination of Water and Wastewater
EPA - United States Environmental Protection Agency

Comments *Final report with original results as per client request.*

ReportDate: Thursday, September 26, 2019
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Taiga Environmental Laboratory
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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190627

- AMENDED REPORT -

Prepared For: Contaminants and Remediation Directorate

Address: Gallery Building
4923 - 52nd Street, Box 1500
Yellowknife,NT
X1A 2R3

Attn: **Murray Somers** **Facsimile: (867) 669-2721**

Final report has been reviewed and approved by:

Glen Hudy
Quality Assurance Officer

NOTES:

- Test methods and data are validated by the laboratory's Quality Assurance Program. Taiga Environmental Laboratory is accredited by the Canadian Association for Laboratory Accreditation Inc. (CALA) to ISO/IEC 17025 as a testing laboratory for specific tests registered with CALA.
- Routine methods are based on recognized procedures from sources such as
  - Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF;
  - Environment Canada
  - USEPA
- Samples shall be kept for thirty (30) days after the final report is issued. All microbiological samples shall be disposed of immediately upon completion of analysis to minimize biohazardous risks to laboratory personnel. Please contact the laboratory if you have any special requirements.
- Final results are based on the specific tests at the time of analysis and do not represent the conditions during sampling.

ReportDate: Thursday, September 26, 2019
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Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-001 **Taiga Sample ID:** 001

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 11:45
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	12.7	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	13.6	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	0.012	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.022	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	189	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	7.85		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	127	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	6	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.79	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	23.6	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	9.7	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	0.7	0.1	mg/L	02-Aug-19	SM4110:B	

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-001 **Taiga Sample ID:** 001

Hardness	77.0	0.7	mg/L	02-Aug-19	SM4110:B
Magnesium	4.4	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	0.14	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.14	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	2.0	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	7.2	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	18	1	mg/L	02-Aug-19	SM4110:B
Organics					
Hexane Extractable Material	< 2.0	2.0	mg/L	06-Aug-19	EPA1664A
Subcontracted Inorganics					
Fluoride	0.721	0.02	mg/L	04-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	08-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-001 **Taiga Sample ID:** 001

Subcontracted Physical					
Alkalinity, Total (as CaCO3)	61.7	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Dissolved					
Aluminum	12.3	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	1.2	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	55.8	0.2	µg/L	15-Aug-19	EPA200.8
Barium	15.8	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	25.9	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	7.8	0.2	µg/L	15-Aug-19	EPA200.8
Iron	14	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	7.2	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	0.3	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	2.5	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	3.7	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	951	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	71.9	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-001 **Taiga Sample ID:** 001

Sulfur	5,452	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	2.2	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	2.2	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	22.7	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	1.2	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	58.0	0.2	µg/L	15-Aug-19	EPA200.8
Barium	16.2	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	26.1	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Copper	8.4	0.2	µg/L	15-Aug-19	EPA200.8
Iron	39	5	ug/L	15-Aug-19	EPA200.8
Lead	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	7.0	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	6.3	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-001 **Taiga Sample ID:** 001

Molybdenum	2.6	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	3.8	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	988	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	72.2	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	5,541	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	0.7	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	2.1	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	3.1	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.2	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-002 **Taiga Sample ID:** 002

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 12:00
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	12.7	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	12.7	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	0.011	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.026	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	187	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	7.72		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	123	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.70	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	23.9	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	9.6	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	0.6	0.1	mg/L	02-Aug-19	SM4110:B	
Hardness	77.4	0.7	mg/L	02-Aug-19	SM4110:B	

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-002 **Taiga Sample ID:** 002

Magnesium	4.3	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	0.13	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.13	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	2.0	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	7.1	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	18	1	mg/L	02-Aug-19	SM4110:B
Organics					
Hexane Extractable Material	< 2.0	2.0	mg/L	06-Aug-19	EPA1664A
Subcontracted Inorganics					
Fluoride	0.719	0.02	mg/L	04-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	08-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	07-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	07-Aug-19	EPA 5021
Subcontracted Physical					

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-002 **Taiga Sample ID:** 002

Alkalinity, Total (as CaCO3)	60.3	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Dissolved					
Aluminum	11.2	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	1.2	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	51.3	0.2	µg/L	15-Aug-19	EPA200.8
Barium	15.6	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	26.2	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	7.7	0.2	µg/L	15-Aug-19	EPA200.8
Iron	16	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	7.3	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	0.6	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	2.5	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	3.7	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	1030	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	71.0	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	5,545	500	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-002 **Taiga Sample ID:** 002

Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	2.2	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	2.9	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	21.8	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	1.2	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	58.0	0.2	µg/L	15-Aug-19	EPA200.8
Barium	16.0	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	25.8	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Copper	8.3	0.2	µg/L	15-Aug-19	EPA200.8
Iron	35	5	ug/L	15-Aug-19	EPA200.8
Lead	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	7.2	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	7.8	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	2.4	0.1	µg/L	15-Aug-19	EPA200.8

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- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-002 **Taiga Sample ID:** 002

Nickel	3.7	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	1020	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	71.4	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	5,375	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	0.4	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	2.1	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	3.6	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.2	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-003 **Taiga Sample ID:** 003

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 12:15
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	12.6	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	13.0	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	0.013	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.022	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	191	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	7.41		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	112	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.74	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	24.4	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	9.8	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	0.6	0.1	mg/L	02-Aug-19	SM4110:B	
Hardness	78.9	0.7	mg/L	02-Aug-19	SM4110:B	

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-003 **Taiga Sample ID:** 003

Magnesium	4.4	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	0.16	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.16	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	2.0	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	7.3	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	18	1	mg/L	02-Aug-19	SM4110:B
Organics					
Hexane Extractable Material	< 2.0	2.0	mg/L	06-Aug-19	EPA1664A
Subcontracted Inorganics					
Fluoride	0.721	0.02	mg/L	04-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	12-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	08-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Subcontracted Physical					

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Taiga Batch No.: 190627

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Client Sample ID: GBL-2019-00001-003 **Taiga Sample ID:** 003

Alkalinity, Total (as CaCO3)	62.1	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Dissolved					
Aluminum	13.4	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	1.2	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	59.1	0.2	µg/L	15-Aug-19	EPA200.8
Barium	15.9	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	25.9	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	7.8	0.2	µg/L	15-Aug-19	EPA200.8
Iron	22	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	7.3	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	10.8	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	2.4	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	3.7	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	1250	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	72.4	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	5,206	500	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-003 **Taiga Sample ID:** 003

Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	2.2	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	4.3	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	23.2	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	1.2	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	61.9	0.2	µg/L	15-Aug-19	EPA200.8
Barium	16.5	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	26.1	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Copper	8.2	0.2	µg/L	15-Aug-19	EPA200.8
Iron	46	5	ug/L	15-Aug-19	EPA200.8
Lead	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	7.4	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	24.0	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	2.5	0.1	µg/L	15-Aug-19	EPA200.8

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Client Sample ID: GBL-2019-00001-003 **Taiga Sample ID:** 003

Nickel	3.8	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	1260	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	73.5	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	5,330	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	0.5	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	2.2	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	4.9	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.2	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-004 **Taiga Sample ID:** 004

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 10:30
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	5.5	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	5.6	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.004	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	144	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	7.96		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	70	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.78	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	16.6	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	2.2	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	0.1	0.1	mg/L	02-Aug-19	SM4110:B	
Hardness	67.1	0.7	mg/L	02-Aug-19	SM4110:B	

ReportDate: Thursday, September 26, 2019
Print Date: ***Monday, September 30, 2019***

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Client Sample ID: GBL-2019-00001-004 **Taiga Sample ID:** 004

Magnesium	6.2	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	0.09	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.09	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	1.0	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	2.5	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	16	1	mg/L	02-Aug-19	SM4110:B
Organics					
Hexane Extractable Material	< 2.0	2.0	mg/L	06-Aug-19	EPA1664A
Subcontracted Inorganics					
Fluoride	0.162	0.02	mg/L	04-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	12-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	08-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Subcontracted Physical					

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Client Sample ID: GBL-2019-00001-004 **Taiga Sample ID:** 004

Alkalinity, Total (as CaCO3)	56.2	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Dissolved					
Aluminum	3.6	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	1.0	0.2	µg/L	15-Aug-19	EPA200.8
Barium	11.0	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	12.2	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	0.8	0.2	µg/L	15-Aug-19	EPA200.8
Iron	< 5	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	2.3	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	0.8	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	0.3	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	734	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	54.1	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	4,631	500	µg/L	15-Aug-19	EPA200.8

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- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-004 **Taiga Sample ID:** 004

Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	0.5	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	38.7	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	1.1	0.2	µg/L	15-Aug-19	EPA200.8
Barium	11.5	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	12.2	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	0.9	0.2	µg/L	15-Aug-19	EPA200.8
Iron	39	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	2.4	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	3.0	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	0.3	0.1	µg/L	15-Aug-19	EPA200.8

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Client Sample ID: GBL-2019-00001-004 **Taiga Sample ID:** 004

Nickel	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	822	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	54.4	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	4,717	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	1.8	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	0.5	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	0.5	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-005 **Taiga Sample ID:** 005

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 9:45
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	16.0	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	16.4	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.005	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	145	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	7.91		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	100	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.75	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	22.0	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	0.1	0.1	mg/L	02-Aug-19	SM4110:B	
Hardness	74.4	0.7	mg/L	02-Aug-19	SM4110:B	

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- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-005 **Taiga Sample ID:** 005

Magnesium	4.7	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	0.09	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.09	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	0.6	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	1.5	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	9	1	mg/L	02-Aug-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.146	0.02	mg/L	04-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	12-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	08-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	64.9	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Dissolved					

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-005 **Taiga Sample ID:** 005

Aluminum	12.8	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	4.9	0.2	µg/L	15-Aug-19	EPA200.8
Barium	6.0	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	6.7	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	2.5	0.2	µg/L	15-Aug-19	EPA200.8
Iron	23	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	1.3	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	1.0	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	0.6	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	0.6	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	580	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	26.2	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	3,112	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	0.9	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	25.7	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	5.0	0.2	µg/L	15-Aug-19	EPA200.8
Barium	6.1	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	6.5	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	2.6	0.2	µg/L	15-Aug-19	EPA200.8
Iron	47	5	ug/L	15-Aug-19	EPA200.8
Lead	0.3	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	1.2	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	7.2	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	0.6	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	0.6	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8

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Client Sample ID: GBL-2019-00001-005 **Taiga Sample ID:** 005

Silicon	599	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	26.5	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	3,130	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	0.4	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.3	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	1.3	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-006 **Taiga Sample ID:** 006

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 10:20
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	5.4	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	5.5	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	137	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	7.90		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	68	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.89	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	15.8	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	2.3	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	02-Aug-19	SM4110:B	
Hardness	64.2	0.7	mg/L	02-Aug-19	SM4110:B	

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-006 **Taiga Sample ID:** 006

Magnesium	6.0	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	0.15	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.30	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	0.15	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	0.9	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	2.2	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	15	1	mg/L	02-Aug-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.156	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	12-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	08-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	52.9	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Dissolved					

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-006 **Taiga Sample ID:** 006

Aluminum	3.7	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Barium	10.0	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	10.6	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	0.7	0.2	µg/L	15-Aug-19	EPA200.8
Iron	5	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	2.1	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	0.7	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	0.3	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	726	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	48.7	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	4,675	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-006 **Taiga Sample ID:** 006

Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	0.5	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	51.5	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Barium	10.4	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	10.8	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	0.8	0.2	µg/L	15-Aug-19	EPA200.8
Iron	61	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	2.1	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	2.4	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	0.3	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-006 **Taiga Sample ID:** 006

Silicon	847	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	49.1	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	4,733	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	2.5	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	0.5	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	1.2	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-014 **Taiga Sample ID:** 007

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 11:45
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	12.6	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	13.0	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	0.010	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	0.021	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	191	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	7.96		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	98	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.77	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	24.2	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	9.7	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	0.7	0.1	mg/L	02-Aug-19	SM4110:B	
Hardness	79.1	0.7	mg/L	02-Aug-19	SM4110:B	

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-014 **Taiga Sample ID:** 007

Magnesium	4.5	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	0.13	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.13	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	2.0	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	7.2	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	18	1	mg/L	02-Aug-19	SM4110:B
Organics					
Hexane Extractable Material	< 2.0	2.0	mg/L	06-Aug-19	EPA1664A
Subcontracted Inorganics					
Fluoride	0.737	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	12-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	08-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Subcontracted Physical					

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-014 **Taiga Sample ID:** 007

Alkalinity, Total (as CaCO3)	62.2	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Dissolved					
Aluminum	10.8	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	1.2	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	56.1	0.2	µg/L	15-Aug-19	EPA200.8
Barium	16.1	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	26.2	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	7.8	0.2	µg/L	15-Aug-19	EPA200.8
Iron	15	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	7.2	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	0.3	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	2.6	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	3.7	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	967	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	72.6	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	5,599	500	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-014 **Taiga Sample ID:** 007

Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	2.2	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	2.2	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	24.3	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	1.2	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	57.9	0.2	µg/L	15-Aug-19	EPA200.8
Barium	16.4	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	27.0	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Copper	8.4	0.2	µg/L	15-Aug-19	EPA200.8
Iron	40	5	ug/L	15-Aug-19	EPA200.8
Lead	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	7.3	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	6.4	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	2.6	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-014 **Taiga Sample ID:** 007

Nickel	3.8	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	991	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	72.7	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	5,595	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	0.4	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	2.1	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	3.0	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.2	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-016 **Taiga Sample ID:** 008

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 14:45
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	< 0.5	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	< 0.5	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	< 0.4	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	5.78		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	< 10	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	4	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.07	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	0.8	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	02-Aug-19	SM4110:B	
Hardness	2.3	0.7	mg/L	02-Aug-19	SM4110:B	

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-016 **Taiga Sample ID:** 008

Magnesium	< 0.1	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	< 0.1	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	0.2	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	< 1	1	mg/L	02-Aug-19	SM4110:B
Organics					
Hexane Extractable Material	< 2.0	2.0	mg/L	06-Aug-19	EPA1664A
Subcontracted Inorganics					
Fluoride	< 0.020	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	12-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	08-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Subcontracted Physical					

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-016 **Taiga Sample ID:** 008

Alkalinity, Total (as CaCO3)	< 1.0	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Dissolved					
Aluminum	< 0.6	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Barium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	< 0.9	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Iron	< 5	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	< 50	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	< 500	500	µg/L	15-Aug-19	EPA200.8

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Taiga Environmental Laboratory
4601-52nd Ave., Box 1320, Yellowknife, NT. X1A 2L9
Tel: (867)-767-9235 Fax: (867)-920-8740

Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-016 **Taiga Sample ID:** 008

Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	< 0.6	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Barium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	< 0.9	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Iron	< 5	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-016 **Taiga Sample ID:** 008

Nickel	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	< 50	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	< 500	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-018 **Taiga Sample ID:** 009

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 15:00
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	< 0.5	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	< 0.5	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	< 0.4	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	5.67		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	< 10	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	< 3	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.07	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	0.6	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	< 0.7	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	< 0.1	0.1	mg/L	02-Aug-19	SM4110:B	
Hardness	1.7	0.7	mg/L	02-Aug-19	SM4110:B	

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-018 **Taiga Sample ID:** 009

Magnesium	< 0.1	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	< 0.1	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	0.2	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	< 1	1	mg/L	02-Aug-19	SM4110:B
Organics					
Hexane Extractable Material	< 2.0	2.0	mg/L	07-Aug-19	EPA1664A
Subcontracted Inorganics					
Fluoride	< 0.020	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Dissolved	< 0.0000050	0.000005	mg/L	07-Aug-19	APHA3030B/EPA163
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Organics					
Benzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Ethylbenzene	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
F1: C6-C10	< 0.10	0.1	mg/L	12-Aug-19	CCME CWS PHC
F2: C10-C16	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F3: C16-C34	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
F4: C34-C50	< 0.30	0.3	mg/L	26-Aug-19	EPA3510
Toluene	< 0.00045	0.00045	mg/L	08-Aug-19	EPA 5021
Xylenes	< 0.00050	0.0005	mg/L	08-Aug-19	EPA 5021
Subcontracted Physical					

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-018 **Taiga Sample ID:** 009

Alkalinity, Total (as CaCO3)	< 1.0	1	mg/L	08-Aug-19	APHA2320
Subcontracted Radiochemistry					
Pb-210	< 0.02	0.02	Bq/L	23-Aug-19	CANMET 78-22
Ra-226	0.007	0.005	Bq/L	15-Aug-19	CANMET NUTP-3E
Trace Metals, Dissolved					
Aluminum	0.8	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Barium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	< 0.9	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Iron	< 5	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	< 50	50	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-018 **Taiga Sample ID:** 009

Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	< 500	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Trace Metals, Total					
Aluminum	< 0.6	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Barium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	< 0.9	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Iron	< 5	5	ug/L	15-Aug-19	EPA200.8
Lead	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-018 **Taiga Sample ID:** 009

Lithium	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	< 50	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	< 500	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	< 0.4	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-019 **Taiga Sample ID:** 010

Client Project: GBL-2019-00001
Sample Type: Water
Received Date: 01-Aug-19
Sampling Date: 31-Jul-19
Sampling Time: 10:45
Location:
Report Status: **Amended**

Test Parameter	Result	Detection Limit	Units	Analysis Date	Analytical Method *	Qualifer
Inorganics - Nutrients						
Ammonia as Nitrogen	< 0.005	0.005	mg/L	08-Aug-19	SM4500-NH3:G	
Organic Carbon, Dissolved	5.4	0.5	mg/L	07-Aug-19	SM5310:B	
Organic Carbon, Total	5.4	0.5	mg/L	08-Aug-19	SM5310:B	
Phosphorous, Dissolved	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Phosphorous, Total	< 0.002	0.002	mg/L	07-Aug-19	SM4500-P:D	
Inorganics - Physicals						
Conductivity, Specific (@25C)	136	0.4	µS/cm	01-Aug-19	SM2510:B	
pH	7.90		pH units	01-Aug-19	SM4500-H:B	
Solids, Total Dissolved	91	10	mg/L	06-Aug-19	SM2540:C	
Solids, Total Suspended	10	3	mg/L	06-Aug-19	SM2540:D	
Turbidity	0.62	0.05	NTU	01-Aug-19	SM2130:B	
Major Ions						
Calcium	15.0	0.1	mg/L	02-Aug-19	SM4110:B	
Chloride	1.8	0.7	mg/L	02-Aug-19	SM4110:B	
Fluoride	0.1	0.1	mg/L	02-Aug-19	SM4110:B	
Hardness	61.5	0.7	mg/L	02-Aug-19	SM4110:B	

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Taiga Batch No.: 190627

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Client Sample ID: GBL-2019-00001-019 **Taiga Sample ID:** 010

Magnesium	5.9	0.1	mg/L	02-Aug-19	SM4110:B
Nitrate as Nitrogen	0.09	0.01	mg/L	02-Aug-19	SM4110:B
Nitrate+Nitrite as Nitrogen	0.09	0.01	mg/L	02-Aug-19	SM4110:B
Nitrite as Nitrogen	< 0.01	0.01	mg/L	02-Aug-19	SM4110:B
Potassium	0.9	0.1	mg/L	02-Aug-19	SM4110:B
Sodium	2.2	0.1	mg/L	02-Aug-19	SM4110:B
Sulphate	15	1	mg/L	02-Aug-19	SM4110:B
Subcontracted Inorganics					
Fluoride	0.152	0.02	mg/L	05-Aug-19	EPA300.1
Sulphide	< 0.0018	0.0018	mg/L	06-Aug-19	APHA4500-S2
Subcontracted Metals					
Mercury, Total	< 0.0000050	0.000005	mg/L	07-Aug-19	EPA1631E
Subcontracted Physical					
Alkalinity, Total (as CaCO3)	53.1	1	mg/L	08-Aug-19	APHA2320
Trace Metals, Total					
Aluminum	26.6	0.6	µg/L	15-Aug-19	EPA200.8
Antimony	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Arsenic	0.3	0.2	µg/L	15-Aug-19	EPA200.8
Barium	10.2	0.1	µg/L	15-Aug-19	EPA200.8
Beryllium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Bismuth	< 0.2	0.2	µg/L	15-Aug-19	EPA200.8
Boron	10.6	0.9	µg/L	15-Aug-19	EPA200.8
Cadmium	< 0.04	0.04	µg/L	15-Aug-19	EPA200.8
Cesium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Chromium	0.1	0.1	µg/L	15-Aug-19	EPA200.8

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Cobalt	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Copper	2.3	0.2	µg/L	15-Aug-19	EPA200.8
Iron	34	5	ug/L	15-Aug-19	EPA200.8
Lead	0.6	0.1	µg/L	15-Aug-19	EPA200.8
Lithium	2.1	0.2	µg/L	15-Aug-19	EPA200.8
Manganese	1.6	0.1	µg/L	15-Aug-19	EPA200.8
Molybdenum	0.3	0.1	µg/L	15-Aug-19	EPA200.8
Nickel	0.2	0.1	µg/L	15-Aug-19	EPA200.8
Selenium	< 0.3	0.3	µg/L	15-Aug-19	EPA200.8
Silicon	784	50	µg/L	15-Aug-19	EPA200.8
Silver	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Strontium	50.0	0.1	µg/L	15-Aug-19	EPA200.8
Sulfur	4,420	500	µg/L	15-Aug-19	EPA200.8
Thallium	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Tin	< 0.1	0.1	µg/L	15-Aug-19	EPA200.8
Titanium	1.2	0.1	µg/L	15-Aug-19	EPA200.8
Uranium	0.5	0.1	µg/L	15-Aug-19	EPA200.8
Vanadium	0.1	0.1	µg/L	15-Aug-19	EPA200.8
Zinc	1.8	0.4	µg/L	15-Aug-19	EPA200.8
Zirconium	0.9	0.1	µg/L	15-Aug-19	EPA200.8

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Taiga Batch No.: 190627

- CERTIFICATE OF ANALYSIS -

Client Sample ID: GBL-2019-00001-019 **Taiga Sample ID:** 010

*** Taiga analytical methods are based on the following standard analytical methods**
SM - Standard Methods for the Examination of Water and Wastewater
EPA - United States Environmental Protection Agency

Comments *Final report with original results as per client request.*

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