Yukon

Environment | Water Resources Branch

Site Audit Report

Brewery Creek Mine

Date of site visit: September 15 – 16, 2020

Licensee: Golden Predator Canada Corp.

Licence number: QZ96-007 expires Dec. 31, 2021 and MN12-038 expires July 5, 2022

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The Water Resource Branch (WRB) is responsible for monitoring surface and groundwater in the Yukon and is committed to responsible management, protection and conservation of the territory's water resources. As technical experts in water resources, we provide advice for compliance and inspections purposes and conduct reviews of projects undergoing water licensing and environmental assessment processes.

One of WRB's responsibilities is to conduct site visits of various undertakings that use or deposit waste to water. Site visits are undertaken to improve understanding of a project's effects on the receiving water environment, with the intention of identifying emerging issues and enhancing understanding of existing water quality and quantity conditions to support technical advice and input into assessment, licensing, and post-licensing processes. The opinions and recommendations expressed in this report are based on relevant data, reports, interpretation/analyses of scientific information available to WRB, and what was observed in the field.

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1. Key Findings & Recommendations

During September 15 – 16, 2020 WRB conducted a site audit at the Brewery Creek mine site, located approximately 60 km from Dawson City, Yukon. This audit was conducted with the intent to address some knowledge gaps revealed by the June 2020 Brewery Creek Site Visit and Desktop Study Report.

Specifically, this site audit had three primary objectives;

1) Identify areas of significant groundwater discharge to Carolyn Creek,
2) Further understand the source(s) of observed nitrate concentrations in Carolyn Creek,
3) Understand the aqueous chemistry of the heap leach facility, ponds, and downgradient seepage, if present.

To achieve these objectives a WRB crew of five visited the site and collected surface water samples, groundwater samples and discharge measurements. The team also investigated the area surrounding the heap leach facility and the Carolyn Creek valley in search of previously unknown surface water ponding or emergent groundwater seeps. Sampling stations and monitoring wells were selected based on their location on the gradient relative to the heap leach facility with a station higher in elevation to provide potential control data and stations lower in elevation to provide potential exposure data. Samples collected were analyzed for a number of parameters found in the Canadian Council of Ministers of Environment (CCME) Guidelines for the Protection of Aquatic Life. Additional parameters, including isotopes, were measured as well in order to potentially strengthen understanding of site aqueous chemistry. Results were interpreted and reported by WRB staff.

The September 2020 site audit resulted in the following key findings;

1) Water quality in Carolyn Creek changes significantly from upstream (CC-US) to downstream (BC-2):
    - Nitrate increases more than tenfold,

- Sulfate and conductivity increase by approximately fivefold,
- Chloride doubles, and
- Selenium increases from undetectable (<0.0005 mg/L) to nearly four times the CCME guideline of 0.001 mg/L (0.00378 mg/L).

2) Based on isotope results, it seems likely that observed changes in water quality at Carolyn Creek are influenced by water originating from the heap leach pad, ponds, or a combination of the two. The current effects of the heap infrastructure on Carolyn Creek are relatively minor and the significance to Laura Creek or further downstream is presumed to be diluted to non-detectible concentrations. Carolyn Creek and Laura Creek are non-fish-bearing as indicated by electrofishing studies performed by Norecol in 1991.
3) A groundwater seep was located, and named "CC-SEEP", on the eastern slope of the Carolyn Creek valley. This seep flows as surface water into the Carolyn Creek main channel upstream of BC-2. Additionally, the Carolyn Creek valley was found to be comprised of soft ground and substrate where flow disappeared to and emerged from ground frequently. CC-SEEP and other groundwater entering the channel in this reach appear to be contributing to the elevated nitrate and other parameters at the Carolyn Creek sampling station BC-2.
4) It is not expected that all groundwater monitoring wells downgradient of the heap leach pad and ponds intersect groundwater flow paths from the heap leach pad and/or ponds to Carolyn Creek, given the hydrogeological setting (i.e. a fractured rock aquifer in which solute transport may be controlled by a relatively small set of fractures) and the relatively small number of active monitoring wells. That said, the nitrate isotope composition of heap water (BC-28a) and groundwater at BC-66-2 are very similar, which supports the hypothesis that groundwater at BC-66-2, which has the highest nitrate concentration in groundwater at the site (20.8 mg/L), has been influenced by heap water.
5) Concentrations of antimony in heap-derived water continue to increase with the September 2020 samples. Concentrations of sulfate, nitrate, and cyanide in heap-derived water are high and variable.

In response to the abovementioned key findings, WRB developed a list of recommendations with respect to the Brewery Creek site;

1) Golden predator should sample an additional Carolyn Creek station similar to "CC-US" that is representative of background water quality in Carolyn Creek in order to accumulate long-term records. This will support the assessment of potential effects from the mine on the water quality in Carolyn Creek and the

background seasonal variability of water quality in the portion of Carolyn Creek upstream of seep and groundwater input.

2) Golden Predator should sample all functional groundwater monitoring wells in the leach pad area (including BC-20 and BC-No ID; see Map 1) in an attempt to better characterize background and potentially-impacted groundwater quality in that area.
3) There would be high value in creating an updated model of water quality and quantity on site to better understand the current function of the bioreactor and overall site water balance.
4) Surveying the well head elevations would improve the accuracy of the calculated hydraulic gradients and interpreted groundwater flow directions.
5) There would be high value in collecting additional samples for analysis of stable water and nitrate isotopes to improve the conceptual site model, ideally including at least all groundwater wells sampled by WRB, the heap stations, CC-Seep, CC-US and BC-02.

2. Methodology

2.1. Field Sampling

Sample collection was completed by WRB staff using best practices for water sampling and according to the specifications of the labs performing analysis. WRB staff adhered to standard sampling methods outlined by Environment and Climate Change Canada (ECCC) and Government of Yukon Department of Environment guidance documents. In-situ water quality field parameters were measured for each sample collected using YSI ProDSS Handheld Multimeters which were calibrated by WRB staff as per manufacturer specifications prior to entering the field.

Samples collected during the September 2020 site visit were analyzed for a host of analytical parameters as outlined in Table 1. These parameters were chosen to support site audit objectives as well as allow for comparison against site-specific effluent guidelines as outlined in licence QZ96-007 and water quality guidelines outlined by the Canadian Council of Ministers of the Environment (CCME) long-term Guidelines for Protection of Aquatic Life. Sampling locations have been indicated on Map 1.

Table 1. Analysis performed for samples collected during the September 2020 site audit.

Samples Group	Parameter
Heap Leach Facility	Thiocyanate, cyanate, cyanide (SAD+WAD, Free), pH, EC, Alkalinity, TSS, TDS, Cl, SO4, NO3, NO2, NH3 u-NH4, total and dissolved metals, water isotopes, nitrate isotopes
Laura & Carolyn Creeks	pH, EC, Alkalinity, TSS, TDS, Cl, SO4, NO3, NO2, NH3, u-NH4, total and dissolved metals, water isotopes, nitrate isotopes
Groundwater Wells	pH, EC, Alkalinity, TDS, Cl, SO4, NO3, NO2, NH3, u-NH4, dissolved metals, water isotopes, nitrate isotopes, thiosulfate (BC-19 & BC-66-2)

In addition to standard samples collected from site, WRB completed four Quality Assurance/Quality Control (QA/QC) samples (Table 2) to comply with sampling best practices referenced above.

Table 2. QA/QC samples completed during the September 2020 site audit.

QA/QC Sample Type Collected	Procedure	Purpose
Travel Blank	Lab that is providing sample bottle sets provides an additional set filled with lab grade deionized water and sealed. This sample is carried for the duration of the sampling event, returned to the lab and never opened until analysis.	Can help identify if any contaminants have been introduced into the sample during or as a result of the transportation process.
Field Blank	A sample bottle set is filled with lab grade deionized water in the field by sampling staff following all the standard protocols and procedures of a normal sample.	Can help identify if any contaminants have been introduced into the sample from the atmosphere at the sampling location or from sampling staff handling protocols and procedures.
Replicate (x2)	A regular sample is collected followed immediately by an identical replicate sample being collected adhering to all of the same standard protocols and procedures. One replicate is collected for every ten samples, rounded up to the nearest ten samples. Analytical results are compared and Relative Percent Difference (RPD) is calculated.	Can help identify precision of sampling technique and methods and provide an estimate of sampling error and analytical error.

Map 1. Site overview and sampling stations.

2.2. Surface Water Samples Collected

WRB staff collected eight surface water samples (Table 3) during the September 2020 site audit. These sampling stations were selected with the intention of providing context to the heap leach facility aqueous chemistry and provide the greatest potential to add to our understanding of the water chemistry across the area of focus. The "pregnant", "barren" and "overflow" ponds at the heap leach facility were sampled, as well as Carolyn and Laura Creeks which are suspected to receive water impacted by the decommissioned heap leach.

As part of the Carolyn Creek investigation one sample was collected at a newly discovered groundwater seep in the Carolyn Creek valley named "CC-SEEP" and one control sample was collected in the Carolyn Creek channel approximately 250 m upstream of the confluence with the newly discovered seep discharge named "CC-US". This upstream sample was collected with the intention of providing background data for Carolyn Creek before the seep influence. Additionally, WRB crew opportunistically collected a water sample from a large pool located west of the heap leach facility with the intention of providing further context to the Carolyn Creek investigation.

Table 3. Surface water samples collected during the September 2020 site audit.

Station Code	Location	Date & Time Sampled	Coordinates (UTM Zone 7N)		Rationale
			Easting	Northing	
BC-28a	Heap leach facility pregnant pond	2020-09-15 10:58	632540	7103800	Provide context to aqueous water chemistry in heap leach facility and improve data record.
BC-28b	Heap leach facility barren pond	2020-09-15 11:25	632424	7104033	Points of compliance in water license QZ96-007, provide context to aqueous water chemistry in heap leach facility, further understanding of potential source(s) of observed nitrate concentrations in Carolyn Creek and improve data record.
BC-28	Heap leach facility overflow pond	2020-09-15 12:05	632424	7104032	
BC-2	Carolyn Creek upstream of confluence with Laura Creek	2020-09-15 14:15	632113	7102611	Further understanding of potential source(s) of observed nitrate concentrations in Carolyn Creek and improve data record.
BC-3	Laura Creek upstream of confluence with Carolyn Creek	2020-09-15 14:50	632345	7102570	Further understanding of potential source(s) of observed nitrate concentrations in Carolyn Creek and improve data record.

DG-SEEP	Downgradient pond located west of heap leach facility	2020-09-15 11:15	632173	7104116	Investigate pooled water in area downgradient from heap leach facility, further understanding of potential source(s) of observed nitrate concentrations in Carolyn Creek.
CC-US	Carolyn creek upstream of the seep and upstream of BC-2	2020-09-16 14:37	631996	7103446	Sample for Carolyn Creek water quality upstream of expected heap leach influence to provide background WQ in Carolyn Creek
CC-SEEP	Seep located south of heap leach facility flowing into Carolyn Creek	2020-09-16 15:13	632086	7103282	Investigation of newly discovered seep emerging from eastern slope of Carolyn Creek valley, further understanding of potential source(s) of observed nitrate concentrations in Carolyn Creek

2.3. Groundwater Samples Collected

WRB staff collected six groundwater samples (Table 4) during the September 2020 site audit. Sampling methods used for each well varied depending on site and well conditions, and these different methods have been outlined in Table 12.

Table 4. Groundwater samples collected during the September 2020 site audit.

Station Code	Location	Date & Time Sampled	Coordinates (UTM Zone 7N) Easting	Northing	Rationale
BC-66-2	Deep nested monitoring well down gradient and southeast of heap leach facility and ponds	2020-09-15 15:00	7103565	632650	Cross gradient to heap leach facility, further understand the aqueous chemistry of the heap leach facility, ponds, and downgradient seepage, if present.
BC-65 (Old)	Deep nested monitoring well located crossgradient and south of the heap leach facility and ponds	2020-09-15 15:40	7103616	632827	Further understand the aqueous chemistry of the heap leach facility, ponds, and downgradient seepage, if present.
BC-65 (New)	East and crossgradient of heap leach facility	2020-09-15 17:50	7103999	632719	Further understand the aqueous chemistry of the heap leach facility, ponds,

Station Code	Location	Date & Time Sampled	Coordinates (UTM Zone 7N) Easting	Northing	Rationale
					and downgradient seepage, if present.
BC-21	Crossgradient and north of the heap leach facility	2020-09-16 11:10	7105073	632724	Potential groundwater control data.
BC-19	Downgradient and south-southwest of the ponds and heap leach facility	2020-09-16 13:55	7103750	632271	Downgradient of heap leach facility, potential impacted station.
BC-22	Downgradient and southwest of the ponds and heap leach facility	2020-09-16 15:43	7103968	632154	Downgradient of heap leach facility, potential impacted station.

2.4. Discharge Measurements

WRB collected two discharge measurements during the September 2020 site audit. These measurements were performed on Carolyn and Laura Creeks at the BC-2 and BC-3 water sampling locations and were intended to provide context to allow for visual flow estimation during the Carolyn Creek investigation. Additionally, these measurements provide data points in the event flow regimes on site are examined more closely in the future.

The volumetric method was used to collect a discharge measurement at Carolyn Creek station BC-2. The volumetric method requires a bucket of known volume and a stopwatch. The method also requires a point in the channel where flow can be captured in its entirety, i.e. a weir or natural cascade in the channel. Flow must be between 1 – 10 L/s such that the bucket does not fill too slowly or too rapidly to record a precise measurement. The time required to fill the bucket is recorded for five trials and averaged to determine a value in L/s.

Salt dilution gauging was performed on Laura Creek site BC-3 to measure discharge. This method involves adding a known quantity of salt tracer to the channel flow and observing and recording Specific Conductance (SPC) at a point downstream as the injected salt tracer moves through the channel. The ideal extent of the reach between salt injection and measurement is >100*(width of channel), and concentration should be measured at a natural choke point in the channel absent of any backwater or eddy effects where flow exhibits good mixing potential across the span of the reach. For a given

quantity of salt, flow can be derived from the time it takes the salt tracer to pass through the channel and the degree to which it has been diluted.

While collecting a scheduled water sample on September 15, 2020, WRB crew opportunistically collected a flow measurement at the Carolyn Creek sampling location BC-2. A natural cascade in the channel was located immediately upstream of the sample location where flow was consolidated in its entirety and allowed for a volumetric measurement. At 14:25, flow in the Carolyn Creek channel was found to be 0.007 m^3/s (7.09 L/s). The measurement provided context to WRB staff in order to visually estimate flow at various points upstream.

Additionally, WRB collected a flow measurement at Laura Creek sampling location BC-3 using the salt dilution gauging method for further context regarding discharge on site. Channel conditions were found to be ideal for the salt dilution gauging method where mixing potential was high and SPC could be measured and recorded at a natural choke point in the channel where flow was laminar and captured in its entirety At 15:05, flow in the Laura Creek channel was found to be 0.2 m^3/s (200 L/s). Photos can be found in Appendix E.

2.5. Water License QZ96-007 Effluent Quality Standards

Golden Predator currently holds a Type A Water License QZ96-007 for a Quartz Mining undertaking at the Brewery Creek site (Appendix D). Part G of QZ96-007 outlines effluent quality standards for several monitoring stations on site which have been detailed in Table 5. These standards only apply when effluent is being discharged from BC-28b or BC-28. It should be noted that at the time of the September 2020 site audit YG WRB was not aware of any effluent being discharged from BC-28. Only standards relevant to the stations sampled during the September 2020 site audit have been included and have been used as a basis of comparison only.

Table 5. Relevant Effluent Quality Standards as outlined by water license QZ96-007 when discharging effluent from BC-28.

Parameter	BC-28	BC-65 & BC-66-2	BC-28b
WAD Cyanide	0.25 mg/L	0.125 mg/L	0.25 mg/L
Total Cyanide	2.0 mg/L	1.0 mg/L	2.0 mg/L
Ammonia (as N)	15.0 mg/L*	7.5 mg/L	5.0 mg/L
Copper	0.5 mg/L*	0.1 mg/L	0.2 mg/L
Arsenic	0.5 mg/L	0.25 mg/L	0.5 mg/L
Antimony	1.0 mg/L	0.5 mg/L	1.0 mg/L
Mercury	0.005 mg/L	0.0025 mg/L	0.005 mg/L

Zinc	0.5 mg/L	0.25 mg/L	0.5 mg/L
Selenium	0.75 mg/L*	0.3 mg/L	0.25 mg/L
Lead	0.2 mg/L	0.1 mg/L	0.2 mg/L
Aluminum	1.0 mg/L	3.0 mg/L	1.0 mg/L
Bismuth	0.5 mg/L	0.25 mg/L	0.5 mg/L
Cadmium	0.1 mg/L	0.05 mg/L	0.1 mg/L
Chromium	0.5 mg/L	0.25 mg/L	0.5 mg/L
Iron	1.0 mg/L	5.0 mg/L	1.0 mg/L
Manganese	2.0 mg/L	6.0 mg/L	2.0 mg/L
Molybdenum	0.5 mg/L	0.25 mg/L	0.5 mg/L
Nickel	0.8 mg/L*	0.25 mg/L	0.5 mg/L
Silver	0.1 mg/L	0.05 mg/L	0.1 mg/L
pH	None	None	6.0 to 9.5 pH units
Suspended Solids	None	None	50 mg/L
Metals values are total for surface water, dissolved for groundwater * When discharging directly to Laura, Lucky or Pacific Creeks, these parameters revert to BC-28b effluent guidelines			

2.6. Canadian Council of Ministers of the Environment (CCME) Guidelines

In addition to site specific water quality guidelines, data from the September 2020 Brewery Creek water sampling was compared to the CCME long-term Water Quality Guidelines for the Protection of Aquatic Life to provide additional basis of comparison (Table 6). These guidelines are intended to describe a generic threshold under which freshwater life is protected from anthropogenic stressors such as chemical inputs or changes to composition. These guidelines are numerical limits or narrative statements based on scientifically defensible toxicological data available at the time a particular guideline was developed. Guideline values are 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. Ambient water quality guidelines developed for the protection of aquatic life are meant to provide a science-based benchmark for a nationally consistent level of protection for aquatic life in Canada. It should be noted that several water quality guidelines are calculated using in-situ parameters such as pH or temperature and are therefore variable.

Table 6. CCME long-term Water Quality Guidelines for the Protection of Aquatic Life.

Parameter	Maximum Concentration
Aluminum (Total)	*Calculated, variable*
Ammonia (Total)	*Calculated, variable*
Arsenic (Total)	0.005 mg/L
Cadmium (Total)	*Calculated, variable*
Chromium (Total)	0.0089 mg/L
Copper (Total)	*Calculated, variable*

Cyanide (WAD)	0.005 mg/L
Dissolved Oxygen	8.0 mg/L (minimum)
Iron (Total)	0.3 mg/L
Lead (Total)	*Calculated, variable*
Manganese (Total & Dissolved)	*Calculated, variable*
Mercury (Total)	0.000026 mg/L
Molybdenum (Total)	0.073 mg/L
Nickel (Total)	*Calculated, variable*
Nitrate	2.9 mg/L
pH	6.5 to 9.0 pH units
Selenium (Total)	0.001 mg/L
Silver (Total)	0.00025 mg/L
Strontium (Dissolved)	2.5 mg/L
Thallium (Total)	0.0008 mg/L
Turbidity	*Calculated, variable*
Uranium (Total)	0.033 mg/L
Zinc (Total)	*Calculated, variable*

2.7. Contaminated Sites Regulations

Schedule 3 of the *Contaminated Sites Regulations* (CSR), pursuant to the *Environment Act*, lists generic numerical water standards that are used to determine if sites are contaminated as per the regulation. The CSR standards for Aquatic Life that are relevant to the September 2020 site audit sampling are outlined in Table 7 below. CSR guidelines operate based on a 1:10 dilution ratio when compared to surface water guidelines. Similar to CCME Guidelines above, several CSR guidelines are calculated using in-situ parameters such as pH or temperature and are therefore variable. For the purposes of this audit, these guidelines were utilized for basis of comparison only, as neither QZ96-007 nor CCME have exhaustive guidelines specific to groundwater. It is not the purpose of this audit to draw conclusions related to any exceedances of CSR standards with respect to the regulation.

Table 7. Contaminated Sites Regulations Schedule 3 Generic Numerical Water Standards for Aquatic Life.

Parameter	Maximum Concentration
Silver (Dissolved)	*Calculated, variable*
Cadmium (Dissolved)	*Calculated, variable*
Copper (Dissolved)	*Calculated, variable*
Fluoride	*Calculated, variable*
Molybdenum (Dissolved)	1 mg/L
Nickel (Dissolved)	*Calculated, variable*
Ammonium	*Calculated, variable*
Nitrogen (as NO_2)	*Calculated, variable*
Nitrate	40 mg/L

Lead (Dissolved)	*Calculated, variable*
Sulfate	100 mg/L
Zinc (Dissolved)	*Calculated, variable*

2.8. Carolyn Creek Investigation

On September 16, 2020 two WRB staff travelled upstream in the Carolyn Creek channel to investigate the channel valley for potential emergent groundwater seeps. While travelling upstream the crew measured in-situ field parameters (Table 8) to look for sudden changes in measured values as an indicator of potential groundwater input. Field parameters were systematically measured approximately every 50 m or less using a YSI ProDSS Handheld Multimeter. The crew also visually estimated flow as they travelled upstream in order to help discern the main channel, divergent channels and potential groundwater inputs.

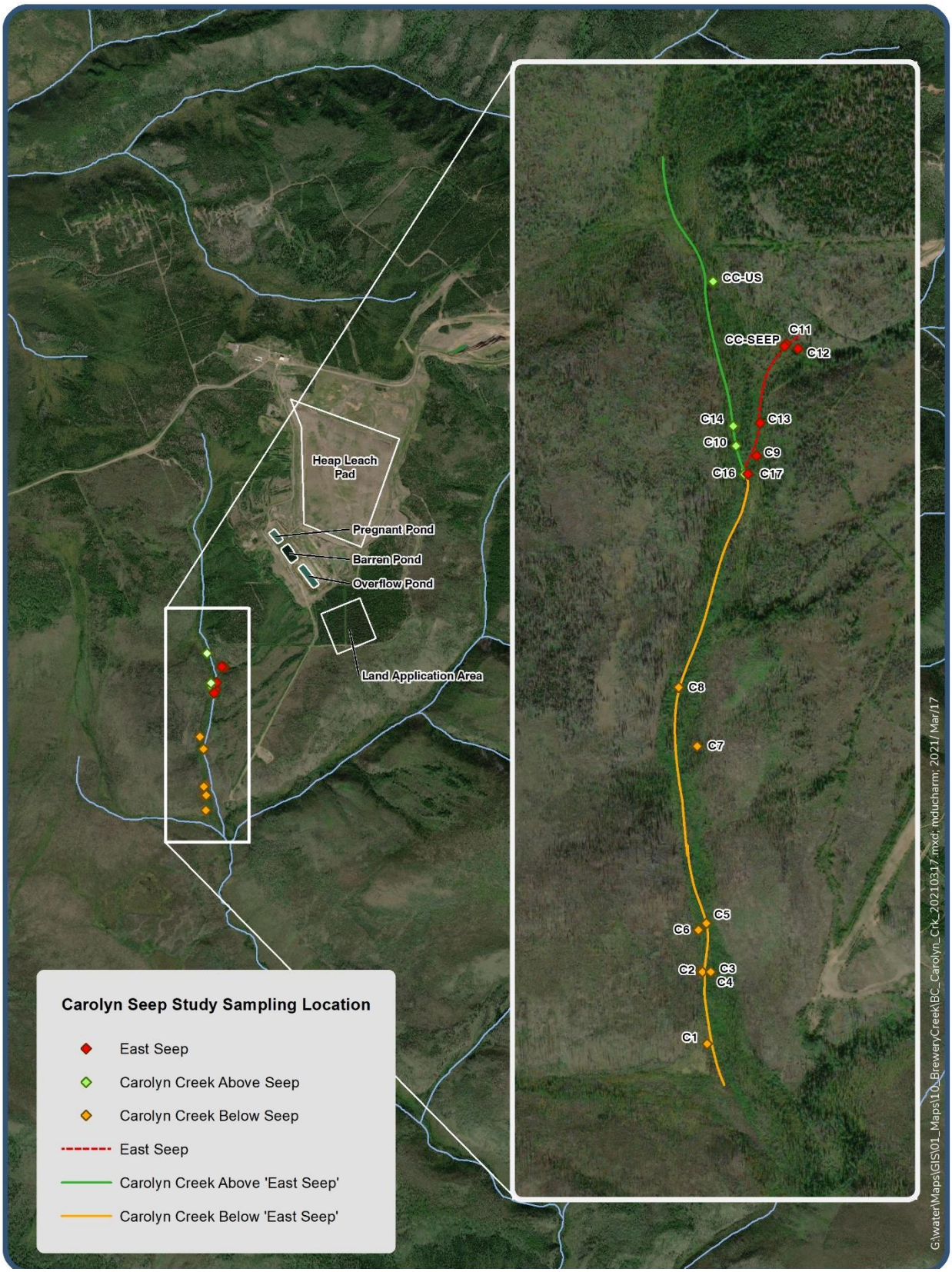
Carolyn Creek was found to actually consist of multiple channels with flow commonly disappearing entirely to ground and re-emerging anywhere between 1 – 20 m downstream. The terrain in the area is soft mossy ground with dense hummocks, hollows and soft muddy substrate. Stagnant pools were commonly found above the channel bankfull elevation as well as where flow had disappeared to ground and channel flow had since rerouted. Rafted vegetation could be found captured in tree branches greater than one meter above the channel indicating the potential for substantial flow increase during freshet or heavy rainfall events. Vegetation in the valley consists of grasses and low, dense willow, birch and poplar shrubs with substantial forest fire evidence remaining along the western valley slope. Larger standing conifers become more pervasive travelling upstream (northwest) through the valley. See Appendix E for photos.

Of the field parameters measured during the Carolyn Creek investigation, Specific Conductance (SPC) was found to be the most significant in-situ indicator of changes to water chemistry and potential source. While following Carolyn Creek upstream and comparing in-situ SPC, one distinguishable channel was located that when followed did not originate from the main stem but was found to accumulate from a groundwater seep on the eastern valley slope. As indicated in Table 8 and Map 2 a confluence was identified where one branch (C17) had substantially higher SPC (1002 µs/cm) than the other branch (C16) when measured (152.1 µs/cm) upstream of their confluence. SPC in the upstream Carolyn Creek channel ranged from 146 – 152.1 µs/cm and the SPC in the seep channel ranged from 881 – 1299 µs/cm on that day. Downstream of their confluence, SPC in the channel generally averages between the two and remains stable between 505 – 754 µs/cm, suggesting the high

SPC seep water is diluting into the low SPC Carolyn Creek source water. This is similar to the trend observed in sulfate concentrations pictured in Figure 13 where high sulfate water from the seep is diluted into low sulfate water of the Carolyn Creek channel and is approximately halved.

Table 8. Field parameters measured moving upstream through the Carolyn Creek channel on September 16, 2020. Sites have been arranged below in downstream to upstream order. No field parameters were measured at C5 due to inadequate channel conditions, only GPS coordinate.

Sampling Point	Time	Temp. (°C)	DO (%)	DO (mg/L)	SPC (µs/cm)	Conductivity (µs/cm)	pH (pH Units)	Turbidity (NTU)
C1	10:14	1.2	88.7	12.50	742	405	7.51	1.32
C2	10:29	1.2	89.2	12.58	751	409	7.50	1.20
C3	10:35	1.2	89.1	12.57	713	389	7.40	12.80
C4	10:53	1.8	35.7	4.95	505	280	7.02	16.50
C5	11:04	-	-	-	-	-	-	-
C6	11:15	1.3	89.3	12.55	754	413	7.42	0.90
C7	11:58	2.2	74.9	10.28	657	368	7.28	0.00
C8	12:15	1.7	90.2	12.54	670	372	7.59	0.40
C16	15:35	2.3	84.6	11.60	152.1	86	7.19	0.80
C10	12:59	1.9	84.2	11.67	146	81	7.75	0.90
C14	14:15	2.2	84.1	11.54	146.1	82	7.01	0.90
C-15 (CC-US)	14:37	2.2	86.5	11.90	152	85	6.88	2.00
C17	15:37	2.2	85.8	11.75	**1002**	566	7.28	0.25
C9	12:50	1.7	84.8	11.78	**1005**	559	7.50	0.14
C13	14:03	1.9	80.4	11.13	**1016**	567	7.32	0.19
C11	13:15	2.8	51.2	6.89	**1169**	673	7.88	0.80
CC-SEEP	15:13	2.9	52.8	7.09	**1299**	751	6.77	0.15
C12	13:48	1.6	21.1	3.08	**881**	487	6.67	0.20
Values in red: measurements collected in seep flow before its confluence with Carolyn Creek								



Map 2. Carolyn Creek seep channel and its confluence with the primary Carolyn Creek flow. Map points created using GPS data collected during the September 2020 site audit. Carolyn Creek channel displayed on map is approximated from GPS points.

3. Field Sampling Results

3.1. Comparison with Standards & Guidelines

CARO Analytical Services was contracted for water chemistry analysis for all parameters except for isotopes, which were analyzed separately by the University of Waterloo Environmental Isotopes Laboratory. The complete analytical results for CARO analysis (Appendix A) and isotope analysis (Appendix B) are attached. Data from sample analysis has been compared to existing effluent quality standards from the water license QZ96-007 and the relevant CCME guidelines and CSR standards. Outlined in Table 9, both BC-28 and BC-28b exceeded the QZ96-007 guideline for antimony (1 mg/L), and a number of stations sampled exceeded CCME guidelines. Groundwater wells BC-19, BC-22 and BC-65-new had concentrations of sulfate exceeding CSR standards. As there was no effluent discharging from BC-28, these exceedances do not represent a non-compliance event and are compared below for context and reference only.

Table 9. Standard and guideline comparison of samples collected during the September 2020 site audit.

Station	Parameter	September 2020 Concentration
BC-28	Antimony (Total)	**1.17 mg/L**
	Arsenic (Total)	**0.0735 mg/L**
	Cyanide (WAD)	**0.007 mg/L**
	Nitrate	**130 mg/L**
	Selenium (Total)	**0.0078 mg/L**
BC-28a	Arsenic (Total)	**0.53 mg/L**
	Cyanide (WAD)	**0.0266 mg/L**
	Mercury (Total)	**0.000049 mg/L**
	Nitrate	**168 mg/L**
	Selenium (Total)	**0.122 mg/L**
BC-28b	Antimony (Total)	**2.08 mg/L**
	Arsenic (Total)	**0.315 mg/L**
	Cyanide (WAD)	**0.0446 mg/L**
	Mercury (Total)	**0.000035 mg/L**
	Nitrate	**188 mg/L**
	Selenium (Total)	**0.122 mg/L**
BC-2	Aluminum (Total)	**0.149 mg/L**
	Iron (Total)	**0.475 mg/L**
	Selenium (Total)	**0.00378 mg/L**
BC-3	Aluminum (Total)	**0.113 mg/L**
	Iron (Total)	**0.395 mg/L**
	Selenium (Total)	**0.00211 mg/L**
BC-19	Sulfate	**609 mg/L**
BC-22	Sulfate	**12900 mg/L**
BC-65-new	Sulfate	**105 mg/L**

CC-Seep	Selenium (Total)	**0.00327 mg/L**
CC-US	Aluminum (Total)	**0.255 mg/L**
Purple: Concentrations measured above CCME guidelines. **Blue:** Concentrations measured above CSR Schedule 3 Aquatic Life guidelines. **Red:** Concentrations measured above QZ96-007 standards applying to station BC-28.		

3.2. Water Sampling QA/QC Results

All QA/QC samples analyzed with September 2020 samples returned results within expected range as indicated in Table 10. These results confirm that both field sampling and analysis were correct and adequate. Detailed analytical results for QA/QC samples can be found in Appendix B.

Table 10. Results from QA/QC sample analysis performed on September 2020 site audit samples.

QA/QC Sample	Results				
Travel Blank	All parameters analyzed in Travel Blank resulted in values below detection limit. There are no suspected contaminants introduced into the samples during or as a result of the transportation process.				
Field Blank	All parameters analyzed in Field Blank resulted in values below detection limit. There are no suspected contaminants introduced into the samples from the atmosphere at the sampling location or from sampling staff handling protocols and procedures.				
Replicate 1	**Groundwater sample BC-21**				
	Average RPD for all analysis was found to be 15%. RPDs for groundwater tend to be higher than surface water due to the fact that only dissolved parameters are measured. This means a small absolute difference in concentration may translate to a high RPD due to the low background concentrations. As such, these results are interpreted as being representative of good sampling and analytical practices. Individual parameters with RPDs >10% have been listed below.				
	Parameter	**Detection Limit (mg/L)**	**Parent (mg/L)**	**Replicate (mg/L)**	**RPD (%)**
	Dissolved Arsenic	0.0001	0.00067	0.00085	24
	Dissolved Cobalt	0.0001	0.00016	0.00037	79
	Dissolved Iron	0.01	0.047	0.259	139
	Dissolved Sodium	0.1	8.15	7.41	10
	Dissolved Nickel	0.0004	0.00134	0.00221	49
	Dissolved Antimony	0.0002	0.00035	0.0004	13
	Dissolved Sulfur	3	33.6	27.1	21
	Dissolved Selenium	0.0005	0.00134	0.00179	29
Replicate 2	**Surface water sample BC-3**				
	Average RPD for all analysis was found to be 5%. As expected, this surface water sample had fewer RPDs >10% on dissolved parameters due to higher background concentrations. Individual parameters with RPDs >10% have been detailed below.				
	Parameter	**Detection Limit (mg/L)**	**Parent (mg/L)**	**Replicate (mg/L)**	**RPD (%)**

QA/QC Sample	Results				
	Total Aluminum	0.005	0.144	0.113	24
	Dissolved Cadmium	0.00001	0.000098	0.000087	12
	Dissolved Copper	0.0004	0.00154	0.00172	11
	Total Iron	0.01	0.466	0.395	16
	Total Sulfur	3	49.6	58.6	17
	Dissolved Vanadium	0.001	0.0027	0.0023	16
	Total Vanadium	0.001	0.0109	0.0089	20
	Total Zirconium	0.0001	0.0002	0.00016	22

Stable water isotope results for groundwater well BC-65(new) are outside of the expected range. The University of Waterloo Environmental Isotopes laboratory technician processing the samples made note that "Sample 446884 (BC-65(new)) ^{18}O-H_2O result more enriched than others. Sample analyzed again in second run to verify results." The reason for this anomalous result is unknown; however, one possibility is that the well was not fully developed and that the sample collected from BC-65(new) contains water used during the drilling of the borehole and is not representative of groundwater at this location and depth. Given the suspected erroneous values for BC-65(new) displayed in Figure 1 below, it has not been included in spatial analysis exercises in this report.

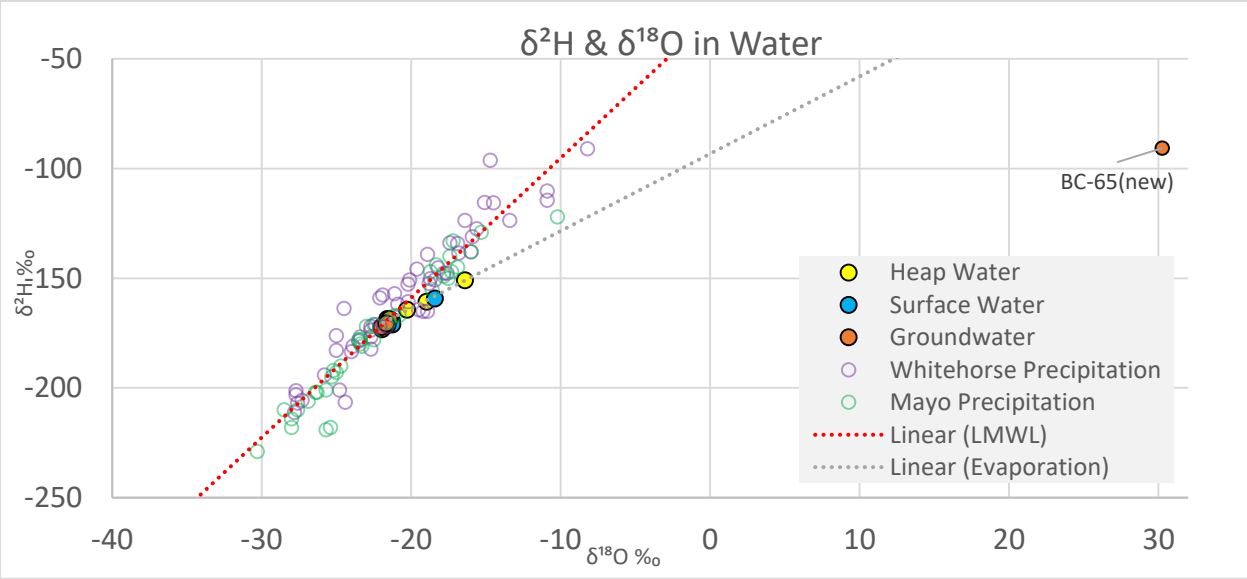


Figure 1. Suspected erroneous isotope values for BC-65(new) found to be significant outlier.

3.3. In-Situ Measurements

During sample collection, WRB crews measured in-situ field parameters using a YSI ProDSS handheld multimeter. These measurements have been outlined in Table 11 and

compared to the relevant license standards and CCME guidelines where applicable. None of the field parameters measured during the September 2020 site audit exceeded QZ96-007 or CCME guidelines. It should be noted that DG-SEEP was named at the time of sampling based on the potential that it was a seep. WRB crews did not suspect it was a seep after investigating the location and this name has been retained for data continuity only.

Table 11. In-situ field parameters measured during sample collection during the September 2020 site audit.

Station Code	Temp (°C)	pH (pH Units)	DO (mg/L)	Specific Conductance (µs/cm)	Turbidity (NTU)
BC-28a	4.5	7.25	11.41	3010	0.03
BC-28b	8.5	7.93	11.12	2873	1.84
BC-28	9.9	8.18	11.21	2020	1.53
BC-2	2.0	7.69	12.13	736	1.57
BC-3	2.0	7.88	12.79	497	1.51
DG-SEEP	5.9	5.56	5.42	355	17.95
CC-US	2.2	6.88	11.90	152	2.00
CC-SEEP	2.9	6.77	7.09	1299	0.15
BC-66-2	3.4	7.25	6.08	783	0.03
BC-65 (Old)	4.2	7.88	8.80	350	155.26
BC-65 (New)	3.5	7.21	4.46	628	22.21
BC-21	2.6	6.73	2.49	526	15.86
BC-19	1.8	6.37	3.59	1488	35.00
BC-22	5.9	5.76	1.48	6376	73.74

3.4. Groundwater Measurements

Groundwater samples were collected using various methods depending on site and well conditions. WRB staff employed a Hydrolift pump and HydraSleeve discreet samplers to collect groundwater samples during the September 2020 site audit. Sampling methods were chosen based on well diameter casing, depth to the groundwater and well recharge rate. Methods used and rationale for using that method have been outlined in Table 12.

Table 12. Groundwater sample methods employed and rationale during the September 2020 site audit.

Groundwater Well Code	Sample Collection Method	Rationale
BC-66-2	HydraSleeve	Possible perforation in on-site tubing, unable to sample using Hydrolift pump, sample collected using HydraSleeve.
BC-65 (Old)	HydraSleeve	Sample collected using HydraSleeve. Hydrolift pump found to be insufficient for lifting groundwater from the required depth.

BC-65 (New)	Bailer	Sample collected using bailer sampler. Hydrolift pump found to be insufficient for lifting groundwater from the required depth.
BC-21	Hydrolift pump	Well purged using Hydrolift pump until field parameters were observed to stabilize. Sample collected using Hydrolift pump.
BC-19	Hydrolift pump	Well purged using Hydrolift pump until field parameters were observed to stabilize. Sample collected using Hydrolift pump.
BC-22	HydraSleeve	Sample collected using HydraSleeve because the Hydrolift pump was insufficient to lift groundwater from the required depth.

Standard groundwater well measurements were collected as part of groundwater sampling (Table 13). The top of each groundwater well casing rises above grade a known distance (known as "stick-up"), and subsequent measurements of depth to groundwater and depth to well bottom are relative to stick-up. From these values, the length of the water column and the volume of water in the well can be calculated. WRB uses a Solinst water level tape to measure depth to groundwater and depth to well bottom. This instrument has a maximum measuring capacity of 100 m. Two of the wells sampled during the September 2020 site audit have total depths that are unknown but greater than 100 m.

Table 13. Groundwater well measurements collected during the September 2020 site audit.

Groundwater Well Code	Surface Elevation (m)	Stick-up (m)	Depth to Groundwater (mbtoc)	Depth to Well Bottom (mbtoc)	Length of Water Column (m)	Volume of Water in Well (L)
BC-19	720	0.39	40.788	57.410	16.622	33.244
BC-20	762	0.52	12.778	22.010	9.232	18.464
BC-21	829	0.54	34.125	81.000	46.875	93.750
BC-22**	721	0.67	44.653	>100**	>55.347	>110.694
BC-25	736	0.48	Dry	9.0	0	0
BC-No ID	740	0.53	46.852	76.620	29.795	59.590
BC-66-2	736	0.77	48.885	67.000	18.115	36.2
BC-65 (Old)	768	0.88	76.854	>100*	>23.146	>46.3
BC-65 (New)	776	1.11	85.148	87.400	2.252	4.5

mbtoc: metres below top of casing
*Depth exceeding measuring instrument capacity of 100 m
**Four inch diameter well, all others two inch
Elevations extracted from Yukon Government 30 m Digital Elevation Model

4. Analysis & Discussion

4.1. September 2020 Heap Leach Chemistry

Effluent is expected to travel from the heap leach pad into the pregnant pond, then into the barren pond and finally into the overflow pond from which it is intended to travel to Laura Creek via a ditch or pipe system dependent on ditch erosion concerns. Analytical results from heap leach facility stations BC-28a, BC-28b and BC-28 are presented in the order that effluent is expected to travel through the system to understand how aqueous chemistry changes between the ponds at the toe of the heap. However, it should be noted that some portion of the pond lining has been removed and it is unknown the degree to which the pond is now unlined, and therefore water can infiltrate to the ground and/or water can flow into the ponds from other sources such as precipitation and surface runoff (i.e. diluting effluent). Still, comparing these stations can provide insight into the aqueous chemistry of the heap leach facility effluent. As pictured in Figure 2, concentrations of total antimony, arsenic, selenium and cyanide are all seen to decrease moving through the ponds.

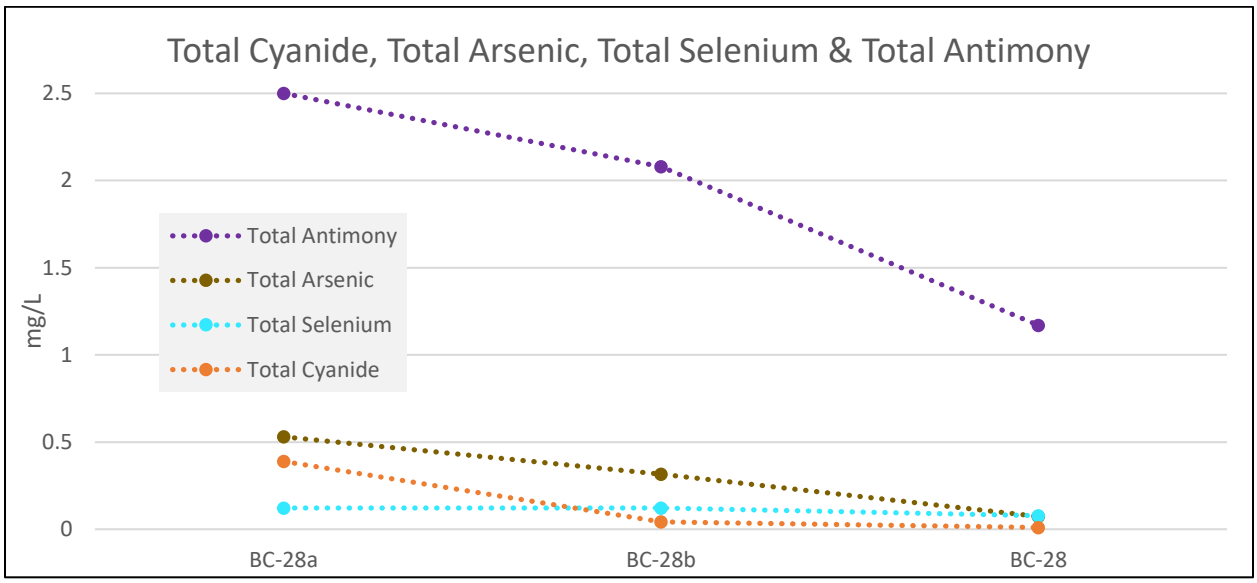


Figure 2. Total cyanide, total arsenic, total selenium and total antimony analytical results from the September 2020 site audit samples. Heap Leach facility sample stations compared in order of flow direction.

During a meeting with the licensee on April 22, 2020, it was described that the barren pond was turned into a bioreactor at closure by filling it in with a porous rock matrix and by having water flow upward through the rock. The intended purpose of the bioreactor was to create reducing conditions to sequester metals of potential concerns, and the effectiveness of this process today can be investigated by measuring the concentrations of oxidized chemical species such as sulfate. It should be noted that the ponds may have

anoxic conditions at depth or during periods of ice cover and there is suspected stratification of these zones within the ponds, but this suspicion has not been confirmed or disconfirmed. As indicated by Figure 3 as well as past monitoring data, the decrease in sulfate across the system seems to support the claim that the barren pond (bioreactor) is in reducing conditions as intended. As pictured in Figure 3, sulfate concentration is high at BC-28a (878 mg/L) but decreases across the system at BC-28b (763 mg/L) and was found to be at its lowest at the sampling station BC-28 (503 mg/L). In contrast, nitrate concentrations increases slightly between BC-28a (168 mg/L) to BC-28b (188 mg/L) but then decreases to 130 mg/L in BC-28. This indicates that the bioreactor in the barren pond is likely still biologically active, it may reduce sulfate, cyanide, antimony, arsenic and selenium concentrations to some extent.

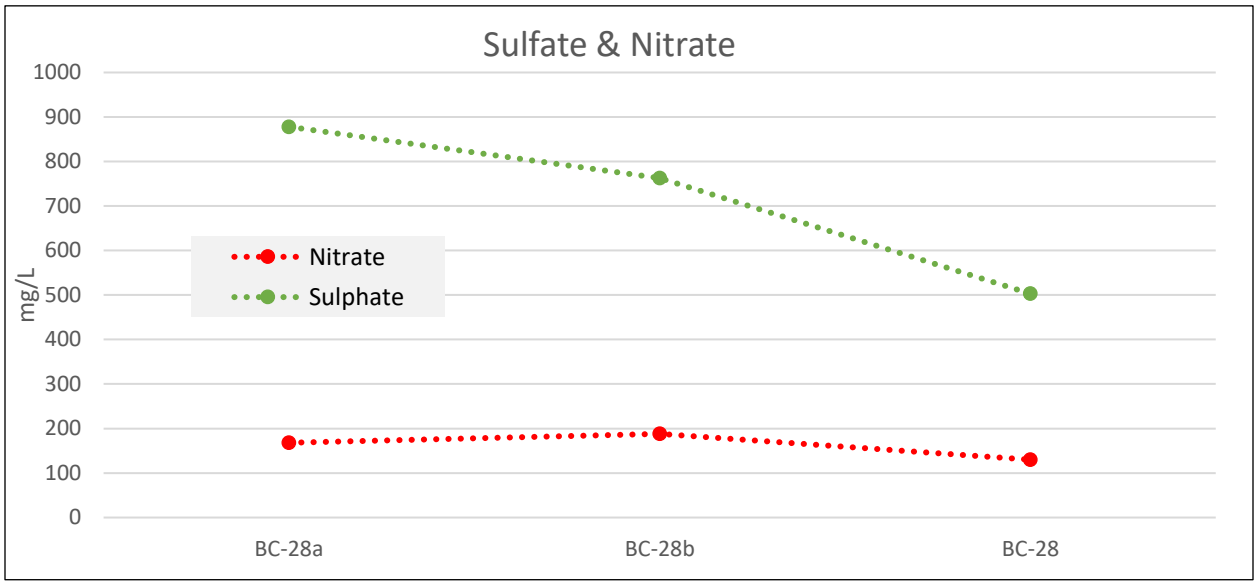


Figure 3. Sulfate and nitrate analytical results from the September 2020 heap leach facility samples compared in order of flow direction.

4.2. Long-term Heap Leach Chemistry

As discussed in the June 2020 report, heap water has exhibited some recent trends that warranted further investigation. Antimony and sulfate concentrations have been trending upwards since 2006 which may be attributed to oxidation in the heap and release of neutral mine drainage at the toe of the heap. Additionally, cyanide concentrations have been decreasing since 2009 and the degradation of cyanide is suspected to produce nitrate as a by-product. The September 2020 and the historical data for total antimony, total cyanide, sulfate and nitrate concentrations at station BC-28a were compared to determine how the September 2020 concentrations align with historic trends (Figure 4). The antimony concentration measured in Sept 2020 was the highest measured antimony concentration at BC-28a in the records available to

WRB. This is consistent with observations made by WRB in the June 2020 report, where antimony concentration is increasing over time, as is sulfate concentration. Cyanide and nitrate concentrations are still high and variable. Arsenic has been stable although exhibited spikes in concentration on May 4, 2020 (0.528 mg/L) and on September 15, 2020 (0.530 mg/L). Based on the data available, sampling frequency decreased between 2011 and 2018 where data points become sparse and the plotted data is of lower resolution during this date range.

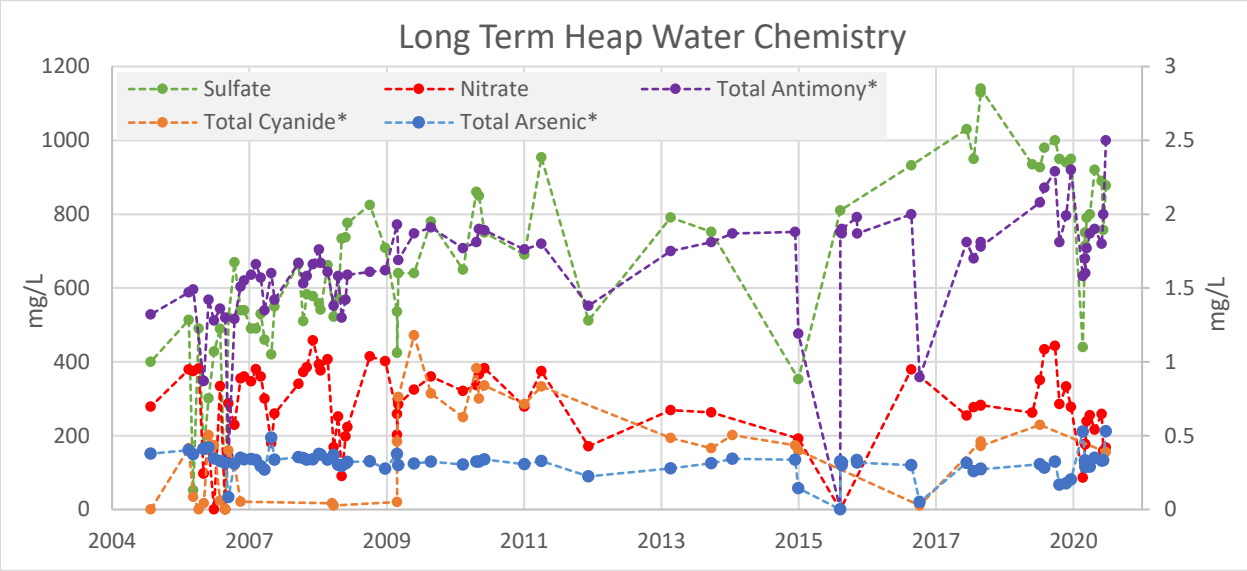


Figure 4. Long term water chemistry trends at heap leach facility station BC-28a.
**displayed on right-hand axis.*

Total antimony was further investigated across all three heap pond sampling locations to determine if the reduction in antimony concentrations moving through the heap leach ponds system was observed over the last 16 years. As pictured in Figure 5, a reduction in antimony concentration is generally observed since 2004, where antimony concentration is highest at BC-28a, decreases moving into BC-28b and is at its lowest at BC-28.

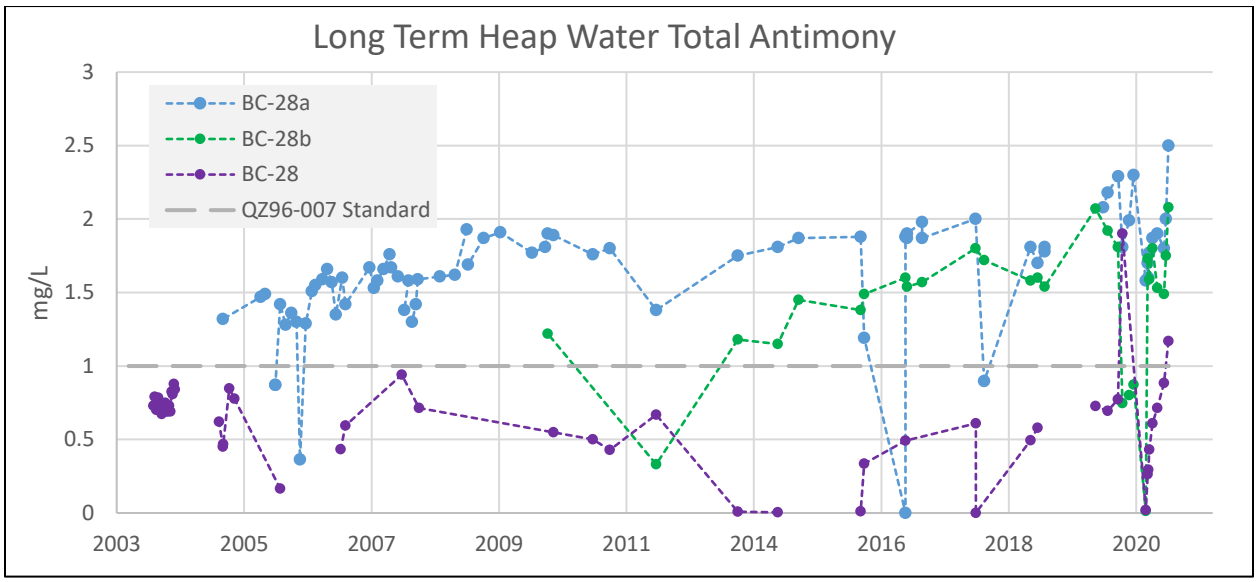


Figure 5. Long term Antimony concentrations at heap leach facility stations BC-28a, BC-28b and BC-28.

Total, Strong Acid Dissociable (SAD) and Weak Acid Dissociable (WAD) species of cyanide between 2004 and 2020 were examined and compared to nitrate levels at station BC-28a. Figure 6 indicates that all species of cyanide examined appear highly variable. It would also appear that cyanide species and nitrate concentrations are varying with seasons, however between 2011 and 2018 sampling did not occur during the winter months making trend analysis difficult as the dataset lacks continuous winter samples during this timeframe.

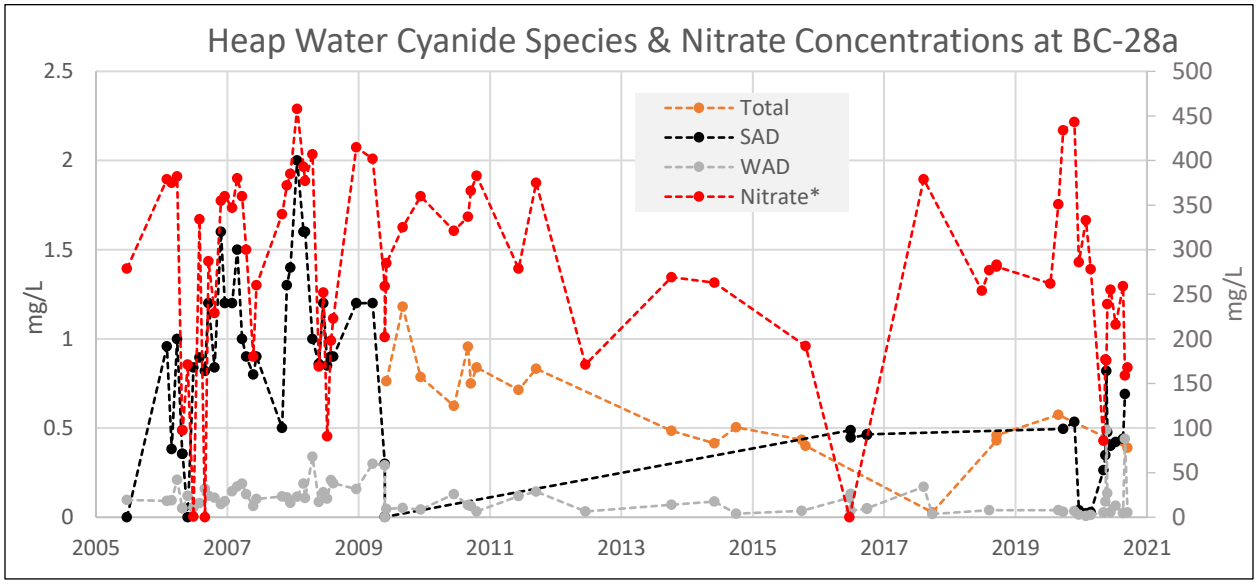
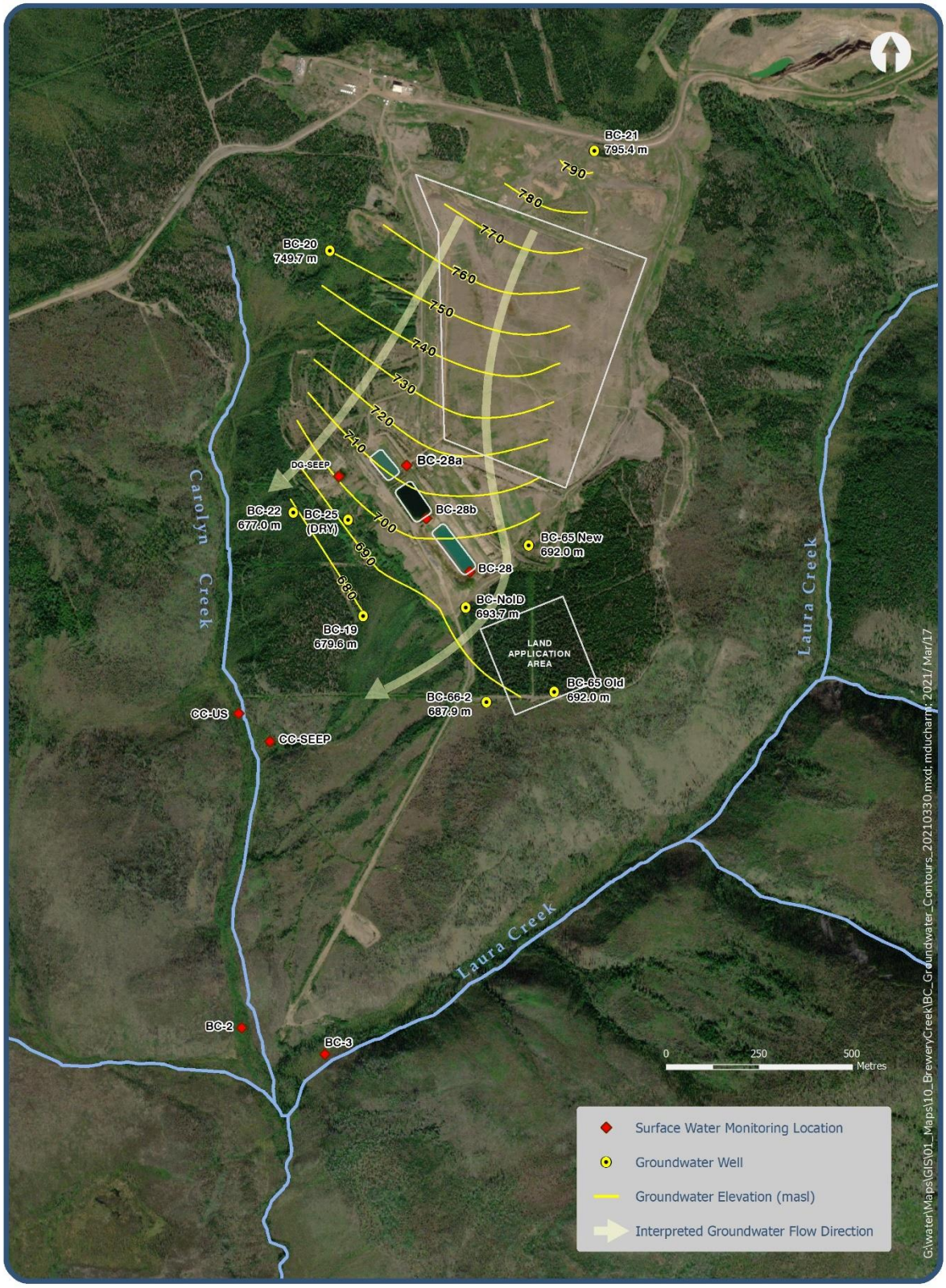


Figure 6. Long term cyanide and nitrate concentrations at heap leach facility station BC-28a.
**displayed on right-hand axis.*

4.3. Direction of Groundwater Flow

Map 3 displays the leach pad area showing groundwater equipotential contours based on groundwater levels observed by WRB in September 2020. Wellhead elevations were derived from a Yukon Government Digital Elevation Model (DEM) and known wellhead stick-up, as surveyed elevations were not available to WRB. Groundwater levels in several wells were considered (BC-20, BC-65 (New), BC-No ID) that were not monitored as part of the Updated Hydrogeology Baseline Assessment (Tetra Tech 2016). The equipotential surface depicted on Map 3 was created by interpolation and not extrapolated beyond the area bounded by the wells since there are no measurements of hydraulic head to constrain the interpretation outside of that area.



Map 3. Hydraulic head contours based on measurements collected during the September 2020 site audit.

The thickness of the unsaturated zone in the leach pad area ranges from approximately 12 m below ground surface (mbgs) at BC-20 to more than 80 mbgs at BC-65 (New) (Table 13). Based on Map 3, the horizontal hydraulic gradient in the bedrock aquifer in the leach pad area is approximately 0.08, which is near the range (0.10 to 0.15) reported in the Updated Hydrogeology Baseline Assessment (Tetra Tech 2016). Based on Map 3, groundwater west of the leach pad area appears to flow approximately to the southwest towards Carolyn Creek; however, groundwater underlying much of the leach pad area itself and the barren and overflow ponds downgradient of the pad may be flowing in a more southerly direction before, presumably, flowing southwesterly and discharging to Carolyn Creek. This is consistent with the interpretation presented in the original hydrogeological evaluation of the site, which stated that "discharge from the aquifer… is anticipated as baseflow discharge into the lower third [sic] Carolyn Creek" (Loki Gold Corp., 1994). Furthermore, this interpretation is consistent with the observation that Carolyn Creek did not appear to be influenced by heap water upstream of its confluence with CC-SEEP, as described in section 4.6.

An unexpected finding based on Map 3 is the reduced hydraulic gradient in the area bounded by BC-65-New, BC-65-Old, and BC-No ID. It is unclear if this area of anomalous hydraulic gradient is real (and, therefore, likely indicative of an area of either enhanced hydraulic conductivity and/or where the bedrock aquifer is thicker than it is upgradient) or an artefact of using elevation data from a DEM instead of surveyed well head elevations.

As depicted on Map 3:

- BC-21 is upgradient of the leach pad,
- BC-20 is crossgradient of the leach pad,
- BC-65 (Old) is crossgradient of the leach pad and Land Application Area (LAA),
- BC-65 (New) is downgradient of the leach pad and upgradient of the LAA,
- BC-19, BC-22, and BC-No ID are downgradient of the leach pad and process ponds,
- BC-66-2 is downgradient of the leach pad, process ponds, and LAA.

4.4. Nitrate

Nitrate was of specific importance to the September 2020 site audit. To visualize nitrate concentrations across the sampled area, nitrate concentrations from all September 2020 samples were plotted in ascending order (Figure 7). It is evident in

Figure 7 that nitrate concentrations at the toe of the heap leach facility are far greater (130 to 188 mg/L) than elsewhere on site. The groundwater well BC-66-2 is downgradient of the leach pad, process ponds, and LAA (Map 3) and had a relatively high concentration of nitrate (20.8 mg/L). In the 2019 audit report WRB hypothesized that the effects of the discharge of effluent to the LAA had largely diminished in BC-66-2 and in Carolyn Creek (BC-2) as of approximately 2009. The remaining stations sampled had nitrate concentrations lower than CCME guidelines. Note that Figure 7 is displayed on a log-10 scale to provide greater clarity for low concentration data points.

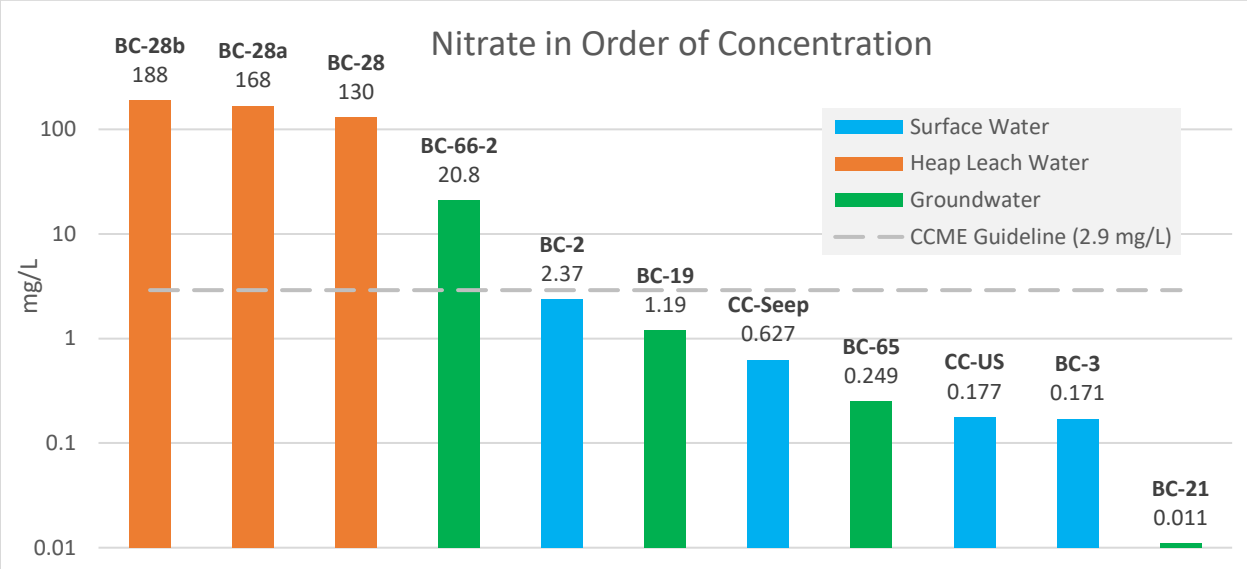


Figure 7. Nitrate in order of concentration for samples collected during the September 2020 site audit. Values are displayed on a log-10 scale. Stations not displayed (BC-22, BC-65(new) and DG-SEEP) were below detection limit.

Of note, the nitrate concentration measured in the seep (CC-SEEP) is lower than the nitrate concentration measured in Carolyn Creek downstream of the seep at BC-2. This is further discussed in Section 4.6. Historic nitrate concentrations for the entire record available to WRB at the Carolyn Creek sampling station BC-2 were also plotted in Figure 8. Nitrate concentrations exhibited a high degree of fluctuation from 2003 – 2008 with values ranging from a minimum of 0.14 mg/L on January 30, 2004 up to the maximum value in the data set on August 31, 2004. Since 2008, observed nitrate concentrations have been less than 5 mg/L. Some data gaps exist and sampling frequency decreased from 2011 – 2019, therefore temporal resolution is lowest in this range. Note that Figure 8 is displayed on a log-10 scale to provide greater clarity for low concentration data points.

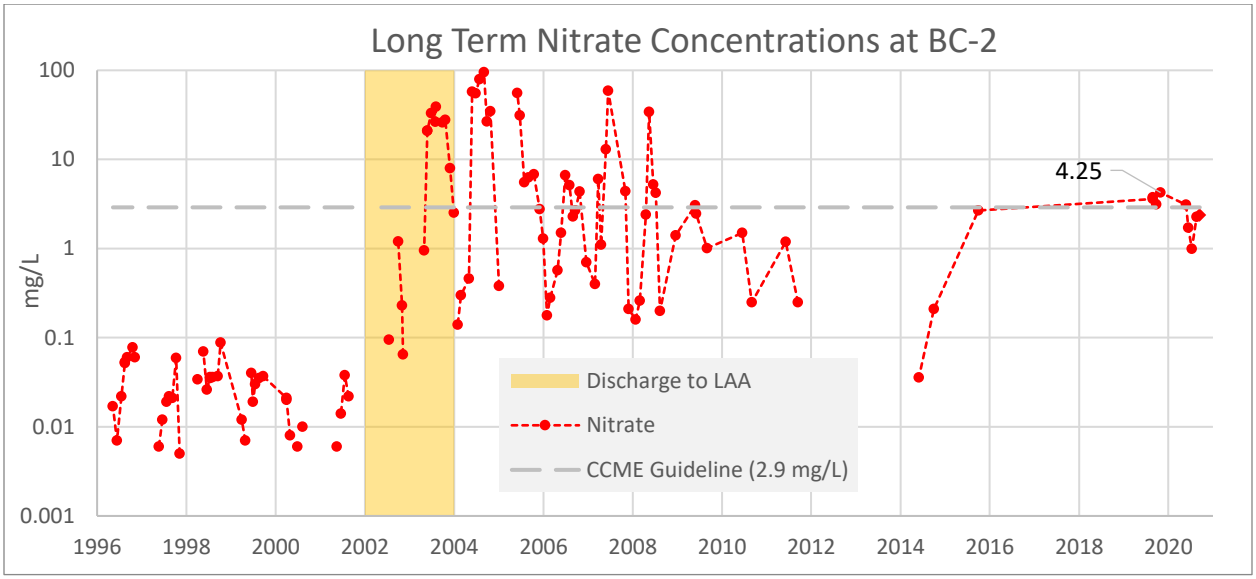


Figure 8. Historic nitrate concentrations measured at Carolyn Creek sampling station BC-2. Values are displayed on a log-10 scale.

4.5. Environmental Isotopes

WRB had samples analyzed for environmental isotopes to better understand the potential influence of heap water on the receiving environment. Stable oxygen ($\delta^{18}O$) and stable hydrogen ($\delta^{2}H$) isotopes were measured in water (H_2O) and stable nitrogen ($\delta^{15}N$) and $\delta^{18}O$ isotopes were measured in nitrate (NO_3).

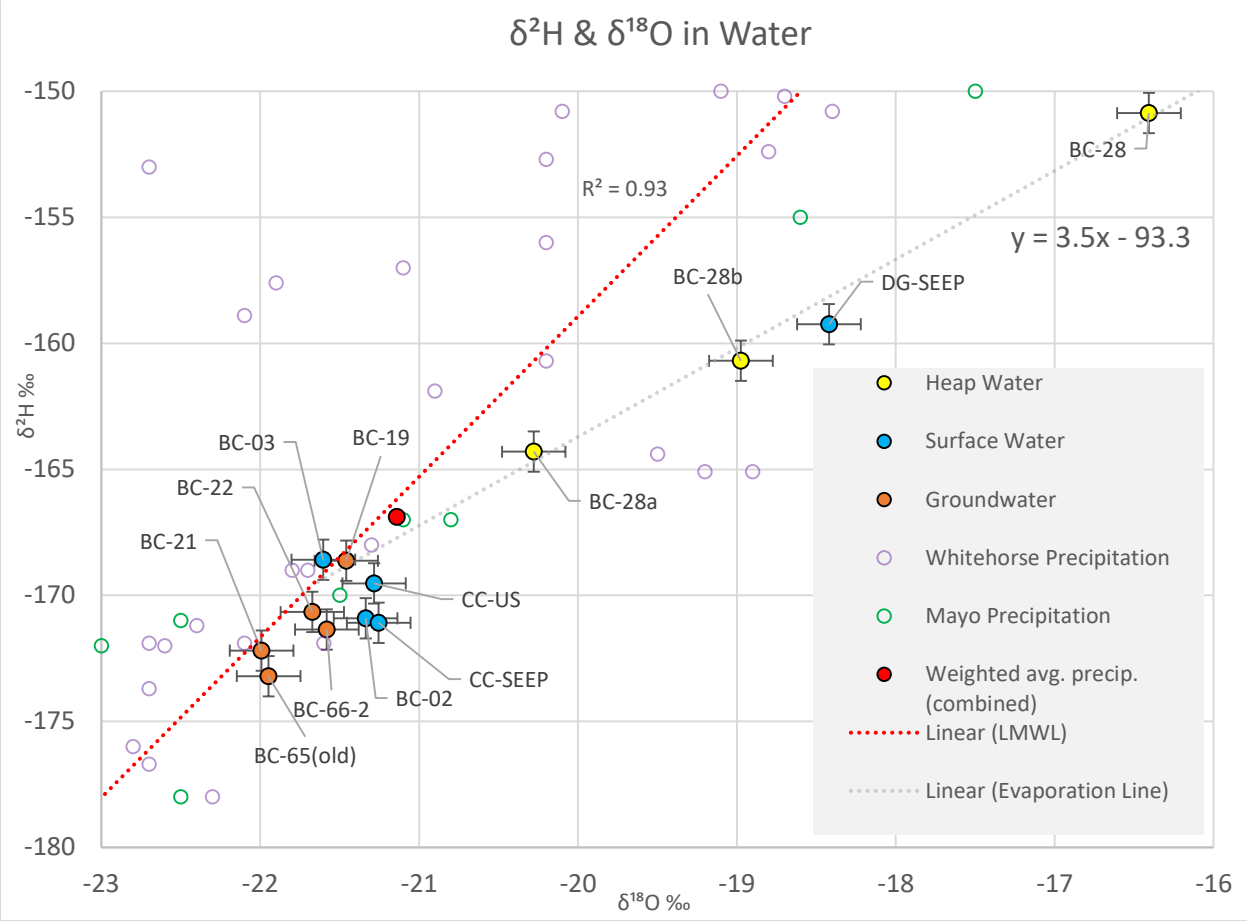


Figure 9. $\delta^{18}O$ and $\delta^{2}H$ ratios for water samples collected during the September 2020 site audit and precipitation from Whitehorse and Mayo via the Global Network of Isotopes in Precipitation (GNIP; IAEA 2021). The red circle represents the average $\delta^{18}O$ and $\delta^{2}H$ ratios measured in precipitation at Whitehorse and Mayo, weighted based on the amount of precipitation recorded for each sample (IAEA 2021). Analytical precision: $\delta^{2}H$ 0.8 ‰ Vienna Standard Mean Ocean Water (VSMOW), $\delta^{18}O$ 0.2 ‰ VSMOW.

Figure 9 shows stable water isotope ratios ($\delta^{18}O$ and $\delta^{2}H$) for water samples collected during the September 2020 site audit (solid circles) and for precipitation from the Global Network of Isotopes in Precipitation (GNIP; IAEA 2021) from Whitehorse (hollow purple circles) and Mayo (hollow green circles). Whitehorse and Mayo are the only places in Yukon where GNIP stations were located (IAEA 2021). Whitehorse is almost four times farther (as the crow flies) from Brewery Creek compared to Mayo; however, the Whitehorse precipitation dataset is more than twice as large as the Mayo precipitation dataset and the two datasets are comparable; that is, the LMWLs for each dataset are similar. Therefore, a local meteoric water line (LMWL) was generated based on the stable water isotope ratios for precipitation samples collected from both locations. The LMWL is a trend line or a line of best fit ($R^2 = 0.93$).

Typically, groundwater samples plot approximately along the LMWL and have stable water isotope compositions similar to that of weighted average precipitation (Kendall & Doctor, 2005). In this case, the stable water isotope compositions of all groundwater samples, the samples from Laura Creek (BC-03) and Carolyn Creek (CC-US and BC-02), and the sample from the seep that discharges to Carolyn Creek (CC-SEEP) cluster closely (i.e. essentially within the range of analytical precision) and are slightly depleted in $\delta^{18}O$ and $\delta^{2}H$ relative to weighted average precipitation. The samples from the heap leach pad (BC-28a), barren pond (BC-28b), overflow pond (BC-28), and the non-constructed pond approximately downgradient of the pregnant pond (DG-SEEP) plot below the LMWL along an evaporation line with a slope of approximately 3.5. Water that has evaporated from open surfaces typically plots below the LMWL with a slope between two and five (Kendall & Doctor, 2005). This demonstrates that water flowing from the heap leach pad (represented at BC-28a) is evaporated relative to groundwater underlying the site and that water in the barren and overflow ponds is progressively more evaporated, which is logical given that the residence time of water in the ponds increases as water flows from the pad through the system of ponds.

Figure 9 shows that heap-derived water has a distinct stable water isotope composition relative to groundwater samples and the samples from Laura Creek (BC-03) and Carolyn Creek (CC-US and BC-02). Figure 9 does not show that groundwater samples or samples from Laura Creek or Carolyn Creek depart significantly from the LMWL along the evaporation line. In other words, available stable water isotope data do not indicate mixing of surface water or groundwater and heap water; however, that is not to say that such mixing does not exist. If such mixing does exist (which appears to be the case based, at least, on nitrate concentrations and isotope compositions; see below), the fraction of heap water in the resultant mixture is insufficient to significantly alter the stable water isotope composition of the mixture.

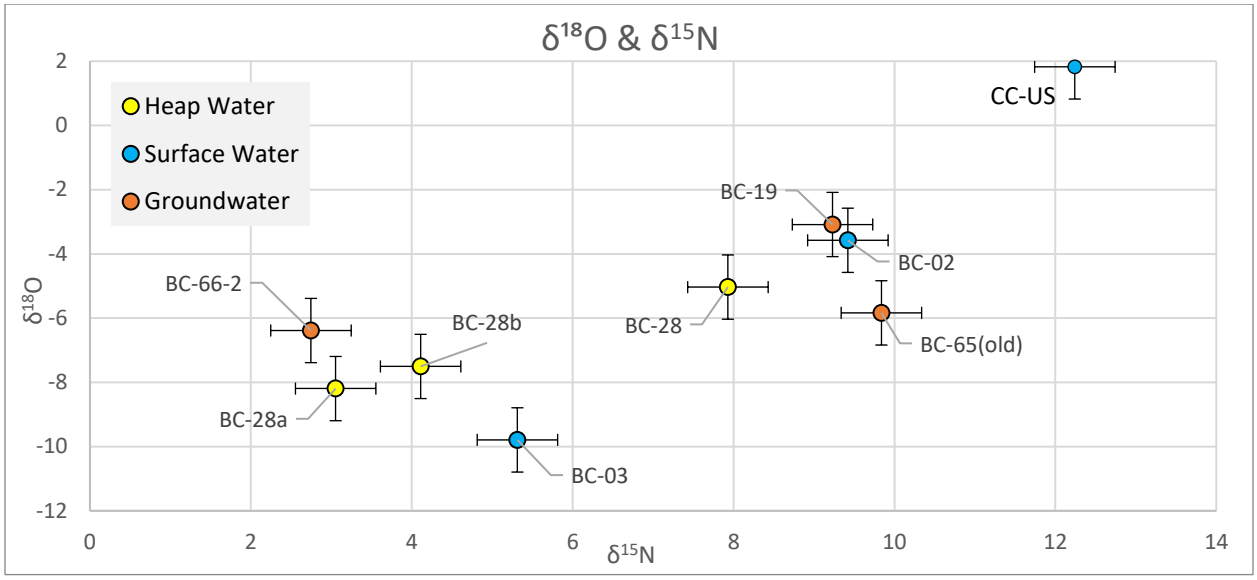


Figure 10. $\delta^{18}O$ and $\delta^{15}N$ ratios for samples collected during the September 2020 site audit. Analytical precision: $\delta^{15}N$ 0.5 ‰ Air-N_2, $\delta^{18}O$ 1.0 ‰ VSMOW

Figure 10 shows $\delta^{18}O$ and $\delta^{15}N$ values of nitrate in water samples collected during the September 2020 site audit. Nitrate isotope compositions could not be analyzed for samples collected from BC-22, BC-65 (new), and DG-SEEP because these samples did not contain detectable concentrations of nitrate. Nitrate isotope compositions could not be analyzed for samples collected from BC-21 or CC-SEEP because nitrate concentrations were too low for the analytical procedure used and could not reproduce reliable results. Laboratory comments for this issue have been included in Appendix B.

The nitrate isotope composition of heap water (BC-28a) and groundwater at BC-66-2 are essentially indistinguishable. This supports a hypothesis that groundwater at BC-66-2, which has the highest nitrate concentration in groundwater at the site (20.8 mg/L), has been influenced by heap water. The nitrate isotope composition of groundwater at BC-19 and BC-65 (old) is significantly different than that of CC-US (i.e. unimpacted surface water); rather, it is essentially indistinguishable from that of BC-2.

Figure 10 shows that nitrate isotope compositions of Carolyn Creek upstream (CC-US) and heap water (BC-28a, BC-28b, BC-28) are distinct. The nitrate isotope composition of Carolyn Creek changes significantly from upstream (CC-US) to downstream (BC-2). The nitrate isotope composition at BC-2 is consistent with what would be expected if Carolyn Creek were impacted by heap water via groundwater (i.e. if CC-US were mixed with BC-66-2). This appears to contradict available stable water isotope data, which, as stated above, do not indicate mixing of unimpacted water and

heap water. However, mixing of unimpacted water and heap water could influence nitrate isotope compositions very differently than stable water isotope compositions.

Denitrification may be occurring in the process ponds, based on the following lines of evidence:

- The change in nitrate isotope composition from BC-28a to BC-28b and BC-28 is consistent with what would be expected for denitrification (Kendall & Doctor, 2005).
- Nitrate concentrations at BC-28 (130 mg/L) are less than at BC-28a (168 mg/L); however, concentrations at BC-28b (188 mg/L) are greater than at BC-28a.
- Nitrite (an intermediary product of denitrification) was not detected at BC-28a but was detected at BC-28b (0.231 mg/L) and BC-28 (0.212 mg/L).

The ponds appear to contain significant concentrations of dissolved oxygen (Table 11) and denitrification is typically thought to only be significant in the absence of significant amounts of oxygen. That said, it may be that the ponds are stratified (e.g. anoxic at depth) or anoxic when they are frozen over.

4.6. Carolyn Creek Investigation Findings

Nitrate concentrations in the Carolyn Creek Channel were lowest at CC-US during the September 2020 site audit and Carolyn Creek investigation. While the water entering Carolyn Creek from CC-SEEP has a higher concentration of nitrate than the upstream background, the downstream most sampling station BC-2 has an even higher concentration of nitrate. This would indicate that additional water is entering the Carolyn Creek channel from ground downstream between the CC-SEEP flow and the BC-2 sampling station. This is supported by observations made by WRB field crews who noted the flow entirely disappear to and emerge from ground multiple times, and the valley consisted of soft, loose ground and substrate. Nitrate measured in the Carolyn Creek valley was all below CCME guidelines where nitrate measured in the heap facility ponds was an order of magnitude above CCME guidelines. Nitrate measured at the DG-SEEP location was below detection limits supporting the hypothesis that this ponded water is present long-term and is likely precipitation surface water runoff.

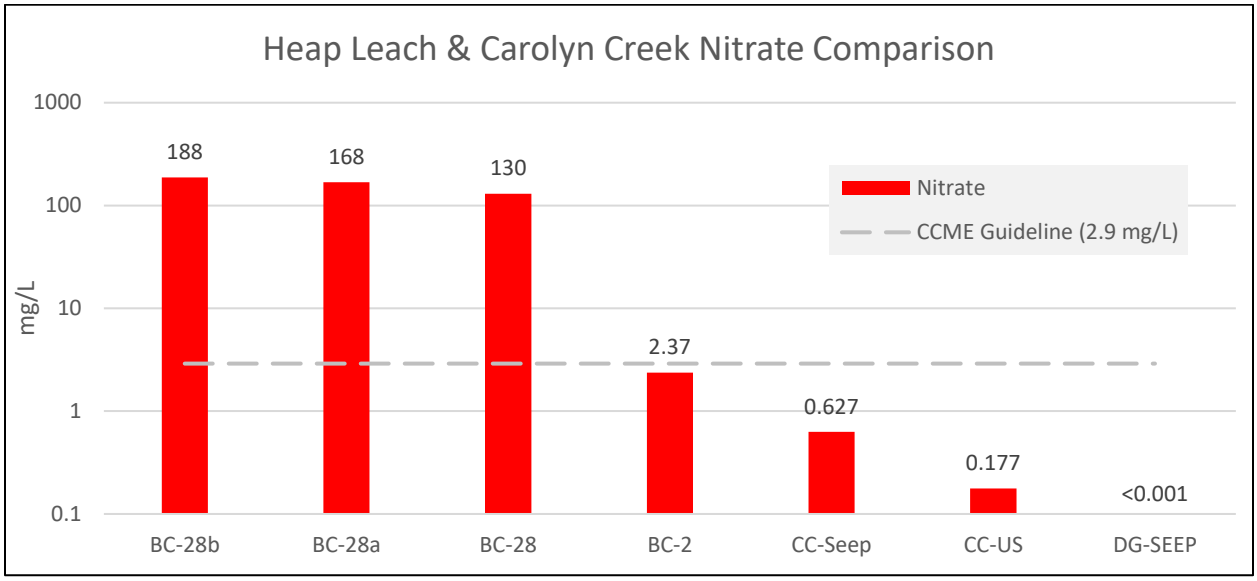


Figure 11. September 2020 nitrate concentrations at the heap leach facility compared against Carolyn Creek and newly sampled seep sites. Note log-10 scale.

Further to this investigation, other water chemistry at the heap leach facility was compared directly to that of Carolyn Creek, DG-SEEP and the newly discovered CC-SEEP to identify if there is any indication the locations are connected. Sulfate was found in the CC-SEEP location in concentrations similar to those found in the heap leach ponds. The DG-SEEP location was the lowest value measured on site, which further supports the hypothesis that it is naturally accumulating rainwater surface runoff as it showed little sign of contamination in the water quality sampling results (APPENDIX A). Unlike nitrate, the sulfate concentrations in CC-SEEP are the highest in the Carolyn Creek valley and appear to dilute into the low sulfate CC-US flow resulting in sulfate concentrations at BC-2 falling approximately halfway between the background CC-US station and seep water. While this indicates water from CC-SEEP may be increasing sulfate levels in the Carolyn Creek channel, it does not appear that groundwater infiltration is causing the same increase moving downstream as nitrate. If additional groundwater is infiltrating to Carolyn Creek downstream of CC-SEEP, it is not causing the same increase in sulfate as it is causing in the case of Nitrate. Note Figure 12 is displayed on a log-10 scale.

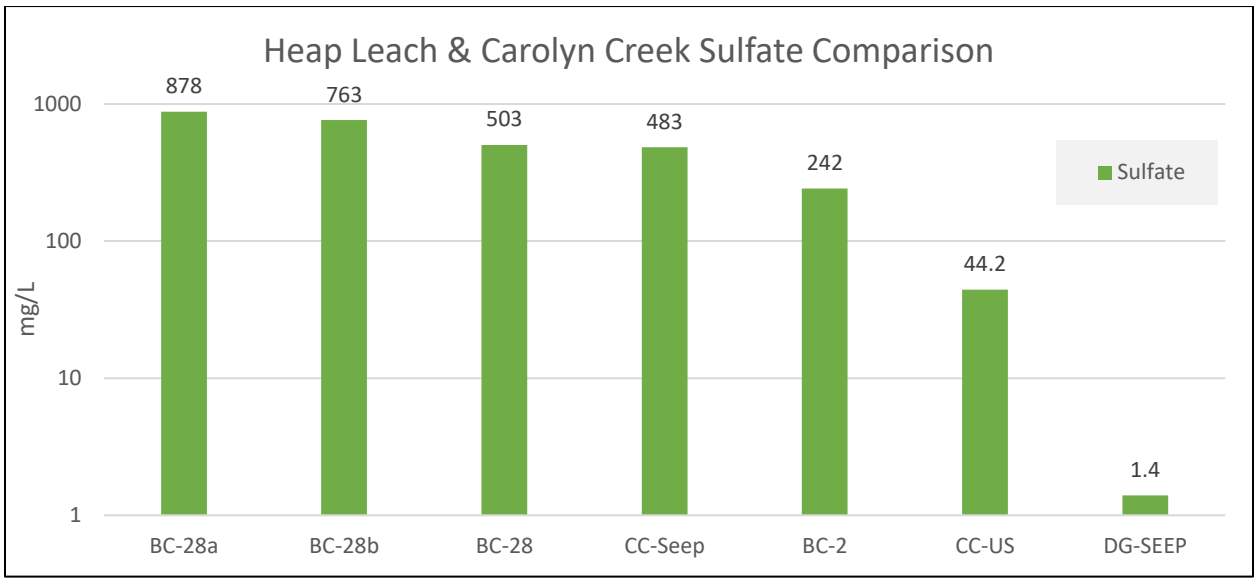


Figure 12. September 2020 sulfate concentrations at the heap leach facility compared against Carolyn Creek and newly sampled seep sites.

Several water quality parameters of interest were observed to increase from the upstream (CC-US) to downstream (BC-2) Carolyn Creek sampling locations. Nitrate, sulfate, chloride and selenium all exhibited higher concentrations after flowing through the Carolyn Creek. These concentration increases are suspected to be caused to varying degrees by a combination of influence from CC-US as well as groundwater.

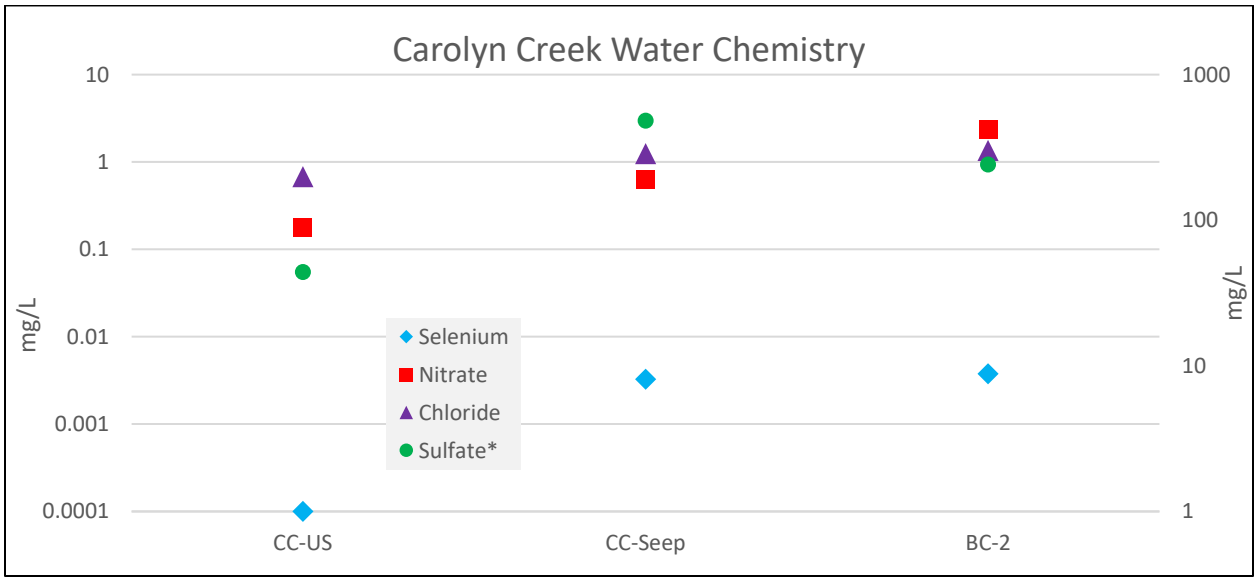


Figure 13. September 2020 nitrate, sulfate, chloride and selenium concentrations at the Carolyn Creek sampling locations. Note log-10 scale
**Displayed on right hand axis.*

5. Conclusions

Based on the analysis and discussion findings, WRB has made the following conclusions:

- There is significant variation in water quality found in the Carolyn Creek channel between the upstream CC-US location and the downstream BC-2 monitoring location, represented by significant increases in nitrate, sulfate, chloride and selenium from the upstream to downstream locations. This is suspected to be influenced by water originating at the heap leach pad, ponds or both travelling downgradient towards the Carolyn Creek Valley.
- Evidence exists to support the conclusion above based on field observations and flow measurements. Carolyn Creek accumulates flow as it travels south through the Carolyn Creek valley and frequently disappears to and emerges from ground. Additionally, terrain in the area is soft and hummocky with loose sediment and mud supporting the hypothesis that significant groundwater discharge is occurring in the Carolyn Creek valley based on the valley landscape. This was further supported by the observation of a groundwater seep (CC-SEEP) originating from the eastern slope of the valley and flowing into the Carolyn Creek channel.
- In addition to field observations, nitrate isotope data support the hypothesis that Carolyn Creek is being impacted by water originating at the heap leach pad, ponds or both. The hypothesis is further supported by the observation that water originating at the heap leach pad or ponds appears to have impacted groundwater quality at BC-66-2.
- Based on historic data available from past fisheries studies as well as WRB staff field observations, it is unlikely that Carolyn Creek represents significant fish habitat and it is suspected that impact to fish from Carolyn Creek water chemistry is unlikely. Carolyn creek flows into the North Klondike River via Laura Creek and is diluted to a degree that would not likely impact fish present in the North Klondike.

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Appendix A: Water Quality Analytical Results

Appendix B: Environmental Isotope Results

Appendix C: Water Quality QA/QC Sample Results

Appendix D: Quartz License QZ96-007

Appendix E: September 2020 Photos

CERTIFICATE OF ANALYSIS

REPORTED TO	Yukon Government - Water Resources Suite 210, 419 Range Road Whitehorse, YT Y1A 3V1		
ATTENTION	Nicole Novodvorsky	**WORK ORDER**	0091816
PO NUMBER		**RECEIVED / TEMP**	2020-09-17 10:30 / 3°C
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20
PROJECT INFO	YK Water Resources - C00043458	**COC NUMBER**	B87617

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at tmaxwell@caro.ca

Authorized By:

Taylor Maxwell
Junior Account Manager

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-01 (0091816-01) | Matrix: Water | Sampled: 2020-09-15 10:58 | eq_Stn_code : BC-28a | eq_SBpl_Class :					
Anions					
Chloride	**13.9**	0.10	mg/L	2020-09-18	
Nitrate (as N)	**168**	0.010	mg/L	2020-09-18	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-18	
Sulfate	**878**	1.0	mg/L	2020-09-18	
Calculated Parameters					
Hardness, Total (as CaCO3)	**1150**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.00565**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	**0.0075**	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**2.02**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	**0.398**	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.0369**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	**0.000231**	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**333**	0.20	mg/L	2020-09-24	
Chromium, dissolved	**0.00072**	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	**0.399**	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00174**	0.00040	mg/L	2020-09-24	
Iron, dissolved	**0.148**	0.010	mg/L	2020-09-24	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**75.9**	0.010	mg/L	2020-09-24	
Manganese, dissolved	**0.0283**	0.00020	mg/L	2020-09-24	
Mercury, dissolved	**0.000049**	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	**0.0209**	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.00779**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-24	
Potassium, dissolved	**4.26**	0.10	mg/L	2020-09-24	
Selenium, dissolved	**0.119**	0.00050	mg/L	2020-09-24	
Silicon, dissolved	**5.2**	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, dissolved	**296**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**1.42**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	**293**	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	**0.000319**	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	**0.0295**	0.000020	mg/L	2020-09-24	
Vanadium, dissolved	**0.0032**	0.0010	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-01 (0091816-01) | Matrix: Water | Sampled: 2020-09-15 10:58 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Dissolved Metals, Continued					
Zinc, dissolved	**0.0154**	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**159**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**159**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-21	
Conductivity (EC)	**3040**	2.0	µS/cm	2020-09-19	
Cyanide, Total	**0.389**	0.0020	mg/L	2020-09-22	
Cyanide, Weak Acid Dissociable	**0.0266**	0.0020	mg/L	2020-09-23	
Cyanide, Free	**0.0317**	0.0050	mg/L	2020-09-24	
pH	**7.78**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**2690**	15	mg/L	2020-09-20	
Solids, Total Suspended	**2.0**	2.0	mg/L	2020-09-21	
Thiocyanate	< 0.10	0.10	mg/L	2020-09-22	
Total Metals					
Aluminum, total	**0.0361**	0.0050	mg/L	2020-09-24	
Antimony, total	**2.50**	0.00020	mg/L	2020-09-24	
Arsenic, total	**0.530**	0.00050	mg/L	2020-09-24	
Barium, total	**0.0423**	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	**0.000248**	0.000010	mg/L	2020-09-24	
Calcium, total	**314**	0.20	mg/L	2020-09-24	
Chromium, total	**0.00118**	0.00050	mg/L	2020-09-24	
Cobalt, total	**0.457**	0.00010	mg/L	2020-09-24	
Copper, total	**0.00181**	0.00040	mg/L	2020-09-24	
Iron, total	**0.206**	0.010	mg/L	2020-09-24	
Lead, total	< 0.00020	0.00020	mg/L	2020-09-24	
Lithium, total	**0.00532**	0.00010	mg/L	2020-09-24	
Magnesium, total	**76.8**	0.010	mg/L	2020-09-24	
Manganese, total	**0.0296**	0.00020	mg/L	2020-09-24	
Mercury, total	**0.000049**	0.000010	mg/L	2020-09-23	
Molybdenum, total	**0.0227**	0.00010	mg/L	2020-09-24	
Nickel, total	**0.00902**	0.00040	mg/L	2020-09-24	
Phosphorus, total	**0.135**	0.050	mg/L	2020-09-24	
Potassium, total	**4.47**	0.10	mg/L	2020-09-24	
Selenium, total	**0.122**	0.00050	mg/L	2020-09-24	
Silicon, total	**5.8**	1.0	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-01 (0091816-01) | Matrix: Water | Sampled: 2020-09-15 10:58 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Total Metals, Continued					
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, total	**297**	0.10	mg/L	2020-09-24	
Strontium, total	**1.65**	0.0010	mg/L	2020-09-24	
Sulfur, total	**333**	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, total	**0.000287**	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	**0.0264**	0.000020	mg/L	2020-09-24	
Vanadium, total	**0.0071**	0.0010	mg/L	2020-09-24	
Zinc, total	**0.0142**	0.0040	mg/L	2020-09-24	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-09-24	
2020T24-02 (0091816-02) | Matrix: Water | Sampled: 2020-09-15 11:25 | eq_Stn_code : BC-28a | eq_SBpl_Class :					
Anions					
Chloride	**16.1**	0.10	mg/L	2020-09-18	
Nitrate (as N)	**188**	0.010	mg/L	2020-09-18	
Nitrite (as N)	**0.231**	0.010	mg/L	2020-09-18	
Sulfate	**763**	1.0	mg/L	2020-09-18	
Calculated Parameters					
Hardness, Total (as CaCO3)	**942**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.00412**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	**0.0262**	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**1.76**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	**0.244**	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.0473**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	**0.000049**	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**263**	0.20	mg/L	2020-09-24	
Chromium, dissolved	**0.00051**	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	**0.429**	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00255**	0.00040	mg/L	2020-09-24	
Iron, dissolved	**0.012**	0.010	mg/L	2020-09-24	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**69.1**	0.010	mg/L	2020-09-24	
Manganese, dissolved	**0.0369**	0.00020	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-02 (0091816-02) | Matrix: Water | Sampled: 2020-09-15 11:25 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Dissolved Metals, Continued					
Mercury, dissolved	**0.000018**	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	**0.0212**	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.00562**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-24	
Potassium, dissolved	**4.39**	0.10	mg/L	2020-09-24	
Selenium, dissolved	**0.123**	0.00050	mg/L	2020-09-24	
Silicon, dissolved	**1.3**	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, dissolved	**318**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**1.30**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	**269**	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	**0.000208**	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	**0.0185**	0.000020	mg/L	2020-09-24	
Vanadium, dissolved	**0.0049**	0.0010	mg/L	2020-09-24	
Zinc, dissolved	**0.0056**	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**93.5**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**93.5**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	**0.071**	0.050	mg/L	2020-09-21	
Conductivity (EC)	**2970**	2.0	µS/cm	2020-09-19	
Cyanide, Total	**0.0421**	0.0020	mg/L	2020-09-22	
Cyanide, Weak Acid Dissociable	**0.0446**	0.0020	mg/L	2020-09-23	
Cyanide, Free	**0.0426**	0.0050	mg/L	2020-09-24	
pH	**7.96**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**2560**	15	mg/L	2020-09-20	
Solids, Total Suspended	**8.6**	2.0	mg/L	2020-09-21	
Thiocyanate	< 0.10	0.10	mg/L	2020-09-22	
Total Metals					
Aluminum, total	**0.0932**	0.0050	mg/L	2020-09-24	
Antimony, total	**2.08**	0.00020	mg/L	2020-09-24	
Arsenic, total	**0.315**	0.00050	mg/L	2020-09-24	
Barium, total	**0.0535**	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-02 (0091816-02) | Matrix: Water | Sampled: 2020-09-15 11:25 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Total Metals, Continued					
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	**0.000077**	0.000010	mg/L	2020-09-24	
Calcium, total	**286**	0.20	mg/L	2020-09-24	
Chromium, total	**0.00123**	0.00050	mg/L	2020-09-24	
Cobalt, total	**0.470**	0.00010	mg/L	2020-09-24	
Copper, total	**0.00251**	0.00040	mg/L	2020-09-24	
Iron, total	**0.134**	0.010	mg/L	2020-09-24	
Lead, total	**0.00022**	0.00020	mg/L	2020-09-24	
Lithium, total	**0.00446**	0.00010	mg/L	2020-09-24	
Magnesium, total	**68.6**	0.010	mg/L	2020-09-24	
Manganese, total	**0.0593**	0.00020	mg/L	2020-09-24	
Mercury, total	**0.000035**	0.000010	mg/L	2020-09-23	
Molybdenum, total	**0.0220**	0.00010	mg/L	2020-09-24	
Nickel, total	**0.00611**	0.00040	mg/L	2020-09-24	
Phosphorus, total	< 0.050	0.050	mg/L	2020-09-24	
Potassium, total	**4.59**	0.10	mg/L	2020-09-24	
Selenium, total	**0.122**	0.00050	mg/L	2020-09-24	
Silicon, total	**1.9**	1.0	mg/L	2020-09-24	
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, total	**311**	0.10	mg/L	2020-09-24	
Strontium, total	**1.45**	0.0010	mg/L	2020-09-24	
Sulfur, total	**298**	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, total	**0.000224**	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	**0.0190**	0.000020	mg/L	2020-09-24	
Vanadium, total	**0.0084**	0.0010	mg/L	2020-09-24	
Zinc, total	**0.0087**	0.0040	mg/L	2020-09-24	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-09-24	
2020T24-03 (0091816-03) | Matrix: Water | Sampled: 2020-09-15 12:05 | eq_Stn_code : BC-28a | eq_SBpl_Class :					
Anions					
Chloride	**13.1**	0.10	mg/L	2020-09-18	
Nitrate (as N)	**130**	0.010	mg/L	2020-09-18	
Nitrite (as N)	**0.212**	0.010	mg/L	2020-09-18	
Sulfate	**503**	1.0	mg/L	2020-09-18	
Calculated Parameters					
Hardness, Total (as CaCO3)	**587**	0.500	mg/L	N/A	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-03 (0091816-03) | Matrix: Water | Sampled: 2020-09-15 12:05 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Dissolved Metals					
Lithium, dissolved	**0.00234**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	**0.0103**	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**0.991**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	**0.0567**	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.0779**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	**0.000011**	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**154**	0.20	mg/L	2020-09-24	
Chromium, dissolved	**0.00094**	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	**0.164**	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00132**	0.00040	mg/L	2020-09-24	
Iron, dissolved	< 0.010	0.010	mg/L	2020-09-24	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**49.0**	0.010	mg/L	2020-09-24	
Manganese, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	**0.0121**	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.00128**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-24	
Potassium, dissolved	**3.90**	0.10	mg/L	2020-09-24	
Selenium, dissolved	**0.0752**	0.00050	mg/L	2020-09-24	
Silicon, dissolved	< 1.0	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, dissolved	**230**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**0.842**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	**183**	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	**0.000065**	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	**0.00827**	0.000020	mg/L	2020-09-24	
Vanadium, dissolved	**0.0034**	0.0010	mg/L	2020-09-24	
Zinc, dissolved	**0.0048**	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**51.5**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**51.5**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	

TEST RESULTS

REPORTED TO Yukon Government - Water Resources
PROJECT Brewery Creek

WORK ORDER 0091816
REPORTED 2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-03 (0091816-03) | Matrix: Water | Sampled: 2020-09-15 12:05 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
General Parameters, Continued					
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-21	
Conductivity (EC)	**2070**	2.0	µS/cm	2020-09-19	
Cyanide, Total	**0.0102**	0.0020	mg/L	2020-09-22	
Cyanide, Weak Acid Dissociable	**0.0077**	0.0020	mg/L	2020-09-23	
Cyanide, Free	**0.0095**	0.0050	mg/L	2020-09-24	
pH	**8.18**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**1780**	15	mg/L	2020-09-20	
Solids, Total Suspended	**12.0**	2.0	mg/L	2020-09-21	
Thiocyanate	< 0.10	0.10	mg/L	2020-09-22	
Total Metals					
Aluminum, total	**0.0577**	0.0050	mg/L	2020-09-24	
Antimony, total	**1.17**	0.00020	mg/L	2020-09-24	
Arsenic, total	**0.0735**	0.00050	mg/L	2020-09-24	
Barium, total	**0.0859**	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	**0.000016**	0.000010	mg/L	2020-09-24	
Calcium, total	**165**	0.20	mg/L	2020-09-24	
Chromium, total	**0.00070**	0.00050	mg/L	2020-09-24	
Cobalt, total	**0.185**	0.00010	mg/L	2020-09-24	
Copper, total	**0.00130**	0.00040	mg/L	2020-09-24	
Iron, total	**0.076**	0.010	mg/L	2020-09-24	
Lead, total	< 0.00020	0.00020	mg/L	2020-09-24	
Lithium, total	**0.00262**	0.00010	mg/L	2020-09-24	
Magnesium, total	**47.9**	0.010	mg/L	2020-09-24	
Manganese, total	**0.00322**	0.00020	mg/L	2020-09-24	
Mercury, total	< 0.000010	0.000010	mg/L	2020-09-23	
Molybdenum, total	**0.0127**	0.00010	mg/L	2020-09-24	
Nickel, total	**0.00153**	0.00040	mg/L	2020-09-24	
Phosphorus, total	< 0.050	0.050	mg/L	2020-09-24	
Potassium, total	**4.06**	0.10	mg/L	2020-09-24	
Selenium, total	**0.0780**	0.00050	mg/L	2020-09-24	
Silicon, total	< 1.0	1.0	mg/L	2020-09-24	
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, total	**223**	0.10	mg/L	2020-09-24	
Strontium, total	**0.949**	0.0010	mg/L	2020-09-24	
Sulfur, total	**198**	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, total	**0.000069**	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-03 (0091816-03) | Matrix: Water | Sampled: 2020-09-15 12:05 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Total Metals, Continued					
Titanium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	**0.00855**	0.000020	mg/L	2020-09-24	
Vanadium, total	**0.0076**	0.0010	mg/L	2020-09-24	
Zinc, total	**0.0104**	0.0040	mg/L	2020-09-24	
Zirconium, total	**0.00010**	0.00010	mg/L	2020-09-24	
2020T24-04 (0091816-04) | Matrix: Water | Sampled: 2020-09-15 14:15 | eq_Stn_code : BC-28a | eq_SBpl_Class :					
Anions					
Chloride	**1.36**	0.10	mg/L	2020-09-18	
Nitrate (as N)	**2.37**	0.010	mg/L	2020-09-18	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-18	
Sulfate	**242**	1.0	mg/L	2020-09-18	
Calculated Parameters					
Hardness, Total (as CaCO3)	**406**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0168**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	**0.0149**	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**0.00127**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.0907**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	**0.000034**	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**97.5**	0.20	mg/L	2020-09-24	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	**0.00556**	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00131**	0.00040	mg/L	2020-09-24	
Iron, dissolved	**0.181**	0.010	mg/L	2020-09-24	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**39.4**	0.010	mg/L	2020-09-24	
Manganese, dissolved	**0.0652**	0.00020	mg/L	2020-09-24	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	**0.00045**	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.00146**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-24	
Potassium, dissolved	**1.65**	0.10	mg/L	2020-09-24	
Selenium, dissolved	**0.00344**	0.00050	mg/L	2020-09-24	
Silicon, dissolved	**6.7**	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-04 (0091816-04) | Matrix: Water | Sampled: 2020-09-15 14:15 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Dissolved Metals, Continued					
Sodium, dissolved	**9.39**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**0.265**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	**85.0**	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	**0.00145**	0.000020	mg/L	2020-09-24	
Vanadium, dissolved	**0.0027**	0.0010	mg/L	2020-09-24	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	**0.00013**	0.00010	mg/L	2020-09-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**144**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**144**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	**0.070**	0.050	mg/L	2020-09-21	
Conductivity (EC)	**761**	2.0	µS/cm	2020-09-19	
pH	**7.91**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**564**	15	mg/L	2020-09-20	
Solids, Total Suspended	**8.2**	2.0	mg/L	2020-09-21	
Total Metals					
Aluminum, total	**0.149**	0.0050	mg/L	2020-09-24	
Antimony, total	**0.00165**	0.00020	mg/L	2020-09-24	
Arsenic, total	**0.00136**	0.00050	mg/L	2020-09-24	
Barium, total	**0.106**	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	**0.000026**	0.000010	mg/L	2020-09-24	
Calcium, total	**106**	0.20	mg/L	2020-09-24	
Chromium, total	**0.00091**	0.00050	mg/L	2020-09-24	
Cobalt, total	**0.00643**	0.00010	mg/L	2020-09-24	
Copper, total	**0.00165**	0.00040	mg/L	2020-09-24	
Iron, total	**0.475**	0.010	mg/L	2020-09-24	
Lead, total	**0.00024**	0.00020	mg/L	2020-09-24	
Lithium, total	**0.0173**	0.00010	mg/L	2020-09-24	
Magnesium, total	**39.8**	0.010	mg/L	2020-09-24	
Manganese, total	**0.0704**	0.00020	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-04 (0091816-04) | Matrix: Water | Sampled: 2020-09-15 14:15 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Total Metals, Continued					
Mercury, total	< 0.000010	0.000010	mg/L	2020-09-23	
Molybdenum, total	**0.00040**	0.00010	mg/L	2020-09-24	
Nickel, total	**0.00204**	0.00040	mg/L	2020-09-24	
Phosphorus, total	< 0.050	0.050	mg/L	2020-09-24	
Potassium, total	**1.81**	0.10	mg/L	2020-09-24	
Selenium, total	**0.00378**	0.00050	mg/L	2020-09-24	
Silicon, total	**7.6**	1.0	mg/L	2020-09-24	
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, total	**9.43**	0.10	mg/L	2020-09-24	
Strontium, total	**0.305**	0.0010	mg/L	2020-09-24	
Sulfur, total	**102**	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, total	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, total	**0.0064**	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	**0.00151**	0.000020	mg/L	2020-09-24	
Vanadium, total	**0.0066**	0.0010	mg/L	2020-09-24	
Zinc, total	**0.0055**	0.0040	mg/L	2020-09-24	
Zirconium, total	**0.00018**	0.00010	mg/L	2020-09-24	
2020T24-05 (0091816-05) | Matrix: Water | Sampled: 2020-09-15 14:50 | eq_Stn_code : BC-28a | eq_SBpl_Class :					
Anions					
Chloride	**0.34**	0.10	mg/L	2020-09-18	
Nitrate (as N)	**0.171**	0.010	mg/L	2020-09-18	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-18	
Sulfate	**128**	1.0	mg/L	2020-09-18	
Calculated Parameters					
Hardness, Total (as CaCO3)	**276**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0139**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	**0.0563**	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**0.00474**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	**0.00212**	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.0610**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	**0.000087**	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**68.4**	0.20	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO Yukon Government - Water Resources
PROJECT Brewery Creek

WORK ORDER 0091816
REPORTED 2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-05 (0091816-05) | Matrix: Water | Sampled: 2020-09-15 14:50 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Dissolved Metals, Continued					
Chromium, dissolved	**0.00060**	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	**0.00128**	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00172**	0.00040	mg/L	2020-09-24	
Iron, dissolved	**0.193**	0.010	mg/L	2020-09-24	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**25.4**	0.010	mg/L	2020-09-24	
Manganese, dissolved	**0.0998**	0.00020	mg/L	2020-09-24	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	**0.00250**	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.00671**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-24	
Potassium, dissolved	**1.34**	0.10	mg/L	2020-09-24	
Selenium, dissolved	**0.00223**	0.00050	mg/L	2020-09-24	
Silicon, dissolved	**4.9**	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, dissolved	**3.01**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**0.312**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	**43.9**	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	**0.00216**	0.000020	mg/L	2020-09-24	
Vanadium, dissolved	**0.0023**	0.0010	mg/L	2020-09-24	
Zinc, dissolved	**0.0128**	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**142**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**142**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-21	
Conductivity (EC)	**508**	2.0	µS/cm	2020-09-19	
pH	**8.04**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**346**	15	mg/L	2020-09-20	
Solids, Total Suspended	**7.4**	2.0	mg/L	2020-09-21	
Total Metals					
Aluminum, total	**0.113**	0.0050	mg/L	2020-09-24	
Antimony, total	**0.00603**	0.00020	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-05 (0091816-05) | Matrix: Water | Sampled: 2020-09-15 14:50 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Total Metals, Continued					
Arsenic, total	**0.00424**	0.00050	mg/L	2020-09-24	
Barium, total	**0.0723**	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	**0.000113**	0.000010	mg/L	2020-09-24	
Calcium, total	**75.5**	0.20	mg/L	2020-09-24	
Chromium, total	**0.00077**	0.00050	mg/L	2020-09-24	
Cobalt, total	**0.00155**	0.00010	mg/L	2020-09-24	
Copper, total	**0.00199**	0.00040	mg/L	2020-09-24	
Iron, total	**0.395**	0.010	mg/L	2020-09-24	
Lead, total	< 0.00020	0.00020	mg/L	2020-09-24	
Lithium, total	**0.0144**	0.00010	mg/L	2020-09-24	
Magnesium, total	**26.6**	0.010	mg/L	2020-09-24	
Manganese, total	**0.110**	0.00020	mg/L	2020-09-24	
Mercury, total	< 0.000040	0.000040	mg/L	2020-09-24	CT5
Molybdenum, total	**0.00268**	0.00010	mg/L	2020-09-24	
Nickel, total	**0.00781**	0.00040	mg/L	2020-09-24	
Phosphorus, total	< 0.050	0.050	mg/L	2020-09-24	
Potassium, total	**1.53**	0.10	mg/L	2020-09-24	
Selenium, total	**0.00224**	0.00050	mg/L	2020-09-24	
Silicon, total	**5.7**	1.0	mg/L	2020-09-24	
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, total	**3.13**	0.10	mg/L	2020-09-24	
Strontium, total	**0.372**	0.0010	mg/L	2020-09-24	
Sulfur, total	**58.6**	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, total	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	**0.00227**	0.000020	mg/L	2020-09-24	
Vanadium, total	**0.0089**	0.0010	mg/L	2020-09-24	
Zinc, total	**0.0159**	0.0040	mg/L	2020-09-24	
Zirconium, total	**0.00016**	0.00010	mg/L	2020-09-24	
2020T24-06 (0091816-06) | Matrix: Water | Sampled: 2020-09-15 15:02 | eq_Stn_code : BC-28a | eq_SBpl_Class :					
Anions					
Chloride	**0.33**	0.10	mg/L	2020-09-18	
Nitrate (as N)	**0.170**	0.010	mg/L	2020-09-18	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-18	
Sulfate	**127**	1.0	mg/L	2020-09-18	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-06 (0091816-06) | Matrix: Water | Sampled: 2020-09-15 15:02 | eq_Stn_code : BC-65 NEW | eq_SBpl_Class : , Continued					
Anions, Continued					
Calculated Parameters					
Hardness, Total (as CaCO3)	**273**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0135**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	**0.0537**	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**0.00455**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	**0.00206**	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.0605**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	**0.000098**	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**66.8**	0.20	mg/L	2020-09-24	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	**0.00129**	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00154**	0.00040	mg/L	2020-09-24	
Iron, dissolved	**0.200**	0.010	mg/L	2020-09-24	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**25.7**	0.010	mg/L	2020-09-24	
Manganese, dissolved	**0.101**	0.00020	mg/L	2020-09-24	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	**0.00245**	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.00696**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-24	
Potassium, dissolved	**1.37**	0.10	mg/L	2020-09-24	
Selenium, dissolved	**0.00229**	0.00050	mg/L	2020-09-24	
Silicon, dissolved	**5.1**	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, dissolved	**3.02**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**0.314**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	**42.8**	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	**0.00214**	0.000020	mg/L	2020-09-24	
Vanadium, dissolved	**0.0027**	0.0010	mg/L	2020-09-24	
Zinc, dissolved	**0.0118**	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	**0.00011**	0.00010	mg/L	2020-09-24	
General Parameters					

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-06 (0091816-06) | Matrix: Water | Sampled: 2020-09-15 15:02 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
General Parameters, Continued					
Alkalinity, Total (as CaCO3)	**142**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**142**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-21	
Conductivity (EC)	**513**	2.0	µS/cm	2020-09-19	
pH	**8.05**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**361**	15	mg/L	2020-09-20	
Solids, Total Suspended	**7.2**	2.0	mg/L	2020-09-21	
Total Metals					
Aluminum, total	**0.144**	0.0050	mg/L	2020-09-24	
Antimony, total	**0.00560**	0.00020	mg/L	2020-09-24	
Arsenic, total	**0.00453**	0.00050	mg/L	2020-09-24	
Barium, total	**0.0702**	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	**0.000107**	0.000010	mg/L	2020-09-24	
Calcium, total	**70.7**	0.20	mg/L	2020-09-24	
Chromium, total	**0.00082**	0.00050	mg/L	2020-09-24	
Cobalt, total	**0.00155**	0.00010	mg/L	2020-09-24	
Copper, total	**0.00190**	0.00040	mg/L	2020-09-24	
Iron, total	**0.466**	0.010	mg/L	2020-09-24	
Lead, total	< 0.00020	0.00020	mg/L	2020-09-24	
Lithium, total	**0.0132**	0.00010	mg/L	2020-09-24	
Magnesium, total	**25.1**	0.010	mg/L	2020-09-24	
Manganese, total	**0.105**	0.00020	mg/L	2020-09-24	
Mercury, total	< 0.000010	0.000010	mg/L	2020-09-23	
Molybdenum, total	**0.00257**	0.00010	mg/L	2020-09-24	
Nickel, total	**0.00814**	0.00040	mg/L	2020-09-24	
Phosphorus, total	< 0.050	0.050	mg/L	2020-09-24	
Potassium, total	**1.44**	0.10	mg/L	2020-09-24	
Selenium, total	**0.00211**	0.00050	mg/L	2020-09-24	
Silicon, total	**5.3**	1.0	mg/L	2020-09-24	
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, total	**2.95**	0.10	mg/L	2020-09-24	
Strontium, total	**0.352**	0.0010	mg/L	2020-09-24	
Sulfur, total	**49.6**	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, total	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-06 (0091816-06) | Matrix: Water | Sampled: 2020-09-15 15:02 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Total Metals, Continued					
Titanium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	**0.00212**	0.000020	mg/L	2020-09-24	
Vanadium, total	**0.0109**	0.0010	mg/L	2020-09-24	
Zinc, total	**0.0154**	0.0040	mg/L	2020-09-24	
Zirconium, total	**0.00020**	0.00010	mg/L	2020-09-24	
2020T26-01 (0091816-07) | Matrix: Water | Sampled: 2020-09-15 11:15 | eq_Stn_code : BC-28a | eq_SBpl_Class :					
Anions					
Chloride	< 0.10	0.10	mg/L	2020-09-18	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-09-18	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-18	
Sulfate	**1.4**	1.0	mg/L	2020-09-18	
Calculated Parameters					
Hardness, Total (as CaCO3)	**15.7**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.00221**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	**0.0284**	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**0.00024**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	**0.00065**	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.0637**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**4.02**	0.20	mg/L	2020-09-24	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00071**	0.00040	mg/L	2020-09-24	
Iron, dissolved	**0.242**	0.010	mg/L	2020-09-24	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**1.38**	0.010	mg/L	2020-09-24	
Manganese, dissolved	**0.00843**	0.00020	mg/L	2020-09-24	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.00046**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-24	
Potassium, dissolved	**0.25**	0.10	mg/L	2020-09-24	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Silicon, dissolved	< 1.0	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-01 (0091816-07) | Matrix: Water | Sampled: 2020-09-15 11:15 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Dissolved Metals, Continued					
Sodium, dissolved	**0.69**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**0.0270**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	< 3.0	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	< 0.000020	0.000020	mg/L	2020-09-24	
Vanadium, dissolved	**0.0018**	0.0010	mg/L	2020-09-24	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**14.4**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**14.4**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-21	
Conductivity (EC)	**38.0**	2.0	µS/cm	2020-09-19	
pH	**6.68**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**40**	15	mg/L	2020-09-21	
2020T26-02 (0091816-08) | Matrix: Water | Sampled: 2020-09-15 15:00 | eq_Stn_code : BC-28a | eq_SBpl_Class :					
Anions					
Chloride	**3.21**	0.10	mg/L	2020-09-18	
Nitrate (as N)	**20.8**	0.010	mg/L	2020-09-18	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-18	
Sulfate	**26.6**	1.0	mg/L	2020-09-18	
Calculated Parameters					
Hardness, Total (as CaCO3)	**303**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0156**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**0.00480**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	**0.00066**	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.0956**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-02 (0091816-08) | Matrix: Water | Sampled: 2020-09-15 15:00 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Dissolved Metals, Continued					
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	**0.000107**	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**64.3**	0.20	mg/L	2020-09-24	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	**0.0435**	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00230**	0.00040	mg/L	2020-09-24	
Iron, dissolved	< 0.010	0.010	mg/L	2020-09-24	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**34.6**	0.010	mg/L	2020-09-24	
Manganese, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	**0.00054**	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.0127**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	**0.158**	0.050	mg/L	2020-09-24	
Potassium, dissolved	**2.64**	0.10	mg/L	2020-09-24	
Selenium, dissolved	**0.00780**	0.00050	mg/L	2020-09-24	
Silicon, dissolved	**5.0**	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, dissolved	**10.4**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**0.320**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	**7.7**	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	**0.00170**	0.000020	mg/L	2020-09-24	
Vanadium, dissolved	**0.0020**	0.0010	mg/L	2020-09-24	
Zinc, dissolved	**0.0091**	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	**0.00011**	0.00010	mg/L	2020-09-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**256**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**256**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-21	
Conductivity (EC)	**691**	2.0	µS/cm	2020-09-19	
pH	**7.94**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**440**	15	mg/L	2020-09-20	
2020T26-03 (0091816-09) | Matrix: Water | Sampled: 2020-09-15 15:40 | eq_Stn_code : BC-28a | eq_SBpl_Class :					

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-03 (0091816-09) | Matrix: Water | Sampled: 2020-09-15 15:40 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Anions					
Chloride	**0.30**	0.10	mg/L	2020-09-18	
Nitrate (as N)	**0.249**	0.010	mg/L	2020-09-18	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-18	
Sulfate	**34.7**	1.0	mg/L	2020-09-18	
Calculated Parameters					
Hardness, Total (as CaCO3)	**165**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0112**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	**0.0240**	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**0.00348**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	**0.00159**	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.150**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	**0.000201**	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**45.0**	0.20	mg/L	2020-09-24	
Chromium, dissolved	**0.00057**	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	**0.00049**	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00795**	0.00040	mg/L	2020-09-24	
Iron, dissolved	**0.018**	0.010	mg/L	2020-09-24	
Lead, dissolved	**0.00069**	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**12.9**	0.010	mg/L	2020-09-24	
Manganese, dissolved	**0.00839**	0.00020	mg/L	2020-09-24	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	**0.00096**	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.00651**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	**0.572**	0.050	mg/L	2020-09-24	
Potassium, dissolved	**1.65**	0.10	mg/L	2020-09-24	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Silicon, dissolved	**8.6**	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, dissolved	**4.09**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**0.200**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	**10.5**	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	**0.00100**	0.000020	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-03 (0091816-09) | Matrix: Water | Sampled: 2020-09-15 15:40 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Dissolved Metals, Continued					
Vanadium, dissolved	**0.0025**	0.0010	mg/L	2020-09-24	
Zinc, dissolved	**0.0243**	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	**0.00028**	0.00010	mg/L	2020-09-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**138**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**138**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	**0.081**	0.050	mg/L	2020-09-21	
Conductivity (EC)	**325**	2.0	µS/cm	2020-09-19	
pH	**7.73**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**256**	15	mg/L	2020-09-20	
2020T26-04 (0091816-10) | Matrix: Water | Sampled: 2020-09-15 17:50 | eq_Stn_code : BC-28a | eq_SBpl_Class :					
Anions					
Chloride	**1.07**	0.10	mg/L	2020-09-18	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-09-18	
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-18	
Sulfate	**105**	1.0	mg/L	2020-09-18	
Calculated Parameters					
Hardness, Total (as CaCO3)	**333**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0614**	0.00010	mg/L	2020-09-24	
Aluminum, dissolved	**0.0081**	0.0050	mg/L	2020-09-24	
Antimony, dissolved	**0.00137**	0.00020	mg/L	2020-09-24	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Barium, dissolved	**0.0354**	0.0050	mg/L	2020-09-24	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, dissolved	**0.000031**	0.000010	mg/L	2020-09-24	
Calcium, dissolved	**69.6**	0.20	mg/L	2020-09-24	
Chromium, dissolved	**0.00075**	0.00050	mg/L	2020-09-24	
Cobalt, dissolved	**0.00367**	0.00010	mg/L	2020-09-24	
Copper, dissolved	**0.00644**	0.00040	mg/L	2020-09-24	
Iron, dissolved	**0.023**	0.010	mg/L	2020-09-24	
Lead, dissolved	**0.00029**	0.00020	mg/L	2020-09-24	
Magnesium, dissolved	**38.7**	0.010	mg/L	2020-09-24	
Manganese, dissolved	**0.770**	0.00020	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-04 (0091816-10) | Matrix: Water | Sampled: 2020-09-15 17:50 | eq_Stn_code : BC-28a | eq_SBpl_Class : , Continued					
Dissolved Metals, Continued					
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-21	
Molybdenum, dissolved	**0.0107**	0.00010	mg/L	2020-09-24	
Nickel, dissolved	**0.0154**	0.00040	mg/L	2020-09-24	
Phosphorus, dissolved	**0.573**	0.050	mg/L	2020-09-24	
Potassium, dissolved	**8.48**	0.10	mg/L	2020-09-24	
Selenium, dissolved	**0.00199**	0.00050	mg/L	2020-09-24	
Silicon, dissolved	**4.7**	1.0	mg/L	2020-09-24	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-24	
Sodium, dissolved	**10.5**	0.10	mg/L	2020-09-24	
Strontium, dissolved	**0.821**	0.0010	mg/L	2020-09-24	
Sulfur, dissolved	**35.5**	3.0	mg/L	2020-09-24	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, dissolved	**0.00945**	0.00020	mg/L	2020-09-24	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, dissolved	**0.00114**	0.000020	mg/L	2020-09-24	
Vanadium, dissolved	**0.0014**	0.0010	mg/L	2020-09-24	
Zinc, dissolved	**0.0350**	0.0040	mg/L	2020-09-24	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-24	
General Parameters					
Alkalinity, Total (as CaCO3)	**246**	1.0	mg/L	2020-09-19	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Bicarbonate (as CaCO3)	**246**	1.0	mg/L	2020-09-19	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2020-09-19	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-21	
Conductivity (EC)	**645**	2.0	µS/cm	2020-09-19	
pH	**7.67**	0.10	pH units	2020-09-19	HT2
Solids, Total Dissolved	**460**	15	mg/L	2020-09-20	

Sample Qualifiers:

CT5	This sample has been incorrectly preserved for Mercury analysis
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Cyanide, Free in Water	ASTM D7237-15a	Flow Injection with Gas Diffusion and Amperometry		Kelowna
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	✓	Kelowna
Cyanide, WAD in Water	ASTM D6888-09	Flow Injection with Gas Diffusion and Amperometry	✓	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	✓	N/A
Mercury, dissolved in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Thiocyanate in Water	SM 4500-CN- M (2017)	Colorimetry	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
ASTM	ASTM International Test Methods
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
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General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager:tmaxwell@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline (s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
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The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B0I1604										
Blank (B0I1604-BLK1)				Prepared: 2020-09-18, Analyzed: 2020-09-18						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B0I1604-BLK2)				Prepared: 2020-09-18, Analyzed: 2020-09-18						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B0I1604-BLK3)				Prepared: 2020-09-18, Analyzed: 2020-09-18						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
LCS (B0I1604-BS1)				Prepared: 2020-09-18, Analyzed: 2020-09-18						
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	3.94	0.010	mg/L	4.00		99	90-110			
Nitrite (as N)	1.92	0.010	mg/L	2.00		96	85-115			
Sulfate	16.1	1.0	mg/L	16.0		100	90-110			
LCS (B0I1604-BS2)				Prepared: 2020-09-18, Analyzed: 2020-09-18						
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	4.04	0.010	mg/L	4.00		101	90-110			
Nitrite (as N)	1.93	0.010	mg/L	2.00		96	85-115			
Sulfate	15.9	1.0	mg/L	16.0		99	90-110			
LCS (B0I1604-BS3)				Prepared: 2020-09-18, Analyzed: 2020-09-18						
Chloride	16.1	0.10	mg/L	16.0		101	90-110			
Nitrate (as N)	3.96	0.010	mg/L	4.00		99	90-110			
Nitrite (as N)	1.94	0.010	mg/L	2.00		97	85-115			
Sulfate	16.1	1.0	mg/L	16.0		101	90-110			
Dissolved Metals, Batch B0I1780										

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
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Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B0I1780, Continued										
Blank (B0I1780-BLK1)				Prepared: 2020-09-19, Analyzed: 2020-09-21						
Mercury, dissolved	< 0.000010	0.000010	mg/L							
Blank (B0I1780-BLK2)				Prepared: 2020-09-19, Analyzed: 2020-09-21						
Mercury, dissolved	< 0.000010	0.000010	mg/L							
Reference (B0I1780-SRM1)				Prepared: 2020-09-19, Analyzed: 2020-09-21						
Mercury, dissolved	0.00608	0.000010	mg/L	0.00581		105	70-130			
Dissolved Metals, Batch B0I2031										
Blank (B0I2031-BLK1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0500	0.0500	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
LCS (B0I2031-BS1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Lithium, dissolved	0.0201	0.00010	mg/L	0.0200		100	80-120			
Aluminum, dissolved	0.0233	0.0050	mg/L	0.0199		117	80-120			
Antimony, dissolved	0.0183	0.00020	mg/L	0.0200		91	80-120			
Arsenic, dissolved	0.0168	0.00050	mg/L	0.0200		84	80-120			
Barium, dissolved	0.0199	0.0050	mg/L	0.0198		100	80-120			
Beryllium, dissolved	0.0186	0.00010	mg/L	0.0198		94	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
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Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B0I2031, Continued										
LCS (B0I2031-BS1), Continued				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Bismuth, dissolved	0.0211	0.00010	mg/L	0.0200		106	80-120			
Boron, dissolved	< 0.0500	0.0500	mg/L	0.0200		101	80-120			
Cadmium, dissolved	0.0204	0.000010	mg/L	0.0199		103	80-120			
Calcium, dissolved	2.13	0.20	mg/L	2.02		105	80-120			
Chromium, dissolved	0.0188	0.00050	mg/L	0.0198		95	80-120			
Cobalt, dissolved	0.0190	0.00010	mg/L	0.0199		96	80-120			
Copper, dissolved	0.0201	0.00040	mg/L	0.0200		101	80-120			
Iron, dissolved	1.96	0.010	mg/L	2.02		97	80-120			
Lead, dissolved	0.0207	0.00020	mg/L	0.0199		104	80-120			
Magnesium, dissolved	2.13	0.010	mg/L	2.02		106	80-120			
Manganese, dissolved	0.0204	0.00020	mg/L	0.0199		102	80-120			
Molybdenum, dissolved	0.0191	0.00010	mg/L	0.0200		96	80-120			
Nickel, dissolved	0.0196	0.00040	mg/L	0.0200		98	80-120			
Phosphorus, dissolved	2.00	0.050	mg/L	2.00		100	80-120			
Potassium, dissolved	2.04	0.10	mg/L	2.02		101	80-120			
Selenium, dissolved	0.0218	0.00050	mg/L	0.0200		109	80-120			
Silicon, dissolved	2.2	1.0	mg/L	2.00		112	80-120			
Silver, dissolved	0.0207	0.000050	mg/L	0.0200		104	80-120			
Sodium, dissolved	2.08	0.10	mg/L	2.02		103	80-120			
Strontium, dissolved	0.0199	0.0010	mg/L	0.0200		100	80-120			
Sulfur, dissolved	5.0	3.0	mg/L	5.00		101	80-120			
Tellurium, dissolved	0.0183	0.00050	mg/L	0.0200		92	80-120			
Thallium, dissolved	0.0209	0.000020	mg/L	0.0199		105	80-120			
Thorium, dissolved	0.0202	0.00010	mg/L	0.0200		101	80-120			
Tin, dissolved	0.0178	0.00020	mg/L	0.0200		89	80-120			
Titanium, dissolved	0.0166	0.0050	mg/L	0.0200		83	80-120			
Tungsten, dissolved	0.0195	0.0010	mg/L	0.0200		97	80-120			
Uranium, dissolved	0.0206	0.000020	mg/L	0.0200		103	80-120			
Vanadium, dissolved	0.0170	0.0010	mg/L	0.0200		85	80-120			
Zinc, dissolved	0.0210	0.0040	mg/L	0.0200		105	80-120			
Zirconium, dissolved	0.0168	0.00010	mg/L	0.0200		84	80-120			
Reference (B0I2031-SRM1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Lithium, dissolved	0.0984	0.00010	mg/L	0.100		98	70-130			
Aluminum, dissolved	0.235	0.0050	mg/L	0.235		100	70-130			
Antimony, dissolved	0.0419	0.00020	mg/L	0.0431		97	70-130			
Arsenic, dissolved	0.361	0.00050	mg/L	0.423		85	70-130			
Barium, dissolved	2.94	0.0050	mg/L	3.30		89	70-130			
Beryllium, dissolved	0.195	0.00010	mg/L	0.209		93	70-130			
Boron, dissolved	1.59	0.0500	mg/L	1.65		96	70-130			
Cadmium, dissolved	0.220	0.000010	mg/L	0.221		99	70-130			
Calcium, dissolved	7.33	0.20	mg/L	7.72		95	70-130			
Chromium, dissolved	0.398	0.00050	mg/L	0.434		92	70-130			
Cobalt, dissolved	0.117	0.00010	mg/L	0.124		94	70-130			
Copper, dissolved	0.784	0.00040	mg/L	0.815		96	70-130			
Iron, dissolved	1.23	0.010	mg/L	1.27		97	70-130			
Lead, dissolved	0.111	0.00020	mg/L	0.110		101	70-130			
Magnesium, dissolved	6.79	0.010	mg/L	6.59		103	70-130			
Manganese, dissolved	0.355	0.00020	mg/L	0.342		104	70-130			
Molybdenum, dissolved	0.390	0.00010	mg/L	0.404		97	70-130			
Nickel, dissolved	0.784	0.00040	mg/L	0.835		94	70-130			
Phosphorus, dissolved	0.487	0.050	mg/L	0.499		98	70-130			
Potassium, dissolved	2.94	0.10	mg/L	2.88		102	70-130			
Selenium, dissolved	0.0365	0.00050	mg/L	0.0324		113	70-130			
Sodium, dissolved	18.6	0.10	mg/L	18.0		104	70-130			
Strontium, dissolved	0.879	0.0010	mg/L	0.935		94	70-130			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B0I2031, Continued										
Reference (B0I2031-SRM1), Continued				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Thallium, dissolved	0.0394	0.000020	mg/L	0.0385		102	70-130			
Uranium, dissolved	0.249	0.000020	mg/L	0.258		96	70-130			
Vanadium, dissolved	0.765	0.0010	mg/L	0.873		88	70-130			
Zinc, dissolved	0.776	0.0040	mg/L	0.848		91	70-130			
General Parameters, Batch B0I1750										
Blank (B0I1750-BLK1)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B0I1750-BLK2)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B0I1750-BLK3)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
Alkalinity, Total (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L							
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B0I1750-BS1)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
Alkalinity, Total (as CaCO3)	102	1.0	mg/L	100		102	80-120			
LCS (B0I1750-BS2)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
Alkalinity, Total (as CaCO3)	102	1.0	mg/L	100		102	80-120			
LCS (B0I1750-BS3)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
Alkalinity, Total (as CaCO3)	103	1.0	mg/L	100		103	80-120			
LCS (B0I1750-BS4)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
Conductivity (EC)	1460	2.0	µS/cm	1410		104	95-104			
LCS (B0I1750-BS5)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
Conductivity (EC)	1470	2.0	µS/cm	1410		104	95-104			
LCS (B0I1750-BS6)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
Conductivity (EC)	1470	2.0	µS/cm	1410		104	95-104			
Duplicate (B0I1750-DUP2)		**Source: 0091816-01**		Prepared: 2020-09-19, Analyzed: 2020-09-19						
Alkalinity, Total (as CaCO3)	160	1.0	mg/L		159			< 1	10	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L		< 1.0				10	
Alkalinity, Bicarbonate (as CaCO3)	160	1.0	mg/L		159			< 1	10	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L		< 1.0				10	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L		< 1.0				10	
Conductivity (EC)	3040	2.0	µS/cm		3040			< 1	5	
pH	7.79	0.10	pH units		7.78			< 1	4	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B0I1750, Continued										
Reference (B0I1750-SRM1)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
pH	6.98	0.10	pH units	7.01		100	98-102			
Reference (B0I1750-SRM2)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
pH	6.98	0.10	pH units	7.01		100	98-102			
Reference (B0I1750-SRM3)				Prepared: 2020-09-19, Analyzed: 2020-09-19						
pH	6.98	0.10	pH units	7.01		100	98-102			
General Parameters, Batch B0I1790										
Blank (B0I1790-BLK1)				Prepared: 2020-09-21, Analyzed: 2020-09-21						
Solids, Total Suspended	< 2.0	2.0	mg/L							
Blank (B0I1790-BLK2)				Prepared: 2020-09-21, Analyzed: 2020-09-21						
Solids, Total Suspended	< 2.0	2.0	mg/L							
LCS (B0I1790-BS1)				Prepared: 2020-09-21, Analyzed: 2020-09-21						
Solids, Total Suspended	87.0	10.0	mg/L	100		87	85-115			
LCS (B0I1790-BS2)				Prepared: 2020-09-21, Analyzed: 2020-09-21						
Solids, Total Suspended	106	10.0	mg/L	100		106	85-115			
General Parameters, Batch B0I1792										
Blank (B0I1792-BLK1)				Prepared: 2020-09-20, Analyzed: 2020-09-20						
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B0I1792-BS1)				Prepared: 2020-09-20, Analyzed: 2020-09-20						
Solids, Total Dissolved	251	15	mg/L	240		105	85-115			
Duplicate (B0I1792-DUP1)		**Source: 0091816-01**		Prepared: 2020-09-20, Analyzed: 2020-09-20						
Solids, Total Dissolved	2580	15	mg/L		2690			4	15	
General Parameters, Batch B0I1842										
Blank (B0I1842-BLK1)				Prepared: 2020-09-21, Analyzed: 2020-09-21						
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B0I1842-BS1)				Prepared: 2020-09-21, Analyzed: 2020-09-21						
Solids, Total Dissolved	246	15	mg/L	240		102	85-115			
General Parameters, Batch B0I1860										
Blank (B0I1860-BLK1)				Prepared: 2020-09-22, Analyzed: 2020-09-22						
Cyanide, Total	< 0.0020	0.0020	mg/L							
Blank (B0I1860-BLK2)				Prepared: 2020-09-22, Analyzed: 2020-09-22						
Cyanide, Total	< 0.0020	0.0020	mg/L							
LCS (B0I1860-BS1)				Prepared: 2020-09-22, Analyzed: 2020-09-22						
Cyanide, Total	0.0198	0.0020	mg/L	0.0200		99	82-120			
LCS (B0I1860-BS2)				Prepared: 2020-09-22, Analyzed: 2020-09-22						
Cyanide, Total	0.0207	0.0020	mg/L	0.0200		104	82-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Yukon Government - Water Resources
PROJECT Brewery Creek

WORK ORDER 0091816
REPORTED 2020-10-13 17:20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B0I1860, Continued										
LCS Dup (B0I1860-BSD1)				Prepared: 2020-09-22, Analyzed: 2020-09-22						
Cyanide, Total	0.0197	0.0020	mg/L	0.0200		99	82-120	< 1	10	
LCS Dup (B0I1860-BSD2)				Prepared: 2020-09-22, Analyzed: 2020-09-22						
Cyanide, Total	0.0205	0.0020	mg/L	0.0200		102	82-120	1	10	
General Parameters, Batch B0I1862										
Blank (B0I1862-BLK1)				Prepared: 2020-09-21, Analyzed: 2020-09-22						
Thiocyanate	< 0.10	0.10	mg/L							
Blank (B0I1862-BLK2)				Prepared: 2020-09-21, Analyzed: 2020-09-22						
Thiocyanate	< 0.10	0.10	mg/L							
LCS (B0I1862-BS1)				Prepared: 2020-09-21, Analyzed: 2020-09-22						
Thiocyanate	0.95	0.10	mg/L	1.00		95	85-115			
LCS (B0I1862-BS2)				Prepared: 2020-09-21, Analyzed: 2020-09-22						
Thiocyanate	1.02	0.10	mg/L	1.00		102	85-115			
Duplicate (B0I1862-DUP1)		**Source: 0091816-02**		Prepared: 2020-09-21, Analyzed: 2020-09-22						
Thiocyanate	< 0.10	0.10	mg/L		< 0.10				20	
Matrix Spike (B0I1862-MS1)		**Source: 0091816-02**		Prepared: 2020-09-21, Analyzed: 2020-09-22						
Thiocyanate	1.16	0.10	mg/L	1.25	< 0.10	93	75-125			
General Parameters, Batch B0I1882										
Blank (B0I1882-BLK1)				Prepared: 2020-09-21, Analyzed: 2020-09-21						
Ammonia, Total (as N)	< 0.050	0.050	mg/L							
LCS (B0I1882-BS1)				Prepared: 2020-09-21, Analyzed: 2020-09-21						
Ammonia, Total (as N)	1.06	0.050	mg/L	1.00		106	90-115			
Duplicate (B0I1882-DUP1)		**Source: 0091816-01**		Prepared: 2020-09-21, Analyzed: 2020-09-21						
Ammonia, Total (as N)	< 0.050	0.050	mg/L		< 0.050				15	
Matrix Spike (B0I1882-MS1)		**Source: 0091816-01**		Prepared: 2020-09-21, Analyzed: 2020-09-21						
Ammonia, Total (as N)	0.308	0.050	mg/L	0.250	< 0.050	119	75-125			
General Parameters, Batch B0I1896										
Blank (B0I1896-BLK1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Cyanide, Free	< 0.0050	0.0050	mg/L							
Blank (B0I1896-BLK2)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Cyanide, Free	< 0.0050	0.0050	mg/L							
Blank (B0I1896-BLK3)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Cyanide, Free	< 0.0050	0.0050	mg/L							
LCS (B0I1896-BS1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Cyanide, Free	0.0216	0.0050	mg/L	0.0200		108	85-115			
LCS (B0I1896-BS2)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Cyanide, Free	0.0217	0.0050	mg/L	0.0200		108	85-115			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B0I1896, Continued										
LCS (B0I1896-BS3)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Cyanide, Free	0.0218	0.0050	mg/L	0.0200		109	85-115			
LCS Dup (B0I1896-BSD1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Cyanide, Free	0.0221	0.0050	mg/L	0.0200		110	85-115	2	10	
LCS Dup (B0I1896-BSD2)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Cyanide, Free	0.0218	0.0050	mg/L	0.0200		109	85-115	< 1	10	
LCS Dup (B0I1896-BSD3)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Cyanide, Free	0.0212	0.0050	mg/L	0.0200		106	85-115	3	10	
General Parameters, Batch B0I1906										
Blank (B0I1906-BLK1)				Prepared: 2020-09-21, Analyzed: 2020-09-23						
Cyanide, Weak Acid Dissociable	< 0.0020	0.0020	mg/L							
Blank (B0I1906-BLK2)				Prepared: 2020-09-21, Analyzed: 2020-09-23						
Cyanide, Weak Acid Dissociable	< 0.0020	0.0020	mg/L							
Blank (B0I1906-BLK3)				Prepared: 2020-09-22, Analyzed: 2020-09-23						
Cyanide, Weak Acid Dissociable	< 0.0020	0.0020	mg/L							
LCS (B0I1906-BS1)				Prepared: 2020-09-21, Analyzed: 2020-09-23						
Cyanide, Weak Acid Dissociable	0.0203	0.0020	mg/L	0.0200		102	85-115			
LCS (B0I1906-BS2)				Prepared: 2020-09-21, Analyzed: 2020-09-23						
Cyanide, Weak Acid Dissociable	0.0198	0.0020	mg/L	0.0200		99	85-115			
LCS (B0I1906-BS3)				Prepared: 2020-09-22, Analyzed: 2020-09-23						
Cyanide, Weak Acid Dissociable	0.0202	0.0020	mg/L	0.0200		101	85-115			
LCS Dup (B0I1906-BSD1)				Prepared: 2020-09-21, Analyzed: 2020-09-23						
Cyanide, Weak Acid Dissociable	0.0205	0.0020	mg/L	0.0200		102	85-115	< 1	10	
LCS Dup (B0I1906-BSD2)				Prepared: 2020-09-21, Analyzed: 2020-09-23						
Cyanide, Weak Acid Dissociable	0.0199	0.0020	mg/L	0.0200		100	85-115	< 1	10	
LCS Dup (B0I1906-BSD3)				Prepared: 2020-09-22, Analyzed: 2020-09-23						
Cyanide, Weak Acid Dissociable	0.0206	0.0020	mg/L	0.0200		103	85-115	2	10	
Total Metals, Batch B0I1781										
Blank (B0I1781-BLK1)				Prepared: 2020-09-19, Analyzed: 2020-09-23						
Mercury, total	< 0.000010	0.000010	mg/L							
Blank (B0I1781-BLK2)				Prepared: 2020-09-19, Analyzed: 2020-09-23						
Mercury, total	< 0.000010	0.000010	mg/L							
Duplicate (B0I1781-DUP1)			**Source: 0091816-06**	Prepared: 2020-09-19, Analyzed: 2020-09-23						
Mercury, total	< 0.000010	0.000010	mg/L		< 0.000010				20	
Reference (B0I1781-SRM1)				Prepared: 2020-09-19, Analyzed: 2020-09-24						
Mercury, total	0.00611	0.000010	mg/L	0.00581		105	70-130			
Reference (B0I1781-SRM2)				Prepared: 2020-09-19, Analyzed: 2020-09-24						
Mercury, total	0.00619	0.000010	mg/L	0.00581		106	70-130			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B0I2116										
Blank (B0I2116-BLK1)				Prepared: 2020-09-23, Analyzed: 2020-09-24						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0500	0.0500	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Calcium, total	< 0.20	0.20	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Magnesium, total	< 0.010	0.010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Mercury, total	< 0.000040	0.000040	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Potassium, total	< 0.10	0.10	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Sodium, total	< 0.10	0.10	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B0I2116-BS1)				Prepared: 2020-09-23, Analyzed: 2020-09-24						
Aluminum, total	0.0232	0.0050	mg/L	0.0199		117	80-120			
Antimony, total	0.0239	0.00020	mg/L	0.0200		120	80-120			
Arsenic, total	0.0237	0.00050	mg/L	0.0200		119	80-120			
Barium, total	0.0219	0.0050	mg/L	0.0198		111	80-120			
Beryllium, total	0.0218	0.00010	mg/L	0.0198		110	80-120			
Bismuth, total	0.0220	0.00010	mg/L	0.0200		110	80-120			
Boron, total	< 0.0500	0.0500	mg/L	0.0200		99	80-120			
Cadmium, total	0.0214	0.000010	mg/L	0.0199		108	80-120			
Calcium, total	2.21	0.20	mg/L	2.02		109	80-120			
Chromium, total	0.0236	0.00050	mg/L	0.0198		119	80-120			
Cobalt, total	0.0230	0.00010	mg/L	0.0199		116	80-120			
Copper, total	0.0240	0.00040	mg/L	0.0200		120	80-120			
Iron, total	2.39	0.010	mg/L	2.02		118	80-120			
Lead, total	0.0213	0.00020	mg/L	0.0199		107	80-120			
Lithium, total	0.0232	0.00010	mg/L	0.0200		116	80-120			
Magnesium, total	2.21	0.010	mg/L	2.02		109	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B0I2116, Continued										
LCS (B0I2116-BS1), Continued				Prepared: 2020-09-23, Analyzed: 2020-09-24						
Manganese, total	0.0214	0.00020	mg/L	0.0199		107	80-120			
Mercury, total	0.00109	0.000040	mg/L	0.00100		109	80-120			
Molybdenum, total	0.0209	0.00010	mg/L	0.0200		105	80-120			
Nickel, total	0.0233	0.00040	mg/L	0.0200		116	80-120			
Phosphorus, total	2.33	0.050	mg/L	2.00		116	80-120			
Potassium, total	2.28	0.10	mg/L	2.02		113	80-120			
Selenium, total	0.0213	0.00050	mg/L	0.0200		106	80-120			
Silicon, total	2.4	1.0	mg/L	2.00		120	80-120			
Silver, total	0.0212	0.000050	mg/L	0.0200		106	80-120			
Sodium, total	2.20	0.10	mg/L	2.02		109	80-120			
Strontium, total	0.0234	0.0010	mg/L	0.0200		117	80-120			
Sulfur, total	5.9	3.0	mg/L	5.00		118	80-120			
Tellurium, total	0.0240	0.00050	mg/L	0.0200		120	80-120			
Thallium, total	0.0214	0.000020	mg/L	0.0199		108	80-120			
Thorium, total	0.0207	0.00010	mg/L	0.0200		103	80-120			
Tin, total	0.0218	0.00020	mg/L	0.0200		109	80-120			
Titanium, total	0.0228	0.0050	mg/L	0.0200		114	80-120			
Tungsten, total	0.0217	0.0010	mg/L	0.0200		109	80-120			
Uranium, total	0.0214	0.000020	mg/L	0.0200		107	80-120			
Vanadium, total	0.0223	0.0010	mg/L	0.0200		111	80-120			
Zinc, total	0.0222	0.0040	mg/L	0.0200		111	80-120			
Zirconium, total	0.0196	0.00010	mg/L	0.0200		98	80-120			
Duplicate (B0I2116-DUP1)		**Source: 0091816-06**		Prepared: 2020-09-23, Analyzed: 2020-09-24						
Aluminum, total	0.153	0.0050	mg/L		0.144			6	20	
Antimony, total	0.00572	0.00020	mg/L		0.00560			2	20	
Arsenic, total	0.00460	0.00050	mg/L		0.00453			1	20	
Barium, total	0.0701	0.0050	mg/L		0.0702			< 1	20	
Beryllium, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Bismuth, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Boron, total	< 0.0500	0.0500	mg/L		< 0.0500				20	
Cadmium, total	0.000091	0.000010	mg/L		0.000107			16	20	
Calcium, total	73.3	0.20	mg/L		70.7			4	20	
Chromium, total	0.00156	0.00050	mg/L		0.00082				20	
Cobalt, total	0.00160	0.00010	mg/L		0.00155			3	20	
Copper, total	0.00214	0.00040	mg/L		0.00190			12	20	
Iron, total	0.480	0.010	mg/L		0.466			3	20	
Lead, total	0.00035	0.00020	mg/L		< 0.00020				20	
Lithium, total	0.0136	0.00010	mg/L		0.0132			3	20	
Magnesium, total	25.3	0.010	mg/L		25.1			< 1	20	
Manganese, total	0.106	0.00020	mg/L		0.105			< 1	20	
Mercury, total	< 0.000040	0.000040	mg/L		< 0.000040				20	
Molybdenum, total	0.00257	0.00010	mg/L		0.00257			< 1	20	
Nickel, total	0.00840	0.00040	mg/L		0.00814			3	20	
Phosphorus, total	< 0.050	0.050	mg/L		< 0.050				20	
Potassium, total	1.50	0.10	mg/L		1.44			4	20	
Selenium, total	0.00229	0.00050	mg/L		0.00211				20	
Silicon, total	5.5	1.0	mg/L		5.3			3	20	
Silver, total	< 0.000050	0.000050	mg/L		< 0.000050				20	
Sodium, total	3.01	0.10	mg/L		2.95			2	20	
Strontium, total	0.360	0.0010	mg/L		0.352			2	20	
Sulfur, total	54.6	3.0	mg/L		49.6			10	20	
Tellurium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Thallium, total	0.000052	0.000020	mg/L		< 0.000020				20	
Thorium, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Tin, total	< 0.00020	0.00020	mg/L		< 0.00020				20	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0091816
PROJECT	Brewery Creek	**REPORTED**	2020-10-13 17:20

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B0I2116, Continued										
Duplicate (B0I2116-DUP1), Continued		**Source: 0091816-06**		Prepared: 2020-09-23, Analyzed: 2020-09-24						
Titanium, total	< 0.0050	0.0050	mg/L		< 0.0050				20	
Tungsten, total	< 0.0010	0.0010	mg/L		< 0.0010				20	
Uranium, total	0.00222	0.000020	mg/L		0.00212			5	20	
Vanadium, total	0.0114	0.0010	mg/L		0.0109			5	20	
Zinc, total	0.0219	0.0040	mg/L		0.0154			34	20	
Zirconium, total	0.00018	0.00010	mg/L		0.00020				20	
Reference (B0I2116-SRM1)				Prepared: 2020-09-23, Analyzed: 2020-09-24						
Aluminum, total	0.330	0.0050	mg/L	0.299		110	70-130			
Antimony, total	0.0589	0.00020	mg/L	0.0517		114	70-130			
Arsenic, total	0.141	0.00050	mg/L	0.119		119	70-130			
Barium, total	0.847	0.0050	mg/L	0.801		106	70-130			
Beryllium, total	0.0566	0.00010	mg/L	0.0501		113	70-130			
Boron, total	4.69	0.0500	mg/L	4.11		114	70-130			
Cadmium, total	0.0523	0.000010	mg/L	0.0503		104	70-130			
Calcium, total	11.9	0.20	mg/L	10.7		111	70-130			
Chromium, total	0.286	0.00050	mg/L	0.250		114	70-130			
Cobalt, total	0.0436	0.00010	mg/L	0.0384		114	70-130			
Copper, total	0.547	0.00040	mg/L	0.487		112	70-130			
Iron, total	0.584	0.010	mg/L	0.504		116	70-130			
Lead, total	0.310	0.00020	mg/L	0.278		112	70-130			
Lithium, total	0.481	0.00010	mg/L	0.398		121	70-130			
Magnesium, total	3.88	0.010	mg/L	3.59		108	70-130			
Manganese, total	0.119	0.00020	mg/L	0.111		107	70-130			
Mercury, total	0.00616	0.000040	mg/L	0.00581		106	70-130			
Molybdenum, total	0.210	0.00010	mg/L	0.196		107	70-130			
Nickel, total	0.279	0.00040	mg/L	0.248		113	70-130			
Phosphorus, total	0.229	0.050	mg/L	0.213		108	70-130			
Potassium, total	6.68	0.10	mg/L	5.89		113	70-130			
Selenium, total	0.126	0.00050	mg/L	0.120		105	70-130			
Sodium, total	9.23	0.10	mg/L	8.71		106	70-130			
Strontium, total	0.451	0.0010	mg/L	0.393		115	70-130			
Thallium, total	0.0892	0.000020	mg/L	0.0787		113	70-130			
Uranium, total	0.0386	0.000020	mg/L	0.0344		112	70-130			
Vanadium, total	0.453	0.0010	mg/L	0.391		116	70-130			
Zinc, total	2.91	0.0040	mg/L	2.50		116	70-130			

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

09-October-2020

CARO Analytical Services
Attn : Eilish St. Clair

#110 4011 Viking Way
Richmond, BC
V6V 2K9,

Phone: 604-279-1499
Fax:604-279-1599

Date Rec. : 29 September 2020
LR Report: **CA13757-SEP20**
Reference: WO# 0091816

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	Sample Date & Time	Temp Upon Receipt °C	CNO mg/L
1: Analysis Start Date		---	06-Oct-20
2: Analysis Start Time		---	07:04
3: Analysis Completed Date		---	06-Oct-20
4: Analysis Completed Time		---	15:30
5: 0091816-01	15-Sep-20 10:58	6.0	< 1
6: 0091816-02	15-Sep-20 11:25	6.0	< 1
7: 0091816-03	15-Sep-20 12:05	6.0	< 1

Raise RL for CNO due to sample matrix.
CNO processed past the 7 day holding time.

Catharine Arnold

Catharine Arnold, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0002282195

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

29-September-2020

CARO Analytical Services
Attn : Eilish St. Clair

#110 4011 Viking Way
Richmond, BC
V6V 2K9,

Phone: 604-279-1499
Fax:604-279-1599

Date Rec. : 21 September 2020
LR Report: **CA12842-SEP20**
Reference: WO# 0091816

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	Sample Date & Time	Temp Upon Receipt °C	S2O3 mg/L
1: Analysis Start Date		---	22-Sep-20
2: Analysis Start Time		---	17:45
3: Analysis Completed Date		---	24-Sep-20
4: Analysis Completed Time		---	14:29
5: 0091816-01	15-Sep-20 10:58	14.0	< 0.2
6: 0091816-02	15-Sep-20 11:25	14.0	< 0.2
7: 0091816-03	15-Sep-20 12:05	14.0	< 0.2
8: 0091816-08	15-Sep-20 15:00	14.0	< 0.2

Catharine Arnold

CHARTERED CHEMIST CATHARINE ARNOLD — ASSOCIATION OF THE CHEMICAL PROFESSION OF ONTARIO

Catharine Arnold, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

OnLine LIMS

0002271871

CARO ANALYTICAL SERVICES

Caring About Results, Obviously.

C... 3846
#110 ... 6V 2K9
#102 ... 1X 5C3
1722 ... 5S 1H7
#108- ... Burnaby, BC V5G 4X4

0091816

CARO BC COC, Rev 2019-01

CHAIN OF CUSTODY RECORD

COC# B 87617 PAGE 1 OF

RELINQUISHED BY:	DATE: SEP 16/20	RECEIVED BY:	DATE: 9/17
NICOLE NOVODVORSKY	TIME: 8:00	Air N	TIME: 10:30

TURNAROUND TIME REQUESTED:
Routine: (5-7 Days) ☒
Rush: 1 Day* ☐ 2 Day* ☐ 3 Day* ☐
Other*
*Contact Lab To Confirm. Surcharge May Apply

REGULATORY APPLICATION: Show on Report ☐
Canadian Drinking Water Quality ☐ BC WQG ☐ BC HWR ☐
BC CSR Soil: WL ☐ AL ☐ PL ☐ RL-LD ☐ RL-HD ☐ CL ☐ IL ☐
BC CSR Water: AW ☐ IW ☐ LW ☐ DW ☐
CCME: Other:

PROJECT NUMBER / INFO: BREWERY CREEK.

A: Biohazard D: Asbestos G: Strong Odour
B: Cyanide E: Heavy Metals H: High Contamination
C: PCBs F: Flammable I: Other (please specify*)

REPORT TO:
COMPANY: GOV. OF YUKON · WRB
ADDRESS: P.O. BOX 2703
WHITEHORSE, YT
CONTACT: NICOLE NOVODVORSKY
TEL/FAX: 867-456-6538
DELIVERY METHOD: EMAIL ☒ ONLINE ☐ OTHER* ☐
DATA FORMAT: EXCEL ☒ WATERTRAX ☐ ESdat ☐ EQuIS ☐ BC EMS ☐ OTHER* ☒
EMAIL 1: nicole.novodvorsky@gov.yk.ca
EMAIL 2: devon.o'connor@gov.yk.ca
EMAIL 3:

INVOICE TO: SAME AS REPORT TO ☒
COMPANY:
ADDRESS:
CONTACT:
TEL/FAX:
DELIVERY METHOD: EMAIL ☒ ONLINE ☐ OTHER* ☐
EMAIL 1: nicole.novodvorsky@gov.yk.ca
EMAIL 2: devon.o'connor@gov.yk.ca
EMAIL 3:
PO #:

** If you would like to sign up for ClientConnect and/or EnviroChain, CARO's online service offerings, please check here: ☐

SAMPLED BY: NICOLE NOVODVORSKY

STATION ID · SAMPLE ID (~~CLIENT SAMPLE ID:~~)	MATRIX: DRINKING WATER	OTHER WATER	SOIL	OTHER	CONTAINER QTY	SAMPLING: DATE YYYY-MM-DD	TIME HH:MM	CHLORINATED	FILTERED	PRESERVED	COMMENTS: (e.g. flow/volume media ID/notes)
BC-28a · 2020T24-01		X				2020·09·15	10:58		X	X	
BC-28b · 2020T24-02		X				2020·09·15	11:25		X	X	
BC-28 · 2020T24-03		X				2020·09·15	12:05		X	X	
BC-02 · 2020T24-04		X				2020·09·15	14:15		X	X	
BC-03 · 2020T24-05		X				2020·09·15	14:50		X	X	
BC-03 · 2020T24-06		X				2020·09·15	15:02		X	X	
DG SEEP · 2020T26-01		X				2020·09·15	11:15		X	X	
BC-66-2 · 2020T26-02		X				2020·09·15	15:00		X	X	
BC-65 OLD · 2020T26-03		X				2020·09·15	15:40		X	X	
BC-65 NEW · 2020T26-04		X				2020·09·15	17:50		X	X	

ANALYSES REQUESTED:

Sample	BTEX ☐ VPH ☐ PHC F1 ☐	VOC ☐ VPH ☐	EPH ☐ PHC F2-F4 ☐	PAH ☐ L/HEPH ☐	PHENOLS Chlorinated ☐ Non-Chlor. ☐	PCB ☐ GLYCOLS ☐ HAA ☐ THM ☐	PESTICIDES ☐ ACID HERBICIDES ☐	METALS - WATER TOTAL Hg ☒	METALS - WATER DISSOLVED Hg ☒	METALS - SOIL (SALM) ☐ inc. pH ☐	pH ☒ EC ☒ ALK ☒ ANIONS ☐	TSS ☒ VSS ☐ TDS ☒	BOD ☐ COD ☐ TOG ☐ MOG ☐	TN ☐ NH3 ☐ TKN ☐	FECAL COLIFORMS ☐ HPC ☐	TOTAL COLIFORMS ☐ E. coli ☐	ESSENTIAL DRINKING WATER PACKAGE	~~ASBESTOS~~ TDS	THIOCYANATE, CYANATE	CN (SAD, WAD, FREE)	THIOSULPHATE	Cl, SO4, NO3, NO2	AMMONIA-T	HOLD	POSSIBLE SAMPLE HAZARD CODE(S)
BC-28a · 2020T24-01								X	X		X	X							X	X	X	X	X		
BC-28b · 2020T24-02								X	X		X	X							X	X	X	X	X		
BC-28 · 2020T24-03								X	X		X	X							X	X	X	X	X		
BC-02 · 2020T24-04								X	X		X	X										X	X		
BC-03 · 2020T24-05								X	X		X	X										X	X		
BC-03 · 2020T24-06								X	X		X	X										X	X		
DG SEEP · 2020T26-01								~~X~~	X		X							X				X	X		
BC-66-2 · 2020T26-02								~~X~~	X		X							X			X	X	X		
BC-65 OLD · 2020T26-03								~~X~~	X		X							X				X	X		
BC-65 NEW · 2020T26-04								~~X~~	X		X							X				X	X		

SHIPPING INSTRUCTIONS: Return Cooler(s) ☐
Supplies Needed:

SAMPLE RETENTION:
30 Days (default) ☐
60 Days ☐ 90 Days ☐
Other (surcharges will apply):

*** OTHER INSTRUCTIONS:**
Not sure if have enough water for BC-66-2 thiosulphate

If you would like to talk to a real live Scientist about your project requirements, please check here: ☐

SAMPLE RECEIPT CONDITION:
COOLER 1 (°C): 3.4 ICE: Y ☐ N ☐
COOLER 2 (°C): ICE: Y ☐ N ☐
COOLER 3 (°C): ICE: Y ☐ N ☐
CUSTODY SEALS INTACT: NA ☐ Y ☐ N ☐

CERTIFICATE OF ANALYSIS

REPORTED TO	Yukon Government - Water Resources Suite 210, 419 Range Road Whitehorse, YT Y1A 3V1		
ATTENTION	Nicole Novodvorsky	**WORK ORDER**	0092007
PO NUMBER		**RECEIVED / TEMP**	2020-09-18 13:00 / 6°C
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35
PROJECT INFO	YK Water Resources - C00043458	**COC NUMBER**	B84309

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks

You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry

It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve

Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

If you have any questions or concerns, please contact me at tmaxwell@caro.ca

Authorized By:

Taylor Maxwell
Junior Account Manager

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-07 (0092007-01) | Matrix: Water | Sampled: 2020-09-16 14:37					
Anions					
Chloride	**0.68**	0.10	mg/L	2020-09-23	
Nitrate (as N)	**0.177**	0.010	mg/L	2020-09-23	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-23	HT1
Sulfate	**44.2**	1.0	mg/L	2020-09-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**63.5**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.00584**	0.00010	mg/L	2020-09-25	
Aluminum, dissolved	**0.129**	0.0050	mg/L	2020-09-25	
Antimony, dissolved	**0.00118**	0.00020	mg/L	2020-09-25	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Barium, dissolved	**0.0933**	0.0050	mg/L	2020-09-25	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-25	
Cadmium, dissolved	**0.000022**	0.000010	mg/L	2020-09-25	
Calcium, dissolved	**15.2**	0.20	mg/L	2020-09-25	
Chromium, dissolved	**0.00089**	0.00050	mg/L	2020-09-25	
Cobalt, dissolved	**0.00182**	0.00010	mg/L	2020-09-25	
Copper, dissolved	**0.00232**	0.00040	mg/L	2020-09-25	
Iron, dissolved	**0.079**	0.010	mg/L	2020-09-25	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Magnesium, dissolved	**6.18**	0.010	mg/L	2020-09-25	
Manganese, dissolved	**0.00292**	0.00020	mg/L	2020-09-25	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	
Molybdenum, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Nickel, dissolved	**0.00200**	0.00040	mg/L	2020-09-25	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-25	
Potassium, dissolved	**0.45**	0.10	mg/L	2020-09-25	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Silicon, dissolved	**5.7**	1.0	mg/L	2020-09-25	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-25	
Sodium, dissolved	**6.19**	0.10	mg/L	2020-09-25	
Strontium, dissolved	**0.0699**	0.0010	mg/L	2020-09-25	
Sulfur, dissolved	**26.8**	3.0	mg/L	2020-09-25	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-25	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Uranium, dissolved	**0.000029**	0.000020	mg/L	2020-09-25	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-07 (0092007-01) | Matrix: Water | Sampled: 2020-09-16 14:37, Continued					
Dissolved Metals, Continued					
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2020-09-25	
Zirconium, dissolved	**0.00051**	0.00010	mg/L	2020-09-25	
General Parameters					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-23	
Conductivity (EC)	**146**	2.0	µS/cm	2020-09-23	
pH	**7.11**	0.10	pH units	2020-09-23	HT2
Solids, Total Dissolved	**131**	15	mg/L	2020-09-23	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-23	
Total Metals					
Aluminum, total	**0.255**	0.0050	mg/L	2020-09-24	
Antimony, total	**0.00115**	0.00020	mg/L	2020-09-24	
Arsenic, total	**0.00092**	0.00050	mg/L	2020-09-24	
Barium, total	**0.0965**	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-09-24	
Chromium, total	**0.00080**	0.00050	mg/L	2020-09-24	
Cobalt, total	**0.00198**	0.00010	mg/L	2020-09-24	
Copper, total	**0.00220**	0.00040	mg/L	2020-09-24	
Iron, total	**0.240**	0.010	mg/L	2020-09-24	
Lead, total	< 0.00020	0.00020	mg/L	2020-09-24	
Lithium, total	**0.00515**	0.00010	mg/L	2020-09-24	
Manganese, total	**0.00591**	0.00020	mg/L	2020-09-24	
Mercury, total	< 0.000010	0.000010	mg/L	2020-09-24	
Molybdenum, total	**0.00017**	0.00010	mg/L	2020-09-24	
Nickel, total	**0.00260**	0.00040	mg/L	2020-09-24	
Phosphorus, total	< 0.050	0.050	mg/L	2020-09-24	
Selenium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Silicon, total	**6.8**	1.0	mg/L	2020-09-24	
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Strontium, total	**0.0681**	0.0010	mg/L	2020-09-24	
Sulfur, total	**15.3**	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, total	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, total	**0.0055**	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	**0.000035**	0.000020	mg/L	2020-09-24	
Vanadium, total	**0.0058**	0.0010	mg/L	2020-09-24	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-07 (0092007-01) | Matrix: Water | Sampled: 2020-09-16 14:37, Continued					
Total Metals, Continued					
Zinc, total	**0.0050**	0.0040	mg/L	2020-09-24	
Zirconium, total	**0.00069**	0.00010	mg/L	2020-09-24	
2020T24-08 (0092007-02) | Matrix: Water | Sampled: 2020-09-16 15:13					
Anions					
Chloride	**1.25**	0.10	mg/L	2020-09-23	
Nitrate (as N)	**0.627**	0.010	mg/L	2020-09-23	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-23	HT1
Sulfate	**483**	1.0	mg/L	2020-09-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**763**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0413**	0.00010	mg/L	2020-09-25	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Barium, dissolved	**0.0251**	0.0050	mg/L	2020-09-25	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-25	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	
Calcium, dissolved	**186**	0.20	mg/L	2020-09-25	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Cobalt, dissolved	**0.00271**	0.00010	mg/L	2020-09-25	
Copper, dissolved	**0.00052**	0.00040	mg/L	2020-09-25	
Iron, dissolved	**0.181**	0.010	mg/L	2020-09-25	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Magnesium, dissolved	**72.3**	0.010	mg/L	2020-09-25	
Manganese, dissolved	**0.186**	0.00020	mg/L	2020-09-25	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	
Molybdenum, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Nickel, dissolved	**0.00154**	0.00040	mg/L	2020-09-25	
Phosphorus, dissolved	**0.060**	0.050	mg/L	2020-09-25	
Potassium, dissolved	**3.61**	0.10	mg/L	2020-09-25	
Selenium, dissolved	**0.00385**	0.00050	mg/L	2020-09-25	
Silicon, dissolved	**5.7**	1.0	mg/L	2020-09-25	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-25	
Sodium, dissolved	**11.3**	0.10	mg/L	2020-09-25	
Strontium, dissolved	**0.541**	0.0010	mg/L	2020-09-25	
Sulfur, dissolved	**176**	3.0	mg/L	2020-09-25	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-08 (0092007-02) | Matrix: Water | Sampled: 2020-09-16 15:13, Continued					
Dissolved Metals, Continued					
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-25	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Uranium, dissolved	**0.00167**	0.000020	mg/L	2020-09-25	
Vanadium, dissolved	**0.0032**	0.0010	mg/L	2020-09-25	
Zinc, dissolved	**0.0059**	0.0040	mg/L	2020-09-25	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
General Parameters					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-23	
Conductivity (EC)	**1280**	2.0	µS/cm	2020-09-23	
pH	**7.69**	0.10	pH units	2020-09-23	HT2
Solids, Total Dissolved	**1030**	15	mg/L	2020-09-23	
Solids, Total Suspended	**18.8**	2.0	mg/L	2020-09-23	
Total Metals					
Aluminum, total	**0.0058**	0.0050	mg/L	2020-09-24	
Antimony, total	< 0.00020	0.00020	mg/L	2020-09-24	
Arsenic, total	< 0.00050	0.00050	mg/L	2020-09-24	
Barium, total	**0.0255**	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	**0.000025**	0.000010	mg/L	2020-09-24	
Chromium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Cobalt, total	**0.00281**	0.00010	mg/L	2020-09-24	
Copper, total	< 0.00040	0.00040	mg/L	2020-09-24	
Iron, total	**0.264**	0.010	mg/L	2020-09-24	
Lead, total	< 0.00020	0.00020	mg/L	2020-09-24	
Lithium, total	**0.0409**	0.00010	mg/L	2020-09-24	
Manganese, total	**0.203**	0.00020	mg/L	2020-09-24	
Mercury, total	< 0.000010	0.000010	mg/L	2020-09-24	
Molybdenum, total	< 0.00010	0.00010	mg/L	2020-09-24	
Nickel, total	**0.00196**	0.00040	mg/L	2020-09-24	
Phosphorus, total	< 0.050	0.050	mg/L	2020-09-24	
Selenium, total	**0.00327**	0.00050	mg/L	2020-09-24	
Silicon, total	**5.6**	1.0	mg/L	2020-09-24	
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Strontium, total	**0.563**	0.0010	mg/L	2020-09-24	
Sulfur, total	**175**	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-08 (0092007-02) | Matrix: Water | Sampled: 2020-09-16 15:13, Continued					
Total Metals, Continued					
Thallium, total	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	**0.00164**	0.000020	mg/L	2020-09-24	
Vanadium, total	**0.0014**	0.0010	mg/L	2020-09-24	
Zinc, total	**0.0058**	0.0040	mg/L	2020-09-24	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-09-24	
2020T24-09 (Field Blank) (0092007-03) | Matrix: Water | Sampled: 2020-09-17 07:54					
Anions					
Chloride	< 0.10	0.10	mg/L	2020-09-23	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-09-23	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-23	HT1
Sulfate	< 1.0	1.0	mg/L	2020-09-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	< 0.500	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Barium, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-25	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	
Calcium, dissolved	< 0.20	0.20	mg/L	2020-09-25	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Copper, dissolved	< 0.00040	0.00040	mg/L	2020-09-25	
Iron, dissolved	< 0.010	0.010	mg/L	2020-09-25	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Magnesium, dissolved	< 0.010	0.010	mg/L	2020-09-25	
Manganese, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	
Molybdenum, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Nickel, dissolved	< 0.00040	0.00040	mg/L	2020-09-25	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-25	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-09 (Field Blank) (0092007-03) | Matrix: Water | Sampled: 2020-09-17 07:54, Continued					
Dissolved Metals, Continued					
Potassium, dissolved	< 0.10	0.10	mg/L	2020-09-25	
Selenium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Silicon, dissolved	< 1.0	1.0	mg/L	2020-09-25	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-25	
Sodium, dissolved	< 0.10	0.10	mg/L	2020-09-25	
Strontium, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Sulfur, dissolved	< 3.0	3.0	mg/L	2020-09-25	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-25	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Uranium, dissolved	< 0.000020	0.000020	mg/L	2020-09-25	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2020-09-25	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
General Parameters					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-23	
Conductivity (EC)	< 2.0	2.0	µS/cm	2020-09-23	
pH	**6.51**	0.10	pH units	2020-09-23	HT2
Solids, Total Dissolved	< 15	15	mg/L	2020-09-23	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-23	
Total Metals					
Aluminum, total	< 0.0050	0.0050	mg/L	2020-09-24	
Antimony, total	< 0.00020	0.00020	mg/L	2020-09-24	
Arsenic, total	< 0.00050	0.00050	mg/L	2020-09-24	
Barium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-09-24	
Chromium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-09-24	
Copper, total	< 0.00040	0.00040	mg/L	2020-09-24	
Iron, total	< 0.010	0.010	mg/L	2020-09-24	
Lead, total	< 0.00020	0.00020	mg/L	2020-09-24	
Lithium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Manganese, total	< 0.00020	0.00020	mg/L	2020-09-24	
Mercury, total	< 0.000010	0.000010	mg/L	2020-09-24	
Molybdenum, total	< 0.00010	0.00010	mg/L	2020-09-24	
Nickel, total	< 0.00040	0.00040	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-09 (Field Blank) (0092007-03) | Matrix: Water | Sampled: 2020-09-17 07:54, Continued					
Total Metals, Continued					
Phosphorus, total	< 0.050	0.050	mg/L	2020-09-24	
Selenium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Silicon, total	< 1.0	1.0	mg/L	2020-09-24	
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Strontium, total	< 0.0010	0.0010	mg/L	2020-09-24	
Sulfur, total	< 3.0	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, total	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	< 0.000020	0.000020	mg/L	2020-09-24	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-09-24	
Zinc, total	< 0.0040	0.0040	mg/L	2020-09-24	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-09-24	
2020T24-10 (Trip Blank) (0092007-04) | Matrix: Water | Sampled: 2020-09-17					
Anions					
Chloride	< 0.10	0.10	mg/L	2020-09-23	
Nitrate (as N)	< 0.010	0.010	mg/L	2020-09-23	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-23	HT1
Sulfate	< 1.0	1.0	mg/L	2020-09-23	
General Parameters					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-23	
Conductivity (EC)	< 2.0	2.0	µS/cm	2020-09-23	
pH	**5.90**	0.10	pH units	2020-09-23	HT2
Solids, Total Dissolved	< 15	15	mg/L	2020-09-23	
Solids, Total Suspended	< 2.0	2.0	mg/L	2020-09-23	
Total Metals					
Aluminum, total	< 0.0050	0.0050	mg/L	2020-09-24	
Antimony, total	< 0.00020	0.00020	mg/L	2020-09-24	
Arsenic, total	< 0.00050	0.00050	mg/L	2020-09-24	
Barium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2020-09-24	
Boron, total	< 0.0500	0.0500	mg/L	2020-09-24	
Cadmium, total	< 0.000010	0.000010	mg/L	2020-09-24	
Chromium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Cobalt, total	< 0.00010	0.00010	mg/L	2020-09-24	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T24-10 (Trip Blank) (0092007-04) | Matrix: Water | Sampled: 2020-09-17, Continued					
Total Metals, Continued					
Copper, total	< 0.00040	0.00040	mg/L	2020-09-24	
Iron, total	< 0.010	0.010	mg/L	2020-09-24	
Lead, total	< 0.00020	0.00020	mg/L	2020-09-24	
Lithium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Manganese, total	< 0.00020	0.00020	mg/L	2020-09-24	
Mercury, total	< 0.000010	0.000010	mg/L	2020-09-24	
Molybdenum, total	< 0.00010	0.00010	mg/L	2020-09-24	
Nickel, total	< 0.00040	0.00040	mg/L	2020-09-24	
Phosphorus, total	< 0.050	0.050	mg/L	2020-09-24	
Selenium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Silicon, total	< 1.0	1.0	mg/L	2020-09-24	
Silver, total	< 0.000050	0.000050	mg/L	2020-09-24	
Strontium, total	< 0.0010	0.0010	mg/L	2020-09-24	
Sulfur, total	< 3.0	3.0	mg/L	2020-09-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2020-09-24	
Thallium, total	< 0.000020	0.000020	mg/L	2020-09-24	
Thorium, total	< 0.00010	0.00010	mg/L	2020-09-24	
Tin, total	< 0.00020	0.00020	mg/L	2020-09-24	
Titanium, total	< 0.0050	0.0050	mg/L	2020-09-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2020-09-24	
Uranium, total	< 0.000020	0.000020	mg/L	2020-09-24	
Vanadium, total	< 0.0010	0.0010	mg/L	2020-09-24	
Zinc, total	< 0.0040	0.0040	mg/L	2020-09-24	
Zirconium, total	< 0.00010	0.00010	mg/L	2020-09-24	
2020T26-06 (0092007-05) | Matrix: Water | Sampled: 2020-09-16 11:10					
Anions					
Chloride	**5.14**	0.10	mg/L	2020-09-23	
Nitrate (as N)	**0.011**	0.010	mg/L	2020-09-23	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-23	HT1
Sulfate	**78.2**	1.0	mg/L	2020-09-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**281**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0239**	0.00010	mg/L	2020-09-25	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Antimony, dissolved	**0.00035**	0.00020	mg/L	2020-09-25	
Arsenic, dissolved	**0.00067**	0.00050	mg/L	2020-09-25	
Barium, dissolved	**0.0236**	0.0050	mg/L	2020-09-25	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	

TEST RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-06 (0092007-05) | Matrix: Water | Sampled: 2020-09-16 11:10, Continued					
Dissolved Metals, Continued					
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-25	
Cadmium, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	
Calcium, dissolved	**47.1**	0.20	mg/L	2020-09-25	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Cobalt, dissolved	**0.00016**	0.00010	mg/L	2020-09-25	
Copper, dissolved	< 0.00040	0.00040	mg/L	2020-09-25	
Iron, dissolved	**0.047**	0.010	mg/L	2020-09-25	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Magnesium, dissolved	**39.7**	0.010	mg/L	2020-09-25	
Manganese, dissolved	**0.306**	0.00020	mg/L	2020-09-25	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	
Molybdenum, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Nickel, dissolved	**0.00134**	0.00040	mg/L	2020-09-25	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-25	
Potassium, dissolved	**2.70**	0.10	mg/L	2020-09-25	
Selenium, dissolved	**0.00134**	0.00050	mg/L	2020-09-25	
Silicon, dissolved	< 1.0	1.0	mg/L	2020-09-25	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-25	
Sodium, dissolved	**8.15**	0.10	mg/L	2020-09-25	
Strontium, dissolved	**0.219**	0.0010	mg/L	2020-09-25	
Sulfur, dissolved	**33.6**	3.0	mg/L	2020-09-25	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-25	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Uranium, dissolved	**0.000488**	0.000020	mg/L	2020-09-25	
Vanadium, dissolved	**0.0015**	0.0010	mg/L	2020-09-25	
Zinc, dissolved	< 0.0040	0.0040	mg/L	2020-09-25	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
General Parameters					
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2020-09-23	
Conductivity (EC)	**501**	2.0	µS/cm	2020-09-23	
pH	**7.47**	0.10	pH units	2020-09-23	HT2
Solids, Total Dissolved	**327**	15	mg/L	2020-09-23	
2020T26-07 (0092007-06) | Matrix: Water | Sampled: 2020-09-16 13:55					
Anions					
Chloride	**0.57**	0.10	mg/L	2020-09-23	

TEST RESULTS

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Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-07 (0092007-06) | Matrix: Water | Sampled: 2020-09-16 13:55, Continued					
Anions, Continued					
Nitrate (as N)	**1.19**	0.010	mg/L	2020-09-23	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-23	HT1
Sulfate	**610**	1.0	mg/L	2020-09-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**885**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0487**	0.00010	mg/L	2020-09-25	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Antimony, dissolved	**0.00022**	0.00020	mg/L	2020-09-25	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Barium, dissolved	**0.0055**	0.0050	mg/L	2020-09-25	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-25	
Cadmium, dissolved	**0.00165**	0.000010	mg/L	2020-09-25	
Calcium, dissolved	**199**	0.20	mg/L	2020-09-25	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Cobalt, dissolved	**0.00217**	0.00010	mg/L	2020-09-25	
Copper, dissolved	< 0.00040	0.00040	mg/L	2020-09-25	
Iron, dissolved	**0.011**	0.010	mg/L	2020-09-25	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Magnesium, dissolved	**93.8**	0.010	mg/L	2020-09-25	
Manganese, dissolved	**0.505**	0.00020	mg/L	2020-09-25	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	
Molybdenum, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Nickel, dissolved	**0.00742**	0.00040	mg/L	2020-09-25	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-25	
Potassium, dissolved	**2.83**	0.10	mg/L	2020-09-25	
Selenium, dissolved	**0.00342**	0.00050	mg/L	2020-09-25	
Silicon, dissolved	**3.6**	1.0	mg/L	2020-09-25	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-25	
Sodium, dissolved	**12.6**	0.10	mg/L	2020-09-25	
Strontium, dissolved	**0.654**	0.0010	mg/L	2020-09-25	
Sulfur, dissolved	**227**	3.0	mg/L	2020-09-25	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Thallium, dissolved	**0.000071**	0.000020	mg/L	2020-09-25	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Uranium, dissolved	**0.00111**	0.000020	mg/L	2020-09-25	
Vanadium, dissolved	**0.0059**	0.0010	mg/L	2020-09-25	

CARO ANALYTICAL SERVICES

TEST RESULTS

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Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-07 (0092007-06) | Matrix: Water | Sampled: 2020-09-16 13:55, Continued					
Dissolved Metals, Continued					
Zinc, dissolved	**0.0587**	0.0040	mg/L	2020-09-25	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
General Parameters					
Ammonia, Total (as N)	**0.063**	0.050	mg/L	2020-09-23	
Conductivity (EC)	**1470**	2.0	µS/cm	2020-09-23	
pH	**7.06**	0.10	pH units	2020-09-23	HT2
Solids, Total Dissolved	**1200**	15	mg/L	2020-09-23	
Miscellaneous Subcontracted Parameters					
Refer to Appendix	**Refer to Appendix for Full Report**		-	2020-09-22	
2020T26-08 (0092007-07) | Matrix: Water | Sampled: 2020-09-16 15:43					
Anions					
Chloride	< 1.00	0.10	mg/L	2020-09-23	RA1
Nitrate (as N)	< 0.100	0.010	mg/L	2020-09-23	HT1, RA1
Nitrite (as N)	< 0.100	0.010	mg/L	2020-09-23	HT1, RA1
Sulfate	**12900**	1.0	mg/L	2020-09-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**9140**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.426**	0.00010	mg/L	2020-09-25	
Aluminum, dissolved	**9.58**	0.0050	mg/L	2020-09-25	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Arsenic, dissolved	**0.0371**	0.00050	mg/L	2020-09-25	
Barium, dissolved	**0.0071**	0.0050	mg/L	2020-09-25	
Beryllium, dissolved	**0.00180**	0.00010	mg/L	2020-09-25	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Boron, dissolved	**0.0858**	0.0500	mg/L	2020-09-25	
Cadmium, dissolved	**0.000034**	0.000010	mg/L	2020-09-25	
Calcium, dissolved	**361**	0.20	mg/L	2020-09-25	
Chromium, dissolved	**0.00665**	0.00050	mg/L	2020-09-25	
Cobalt, dissolved	**1.00**	0.00010	mg/L	2020-09-25	
Copper, dissolved	**0.00041**	0.00040	mg/L	2020-09-25	
Iron, dissolved	**1490**	0.010	mg/L	2020-09-28	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Magnesium, dissolved	**2000**	0.010	mg/L	2020-09-25	
Manganese, dissolved	**22.3**	0.00020	mg/L	2020-09-28	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	

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Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-08 (0092007-07) | Matrix: Water | Sampled: 2020-09-16 15:43, Continued					
Dissolved Metals, Continued					
Molybdenum, dissolved	**0.00020**	0.00010	mg/L	2020-09-25	
Nickel, dissolved	**6.26**	0.00040	mg/L	2020-09-28	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-25	
Potassium, dissolved	**22.8**	0.10	mg/L	2020-09-25	
Selenium, dissolved	**0.00457**	0.00050	mg/L	2020-09-25	
Silicon, dissolved	**3.3**	1.0	mg/L	2020-09-25	
Silver, dissolved	**0.000061**	0.000050	mg/L	2020-09-25	
Sodium, dissolved	**152**	0.10	mg/L	2020-09-25	
Strontium, dissolved	**1.03**	0.0010	mg/L	2020-09-25	
Sulfur, dissolved	**4110**	3.0	mg/L	2020-09-25	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-25	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Uranium, dissolved	**0.00193**	0.000020	mg/L	2020-09-25	
Vanadium, dissolved	**0.0045**	0.0010	mg/L	2020-09-25	
Zinc, dissolved	**19.5**	0.0040	mg/L	2020-09-28	
Zirconium, dissolved	**0.00053**	0.00010	mg/L	2020-09-25	
General Parameters					
Ammonia, Total (as N)	**0.774**	0.050	mg/L	2020-09-23	
Conductivity (EC)	**11000**	2.0	µS/cm	2020-09-23	
pH	**6.06**	0.10	pH units	2020-09-23	HT2
Solids, Total Dissolved	**19000**	15	mg/L	2020-09-23	
2020T26-05 (0092007-08) | Matrix: Water | Sampled: 2020-09-16 11:10					
Anions					
Chloride	**5.13**	0.10	mg/L	2020-09-23	
Nitrate (as N)	**0.012**	0.010	mg/L	2020-09-23	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2020-09-23	HT1
Sulfate	**78.0**	1.0	mg/L	2020-09-23	
Calculated Parameters					
Hardness, Total (as CaCO3)	**269**	0.500	mg/L	N/A	
Dissolved Metals					
Lithium, dissolved	**0.0248**	0.00010	mg/L	2020-09-25	
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Antimony, dissolved	**0.00040**	0.00020	mg/L	2020-09-25	
Arsenic, dissolved	**0.00085**	0.00050	mg/L	2020-09-25	
Barium, dissolved	**0.0228**	0.0050	mg/L	2020-09-25	

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Analyte	Result	RL	Units	Analyzed	Qualifier
2020T26-05 (0092007-08) | Matrix: Water | Sampled: 2020-09-16 11:10, Continued					
Dissolved Metals, Continued					
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Boron, dissolved	< 0.0500	0.0500	mg/L	2020-09-25	
Cadmium, dissolved	**0.000116**	0.000010	mg/L	2020-09-25	
Calcium, dissolved	**47.0**	0.20	mg/L	2020-09-25	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Cobalt, dissolved	**0.00037**	0.00010	mg/L	2020-09-25	
Copper, dissolved	< 0.00040	0.00040	mg/L	2020-09-25	
Iron, dissolved	**0.259**	0.010	mg/L	2020-09-25	
Lead, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Magnesium, dissolved	**36.8**	0.010	mg/L	2020-09-25	
Manganese, dissolved	**0.289**	0.00020	mg/L	2020-09-25	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2020-09-25	
Molybdenum, dissolved	**0.00012**	0.00010	mg/L	2020-09-25	
Nickel, dissolved	**0.00221**	0.00040	mg/L	2020-09-25	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2020-09-25	
Potassium, dissolved	**2.56**	0.10	mg/L	2020-09-25	
Selenium, dissolved	**0.00179**	0.00050	mg/L	2020-09-25	
Silicon, dissolved	< 1.0	1.0	mg/L	2020-09-25	
Silver, dissolved	< 0.000050	0.000050	mg/L	2020-09-25	
Sodium, dissolved	**7.41**	0.10	mg/L	2020-09-25	
Strontium, dissolved	**0.224**	0.0010	mg/L	2020-09-25	
Sulfur, dissolved	**27.1**	3.0	mg/L	2020-09-25	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2020-09-25	
Thallium, dissolved	< 0.000020	0.000020	mg/L	2020-09-25	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
Tin, dissolved	< 0.00020	0.00020	mg/L	2020-09-25	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2020-09-25	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Uranium, dissolved	**0.000455**	0.000020	mg/L	2020-09-25	
Vanadium, dissolved	< 0.0010	0.0010	mg/L	2020-09-25	
Zinc, dissolved	**0.0062**	0.0040	mg/L	2020-09-25	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2020-09-25	
General Parameters					
Ammonia, Total (as N)	**0.085**	0.050	mg/L	2020-09-23	
Conductivity (EC)	**510**	2.0	µS/cm	2020-09-23	
pH	**7.45**	0.10	pH units	2020-09-23	HT2
Solids, Total Dissolved	**330**	15	mg/L	2020-09-23	

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Sample Qualifiers:

HT1	The sample was prepared and/or analyzed past the recommended holding time.
HT2	The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
RA1	The Reporting Limit has been raised due to matrix interference.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
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Analysis Description	Method Ref.	Technique	Accredited	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2017)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	✓	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Hardness in Water	SM 2340 B (2017)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	✓	N/A
Mercury, dissolved in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
pH in Water	SM 4500-H+ B (2017)	Electrometry	✓	Kelowna
Solids, Total Dissolved in Water	SM 2540 C* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Solids, Total Suspended in Water	SM 2540 D* (2017)	Gravimetry (Dried at 103-105C)	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
mg/L	Milligrams per litre
pH units	pH < 7 = acidic, ph > 7 = basic
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing.

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline (s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.

APPENDIX 2: QUALITY CONTROL RESULTS

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The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk)**: A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup)**: An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS)**: A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS)**: A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM)**: A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B0I2101										
Blank (B0I2101-BLK1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B0I2101-BLK2)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B0I2101-BLK3)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
Blank (B0I2101-BLK4)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Chloride	< 0.10	0.10	mg/L							
Nitrate (as N)	< 0.010	0.010	mg/L							
Nitrite (as N)	< 0.010	0.010	mg/L							
Sulfate	< 1.0	1.0	mg/L							
LCS (B0I2101-BS1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Chloride	16.1	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	3.99	0.010	mg/L	4.00		100	90-110			
Nitrite (as N)	2.00	0.010	mg/L	2.00		100	85-115			
Sulfate	16.0	1.0	mg/L	16.0		100	90-110			
LCS (B0I2101-BS2)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	3.94	0.010	mg/L	4.00		99	90-110			
Nitrite (as N)	2.01	0.010	mg/L	2.00		101	85-115			
Sulfate	15.9	1.0	mg/L	16.0		99	90-110			
LCS (B0I2101-BS3)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Chloride	16.1	0.10	mg/L	16.0		101	90-110			

APPENDIX 2: QUALITY CONTROL RESULTS

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Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B0I2101, Continued										
LCS (B0I2101-BS3), Continued				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Nitrate (as N)	3.96	0.010	mg/L	4.00		99	90-110			
Nitrite (as N)	2.17	0.010	mg/L	2.00		108	85-115			
Sulfate	16.1	1.0	mg/L	16.0		101	90-110			
LCS (B0I2101-BS4)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Chloride	16.0	0.10	mg/L	16.0		100	90-110			
Nitrate (as N)	4.03	0.010	mg/L	4.00		101	90-110			
Nitrite (as N)	2.05	0.010	mg/L	2.00		103	85-115			
Sulfate	16.1	1.0	mg/L	16.0		101	90-110			
Dissolved Metals, Batch B0I2268										
Blank (B0I2268-BLK1)				Prepared: 2020-09-25, Analyzed: 2020-09-25						
Lithium, dissolved	< 0.00010	0.00010	mg/L							
Aluminum, dissolved	< 0.0050	0.0050	mg/L							
Antimony, dissolved	< 0.00020	0.00020	mg/L							
Arsenic, dissolved	< 0.00050	0.00050	mg/L							
Barium, dissolved	< 0.0050	0.0050	mg/L							
Beryllium, dissolved	< 0.00010	0.00010	mg/L							
Bismuth, dissolved	< 0.00010	0.00010	mg/L							
Boron, dissolved	< 0.0500	0.0500	mg/L							
Cadmium, dissolved	< 0.000010	0.000010	mg/L							
Calcium, dissolved	< 0.20	0.20	mg/L							
Chromium, dissolved	< 0.00050	0.00050	mg/L							
Cobalt, dissolved	< 0.00010	0.00010	mg/L							
Copper, dissolved	< 0.00040	0.00040	mg/L							
Iron, dissolved	< 0.010	0.010	mg/L							
Lead, dissolved	< 0.00020	0.00020	mg/L							
Magnesium, dissolved	< 0.010	0.010	mg/L							
Manganese, dissolved	< 0.00020	0.00020	mg/L							
Molybdenum, dissolved	< 0.00010	0.00010	mg/L							
Nickel, dissolved	< 0.00040	0.00040	mg/L							
Phosphorus, dissolved	< 0.050	0.050	mg/L							
Potassium, dissolved	< 0.10	0.10	mg/L							
Selenium, dissolved	< 0.00050	0.00050	mg/L							
Silicon, dissolved	< 1.0	1.0	mg/L							
Silver, dissolved	< 0.000050	0.000050	mg/L							
Sodium, dissolved	< 0.10	0.10	mg/L							
Strontium, dissolved	< 0.0010	0.0010	mg/L							
Sulfur, dissolved	< 3.0	3.0	mg/L							
Tellurium, dissolved	< 0.00050	0.00050	mg/L							
Thallium, dissolved	< 0.000020	0.000020	mg/L							
Thorium, dissolved	< 0.00010	0.00010	mg/L							
Tin, dissolved	< 0.00020	0.00020	mg/L							
Titanium, dissolved	< 0.0050	0.0050	mg/L							
Tungsten, dissolved	< 0.0010	0.0010	mg/L							
Uranium, dissolved	< 0.000020	0.000020	mg/L							
Vanadium, dissolved	< 0.0010	0.0010	mg/L							
Zinc, dissolved	< 0.0040	0.0040	mg/L							
Zirconium, dissolved	< 0.00010	0.00010	mg/L							
LCS (B0I2268-BS1)				Prepared: 2020-09-25, Analyzed: 2020-09-25						
Lithium, dissolved	0.0202	0.00010	mg/L	0.0200		101	80-120			
Aluminum, dissolved	0.0181	0.0050	mg/L	0.0199		91	80-120			
Antimony, dissolved	0.0166	0.00020	mg/L	0.0200		83	80-120			
Arsenic, dissolved	0.0163	0.00050	mg/L	0.0200		81	80-120			

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B0I2268, Continued										
LCS (B0I2268-BS1), Continued				Prepared: 2020-09-25, Analyzed: 2020-09-25						
Barium, dissolved	0.0186	0.0050	mg/L	0.0198		94	80-120			
Beryllium, dissolved	0.0182	0.00010	mg/L	0.0198		92	80-120			
Bismuth, dissolved	0.0205	0.00010	mg/L	0.0200		103	80-120			
Boron, dissolved	< 0.0500	0.0500	mg/L	0.0200		96	80-120			
Cadmium, dissolved	0.0194	0.000010	mg/L	0.0199		98	80-120			
Calcium, dissolved	1.83	0.20	mg/L	2.02		90	80-120			
Chromium, dissolved	0.0188	0.00050	mg/L	0.0198		95	80-120			
Cobalt, dissolved	0.0189	0.00010	mg/L	0.0199		95	80-120			
Copper, dissolved	0.0196	0.00040	mg/L	0.0200		98	80-120			
Iron, dissolved	1.78	0.010	mg/L	2.02		88	80-120			
Lead, dissolved	0.0204	0.00020	mg/L	0.0199		102	80-120			
Magnesium, dissolved	1.94	0.010	mg/L	2.02		96	80-120			
Manganese, dissolved	0.0181	0.00020	mg/L	0.0199		91	80-120			
Molybdenum, dissolved	0.0180	0.00010	mg/L	0.0200		90	80-120			
Nickel, dissolved	0.0193	0.00040	mg/L	0.0200		97	80-120			
Phosphorus, dissolved	1.68	0.050	mg/L	2.00		84	80-120			
Potassium, dissolved	1.61	0.10	mg/L	2.02		80	80-120			
Selenium, dissolved	0.0206	0.00050	mg/L	0.0200		103	80-120			
Silicon, dissolved	2.3	1.0	mg/L	2.00		117	80-120			
Silver, dissolved	0.0195	0.000050	mg/L	0.0200		97	80-120			
Sodium, dissolved	1.87	0.10	mg/L	2.02		92	80-120			
Strontium, dissolved	0.0185	0.0010	mg/L	0.0200		93	80-120			
Sulfur, dissolved	4.7	3.0	mg/L	5.00		95	80-120			
Tellurium, dissolved	0.0161	0.00050	mg/L	0.0200		81	80-120			
Thallium, dissolved	0.0206	0.000020	mg/L	0.0199		103	80-120			
Thorium, dissolved	0.0204	0.00010	mg/L	0.0200		102	80-120			
Tin, dissolved	0.0224	0.00020	mg/L	0.0200		112	80-120			
Titanium, dissolved	0.0183	0.0050	mg/L	0.0200		91	80-120			
Tungsten, dissolved	0.0183	0.0010	mg/L	0.0200		91	80-120			
Uranium, dissolved	0.0210	0.000020	mg/L	0.0200		105	80-120			
Vanadium, dissolved	0.0207	0.0010	mg/L	0.0200		104	80-120			
Zinc, dissolved	0.0180	0.0040	mg/L	0.0200		90	80-120			
Zirconium, dissolved	0.0176	0.00010	mg/L	0.0200		88	80-120			
Duplicate (B0I2268-DUP1)		**Source: 0092007-01**		Prepared: 2020-09-25, Analyzed: 2020-09-25						
Lithium, dissolved	0.00616	0.00010	mg/L		0.00584			5	20	
Aluminum, dissolved	0.126	0.0050	mg/L		0.129			2	20	
Antimony, dissolved	0.00111	0.00020	mg/L		0.00118			6	20	
Arsenic, dissolved	0.00053	0.00050	mg/L		< 0.00050				20	
Barium, dissolved	0.0892	0.0050	mg/L		0.0933			4	20	
Beryllium, dissolved	< 0.00010	0.00010	mg/L		< 0.00010				20	
Bismuth, dissolved	< 0.00010	0.00010	mg/L		< 0.00010				20	
Boron, dissolved	< 0.0500	0.0500	mg/L		< 0.0500				20	
Cadmium, dissolved	< 0.000010	0.000010	mg/L		0.000022				20	
Calcium, dissolved	14.6	0.20	mg/L		15.2			4	20	
Chromium, dissolved	0.00086	0.00050	mg/L		0.00089				20	
Cobalt, dissolved	0.00173	0.00010	mg/L		0.00182			5	20	
Copper, dissolved	0.00236	0.00040	mg/L		0.00232			1	20	
Iron, dissolved	0.072	0.010	mg/L		0.079			8	20	
Lead, dissolved	< 0.00020	0.00020	mg/L		< 0.00020				20	
Magnesium, dissolved	6.20	0.010	mg/L		6.18			< 1	20	
Manganese, dissolved	0.00363	0.00020	mg/L		0.00292			22	20	RPD
Molybdenum, dissolved	0.00014	0.00010	mg/L		< 0.00010				20	
Nickel, dissolved	0.00196	0.00040	mg/L		0.00200			2	20	
Phosphorus, dissolved	< 0.050	0.050	mg/L		< 0.050				20	
Potassium, dissolved	0.49	0.10	mg/L		0.45				20	

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Yukon Government - Water Resources
PROJECT Brewery Creek

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Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B0I2268, Continued										
Duplicate (B0I2268-DUP1), Continued		**Source: 0092007-01**		Prepared: 2020-09-25, Analyzed: 2020-09-25						
Selenium, dissolved	< 0.00050	0.00050	mg/L		< 0.00050				20	
Silicon, dissolved	6.6	1.0	mg/L		5.7			14	20	
Silver, dissolved	< 0.000050	0.000050	mg/L		< 0.000050				20	
Sodium, dissolved	6.42	0.10	mg/L		6.19			4	20	
Strontium, dissolved	0.0672	0.0010	mg/L		0.0699			4	20	
Sulfur, dissolved	32.6	3.0	mg/L		26.8			20	20	
Tellurium, dissolved	< 0.00050	0.00050	mg/L		< 0.00050				20	
Thallium, dissolved	< 0.000020	0.000020	mg/L		< 0.000020				20	
Thorium, dissolved	< 0.00010	0.00010	mg/L		< 0.00010				20	
Tin, dissolved	< 0.00020	0.00020	mg/L		< 0.00020				20	
Titanium, dissolved	< 0.0050	0.0050	mg/L		< 0.0050				20	
Tungsten, dissolved	< 0.0010	0.0010	mg/L		< 0.0010				20	
Uranium, dissolved	0.000028	0.000020	mg/L		0.000029				20	
Vanadium, dissolved	0.0023	0.0010	mg/L		< 0.0010				20	
Zinc, dissolved	< 0.0040	0.0040	mg/L		< 0.0040				20	
Zirconium, dissolved	0.00043	0.00010	mg/L		0.00051			15	20	
Reference (B0I2268-SRM1)				Prepared: 2020-09-28, Analyzed: 2020-09-28						
Lithium, dissolved	0.106	0.00010	mg/L	0.100		106	70-130			
Aluminum, dissolved	0.220	0.0050	mg/L	0.235		94	70-130			
Antimony, dissolved	0.0473	0.00020	mg/L	0.0431		110	70-130			
Arsenic, dissolved	0.441	0.00050	mg/L	0.423		104	70-130			
Barium, dissolved	3.11	0.0050	mg/L	3.30		94	70-130			
Beryllium, dissolved	0.213	0.00010	mg/L	0.209		102	70-130			
Boron, dissolved	1.65	0.0500	mg/L	1.65		100	70-130			
Cadmium, dissolved	0.222	0.000010	mg/L	0.221		101	70-130			
Calcium, dissolved	6.35	0.20	mg/L	7.72		82	70-130			
Chromium, dissolved	0.429	0.00050	mg/L	0.434		99	70-130			
Cobalt, dissolved	0.125	0.00010	mg/L	0.124		101	70-130			
Copper, dissolved	0.843	0.00040	mg/L	0.815		103	70-130			
Iron, dissolved	1.21	0.010	mg/L	1.27		96	70-130			
Lead, dissolved	0.112	0.00020	mg/L	0.110		102	70-130			
Magnesium, dissolved	6.31	0.010	mg/L	6.59		96	70-130			
Manganese, dissolved	0.332	0.00020	mg/L	0.342		97	70-130			
Molybdenum, dissolved	0.420	0.00010	mg/L	0.404		104	70-130			
Nickel, dissolved	0.851	0.00040	mg/L	0.835		102	70-130			
Phosphorus, dissolved	0.472	0.050	mg/L	0.499		94	70-130			
Potassium, dissolved	2.78	0.10	mg/L	2.88		96	70-130			
Selenium, dissolved	0.0376	0.00050	mg/L	0.0324		116	70-130			
Sodium, dissolved	17.3	0.10	mg/L	18.0		96	70-130			
Strontium, dissolved	0.899	0.0010	mg/L	0.935		96	70-130			
Thallium, dissolved	0.0394	0.000020	mg/L	0.0385		102	70-130			
Uranium, dissolved	0.249	0.000020	mg/L	0.258		96	70-130			
Vanadium, dissolved	0.842	0.0010	mg/L	0.873		96	70-130			
Zinc, dissolved	0.896	0.0040	mg/L	0.848		106	70-130			
Dissolved Metals, Batch B0I2289										
Blank (B0I2289-BLK1)				Prepared: 2020-09-24, Analyzed: 2020-09-25						
Mercury, dissolved	< 0.000010	0.000010	mg/L							
Blank (B0I2289-BLK2)				Prepared: 2020-09-24, Analyzed: 2020-09-25						
Mercury, dissolved	< 0.000010	0.000010	mg/L							
Blank (B0I2289-BLK3)				Prepared: 2020-09-24, Analyzed: 2020-09-25						
Mercury, dissolved	< 0.000010	0.000010	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
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Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B0I2289, Continued										
Reference (B0I2289-SRM1)				Prepared: 2020-09-24, Analyzed: 2020-09-25						
Mercury, dissolved	0.00595	0.000010	mg/L	0.00581		102	70-130			
Reference (B0I2289-SRM2)				Prepared: 2020-09-24, Analyzed: 2020-09-25						
Mercury, dissolved	0.00575	0.000010	mg/L	0.00581		99	70-130			
Reference (B0I2289-SRM3)				Prepared: 2020-09-24, Analyzed: 2020-09-25						
Mercury, dissolved	0.00549	0.000010	mg/L	0.00581		94	70-130			
General Parameters, Batch B0I2039										
Blank (B0I2039-BLK1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Solids, Total Dissolved	< 15	15	mg/L							
LCS (B0I2039-BS1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Solids, Total Dissolved	239	15	mg/L	240		100	85-115			
General Parameters, Batch B0I2040										
Blank (B0I2040-BLK1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Solids, Total Suspended	< 2.0	2.0	mg/L							
Blank (B0I2040-BLK2)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Solids, Total Suspended	< 2.0	2.0	mg/L							
LCS (B0I2040-BS1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Solids, Total Suspended	91.0	10.0	mg/L	100		91	85-115			
LCS (B0I2040-BS2)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Solids, Total Suspended	101	10.0	mg/L	100		101	85-115			
General Parameters, Batch B0I2060										
Blank (B0I2060-BLK1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Conductivity (EC)	< 2.0	2.0	µS/cm							
Blank (B0I2060-BLK2)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Conductivity (EC)	< 2.0	2.0	µS/cm							
LCS (B0I2060-BS3)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Conductivity (EC)	1390	2.0	µS/cm	1410		99	95-104			
LCS (B0I2060-BS4)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Conductivity (EC)	1400	2.0	µS/cm	1410		100	95-104			
Reference (B0I2060-SRM1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
pH	6.97	0.10	pH units	7.01		99	98-102			
Reference (B0I2060-SRM2)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
pH	6.98	0.10	pH units	7.01		100	98-102			
General Parameters, Batch B0I2093										
Blank (B0I2093-BLK1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Ammonia, Total (as N)	< 0.050	0.050	mg/L							

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO Yukon Government - Water Resources
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Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B0I2093, Continued										
Blank (B0I2093-BLK2)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Ammonia, Total (as N)	< 0.050	0.050	mg/L							
Blank (B0I2093-BLK3)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Ammonia, Total (as N)	< 0.050	0.050	mg/L							
Blank (B0I2093-BLK4)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Ammonia, Total (as N)	< 0.050	0.050	mg/L							
LCS (B0I2093-BS1)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Ammonia, Total (as N)	1.05	0.050	mg/L	1.00		105	90-115			
LCS (B0I2093-BS2)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Ammonia, Total (as N)	1.04	0.050	mg/L	1.00		104	90-115			
LCS (B0I2093-BS3)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Ammonia, Total (as N)	1.04	0.050	mg/L	1.00		104	90-115			
LCS (B0I2093-BS4)				Prepared: 2020-09-23, Analyzed: 2020-09-23						
Ammonia, Total (as N)	1.02	0.050	mg/L	1.00		102	90-115			
Total Metals, Batch B0I2282										
Blank (B0I2282-BLK1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Mercury, total	< 0.000010	0.000010	mg/L							
Reference (B0I2282-SRM1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Mercury, total	0.00584	0.000010	mg/L	0.00581		101	70-130			
Total Metals, Batch B0I2284										
Blank (B0I2284-BLK1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Aluminum, total	< 0.0050	0.0050	mg/L							
Antimony, total	< 0.00020	0.00020	mg/L							
Arsenic, total	< 0.00050	0.00050	mg/L							
Barium, total	< 0.0050	0.0050	mg/L							
Beryllium, total	< 0.00010	0.00010	mg/L							
Bismuth, total	< 0.00010	0.00010	mg/L							
Boron, total	< 0.0500	0.0500	mg/L							
Cadmium, total	< 0.000010	0.000010	mg/L							
Chromium, total	< 0.00050	0.00050	mg/L							
Cobalt, total	< 0.00010	0.00010	mg/L							
Copper, total	< 0.00040	0.00040	mg/L							
Iron, total	< 0.010	0.010	mg/L							
Lead, total	< 0.00020	0.00020	mg/L							
Lithium, total	< 0.00010	0.00010	mg/L							
Manganese, total	< 0.00020	0.00020	mg/L							
Molybdenum, total	< 0.00010	0.00010	mg/L							
Nickel, total	< 0.00040	0.00040	mg/L							
Phosphorus, total	< 0.050	0.050	mg/L							
Selenium, total	< 0.00050	0.00050	mg/L							
Silicon, total	< 1.0	1.0	mg/L							
Silver, total	< 0.000050	0.000050	mg/L							
Strontium, total	< 0.0010	0.0010	mg/L							
Sulfur, total	< 3.0	3.0	mg/L							
Tellurium, total	< 0.00050	0.00050	mg/L							
Thallium, total	< 0.000020	0.000020	mg/L							

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REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B0I2284, Continued										
Blank (B0I2284-BLK1), Continued				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Thorium, total	< 0.00010	0.00010	mg/L							
Tin, total	< 0.00020	0.00020	mg/L							
Titanium, total	< 0.0050	0.0050	mg/L							
Tungsten, total	< 0.0010	0.0010	mg/L							
Uranium, total	< 0.000020	0.000020	mg/L							
Vanadium, total	< 0.0010	0.0010	mg/L							
Zinc, total	< 0.0040	0.0040	mg/L							
Zirconium, total	< 0.00010	0.00010	mg/L							
LCS (B0I2284-BS1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Aluminum, total	0.0221	0.0050	mg/L	0.0199		111	80-120			
Antimony, total	0.0220	0.00020	mg/L	0.0200		110	80-120			
Arsenic, total	0.0217	0.00050	mg/L	0.0200		109	80-120			
Barium, total	0.0227	0.0050	mg/L	0.0198		115	80-120			
Beryllium, total	0.0206	0.00010	mg/L	0.0198		104	80-120			
Bismuth, total	0.0219	0.00010	mg/L	0.0200		109	80-120			
Boron, total	< 0.0500	0.0500	mg/L	0.0200		102	80-120			
Cadmium, total	0.0210	0.000010	mg/L	0.0199		106	80-120			
Chromium, total	0.0218	0.00050	mg/L	0.0198		110	80-120			
Cobalt, total	0.0219	0.00010	mg/L	0.0199		110	80-120			
Copper, total	0.0230	0.00040	mg/L	0.0200		115	80-120			
Iron, total	2.19	0.010	mg/L	2.02		108	80-120			
Lead, total	0.0219	0.00020	mg/L	0.0199		110	80-120			
Lithium, total	0.0221	0.00010	mg/L	0.0200		111	80-120			
Manganese, total	0.0221	0.00020	mg/L	0.0199		111	80-120			
Molybdenum, total	0.0213	0.00010	mg/L	0.0200		107	80-120			
Nickel, total	0.0224	0.00040	mg/L	0.0200		112	80-120			
Phosphorus, total	2.23	0.050	mg/L	2.00		111	80-120			
Selenium, total	0.0205	0.00050	mg/L	0.0200		103	80-120			
Silicon, total	2.1	1.0	mg/L	2.00		106	80-120			
Silver, total	0.0216	0.000050	mg/L	0.0200		108	80-120			
Strontium, total	0.0238	0.0010	mg/L	0.0200		119	80-120			
Sulfur, total	5.3	3.0	mg/L	5.00		107	80-120			
Tellurium, total	0.0213	0.00050	mg/L	0.0200		107	80-120			
Thallium, total	0.0217	0.000020	mg/L	0.0199		109	80-120			
Thorium, total	0.0206	0.00010	mg/L	0.0200		103	80-120			
Tin, total	0.0218	0.00020	mg/L	0.0200		109	80-120			
Titanium, total	0.0219	0.0050	mg/L	0.0200		110	80-120			
Tungsten, total	0.0212	0.0010	mg/L	0.0200		106	80-120			
Uranium, total	0.0210	0.000020	mg/L	0.0200		105	80-120			
Vanadium, total	0.0231	0.0010	mg/L	0.0200		115	80-120			
Zinc, total	0.0241	0.0040	mg/L	0.0200		120	80-120			
Zirconium, total	0.0222	0.00010	mg/L	0.0200		111	80-120			
Duplicate (B0I2284-DUP1)		**Source: 0092007-01**		Prepared: 2020-09-24, Analyzed: 2020-09-24						
Aluminum, total	0.255	0.0050	mg/L		0.255			< 1	20	
Antimony, total	0.00118	0.00020	mg/L		0.00115			3	20	
Arsenic, total	0.00084	0.00050	mg/L		0.00092				20	
Barium, total	0.0921	0.0050	mg/L		0.0965			5	20	
Beryllium, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Bismuth, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Boron, total	< 0.0500	0.0500	mg/L		< 0.0500				20	
Cadmium, total	< 0.000010	0.000010	mg/L		< 0.000010				20	
Chromium, total	0.00084	0.00050	mg/L		0.00080				20	
Cobalt, total	0.00185	0.00010	mg/L		0.00198			7	20	
Copper, total	0.00219	0.00040	mg/L		0.00220			< 1	20	
Iron, total	0.229	0.010	mg/L		0.240			5		

APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO	Yukon Government - Water Resources	**WORK ORDER**	0092007
PROJECT	Brewery Creek	**REPORTED**	2020-10-06 13:35

Analyte	Result	RL	Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B0I2284, Continued										
Duplicate (B0I2284-DUP1), Continued		**Source: 0092007-01**		Prepared: 2020-09-24, Analyzed: 2020-09-24						
Lead, total	< 0.00020	0.00020	mg/L		< 0.00020				20	
Lithium, total	0.00499	0.00010	mg/L		0.00515			3	20	
Manganese, total	0.00565	0.00020	mg/L		0.00591			5	20	
Molybdenum, total	0.00022	0.00010	mg/L		0.00017				20	
Nickel, total	0.00250	0.00040	mg/L		0.00260			4	20	
Phosphorus, total	< 0.050	0.050	mg/L		< 0.050				20	
Selenium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Silicon, total	6.5	1.0	mg/L		6.8			5	20	
Silver, total	< 0.000050	0.000050	mg/L		< 0.000050				20	
Strontium, total	0.0669	0.0010	mg/L		0.0681			2	20	
Sulfur, total	14.5	3.0	mg/L		15.3			6	20	
Tellurium, total	< 0.00050	0.00050	mg/L		< 0.00050				20	
Thallium, total	< 0.000020	0.000020	mg/L		< 0.000020				20	
Thorium, total	< 0.00010	0.00010	mg/L		< 0.00010				20	
Tin, total	< 0.00020	0.00020	mg/L		< 0.00020				20	
Titanium, total	0.0054	0.0050	mg/L		0.0055				20	
Tungsten, total	< 0.0010	0.0010	mg/L		< 0.0010				20	
Uranium, total	0.000038	0.000020	mg/L		0.000035				20	
Vanadium, total	0.0047	0.0010	mg/L		0.0058			20	20	
Zinc, total	0.0042	0.0040	mg/L		0.0050				20	
Zirconium, total	0.00064	0.00010	mg/L		0.00069			8	20	
Reference (B0I2284-SRM1)				Prepared: 2020-09-24, Analyzed: 2020-09-24						
Aluminum, total	0.314	0.0050	mg/L	0.299		105	70-130			
Antimony, total	0.0537	0.00020	mg/L	0.0517		104	70-130			
Arsenic, total	0.127	0.00050	mg/L	0.119		107	70-130			
Barium, total	0.823	0.0050	mg/L	0.801		103	70-130			
Beryllium, total	0.0497	0.00010	mg/L	0.0501		99	70-130			
Boron, total	3.70	0.0500	mg/L	4.11		90	70-130			
Cadmium, total	0.0506	0.000010	mg/L	0.0503		101	70-130			
Chromium, total	0.255	0.00050	mg/L	0.250		102	70-130			
Cobalt, total	0.0407	0.00010	mg/L	0.0384		106	70-130			
Copper, total	0.523	0.00040	mg/L	0.487		107	70-130			
Iron, total	0.521	0.010	mg/L	0.504		103	70-130			
Lead, total	0.293	0.00020	mg/L	0.278		105	70-130			
Lithium, total	0.420	0.00010	mg/L	0.398		106	70-130			
Manganese, total	0.118	0.00020	mg/L	0.111		106	70-130			
Molybdenum, total	0.206	0.00010	mg/L	0.196		105	70-130			
Nickel, total	0.263	0.00040	mg/L	0.248		106	70-130			
Phosphorus, total	0.238	0.050	mg/L	0.213		112	70-130			
Selenium, total	0.118	0.00050	mg/L	0.120		98	70-130			
Strontium, total	0.407	0.0010	mg/L	0.393		103	70-130			
Thallium, total	0.0821	0.000020	mg/L	0.0787		104	70-130			
Uranium, total	0.0354	0.000020	mg/L	0.0344		103	70-130			
Vanadium, total	0.397	0.0010	mg/L	0.391		102	70-130			
Zinc, total	2.61	0.0040	mg/L	2.50		104	70-130			

QC Qualifiers:

RPD Relative percent difference (RPD) of duplicate analysis are outside of control limits for unknown reason(s).

SGS Canada Inc.
P.O. Box 4300 - 185 Concession St.
Lakefield - Ontario - KOL 2HO
Phone: 705-652-2000 FAX: 705-652-6365

25-September-2020

CARO Analytical Services
Attn : Eilish St. Clair

#110 4011 Viking Way
Richmond, BC
V6V 2K9,

Phone: 604-279-1499
Fax:604-279-1599

Date Rec. : 22 September 2020
LR Report: **CA12898-SEP20**
Reference: WO# 0092007

Copy: #1

CERTIFICATE OF ANALYSIS

Final Report

Sample ID	Sample Date & Time	Temp Upon Receipt °C	S2O3 mg/L
1: Analysis Start Date		---	22-Sep-20
2: Analysis Start Time		---	17:45
3: Analysis Completed Date		---	24-Sep-20
4: Analysis Completed Time		---	14:29
5: 0092007-06	16-Sep-20 13:55	17.0	< 0.2

Catharine Arnold

CHARTERED CATHARINE ARNOLD CHEMIST

Catharine Arnold, B.Sc., C.Chem
Project Specialist,
Environment, Health & Safety

OnLine LIMS

00022693996

CARO ANALYTICAL SERVICES
Caring About Results, Obviously.

CARO 1-888-311-8846
#110-401 … 2K9
#102-367 … 5C3
17225 10… 1H7
#108-447 … 4X4

* 0 0 9 2 0 0 7 *

CARO BC COC, Rev 2019-01

CHAIN OF CUSTODY RECORD

COC# B 84309 PAGE 1 OF 1

RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:
DEVON O'CONNOR	SEP 17/20	AFA Air North	9/18
	TIME: 17:00		TIME: 13:0

REPORT TO:
COMPANY: GOV. OF YUKON - WRB
ADDRESS: BOX 2703 WHITEHORSE, YT
CONTACT: NICOLE NOVODVORSKY
TEL/FAX: 867-456-6538
DELIVERY METHOD: EMAIL ☒ ONLINE ☐ OTHER* ☐
DATA FORMAT: EXCEL ☒ WATERTRAX ☐ ESdat ☐ EQuIS ☐ BC EMS ☐ OTHER* ☒
EMAIL 1: nicole.novodvorsky@gov.yk.ca
EMAIL 2: devon.o'connor@gov.yk.ca
EMAIL 3:

INVOICE TO: SAME AS REPORT TO ☒
COMPANY:
ADDRESS:
CONTACT:
TEL/FAX:
DELIVERY METHOD: EMAIL ☒ ONLINE ☐ OTHER* ☐
EMAIL 1: nicole.novodvorsky@gov.yk.ca
EMAIL 2: devon.o'connor@gov.yk.ca
EMAIL 3:
PO #:

TURNAROUND TIME REQUESTED:
Routine: (5-7 Days) ☒
Rush: 1 Day* ☐ 2 Day* ☐ 3 Day* ☐
Other*
***Contact Lab To Confirm. Surcharge May Apply**

REGULATORY APPLICATION: Show on Report
Canadian Drinking Water Quality ☐ BC WQG ☐ BC HWR ☐
BC CSR Soil: WL ☐ AL ☐ PL ☐ RL-LD ☐ RL-HD ☐ CL ☐ IL ☐
BC CSR Water: AW ☐ IW ☐ LW ☐ DW ☐
CCME: Other:

PROJECT NUMBER / INFO: BREWERY CREEK

A: Biohazard, B: Cyanide, C: PCBs, D: Asbestos, E: Heavy Metals, F: Flammable, G: Strong Odour, H: High Contamination, I: Other (please specify*)

**** If you would like to sign up for ClientConnect and/or EnviroChain, CARO's online service offerings, please check here: ☐**

SAMPLED BY: NICOLE NOVODVORSKY

~~CLIENT SAMPLE ID:~~ STATION ID - SAMPLE ID	DRINKING WATER	OTHER WATER	SOIL	OTHER	CONTAINER QTY	DATE YYYY-MM-DD	TIME HH:MM	CHLORINATED	FILTERED	PRESERVED	COMMENTS (e.g. flow/volume media ID/notes)
CC-US · 2020T24-07		X				20200916	14:37		X	X	
CC-SEEP · 2020T24-08		X				20200916	15:13		X	X	
(BC) QAQC · 2020T24-09		X				20200917	7:54		X	X	FIELD BLANK
(BC) QAQC · 2020T24-10		X				—	—		\	X	TRIP BLANK
BC-21 · 2020T26-06		X				20200916	11:10		X	X	REP.
BC-19 · 2020T26-07		X				20200916	13:55		X	X	
BC-22 · 2020T26-08		X				20200916	15:43		X	X	
BC-21 2020T26-05		X				20200916	11:10		X	X	

ANALYSES REQUESTED:

Sample ID	BTEX ☐ VPH ☐ PHC F1 ☐	VOC ☐ VPH ☐	EPH ☐ PHC F2-F4 ☐	PAH ☐ L/HEPH ☐	PHENOLS Chlorinated ☐ Non-Chlor. ☐	PCB ☐ GLYCOLS ☐ HAA ☐ THM ☐	PESTICIDES ☐ ACID HERBICIDES ☐	METALS - WATER TOTAL Hg ☒	METALS - WATER DISSOLVED Hg ☒	METALS - SOIL (SALM) ☐ inc. pH ☐	pH ☒ EC ☒ ALK ☒ ANIONS ☐	TSS ☐ VSS ☐ TDS ☒	BOD ☐ COD ☐ TOG ☐ MOG ☐	TN ☐ NH3 ☐ TKN ☐	FECAL COLIFORMS ☐ HPC ☐	TOTAL COLIFORMS ☐ E. coli ☐	ESSENTIAL DRINKING WATER PACKAGE	ASBESTOS	THIOSULPHATE	TSS	AMMONIA-T	Cl, SO4, NO3, NO2		HOLD	POSSIBLE SAMPLE HAZARD CODE(S)
CC-US · 2020T24-07								X	X		X	X								X	X	X			
CC-SEEP · 2020T24-08								X	X		X	X								X	X	X			
(BC) QAQC · 2020T24-09								X	X		X	X								X	X	X			
(BC) QAQC · 2020T24-10								X	X		X	X								X	X	X			
BC-21 · 2020T26-06									X		X	X									X	X			
BC-19 · 2020T26-07									X		X	X							X		X	X			
BC-22 · 2020T26-08									X		X	X									X	X			
BC-21 2020T26-05									X		X	X									X	X			

SHIPPING INSTRUCTIONS: Return Cooler(s) ☐
Supplies Needed:

SAMPLE RETENTION:
30 Days (default) ☐
60 Days ☐ 90 Days ☐
Other (surcharges will apply):

*** OTHER INSTRUCTIONS:**

If you would like to talk to a real live Scientist about your project requirements, please check here: ☐

SAMPLE RECEIPT CONDITION:
COOLER 1 (°C): 5.8 ICE: Y ☐ N ☐
COOLER 2 (°C): ICE: Y ☐ N ☐
COOLER 3 (°C): ICE: Y ☐ N ☐
CUSTODY SEALS INTACT: NA ☐ Y ☐ N ☐

Client: O'Connor
Yukon Water Resources Branch
Project: Brewery Creek Mine

ISO# 2020297
Location: A-4, Freezer
6 for 18O+2H, 18O+15N-NO3

Environmental Isotope Lab
2020-11-09

#	Sample	Date	Lab#	$\delta^{18}O$	Result	Repeat	$\delta^{2}H$	Result	Repeat	$\delta^{15}N$	Result	Repeat	$\delta^{18}O$	Result	Repeat	pH	EC	NO3	NO3	Cl
				H_2O	VSMOW ± 0.2‰		H_2O	VSMOW ± 0.8‰		NO_3	AIR ± 0.5‰		NO_3	VSMOW ± 1‰			µS/cm	mg/L	mg/L	mg/L
1	2020T24-01	Sept 15/20	444648	X	-20.28	-20.39	X	-164.30	-165.32	X	3.05	2.95	X	-8.19	-8.46	7.25	1832	168	<0.01	13.9
2	2020T24-02	Sept 15/20	444649	X	-18.97		X	-160.69		X	4.11	4.16	X	-7.50	-7.49	7.93	1968	188	0.23	16.1
3	2020T24-03	Sept 15/20	444650	X	-16.41	-16.41	X	-150.86	-150.58	X	7.93	7.95	X	-5.03	-5.01	8.77	1436	130	0.21	13.1
4	2020T24-04	Sept 15/20	444651	X	-21.34		X	-170.91		X	9.42	9.33	X	-3.58	-3.43	7.69	413.2	2.37	<0.01	1.36
5	2020T24-07	Sept 16/20	444652	X	-21.28		X	-169.53		X	12.24	12.32	X	1.82	2.23	6.77	751	0.627	<0.01	1.25
6	2020T24-08	Sept 16/20	444653	X	-21.25	-21.26	X	-171.08	-170.93	X	NA		X	NA		6.88	85.8	0.177	<0.01	0.68

NA= Not Attempted, Concentration too low for analysis

Samples have been analyzed twice. Once assuming concentrations as NO3, second time as N.

In first round samples 444648-444651 yielded no results, 444652 gave acceptable peak area.
In second round, samples 444648-444651 yielded good results, 444652 did not.

Concentration seem to be reported as NO3 in the first four samples, and the fifth sample as N

I cannot offer an explanation to this discrepency, but can only make judgements on peak areas produced.

Sample 444653 concentration is too low regardless of unit concentration is reported in.

Rick Heemskerk
uwEILAB Manager
rkhmskrk@uwaterloo.ca
519 888 4567 ext 35838

To Contact uwEILAB:
519 888 4732

#	Sample	Date	Lab#	$\delta^{18}O$	Result	Repeat	$\delta^{2}H$	Result	Repeat	$\delta^{15}N$	Result	Repeat	$\delta^{18}O$	Result	Repeat	pH	EC	NO3-N	NO2-N	Cl
				H_2O	VSMOW ± 0.2‰		H_2O	VSMOW ± 0.8‰		NO_3	AIR ± 0.5‰		NO_3	VSMOW ± 1‰			µS/cm	mg/L	mg/L	mg/L
1	2020T24-05	Sept 15/2020	446880	X	-21.60	-21.65	X	-168.58	-168.00	X	5.31	5.30	X	-9.79	-10.10	7.88	508	0.17	<0.010	0.33
2	2020T26-01	Sept 15/2020	446881	X	-18.42		X	-159.24		X	NA		X	NA		6.68	38	<0.010	<0.010	<0.10
3	2020T26-02	Sept 15/2020	446882	X	-21.58	-21.57	X	-171.35	-170.85	X	2.75	2.94	X	-6.39	-6.50	7.25	783	20.8	<0.010	3.21
4	2020T26-03	Sept 15/2020	446883	X	-21.95		X	-173.20		X	9.84	10.01	X	-5.84	-6.72	7.88	350.7	0.249	<0.010	0.3
5	2020T26-04	Sept 15/2020	446884	X	30.27	30.18	X	-90.68	-90.39	X	NA		X	NA		7.21	628	<0.010	<0.010	1.07
6	2020T26-05	Sept 16/2020	446885	X	-21.99		X	-172.19		X	NA		X	NA		6.73	526	0.012	<0.010	5.13
7	2020T26-06	Sept 16/2020	446886	X	-21.82	-21.87	X	-171.15	-171.98	X	NA		X	NA		6.73	526	0.011	<0.010	5.14
8	2020T26-07	Sept 16/2020	446887	X	-21.46		X	-168.63		X	9.23	9.73	X	-3.09	-3.03	6.37	1488	1.19	<0.010	0.57
9	2020T26-08	Sept 16/2020	446888	X	-21.67	-21.67	X	-170.66	-170.95	X	NA		X	NA		5.76	6376	<0.100	<0.100	<1.00

Sample 446884 18O-H2O result more enriched than others. Sample analyzed again in second run to verify results.

NA=Not attempted, concentration too low

ENVIRONMENTAL ISOTOPE LABORATORY

Replicate, Field and Travel Blank Results

	Station Code	(BC)BC-21	(BC)BC-21	RPD (%)	(BC)BC-3	(BC)BC-3	RPD (%)
Units	Sample Date & Time	2020-09-16 11:10	2020-09-16 11:10		2020-09-15 15:02	2020-09-15 14:50	
mg/L	Ag-D	<0.000050	<0.000050	-	<0.000050	<0.000050	-
mg/L	Ag-T	-	-	-	<0.000050	<0.000050	-
mg/L	Al-D	<0.0050	<0.0050	-	0.0537	0.0563	4.7
mgCaCO3/L	Alk-B	-	-	-	142	142	0
mgCaCO3/L	Alk-C	-	-	-	<1.0	<1.0	-
mgCaCO3/L	Alk-OH	-	-	-	<1.0	<1.0	-
mgCaCO3/L	Alk-P	-	-	-	<1.0	<1.0	-
mgCaCO3/L	Alk-T	-	-	-	142	142	0
mg/L	Al-T	-	-	-	0.144	0.113	24
mg/L	As-D	0.00067	0.00085	24	0.00206	0.00212	3
mg/L	As-T	-	-	-	0.00453	0.00424	7
mg/L	Ba-D	0.0236	0.0228	3	0.0605	0.061	1
mg/L	Ba-T	-	-	-	0.0702	0.0723	3
mg/L	B-D	<0.0500	<0.0500	-	<0.0500	<0.0500	-
mg/L	Be-D	<0.00010	<0.00010	-	<0.00010	<0.00010	-
mg/L	Be-T	-	-	-	<0.00010	<0.00010	-
mg/L	Bi-D	<0.00010	<0.00010	-	<0.00010	<0.00010	-
mg/L	Bi-T	-	-	-	<0.00010	<0.00010	-
mg/L	B-T	-	-	-	<0.0500	<0.0500	-
mg/L	Ca-D	47.1	47	0	66.8	68.4	2
mg/L	Ca-T	-	-	-	70.7	75.5	7
mg/L	Cd-D	<0.000010	0.000116	-	0.000098	0.000087	12
mg/L	Cd-T	-	-	-	0.000107	0.000113	5
mg/L	Chlord	5.14	5.13	0	0.33	0.34	3
mg/L	Co-D	0.00016	0.00037	79	0.00129	0.00128	1
uS/cm	Cond-F	526	526	0	497	497	0
uS/cm	Cond-L	501	510	2	513	508	1
mg/L	Co-T	-	-	-	0.00155	0.00155	0
mg/L	Cr-D	<0.00050	<0.00050	-	<0.00050	0.0006	-
mg/L	Cr-T	-	-	-	0.00082	0.00077	6
mg/L	Cu-D	<0.00040	<0.00040	-	0.00154	0.00172	11
mg/L	Cu-T	-	-	-	0.0019	0.00199	5
mg/L	Fe-D	0.047	0.259	139	0.2	0.193	4
mg/L	Fe-T	-	-	-	0.466	0.395	16
mgCaCO3/L	Hard-D	281	269	4	273	276	1
mg/L	Hg-D	<0.000010	<0.000010	-	<0.000010	<0.000010	-
mg/L	Hg-T	-	-	-	<0.000010	<0.000040	-
mg/L	K-D	2.7	2.56	5	1.37	1.34	2
mg/L	K-T	-	-	-	1.44	1.53	6
mg/L	Li-D	0.0239	0.0248	4	0.0135	0.0139	3
mg/L	Li-T	-	-	-	0.0132	0.0144	9
mg/L	Mg-D	39.7	36.8	8	25.7	25.4	1
mg/L	Mg-T	-	-	-	25.1	26.6	6
mg/L	Mn-D	0.306	0.289	6	0.101	0.0998	1
mg/L	Mn-T	-	-	-	0.105	0.11	5
mg/L	Mo-D	<0.00010	0.00012	-	0.00245	0.0025	2
mg/L	Mo-T	-	-	-	0.00257	0.00268	4
mg/L	Na-D	8.15	7.41	10	3.02	3.01	0
mg/L	Na-T	-	-	-	2.95	3.13	6
mg/L	Ni-D	0.00134	0.00221	49	0.00696	0.00671	4
mg/L	Ni-T	-	-	-	0.00814	0.00781	4
mg/L	N-NH4	<0.050	0.085	-	<0.050	<0.050	-
mg/L	N-NO2	<0.010	<0.010	-	<0.010	<0.010	-
mg/L	N-NO3	0.011	0.012	9	0.17	0.171	1
mg/L	O-DO-F	2.49	2.49	0	12.79	12.79	0
mV	ORP	72.8	72.8	0	-	-	-
mg/L	Pb-D	<0.00020	<0.00020	-	<0.00020	<0.00020	-
mg/L	Pb-T	-	-	-	<0.00020	<0.00020	-
mg/L	P-D	<0.050	<0.050	-	<0.050	<0.050	-
pH units	pH-F	6.73	6.73	0	7.88	7.88	0
pH units	pH-L	7.47	7.45	0	8.05	8.04	0
mg/L	P-T	-	-	-	<0.050	<0.050	-
mg/L	Sb-D	0.00035	0.0004	13	0.00455	0.00474	4
mg/L	Sb-T	-	-	-	0.0056	0.00603	7
mg/L	S-D	33.6	27.1	21	42.8	43.9	3
mg/L	Se-D	0.00134	0.00179	29	0.00229	0.00223	3
mg/L	Se-T	-	-	-	0.00211	0.00224	6
mg/L	Si-D	<1.0	<1.0	-	5.1	4.9	4
mg/L	Si-T	-	-	-	5.3	5.7	7
mg/L	Sn-D	<0.00020	<0.00020	-	<0.00020	<0.00020	-
mg/L	Sn-T	-	-	-	<0.00020	<0.00020	-
mg/L	SO4-D	78.2	78	0	127	128	1
mg/L	Sr-D	0.219	0.224	2	0.314	0.312	1
mg/L	Sr-T	-	-	-	0.352	0.372	6
mg/L	S-T	-	-	-	49.6	58.6	17
mg/L	TDS	327	330	1	361	346	4
mg/L	Te-D	<0.00050	<0.00050	-	<0.00050	<0.00050	-
mg/L	Te-T	-	-	-	<0.00050	<0.00050	-
mg/L	Th-D	<0.00010	<0.00010	-	<0.00010	<0.00010	-
mg/L	Th-T	-	-	-	<0.00010	<0.00010	-
mg/L	Ti-D	<0.0050	<0.0050	-	<0.0050	<0.0050	-
mg/L	Ti-T	-	-	-	<0.0050	<0.0050	-
mg/L	Tl-D	<0.000020	<0.000020	-	<0.000020	<0.000020	-
mg/L	Tl-T	-	-	-	<0.000020	<0.000020	-
mg/L	TSS	-	-	-	7.2	7.4	3
NTU	Turb-F	15.86	15.86	0	1.51	1.51	0
mg/L	U-D	0.000488	0.000455	7	0.00214	0.00216	1
mg/L	U-T	-	-	-	0.00212	0.00227	7
mg/L	V-D	0.0015	<0.0010	-	0.0027	0.0023	16
mg/L	V-T	-	-	-	0.0109	0.0089	20
mg/L	W-D	<0.0010	<0.0010	-	<0.0010	<0.0010	-
mg/L	W-T	-	-	-	<0.0010	<0.0010	-
mg/L	Zn-D	<0.0040	0.0062	-	0.0118	0.0128	8
mg/L	Zn-T	-	-	-	0.0154	0.0159	3
mg/L	Zr-D	<0.00010	<0.00010	-	0.00011	<0.00010	-
mg/L	Zr-T	-	-	-	0.0002	0.00016	22
			Average RPD (%):	15		Average RPD (%):	5

Field Blank	
Parameter	Result
Ag-D	< 0.000050
Ag-T	< 0.000050
Al-D	< 0.0050
Al-T	< 0.0050
As-D	< 0.00050
As-T	< 0.00050
Ba-D	< 0.0050
Ba-T	< 0.0050
B-D	< 0.0500
Be-D	< 0.00010
Be-T	< 0.00010
Bi-D	< 0.00010
Bi-T	< 0.00010
B-T	< 0.0500
Ca-D	< 0.20
Cd-D	< 0.000010
Cd-T	< 0.000010
Chlord	< 0.10
Co-D	< 0.00010
Cond-L	< 2.0
Co-T	< 0.00010
Cr-D	< 0.00050
Cr-T	< 0.00050
Cu-D	< 0.00040
Cu-T	< 0.00040
Fe-D	< 0.010
Fe-T	< 0.010
Hard-D	< 0.500
Hg-D	< 0.000010
Hg-T	< 0.000010
K-D	< 0.10
Li-D	< 0.00010
Li-T	< 0.00010
Mg-D	< 0.010
Mn-D	< 0.00020
Mn-T	< 0.00020
Mo-D	< 0.00010
Mo-T	< 0.00010
Na-D	< 0.10
Ni-D	< 0.00040
Ni-T	< 0.00040
N-NH4	< 0.050
N-NO2	< 0.010
N-NO3	< 0.010
Pb-D	< 0.00020
Pb-T	< 0.00020
P-D	< 0.050
pH-L	6.51
P-T	< 0.050
Sb-D	< 0.00020
Sb-T	< 0.00020
S-D	< 3.0
Se-D	< 0.00050
Se-T	< 0.00050
Si-D	< 1.0
Si-T	< 1.0
Sn-D	< 0.00020
Sn-T	< 0.00020
SO4-D	< 1.0
Sr-D	< 0.0010
Sr-T	< 0.0010
S-T	< 3.0
TDS	< 15
Te-D	< 0.00050
Te-T	< 0.00050
Th-D	< 0.00010
Th-T	< 0.00010
Ti-D	< 0.0050
Ti-T	< 0.0050
Tl-D	< 0.000020
Tl-T	< 0.000020
TSS	< 2.0
U-D	< 0.000020
U-T	< 0.000020
V-D	< 0.0010
V-T	< 0.0010
W-D	< 0.0010
W-T	< 0.0010
Zn-D	< 0.0040
Zn-T	< 0.0040
Zr-D	< 0.00010
Zr-T	< 0.00010

Travel Blank	
Parameter	Result
Ag-T	< 0.000050
Al-T	< 0.0050
As-T	< 0.00050
Ba-T	< 0.0050
Be-T	< 0.00010
Bi-T	< 0.00010
B-T	< 0.0500
Cd-T	< 0.000010
Chlord	< 0.10
Cond-L	< 2.0
Co-T	< 0.00010
Cr-T	< 0.00050
Cu-T	< 0.00040
Fe-T	< 0.010
Hg-T	< 0.000010
Li-T	< 0.00010
Mn-T	< 0.00020
Mo-T	< 0.00010
Ni-T	< 0.00040
N-NH4	< 0.050
N-NO2	< 0.010
N-NO3	< 0.010
Pb-T	< 0.00020
pH-L	5.9
P-T	< 0.050
Sb-T	< 0.00020
Se-T	< 0.00050
Si-T	< 1.0
Sn-T	< 0.00020
SO4-D	< 1.0
Sr-T	< 0.0010
S-T	< 3.0
TDS	< 15
Te-T	< 0.00050
Th-T	< 0.00010
Ti-T	< 0.0050
Tl-T	< 0.000020
TSS	< 2.0
U-T	< 0.000020
V-T	< 0.0010
W-T	< 0.0010
Zn-T	< 0.0040
Zr-T	< 0.00010

Yukon
Water Board

Office des eaux
du Yukon

March 23, 2010

Darrell Pasloski
Minister
Executive Council Office
Government of Yukon
Box 2703
Whitehorse YT Y1A 2C6

RE: Application QZ11-035, Amendment 8 of Water Use Licence QZ06-007
Alexco Resource Corp. at Brewery Creek

The Yukon Water Board concluded its deliberations on application QZ11-035 on February 8, 2012. The purpose of the amendment was to update Alexco Resource Corporation's existing care and maintenance licence to reflect current site conditions.

Should you be favourably inclined to grant the attached approval, pursuant to the requirements of the *Waters Act*, the Board will proceed to issue the renewal.

Yours truly,

Bruce Willis, Chairperson
Yukon Water Board

C: Register QZ11-035 exhibit 12.1

Encl: Copy of amendment 8 of QZ96-007

Suite 106, 419 Range Road, Whitehorse, Yukon Y1A 3V1 Ph: 867-456-3980 Fax: 867-456-3890
419, chemin Range, bureau 106, Whitehorse (Yukon) Y1A 3V1 Tél. : 867-456-3980 Téléc. : 867-456-3890
vwb@vukonwaterboard.ca www.vukonwaterboard.ca

YUKON WATER BOARD

Pursuant to the *Waters Act* and *Waters Regulation*, the Yukon Water Board hereby grants an amendment to a Type A waster licence for a quartz mining undertaking to:

Alexco Resource Corp.
1150-200 Granville Street
Vancouver BC V6C 1S4

APPLICATION: QZ11-035

LICENCE NUMBER: QZ96-007

AMENDMENT: This amendment shall be deemed to be amendment 8 of the licence. All clauses and all appendices of water use licence QZ96-007 are hereby withdrawn and replaced by amendment 8.

LICENCE TYPE: A **UNDERTAKING:** QUARTZ MINING

WATER SOURCES: Laura Creek, Lucky Creek, Pacific Creek, Lee Creek, North Fork of the Klondike River, and groundwater.

QUANTITY OF WATER: 2, 824 m^3/day

EFFECTIVE DATE: The effective date of this licence shall be the date on which the signature of the Chairperson of the Yukon Water Board is affixed.

EXPIRY DATE: December 31, 2021

This licence shall be subject to the restrictions and conditions contained herein and to the restrictions and conditions contained in the *Waters Act* and the *Waters Regulation* made thereunder.

Approved this 27th day of March, 2012.

Witness

Minister, Executive Council Office
Government of Yukon

Issued this 30 day of March, 2012.

Witness

Chairperson
Yukon Water Board

PART A - DEFINITIONS

"Act" means *Waters Act* and any amendments thereto.

"Application" means Water Use Application QZ94-003, QZ96-007, QZ98-032, QZ98-038, QZ99-041, QZ01-050, QZ02-056, QZ03-060, QZ03-062, QZ11-035, including any additional submissions and/or revisions submitted to the Yukon Water Board by the Licensee, up to the date of the Board's decision.

"Board" means the Yukon Water Board.

"Decommissioning and Reclamation Plan" means the Decommissioning and Reclamation plan, including appendices and attachments, submitted as exhibits 1.2, 1.3, 1.4, 1.5, and 1.6 in application QZ03-062.

"Inspector" means any person designated as an Inspector under the Act.

"Regulation" means the *Waters Regulation* made under the Act.

"Spill Contingency Plan" means the Spill and Emergency Response Plan that was submitted as part of the Application and included in Water Use Register QZ94-003, as exhibit I f) and any subsequent revisions. For greater certainty, the Spill and Emergency Response Plan is a component of a document titled "Brewery Creek Project, Update to Water Licence Application QZ94-003, Supporting Documentation, Appendices Volume IV of IV, at tab #16."

"Waste" means any substance as defined in the Act.

"Watercourse" means any stream, lake, pond, river, creek, spring, ravine or swamp whether ordinarily containing water or not.

PART B - GENERAL CONDITIONS

Other Laws

1. No condition of the water use licence limits applicability of any statutory authority.

2. All construction or installation of works authorized by this licence shall occur on property that the Licensee has the right to enter upon and use for that purpose.

Correspondence

3. Where any direction, notice, order or report under this licence is required to be in writing, it shall be given:

   a) To the Licensee, if delivered, faxed or mailed by registered mail to the following address:

Alexco Resource Corp.
1150-200 Granville Street
Vancouver BC V6C 1S4
Fax: (604) 633-4887

and shall be deemed to have been given to the Licensee on the day it was delivered or faxed, or 7 days after the day it was mailed, as the case may be.

b) To the Board, if delivered, faxed or mailed by registered mail to the following address:

Yukon Water Board
Suite 106, 419 Range Road
Whitehorse YT Y1A 3V1
Fax: (867) 456-3890

and shall be deemed to have been given to the Board on the day it was delivered or faxed, or 7 days after the day it was mailed, as the case may be.

c) The Board or the Licensee may, by notice in writing, change its address for delivery.

Non-Compliance

4. In the event that the Licensee fails to comply with any provision or condition of this licence, the Board may, subject to the Act, cancel the licence.

Spills and Unauthorized Discharges

5. Where a spill or an unauthorized discharge occurs, that is of a reportable quantity under the Yukon *Spills Regulations,* the Licensee shall immediately contact the 24-hour Yukon Spill Report number, (867) 667-7244 and implement the *Spill Contingency Plan.* A detailed written report on any such event including, but not limited to, dates, quantities, parameters, causes and other relevant details and explanations, shall be submitted to the Board not later than 10 days after the occurrence.

6. The Licensee shall apply the relevant procedures in the *Spill Contingency Plan.* The Licensee shall review the *Spill Contingency Plan* annually and shall provide a summary of that review, including any revisions to the plan, as a component of the annual report.

7. The Licensee shall maintain a log book of all spill or unauthorized discharge occurrences, including spills that are less than the reportable quantities under the Yukon *Spills Regulations.* The log book shall be made available at the request of an Inspector. The log book shall include, but not necessarily be limited to the:

a) date and time of the spill;

b) substance spilt or discharged;

c) approximate amount spilt or discharged;

d) distance between the spill or discharge and the nearest Watercourse; and

e) remedial measures taken to contain and clean-up the spill area or to cease the unauthorized discharge.

8. The Licensee shall include a summary of all spills or unauthorized discharges that occurred during the year reported, as part of the annual report.

9. All personnel shall be trained in procedures to be followed and the equipment to be used in the containment of a spill.

10. Prior to the commencement of construction, the Licensee shall update the *Spill Contingency Plan* and provide the updated plan to the Board.

11. The *Spill Contingency Plan* shall be posted on site for the duration of the works.

Fuel Storage and Transfer

12. Fuel, lubricants, hydraulic fluids, coolants and similar substances shall be stored and/or transferred a minimum of 30 metres from the natural boundary of any Watercourse, in such a way that said substances are not deposited in or allowed to be deposited in waters.

Reports

13. All reports required to be submitted to the Board will be unbound and reproducible by standard photocopier, accompanied by one electronic copy on a CD/DVD.

14. The Licensee shall provide to the Board 5 additional copies of all reports. The additional copies may be either 5 bound paper copies or 5 electronic copies on individual CDs/DVDs.

15. Electronic copies shall be Windows computer compatible in one of the following formats: Word 97 - 2003, Excel 97 - 2003 workbooks, or Adobe .pdf format. Water quality results must be presented in Excel 97-2003 .xls format.

Annual Reports

16. The Licensee shall submit annual reports to the Board. Reports shall be from January 1 to December 31 of each calendar year and shall be submitted to the Board on or before February 28 of the year following the year reported.

17. Annual reports shall include the information which is required by Part H of this licence, and shall include, but not necessarily be limited to:

    a) both tabular and graphic summaries of all data generated as a result of the monitoring requirements of this licence, including analysis and interpretation by a qualified individual or firm and a discussion of any variances from baseline conditions or from previous years' data; and

    b) a detailed record of any major maintenance work carried out on any physical works where that maintenance may have an impact on water quality; and

    c) commencing in the year 2006, a report on decommissioning and reclamation, including:

        i. all decommissioning and reclamation activities undertaken in the previous calendar year; and

ii. the effectiveness of the remediation measures implemented by the Licensee to decommission and abandon the undertaking, including monitoring; and

iii. any heap effluent contingency action undertaken and the quality of effluent subject to contingency treatment; and

iv. details on the effectiveness of the heap cover based on the annually updated heap water balance analysis; and

d) any other reports which are required by this licence or by the regulation.

PART C – OPERATING CONDITIONS

Water Use and Deposit of Waste

18. The Licensee is hereby authorized to:

a) obtain water, at a total rate not to exceed 2,824 m^3 per day, from the following sources and at the rates specified for each source:

i. a maximum of 2,724 m^3 per day, from Laura Creek, a tributary of the South Klondike River; and

ii. a maximum of 50 m^3 per day from groundwater well BC-23; and

iii. a maximum of 50 m^3 per day from Lucky Creek, a tributary of Golden Creek, which flows into the South Klondike River; and

iv. a maximum of 50 m^3 per day from Pacific Creek, a tributary of Lee Creek; and

v. a maximum of 50 m^3 per day, for emergency purposes, from Lee Creek, a tributary of the South Klondike River; and

vi. a maximum of 50 m^3 per day for emergency purposes, from the North Fork of the Klondike River, a tributary of the South Klondike River.

b) use this water for a quartz mining undertaking and camp use; and

c) deposit a Waste into a land application treatment area as proposed in *Effluent Treatment and Land Application Water Licence Submission*, March 2001, which was submitted as a component of water use application QZ01-050 (exhibit 1.2); and

d) to deposit a waste through the land application area into Laura Creek; and

e) to deposit a waste into Laura Creek, Lucky Creek, and Pacific Creek, at a rate that will not exceed a combined total of 100,000 m^3 in the year 2004 and a combined total of 25,000 m^3 per year thereafter;

as described in the Application and subject to the conditions of this licence. Where there is a discrepancy between the Application and this licence, the conditions of this licence shall prevail.

19. Water obtained from groundwater well BC-23 shall not be used for human consumption.

PART D – SECURITY

20. The Licensee shall provide security consistent with the obligations and amount set out in the *Reclamation Security Release Agreement* between Yukon Government and Alexco Resource Corp.

21. The form of any security that is required shall by this licence shall be in accordance with the requirements of Section 11(3) of the Regulation.

PART E – DESIGN, CONSTRUCTION AND MODIFICATION

Waste Rock Dumps

22. The Licensee shall complete a *Waste Rock Management Plan* and submit this plan to the Board prior to the completion of the first year of operations. The plan shall address, at a minimum, waste dump scheduling, a testing program pertaining to the potential for acid rock drainage and a sediment control and treatment program for any waste rock dump runoff or seepage which could discharge to water.

23. Waste dumps shall be constructed in thaw-stable conditions only and the Licensee shall ensure that thaw-unstable material is removed and that foundation material of all external waste dumps is stripped of vegetation material and top soil.

Overflow Pond

24. The design of the second overflow pond must accommodate a consideration of the volume which would be required to contain a complete drain down of the fully developed heap and the run-off from a one hundred year snowmelt.

Heap Leach Liner

26. a) Except as otherwise required by the terms of this licence, the Licensee shall construct and operate the heap leach pad and supporting facilities as outlined in the following documents:
    i) *Design Criteria Report*; and
    ii) *Technical Specifications;* and
    iii) *Construction Quality Assurance Manual;* and
    iv) *Design Modification Manual.*

    b) For greater certainty:

    The documents referenced in clause 26 a) i) ii) were components of documents entitled *Brewery Creek Project, Update to Water Licence Application QZ94-003, Supporting Documentation, Appendices Volume IV of IV.*

    The document referenced in clause 26 a) iii) was a component of documents entitled *Brewery Creek Project, Update to Water Licence Application QZ94-003, Supporting Documentation, Appendices Volume IV of IV.* However, where that document is revised to comply with an amendment of licence, then the revised *Construction Quality Assurance Manual* shall prevail.

The document referenced in clause 26 a) iv) is a document titled *Revised Design Modification Report for the Brewery Creek Mine Leach Pad Liner, Report L55.7*, dated April 15, 1999, which was submitted as exhibit 1.4 of water use application QZ98-038.

c) The Licensee shall comply with all of the provisions, recommendations, and all assumptions pertaining to operational procedures, that are included in the *Revised Design Modification Report for the Brewery Creek Mine Leach Pad Liner, Report L55.7*, dated April 15, 1999.

d) The height of the heap shall not exceed thirty (30) metres.

e) The Licensee shall, by August 30, 1999, submit to the Board a schedule of studies to examine the effectiveness of the geosynthetic clay liner, with particular attention to the long term effectiveness. The Licensee shall undertake and complete those studies in accordance with the schedule provided and shall submit the results of those studies to the Board in accordance with that schedule.

f) The Licensee shall, by August 30, 1999, submit to the Board an updated *Construction Quality Assurance Manual* that will incorporate the provisions, recommendations, and all assumptions pertaining to operational procedures, that are included in the *Revised Design Modification Report for the Brewery Creek Mine Leach Pad Liner, Report L55.7*, dated April 15, 1999.

g) The minimum thickness of the ore cushion layer overlying the liner shall not be less than 500mm.

h) Ore cushion material shall be equal to or better than R3 classification rock (a knife cannot be used to scrape or peel the surface and shallow indentations only can be made with a firm blow of a pick). Argillite, graphitic shale or slate are not acceptable. Ore cushion material shall conform to the following gradation:

Sieve Size	Percent Passing by Weight
25 mm (1 inch)	100
9.5 mm (3/8 inch)	20-80
4.75 mm (#4)	0-45
2 mm (#10)	0-5

i) The thickness of the initial lift of ore placed on the heap shall not exceed four meters.

j) All ore shall be placed in a progressively uphill direction until a minimum thickness of 10 metres of ore has been placed.

27. The Licensee shall provide as-constructed plans and drawings of all structures within 90 days of completion of each phase of construction, sealed by a Professional Engineer licensed to practice in Yukon.

28. Construction of all facilities described in the *Design Criteria Report* shall be accomplished using sound engineering practices, supervised by a technically qualified person and inspected by a Professional Engineer.

Water Withdrawal Sumps

29. Water withdrawal sumps shall be constructed in accordance with the proposals put forward in application QZ96-007. Where local geology and topography permits, all sumps shall be of the side-channel type depicted in Appendix C of this licence.

30. Where local geology/ topography do not permit the use of side-channel pumps, then the Licensee shall notify the Board prior to construction of any instream sumps. The notification shall include a rationale to support the conclusions that a side channel sump is not practical.

31. All water intakes shall be screened so as to prevent the passage of fish into any water intake.

PART F – SOLUTION MANAGEMENT

32. Except as may otherwise be required by this licence, the Licensee shall comply with the plan put forward as the *Solution Management Plan* which was submitted as exhibit 1g) of water use application QZ94-003.

33. The Licensee shall submit an updated Solution Management Plan to the Board no later than December 31, 1998. The updated plan will include an updated water balance which takes into account the operating experience and climatological data which will have been collected to that time.

34. The Licensee shall maintain a monitoring summary log for all Solution Management Plan monitoring components, as proposed in the Solution Management Plan. This log, or a copy of the log, shall be kept at the mine site in a location where it is accessible to an inspector.

Leak Detection Action Levels

35. Except as otherwise required by this Licence, the Licensee shall comply with monitoring frequencies and operational actions which were proposed in Tables 14.2.1 and 14.2.2 of the Solution Management Plan, which was submitted as exhibit 1g) of water use application QZ94-003.

36. In the event that licence limitations are exceeded, the Licensee shall conduct a site specific evaluation to determine the need for any additional process components or site monitoring and shall immediately compile a report of the evaluation and submit the report to the Board.

Treat and Release of Heap Leach Process Effluent

37. The Licensee shall ensure that there is no discharge of effluent until such time as a water treatment plant has been constructed and is fully operational.

38. The Licensee shall submit detailed design specifications which demonstrate a workable water treatment plan to the Board and shall not begin construction until these design

specifications have been submitted. The Licensee shall submit as-constructed drawings to the Board within 90 days of completion of construction.

39. a) The Licensee shall ensure that there is no discharge of effluent from the heap leach process until at least 14 days notice has first been provide, in writing, to the Board. The notice shall clearly substantiate that treatment and release is required because design capacities of facilities are likely to be exceeded.

b) At least 14 days prior to any release of effluent from the heap leach process, the Licensee shall post public notice at various locations in the vicinity of the mine site, including, but not limited to:

i) at least one office of each of the Federal, Territorial, First Nations and Municipal governments which are located in or near the municipality of the City of Dawson; and

ii) a visible location on the Klondike Ditch Road at Laura Creek, in the general location of the area where the creek enters and exits the Klondike Ditch; and

iii) at least one office of the Licensee which is located a the mine site and one office of the Licensee which is located in or near the municipality of the City of Dawson.

40. Release of effluent from the heap leach process shall not exceed 200,000 m^3/year and the rate of effluent release shall not exceed the daily flow rate in Laura Creek immediately above Carolyn Creek.

41. Within 7 days of the cessation of a treat and release event, the Licensee shall submit a written report to the Board which itemizes the total quantity of water released as well as the daily rate of release and the duration of the treat and release period.

PART G – EFFLUENT QUALITY STANDARDS

42. Effluent discharged from the water treatment plant, or from monitoring station BC-28 to the land application area, both during operation and at the final decommissioning, shall meet the following standards :

Parameter	Maximum Concentration
Weak Acid Dissociable Cyanide	0.25 mg/L
Total Cyanide	2.0 mg/L
Ammonia (as N)	15.0 mg/L
Copper	0.5 mg/L
Arsenic	0.5 mg/L
Antimony	1.0 mg/L
Mercury	0.005 mg/L
Zinc	0.5 mg/L
Selenium	0.75 mg/L
Lead	0.2 mg/L

Aluminum	1.0 mg/L
Bismuth	0.5 mg/L
Cadmium	0.1 mg/L
Chromium	0.5 mg/L
Iron	1.0 mg/L
Manganese	2.0 mg/L
Molybdenum	0.5 mg/L
Nickel	0.8 mg/L
Silver	0.1 mg/L

43. Groundwater, at monitoring stations BC-65 and BC-66 and any lysimeter at a depth of 5.0 metres or greater, that has passed through the land application area, both during operation and at final decommissioning shall meet the following standards:

Parameter	Maximum Concentration
Weak Acid Dissociable Cyanide	0.125 mg/L
Total Cyanide	1.0 mg/L
Ammonia (as N)	7.5 mg/L
Copper	0.1 mg/L
Arsenic	0.25 mg/L
Antimony	0.5 mg/L
Mercury	0.0025 mg/L
Zinc	0.25 mg/L
Selenium	0.3 mg/L
Lead	0.1 mg/L
Aluminum	3.0 mg/L
Bismuth	0.25 mg/L
Cadmium	0.05 mg/L
Chromium	0.25 mg/L
Iron	5.0 mg/L
Manganese	6.0 mg/L
Molybdenum	0.25 mg/L
Nickel	0.25 mg/L
Silver	0.05 mg/L

44. Effluent discharged from BC-28 directly to Laura Creek, Lucky Creek and Pacific Creek, and the effluent discharged from BC-28b, both during operation and final decommissioning, shall meet the following effluent quality standards:

Parameter	Maximum Concentration
Weak Acid Dissociable Cyanide	0.25 mg/L
Total Cyanide	2.0 mg/L
Ammonia (as N)	5.0 mg/L
Copper	0.2 mg/L
Arsenic	0.5 mg/L
Antimony	1.0 mg/L

Mercury	0.005 mg/L
Zinc	0.5 mg/L
Selenium	0.25 mg/L
Lead	0.2 mg/L
Aluminum	1.0 mg/L
Bismuth	0.5 mg/L
Cadmium	0.1 mg/L
Chromium	0.5 mg/L
Iron	1.0 mg/L
Manganese	2.0 mg/L
Molybdenum	0.5 mg/L
Nickel	0.5 mg/L
Silver	0.1 mg/L
pH	6.0 to 9.5 pH units
Suspended Solids	50 mg/L

45. The maximum concentration of selenium shall not exceed 3.8µg/L (0.0038 mg/L) at monitoring station BC-39.

46. Water quality at monitoring stations BC-31, BC-34 and BC-39 shall not exceed the water quality guidelines specified for the protection of aquatic life contained in the *Canadian Environmental Quality Guidelines* prepared by the Canadian Council of Ministers of Environment, as amended from time to time.

47. Detoxification of the heap shall be deemed to have occurred when the concentration of Total Cyanide measured at monitoring station BC-28a in accordance with Schedules A and B is equal to or lower than 2.0 mg/L for five continuous years of monitoring.

48. Any effluent which is discharged from the project must meet the non-toxicity requirement defined by a 96 hour LC_{50} bioassay of 100% using rainbow trout.

PART H – MONITORING PROGRAMS AND STUDIES

49. The Licensee shall comply with the following monitoring programs and studies and, unless otherwise specified, shall submit the data which is compiled as a result of the programs and studies as a component of the annual report. Sampling stations for all monitoring programs shall be as described in Schedule A of this licence. Monitoring and sampling shall be carried out in accordance with the procedures and standards described in:

    a) *Guidance Document for the Sampling and Analysis of Metal Mining Effluents*, April 2001, (Report: EPS 2/MM/5), Minerals and Metals Division, Environment Canada; and

    b) *Guidance Document for Flow Measurement of Metal Mining Effluents*, April 2001, (Report: EPS 2/MM/4), Minerals and Metal Division, Environment Canada; and

c) *Standard Guide for Sampling Ground –Water Monitoring Wells*, ASTM D4448-01, ASTM International, PA, USA.

Water Quality Monitoring

50. The Licensee shall establish a water quality monitoring station, BC-70, to monitor the test cover lysimeter effluent. The Licensee shall submit to the Board the UTM coordinates and description of this newly established monitoring station when submitting the first monitoring results for this station.

51. The Licensee shall comply with the water quality monitoring program which is described in Schedule B of this Licence. Monitoring reports shall be submitted to the Board within 30 days of the conclusion of the month in which the monitoring takes place. Metals are to be analyzed for total metals, except groundwater wells, which are to be analyzed for dissolved metals.

Physical Structures Monitoring

52. The Licensee shall ensure that earth works are inspected by a Professional Engineer licensed to practice in Yukon in accordance with *Blue Zone Monitoring and Assessment Program* and *Heap Leach Pad Cover and Facilities Monitoring Program*. Specifically:

a) geotechnical inspections of the Blue WRSA and Pit, and the heap and containment dike shall occur annually in years 2005 through 2009, in years 2014 and 2019; and

b) inspections of the test cover lysimeter and heap cover shall occur annually in years 2005 through 2009 , and biannually in years 2010 through 2014.

A report on the inspection, prepared by a Professional Engineer licensed to practice in Yukon, shall be submitted as part of the annual report.

Leakage Detection and Recovery System

53. Data collected as a result of the leakage detection and recovery system monitoring plan which is described in the Solution Management Plan shall be submitted monthly and summarized in the annual report.

Climatic Monitoring

54. Data collected as a result of the *Climatic Monitoring Plan* which is described in the *Solution Management Plan* shall be submitted monthly and summarized in the annual report.

Benthic Monitoring Program

55. a) Except as otherwise noted in this section of the licence, the Licensee shall repeat the benthic monitoring program, which was undertaken in July 1991 and which was described in exhibit 1d) to water use application QZ94-003 (*Volume II – Environmental Baseline*, page 6-27).

b) The Licensee shall conduct a benthic monitoring program every two years during the period of July/August. Three such monitoring events shall be carried out subsequent to the issuance of amendment 7.

c) Benthic invertebrate sampling shall be collected in the following fashion:

i) Three replicate samples shall be taken by a circular Hess sampler (0.0934 m^2) or Waters and Knapp (0.089m^2) equipped with 250 µm mesh net.

ii) Samples shall be preserved with 10% formalin solution, and identified to the lowest possible taxon (usually genus) and counted.

iii) Collection information shall contain the following: velocity, depth, temperature, substrate conditions, and riparian conditions.

iv) Benthic invertebrate sampling shall be conducted at the same time as water quality and sediment monitoring sampling.

d) The benthic invertebrates sampling locations shall be at the following monitoring stations, which are described in Schedule A of this licence: B1, B2, B3, B4, B5, B6, and B7.

e) Data which will be analyzed using various indices, including density, and compared with baseline information for interpretation.

Sediment Monitoring Program

56. a) The Licensee shall conduct a sediment monitoring program on an annual basis during summer low flow, which is generally July/ August. The program shall be carried out up to and including the year 2009.

b) The sediment shall be collected as follows:

i) Sediment samples shall be collected in replicated of three from within the active channel, directly into high density plastic sample jars, using an aluminum or Teflon scoop.

ii) The samples shall be dried and screened, using sieves at ASTM mesh numbers 10, 20, 40, 60, 100, 140, and 270 (ASTM –E11-61) and the fraction weights shall be recorded.

iii) A sub-sample composed of material passing through the 100 mesh number sieve shall be analyzed for metals by a 33 element ICP scan. Loss on ignition (LOI) shall also be determined by heating the sample to 600°C.

c) The sediment sampling locations shall be at the following monitoring stations, which are described in the *Surveillance Network Program* of this Licence: W2, W3, W4B, W5, W5A, W6A, W7, W8, W9, W13, W14, W15, and W16.

d) Data analysis shall include an evaluation of the information against baseline information.

Air Quality Monitoring Program

57. The Licensee shall ensure that atmospheric emissions for mercury are monitored at least once, and then weekly, during each operation of the retort and refinery furnace.

Hydrology of Laura Creek at confluence with Klondike River

58. The Licensee shall, by December 31, 1998, submit to the Board a report pertaining to an investigation which the Licensee shall conduct to identify seasonal surface and subsurface flow path(s) of Laura Creek between the Ditch Road and the Klondike River. The report shall include:

    a) a description of the methods of investigation used; and

    b) an assessment of the potential for Laura Creek to re-establish itself as a surface drainage into the Klondike River and the likely location(s) for any surface discharge; and

    c) any evidence which suggests where and how Laura Creek currently enters the Klondike River; and

    d) a characterization of the terrestrial and aquatic habitat between the Ditch Road and any points of discharge into Klondike River; and

    e) a proposal of the most effective means to monitor the water quality of any discharge from Laura Creek into the Klondike River; and

    f) an impact assessment which takes into account the findings of this investigation and the findings of investigations during the treat and release program.

Effects on Wildlife

59. If there is solution in the process and/or overflow ponds, then the Licensee shall monitor the pond containing any solution. The monitoring shall be accomplished by visual inspection, on a daily basis, for possible bird or mammal mortality. The Licensee shall submit a summary of this monitoring with the monthly reports.

PART I –RECLAMATION, DECOMMISSIONING, ABANDONMENT

60. The Licensee shall, by December 31, 1997, submit to the Board a detailed plan for any temporary closure and shall implement this plan should any temporary closure occur.

61. The Licensee shall implement the *Decommissioning and Reclamation Plan* upon permanent closure.

62. Any temporary closure for a period which exceeds two (2) years shall, for the purposes of this licence, be considered permanent closure.

63. Revegetation shall be carried out in accordance with Schedule C, Part D of Quartz Mining Licence A99-001, amendment 04-001.

64. The Licensee shall report on any reclamation activities as a component of the annual report.

65. Water withdrawal sumps shall be decommissioned in such a manner so that stream channels are returned to their natural state.

PART J –LAND APPLICATION SYSTEM

66. The volume of effluent discharged to the land application area shall not exceed 200,000 cubic metres per year and a total of 400,000 cubic metres during the term of the licence.

67. No discharge of effluent to the land application area shall occur during precipitation that results in, or has the potential to result in, surface flow, or when there is ice build-up.

68. Two groundwater monitoring wells, designated BC-65 and BC-66, shall be installed to monitor groundwater flow from the land application area. The wells shall be generally located adjacent to the land application area and within 100 metres of it. The Licensee shall submit as-constructed details of the monitoring wells to the Board within 60 days of their installation.

69. Suction lysimeters shall be installed and monitored as described in exhibit 6.1.5 of Application QZ01-050. The Licensee shall submit as-constructed details of the lysimeters to the Board within 60 days of their installation.

70. If a sample collected from a lysimeter at a depth of 5 m or less shows a concentration of a parameter that is in excess of the maximum permissible concentration for that parameter established in the effluent quality standards for stations BC-65 and BC-66, then the Licensee shall immediately prepare and submit to the Board an action plan that addresses the problem. The plan shall be submitted to the Board within 60 days of the identification of the exceedance. A detailed report documenting actions taken on the basis of the plan shall be submitted to the Board within 30 days of their execution.

71. Soil and plant tissues from location BC-60 shall be sampled and tested as described in exhibit 6.1.5 of Application QZ01-050. In addition, soil samples shall be collected and tested annually from location BC-60 during the land application of effluent. A minimum of four sets of plant tissue samples shall be collected and tested from location BC-60 within one year after completion of the land application of effluent.

72. Soil quality parameter concentrations measured at location BC-60 shall, at a minimum, meet the allowable soil quality criteria for Residential/Parkland use established by the *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (CCME, 1999), unless the Licensee has completed and submitted to the Board a site specific Ecological Risk Assessment carried out in conformity with the requirements contained in *A Framework for Ecological Risk Assessment* (CCME, 1996), in which case the soil quality parameter concentrations shall, at a minimum, meet the allowable soil quality criteria established by the ecological risk assessment.

73. If a soil quality parameter concentration measured at location BC-60 exceeds the allowable soil quality criteria for either Residential/Parkland use as established by the *Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health* (CCME, 1999) or the ecological risk assessment, as applicable, the Licensee shall immediately prepare and submit to the Board an action plan that addresses the problem. The plan shall be submitted to the Board within 60 days of the identification of the exceedance. A detailed report documenting actions taken on the basis of the plan shall be submitted to the Board within 30 days of their execution.

74. If the Licensee undertakes an ecological risk assessment for soil quality at location BC-60, it shall be completed and submitted to the Board prior to the commencement of the land application of effluent. The Licensee shall also submit documentation with the ecological risk assessment confirming that its development was carried out in consultation with the Department of Indian Affairs and Northern Development.

75. An *Operation, Monitoring and Surveillance Manual* for the land application system shall be submitted to the Board within 90 days of the effective date of amendment 4 of this licence. The Manual shall contain, but not be limited to:

    a) requirements and formats for daily operator reports;
    b) schedules and checklists for inspections and monitoring;
    c) action plans for addressing operational problems;
    d) recording and reporting of discharge rates and total discharge quantities;
    e) protocols for managing effluent distribution within the land application area; and
    f) action plans for ensuring discontinuation of discharge during precipitation events.

76. *A Sludge Management Plan* shall be submitted to the Board no less than 3 months after the commencement of effluent discharge to the land application area. The Plan shall address the chemical stability of the sludge, disposal options identified and assessed in the context of the characteristics of the site, and the type and location of the selected disposal option.

77. A fish tissue sampling and testing program shall be undertaken by the Licensee at the confluence of Laura Creek and the South Klondike River to monitor the bioaccumulation of contaminants from the land application area. The results of the monitoring shall be submitted to the Board as part of each annual report.

PART K – ADDITIONAL PLANS AND STUDIES

Adaptive Management Plan

78. No later than April 30, 2004, the Licensee shall submit an *Adaptive Management Plan* that details those actions the Licensee proposes to undertake to ensure that site-specific maximum allowable selenium concentration of 3.8µg/L (0.0038 mg/L) is not to be exceeded at station BC-39. At a minimum, the plan shall address:

    a) baseline and current water quality data for Lower Laura Creek and the wetland area at the confluence of Laura Creek and the South Klondike River; and

b) methodology and modeling results for determining the potential impact to Lower Laura Creek and the South Klondike River resulting from effluent releases; and

c) proposed actions to be taken and triggers for those actions should monitoring or modeling indicate that selenium concentrations at station BC-39 might exceed the site-specific maximum allowable concentration.

Impact Study, Lower Laura Creek:

79. Every three years, the Licensee shall submit a study report describing and detailing impacts to Lower Laura Creek and the side channel to the South Klondike River at the confluence of Laura Creek and the South Klondike River resulting from the release of effluent from the project. The first report shall be submitted by April 1, 2007. No later than December 31, 2004, the Licensee shall submit a plan for the study. The plan shall include, but not be limited to a description of the study methodology, the sampling protocols and the report outline. All data collected as part of the study shall be submitted as part of the monthly reports.

Blue Pit and Blue Waste Rock Storage Area Monitoring Program

80. A detailed program to monitor and report on the geochemical stability of the Blue Pit and the Blue Waste Rock Storage Area shall be submitted to the Board no later than 60 days after the signing of amendment 7 of this licence. The program shall be implemented according to the schedule identified in the program.

81. The Blue Pit and Blue Waste Storage Area monitoring program shall evaluate the effectiveness of the remediation measures implemented by the Licensee to decommission and abandon the Blue Pit and the Blue Waste Rock Storage Area. Without limiting the generality of the foregoing, the program shall assess:

a) the performance of the engineered cover on the Blue Waste Rock Storage Area, including its physical stability and the infiltration rate of water; and

b) the geochemical status of the Blue Pit and the Blue Waste Rock Storage Area; and

c) the stability of metals within the Blue Pit and the Blue Waste Rock Storage Area, including salt and metal uptake;

d) the vegetation cover of the Blue Pit and the Blue Waste Rock Storage Area, including salt and metal uptake;

e) moisture content of the Blue Waste Rock Storage Area; and

f) the environmental quality of the groundwater and the water in Laura Creek.

82. Any revisions to the Blue Pit and the Blue Waste Storage Area monitoring program shall be submitted to the Board within 30 days of the revision.

83. All reports generated as a result of the Blue Pit and Blue Waste Rock Storage Area monitoring program shall be submitted to the Board within 30 days of their completion.

84. The Licensee shall provide the Board with copies of any approvals of the Blue Pit and Blue Waste Rock Storage Area monitoring program that may be issued pursuant to the Quartz Mining Act, including any approvals of revisions to the program.

SCHEDULE A
MONITORING STATIONS

Station	Description	UTM Coordinates (Zone 7)	
		Northing (m)	Easting(m)
BC-01, H5, W5, B3	Laura Creek, 50m upstream from Ditch Road	7,099,630	634,420
BC-02, H15, W15	Carolyn Creek, upstream from Laura Creek	7,101,970	633,250
BC-03, 2, W4B	Laura Creek above Carolyn Creek	7,102,570	632,345
BC-04, H13, W13, B7	Lucky Creek, downstream from Lucky Pit	7,107,640	639,180
BC-05	Pacific Creek, upstream from confluence with Lee Creek	7,103,130	627,610
BC-06, K1, W9, B5	South Klondike downstream from confluence with Lee Creek	7,097,460	627,400
BC-10	Kokanee Pit and Dump	7,105,760	635,620
BC-11	Blue Waste Dump	7,105,050	633,740
BC-12	Blue Pit	7,105,420	634,090
BC-15	Moosehead Pit discharge	7,106,430	634,420
BC-16	Pacific Gulch – 300m above Laura	7,105,140	633,350
BC-17	Golden Pit and Dump	7,106,510	637,560
BC-18S	Lucky Pit and Dump –South End	7,107,220	638,160
BC-18N	Lucky Pit and Dump –North End	7,107,410	638,160
BC-19	Piezometer RC94-843	7,103,750	632,290
BC-21	Piezometer RC95-1354	7,105,070	632,740
BC-22	Piezometer RC95-1357	7,104,000	632,066
BC-27	Piezometer RC97-2026	7,106,550	637,380
BC-28	Far (South) End of Overflow Pond	7,103,899	632,578
BC-28a	Discharge from Heap	7,104,144	632,369
BC-28b	Far (South) End of Biological Treatment Cell	7,104,033	632,424
BC-39	Laura Creek 50m upstream of the South Klondike River	7,098,230	631,340
BC-51W	Pacific Pit –west side	7,105,240	633,130
BC-53	Laura Creek Wetland 100m downstream of Ditch Road	7,099,729	633,750
BC-65	Land Application Piezometer	7,102,140	633,990
BC-66	Land Application Piezometer	7,100,660	634,710
BC-67	Blue WRSA Piezometer	7,105,280	633,710
BC-68	Blue WRSA Piezometer	7,105,310	633,920
BC-69	Blue WRSA Piezometer	7,105,150	633,820
BC-70	Blue WRSA Test Cover Lysimeter		
H2, W2, B2, BC-31	Golden Creek above confluence with S. Klondike	7,104,030	642,340
H3, W3, BC-32	Laura Creek below Exploration Camp	7,105,100	634,170
H6, W6A, B6, BC-33	Lee Creek above Pacific Creek	7,103,240	627,420
H7, W7, B1, BC-34	Lee Creek at Ditch Road	7,100,380	627,710
He, W14, BC-35	Pacific Creek below heap leach pad	7,106,010	630,650
H16, W16, BC-36	Golden Creek above confluence with Lucky Creek	7,109,860	640,500
H17, W5A, BC-37	Laura Creek at Ditch Road	7,099,700	633,960
K4, W8, B4, BC-38	S. Klondike upstream from confluence with Golden Creek	7,102,670	642,250

SCHEDULE B-1
MONITORING SCHEDULE (2005 to 2009)

	MONITORING STATION																																							
Parameter	BC 1	BC 2	BC 3	BC 4	BC 5	BC 6	BC 7	BC 8	BC 9	BC 10	BC 11	BC 12	BC 13	BC 14	BC 15	BC 16	BC 17	BC 18	BC 19	BC 20	BC 21	BC 22	BC 23	BC 24	BC 25	BC 26	BC 27	BC 28	BC 28a	BC 31	BC 34	BC 39	BC 51W	BC 65	BC 66	BC 67	BC 68	BC 69
Flow	M/Q	M/Q	C	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	C		Q	Q	Q	Q	(2)	(2)	(2)	(2)	(2)
pH (field)	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	MWA	MWA	Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
pH (laboratory)	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
Conductivity (field)	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	MWA	MWA	Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
Conductivity (lab)	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
Temperature (field)	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q												Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
Hardness	M/Q	M/Q	M/Q	Q	Q	Q																																	
Alkalinity	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
Dissolved Solids	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q			Q	Q	Q
Suspended Solids	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q										MWA	MWA	Q	Q	Q	Q	MA/Q	MA/Q			
Chloride	M/Q	M/Q	M/Q	Q	Q	Q													Q	Q	Q	Q	Q	Q	Q	Q	Q									Q	Q	Q
Sulphate	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
Ammonia	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	MWA	MWA	Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
Nitrate	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q			Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
Total cyanide	M/Q	M/Q				Q													Q	Q	Q	Q	Q	Q	Q	Q	Q	MWA	MWA					MA/Q	MA/Q	Q	Q	Q
WAD cyanide	M/Q	M/Q				Q													Q	Q	Q	Q	Q	Q	Q	Q	Q	MWA	MWA					MA/Q	MA/Q	Q	Q	Q
ICP metals	M/Q	M/Q	M/Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	Q	MWA	MWA	Q	Q	Q	Q	MA/Q	MA/Q	Q	Q	Q
Bio-assay																												MWA	MWA									

- ICP metals to include: Ca, Mg, Ba, K, Cu, As, Sb, Hg, Zn, Se, Pb, Al, Bi, Cd, Cr, Fe, Mn, Mo, Ni, Ag and S
- BC-18 includes BC-18S and BC-18N
- (2) denotes static water elevation

LEGEND

Q = Quarterly
MQ = Monthly in Years 2005, 2006, 2007 and Quarterly in Years 2008 and 2009
C = Continuous
MWA = Monthly when active
MA/Q = Monthly when active and quarterly when not active

SCHEDULE B-2
MONITORING SCHEDULE (2010 to 2014)

	MONITORING STATION																														
Parameter	BC 1	BC 2	BC 3	BC 4	BC 5	BC 6	BC 10	BC 11	BC 12	BC 15	BC 16	BC 17	BC 18	BC 19	BC 21	BC 22	BC 27	BC 28	BC 28a	BC 28b	BC 31	BC 34	BC 39	BC 51W	BC 53	BC 65	BC 66	BC 67	BC 68	BC 69	BC 70
Flow[1]	SA	SA	SA	SA	SA		SA	SA	SA	SA	SA	SA	SA	(2)	(2)	(2)	(2)		SA		SA	SA	SA	SA	SA	SA	(2)	(2)	(2)	(2)	
pH (field)	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
pH (laboratory)	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA				SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
Conductivity (field)	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
Conductivity (lab)	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA				SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
Temperature (field)	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA								SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
Hardness	SA	SA	SA	SA	SA																				SA						SA
Alkalinity	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA				SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
Dissolved Solids	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA				SA	SA	SA	SA	SA			A	A	A	SA
Suspended Solids	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA					SA	SA	SA	SA	SA	SA	SA	SA	MA/SA	MA/SA				
Chloride	SA	SA	SA	SA	SA	SA								SA	SA	SA	SA								SA			A	A	A	
Sulphate	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA				SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
Ammonia	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
Nitrate	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA				SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
Total cyanide	SA	SA				SA								SA	SA	SA	SA	SA	SA	SA					SA	MA/SA	MA/SA	A	A	A	
WAD cyanide	SA	SA				SA								SA	SA	SA	SA	SA	SA	SA					SA	MA/SA	MA/SA	A	A	A	
ICP metals	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	SA	MA/SA	MA/SA	A	A	A	SA
Bio-assay																		SA	SA	SA											

- ICP metals to include: Ca, Mg, Ba, K, Cu, As, Sb, Hg, Zn, Se, Pb, Al, Bi, Cd, Cr, Fe, Mn, Mo, Ni, Ag and S
- BC-18 includes BC-18S and BC-18N
- (2) denotes static water elevation

LEGEND

A = Annually
SA = Semi-Annually
MA/SA = Monthly when active and semi-annually when not actively discharging
[1] = Flows collected at all sites when it is safe and practical to do so

SCHEDULE B-3
MONITORING SCHEDULE (2015 to expiry)

	MONITORING STATION																															
Parameter	BC 1	BC 2	BC 3	BC 4	BC 5	BC 6	BC 10	BC 11	BC 12	BC 15	BC 16	BC 17	BC 18	BC 19	BC 21	BC 22	BC 27	BC 28	BC 28a	BC 28b	BC 31	BC 34	BC 39	BC 51W	BC 53	BC 65	BC 66	BC 67	BC 68	BC 69	BC 70
Flow[1]	A	A	A	A	A		A	A	A	A	A	A	A	(2)	(2)	(2)	(2)		SA		A	A	A	A	A	(2)	(2)	(2)	(2)	(2)	
pH (field)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	SA	SA	SA	A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
pH (laboratory)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
Conductivity (field)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	SA	SA	SA	A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
Conductivity (lab)	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
Temperature (field)	A	A	A	A	A	A	A	A	A	A	A	A	A								A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
Hardness	A	A	A	A	A	A																			A						A
Alkalinity	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
Dissolved Solids	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				A	A	A	A	A			A	A	A	A
Suspended Solids	A	A	A	A	A	A	A	A	A	A	A	A	A					SA	SA	SA	A	A	A	A	A	MA/SA	MA/SA				
Chloride	A	A	A	A	A	A								A	A	A	A				A	A	A	A	A			A	A	A	
Sulphate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
Ammonia	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	SA	SA	SA	A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
Nitrate	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A				A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
Total cyanide	A	A				A								A	A	A	A	SA	SA	SA	A	A	A	A	A	MA/SA	MA/SA	A	A	A	
WAD cyanide	A	A				A								A	A	A	A	SA	SA	SA	A	A	A	A	A	MA/SA	MA/SA	A	A	A	
ICP metals	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	SA	SA	SA	A	A	A	A	A	MA/SA	MA/SA	A	A	A	A
Bio-assay																		SA	SA	SA											

- ICP metals to include: Ca, Mg, Ba, K, Cu, As, Sb, Hg, Zn, Se, Pb, Al, Bi, Cd, Cr, Fe, Mn, Mo, Ni, Ag and S
- BC-18 includes BC-18S and BC-18N
- (2) denotes static water elevation

LEGEND

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Photo 1. BC-28a

Pregnant pond sampling station. Valve is opened and allowed to flush for approximately five minutes prior to sample collection. Small amount of water (<1 L/s) flowing from beneath pipe outlet.

Photo 2. BC-28b

Barren pond sampling station. Looking northwest towards pregnant pond.

Photo 3. BC-28

Overflow pond sampling station. Looking northwest towards barren pond.

Photo 4. BC-2

Carolyn Creek sampling station. Entire flow captured in natural cascade before disappearing to ground.

Photo 5. BC-3

Laura Creek sampling station. Looking downstream from former hydrometric station.

Photo 6. DG-Seep

Ponded water present west of heap leach facility opportunistically sampled.

Photo 7. CC-US/C15

Upstream Carolyn Creek sampling location, detectible flow consolidated to single channel.

Photo 8.CC-Seep

Seep discharge consolidating into single channel, visible flow present where stirred sediment moves with minor current, estimated <1 L/s.

Photo 9. CC-Seep

Flow emerging from soft mossy ground on eastern valley slope.

Photo 10. CC-Seep

Overview of furthest upstream extent of seep channel. Pooled water emerging from ground and accumulating.

Photo 11. CC-Seep

Surface water accumulating into visible flow travelling towards Carolyn Creek channel.

Photo 12. BC-66-2

Photo 13. BC-65 (Old)

Photo 14. BC-65 (New)

Photo 15. BC-21

Photo 16. BC-19

Photo 17. BC-22

Photo 18. C2

Main Carolyn Creek channel, entirety of flow emerging from ground.

Photo 19. C4

Stagnant pool above visible confines of Carolyn Creek channel.

Photo 20. C6

Channel disappears entirely to ground. Small whirlpool present.

Photo 21. C8

Main channel, all detectable flow confined to this reach.

Photo 22. CC-Seep

Overview of emergent groundwater, looking upstream.

Photo 23. C9

Main Carolyn Creek Channel upstream of confluence with seep flow.

Photo 24. C10

Incoming consolidated seep flow upstream of confluence with Carolyn Creek main channel.