# Quinsam Coal
# Annual Water Quality Monitoring Report 2019-2020

**PREPARED BY: QUINSAM COAL CORPORATION**

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## GLOSSARY & ACRONYMS

B.C. British Columbia

CALA Calibration

CCR Coarse Coal Reject

COPC Contaminants of Potential Concern

CSR-AL B.C. Contaminated Sites Regulations for Aquatic Life 2019

DL Detection Limit

DO Dissolved Oxygen

ENV Ministry of Environment and Climate Change Strategy

EMS Environmental Monitoring Station

MEMPR Ministry of Energy, Mines and Petroleum Resources

EPT Ephemeroptera, Plecoptera, and Trichoptera

Ha Hectares

Hp Horsepower

IDZ Initial Dilution Zone

km Kilometer

LLE Long Lake Entry

LLSPTS Long Lake Seep Passive Treatment System

Masl Metres above sea level

MDL Mean Detection Limit

MOE Ministry of Environment and Climate Change Strategy

PAG-CCR Potentially Acid Generating Coarse Coal Reject

PAH Polyromantic Hydrocarbons

PEP Provincial Emergency Program

PNC Permit Non-compliance

QA/QC Quality Assurance/Quality Control

QCC Quinsam Coal Corporation

RPD Relative Percent Difference

TDS Total Dissolved Solids

TSS Total Suspended Solids

VIO Vancouver Island Objective for Phosphorus in Streams

WQG British Columbia Ambient Water Quality Guidelines for Protection of Aquatic Life

WQO Water Quality Objectives for Middle Quinsam Lake Sub-Basin

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## EXECUTIVE SUMMARY

In accordance with Effluent Permit PE-7008 issued under the *Environmental Management Act*, Quinsam Coal Corporation (QCC) operates water management systems designed to mitigate effects of mining activities on the Middle Quinsam Sub-Basin and Iron River watershed(s). This effluent permit provides the framework for the comprehensive monitoring program along with allowable levels of Parameters of Interest (POI) within water released from the permitted management systems. In addition to surface water quality monitoring within management systems, and receiving environments, local groundwater and biological monitoring was conducted at numerous stations for a more comprehensive understanding of effects within the mine footprint.

The main objective of this report is to inform governing bodies and stakeholders on the effectiveness of the management systems and compliance with the effluent permit for the 2019-2020 monitoring year (April 1, 2019 to March 31, 2019) including:

- Description of mine-site operations and their respective environmental management systems
- Report on environmental performance along with compliance with the Effluent Permit PE-7008
- Provide updates on surface, groundwater and receiving environment water including biological integrity
- Provide insight and recommendations for future monitoring and best environmental practices

During the reporting period, the Quinsam Mine operated for 2 months before suspending production due to unprofitable operations caused by low productivities and higher than planned spending. The mine has been in care and maintenance since May 29, 2019 ensuring the health and safety of the employees and environment while continuing to meet regulatory requirements. On July 3, 2019 Quinsam Coal Corporation (QCC) made an assignment into bankruptcy and on September 26th, 2019 The Bowra Group Inc. was officially appointed receiver via Court order.

On November 1$^{st}$, 2019 Permit PE:7008 was amended to reduce the number of monitoring sites and the frequency of monitoring. Appendix X provides the reductions to the monitoring program including rational.

Mine discharges released from permitted locations were within authorized permit limits (PE:7008) for the majority of samples obtained this monitoring period.

One permit limit exceedance was observed for dissolved iron (0.050 mg/L) occurred at Settling Pond #1, EMS # E218582 on December 4th, 2019 resulting in 0.0517 mg/L, 0.017 mg/L above the permit limit. The exceedance was thought to be attributed to a beaver dam obstructing the decant and once the water was released high flow rates and suction around decant caused rapid release of water and turbidity due to the mixing of bottom, iron rich sediment. The pond water level had been extremely low for the summer exposing the bottom sediment in the pond. This would have oxidized any of the iron in the sediment, which may have been released once water levels increased. The flow rate at the pond was measured as 3826 $m^3$/day. Elevated iron occurred

for (1/9) samples collected. Spill report No. DGI: 193640. Appendix VII contains the non-compliance report for 2019 – 2020.

The permissible annual average rate of discharge at Setting Pond #4 (0.08 $m^3/s$) was exceeded by 9% with an annual average discharge rate of 0.09209 $m^3/s$. For 2019-2020 the cumulative discharge was calculated as 2,912,065 $m^3$ lower compared to last year's (3,793,971 $m^3$). Appendix II, Graph 64 displays the cumulative year over year discharges at Settling Pond #4.

Water quality guideline (WQG) exceedances were observed in the Iron river for arsenic (low flow) and aluminum (high flow). The number of exceedances were less than previous years for arsenic at IR6 and IR8 during low flow periods. There were only two results above the WQG of 0.005 mg/L for Arsenic occurring in June and August at IR8.

Water quality within the Quinsam river remained below Provincial guidelines for all receiving environment sites on the Quinsam river. Average annual dissolved sulphate concentrations on the Quinsam river ranged from 1.30 mg/L upstream of the mine influence (WA) to 28.1 mg/L downstream of the mine influence (7SQR) and further downstream after the confluence with Iron river at IRQR results were 17.4 mg/L.

Parameters that were observed to be elevated in Long lake included sulphate and manganese and Lower Quinsam Lake included elevated concentrations of both total and dissolved iron. Slightly acidic water quality was observed mostly in No Name Lake with pH values reported below WQG's of 6.5

Sulphate concentrations at depth in Long Lake have continued to be a focal point for receiving environment water quality as elevated levels have persisted throughout past monitoring. In 2019, average concentrations at 9 metres during spring were elevated above WQG's of 128 mg/, resulting in 132 mg/L (averaged from 4 weeks instead of 5 weeks). The bottom depth ranges from 19 to 20 metres and is sampled at 1 metre above bottom (1mb). Average results for spring (130 mg/L), summer (130 mg/L), and fall (138 mg/L) were elevated above WQG's of 128 mg/L using a background hardness concentration of 30 mg/L. In Middle Quinsam Lake sulphate remained well below average WQG's, with average sulphate declining on surface during summer (1m and 4m depths) to 7.2 mg/L. This was directly related to reduced discharge from Settling Pond #4 from June to September.

Hypolimnetic dissolved oxygen was observed in Long Lake during fall, where total manganese was elevated above guidelines. In Lower Quinsam Lake hypolimnetic D.O. occurred during summer resulting in elevated total and dissolved iron at 1mb.

The Passive Treatment System has been effective at reducing sulphate concentrations from mine pool water pumped to surface; however, it has been difficult to determine whether this system has a positive effect with respect to sulphate concentrations within Long Lake and seep discharge. Pump failure occurred in February 2019, and the treatment system did not operate until May 2020. The system has been successful at reducing sulphate in mine water. The effluent from the system discharges to 2-South pit, and flows (when discharge is occurring from 2-South) to 3-South pit where it is pumped to Settling Pond #1, during fall/winter (high flow) or back to 2S in the summer (low flow). This aids in maintaining a water cover over 2S PAG-CCR and reduces the need to discharge to the receiving environment from Settling Pond #1 during

the dry season. This system ensures all mine related discharge water is released through the authorized works where permit limits are maintained. Average sulphate concentrations ranged from 605 mg/L at 2-South mine pool (INF) to 385 mg/L discharging from the Sulphide Polishing Cell (SPC-EFF) into 2-South pit resulting in a reduction of 220 mg/L. Settling pond # 1 had an annual average sulphate concentration of 254 mg/L, indicating dilution through the system is working to reduce sulphate concentrations to below 300 mg/L as was intended for the Treatment system.

Groundwater monitoring provides an understanding of cumulative mine related effluence on groundwater. Parameters of interest are compared to source terms derived for mine water within the mine footprint (in-situ) and B.C. Contaminated Sites Regulations for Aquatic Life (CSR-AL) are used to compare groundwater quality outside of the mine footprint (ex-situ). Arsenic iron, manganese, sulphate and sulphide are key parameters to monitor as they directly related to coal mining operations at Quinsam Coal. Currently, no inputs are known to have significant detrimental effects on receiving environments, but future monitoring will be an effective tool to identify and determine changes in the groundwater and observe long term trends.

# 1.0 INTRODUCTION

The Quinsam Mine is located in the Quinsam River Watershed, approximately 28 kilometers (km) by road southwest of Campbell River. The land reserved by the Quinsam mining operation consists of approximately 283 hectares (ha) was owned and operated by Quinsam Coal Corporation (QCC). Coal production occurred from both 2-North and 7-South mining areas until May 2019 when the mine went into a temporary shutdown and then later suspended coal operations.

The Quinsam Mine produces High Volatile "A" Bituminous thermal coal. Coal is processed at an onsite preparation plant, transported by B-train highway trucks to the Middle Point Barge Terminal north of Campbell River. Coal is then shipped via barge, to local customers and to Texada Island where it is then loaded onto a ship and sent to local companies or exported abroad.

Due to the mine's location and sensitive habitat, adjacent to Middle Quinsam Lake, the Quinsam River, No Name Lake, and Long Lake, which drain into Lower Quinsam Lake the operational permits issued by the Ministry of Environment (MOE) and Climate Change Strategy (ENV) as well as the Ministry of Energy, Mines and Petroleum Resources (MEMPR) established stringent effluent quality standards. Accordingly, QCC has maintained an environmental management system defined by the requirements of Effluent Permit PE-7008 and the C-172 Mines Act permit. The mine has collaborated with regulators and stakeholders on key management aspects to minimize mine related effects in the receiving environment.

Sulphate concentrations in surface waters of the receiving environment (e.g. Long Lake) continued to be a focus for the QCC monitoring program. Although PE-7008 lists only one sulphate limit for effluent (500 mg/L at 7SSD), sulphate is routinely monitored at designated locations within the mine site and in the receiving environment. Quinsam continues to assess sources of sulphate and management options to mitigate concentrations in mine related discharge(s).

## On-Site Water Quality and Activities

The North, South, and 7-South water management systems represent the cumulative mine related discharges to the Quinsam watershed. As such, strategic operation of management structures is designed for discharge waters to meet permit requirements and be of suitable quality for discharge into the receiving environment. Permit limits for parameters of interest have been established and are closely monitored to ensure environmental protection.

## Acute and Chronic Bioassays and Toxicity Testing

Acute Rainbow trout bioassay (*Oncorhynchus mykiss*) are performed on water collected from the authorized discharge locations Settling Ponds #1, Settling Pond #4 and 7SSD during the first fall flush event. When discharge is occurring from 7SSD, samples are collected concurrently at 7SSD and the downstream site Stream 1, 7S during the first spring freshet and fall flush. Rainbow trout bioassays are performed on 7SSD discharge water and 7-day *Ceriodaphnia dubia* chronic toxicity testing is performed for water collected from Stream 1 ,7S.
The acceptable criteria for a Rainbow trout bioassay test to pass includes no mortalities at 100% effluent concentration after 96 hours.

For the 7-day *Ceriodaphnia dubia* chronic toxicity testing the results are based on acute and chronic exposure levels. This toxicity test determines if the effluent causes death (acute toxicity) or reduction in the reproduction of the test organisms (chronic toxicity) during a 7- day period.

**Receiving Water Quality**

Water quality attainment in the Middle Quinsam Sub-Basin remains a key management objective at QCC. Although these guidelines do not have any legal standing, they are used to provide a basis for evaluating the health of the environment. Comparison to provincial Water Quality Guidelines for Protection of Aquatic Life (WQG's) and Middle Quinsam Sub-Basin Water Quality Objectives (WQO's) are used to evaluate receiving water quality, aquatic health, and guide overall management operational performance.

Monitoring sulphate concentrations continues to act as an essential practice to evaluate mine impacts as it is a key parameter traced back to coal mining. Sulphate concentrations are compared to an average WQG of 128 mg/L, calculated using a background hardness of 30 mg/L for the Middle Quinsam Sub-Basin. Sulphate results averaged over five weekly samples collected over 30 days (5 in 30) were compared to the WQG. Other parameters of interest for the receiving environment include total arsenic, copper, iron, manganese, and zinc and dissolved iron and aluminum. Elevated dissolved aluminum and total copper, and zinc concentrations are associated with rainfall events (elevated TSS) and may not be associated with mine related discharges; however, elevated concentrations are considered in the context of aquatic effects.

In 2019 the BC Ministry of Environment and Climate Change Strategy (ENV) updated the Copper (Cu) WQG to use dissolved instead of total copper. The updated Cu WQG is calculated using a Biotic Ligand Model (BLM), which incorporates specific water chemistry data using specialized software. This model requires the input of site specific physical and chemical parameters (temperature, pH, alkalinity, dissolved copper, calcium, chloride, hardness, magnesium, sodium, potassium, sulphate, and organic carbon) where it then derives a site-specific guideline and normalizes the toxicity data to specific site conditions for specific aquatic receptors.

The BC BLM software allows the user to calculate either a chronic or acute guideline based on the underlying toxicity databases. Using the acute or chronic database, the BC BLM software first calculates a critical accumulation value and then normalizes this value to the water chemistry conditions specified in the input data. The normalized acute or chronic dataset of critical accumulations values is then used to identify the most sensitive endpoint of the most sensitive organism at the most sensitive life stage[1].

Quinsam was not able to collect all the required parameters to input into the BLM database for this reporting year. Therefore, the pervious water quality guideline for Total Copper will be used for this report. During the 2020-2021 monitoring year receiving environment data will be compared to the new guideline.

[1] B.C. Ministry of Environment and Climate Change Strategy 2019. Copper Water Quality Guideline for the Protection of Freshwater Aquatic Life-Technical Report. Water Quality Guideline Series, WQG-03-1. Prov. B.C., Victoria B.C.

Monitoring at sites upstream of mine influences (e.g., IR in the Iron River) indicates naturally elevated concentrations of dissolved aluminum during high flow events. These metals and other parameters that are higher than WQGs or WQOs are discussed below.

**Groundwater Quality**

QCC maintains a comprehensive groundwater monitoring program to characterize water quality associated with mining development. There are numerous groundwater wells including underground sumps located in-situ (disturbance footprint) and ex-situ (outside of mine workings) that are monitored. In the absence of a groundwater well sample, underground sump samples are used for comparison. Results for ex-situ wells are compared to Contaminated Sites Regulations for Protection of Aquatic Life (CSR-AL) and those for in-situ wells and sumps are compared to source terms derived for particular mining areas. Groundwater quality is influenced by bedrock chemistry, an example being the presence of realgar (arsenic sulphide) in the Dunsmuir Sandstone overlying the No. 4 coal zone, resulting in dissolved arsenic in the south area groundwater being naturally higher than the CSR-AL. Parameters of interest for groundwater are those with concentrations higher than the CSR-AL: arsenic, chloride, fluoride, sulphide as ($H_2S$) and sulphate. Overall, in-situ groundwater at Quinsam Coal is generally within the water quality prediction scenarios and ex-situ groundwater typically trends below most CSR-AL. Two exceptions to this, is groundwater influenced by host geological formations (e.g. Dunsmuir Member sandstones, Cumberland Member No.1 Coal seam and mudstones) with naturally elevated concentrations of parameters of interest and by weathering processes (i.e. mine wall oxidation and flushing) of disturbed materials within the mine footprint.

**Receiving Water Sediment and Biota**

QCC conducted a comprehensive biological monitoring program in 2016, as stipulated in Section 4.2.4 and 4.2.7 of the effluent permit. The August through October program involved sediment and benthic invertebrate monitoring at 23 locations in the watershed (at five lakes, one wetland, and three locations on the Quinsam River). In the four lakes exposed to mine influences, samples were collected at inlets, deep sites, seeps, and outlets. Sediment results were compared to generic Canadian Council of Ministers of Environment (CCME) Interim Sediment Quality Guidelines (ISQG) and Probable Effect Levels (PEL) and to site-specific sediment quality objectives (SQOs) developed for Long Lake that reflect the naturally elevated background levels of some metals. The SQOs were derived from studies completed prior to mining influence in Long Lake (pre-1987). Where background levels are lower than ISQG's, the ISQGs are used for comparison. Primary parameters of interest for sediment are arsenic, iron, manganese, and total polycyclic aromatic hydrocarbons (PAH), identified based on concentrations, relative toxicity, and findings in previous reports. Most of the elevated concentrations are related to geology (host rock formations), although mining has contributed inputs. The next round of sediment sampling is scheduled for 2021-2022.

Water quality in the Middle Quinsam Sub-Basin and Iron River largely meets WQGs and WQOs and is considered a healthy aquatic ecosystem. Throughout the monitoring period, Quinsam has demonstrated that mine water management system(s) and procedure(s) are an effective tool in reducing parameters of interest loading in the receiving environment.

Benthic invertebrate samples from lakes and the wetland were analyzed for community metrics (density, taxon richness, diversity, evenness, major taxonomic groups), and for ecologically

relevant and statistically significant differences among sites. Quinsam River sites were sampled and analyzed using the Canadian Aquatic Biomonitoring Network (CABIN) method.

Phytoplankton and zooplankton samples collected once per sampling event on all four lakes as a routine requirement of PE-7008s. Samples were analyzed for count, identification, and species abundance.

**Long Lake Seep Passive Treatment System (PTS)**

The Passive Treatment System (PTS) consists of a series of treatment cells designed to receive mine-water pumped from the 2-South underground workings to reduce Parameters of Interest (POI) concentrations including dissolved sulphate and iron. This system was initiated as part of a remediation plan to limit localized mine-water seepage on the south-side of Long Lake as a result of subsidence caused by mining within close proximity and establishing an evident hydrologic connection.

The Passive Treatment System (PTS) continues to demonstrate reduction in sulphate concentrations throughout the system. Higher reduction is observed during warmer conditions, with reduction efficiencies of upwards of 300 mg/L or 50%. The addition of molasses (carbon source) has shown some capability to increase performance within the system but due to the viscosity of the molasses the injection system requires continuous replacement of pumps and as a result has been discontinued until a different system can be put in place.

## 2.0 WATER MANAGEMENT SYSTEMS AND MONITORING LOCATIONS

Settling ponds, sumps and ditches have been constructed to manage and treat mine contact water to help mitigate any negative effects on the receiving environment. Water management at the Quinsam Mine is divided into three discrete areas: North, South, and 7-South. Appendix IX, Site Maps, displays underground mine locations, groundwater wells and surface monitoring sites. Table 1 below describes the within-mine releases monitoring sites and associated initial dilution zones.

## Table 1: Description of Monitoring Sites: In-Mine Releases & Initial Dilution Zones

| EMS ID # | Monitoring Sites | Abbreviation (Station Code) | *Type of Water (MW, FW or GW) |
|---|---|---|---|
| | **North Coal Mining Operation** | | |
| E207409 | Settling Pond #4 Decant | WD | **Discharge (MW)** |
| E207411 | Culvert, at Middle Quinsam Lake Road | WC | MW & FW |
| E283433 | 2-North Portal Sump (Adit Sump) | 2NPS | MW |
| E207412 | 2-North Pit Sump CCR Cover | WP | PAG-CCR Water Cover - MW |
| E292126 | South Dyke Sump | SDS | MW |
| | **South Coal Mine** | | |
| E218582 | Settling Pond #1 Decant | SPD | **Discharge (MW)** |
| E217014 | Culvert, Downstream End at Access Road | SPC | MW & FW |
| E217015 | South Pit Main Sump Water | 3S | PAG-CCR Water Cover (MW & FW) |
| E292127 | 2-South Pit In Pit Water Cover (2-South Standpipe) | 2S | PAG-CCR Water Cover (MW & FW) |
| E292128 | 1977 Bulk Sample Pit | 3S77 | MW & FW |
| E292129 | Culvert Downstream of 4 South Access Road | 4S-Lo | MW & FW |
| | **7-South Mining Operation** | | |
| E292069 | 7-South Surface Decant | 7SSD | **Discharge (MW & FW)** |
| E292110 | 7-South Adit Sump | 7SPS | MW |
| | **Seep Monitoring Sites** | | |
| E292131 | Long Lake Seeps | LLS & LLSM | GW / MW |
| | Culvert that collects groundwater and Coal Main logging road water entering MQL (PDSR) | PDSR | GW / SW |
| | **Receiving Environment Monitoring Sites - Near Initial Zone of Dilution (NIDZ)** | | |
| **Near Initial Dilution Zone (NIDZ) Monitoring Sites** | | | |
| E292130 | Long Lake Entrance (South end water entering Long Lake) | LLE | NIDZ |
| E292109 | Road Crossing Bridge on Stream 1 above the Lower Wetland (Downstream of 7SSD).The site name is Stream 1, 7S. | 7S | NIDZ |
| | **Receiving Water (Rivers & Lakes Monitoring Sites) 5 in 30 Monitoring Locations** | | |
| **North Coal Mining Operation** | | | |
| E0126402 | Quinsam River at Argonaut Road | WA | FW |
| E206618 | Middle Quinsam Lake Centre | MQL (1, 4, 9 & 1m from Bottom) | FW |
| E0900504 | Outflow from Middle Quinsam Lake | WB | FW |
| **South Coal Mine** | | | |
| E217018 | No Name Lake | NNL (1, 4, 9 & 1m from Bottom) | FW |
| E217017 | No Name Lake Outlet | NNO | FW |
| E206619 | Long Lake at Centre | LLM (1, 4, 9 & 1m from Bottom) | FW |
| E219412 | Long Lake Outlet | LLO | FW |
| **7-South Mining Operation (Areas 1 to 4)** | | | |
| E286930 | Quinsam River Upstream of 7-South Mining Operation | QRDS1 | FW |
| E292113 | Quinsam River Downstream of 7-South Mining Operation | 7SQR | FW |
| E292112 | Lower Wetland Outlet at the confluence of the Quinsam River | LWO | FW |
| E292118 | Lower Quinsam Lake Centre | LQL (1, 4, 9 & 1m from Bottom) | FW |
| **7-South (Proposed) Area 5 Mining Operation** | | | |
| E297230 | Iron River upstream of mining operations | IR1 | FW |
| E297231 | Iron River upstream of 7SA5 | IR6 | FW |
| E297232 | Iron River downstream of 7SA5 and 242 inputs | IR8 | FW |
| E299256 | Quinsam River downstream of confluence with Iron River | IRQR | FW |
| E292118 | Lower Quinsam Lake Centre | LQL (1, 4, 9 & 1m from Bottom) | FW |
| **Block 242 Mining Operation (Reclaimed / Not Monitored)** | | | |
| E225798 | Iron River upstream of the 242 influence | Not Monitored | FW |
| E225808 | Iron River downstream of the 242 influence | Not Monitored | FW |
| N/A | Old portal sump used for collection of water from underground | Reclaimed | FW / GW |
| **Long Lake Seep Passive Treatment System** | | | |
| N/A | Groundwater well (2-South Mine Pool) influent to the treatment system | QU11-11 (INF-EFF) | MW |
| N/A | Bio Cell Reactor | BCR-EFF | MW |
| N/A | Sulphide Polishing Cell | SPC-EFF | MW |
| N/A | 2-South Inflow | 2SI | MW |
| N/A | Aeration Lagoon | AL-EFF | Not in use |
| N/A | Settling Pond Effluent | SP-EFF | Not in use |

*** MW= Mine Water, FW= Freshwater, GW =Groundwater NIDZ = Near Intial Dilution Zone**

## 2.1 MINE RELATED DISCHARGE

### 2.1.1 *THE NORTH WATER MANAGEMENT SYSTEM*

The north water management system is designed to collect mine related runoff from the north disturbed surface areas and pumped water from the 2-North, 5-South and 7-South underground mine operations. This system includes catchment sumps and ditches, pipelines, a subaqueous storage facility for potentially acid generating (PAG) coarse coal reject (CCR) and Settling Pond # 4 (SP4/WD) EMS #E207409.
The 2-North Mine is dewatered through a network of pump systems. These include 1 Mains 2-North (1M2N) and 5 Mains 2-North (5M2N) and 3Mains 2-North (3M2N). Table 2 below describes the underground pumps systems and Figure 1 describes the 2-North pumping network.

**Table 2: 2-North Pump System**

| Area | Type of Pump | Pumping capacity gallons /min (GPM) | Total Pumping Capacity |
|---|---|---|---|
| 1M2N #1 | 1 x 200 hp | 750 | 750 |
| 1M2N #2 | 1 x 200 hp | 750 (not operating - faulted) | 0 |
| 5M2N | 1 x 200 hp | 750 (not operating - faulted) | 0 |
| 3M2N | 2 x 250 hp | 1000 | 2000 |
| **Contingency** | | | |
| 3M2N | 1 x 250 hp & 3 x 58 hp | 4000 (requires testing) | 4000 |

1M2N and 5M2N are equipped with 200-hp, 600-volt, 3-phase submersible deep well pumps capable of pumping 750 gallons per minute each. 1M2N has two deep well pumps but currently only one is operating. 5M2N is equipped with one deep well pump but it has recently (February 2020) faulted and requires repair / replacement.

Based on the hydrogeology of the area and mine workings depth, the 2-North mine requires dewatering. The 1M2N and 5M2N pumps operate to dewater the 1 Mains and 5 Mains areas of the 2-North mine pool to maintain capacity for 7-South tailings injection while maintaining water levels in the mine for a restart. A series of underground pumps move water to surface as needed. Currently only 1-Mains well is operating the 5-Mains pump malfunctioned and has not been repaired. Additional systems are installed to dewater portions of the mine that are hosting operations and are used intermittently as required.

Since December 2017, the combined 5-South and 7-South mine water and the South Dyke Sump (SDS) was redirected into two boreholes where water will discharge into 3-Mains, 2-North. Now all water from 5-South (includes 7-South water) and SDS will enter 2-North mine and be received at Settling Pond #4 or 2-North subaqueous PAG-CCR facility (WP).
The 3-Mains 2-North (3M2N) area is equipped with 3 x 58 hp submersible pumps with 3 x 250 hp non-submersible pumps. The 3Mains pumps convey water from the old 3-Mains areas and overflow from 1-Mains and 5-Mains out of the mine. The 3 x 58 Hp and 1 x 250 hp pumps were installed for contingency purposes to maintain water levels in the mine during heavy rain / snow fall events. Collectively these pumps can dewater that section of the mine at a rate of

approximately 6000 GPM. The pumps were installed to manage water levels in the mine and protect underground infrastructure.

The 2-North subaqueous PAG-CCR facility (WP) EMS #E207412 contains waste rock from 5-South mine coal processing and is stored with at least 1.50 m of water cover to inhibit the onset of acid generation from the stowed material. This water cover is sourced from underground at either / or a combination of 1-Mains, 5-Mains, 3-Mains, or the 2-North Portal Sump (2NPS) EMS #E283433. Water is directed into the pond by opening gate values directing water into WP maintained by QCC personnel. A permanent water cover of 1.5m is required until final reclamation of the site occurs.

Settling Pond # 4 collects gravity fed water from Brinco Brook, which includes disturbed surface runoff, tailings dam seepage, and underground water collected at 2NPS. When the gate values to Brinco Brook are open, all underground dewatering wells 1 and 5 Mains discharge are directed into and mix with the water from 2NPS and 3-Mains. Settling Pond # 4 acts as the final collection point before discharge into a meadow/biomass system where it flows into a culvert at Middle Quinsam Lake road sampling location (WC) EMS #E207411, prior to entering another extensive wetland that flows into the inlet of Middle Quinsam Lake.

Settling Pond #4 encompasses approximately 2.4 ha of marshland with an average depth of 1.5 m and a storage capacity of approximately 30,000 $m^3$. It has been designed to receive a 1 in 10-year flood event and has an emergency spillway to prevent structure failure during extreme flood events. Water from Settling Pond #4 is pumped to the wash plant for use in coal processing. When processing 2-North coal used wash plant water is pumped to the tailings dam at the pump site CPP collection ditch, where it filters through the north and south sides of the tailings dam to 2NPS and South Dyke Sump (SDS) EMS #E292126, respectively. When processing 7-South coal, wash plant water and fine tailings are pumped directly underground to 1-Mains 2-North. Water in the 2NPS is used for underground equipment, dust suppression, and emergency firefighting. Excess water in the 2NPS sump is pumped with a 65 HP pump and ties into a 12-inch pipeline from 3-Mains 2-North, along the 2-North high wall then discharged into Brinco Brook. SDS collects seepage water from the south side of the tailings dam and pumps it back into the 2-North mine pool at 3-Mains (the seepage does not report to the Quinsam River or Middle Quinsam Lake from this location).

Below the wash plant is a natural drainage where groundwater surfaces and flows towards Middle Quinsam Lake. This area has two nested (deep and shallow) groundwater wells. This water flows towards Middle Quinsam Lake near the inlet end. Deep and shallow nested groundwater wells MW00-1 (S and D) and MW00-6 (S and D) represent the groundwater below the collection ditch and processing plant. These wells were installed to monitor seepage from the plant site collection ditch. Historically, the plant site collection ditch was used to transport fine tailings from the processing of coal to WP, which was used as a fine-tailings settling pond, with excess water pumped into Brinco Brook and gravity feed into Settling Pond # 4.

Figure 1 provides a flow chart describing the flow paths of water in the 2-North Water Management System.

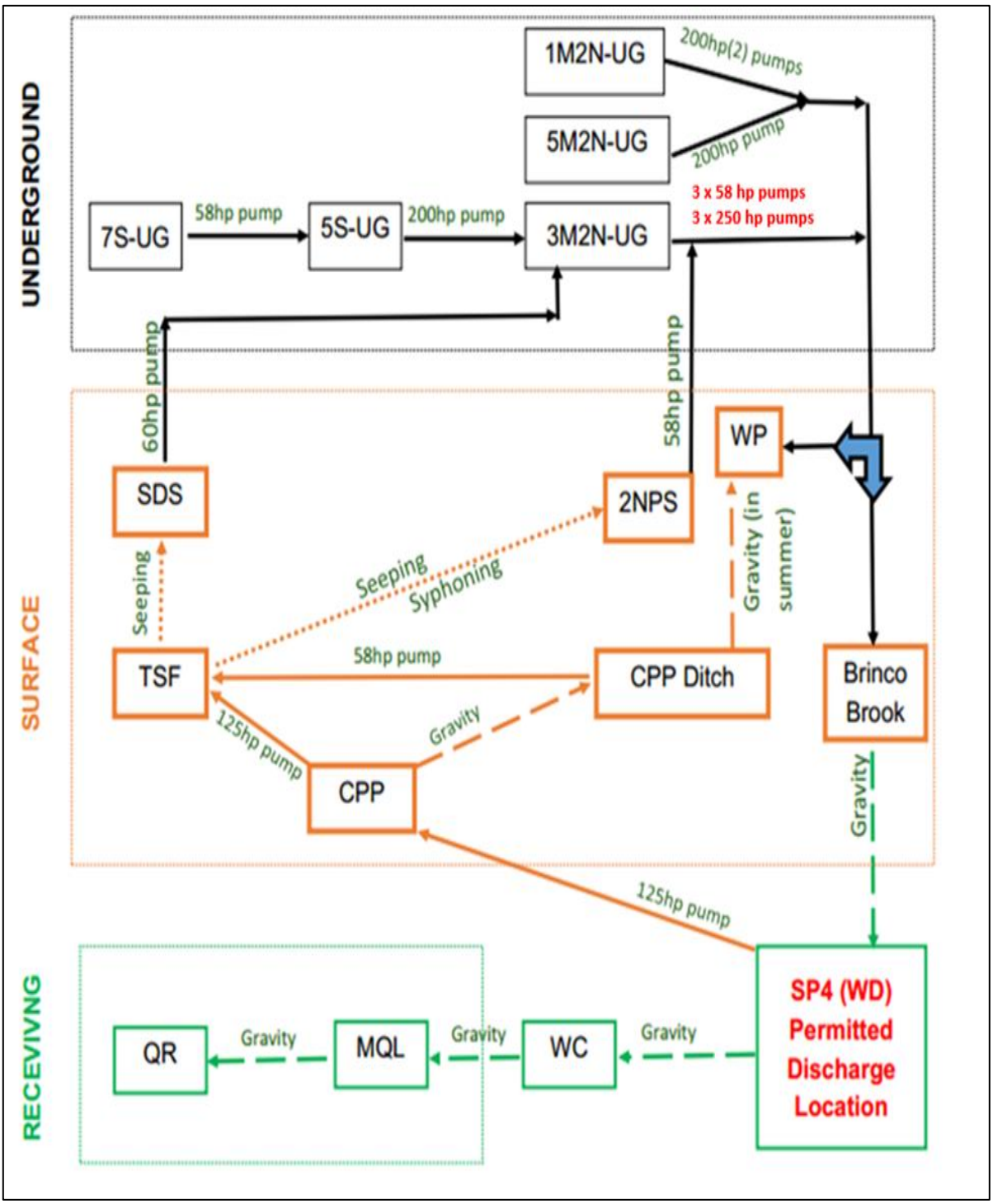



**Figure 1: Water Movement and Flow Path in the North Management System**

### 2.1.2 *THE SOUTH WATER MANAGEMENT SYSTEM*

The South Water Management System is designed to collect mine related runoff from the south disturbed surface areas and manage water in the 2-South (2S) EMS #E292127 and 3-South (3S) EMS #E217015 PAG-CCR containment pits and Passive Treatment System (PTS).

The two permanent PAG-CCR pits (2-South and 3-South) have been completed as part of the south water management system. Construction of the 2-South PAG-CCR pit was completed in 2014. It includes a clay-bentonite liner to retain water within the pit and a water cover fed by a series of ditches and pipes that collect local catchment water. Surface personnel control valves to direct fresh non-mine impacted water into the PAG-CCR facility or to No Name Lake. Source water for the 2-South pit is from local catchment and the PTS. Recently (2018) the PTS discharge has been permanently diverted into the 2S pit to maintain a water cover. This maintains a water cover and inflow rate of approximately 4.5 L/s. Flow rates are recorded at the well head INF of the PTS and at the inflow and outflow of the 2-South pit. The inflow of 2-South is equipped with a V-notch weir, pressure transducer and staff gauge where weekly measurements are recorded. A minimum of 1.0 m water cover is required in the 2-South pit and excess water from 2-South water cover overflows down a spillway (built in 2015) into a large channel that leads to the 3-South PAG-CCR storage pit. Seepage from under the liner is also directed down the channel to 3-South pit. The 2-South water cover and seepage maintains a 1.0 m water cover over the 3-South pit. Continuous outflow from 2-South pit is recorded at the H-Flume before water enters 3-South pit. Appendix I, Tables 156 and 157 and Appendix II, Graphs 67 through 69 display the recorded inflow and outflow of the 2-South pit and 3-South areas.

Excess water in 3-South is pumped via an 88 HP pump capable of pumping 500 gallons per minute directly into the roadside collection ditch that flows into Settling Pond #1 or during the summer a gate valve is opened on the highwall above the 2-South pit, directing water back into the 2-South pit making it a closed loop system.

Settling Pond #1 (SPD/ SP1) EMS #E218582 is the authorized discharge location and compliance point before water enters Long Lake. Settling Pond #1 encompasses 1.8 ha of wetland with an average depth of 1.5 m. An emergency overflow ditch built into the impoundment dam is located on the north end of the pond. A siphon pipeline has been installed from Settling Pond #1 to the 3-South Pond to provide an emergency source of water to maintain the 1 m cover over the 3-South PAG-CCR pond.

The PTS is designed to inhibit flow at the Long Lake seep by lowering the 2-South mine-pool through pumping from monitoring well QU11-11 (INF), where it is treated on surface. Previously four ponds were used. These include the Biochemical Reactor (BCR), Sulphide Polishing Cell (SPC), Aeration Lagoon (AL) & Settling Pond (SP) where water passively flowed through processing. Since 2018 only the ponds BCR and SPC have been operating, with the other two ponds decommissioned. Since May 2018, the treatment system discharge was directed into the 2-South pit from the Sulfide polishing cell. The sample location before it enters the pit, is referred to as 2-South Inflow (2SI). The reason for decommissioning the last two ponds was to keep the water within the authorized works and aid in maintaining a water cover over the 2S pit during the dry season. Previously the treatment system bypassed Settling Pond # 1 and the downstream location, capturing the combined discharges, Biocell Downstream (BDS) was used for compliance under an

authorization to bypass the works letter obtained annually from the ENV. These three sites AL, SP and BDS are no longer monitored as a result.

SP1 channel leads into a series of meadow/biomass systems and combines with the surface and subsurface groundwater where it discharges at LLE near the outlet of Long lake. The 3-South 1977 bulk sample pit (3S77) EMS #E292128 is located upstream of the 4-South Pad and collects groundwater filtering in from the wetland through which Settling Pond #1 flows. The bulk sample pit has a surface discharge that filters into the groundwater and through the connector ditch above the reclaimed 4-South pad area during fall and winter. The 4-South ditch monitoring location (4S-Lo) EMS #E292129 is a culvert downstream of 4-South Access Road and west of 4S coal pad; it collects runoff from the reclaimed 4S-pad, groundwater seepage from 3S77, and surface runoff from the haul road. On November 1st, 2019, a minor permit reduction was authorized by ENV to discontinue monitoring at these locations as LLE captures the combine discharge.

The monitoring location SPC, EMS #E217014, located downstream of the 4-South pad and 4S-Lo, (does not interact with effluent from 4-South water); captures Settling Pond #1 water downstream of the wetland. The final collection point (EMS #E292130) is at the downstream end of a culvert leading into Long lake (LLE) wetland and discharges approximately 50 m upstream of Long Lake near the outlet. This site is considered the edge of the initial dilution zone (IDZ) for Long Lake.

The figures below provide a flow chart describing the flow paths of water in the South Water Management System.

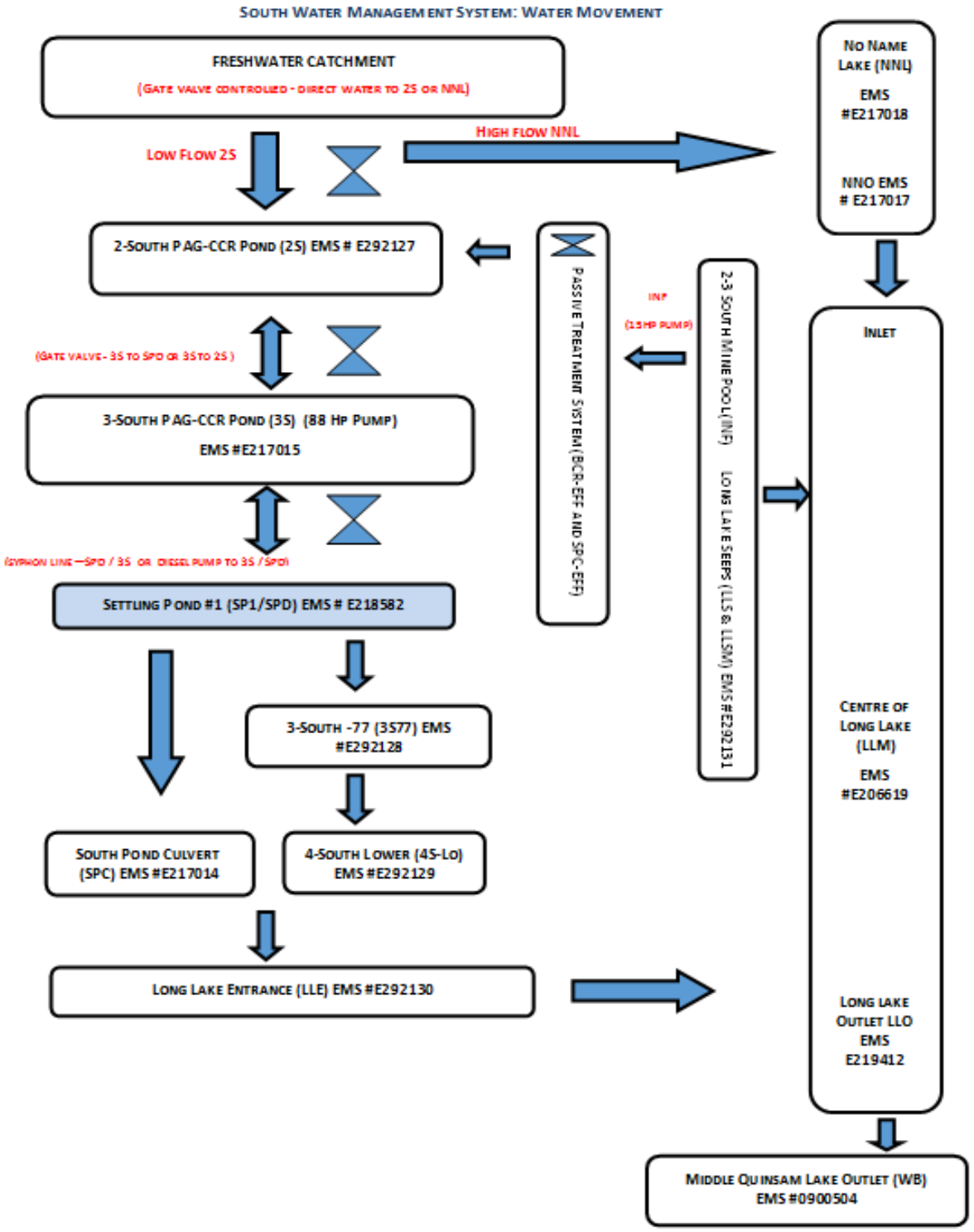



**Figure 2: Water Movement & Flow Path in the South Water Management System**

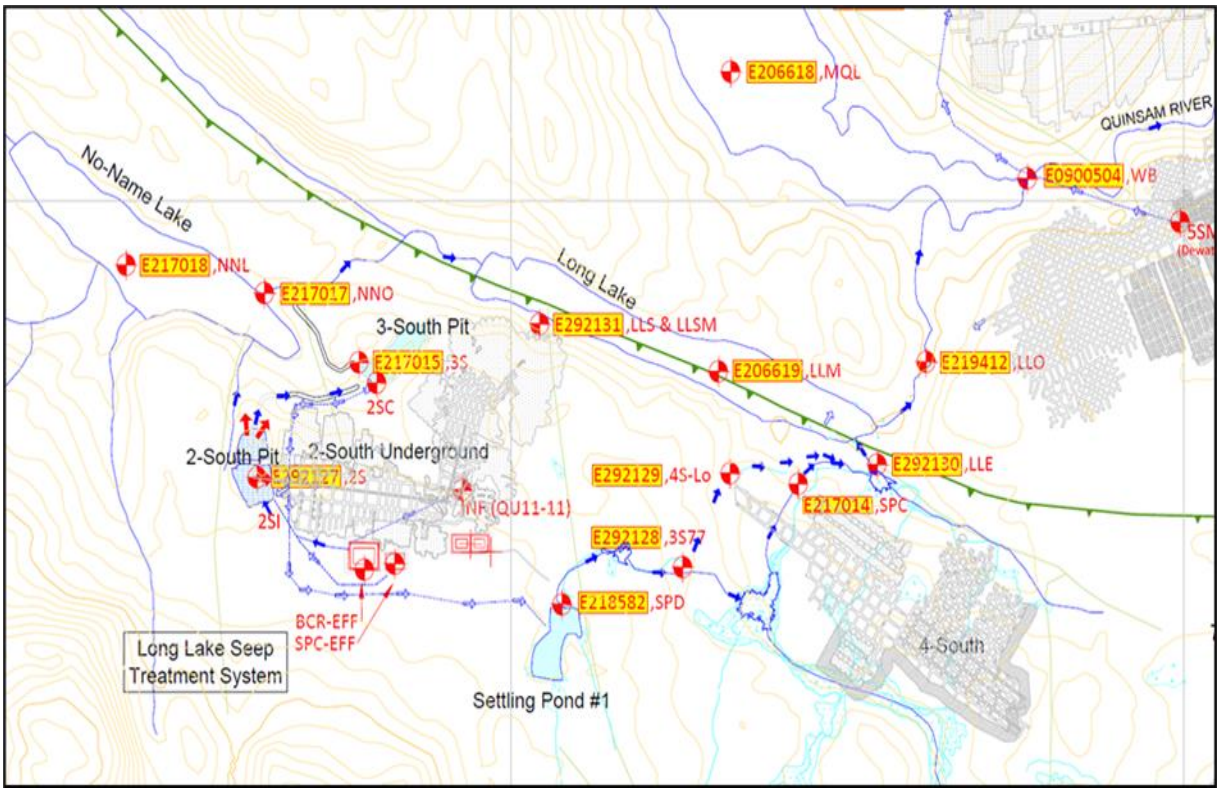



**Figure 3: South Water Management System with Underground Workings**

### 2.1.3 *7-South Water Management System*

The 7-South Water Management System includes permitted locations, 7-South Surface Decant Settling Pond (7SSD) EMS #E292069, 7-South-Adit Sump (7SPS) EMS #E292110, 7-South Containment Pond (7SCP), and receiving environment sites downstream at Stream 1 (7S) EMS #E292109, which flows into the lower wetland and monitoring location Lower Wetland Outlet (LWO) EMS #E292112 at the confluence of the Quinsam River. This system is designed to manage excess water from the 7-South catchment area and mitigate environmental impacts from disturbed surface locations affected by mining and underground activity. Water is collected and stored in three main ponds in the 7-South Mine catchment area: 7SPS, 7SCP, and 7SSD.

7SPS contains water that is collected from dewatering processes during mining activity while most of surface water from the coal storage pad is directed into the adit sump (7SPS). Water is pumped from active mining areas, 7-South Area 5 (7SA5) and 1-Mains 7-South (1M7S) and either stored in 7SPS adjacent to the portal entrance to use for dust suppression on mining equipment / fire suppression or pipelined directly into 5-South flooded mine pool at borehole QU05-13. Water levels at 7SPS are set up on an automated float system, when water levels rise beyond a desired

storage capacity, excess water is pumped into the 5-South mine pool. From there water mixes with the 5-South water where it is pumped into the 2-North mine at 3-Mains. 3-Mains discharges into Brinco brook which is gravity fed to Settling Pond #4 and discharges into Middle Quinsam Lake. 7SCP collects surface runoff from the 7-South surface disturbance area, local groundwater, and infiltration water from the coal pad. This pond allows suspended solids in surface water to settle before the water enters 7SSD. When this pond reaches a certain capacity, it discharges through a culvert into 7SSD. In 2015, the 7SCP was enlarged to accommodate more water. Additional pumps were placed at 7SSD and 7SCP to decrease 7SSD discharge and assist with water management. The revised system pumps water from 7SSD and 7SCP to 7SPS which pumps into 5-South Mine Pool to 2-North Mine Pool into Brinco brook and flows into Settling Pond #4. The pump at 7SCP runs on an automated float system where water levels are kept below the overflow channel into 7SSD.

During high precipitation events, a secondary pump can be activated to assist in pumping water to 7SPS. This pump can also be relocated to 7SSD where accumulated water can be diverted into 7SCP. This system has helped reduce discharge from this location.
7SSD is the permitted discharge location and main water collection pond for the 7-South Mine area, with a cumulative catchment of 3.14 ha. 7SSD is a settling pond that receives water from groundwater infiltrated from the surrounding hillsides and the coal storage pad. This water is monitored for quality and quantity during discharge events. Water is discharged from the pond via a 2-inch discharge line equipped with a valve to allow environmental personal to set the discharge rate based on flow rates measured at the downstream site 7S in Stream 1. An 8:1 ratio (7S:7SSD) was calculated from previous water quality data and modelling conservatively to protect the Stream 1 receiving environment. Water quality downstream in Stream 1 meets applicable guidelines with dilution ratios greater than 8:1.

Discharge from 7SSD forms the headwaters of Stream 1, monitoring location 7S is located on Stream 1 below the confluence with Stream 2 and, for the purposes of the effluent permit, is compared to British Columbia water quality guidelines (WQGs) for protection of aquatic life to evaluate potential effects on aquatic receptors at this location.
Figure 4 provides a flow chart describing the flow paths of water in the 7-South Water Management System.

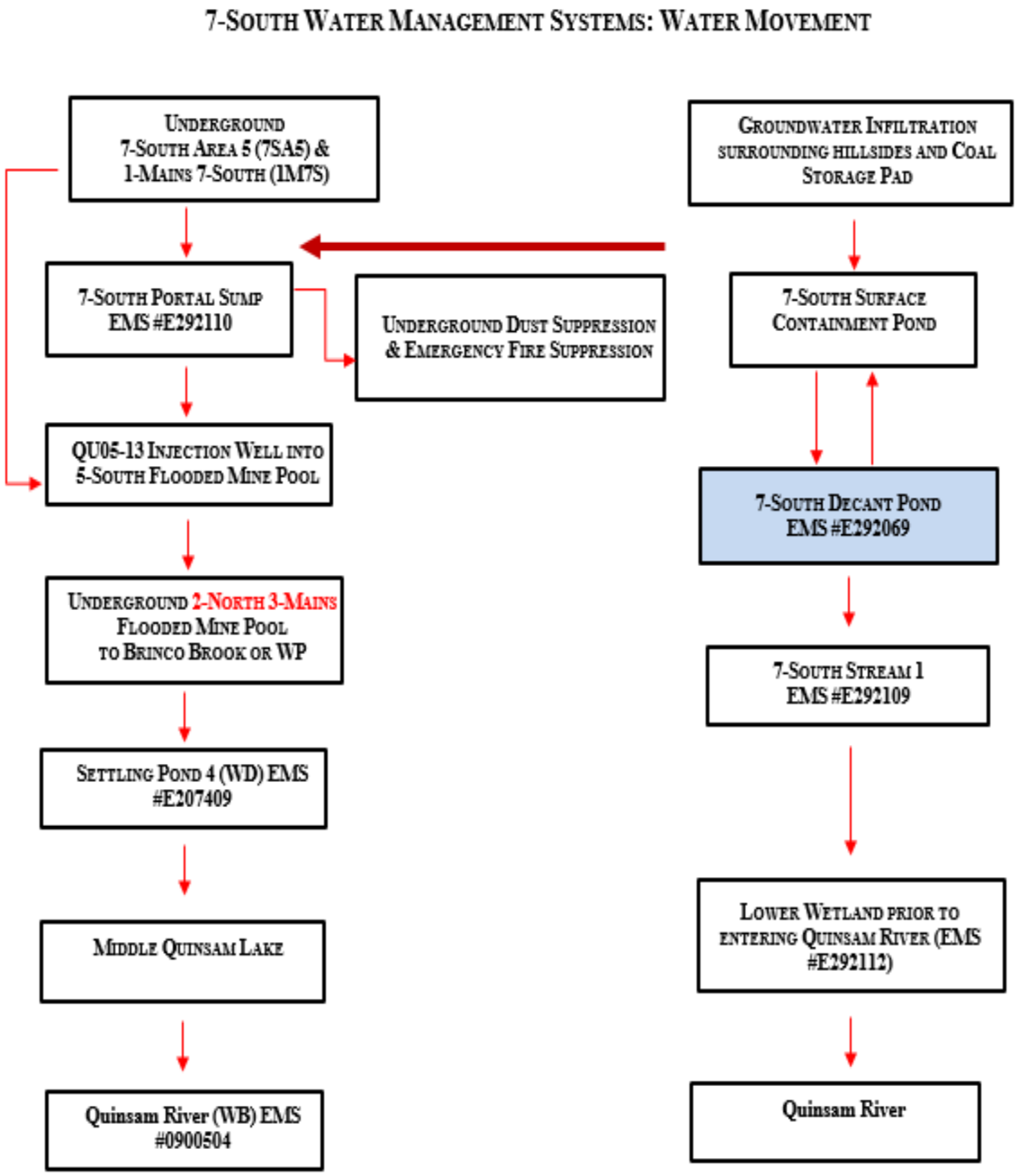



**Figure 4: Water Movement and Flow Path at the 7-South Operation**

## 2.2 RECEIVING ENVIRONMENT SITES

### 2.2.1 *RIVER, STREAM & LAKE MONITORING SITES*

Effluent Permit PE-7008 Section 4.2.3 identifies river, stream, and lake monitoring sites that represent the receiving environment for various mine related discharge(s). Most of these sites are monitored on a 5 in 30 sampling frequency (five events in 30 days) during the spring, summer and fall seasons. Table 3 lists the receiving water monitoring sites.

**Table 3: Receiving Water (Stream and Lake) Monitoring Sites**

| Streams | Lakes |
|---|---|
| **North Mining Operation** | |
| Quinsam River at Argonaut Road (WA) (EMS # 0126402)<br><br>Outflow from Middle Quinsam Lake (WB) (EMS # 0900504) | Middle Quinsam Lake Centre (EMS # 206618) |
| **South Mining Operation** | |
| Long Lake Outlet (LLO) (EMS # E219412)<br><br>No Name Lake Outlet (NNO) (EMS # E217017) | Long Lake at Centre (LLM) (EMS #E206619)<br>No Name Lake (NNL) (EMS # E217018) |
| **7-South Mining Operation (Areas 1 to 4)** | |
| Quinsam River upstream of 7 South Mining Operation (QRDS1) (EMS # E286930)<br>Quinsam River downstream of 7 South Mining Operation (7SQR) (EMS # E292113)<br>Lower Wetland Outlet at the confluence of Quinsam River (LWO) (EMS # E292112) | Lower Quinsam Lake (LQL) (EMS #E292118) |
| **7-South Area 5 Mining Operation** | |
| Iron River upstream of mining operations (IR1) (EMS #E297230)<br>Iron River upstream of 7SA5 (IR6) (EMS # E297231)<br>Iron River downstream of 7SA5 and 242 inputs (IR8) (EMS # E297232)<br>Quinsam River downstream of confluence with Iron River (IRQR) (EMS # E299256) | Lower Quinsam Lake (LQL)<br>(EMS # E292118) |

**River and Stream Sites in the Quinsam River Sub-Basin**

- Quinsam River at Argonaut Road (WA) EMS #0126402 – Located upstream of all mine related discharges; represents background (baseline) conditions for water quality comparisons.
- Outflow from Middle Quinsam Lake (WB) EMS #0900504 – Located at the outflow of Middle Quinsam lake; represents combined discharge from North and South water management systems.
- No Name Lake Outlet (NNO) EMS #E217017 – Located at the outflow of No Name Lake; not presently influenced by surface mine related discharge in the South. The groundwater influence from 2-South Pit to No Name Lake near the outlet site was estimated as 5 $m^3$/day or 10% of the seepage rate from 2-South Pit.
- Long Lake Outlet (LLO) EMS #E219412 – Located at the outflow to Long Lake; captures all South mine related inputs on surface and a percentage of groundwater (i.e. LLE and Long Lake Seep).
- Quinsam River Downstream Site 1 (QRDS1) EMS #E286930 – This site is located downstream of Middle Quinsam Lake Outflow (WB), the North Mining Operation and upstream of the 7-South Mining Operation; captures changes in water quality before the 7-South Mine and groundwater inputs related to mining.
- Lower Wetland Outlet at the confluence of the Quinsam River (LWO) EMS #E292112 – This site is located downstream of Stream 1 (7S); represents final surface discharge quality prior to combining with the Quinsam River.
- 7-South Quinsam River (7SQR) EMS #E292113 – Quinsam River downstream of QRDS1, LWO, and 7-South Mining Operation; captures incremental changes in water quality that may be attributed to 7-South PAG-CCR storage and flooded mine pool.

**Iron River – Proposed 7-South Area 5 (7SA5) Mining Operation**

- Iron River Upstream of Mining Operation (IR1) EMS #E297230 – Located upstream of any mine related activity; represents baseline conditions.
- Iron River Upstream of 7SA5 (IR6) EMS #E297231 – Located upstream of any mine related activity (currently); reflects baseline conditions in an area of different geologic formation(s) and baseline water quality influences than IR1 (mainly arsenic concentrations).
- Iron River downstream of 7SA5 and 242 inputs (IR8) EMS #E297232 – Downstream monitoring site on the Iron River; will be used to monitor potential influence of 7SA5.
- Quinsam River downstream of the confluence with the Iron River (IRQR) EMS #E299256 –Located downstream of all current and planned (7-South, Area 5) activities; represents the cumulative mine related discharge.

**Lake Monitoring Sites**

- No Name Lake (NNL) EMS #E217018– Located within the South mine development area.
- Long Lake (LLM) EMS #E206619 – Located within the South mine development area and receives water from No Name Lake, 2-South flooded mine pool as groundwater and surface water (Long Lake Seep). The outlet end receives seepage from 4-South flooded mine pool, estimated at 0.14 $m^3$/day and south water management discharge (LLE).
- Middle Quinsam Lake (MQL) EMS #E206618 – Located adjacent to the North mine development area and receives all discharge from the North water management system and upstream (non-mine related) inputs. Long Lake flows into Middle Quinsam Lake at the south end near the outlet (WB) via a small tributary stream (LLO).

- Lower Quinsam Lake (LQL) EMS #E292118 – Located well below mine related discharge(s); reflects the combined influences of Quinsam River and Iron River water quality.

On November 1, 2019 authorization was approved from ENV for a minor permit amendment to remove monitoring at certain locations and reduced the frequency of monitoring at others. Appendix

**Receiving environment sites that were removed include**:

- Iron River upstream of mining operations (IR1) (EMS #E297230)
- Quinsam River upstream of 7 South Mining Operation (QRDS1) (EMS # E286930)
- Lower Wetland Outlet at the confluence of Quinsam River (LWO) (EMS # E292112)

**Sites with the frequency of monitoring reduced included:**

- Long Lake Outlet (LLO) (EMS # E219412) - reduced to 5 in 30 spring, summer and fall, only removed weekly $SO_4$
- Quinsam River downstream of 7 South Mining Operation (7SQR) (EMS # E292113) - reduced to 5 in 30 spring, summer and fall, removed monthly
- Quinsam River downstream of confluence with Iron River (IRQR) (EMS # E299256) - reduced to 5 in 30 spring, summer and fall, removed monthly
- Iron River upstream of 7SA5 (IR6) (EMS # E297231) - reduced to 5 in 30 summer and fall only, removed monthly and spring monitoring
- Iron River downstream of 7SA5 and 242 inputs (IR8) (EMS # E297232) - reduced to 5 in 30 summer and fall only, removed monthly and spring monitoring
- No Name Lake (NNL) EMS #E217018 – reduced to spring 5 in 30 only, removed summer and fall
- Lower Quinsam Lake (LQL) EMS #E292118 - reduced to spring 5 in 30 only, removed summer and fall

### 2.2.2 *GROUNDWATER MONITORING SITES*

Numerous groundwater observation wells in the vicinity of pits 2N, 1S, 2S, 3S, 4S, Block 242, and 7S are monitored. Table 4 (below) lists groundwater wells, location and geological details of these wells. For further information refer to Appendix I, Tables 158 to 211 for water chemistry and Appendix VI, *2019-2020 Annual Groundwater Monitoring Report*. As an alternative to the 2N, 1S, 2S, 3S, 4S and 7S wells, QCC established monitoring sites at underground sumps. During 2019-2020, QCC monitored 36 sites for groundwater.

## Table 4: Groundwater Wells and Underground Sumps

| Groundwater Wells - Description | | | | |
|---|---|---|---|---|
| **Area** | **Groundwater ID** | **In-situ / Ex-situ** | **Screened Interval** | **Comment** |
| **2-North** | 1 Mains 2-North (1M2N) | In-situ | No. 1 Seam | Flooded Underground Workings Dewatering well |
| | 5 Mains#2 (5M#2) | In-situ | No. 1 Seam | Flooded Underground Workings Dewatering well |
| | QU08-21GD | Ex-situ | No. 1 Seam | Down gradient of u/g tailings disposal, measure water quality and hydraulic gradients downstream of forjan fault |
| | QU08-21GS | Ex-situ | No. 4 Coal Seam and | |
| | QU10-10D | Ex-situ | No. 1 Seam / mudstone | Down gradient of u/g tailings disposal, measure water quality and hydraulic head downstream of 2 North workings |
| | QU10-10S | Ex-situ | No. 4 Seam / | |
| | QU10-11S | Ex-situ | Fractured Sandstone | Measure water quality and hydraulic gradient in Forjan Fault |
| | QU10-11D | Ex-situ | No.1 Seam | Down gradient of u/g tailings disposal, measure water quality and hydraulic head downstream of 2 North workings |
| | QU10-13D | In-situ | Caved Zone | Measure hydraulic head above 2 North mine (1 mains), fine tailing disposal |
| **5-South Mine Pool** | 5SMW | In-situ | Mine Pool (1 Seam) | 5-S Mine Pool pumped into 2-North Mine Pool |
| **River Barrier Pillar (RBP)** | QU11-05S | Ex-situ | Sandstone | Monitoring water quality and vertical gradients downstream of the RBP and 2-North mine. |
| | QU11-05D | Ex-situ | Sandstone | Monitoring water quality and vertical gradients downstream of the RBP and 2-North mine. |
| | QU11-09S | Ex-situ | Sandstone | Monitor water quality & gradients downstream of the RBP and 2-North workings. Mine pool – CCR backfill in River Barrier Pillar |
| | QU11-09M | In-situ | RBP Mine Pool | Monitor water quality & gradients downstream of the RBP and 2-North workings. Mine pool – CCR backfill in River Barrier Pillar. |
| **2-North Plant Site** | MW-00-1S | Ex-situ | Till | Seepage to MQL |
| | MW-00-1D | Ex-situ | 1-Seam | Seepage to MQL |
| | MW-00-6D | Ex-situ | Till | Seepage to MQL |
| | MW-00-6S | Ex-situ | Till | Seepage to MQL |
| **4-South** | QU10-08D | Ex-situ | No. 3 Seam | 4 South (just outside mine pool) up gradient of existing workings |
| | QU11-01 | | Foot print area of 4 South GOB | Assess 4 South Mine Pool water quality |
| | QU10-09S | Ex-situ | Down gradient of existing workings | Access vertical gradients and water quality adjacent to Long Lake. |
| | QU10-09D | Ex-situ | Down gradient of existing workings | Access vertical gradients and water quality adjacent to Long Lake. |
| **2-South & 3-South** | MW002 | Ex-situ | 1 Seam | 3S seepage to Long Lake |
| | MW004 | In-Situ | Mine Pool (1 Seam) | 2-South Mine Pool Gob depillared area |
| | MW1223 | Ex-situ | Silt Stone | 2-South seepage to No Name Lake |
| | MW1224 | Ex-situ | Silt Stone | 2-South seepage to No Name Lake |
| | QU11-11 (INF) | In-Situ | Mine Pool (1 Seam) | 2-South mine pool dewatering well for Passive Treatment System |
| **7-South** | 1M7S | In-Situ | No. 4 Coal Seam | Underground Sump |
| | QU08-10 | Ex-situ | No. 4 Coal Seam | Downgradient of 7S -screened No. 3 Coal -Southern margin of workings |
| | QU08-13A | Ex-situ | No. 4 Coal Seam | Down Gradient of the CCR backfill towards QR |
| | QU08-13B | Ex-situ | Till & SST contact | Down Gradient of the CCR backfill towards QR |
| | QU14-10 | In-Situ | Mine Void | PAG Storage Mine Void |
| **7- South Area 5** | 7SA5 | In-Situ | Mine Void | Groundwater draining into mine void |
| | QU1128 | Ex-situ | N0. 4 Seam and 4L | Upgradiernt of 7SA5. Background 7 South Area 5 |
| | QU1118S | Ex-situ | Till | Down Gradient of 7SA5 - Background info for 7S A5 Subcrop |
| | QU1118D | Ex-situ | Sandstone | Down Gradient of 7SA5 - Background info for 7S A5 Subcrop |
| | QU1206S | Ex-situ | Faulted sandstone near No. 4 Seam | Upgradient of 7SA5 along margine with proposed 4S expansion |
| | QU11-35 | Ex-situ | Sandstone above No. 4 Seam | South end of 7SA5 footprint at 100280m N (mine grid) |
| **242 AREA** | QU11-36S | Ex-situ | Sandstone below No. 5 seam | Downgradient of 7SA5. Background (Between 242 and IR). |
| | QU11-36D | Ex-situ | Sandstone below No. 5 seam | Downgradient of 7SA5. Background (Between 242 and IR). |
| | 242MW | In-situ | No. 4 Seam | Mine pool |
| | 242PS | Ex-situ | Shallow groundwater/ rain water | Old Portal Sump |

## 2.3 ADDITIONAL MONITORING PROGRAMS

QCC conducts a diverse environmental monitoring program governed largely by the effluent permit PE: 7008. There are also additional baseline water quality monitoring programs, and in 2016, a sediment and benthic invertebrate monitoring program was conducted with the next program scheduled for 2021.

### 2.3.1 *BASELINE MONITORING PROGRAMS*

Quinsam conducts additional monitoring to support permit amendment efforts and to provide additional insight into water quality trends and observations. Although this information is not specifically included in this report, the data may be used in future submissions to ENV. As part of the 7-South Area 5 permit application, monitoring in the Iron River continues to be performed. The Iron River sediment and benthic monitoring program will commence in August / September of 2021 as the mine is currently in care and maintenance.

Baseline monitoring of water quality for future permitting of the 3-South pit continued this year. The date will provide sufficient information for water quality characterization toward the permit application. An engineered outlet channel was constructed in 2016, which will act as a permanent overflow channel connecting the 3-South sub-aqueous PAG-CCR disposal pond to the drainage channel connecting No Name Lake to Long Lake. Monitoring locations include the 2-South Inflow (2SI), 2-South pit near the outflow (2S), 2-South Channel (2SC), and 3-South Pit (3S). Receiving environment monitoring sites are No Name Lake Outlet (NNO) and three locations on the No Name Lake connector channel. The three sites on the connector channel include:

- downstream of the 3S outlet channel (3SDS)
- a tributary to the connector channel (3SDST)
- 100 m downstream of the tributary and the connector channel (3SDS3)

The sites have been monitored on the 5 in 30 schedules during spring, summer, and fall, and more recently monthly. Water quality monitoring was completed in 2019. Baseline sediment and benthic sampling will be performed in the future on the No Name Lake connector stream to supplement permitting for discharge.

### 2.3.2 *SEDIMENT AND BENTHIC MONITORING PROGRAM ON THE QUINSAM WATERSHED FOR EFFLUENT PERMIT PE:7008*

QCC conducted sediment and benthic monitoring in August through October 2016 to meet condition 4.2.7 (iii) of the amended Permit PE-7008 (dated September 22, 2014). This monitoring program was designed to supplement existing water quality data by evaluating sediment chemistry and benthic biota in waterbodies that receive mine impacted discharges and reference sites with similar characteristics. The *2016-2017 Annual Water Quality Monitoring Report* contains the findings of the program. The program included five lakes, one wetland, and one river system for a total of 23 sites. The table below lists the waterbody type, waterbody name and site outlined in the study.

**Table 5: Sediment and Benthic Monitoring Sites**

| Waterbody Type | Waterbody Name | Site |
|---|---|---|
| Lakes | No Name Lake (NNL) | No Name Lake Inlet, NNLI (EMS # E224246)<br>No Name Lake Deep, NNLD (EMS # E217018)<br>No Name Lake Near Seep (EMS # E292114)<br>No Name Lake Outlet (EMS # E217017) |
| | Middle Quinsam Lake (MQL) | Middle Quinsam Lake Inlet (EMS # E206901)<br>Middle Quinsam Lake Deep (EMS # E292115)<br>Middle Quinsam Lake Near Seep (EMS # E292116)<br>Middle Quinsam Lake Outlet (EMS # 0900504) |
| | Lower Quinsam Lake (LQL) | Lower Quinsam Lake Inlet (EMS # E292117)<br>Lower Quinsam Lake Deep 1 (EMS # E29118)<br>Lower Quinsam Lake Deep 2 (EMS # E292119)<br>Lower Quinsam Lake Outlet (EMS # E292120) |
| | Long Lake (LL) | Long Lake Inlet (EMS # E292121)<br>Long Lake Deep (EMS # E292122)<br>Long Lake Near Seep (EMS # E292123)<br>Long Lake Outlet (EMS # E219412) |
| | Gooseneck Lake (GNL) | Middle Gooseneck Lake (EMS # 1132502) |
| Wetland | Lower Wetland | Lower Wetland Inlet (EMS # E292124)<br>Lower Wetland Middle (EMS # E292125)<br>Lower Wetland Outlet (EMS # E292112) |
| Quinsam River | At Argonaut Road (WA) | (EMS # 0126402) |
| | Upstream of 7 South Mining Operation (QRDS1) | (EMS # E286930) |
| | Downstream of 7 South Mining Operation (7SQR) | (EMS # E292113) |

### 2.3.3 *LONG LAKE SEEP PASSIVE TREATMENT SYSTEM (PTS)*

Since the 2-South Mine pool pump replacement in August 2018, the treatment system has been operating with all discharge directed to the 2-South Pit. The system has been operating normally except for a few interruptions in January and February 2020 when it was shut down to reduce the amount of water entering 2S and 3S. The pump failed upon restart in February. Section 2.4 discusses this further. The pump was replaced with the treatment system reinitiated at 4.5 L/s in May 2020.

As discussed previously, the treatment system now has only two ponds, BCR and SPC treating mine water. The discharge is directed to the inlet of 2-South pit (2SI). This site is monitored for water quality and quantity. This system keeps the water within the authorized works where it meets permit limits at Settling Pond #1.

## 2.4 MAINTENANCE & RECLAMATION ACTIVITIES

To ensure proper functioning of site wide water management systems, haul roads, roadside ditches, catchment ditches, ponds, culverts, pumps, and water lines are maintained on a routine basis. Regular maintenance activities include removal of debris from culverts, replacement of silt fences and straw bales, and removal of sediment build-up from catchment ditches and ponds. Pumps and water lines are inspected daily and maintained as part of the surface inspection. Maintenance and repair occurred within the water management systems of the North and South Water Management Areas.

**2-North Underground Water Management**

On February 23, 2020, the 5-Mains 2-North pump failed. The 2-North Mine is dewatered through a network of pump systems. These include 1 Mains 2-North (1M2N) and 5 Mains 2-North (5M2N) and 3Mains 2-North (3M2N). As contingency 3 x 58 Hp and 1 x 250 hp pumps were installed to maintain water levels in the mine during heavy rain / snow fall events. Collectively these pumps can dewater the 3Mains section of the mine at a rate of approximately 6000 GPM. These pumps are installed to manage water levels in the mine and protect underground infrastructure.

**South Water Management**

In January 2020, the 2-South mine pool pump was shut down to eliminate further inputs into 3S pit during times of flooding conditions at site (snow fall followed by extreme rain fall) and reduce the risk of an overflow from 3S pit down the un-authorized channel. For contingency, a diesel pump was rented to provide additional pumping capacity at 3-South pit into Settling Pond #1. The 2-South mine pool pump faulted upon restart in February 2020. Replacement of the pump and initiation of the treatment system occurred in May 2020.

Below is a list of maintenance and water management events that occurred in 2019-2020.

*Notable Events - Water Management*

- April 2019 Dewatering wells (#1 & #2) 1M2N and 5M2N running
- May 1, 2019 Beaver dam obstructing decant at SP1
- May 9, 2019 7S continues to cycle into 5S, 5S dewatering pump to 3M2N turned off
- May 14, 2019 No discharge at SP1, closed circuit from 2S to 3S
- May 31, 2019 All three dewatering wells (1M2N #1 & #2 and 5M2N) turned off
- Jun 2019 1 x 250 hp 3M2N and 1 x 58 hp 2NPS continue to cycle into SP4
- Jun 26, 2019 CPP pump in SP4 turned on, water directed to plant then WP
- Jul 4, 2019 LLSM stopped flowing
- Jul 7, 2020 Reduced / limited discharge from SP4 to receiving environment
- Sep 8, 2019 All three dewatering wells (1M2N #1 & #2 and 5M2N) turned on
- Sep 9, 2019 1M2N #1 pump faulted / failed
- Sep 9, 2019 SP4 discharging to receiving environment, CPP pump turned off
- Oct 21, 2019 5M2N pump turned off, low reservoir underground
- Oct 31, 2019 Dewatering wells (1M2N #2 and 5M2N) turned on
- Nov 12, 2019 Beaver dam cleared from SP1
- Nov 13, 2019 Water directed back to SP1 from 3S
- Nov 25, 2019 LLSM started flowing
- Nov 26, 2019 5-South mine pump to 3M2N turned on
- Jan 16, 2020 Major snow fall followed by precipitation at site (264.80 mm in Jan)
- Jan 22, 2020 3-South pit water levels increasing from precipitation / snow melt
- Jan 22, 2020 Turned off 2-South well pump to reduce water levels in 3S pit
- Jan 24, 2020 Diesel pump arrived to provide additional pumping capacity at 3-South
- Feb 23, 2020 5Mains 2-North dewatering pump faulted on restart after power outage
- Feb 6, 2020 2-South well pump faulted/failed to restart
- Feb 27, 2020 "Failure of works" notice issued to MOE and EMPR
- Mar 4, 2020 Emergency back-up pumping system installed at 10X-cut in 3M2N

The following reclamation was completed during spring of 2019 (see the *Annual Reclamation Report for 2019, Mines Act Permit Number C-172* for further details):

- Reforestation with Douglas fir (*P. menziesii* var. *menziesii)* at 1200 stems per hectare occurred at 2-North area (18.24 Ha) and replanting occurred on 3-South highwall (1.48 Ha) and for a total of 19.72 Ha tree planted in 2019.

Reclamation work performed around the 2, 3, 4 and 7-South areas are expected to substantially improved water quality within the mine areas and receiving environment by decreasing exposure of weathering waste rock dumps and highwalls.

## 3.0 CHEMICAL REAGENTS AND WASTE STORAGE

Waste oil and solvents are stored in sealed containers or tidy tanks at secure locations and removed from site for recycling by Terrapure Nanaimo. Bill of lading number 85207556. Scrap metal at the mine site is collected in designated containers and recycled.

## 4.0 INCIDENTS - PERMIT LIMIT EXCEEDANCES & PERMIT NON-COMPLIANCES

Please refer to Appendix 1, Table 2 for a summary of all permit limit exceedances (P) and permit non-compliances (PNC) specific to missed samples, parameter analysis, and missing flow data. Appendix VII provides the noncompliance reports. All spill and excursion reports were submitted to the Environmental Compliance website at: environmentalcompliance@gov.bc.ca.

There was one event that resulted in a permit limit exceedance related to mine discharge during the 2019-2020 period:

- A beaver dam had been blocking the decant since spring and most of fall at Settling Pond #1. Water levels in pond increased and the dam was removed causing a flushing and suction around decant structure possibly releasing iron into water column. Discharge water on December 4, 2019 resulted in elevated dissolved iron (0.517 mg/L). The permit limit applied to the discharge at SP1 is 0.50 mg/L. This occurred for (1/9) samples collected. Spill report No. DGI: 193640.

During 2019-20 several permitted sites have no results due to the company's financial situation, as a result the laboratory reports were not released. The samples were collected, submitted and analyzed, but the lab would not release the results without payment. The table below displays the missing results.

**Table 6: Summary of Missing Laboratory Results and Permit Non-Compliance**

| EMS ID | Station Code | Sample ID | Job confirmation Report | Job # | Sample # | Project # | COC# | Date Received | Company Reponsible for Payment |
|---|---|---|---|---|---|---|---|---|---|
| E206619 | LLM1 | LLM1-1May19-M | B932610 | N/A | N/A | Biological Monitoring (Species Composition) | N/A | 2019-05-02 | Quinsam Coal Corporation |
| E206619 | LLM1 | LLM1-8May19-M | B935007 | N/A | N/A | | N/A | 2019-05-09 | |
| E217018 | NNL1 | NNL1-1May19-M | B932613 | N/A | N/A | | N/A | 2019-05-02 | |
| E217018 | NNL1 | NNL1-8May19-M | B935019 | N/A | N/A | | N/A | 2019-05-09 | |
| E206618 | MQL | MQL-8May19-M | B935003 | N/A | N/A | Biological Monitoring (Species Composition / Chlorophyll A) | N/A | 2019-05-09 | |
| E292118 | LQL1 | LQL1-8May19-M | B935390 | N/A | N/A | | N/A | 2019-05-09 | |
| N/A | INF | INF-25JUL19-M | | B962440 | WF0026 | WEEKLY-SURFACE | 8471969 | 2019-07-31 | PwC Inc. trustee of the estate of Quinsam Coal Corp |
| N/A | BCREFF | BCREFF-25JUL19-M | | B962440 | WF0027 | WEEKLY-SURFACE | 8471969 | 2019-07-31 | |
| N/A | SPCEFF | SPCEFF-25JUL19-M | | B962440 | WF0028 | WEEKLY-SURFACE | 8471969 | 2019-07-31 | |
| N/A | 2SI | 2SI-25JUL19-M | | B962440 | WF0029 | WEEKLY-SURFACE | 8471969 | 2019-07-31 | |
| E292130 | LLE | LLE-25JUL19-M | | B962440 | WF0030 | WEEKLY-SURFACE | 8471969 | 2019-07-31 | |
| E292130 | LLE | LLE-25JUL19-R | | B962440 | WF0031 | WEEKLY-SURFACE | 8471969 | 2019-07-31 | |
| E219412 | LLO | LLO-25JUL19-M | | B962440 | WF0032 | WEEKLY-SURFACE | 8471969 | 2019-07-31 | |
| E292118 | LQL1 | LQL1-30JUL19-M | | B962453 | WF0076 | LAKES | 8471978 | 2019-07-31 | |
| E292118 | LQL4 | LQL4-30JUL19-M | | B962453 | WF0077 | LAKES | 8471978 | 2019-07-31 | |
| E292118 | LQL9 | LQL9-30JUL19-M | | B962453 | WF0078 | LAKES | 8471978 | 2019-07-31 | |
| E292118 | LQLB | LQLB-30JUL19-M | | B962453 | WF0079 | LAKES | 8471978 | 2019-07-31 | |
| E206619 | LLM1 | LLM1-30JUL19-M | | B962480 | WF0122 | LAKES | 8471976 | 2019-07-31 | |
| E206619 | LLM4 | LLM4-30JUL19-M | | B962480 | WF0123 | LAKES | 8471976 | 2019-07-31 | |
| E206619 | LLM9 | LLM9-30JUL19-M | | B962480 | WF0124 | LAKES | 8471976 | 2019-07-31 | |
| E206619 | LLMB | LLMB-30JUL19-M | | B962480 | WF0125 | LAKES | 8471976 | 2019-07-31 | |
| E217018 | NNL1 | NNL1-30JUL19-M | | B962481 | WF0126 | LAKES | 8471974 | 2019-07-31 | |
| E217018 | NNL1 | NNL1-30JUL19-R | | B962481 | WF0127 | LAKES | 8471974 | 2019-07-31 | |
| E217018 | NNL4 | NNL4-30JUL19-M | | B962481 | WF0128 | LAKES | 8471974 | 2019-07-31 | |
| E217018 | NNL9 | NNL9-30JUL19-M | | B962481 | WF0129 | LAKES | 8471974 | 2019-07-31 | |
| E217018 | NNLB | NNLB-30JUL19-M | | B962481 | WF0130 | LAKES | 8471974 | 2019-07-31 | |
| E206618 | MQL1 | MQL1-30JUL19-M | | B962483 | WF0137 | LAKES | 8471977 | 2019-07-31 | |
| E206618 | MQL4 | MQL4-30JUL19-M | | B962483 | WF0138 | LAKES | 8471977 | 2019-07-31 | |
| E206618 | MQL9 | MQL9-30JUL19-M | | B962483 | WF0139 | LAKES | 8471977 | 2019-07-31 | |
| E206618 | MQLB | MQLB-30JUL19-M | | B962483 | WF0140 | LAKES | 8471977 | 2019-07-31 | |
| E292118 | LQL | LQL-30JUL19-M | | B962530 | WF0357 | Biological Monitoring | N/A | 2019-07-31 | |
| E206619 | LLM | LLM-30JUL19-M | | B962530 | WF0358 | Biological Monitoring | N/A | 2019-07-31 | |
| E206618 | MQL | MQL-30JUL19-M | | B962530 | WF0359 | Biological Monitoring | N/A | 2019-07-31 | |
| E299256 | IRQR | IRQR-29JUL19-M | | B962572 | WF0498 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E297230 | IR1 | IR1-29JUL19-M | | B962572 | WF0499 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E297231 | IR6 | IR6-29JUL19-M | | B962572 | WF0500 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E297232 | IR8 | IR8-29JUL19-M | | B962572 | WF0501 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E292113 | 7SQR | 7SQR-29JUL19-M | | B962572 | WF0502 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E297230 | IR1 | IR1-29JUL19-R | | B962572 | WF0503 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E0126402 | WA | WA-29JUL19-M | | B962572 | WF0504 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E0900504 | WB | WB-29JUL19-M | | B962572 | WF0505 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E219412 | LLO | LLO-29JUL19-M | | B962572 | WF0506 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E286930 | QRDS1 | QRDS1-29JUL19-M | | B962572 | WF0507 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |
| E217017 | NNO | NNO-29JUL19-M | | B962572 | WF0508 | RIVER'S WEEK 1 | 8471973 | 2019-07-31 | |

## 5.0 MATERIALS AND METHODS: ENVIRONMENTAL MONITORING PROGRAM

All water samples were collected in accordance with methods described in "*The British Columbia Field Sampling Manual for Continuous Monitoring of Air- Emissions, Water, Soil, Sediment, and Biological Samples*" (MOE 2013)[2]. This includes following of specified field protocols: use of field duplicates, split samples, and method blanks and checking for transcription errors.
Bureau Veritas Laboratories (BV labs) located in Burnaby B.C., a Canadian Association for Laboratory Accreditation (CALA) designated laboratory, conducted the analysis of surface, groundwater, and sediment samples. Phytoplankton samples were analyzed by Stantec Consulting Ltd. (Burnaby B.C.). Zooplankton samples were analyzed by Fraser Environmental (Surrey, B.C.).

### 5.1 WATER QUALITY ANALYSIS

PE-7008 identifies the parameters to be analyzed in effluent. Each site has specific requirements for parameters to be analyzed. The following parameters are generally monitored at each station:

- Total suspended solids (TSS) (mg/L)
- Total dissolved solids (TDS) (mg/L)
- pH-Field (standard units)
- Conductivity-Field (uS/cm)
- Alkalinity (mg/L as $CaCO_3$)
- Hardness (mg/L as $CaCO_3$)
- Sulphate (mg/L)
- Ammonia as nitrogen (mg/L)
- Nitrate/nitrite combined as nitrogen (mg/L)
- Dissolved Organic Carbon (mg/L)
- Total phosphorus and dissolved phosphate (mg/L)
- Total and dissolved metals (mg/L)
- Oil and grease (for sites SPD and WD only) (mg/L)
- Rainbow trout bioassays (for sites SPD, WD and 7SSD only)
- 7 Day *Ceriodaphinia dubia* chronic toxicity test (at site 7S only)

The following parameters are specific to lake sampling:

- Dissolved oxygen (mg/L)
- Dissolved oxygen (Percent saturation)
- Temperature (Celsius)
- Oxidation reduction potential
- Biological
    - Phytoplankton (chlorophyll "a" and phaeopigment)
    - Phytoplankton (counts and identification to species)
    - Zooplankton (counts and identification to species)

All surface and groundwater samples were filtered through a 0.45 µm filter and most were preserved on site except for a few samples where preservation did not occur. Maxxam analyzed dissolved and

[2] MOE. 2013. "The British Columbia Field Sampling Manual for Continuous Monitoring of Air- Emissions, Water, Soil, Sediment, and Biological Samples". Available at: http://www2.gov.bc.ca/assets/gov/environment/research-monitoring-and-reporting/monitoring/emre/field_sample_man2013.pdf

total metals samples using the CCME/BC WQG analytical package to provide suitable detection limits for comparison with guidelines and as per ENV requirements. This included use of conventional and Inductively Coupled Plasma Mass Spectrometry (ICPMS) equipment.

## 5.2 ENVIRONMENTAL MONITORING EQUIPMENT

The following equipment was used to conduct the surface monitoring program at Quinsam Coal:

- ISCO 4210 flow metres equipped with a paper chart plotter and datalogger, which are connected to a sonic depth sensor to measure water height above decant (Settling Pond #1) and an ISCO signature flow metre with an ultrasonic sensor (Settling Pond #4). Both instruments use water height to determine discharge by using provided weir/orifice equations. Continuous monitoring is achieved using a datalogger and downloaded using a computer with Flow link software.
- A maidlabs technology, Flowmaid with an ultra-sonic depth sensor replaced the ISCO 4210 at Settling Pond #1
- A Sitrans F M MAG 8000 CT electromagnetic flow metre to record discharge at 7SSD.
- ISCO 12-volt automatic samplers programmed to collect daily composite samples for analysis of TSS deployed at all permitted discharge locations.
- A YSI Exo 1 multiparameter sonde and YSI Pro-Plus, to obtain physical water quality parameters, and calibrated prior to each sampling event following manufacturer specifications for maintenance and handling.
- Two handheld sondes (Oakton PC Tester 35), for routine monitoring of pH and conductivity.
- Level logger pressure transducers, used to obtain continuous water level measurements at Long Lake Outlet, Middle Quinsam Lake Outlet and the Iron River, with data used to create daily hydrographs.
- A 4-litre Beta sampler, to collect lake water samples; the sampler is constructed with materials to minimize interference cross contamination of metals and the 4 litre volume provides sufficient water for all required analyses in one deployment per depth.
- A Campbell Scientific weather site, to record temperature, precipitation, wind, humidity, solar intensity, and snow accumulation data (installed next to the 2-South pit in August 2015, became operational in October 2015).
- An Eckman grab sampler, for collection of sediment and benthic invertebrate samples.
- Hydro-lift used for collection of groundwater samples
- Portable Bladder pump used for collection of groundwater samples
- Peristaltic pump used for collection of groundwater samples

Although this list is not exhaustive, it provides an overview of the equipment used for environmental monitoring.

## 5.3 QUALITY ASSURANCE / QUALITY CONTROL

Quality Assurance / Quality Control (QA/QC) sampling followed protocols described in MOE (2016). QA/QC practices were integrated into the water sampling program to maintain the integrity, consistency, and reproducibility of sampling techniques and results of environmental monitoring. Various samples, including field blanks, trip blanks, equipment blanks, and replicates, are used to evaluate methods and identify potential issues related to sampling techniques and equipment. Each sample type serves a specific purpose:

- Field Blanks – Samples of laboratory-grade, reverse osmosis, deionized water deposited into sample containers in the same location in which a field sample is collected. These samples are carried and treated in the same manner as a field sample to assess any potential cross-contamination that may occur due to sampler technique.
- Trip Blanks – Samples of laboratory-grade, reverse osmosis, deionized water deposited into sample containers in a laboratory setting are transported into field locations with samplers to determine if any cross-contamination occurs due to the handling or storage of sample bottles.
- Equipment Blanks – Samples of laboratory-grade, reverse osmosis, deionized water placed into a piece of equipment at a sampling station to identify potential cross-contamination associated with equipment (e.g., Beta sampler), sampling procedures, or general cleanliness.
- Replicates – Samples collected at the same location and time by the same sampler using the same techniques and equipment. Replicates samples are used to assess precision for each analyte analyzed. Observed variance between replicates identifies uncertainty in sampling, environmental heterogeneity, and laboratory analysis.

Field replicate samples are collected during every sampling event, accounting for approximately 10% of analyses requested from the laboratory. One sampling event may span two or more days. The primary sampling events are:

- Weekly, monthly, and quarterly sampling for all permitted monitoring locations
- 5 in 30-day programs, three times per year for receiving environment sampling for lakes, rivers, and streams
- Groundwater wells

For all replicates collected Relative Percent Difference (RPD) values were calculated for the analytical results from the sample and its respective replicate. In accordance with the British Columbia Field-Sampling Manual, the calculation was applied as stated below:

$$RPD = Absolute \frac{(Sample\ Concentration - Replicate\ Concentration)}{\left(\frac{Sample\ Concentration + Replicate\ Concentration}{2}\right)}\ x\ 100\%$$

RPD calculations were only practical for results where concentrations were found at or greater than five times the reported detection limit (RDL) as there is considerable uncertainty at low levels. In addition, mathematical calculations for RPD appear exaggerated with low values where absolute differences may be relatively low. It is expected to see variation between a sample and its respective field replicate for several reasons. Some considerations include redox reactive parameters, inconsistent sample stream at sampling locations; heterogeneity of water at sampling location; the possibility of minor contaminations; laboratory sample preparation and accuracy of analytical instrument and the lab mean detection limits for the results are different, to name a few. Taking these possibilities into consideration, RPD values less than 20% are deemed "acceptable" and indicate proper sampling methodology with representative results. It has been acknowledged that RPD values greater than 20% indicate a potential problem with sampling integrity whereas values greater than 50% indicate a definite problem.

All replicate results and RPD calculations are displayed Appendix I, Tables 37 and RPD calculations with values greater than 20% and 50% are presented in Tables 38 and 39, respectively.

During the 2019/2020 monitoring year, there were 1239 sample sets submitted to the laboratory and a total of 75 replicate surface and groundwater water samples were collected. Of the 4081 analyzed parameters in these samples, 27 (0.66%) had an RPD greater than 20% while 28 of the 4081 (0.68% of total) had an RPD greater than 50%. Duplicate analyses for total aluminum accounted for the most frequent instances of RPD greater than 20% resulting in 4 out of 55 (4/55) occurrences. Overall, the parameters that were found with an RPD greater than 50% do not seem to be displaying enough RPD magnitude to identify a serious problem needing immediate attention. QCC will continue to adhere to sampling practices identified in MOE (2016) and promote best practices at all locations.

The RPD for field blank sample concentrations should not be significantly greater nor occur more frequently than for laboratory method blanks (MOE 2016). Results greater than two times the laboratory MDL are identified and investigated to determine potential contamination.

Field blank, trip blank, and equipment blank results of laboratory grade deionized water were within the acceptable range for samples analyzed in 2019/2020. There was 1 trip blank analyzed for sulphate and metals; all results met the RPD, indicating acceptable field sample collection and handling.

Results of the 2019/2020 QA/QC review indicate confidence in the ability of QCC to collect and analyze samples that meet required accuracy and precision requirements. Internal performance audits will continue, and any identified deficiencies will be investigated to adjust sampling protocol. All employees will be kept up to date with sampling procedures and provided with any training and equipment necessary.

A variance analyses to identify outliers is performed prior to uploading analytical data into the database. Any results outside 95% confidence intervals (within 4 standard deviations) of previous results are investigated, and if needed BV's is contacted and the results are rerun, with a new report issued that include a review of BV's internal investigation.

BV laboratory performs internal QA/QC on all sample sets that are analyzed. This is included in the laboratory report provided BV and reviewed by QCC. The internal QA/QC performed by BV meets laboratory standards. BV internal QA/QC involves the following procedures with every sample set analyzed:

- Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.
- Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.
- Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

# 6.0 HYDROLOGY

## 6.1 NORTH WATER MANAGEMENT SYSTEM

### 6.1.1 *AUTHORIZED DISCHARGE RATES AT SETTLING POND #4 (SP4/WD) E207409*

Maximum authorized rates of discharge at SP4 are 0.32m$^3$/s (instantaneous) and 0.08m$^3$/s (annual average) or 2,522,880 m$^3$ over a period of 365 days. Maximum discharge rates were below 0.32m$^3$/s throughout the entire monitoring period, peak discharge was observed in May and February during pumping and heavy precipitation events. For 2019-2020 the cumulative discharge was calculated as 2,912,065 m$^3$ lower compared to last year 3,793,971m$^3$. This is equivalent to an annual average discharge rate of 0.092 m$^3$/s; higher than the authorized average rate of discharge by 9.0% (0.08 m$^3$/s or 2,522,880 m$^3$). Figure 4 displays cumulative annual average discharge rate and daily discharge rates compared to the average annual authorized rate of discharge.

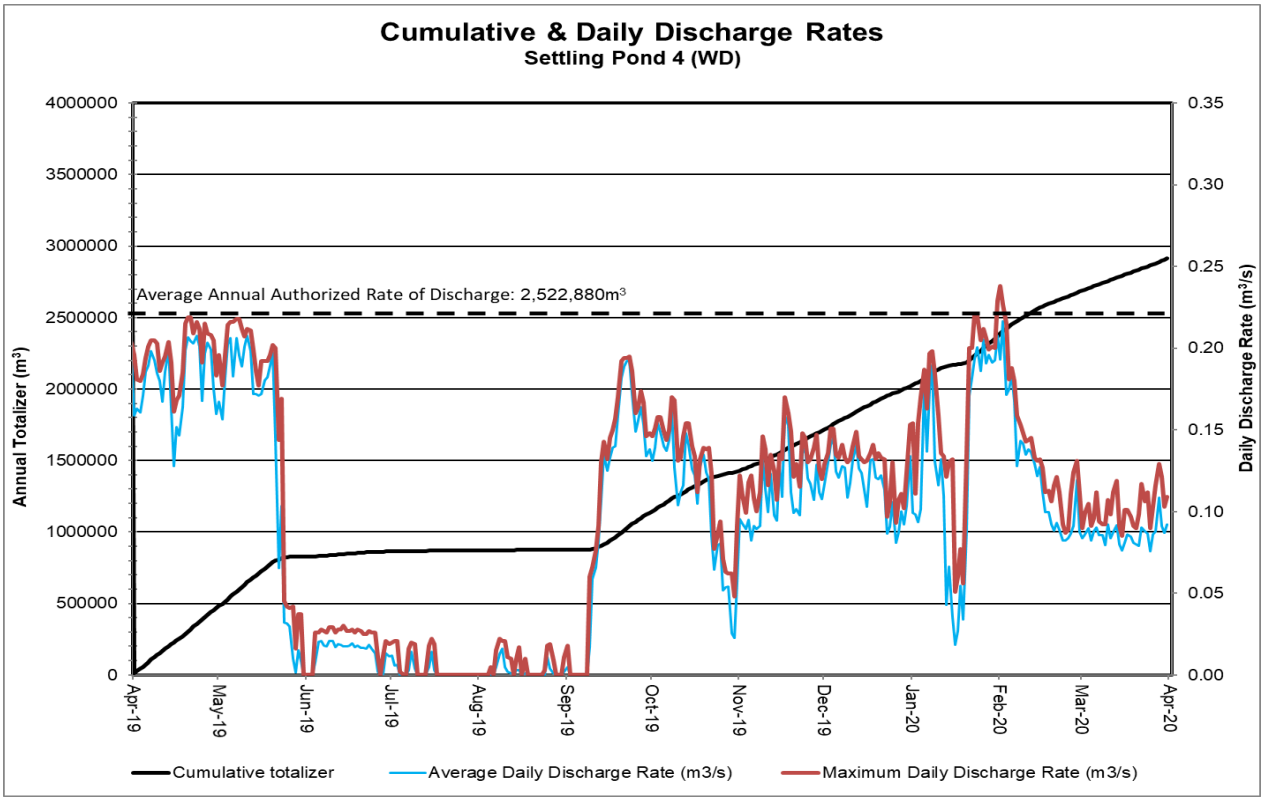



**Figure 5: Settling Pond #4 Cumulative Annual Average Discharge Rate and Daily Discharge Rates**

The annual average flow rate exceeded the permissible value due to elevated discharge rates at SP4 during spring, fall, and winter coinciding with increased (seasonal) precipitation events and continuous pumping to maintain water levels underground in 2-North mine in preparation for mining.

Coal processing water is pumped from SP4, reducing the discharge rates significantly when this occurs. Discharge rates are related to coal processing, dewatering from underground 2-North mine and precipitation. In the absence of coal processing the discharge rates should increase as this water is not being pumped from the pond for coal processing.

During June through September the Coal Processing Pump (CPP) located in SP4 was turned on to reduce discharge. The water was circulated to the 2-North PAG Pond (WP), which aided in maintaining a water cover over the PAG-CCR. This can only be performed during summer low flow as there is limited capacity in WP.

The rate of discharge at SP4 was under investigation with Quinsam Environmental Department. The outlet end of the discharge pipe is pointing upwards and is partially submerged causing a head pressure differential on the outlet end. These conditions cause slightly higher readings possibly by 20%. In order to correct this, construction work would have to occur on the dam to correct the position of the pipe. The decant riser and discharge pipe was cleaned out by Roto Rotter in 2018 to remove any buildup. The quantity of water discharged next year is anticipated to remain consistent with this year's annual average authorized rate of discharge if pumping continuous at the same rates throughout the year.

A summary of discharges from Settling Pond # 4 is displayed in Appendix I, Tables (27-28).

## 6.2 SOUTH WATER MANAGEMENT SYSTEM

### 6.2.1 *AUTHORIZED DISCHARGE RATES AT SETTLING POND #1 (SP1/ SPD) E218582*

Maximum authorized rates of discharge at SP1 are 0.46$m^3$/s (instantaneous) and 0.10$m^3$/s (annual average) or 3,153,600$m^3$ over a period of 365 days. Both annual maximum flow (0.339 $m^3$/s) and annual average flow (0.0312 $m^3$/s) were well below the permitted rates.

SPD was not discharging from May 14$^{th}$ through to September 12$^{th}$ due to low flow rates and beaver activity, which occurred until November 12$^{th}$. Daily discharge peaked in late September because of the beaver dam and once removed throughout the fall and winter months. The fall and winter discharge coincided with heavy precipitation resulting in increased surface runoff and pumping from the 3-South pit.

The flow metre at SP1 failed for three days during December (6$^{th}$ through 8$^{th}$) and was replaced on December 11$^{th}$ due to inaccurate readings. Daily staff gauge readings and sensor calibration was required during this time. Figure 6 displays cumulative and daily discharge rates compared to permit limits. A summary of SP1 discharge is displayed in Appendix I, Tables (29-30).

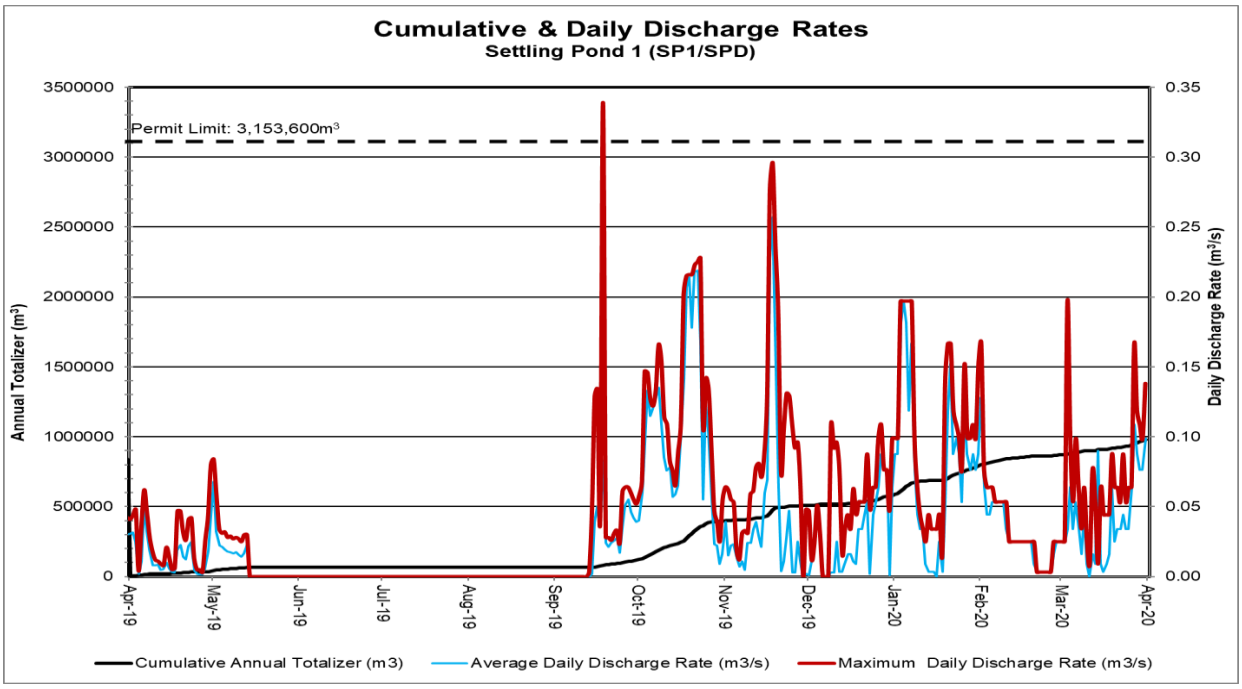



**Figure 6: Settling Pond #1 Cumulative Annual Average Discharge Rate and Daily Discharge Rates**

### 6.2.2 *South Water Management System Entrance into Long Lake (LLE) E292130*

Flow monitoring is required weekly at LLE, which discharges near the outlet of Long Lake. Discharge at LLE represents the combined flow from the South water management systems along with groundwater from the 4-South coal pad area and non-mine related surface water from the upstream wetland and drainage features. As such, this site provides cumulative flow data representing all discharges from the South water management system prior to entering Long Lake near the outlet.

Flow at LLE is well correlated with precipitation events and, historically, experiences a seasonal dry period during summer. Beaver activity occurred at the culvert in this wetland from spring to fall and as a result flow rates were sporadic when the dam was removed
Appendix II, Graph 59 displays discharge versus precipitation at LLE.

### 6.2.3 *Seep Monitoring Sites, Long Lake Seep (LLSM) – E292131*

Manual flow measurements are obtained weekly at the LLSM weir. The flow information is available in Appendix II, Graph 58. The flow recorded at Long Lake Seep indicates a dependency on mine pool (void) water levels. Mine pool water levels correlate with seasonal precipitation, with highest levels observed in January 2019. As mine pool levels decrease below a certain elevation in late spring, flow at the seep decreases substantially and temporarily ceases during late summer early fall. In 2019, discharge from the seep stopped for five months (Jul 4 through November 25th). It is determined that seep flow is most closely related to water level at the monitoring well MW004 and the threshold level for seep flow is approximately 303.5 - 304 mASL. This trend will continue to be monitored and verified in the future. In August 2018, an H-fume with a flow metre was installed at Long Lake Seep Middle providing more accurate monitoring of seep discharge. Continuous flow

was not recorded from March 2 through 31 but weekly measurements were taken at the H-Flume and converted to flow from March 2 to March 31, 2020.

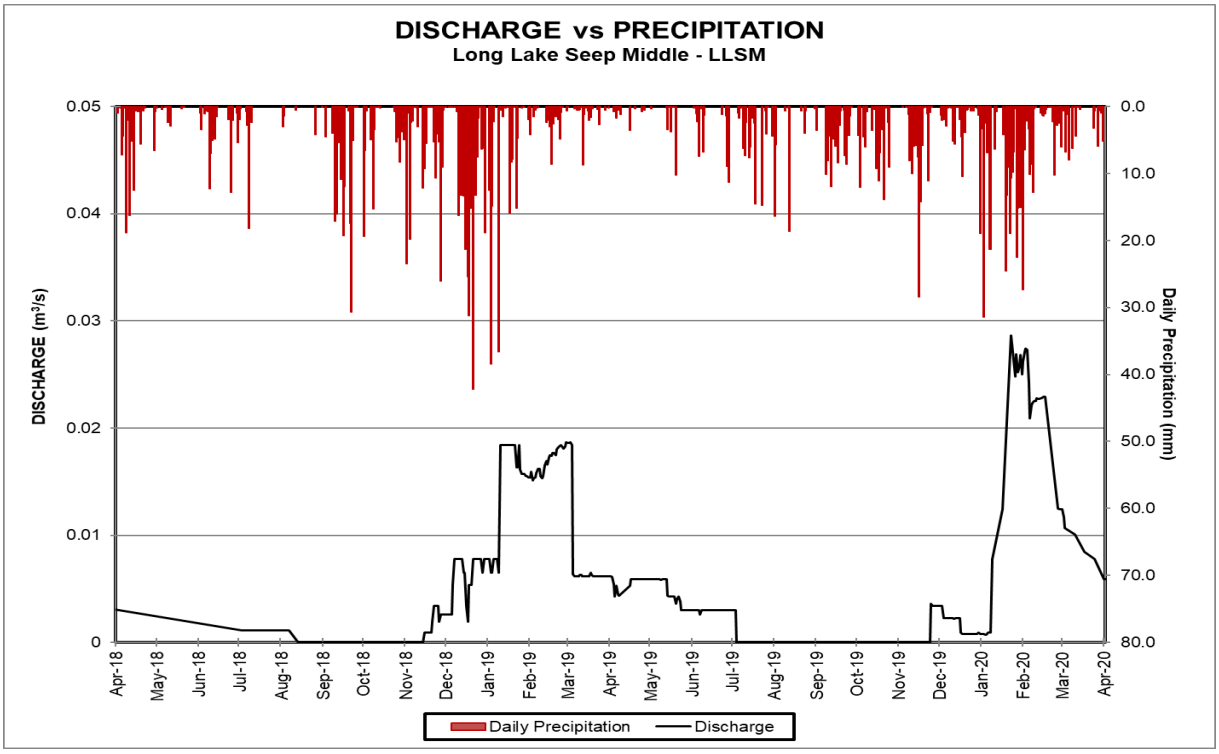



**Figure 7: Discharge vs Precipitation Long Lake Seep Middle (LLSM)**

## 6.3 7-South Mining Operation Decant (7SSD) - E292069

The maximum authorized discharge from settling pond 7SSD is 0.005m$^3$/s (5 L/s). However, discharge is dependent on assimilative capacity of Stream 1 (7S) and, therefore, dynamic in nature. To facilitate determination of the appropriate discharge level at 7SSD, a flow rating curve was developed for monitoring site 7S (Figure 8) to allow instantaneous flow levels at 7S to be measured by reading the installed staff gauge.

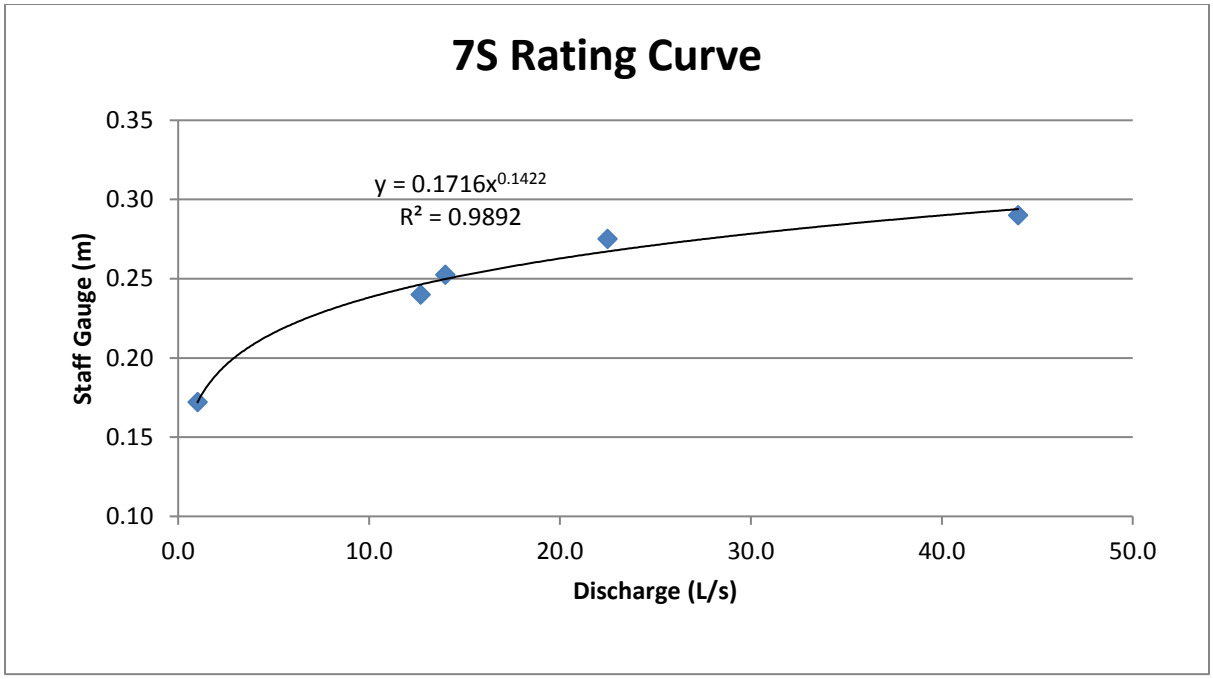



**Figure 8: Monitoring Site 7S Stage Discharge Curve**

Initially, an 8:1 dilution ratio was identified to maintain desirable water quality in the receiving environment, monitored at downstream site Stream 1 (7S). However, throughout the 7-South operational period, a lower dilution ratio has been shown to allow WQG's to be met in the receiving environment (site 7S). The dynamics of this system are still being monitored and measured; as a longer-term dataset is developed, the information will be evaluated to optimize discharge rates, while continuing to protect aquatic life.

In 2015, modifications were made to minimize discharge from 7SSD. The containment pond (7SCP) that delivers water into 7SSD was enlarged to accommodate more water. Additional pumps were placed at 7SSD and 7SCP to decrease 7SSD discharge and assist environmental personnel in water management. The revised system pumps water from 7SSD and 7SCP to 7SPS. The pump at 7SCP runs on an automated float system where water levels are kept below the overflow channel into 7SSD. During high precipitation events, a secondary pump can be activated to assist in pumping water to 7SPS. This pump can also be relocated to 7SSD, where any accumulated water can be diverted into 7SCP. This system does not eliminate all discharge from 7SSD but substantially reduces discharge frequency and aids in management during times of heavy precipitation.
No discharge occurred during 2019-2020, Appendix I, Table 31.

## 7.0 RECEIVING ENVIRONMENT HYDROLOGY

Hydrometric stations in the receiving environment monitor hydrological conditions at key locations affected by QCC operations. Stage discharge curves for these stations have been developed using various methods (e.g. staff gauge, pressure transducer, manual measurements) and are periodically updated to ensure that the full range of flow is captured. The information is used to evaluate water quality and, in turn, determine assimilative capacity of the receiving environment with respect to mine related discharge. Moreover, flow is well correlated with lake flushing and turnover events, which directly influence concentrations of certain parameters (e.g. sulphate).

Flow data for WA is obtained from the Environment Canada monitoring station "Quinsam River at the Argonaut Bridge"; the data is currently subject to revision and has not been approved. The flow for WA is controlled upstream by the BC Hydro diversion dam to Gooseneck Lake; therefore, the volume of water diverted for hydro generating purposes influences flows at WA and WB. Accordingly, water levels at these two stations are not as closely correlated with precipitation as they are for other receiving environment stations.

Flow monitoring stations on the Iron River, Stream 1, and Long Lake system(s) are directly influenced by precipitation and the hydrographs typically show a pronounced peak following a precipitation event. This increase generally represents additional dilution and, therefore, assimilative capacity (for most parameters) in the receiving environment.
Appendix II, Graphs (56, 57, 60, 61 and 62) display flows compared to water level measurements and precipitation for the receiving environment hydrometric stations (WA, WB, LLO, 7S and IR8).

## 8.0 WATER QUALITY: IN-SITU MINE RELEASES & WATER MANAGEMENT SYSTEMS

This section presents results of the 2019/2020 water quality monitoring program for the North, South, and 7-South in-situ (within) mine releases and water management systems for the major monitoring locations (e.g. settling ponds, discharges), permitted parameters and parameters of interest, to provide context for evaluating receiving environment water quality. The data for all in-situ mine monitoring stations are presented throughout Appendix I of the Tables section. Weekly field pH and conductivity results are presented in Appendix I, Tables (34 to 36).

Appendix I, Tables (41 – 70) provide a five year statistical summary (year over year, minimum, maximum, average, median, geometric mean, count, count < detection limit (DL), standard deviation, first quartile, third quartile and standard error) for 27 parameters measured in the settling ponds, applicable receiving environment monitoring stations, and ex-situ groundwater wells. Monitoring years 2015 to 2020 are presented, where data is available. Table 7 below lists the monitoring stations, parameters, and statistics included in this evaluation.

For a summary of permit limit exceedances please refer to Appendix I, Table 2 and Appendix VIII to review the Annual Status Form prepared for PE-7008.

**Table 7: List of Monitoring Stations, Parameters and Statistics**

| **Monitoring Stations** | | |
|---|---|---|
| WA | LLS | |
| WD | LLSM | QU0813A |
| MW001D | MW002 | QU0813B |
| MW001S | QU1009D | QU0821GD |
| MW006D | QU1009S | QU0821GS |
| MW006S | SPD | QU1010D |
| WC | LLE | QU1010S |
| MQL1 | LLM1 | QU1011D |
| MQLB | LLMB | QU1011S |
| NNL1 | LLO | QU1105S |
| NNLB | WB | QU1109S |
| NNO | 7SSD | 7SQR |
| **Parameters** | | |
| Arsenic (As-T) | Iron (Fe-T) | Lead (Pb-T) |
| Arsenic (As-D) | Iron (Fe-D) | Lead (Pb-D) |
| Aluminum (Al-T) | Manganese (Mn-T) | Sulphate (SO4-D) |
| Aluminum (Al-D) | Manganese (Mn-D) | Zinc (Zn-T) |
| Alkalinity (Alk-T) | Mercury (Hg-T) | Zinc (Zn-D) |
| Cadmium (Cd-T) | Mercury (Hg-D) | Phosphorous (P-T) |
| Cadmium (Cd-D) | Hardness (Hard-T) | Phosphorous (P-D) |
| Copper (Cu-T) | Nickel (Ni-T) | Nitrate & Nitrite combined (N-NO2,3) |
| Copper (Cu-D) | Nickel (Ni-D) | Ammonia Nitrate (N-NH3) |
| **Statistics** | | |
| Count | Geometric Mean | 1st Quartile |
| Minimum | Count <DL | Median |
| Maximum | Standard Deviation | 3rd Quartile |

## 8.1 NORTH WATER MONITORING SITES

The 2-North mine pool could be considered a large reservoir with different chambers hosting a variety of geochemical water quality. The 2-North mine system holds fresh water from perched water tables above the mine that interact with exposed mine walls at 5-Mains. 1-Mains 2-North holds 7-South tailings from processing of 7-South coal and 3-Mains holds a mixture of water from flooded 5-South mine pool (5SMW), dewatering of the 7-South mine and tailings dam seepage collected at SDS.

Mine water from 7-South Area 5 (7SA5) is directed into the underground sump 1-Mains 7-South (1M7S). From here water is pumped into the 7-South portal sump (7SPS) where it mixes with surface water in the sump or is pumped directly into the flooded 5-South mine pool at borehole (QU0513). From the 5-South mine, water is pumped via a 6-inch pipeline directly into 3-Mains 2-North mine and includes water from the SDS. Water collected in the 2NPS is a mixture of 1-Mains 2-North and tailings dam seepage. 2NPS discharge line ties into the 3-Mains pipeline and discharges into Brinco brook.

Brinco brook also collects discharge water from underground dewatering wells 1-Mains, 2-North (1M2N) where 7-South tailings are injected and 5-Mains #2 (5M#2) where flooded workings are dewatered. Both wells dewater the flooded mine pool of the 2-North mine.

All discharge water pumped into Brinco brook is sampled on a monthly or quarterly basis from the well heads and portal sumps. These sites include: 2NPS, SDS, 1M2N, 5M#2, 5SMW, 7SA5, 1M7S and 7SPS (Appendix I, Tables 6, 8, 179 to 267). Geochemical source terms were derived for specific areas and modeled with different scenarios where mine water interacts with tailings or flooded mine pools. This is discussed in more detail below.

Discharge water quality from Brinco brook forms the headwaters for Settling Pond # 4 where water quality is compared to permit limits and source terms derived for this site. The two primary permitted monitoring locations in the North water management system are located at Settling Pond #4, (SP4) sedimentation pond decant (WD) EMS #E207409 and the final discharge point above Middle Quinsam Lake, (WC) EMS #E207411. Results for WD and WC including additional monitoring locations in the North mine area are provided in Appendix I, Tables (4-9).

### 8.1.1 *SETTLING POND #4 (WD) EMS #E207409*

Results for the 2019/2020 monitoring program demonstrated that water quality for all permitted parameters were within permit limits listed in Table 8. Appendix I, Tables (4, 25, 27, 28, and 34) provide water quality results for Settling Pond #4. On November 1, 2019 authorization was received from ENV to reduce daily composite TSS sampling to weekly and incorporate dissolved metals monthly.

**Table 8: Permit Limits Applied to Settling Pond #4**

| Parameters | Limit | Unit |
|---|---|---|
| Total Suspended Solids (daily composite) | 25 | mg/L |
| Total Suspended Solids (hourly composite) | 35 | mg/L |
| pH | 6.0-8.5 | mg/L |
| Ammonia (as N) | 1.0 | mg/L |
| Phosphorus (as P) | 0.03 | mg/L |
| Oil and Grease (total) | 10 | mg/L |
| Aluminum, dissolved | 0.5 | mg/L |
| Copper, dissolved | 0.02 | mg/L |
| Iron, dissolved | 0.3 | mg/L |
| Lead, dissolved | 0.05 | mg/L |
| Zinc, dissolved | 0.1 | mg/L |
| Rainbow Trout Bioassay (*Oncorhynchus mykiss*) | No mortalities at 100% effluent concentration after 96 hour | 96LC50 |

### 8.1.2 *General Parameters*

*pH*

Field pH values displayed little variance, ranging from 7.23 to 8.33 and averaging 7.71. The water is alkaline to pH neutral. Starting in April 2013, field measurements (instead of lab) were used for improved accuracy and reliability. Consequently, a slight decline in reported pH was observed compared to historic results as depicted in Appendix II, Graph 3. Weekly field pH results are provided in Appendix I, Table 34.

*Total Suspended Solids (TSS)*

The mitigation plan for TSS exceedances is the use of a silt curtain that has been placed in Brinco brook to aid in reducing flow and increase retention time in the wetland, this was installed in March 2019. Observations with respect to precipitation, dewatering system operations, pond turbidity in Brinco brook and WD, concentrations of TSS and metals will continue to refine best practices and minimize TSS concentrations in WD. TSS was below detection limits <4.0 mg/L for most of the monitoring period with peak concentrations reaching <16 mg/L and averaging 3.9 mg/L.

*Hardness and Dissolved Sulphate*

Both hardness and sulphate concentrations at WD have displayed marked decreases since 1996; see Graphs 1 and 2 in Appendix II. Total hardness ranged from 281 mg/L to 637 mg/L (averaging 447 mg/L), while monthly average sulphate ranged from 305 mg/L to 955 mg/L (averaging 586 mg/L). Sulphate depicts an inverse relationship with flow at SP4. Increased concentrations are observed with lower flow rates. Sulphate concentrations were variable throughout the year with average monthly sulphate concentrations peaking during the summer months (June through August) when discharge was reduced. Lowest concentrations were observed in fall and winter months October through February when discharge and dilution is greatest.

Sulphate continues to be the primary parameter of interest from mine related discharges, as it is a common and traceable parameter associated with coal mining.

#### 8.1.2.1 *Metals and Geochemical Source Terms*

Since commencement of underground mining in 1992, dissolved aluminum, copper, iron, lead and zinc concentrations have remained below permit limits, with minor, irregular fluctuations noted. This year all permitted dissolved metal parameters remained below permit limits. Parameters of interest or those displaying trends such as total and dissolved iron, dissolved arsenic and total manganese are displayed graphically in appendix II, Graphs 5 through 8.

The *7-South Area 5 Water Quality Effects Assessment*[3] prepared by Lorax Environmental Services Ltd (Lorax) 2013 in support of QCC's application to amend the mining permit C-172 to develop the 7-South mine into Area 5. Lorax was retained by QCC to developed and characterize the groundwater chemistry, predict seepage rates and geochemical mass loadings on receiving environment from 7-South Area 5 (7SA5). Monthly source terms were derived from modeling different scenarios of pumping rates from 7SA5 to SP4 discharge for Al-T, Al-D, As-T, B-T, Cd-T, Co-T, Cu-T, Fe-T, Fe-D, Pb-T, Mn-T, Ni-T, Se-T, Zn-T, Ca-T and Mg-T. This section and section 7.1.3 will present the water quality for the parameters of interest and those that were above the monthly predicted source terms in scenario 3d (Table 9 below). The predicted water quality in scenario 3d 2018 (Table 9) is where 30% of groundwater inflow to 7SA5 is directed to SP4. This equates to 12 L/s discharge to Settling Pond # 4 (SP4) from 7SA5, modeled in the report prepared by Lorax. The scenario 3d uses only the 7SA5 water that was originally meant to discharge into the tailings dam where seepage would be captured at the 2NPS and then discharged into Brinco brook.

The parameters graphed below include As-T, Fe-T, Fe-D, Cu-T, Co-T, Mn-T and $SO_4$. Monthly concentrations of As-T were graphed against scenario 3d for a direct comparison.

[3] Lorax. 2013. "7-South Area 5 Water Quality Effects Assessment".

**Table 9: Scenario 3d, 2019 -30% of 12L/s Discharge to SP4**

| Scenario 3d, 2018 – 30% of 12 L/s Discharged to SP4. | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Concentration (mg/L - except pH) | | | | | | | | | | | |
| | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
| pH | 8.04 | 8.05 | 8.06 | 8.13 | 8.06 | 8.02 | 8.07 | 8.03 | 8.11 | 8.13 | 8.10 | 8.03 |
| $SO_4$ | 533 | 517 | 517 | 589 | 708 | 741 | 762 | 771 | 750 | 842 | 678 | 614 |
| Al-T | 0.182 | 0.117 | 0.147 | 0.226 | 0.209 | 0.305 | 0.202 | 0.187 | 0.201 | 0.189 | 0.119 | 0.159 |
| Al-D | 0.089 | 0.092 | 0.075 | 0.090 | 0.171 | 0.262 | 0.148 | 0.168 | 0.150 | 0.174 | 0.077 | 0.073 |
| As-T | 0.0023 | 0.0024 | 0.0023 | 0.0021 | 0.0026 | 0.0032 | 0.0025 | 0.0025 | 0.0023 | 0.0023 | 0.0040 | 0.0031 |
| B-T | 0.92 | 0.82 | 0.93 | 0.75 | 0.82 | 0.82 | 0.95 | 0.96 | 0.94 | 0.99 | 1.02 | 0.95 |
| Cd-T | 0.000034 | 0.000024 | 0.000019 | 0.000024 | 0.000036 | 0.000055 | 0.000021 | 0.000032 | 0.000019 | 0.000114 | 0.000032 | 0.000021 |
| Co-T | 0.0045 | 0.0030 | 0.0032 | 0.0040 | 0.0070 | 0.0093 | 0.0053 | 0.0058 | 0.0053 | 0.0059 | 0.0029 | 0.0032 |
| Cu-T | 0.0029 | 0.0013 | 0.0019 | 0.0020 | 0.0018 | 0.0023 | 0.0018 | 0.0016 | 0.0015 | 0.0014 | 0.0015 | 0.0023 |
| Fe-T | 0.60 | 0.41 | 0.54 | 0.58 | 0.63 | 0.95 | 0.55 | 0.57 | 0.53 | 0.57 | 0.58 | 0.59 |
| Fe-D | 0.198 | 0.271 | 0.175 | 0.201 | 0.549 | 0.661 | 0.377 | 0.432 | 0.394 | 0.442 | 0.200 | 0.165 |
| Pb-T | 0.000224 | 0.000223 | 0.000222 | 0.000225 | 0.000256 | 0.000284 | 0.000391 | 0.000286 | 0.00025 | 0.000255 | 0.000224 | 0.00022 |
| Mn-T | 0.160 | 0.118 | 0.147 | 0.136 | 0.223 | 0.308 | 0.184 | 0.189 | 0.178 | 0.184 | 0.117 | 0.135 |
| Ni-T | 0.0096 | 0.0062 | 0.0074 | 0.0094 | 0.0150 | 0.0197 | 0.0112 | 0.0119 | 0.0107 | 0.0124 | 0.0063 | 0.0074 |
| Se-T | 0.00029 | 0.00016 | 0.00025 | 0.00031 | 0.00033 | 0.00035 | 0.00032 | 0.00026 | 0.00024 | 0.00045 | 0.00026 | 0.00022 |
| Zn-T | 0.0075 | 0.0075 | 0.0073 | 0.0076 | 0.0110 | 0.0139 | 0.0101 | 0.0108 | 0.0103 | 0.0108 | 0.0076 | 0.0071 |
| Pink shaded values indicate a permit limit exceedance | | | | | | | | | | | | |

*7-South Area 5 Water Quality Effects Assessment*[4]

Presently the SP4 discharge is influenced by many sources of water therefore, this evaluation demonstrates that water quality is falling within the range of predicted values at 30% groundwater inflow from 7SA5 discharging to SP4, which represents the worst-case scenario.

In February of 2019 mining commenced in 7SA5, dewatering had been occurring from this area since December. From February 2019 to April 2020 a total of 3,439,421 $m^3$ has been pumped out of 7-South Area 5. This water becomes a combination of different sources (1-mains 7-South and 5-South mine water) as it is stage pumped into 3Mains 2-North and into Brinco brook where it mixes with other sources of mine water and discharges at SP4. For the 2019-20 pumping from 5-South mine into 2-North Mine occurred from 160 days from April 3 to May 5, 2019 and then from November 26th, 2019 to March 31, 2020.

Total arsenic concentrations have been graphed since 2011 and display a spike in concentrations attributed to the injection of 7-South tailings into the 2-North mine pool commencing in 2012. Peak concentrations occur in the winter and spring when pumping rates were greatest. Figure 9 below compares concentrations of total arsenic to the predicted values of scenario 3d. In 2019-2020 total arsenic has remained below the B.C. acute WQG of 0.005 mg/L from the discharge water. The seasonal worst case was expected to be during the summer months when concentrations would peak but discharges would decrease to a minimal. The graph displays the seasonal peaks in fall and winter associated with dewatering commencing from all areas of the 2-North mine.

[2]Lorax. 2013. "7-South Area 5 Water Quality Effects Assessment".

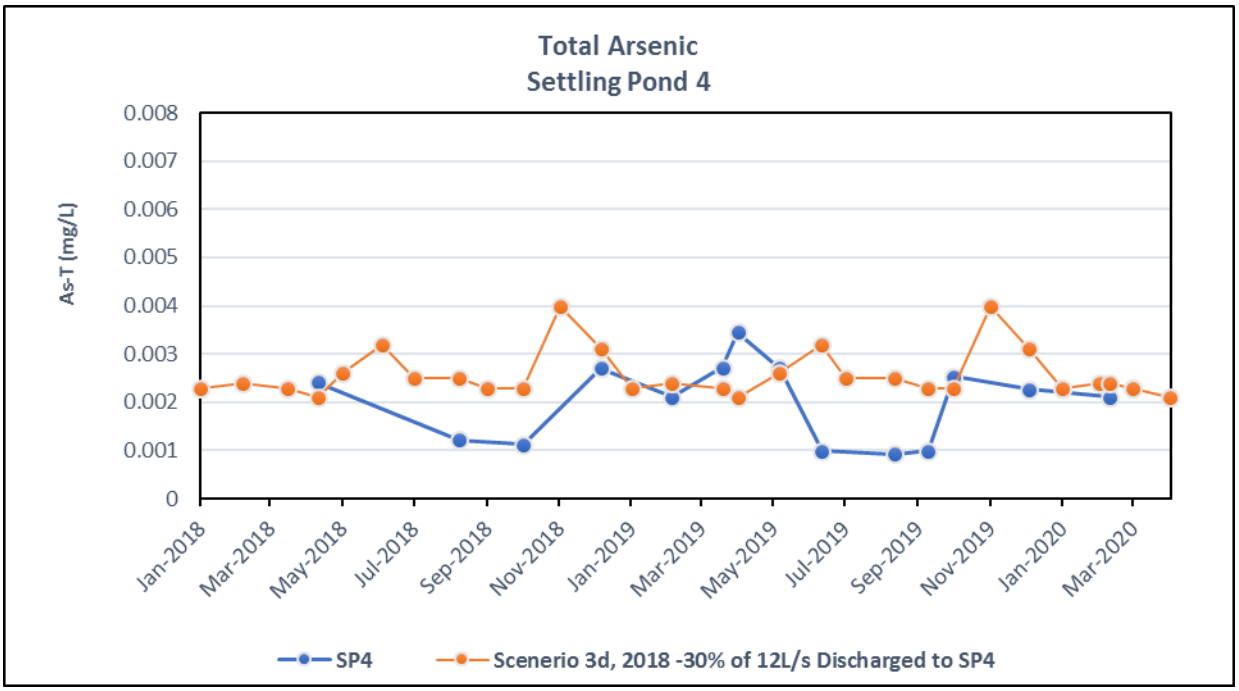



**Figure 9:Total Arsenic at SP4 compared to predicted values**

Iron speciation from ferrous iron to ferric iron occurs when waters are alkaline to pH neutral and exposed to oxygen. Ferric hydroxide ($Fe(OH)_3$) will result in the total form of iron and is the dominate species of iron in discharge water at SP4. Total iron concentrations (Fe-T) have shown an increasing trend since 2007, with concentration variations relating to fluctuating 2-North mine pool water elevations and pH of the discharge water. Concentrations ranged from 0.095 mg/L to 1.74 mg/L, averaging 0.5195 mg/L. Peak concentrations were observed in April with elevated TSS concentrations. The relationship between the mine pool water elevation and elevated total iron concentrations at SP4 is believed to be directly related to water flushing the oxidized mine walls releasing iron into the water column. Source waters such as tailings injection, 5-South and 7-South mine water also contribute to elevated iron in the water column. Scenario 3d predicted that iron would remain elevated in the total fraction due to precipitation of ferric hydroxides but remain below WQG levels of 1.00 mg/L. As displayed in Figure 10 below elevated total iron concentrations have been observed since 2015 above WQG's of 1.00 mg/L.

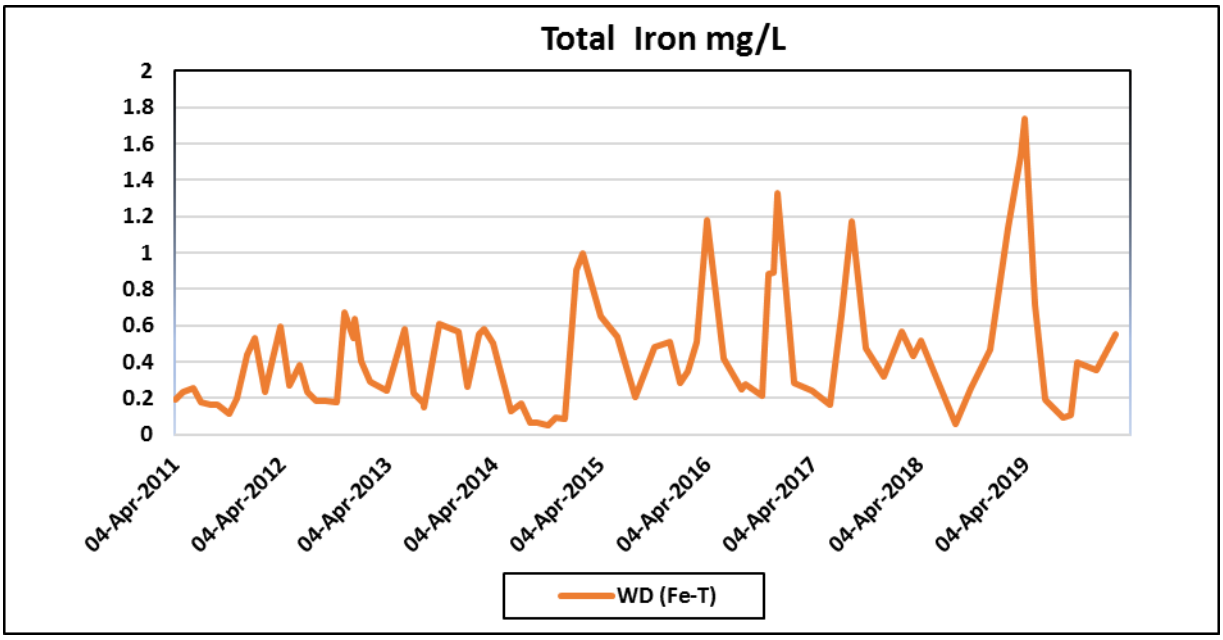



**Figure 10: Total Iron at SP4**

### 8.1.3 *Culvert into Middle Quinsam Lake (WC) EMS #E207411*

Monitoring station WC represents the cumulative surface water discharge from WD prior to entering Middle Quinsam Lake. Concentrations for parameters of interest are typically slightly lower at WC than at WD, likely attributed to the attenuation that occurs along the WD-WC flow path that includes an expansive wetland. The exception observed is sulphate concentration during summer when discharge and dilution are lowest, and evapo-concentration is thought to occur. During 2019/2020, sulphate ranged from 300 mg/L to 726 mg/L averaging 530.42 mg/L at WC. Metal concentrations are attenuated in the wetland, likely due to uptake by vegetation. This was particularly evident for total iron during times of elevated TSS and iron at WD. All concentrations of metals remained below permit limits and WQG's at this site. This site does not have permit limits but is graphed against WD discharge for comparison. Water quality at WC and WD are compared to scenario 3d from 2014 Lorax source terms predictions for those parameters displaying an increasing trend or approaching WQG.

The wetland below WD also provides additional settling and filtration for TSS, on most occasions TSS is below the detection limit of 4 mg/L, even when TSS was elevated at WD discharge historically (Appendix II, Graph 4). The results demonstrate the wetland is functioning to reduce TSS before the discharge enters Middle Quinsam Lake. It is important to remember that after passing WC, the discharge water enters another large wetland before entering near the inlet of Middle Quinsam Lake approximately 350 m downstream of WC.

The below figures compare concentrations of discharges from WD to WC from 2011 to present. As displayed water quality at WC is normally lower than concentrations from WD. Most parameters displayed in the figures below (As-T, Fe-T, Fe- D, Co-T, Cu-D and Mn-T) have remained lower than water quality guidelines historically to present and all parameters follow a similar trend with WD at a lower concentration except for dissolved iron. There have been a few occasions where concentrations have become elevated nearing guideline levels in Co-T and Mn-

T. Sulphate and Fe-D are the only parameters that do not display a decrease in concentrations from WD to WC. In the scenario 3d, cobalt was predicted to increase above background levels at WD. Concentrations of Co-T are observed to be elevated but are not above the acute-WQG of 0.11 mg/L at either station. Water quality in Middle Quinsam Lake has remained acceptable with POI remaining in low concentrations compared to WQG's.

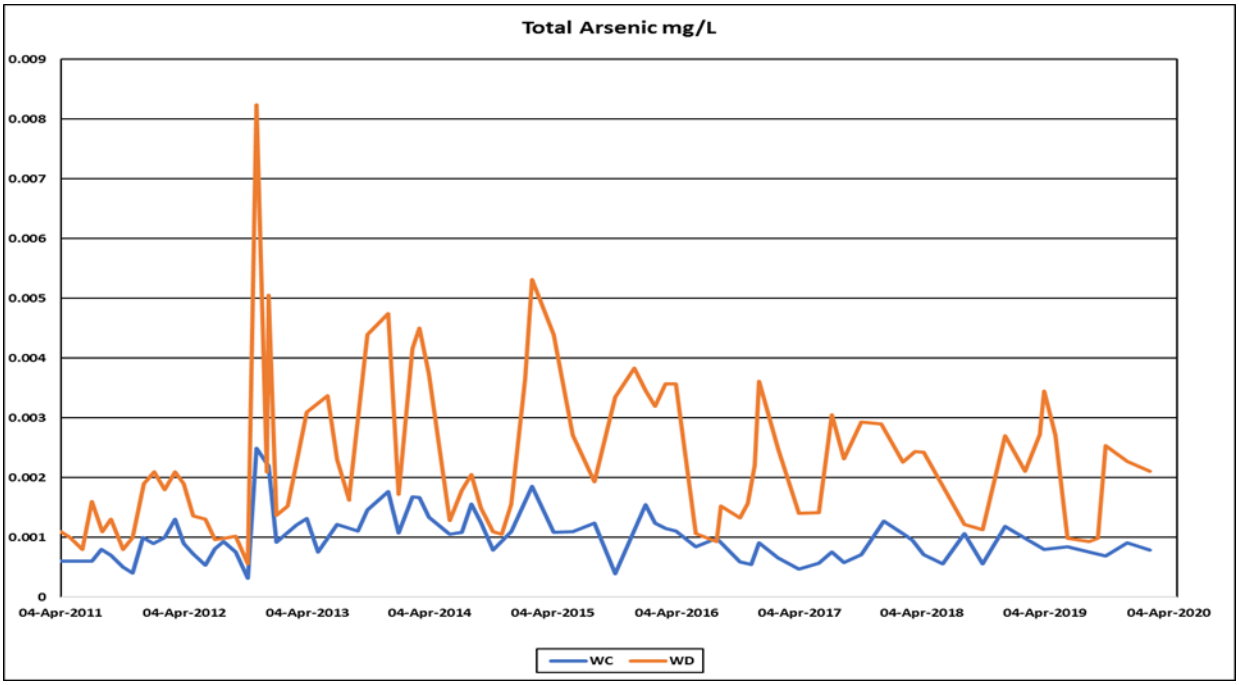



**Figure 11: Total Arsenic Comparison at WC and WD**

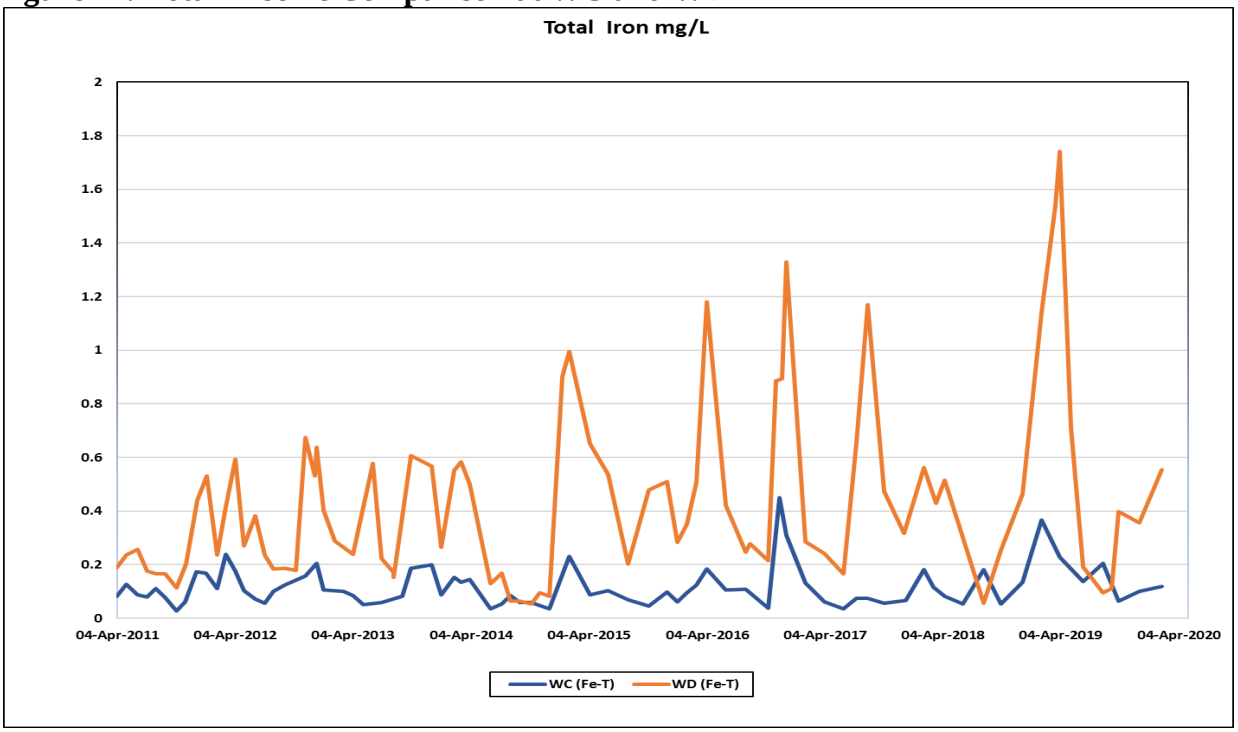



**Figure 12: Total Iron Comparison at WC and WD**

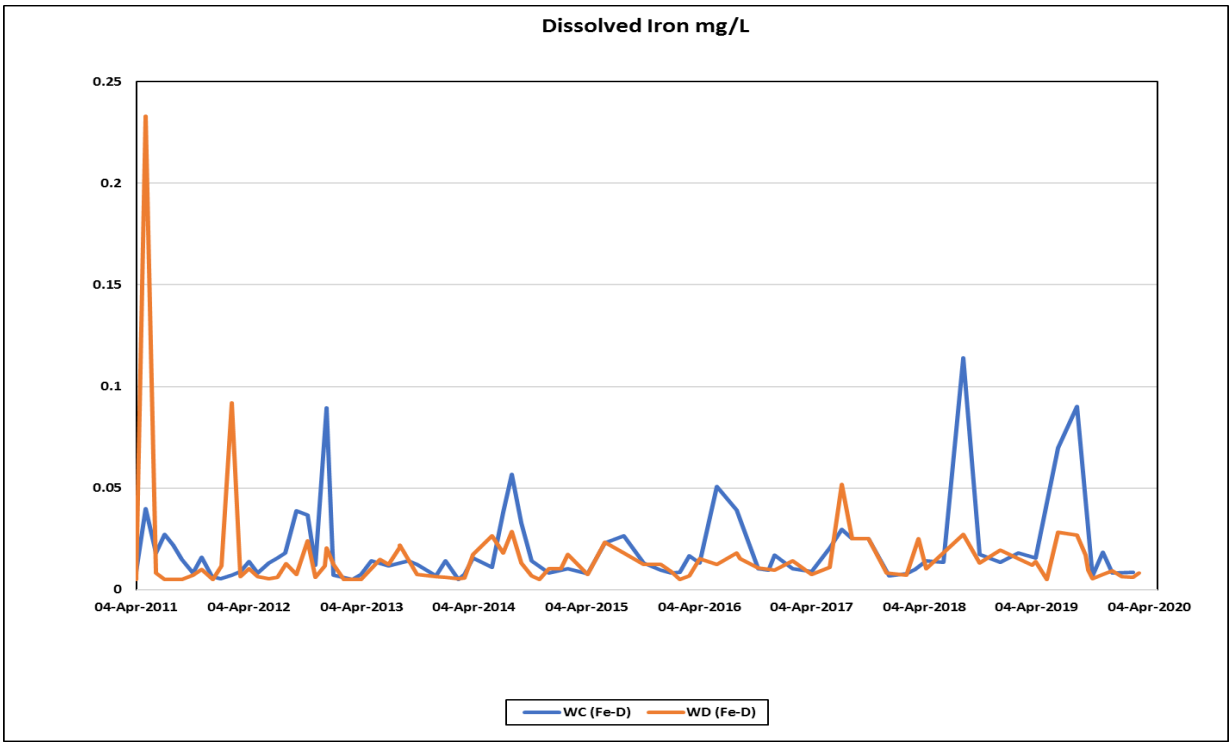



**Figure 13: Dissolved Iron Comparison at WC and WD**

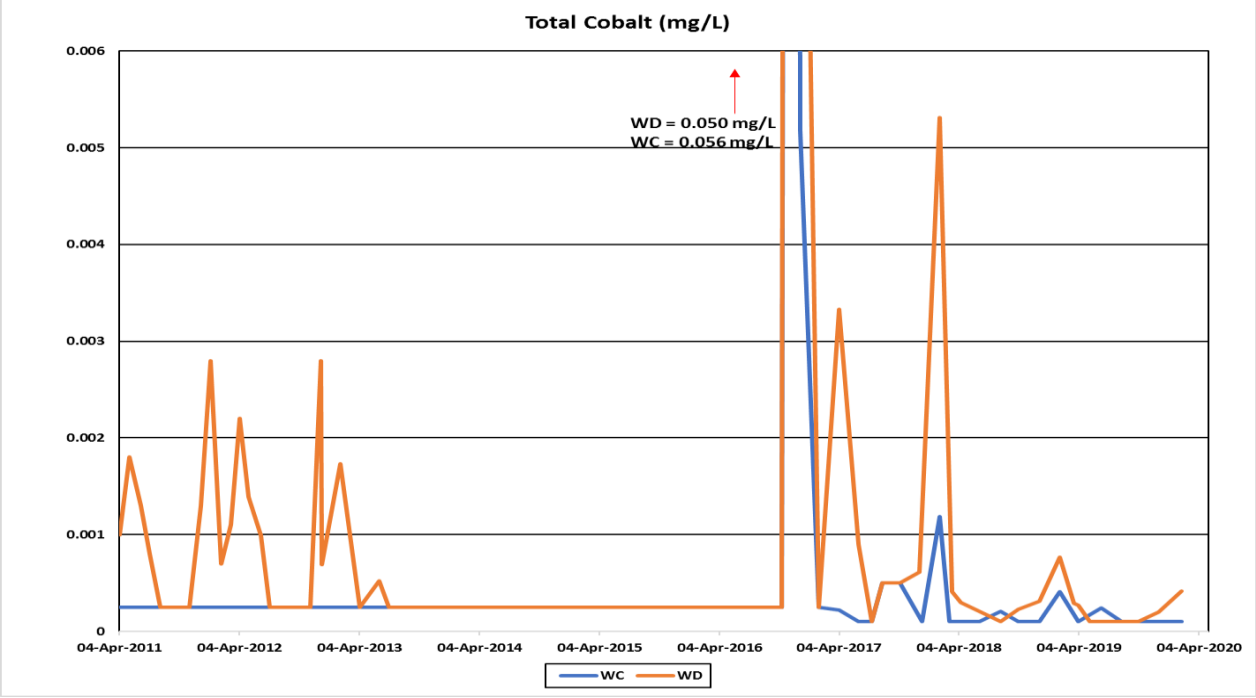



**Figure 14: Total Cobalt Comparison at WC and WD**

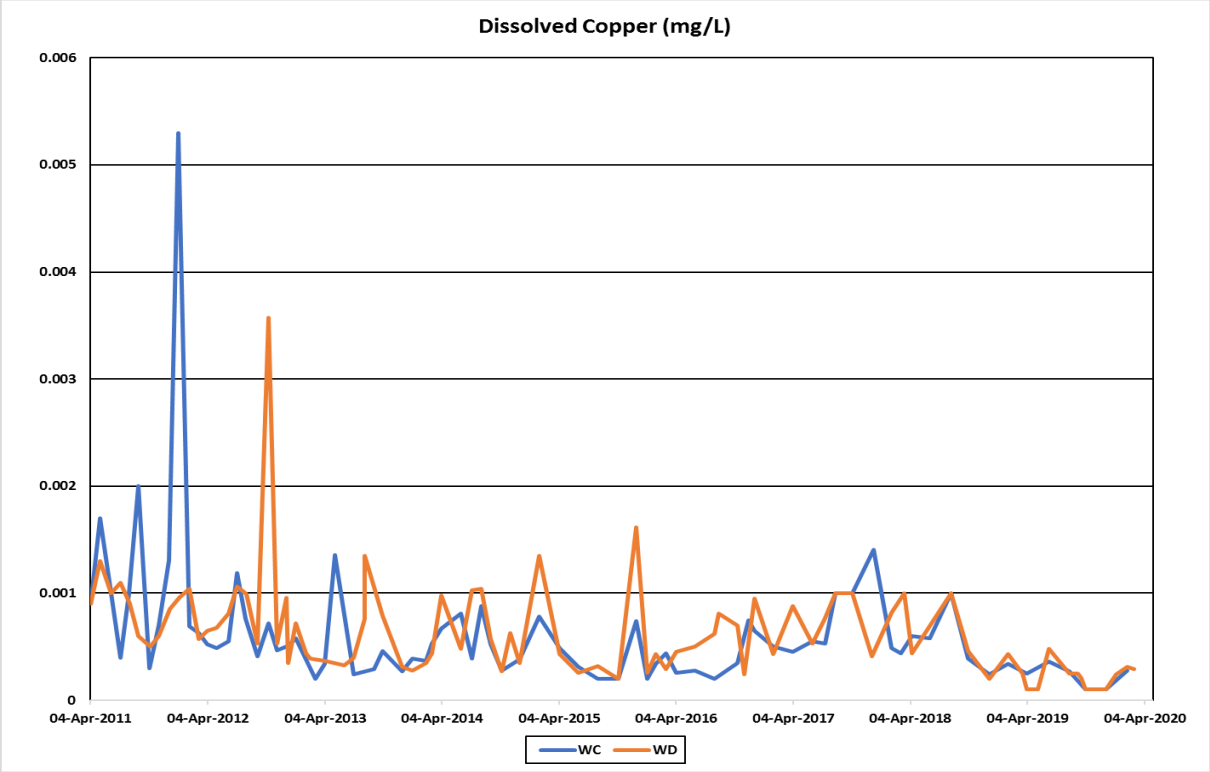



**Figure 15: Dissolved Copper Comparison at WC and WD**

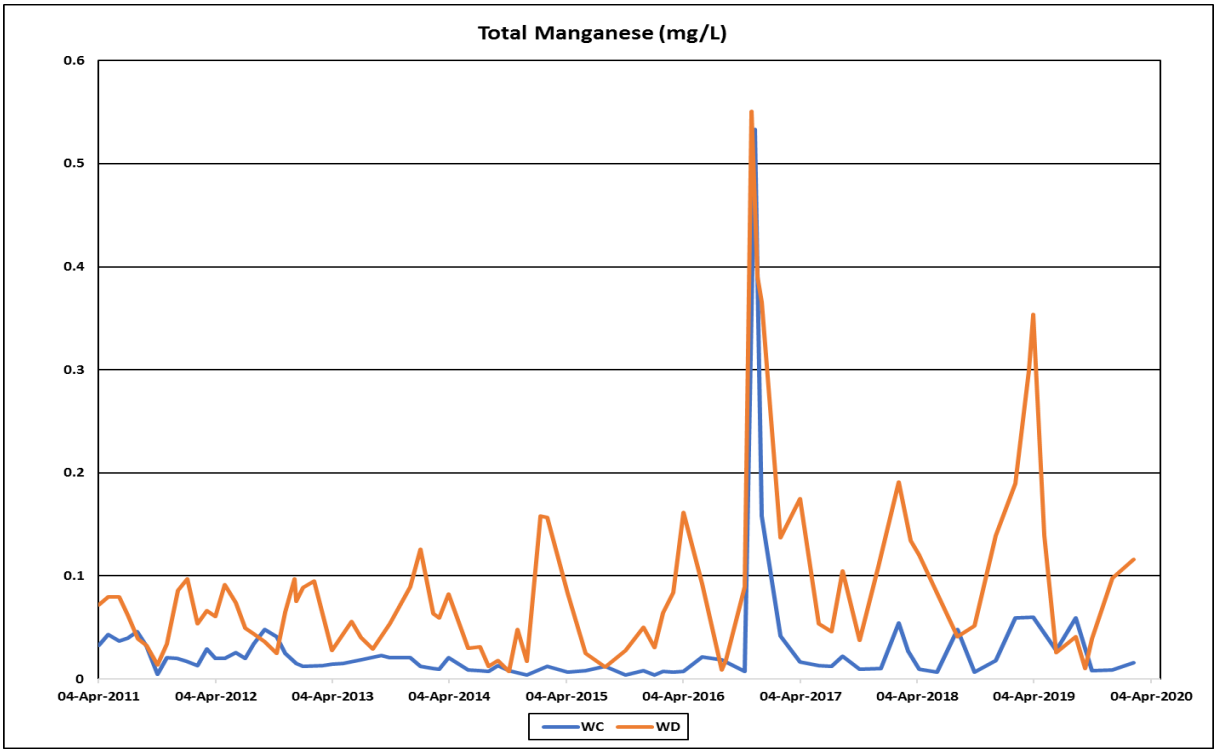



**Figure 16: Total Manganese Comparison at WC and WD**

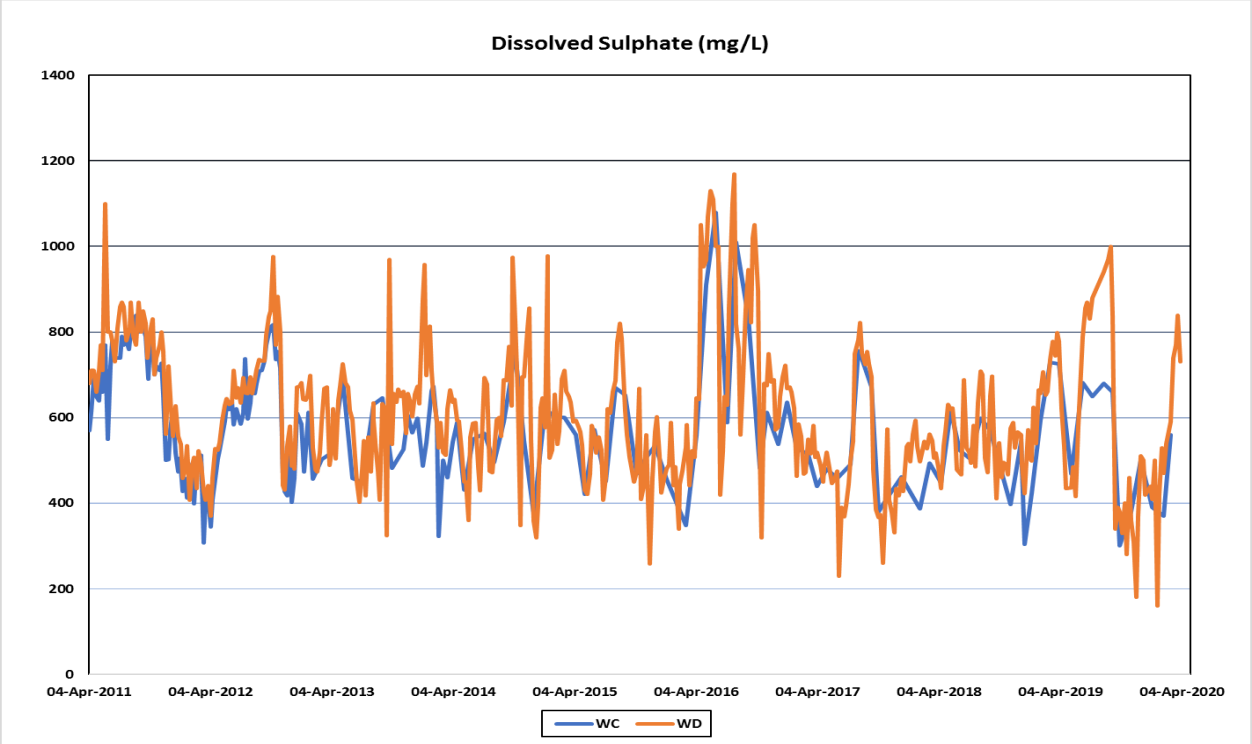



**Figure 17: Dissolved Sulphate Comparison at WC and WD**

## 8.2 SOUTH WATER MONITORING SITES

The primary monitoring locations in the South water management system are stations that directly influence water quality in Long Lake: Settling Pond #1 decant (SP1/SPD) EMS #E218582, Long Lake Entrance (LLE) EMS #E292130, and Long Lake Seeps (LLS & LLSM) EMS #E292131.

SP1 captures the combined discharge of the Long Lake Seep Passive Treatment System (PTS) from the biochemical reactor cell (BCREFF) and the Sulphide polishing cell (SPCEFF). The treated discharge water from SPCEFF has been redirected to 2-South pit EMS #E292127, where (when overflowing from 2-South), flows to 3-South pit and is pumped to SP1. During the dry season until late fall, 3-South pit (EMS # E217015) water is directed back into 2-South pit for a closed loop circuit. The treatment system discharge aids in maintaining the required 1.5 m water cover over 2-South pit during times of low precipitation. All discharge is contained within the authorized works and meets permit limits when discharging from SP1.

Results for the monitoring locations in the South mine area are provided in Appendix I, Tables (10 - 22, 26, 29, 30, 32 - 33 and 35).

### 8.2.1 *SETTLING POND #1 (SP1/SPD) EMS #E218582*

Settling Pond #1 represents the cumulative mine related discharge from the South water management system. Permit limits applied to SPD are shown in the table below. All parameters except for TSS and Fe-D remained within permit limits at SPD during 2019/2020.

On September 25, 2020 TSS resulted in 27.6 mg/L and was not reported as a permit limit exceedance as it was a result of a beaver disturbing the water and damming the decant.
Fe-D was elevated above permit limits of 0.50 mg/L on December 4$^{th}$, 2019 resulting in 0.517 mg/L.
Table **10** below represents the permit limits applied to the discharge waters at SPD. Refer to appendix I, Tables (10, 26, 29, 30, 32, 35 and 36) contain results for SPD water quality. Appendix II, Graphs (9 through 14) display the parameters of interest for SPD.

**Table 10: Permit Limits Applied to SPD**

| Parameters | Limit | Unit |
|---|---|---|
| Total Suspended Solids (daily composite) | 25 | mg/L |
| Total Suspended Solids (hourly composite) | 35 | mg/L |
| pH | 6.0-8.5 | mg/L |
| Ammonia (as N) | 1.0 | mg/L |
| Phosphorus (as P) | 0.03 | mg/L |
| Oil and Grease (total) | 10 | mg/L |
| Aluminum, dissolved | 0.5 | mg/L |
| Copper, dissolved | 0.02 | mg/L |
| Iron, dissolved | 0.5 | mg/L |
| Lead, dissolved | 0.05 | mg/L |
| Zinc, dissolved | 0.2 | mg/L |

| | | |
|---|---|---|
| Rainbow Trout Bioassay (*Oncorhynchus mykiss*) | mortalities at 100% effluent concentration after 96 hour | 96LC50 |

#### 8.2.1.1 *General Parameters*

*pH*

All pH readings were within the permit limits in 2019/2020. Values of pH ranged from 6.49 to 8.14 and averaged 7.42. Appendix II, Graph 11 displays historical to present pH at SPD.

Discharge water at SPD in the fall and winter can be described as having circumneutral pH (6.5 to 7.5) related to discharge conditions *i.e. pumping from 3-South pit*. Slightly acidic conditions are observed in fall and winter with more neutral to alkaline conditions in spring and summer.

*Nutrients*

Ammonia and dissolved phosphorus remained below the permit criteria of 1 mg/L and 0.03 mg/L at SPD, respectively.

*Total Suspended Solids (TSS)*

Grab and composite samples for TSS analysis were collected, depending on discharge rates and sampling criteria. TSS ranged from <1.0 mg/L to 27.6 mg/L, averaging 3.70 mg/L. Most results were less than the detection limits of 1.0 mg/L and 4.0 mg/L. Appendix II, Graph 12 displays historical to present data for SPD compared to the downstream location SPC.

*Hardness and Dissolved Sulphate*

Dissolved hardness concentrations ranged from 86 mg/L to 400 mg/l, averaging 293 mg/L. Increased concentrations are observed with lower flow rates. Sulphate concentrations in Settling Pond #1 have varied, depending on pumping rates from 3-South Pit and historically 5-South underground during high flow. Since the 5-South Mine pool water was redirected to 2-North mine at the end of 2017, the main contributor to sulphate is water pumped from 3-South pit. This year average monthly sulphate at SPD ranged from 152 mg/L to 324 mg//L and averaged 250 mg/L. Concentrations were highest from summer through fall (low dilution) and lowest during winter (higher flow and high dilution) as shown in Appendix II, Graph 10.

Typically, there is zero flow at SPD from late spring to early fall as there is no pumping from 3-South Pit. There was no discharge from SPD from May 14$^{th}$ through September 12$^{th}$. With beaver activity continually blocking the decant until November 12$^{th}$. Appendix I, Table 32, displays weekly sulphate results at SPD.

#### 8.2.1.2 *Dissolved Metals*

Most permitted dissolved metals (Al-D, Cu-D, Pb-D and Zn-D) concentrations at SPD remained below SPD permit limits.

D-Fe was above permit limits of 0.50mg/L resulting in 0.517 mg/L on December 4, 2019 when discharges in the pond were high causing the bottom iron rich sediments to be disturbed. The result was 0.017 mg/L above the permit limit. The exceedance is not related to water pumped from 3-South pit.

D-Fe was moderately elevated during summer and early fall when no discharge occurred and exceeded permit limits in December and WQG of 0.35 mg/L. All other occasions D-Fe was below both permit limits and WQG. D-Fe ranged from 0.0275 mg/L to 0.517 mg/L and averaged 0.214 mg/L.

Mn-T remained in low concentrations with peaks occurring sporadically throughout the year but remaining below WQG of 0.8 mg/L. Mn-T ranged from 0.038 mg/L to 0.271 mg/L and averaged 0.143 mg/L.
Appendix II, Graphs (13 and 14) display POI for SPD (Fe-D and Mn-T).
As-T remined in low concentrations throughout the year.
Fe-T concentrations peaked in August when no discharge occurred (1.35 mg/L) above WQG of 1.00 mg/L and in December when D-Fe was elevated resulting in (0.880mg/L). Fe-T ranged from 0.178 mg/L to 1.35 mg/L and averaged 0.588 mg/L.
Besides slightly elevated sulphate and periodically elevated iron, the water quality at SPD has remained in good condition. It is expected that this trend will continue in the future.

### 8.2.2 *Long Lake Entrance (LLE) EMS #E2922130*

LLE is the most downstream monitoring station in the South Water Management System and represents cumulative mine water discharge into Long Lake (excluding the seeps and groundwater inputs). This station is located at the outflow of a culvert discharging from a wetland, where discharge water flows through an approximately 50 m long channel before entering Long Lake. LLE is not defined as a receiving environment station but rather constitutes the upstream segment of a mixing zone defined as the IDZ in the permit. For observation purposes, results for LLE are compared to WQGs to assess overall water management system performance and influence on Long Lake.

Sulphate and iron are two main parameters of interest at LLE; both frequently exceeding WQGs as displayed in Appendix II, Graphs 15 through 17. In 2019/2020, weekly sulphate was averaged over 5 weeks and ranged from 83 mg/L to 476 mg/L and annual average sulphate concentration resulting from weekly samples was 196 mg/L. Peak concentrations were observed from June through October during low flow periods. Sulphate concentrations exceeded the WQG of 128 mg/L for 16 out of 45 weeks when applying a five-week rolling average. The sulphate WQG varies with hardness (Table 11) and QCC follows a conservative approach defined in the WQG assuming a background hardness of 30 mg/L (very soft water, measured at WA) to derive a sulphate WQG of 128 mg/L. Annual average hardness concentration at LLE was 219 mg/L. If the sulphate guideline for very hard water (hardness between 181 mg/L and 250 mg/L) at LLE was applied, the sulphate WQG would be 429 mg/L resulting in exceedances for only 2 out of 45 weeks. If the average hardness in Long Lake 1 m from surface during all seasons (65 mg/L) was applied, the WQG would be 218 mg/L resulting in exceedances for 8 out of the 45 weeks.

These comparisons demonstrate the conservative approach incorporated into the WQG for protection of aquatic life. It should also be noted that during the summer low flow period LLE discharge may not be flowing into the lake before it is evaporated. This year there has also been beaver activity at LLE which blocked the culvert and stirred up the bottom sediment. The culvert was cleaned out many times during the summer and fall. Discharge at LLE is extremely low during summer and early fall. This is displayed in Appendix II, Graphs 15-18 and 59.

**Table 11: Approved 30-day Average Water Quality Guideline for Sulphate to Protect Aquatic Life**

| Water hardness* (mg/L) | Sulphate water quality guideline (mg/L) |
|---|---|
| Very Soft (0-30) | 128 |
| Soft to moderately soft (31-75) | 218 |
| Moderately soft/hard to hard (76-180) | 309 |
| Very hard (181-250) | 429 |
| >250 | Need to determine based on site water |

Both total (1.00 mg/L) and dissolved (0.35 mg/L) iron exceeded the WQG in monthly sampling events. Total iron had 1 exceedance in June resulting in 1.05 mg/L. Dissolved iron had 5 out of 11 months (April, June, October, November and December) where results were elevated above WQG ranging from 4.11 mg/L to 0.985 mg/L. The number of exceedances could be contributed to the continuous removal of beaver dams followed by flushing events in the wetland. Beaver activity occurred from May to November this year.

Elevated iron is observed during low flow conditions when anoxic conditions are occurring in the wetland and high flow conditions causing the mixing of iron-rich bottom waters of the wetland into surface water discharged at LLE. The high flows may have inhibited the typical redox reactions and iron precipitation processes that reduce dissolved iron to particulate iron.

The Vancouver Island Objective (VIO) for streams defines a maximum suitable concentration for total phosphorous of 0.01 mg/L and an average concentration of 0.005 mg/L applied from May through September. No exceedances occurred this year with a maximum concentration of 0.0048 mg/L and an average of 0.0034 mg/L. with only 4 months averaged instead of 5. As previously stated, LLE is not considered a stream and the VIO is used for general comparison. Nutrients are monitored at LLE to assess loading from the treatment system for potential adverse effects on Long Lake and the downstream receiving environment. Any elevated concentrations are most likely attributed to natural biotic processes including assimilation by vegetation, plankton, periphyton, and microorganisms. In wetlands, macrophytes play a significant role in uptake, assimilation and storage of phosphorous. Macrophytes absorb phosphorous directly from the water column and release it shortly after upon vegetation decomposition (R. Reddy, R. H. Kadlec, E. Flaig & P. M. Gale.1999)[5]. Elevated total phosphorus concentrations have been measured since before the treatment system was installed as displayed in the figure below. The measured concentrations are unlikely to result in eutrophication downstream given the low to zero discharge rates from LLE during summer and the absence of a measurable increase in phosphorus in Long Lake where LLE enters the lake.

[5]R. Reddy, R. H. Kadlec, E. Flaig & P. M. Gale .1999. Phosphorus Retention in Streams and Wetlands: A Review, Critical Reviews in Environmental Science and Technology, 29:1, 83-146K

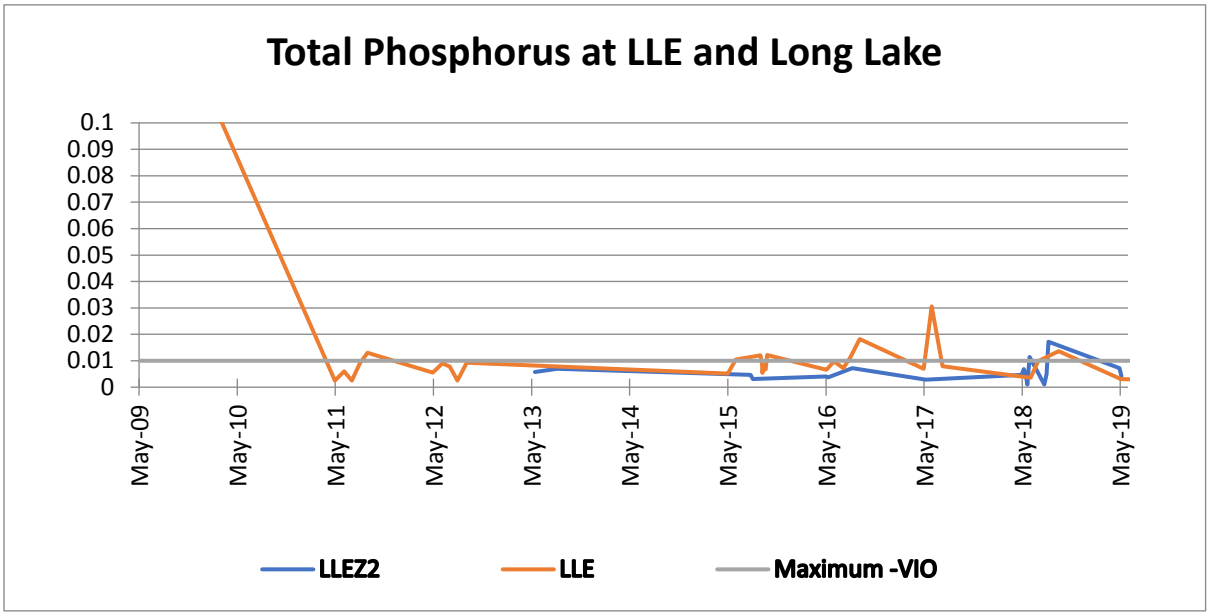



**Figure 18: Total Phosphorus at LLE and Long Lake May through September 2011- 2019**

Sulphate, iron, and TSS concentrations are influenced by precipitation events and source loading from the multiple disturbance areas within the South mining area. As sulphate and iron are continually found in high concentrations throughout routine monitoring. As a result, Lorax was contracted to perform a loading assessment for LLE to investigate the potential influence from the 4-South portal pad area. This was followed up with further water quality monitoring at LLE during times of low flow and additional studies. Lorax submitted a study in February 2017 entitled "*LLE Wetland Survey and Iron Discharge Study."* Quinsam submitted a report in April 2017 entitled "4-South Loading - LLE Water Quality Summary Report (Including Historical Reports)". These studies provide a greater understanding of elevated iron and sulphate concentrations within the LLE wetland.

Lorax (2017) concluded:

> "*The study results indicated that iron introduced into the LLE wetland via 4S-Lo is particulate Fe3+, which is stored within the wetland. Under typical conditions, the particulate Fe3+ settles in the wetland pond and cycles between the wetland substrate and the base of the oxic surface water layer. Water discharging from the wetland and sampled at LLE on August 29th, 2016 had a low concentration of Fe-T, and iron was less than detection limit in all the filtered samples. These data indicate that iron being discharged to Long Lake is present as particulate iron, which has a relatively low bioavailability. Therefore, potential effects from mine-related inputs of iron to Long Lake should be assessed for the Fe-T fraction."*

Water quality has improved following the reclamation work performed on the 4-South Pad as well as the new culvert (at a slightly higher elevation) installation at LLE. Total and dissolved iron has continued to exceed guidelines as the wetland experiences anoxic conditions during summer and fall flush causes turbidity during high flows stirring up the bottom waters.

Appendix I, Tables (20, 32-33 and 35) provide the full set of data collected at LLE. A statistical summary of the past five years is available in Appendix I, Tables 41 through 70.

### 8.2.3 *LONG LAKE SEEP*

The seep into Long Lake is a bedrock groundwater seep delivering water from the 2-3 South mine pool. This seep is monitored for water quality and quantity to assess overall loading into Long Lake. Long Lake seep water chemistry is influenced by groundwater levels in the 2 and 3-South mining area(s) and is subject to seasonal 'flushing' events due to local precipitation and infiltration.

Two seep sites are monitored on a continuous basis – LLS is the smaller seep and LLSM is the middle seep. LLSM is considered the primary seep, as flows at this site are typically much higher (and variable) than LLS; as such, the hydrology monitoring station is located on this seep.
Overall, water chemistry at both seeps remained consistent with that observed during previous reporting periods. A similar pattern of high flow during winter and no flow through summer and early fall was observed in 2019-20; the dry period (July through late November) was extended this year as it started in July instead of August. LLMS flowed for 8 months and LLS flowed for 10 months. The LLS actually stopped flowing from September through to November. This has not previously been observed here. The mine pool was pumped low during the summer months and pumped into the treatment system.

As experienced in previous years the middle seep flow ceases in July or August and commenced in November, when the mine pool is recharged with groundwater. The middle seep ceases to flow when the mine pool water level falls below the elevation of approximately 303.5 - 304 metres above sea level (MASL) (measured at MW00-4).

During the dry season for the middle seep a concrete pad was poured above the weir structure and below the weir. An H-Flume was installed below the weir on the concrete, equipped with an ultra-sonic depth sensor and a flow metre. With the expectation of a few interruptions the seep flow has been capture since November 2018 when discharge commenced. The flow rates were similar to what was recorded previously with peak flows at around 30 L/s occurring from mid-January to mid-March and subsiding in spring, Appendix II, Graph 58.

Sulphate concentrations at the seeps displayed peak concentrations in March. Results remained fairly consistent throughout the monitoring year ranging from 360 mg/L to 750 mg/L and averaging 500 mg/L at LLS. At LLSM they ranged from 280 mg/L to 580 mg/L and averaged 420 mg/L. The increase in sulphate concentrations observed during winter and spring is thought to be attributed to oxidation (and leaching) of the mine void walls as displayed in Appendix II, Graph 19. The mine void is recharged with infiltration of groundwater after it is depleted during summer.

Other parameters of interest include arsenic, iron, and total manganese. This year concentrations of arsenic were moderately elevated but remained below WQG (0.005 mg/L) at the middle seep (LLSM) with peak concentrations for both total and dissolved arsenic resulting in 0.00122 mg/L and 0.00133 mg/L, respectively. At the smaller seep (LLS) peak concentrations were observed in March with one exceedance of the WQG for AS-T resulting in 0.00518 mg/L, As-D resulting in 0.00483 mg/L. Appendix II, Graph 20 displays dissolved arsenic concentrations at the seeps. Concentrations are displaying a declining trend compared to previous years.

Several exceedances for both total and dissolved iron at both seeps were observed. Since the initiation of field filtering and preserving dissolved metal samples, dissolved iron has displayed an increase in concentrations. Mine water high in iron concentrations has the highest observed effect from the transition of laboratory filtering compared to field filtering.

Iron occurs naturally in water in soluble form as the ferrous iron (bivalent iron in dissolved form Fe2+ or Fe (OH)+) or complexed form like the ferric iron (trivalent iron: Fe3+ or precipitated as Fe (OH)3). The occurrence of iron in the Seep water ‘s is mine related. These sites have elevated concentrations of iron, which is evident by the iron rich sediment deposited as the iron changes state from ferrous iron to its oxidized state ferric iron, when it interacts with oxygen. This makes sample collection extremely difficult at these locations and insurances are made so the flow path is not disturbed prior to sampling (as is routine everywhere). If any of the sediment is disturbed due to higher flow conditions or extremely low flow conditions the results will display elevated levels of iron. As a result, iron has a higher percentage of exceedances occurring here due to the flow path the water is taking over the iron rich sediment, sample collection and nature of the mine influenced water.

Metals display a seasonal trend, with peak concentrations in the summer and spring at the middle seep. Appendix II, Graphs 21 and 22 displays the concentrations of total manganese and dissolved iron since 2011. Total manganese has remained below the WQG of 0.8 mg/L since 2011.
Fe-D exceeded the WQG of 0.35 mg/L at LLS on 9 out of 10 monthly samples collected and 3 out of 8 monthly samples collected at LLSM. The peak concentration at LLS was observed during March with a maximum of 1.96 mg/L and in June at LLSM with a maximum of 0.783 mg/L.
Fe-T exceeded the WQG of 1.00 mg/L at LLS on 8 out of 10 monthly samples collected during all seasons. The peak concentration resulted in 2.11 mg/L in March. At LLSM there were no exceedances of the WQG for Fe-T. The peak concentration occurred during June resulting in 0.787 mg/L.

All monthly water quality samples collected from the seeps are included in Appendix I, Tables 21-22 and 32.

## 8.3 7-SOUTH WATER MONITORING SITES

The 7-South water management system is comprised of several structures (Section 2.1.3) to manage local water in and around the disturbed area, with the most substantial structure being the 7-South settling pond (7SSD). This structure represents the point of discharge for 7-South operations and is regulated under PE-7008. Table 12 outlines the applicable permit limits at 7SSD for each controlled parameter.

**Table 12: Permit Limits Applied to 7SSD EMS #E292069**

| Parameters | Limit | Unit |
|---|---|---|
| Total Suspended Solids (daily composite) | 25 | mg/L |
| Total Suspended Solids (hourly composite) | 35 | mg/L |
| pH | 6.0-8.0 | mg/L |
| Sulphate | 500 | mg/L |
| Aluminum dissolved | 0.1 | mg/L |
| Cadmium dissolved | 0.000045 | mg/L |
| Copper dissolved | 0.014 | mg/L |
| Iron dissolved | 0.35 | mg/L |
| Selenium dissolved | 0.016 | mg/L |
| Rainbow Trout Bioassay (*Oncorhynchus mykiss*) | No mortalities at 100% effluent concentration after 96 hour | - |

### 8.3.1 *7-South Settling Pond (7SSD) EMS #E292069 and Steam 1, (7S) EMS #E292109*

A discussion of settling pond performance and validation of actual effluent water quality compared to the water quality prediction model developed for the 7-South water management plan by Lorax was not performed at 7SSD as there was no discharge from this location. Refer to section 8.1.1 for a comparison of geochemical source terms associated with 7-South Area 5 and SP4 discharge water quality predictions. Complete water chemistry datasets can be found in Appendix I, Tables (24, 31 and 35).

Water quality compared to the water quality predictions model are presented in Table 13 for 7S. All annual average water quality parameter concentrations modeled (SO4-D, Al-D, As-D, B-D, Cd-D, Co-D, Cu-D, Fe-D, Mn-D, Ni-D, Se-D and Zn-D) at 7S were below the expected case predictions model. This indicates that water quality has improved from previous years, resultant of adopted water management practices that are effective at reducing impacts downstream at 7S. These methods include pumping all mine related discharged from the 7-South area into 5-South mine pool and then into 2-North mine pool where it is discharged at SP4. Appendix I, Table 23 provides water quality at 7S and Appendix II, Graph 61 provides flow vs precipitation at Stream 1, 7S.

**Table 13: Water Quality Prediction Model-Bes and Worst-Case Scenarios Compared to Measured Concentrations at 7S**

| 7S WQ (2019-20 Averages) | | | | |
|---|---|---|---|---|
| **Parameter** | **Expected Case (mg/L)** | **Worst Case (mg/L)** | **Average (mg/L)** | **Result** |
| Fluoride | N/A | N/A | N/A | |
| Sulphate | 6.49-7.80 | 15.4-17.8 | 5.1 | **Below Expected** |
| Aluminum | 0.043 | 0.055-0.056 | 0.0227 | **Below Expected** |
| Arsenic | 0.0002 | 0.0003 | 0.000050 | **Below Expected** |
| Boron | 0.052-0.063 | 0.061-0.063 | 0.0250 | **Below Expected** |
| Cadmium | 0.000010 | 0.000013 | 0.00000429 | **Below Expected** |
| Cobalt | 0.00046-0.00047 | 0.00062-0.00065 | 0.00010 | **Below Expected** |
| Copper | 0.001 | 0.001 | 0.00028 | **Below Expected** |
| Iron | 0.020-0.021 | 0.030-0.031 | 0.00357 | **Below Expected** |
| Manganese | 0.0026-0.003 | 0.007 | 0.00050 | **Below Expected** |
| Nickel | 0.001 | 0.001 | 0.00050 | **Below Expected** |
| Selenium | 0.00028-0.00030 | 0.00070-0.00075 | 0.000050 | **Below Expected** |
| Zinc | 0.005 | 0.005 | 0.00250 | **Below Expected** |

***When calculating averages, 0.5 of the method detection limit values were used.**

## 8.4 BIOASSAYS

An LC50 (median lethal concentration) is the concentration of material (in this case, effluent) in water that is estimated to be lethal to 50% of the test organisms. The $LC_{50}$ and its 95% confidence limits are usually derived by statistical analysis of percent mortalities in several test concentrations, after a fixed period of exposure. The duration of exposure must be specified (e.g., 96-h LC50). PE-7008 indicates that rainbow trout (*Oncorhynchus mykiss*) $LC_{50}$ bioassays are required once per year (fall flush) at Settling Pond #1, EMS# E218582 and at Settling Pond #4, EMS# E207409. The bioassays are performed using 100% (non-diluted) discharge water to assess the potential survival of rainbow trout over a period of 96-hours. A successful test sees no mortalities throughout the 96-hour period. Discharge was collected from Settling Pond #1 and Settling Pond #4 on September 18, 2019.

The permit requires a 96-hour $LC_{50}$ test on rainbow trout to be completed using 7SSD EMS# E292069 effluent water and, concurrently, a 7-day *Ceriodaphnia dubia* test from water obtained from 7S, EMS# E292109. This is required twice per year; once during the spring freshet and once during the fall flush, when discharging is occurring from 7SSD. The discharge from 7SSD pond did not occur this resulted in omitting the spring freshet and fall flush samples.
All rainbow trout bioassays had 100% survival (Appendix III). This indicated that mine related discharges at Settling Pond #1 and Settling Pond 4, are compliant, with no acute toxicity in the effluent discharged.

## 9.0 WATER QUALITY IN THE RECEIVING ENVIRONMENT

Preamble – Water Hardness

For this report, hardness dependent WQGs were derived using background levels of hardness (~30 mg/L) to provide a conservative assessment of receiving environment water quality. Guidelines and objectives do not have legal status but are designed to provide resource managers with direction and comparison for protection of receiving environments with aquatic life.

Guidelines and Objectives: Receiving environment water quality is compared to the British Columbia Ambient WQG for Protection of Aquatic Life for most parameters. The exceptions are hypolimnetic DO (using a WQO based on a site-specific conditions), total cobalt and total lead (using more recently established site-specific Water Quality Objectives (WQO)[6]), and total phosphorus in streams (using the Vancouver Island objective[7]). Table 14 lists the WQG, WQO and VIO used to screen receiving water quality.

**Table 14: Water Quality Guidelines and Objectives Applied to Receiving Environment Stations**

| Parameter | Lakes (mg/L) | | Streams (mg/L) | |
|---|---|---|---|---|
| | Maximum | 5 in 30-day Avg | Maximum | 5 in 30-day Avg |
| Phosphorus - total | 0.007 summer avg - Long Lake | | 0.01 | 0.005** |
| | 0.006 summer avg - Middle Quinsam L | | (May-September) | |
| Turbidity | n/a | n/a | 5.0 NTU | 1.0 NTU |
| Non-filterable residue or TSS | 25 | 5 | n/a | n/a |
| Hypolimnetic DO | 3 mg/L minimum during June-August | | n/a | n/a |
| pH | 6.5 – 9 | n/a | 6.5 – 9 | n/a |
| Aluminum (dissolved) | 0.1 | 0.05 | 0.1 | 0.05 |
| Arsenic (total) | 0.005 | n/a | 0.005 | n/a |
| *Cadmium (dissolved) | 0.00017 | 0.000088 | 0.00017 | 0.000088 |
| Cobalt (total) | 0.05 | 0.004 | 0.05 | 0.004 |
| Copper (total) | 0.007 | 0.002 | 0.007 | 0.002 |
| Iron (total) | 1.0 | n/a | 1.0 | n/a |
| Iron (dissolved) | 0.35 | n/a | 0.35 | n/a |
| Lead (total) | 0.005 | 0.003 | 0.005 | 0.003 |
| Manganese (total) | 0.8 | 0.7 | 0.8 | 0.7 |
| Mercury (total) | 0.0001 | n/a | 0.0001 | n/a |
| Nickel (total) | 0.025 | n/a | 0.025 | n/a |
| Silver (total) | 0.0001 | n/a | 0.0001 | n/a |
| Zinc (total) | 0.03 | n/a | 0.03 | n/a |
| *Sulphate dissolved | n/a | 128 | n/a | 128 |

* Values represent Middle Quinsam sub-basin water quality using WA hardness.

** Average based on monthly samples from May to Sept

[6] Campbell River Area Middle Quinsam Lake Sub-Basin Water Quality Assessment and Objectives. Ministry of Environment. 1989

[7] Guidance Document for Phosphorous Management in Vancouver Island Streams. Ministry of Environment. 2012

Water quality at locations outside of the Middle Quinsam Lake Sub-basin, such as the Iron River and 7-South (7S and LWO), are compared exclusively to the WQG.

## 9.1 LAKES

The monitoring program for the Middle Quinsam Lake Sub-basin employed a 5 in 30 sampling approach at No Name Lake (NNL), Long Lake (LLM), Middle Quinsam Lake (MQL), and Lower Quinsam Lake (LQL). There are four depths monitored at each lake:

- 1 metre below surface (1m)
- 4 metres below surface (4m)
- 9 metres below surface (9m)
- 1 metre above bottom (1mb)

Monitoring occurred during three separate periods:

- Spring – April / May 2019 at NNL, LLM, MQL and LQL
- Summer – July / August 2019 at NNL, LLM, MQL and LQL
- Fall – October / November 2019 at LLM and MQL

This year fall sampling was removed from the monitoring program at No Name Lake and Lower Quinsam Lake. Table 15 below summarizes those parameters above WQG and WQO observed in the lakes for 2019. A summary table is also provided in Appendix I, Table 3 and Tables (41 through 70) provide a statistical summary for parameters of interest with Tables (71 through 122), displaying the depth profiles and water chemistry results compared to WQG and WQO. Appendix II, Graphs (23 through 45) illustrate parameter trends at each lake.

## Table 15: Summary of Water Quality Guideline Observations at Lake Monitoring Sites

| SUMMARY OF WATER QUALITY GUIDELINE OBSERVATIONS AT RECEIVING MONITORING LOCATIONS - 2019-2020 | | | | | | |
|---|---|---|---|---|---|---|
| EMS ID & Site Name | Parameter (mg/L or pH Units) | Guideline Limit | Result | Date | Guideline | Sampling Events Exceeding Guideline |
| E217018 - No Name Lake (NNL) 6-12 metres | pH | 6.5 | 6.30 - 6.49 | Spring 5 in 30 | Min | (17/60) depths profiled during spring |
| | pH | 6.5 | 5.76 - 6.49 | Summer 5 in 30 | Min | (24/60) depths profiled during spring |
| E206619 - Long Lake Middle (LLM) 9 metre (9m) | SO4-D | 128 | 132 | Summer 5 in 30 | A | (4/4 weeks ) average for summer |
| E206619 - Long Lake Middle (LLM) 1 metre from bottom (1MB) | Hypolimnectic DO | Minimum 3 mg/L June - August | 0.55 - 2.96 | Summer 5 in 30 | Min | >13m depths |
| | SO4-D | 128 | 130, 130 and 138 | Spring, summer and Fall 5 in 30 | A | Average of spring, summer (4/4 weeks) and fall, 5 in 30 results |
| | Mn-T | 0.70 | 1.03 | Fall 5 in 30 | A | Average of fall, 5 in 30 results |
| | | 0.80 | 0.993, 1.08, 1.24 and 1.07 | | M | (4/5) results in fall |
| E292118- Lower Quinsam Lake (LQL)1 metre from bottom (1MB) | Hypolimnectic DO | Minimum 3 mg/L June - August | 0 - 2.91 | Summer 5 in 30 | Min | >11m depths |
| | Fe-T | 1.00 | 1.09 | Sep. 28 | M | (1/5) weekly samples |
| | Fe-D | 0.35 | 0.385, 0.419 & 0.397 | Summer 5 in 30 | M | (3/4) weekly samples |

### 9.1.1 *SEASONAL TRENDS*

Spring and fall sampling events are timed to cover lake turnover, when water circulates freely in the water column and nutrients become more available for phytoplankton growth (Wetzel 2001)[8]. Water is most dense at 4ºC, and during winter, the surface water (epilimnion) is typically colder than 4ºC and the deeper water (hypolimnion) is at about 4ºC (displaying inverse stratification). Spring turnover occurs when the surface water warms to 4ºC and begins to mix with the deeper water. The lake circulates freely throughout the water column for several days (Wetzel 2001). Through the spring and summer, surface temperatures increase, establishing a thermocline (region of rapid temperature change), with warmer water above and cooler water below. Temperatures cool in late summer, and eventually the thermal stratification breaks down, leading to fall overturn and to mixing of the water column. As surface waters continue to cool, a colder layer overlies the dense bottom water (4ºC) and inverse stratification persists from late fall to spring. During periods with distinct stratification, it has been observed that water chemistry often displays variable concentrations throughout the water column. During overturn, nutrients associated with decomposition of organic matter that has sunk to the bottom are brought into surface waters, where they are available for phytoplankton growth. The timing and duration of spring and fall turnover depend on the size and depth of the lake.

#### 9.1.1.1 *Spring*

The spring sampling program is scheduled to capture the lake turnover that typically occurs in conjunction with warmer temperatures, snowmelt, and increased precipitation. Spring sampling was performed from April 9th through May 8th. The sampling regime commenced during the spring turnover event with warming ambient temperatures of greater than 4 ºC. From April 1st through to May 9th, 10.1 mm of precipitation was received.

Stratification gradually developed during the five weeks of sampling as temperatures warmed from 7 ºC to 15 ºC in the upper water column, (1m below surface) for NNL, MQL and LLM and in LQL temperatures reached 13 ºC.

Noteworthy observations resulting from the spring lake monitoring program include the following:

- The only parameters of interest that were outside of the WQGs during spring sampling were sulphate (LLM 1 mb) and pH (below 6 metres NNL).
- Sulphate remained below WQG of 128 mg/L in NNL, MQL, LQL at all depths and LLM at depths 1m, 4m and 9m below surface.
- Sulphate was above the WQG of 128 mg/L at LLM 1mb resulting in 130 mg/L
- No Name Lake continued to experience low pH values at depth.

#### 9.1.1.2 *Summer*

The summer sampling program is scheduled to capture the period of low flow and lake stratification. The summer program spanned July 29th through August 28th. The summer program represents the lake's seasonal thermal stratification and a time when deeper lakes naturally develop anoxia in deeper waters. Results from this sampling period represent low dilution conditions when the lakes display minimum assimilative capacity and mine related surface discharges and groundwater infiltration have the greatest influence.

[8]Wetzel, R.G. 2001. Limnology, Third Edition. Academic Press, San Diego CA.

During the summer sampling program, there were high ambient temperatures and average precipitation (122 mm of accumulated precipitation for July through August). July and August 2019 were a wetter compared to that period in 2018 (36 mm for July through August).

Noteworthy observations resulting from the summer monitoring program include the following:

- Only 4 weeks of results were received from the laboratory
- Sulphate remained below WQG (128 mg/L) in NNL, MQL, LQL at all depths and LLM at depths 1m and 4m below surface.
- Sulphate exceeded the WQG at LLM 9m and 1mb averaging 132.5 mg/L and 130 mg/L, respectively (*using a 4-week average*)
- No Name Lake continued to experience low pH values at depth.
- LLM 1mb maximum and average Mn-T concentrations remained below WQGs
- Hypolimnetic DO was below the site-specific WQO (3 mg/L) in LLM (>13m) and LQL (>11m) in the hypolimnion zone
- In LQL 1MB Fe (T &D) concentrations were elevated above the WQG on 1 occasion for T-Fe and 3 out of 4 for D-Fe, related to low dissolved oxygen levels in the hypolimnion zone
- MLQ 1m and 4m depths averaged 7.2 mg/L for sulphate using a 4-week average
- MQL 9m and 1mb average sulphate was 54.5 mg/L and 60.5 mg/L using a 4-week average

#### 9.1.1.3 *Fall*

The fall sampling program is scheduled to capture the period of elevated precipitation following the summer dry season, representing fall overturn and a 'fall flushing' event that is correlated with elevated surface water metal concentrations resulting from localized weathering and mobilization. The lakes turn over in the fall as the water temperatures decrease and high inflows return. In 2019, the fall monitoring program spanned October 24th through November 18th during a time of light precipitation (185 mm from October 1st through November 18th). Similar to that period in fall of 2018, when 156.50 mm of accumulated precipitation was received. Only Long Lake and Middle Quinsam Lake were monitored during fall after a minor permit amendment was received from ENV reducing the monitoring program on November 1, 2019.

Noteworthy observations resulting from the fall monitoring program include the following:

- Water quality parameters at MQL all depths remained below WQGs
- Average sulphate results in MQL at all depths and < 37 mg/L
- Average sulphate results in LLM were 34 mg/L at surface (1m and 4m) and 109 mg/L at 9m
- Average sulphate in LLM 1mb was 138 mg/L above the WQG (128 mg/L)
- LLM pH is circumneutral (6.5 to 7.5) ranging from 7.56 (1m) to 6.58 (1mb)
- MQL pH neutral to alkaline ranging from 8.0 (1m) to 6.91 (1mb)
- LLM 1mb, Mn-T exceeded both the acute (0.7 mg/L) and chronic (0.8 mg/L) WQG due to low DO in fall
- Long Lake seep stopped flowing in July and started flowing on November 25th, yet exceedances were still observed at depth in Long Lake

#### 9.1.1.4 *General Parameters*

*pH*

Lakes that are deeper and thermally stratified normally have pH that ranges from alkaline on the surface (epilimnion) to slightly acidic at bottom depths (hypolimnion). This trend is typically more pronounced during summer, when the lake is stratified, and surface temperatures are elevated.
During 2019 Spring and summer, NNL had several occurrences where pH fell below the WQG minimum of 6.5. For depths profiled during spring and summer, pH values ranged from 5.76 to 7.62. The deeper portion hypolimnion, (below 5m) experiences acidic conditions.

Factors that may contribute to acidic conditions observed through the water column of NNL include:

- Natural conditions – the western end of the sub-basin is surrounded by a vast wetland; organic wetland soils tend to be acidic
- Limited turnover – temperature gradients are relatively small during spring and NNL is shallow (~12-13 m) compared to Long Lake (20 m) and Lower Quinsam Lake (16-18 m)
- Anthropogenic sources – i.e., mining and logging in the area

NNL has a shallow basin (11-12 m) and a large drainage area. Since monitoring began in 2012, slightly acidic conditions have been recorded throughout the water column during spring, summer and fall sampling events, with most of the readings below the WQG of 6.5. Baseline water quality sampling performed by MoE 1983 and 1984 also indicated pH less than 6.5 at depth. Monitoring will continue at NNL, during spring and summer and No Name Lake Outlet (spring, summer and fall), with trends for pH evaluated.

The sampling location on No Name Lake is considered to be outside of mine related discharge, and low pH values are not believed to be associated with mining activities. No direct surface mine discharge locations to No Name Lake have been identified and the low pH is understood to be naturally occurring.

For all other lakes, pH remained mostly circumneutral and within WQG's 6.5 to 9.0.
Middle Quinsam Lake is generally neutral to slightly alkaline throughout the spring, summer, and fall and this trend continued for 2019 (all samples above the WQG minimum). Both WA and WC, which enter Middle Quinsam Lake, exhibit neutral pH.

*HARDNESS*

The WQG for sulphate and several metals varies with hardness. The simple definition of water hardness is the amount of dissolved calcium and magnesium in the water. Hard water is high in dissolved minerals, largely calcium and magnesium.
Water hardness (mg/L CaCO3) is defined as:

- very soft if hardness ranges from 0 - 30 mg/L
- soft to moderately soft at 31- 75 mg/L
- moderately soft/hard to hard at 76-180 mg/L and
- very hard at 181-250 mg/L

No Name Lake is considered to have very soft water (average concentration of ~15 mg/L at all depths). Lower Quinsam Lake is characterized as soft to moderately soft (average concentration of ~34 mg/L at all depths). Since summer of 2014, Middle Quinsam Lake has had soft to moderately soft water throughout the water column. In 2019 the average concentration was 41 mg/L at all depths, but this varies with depth. Long Lake generally has moderate to hard water (higher hardness in deep water), but the range varies with season and depth. Spring averages from surface to bottom ranged from 55 mg/L to 145 mg/L with fall averages ranging from 50 mg/L to 144 mg/L from surface to bottom. Variation in concentrations was less noticeable in summer averages from surface to bottom ranging from 97.5 mg/L to 142.5 mg/L. The spring and summer surface depths have the most variability compared to the deeper waters. The influence of freshwater inflow and lake turnover is most evident at surface. Due to its depth (19-20 m), Long Lake has very little turnover or flushing in the hypolimnion zone.

*SULPHATE*

As noted previously, the sulphate WQG is hardness dependent, but for QCC, it is set at 128 mg/L (applying a background hardness of 30 mg/L from monitoring station WA, upstream of mine influences).

Sulphate concentrations were lower than the WQG of 128 mg/L in No Name, Middle Quinsam, and Lower Quinsam lakes at all depths, during all seasons and in Long Lake at 1 m, 4 m depths during spring, summer and fall. LLM 9 m depth remained below 128 during spring and fall seasons in Long Lake.

During summer, the deeper waters of Long Lake (9m and 1mb) had similar concentrations resulting in 132.5 mg/L (9m) and 130 mg/L (1mb). Results for fall sampling displayed a decrease at 9m depth resulting in 109 mg/L and slight increase and 138 mg/L for 1mb. The 1mb in Long Lake was above the average guideline during all three seasons, spring, summer and fall. Average sulphate results had little variation between seasons at the 1mb depth in Long lake, results were 130 mg/L during spring and summer and 138 mg/L during fall. This vertical pattern through the seasons suggests that the deeper water (15 to 20 m depth) does not fully flush.

If the sulphate WQG used average hardness measured in Long Lake at 1m depth during spring (56 mg/L), summer ( 97 mg/L) and fall (49 mg/L), the average sulphate guideline would range from 218 mg/L to 309 mg/L during these seasons. Recognizing that hardness and sulphate concentrations in Long Lake reflect the influence of mining discharges, and not baseline conditions, a higher hardness defined WQG would still be protective of aquatic life, given the protective mechanism provided by hardness (MOE 2013)[9].

Sulphate concentrations increased with depth in LLM, MQL, and NNL and appeared to be correlated with thermal stratification. In LQL, concentrations decreased with depth except this year that trend did not persist. The highest concentrations were observed at depth during spring and summer indicating less turnover or flushing of the lake with sulphate sinking to the 9m and 1mb.

[9] Ministry of Environment. 2013. Ambient water quality guidelines for sulphate. Technical Appendix Update. Available at:http://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/wqgs-wqos/approved-wqgs/bc_moe_wqg_sulphate.pd

In 2019, sulphate concentrations in Long Lake were greatest during fall at 1mb. There was no surface flow from the seeps from July through November 25 and limited influence from LLE. Higher concentrations during fall were associated with sulphate sinking through the water column and accumulating at depth, or groundwater influence. There were limited contributions from the seeps from mid-July to mid-November and limited to no surface discharge from Settling Pond #1 or LLE; with limited inflow or outflow from the inlet or outlet.

In Middle Quinsam Lake, the fall 2014 monitoring indicated a decrease in sulphate concentrations at 1 mb from above 128 mg/L to below 20 mg/L after a flushing event. Sulphate concentrations had remained below 52 mg/L from fall 2014 until spring 2017, when an increase was observed at depth. In 2019, the average sulphate concentrations were greatest during spring at all depths averaging 45 mg/L, 47 mg/L, 60 mg/L and 63 mg/L, respectively. The greatest decrease was observed in summer at the surface 1 m and 4 m depths (averaging 7.2 mg/L). The decease at surface would be attributed to deceased discharge rates from Settling pond # 4 during summer low flow. During fall results increased at surface (33 mg/L) compared to summer, with decreases observed at depth 9 m and 1 mb resulting in 29 mg/L and 36 mg/L, respectively. This suggests Middle Quinsam Lake has a fast flushing and turnover rate as well as demonstrating the assimilative capacity of the receiving environment.

No Name Lake and Lower Quinsam lakes continued to have sulphate concentrations well below the WQG. In Lower Quinsam Lake, peak concentrations were reported during spring and summer at 1mb (average of 34 mg/L) and suggested some influence of mining related discharges. The range of average concentrations in Lower Quinsam Lake remained similar during spring and summer at depth, with a greater range change observed at surface depths 1 m and 4 m in summer, indicating stratification. This year sulphate was highest at depth compared to historical values being lowest at depth. In No Name Lake, the average sulphate concentration was at or below 5 mg/L for all monitoring periods.

*HYPOLIMNETIC DISSOLVED OXYGEN*

The hypolimnetic dissolved oxygen (DO) Water Quality Objective of 3 mg/L minimum in June through August was developed for the Water Quality Objectives for Middle Quinsam Lake Sub-basin (MQL and LL); however, Quinsam also applies this objective to NNL and LQL. The hypolimnion is the dense, cold bottom layer below the thermocline in a thermally stratified lake. Typically, the hypolimnion is the coldest layer in summer and the warmest layer during winter. Anoxic conditions may develop naturally in deep waters over the summer due to the lack of circulation with upper, oxic water during stratification and the consumption of DO by microorganisms that decompose organic matter and by chemical reactions. The reducing environment can cause lake sediments to release iron, manganese, sulfide, and arsenic, all of which could have potential toxicological effects on aquatic receptors.

In 2019, hypolimnetic DO in Long Lake was below 3 mg/L during the summer and fall sampling period below the 13m depths. The low DO was observed during the fall sampling into mid-November. Long Lake has a deep basin (20 m) and experiences anoxic conditions during summer and fall normally associated with elevated manganese. Manganese was not elevated during the summer but was during the fall in Long lake.

Lower Quinsam Lake exhibited anoxic conditions in the hypolimnion during the summer and fall, sampling events. In Lower Quinsam Lake, water at 14 to 16 m had DO below 3 mg/L for the last three weeks of sampling during summer and fall. This lake has a deep basin (17 m) and typically experiences low DO (anoxic conditions) at depth when stratification is pronounced normally associated with elevated iron.

#### 9.1.1.5 *Total and Dissolved Metals*

Concentrations of most metals at the four lake monitoring stations were low and below WQGs throughout the spring, summer, and fall sampling periods. Concentrations of total manganese and total and dissolved iron were elevated compared to the WQGs in some lakes, as discussed below.

Iron and Dissolved Oxygen

Total and dissolved iron (Fe-T and Fe-D) concentrations in the four lakes have displayed similar trends since 2013: low concentrations near surface throughout the year; low concentrations at all depths during spring; and increased concentrations at depth during anoxic conditions during summer and fall. Iron concentrations were well below WQGs for No Name, Long, and Middle Quinsam Lakes (all depths) and at Lower Quinsam Lake (all depths except 1mb).

Lower Quinsam Lake (at 1mb) had elevated Fe-T on one occasion during summer resulting in 1.09 mg/L. Elevated Fe-D was observed on three occasions during summer. Fe-D resulted in 0.385 mg/L, 0.419 mg/L and 0.397mg/L during summer. This is one of the deepest lakes sampled (17 m depth), and the elevated iron concentrations are directly related to anoxic conditions and associated increase in iron solubility at the sediment/water interface. Appendix II, Graphs (44 and 45) display the inverse relationship between low DO and elevated iron concentrations: when DO decreases below 3 mg/L, iron concentrations increase.

Manganese and Dissolved Oxygen

An inverse relationship between manganese (Mn-T) and DO is observed in Long Lake. Mn-T concentrations are highest when DO falls below 3 mg/L. In 2019, Mn-T concentrations remained low during spring, summer. During fall at 1mb concentrations exceeded average and maximum WQGs (0.7 mg/L and 0.8 mg/L, respectively). Average concentration resulted in 1.03 mg/L with maximum concentrations of 0.993 mg/L, 1.08 mg/L, 1.24 mg/L and 1.07 mg/L. Total Mn concentrations in Long Lake have been greatest at 1mb depth since 2006. Appendix II, Graph 27 displays the relationship between hypolimnetic dissolved oxygen and Mn-T at 1mb with Graphs 30 and 31 display the maximum and 5 in 30 average concentrations of total manganese at Long Lake, respectively.

A similar trend of elevated Mn-T with low DO has been identified for Lower Quinsam Lake at 1mb during the summer monitoring period previously; this trend was not observed this year and concentrations did not exceed the WQG maximum or average during 2019.
The Ambient Water Quality Guidelines for Manganese[10] state:

> "*Mn is only slightly to moderately toxic to aquatic organisms in excessive amounts. It is present in almost all organisms and often ameliorates the hazard posed by other metals.*

[10] Ministry of Environment.2013. Ambient Water Quality Guidelines for Manganese

> *Hence jurisdictions in the international arena have not disseminated Mn guidelines to protect freshwater and marine life. Mn availability and, hence its toxicity in the aquatic environment, can be influenced by many factors including water hardness."*

In deeper lakes, stratification may result in anoxic conditions in the hypolimnion and the dissolution of the iron and manganese from sediment. Casey (2009)[11] noted:

> "*Iron and manganese are commonly found in groundwater and some surface water such as lakes that have a significant groundwater input. The existence of Fe and or Mn in groundwater generally infers prior anaerobic conditions with the result that the water is likely to be devoid of oxygen and may also have a high carbon dioxide ($CO_2$) concentration. As well as being associated with groundwater input the existence of Fe and Mn in some deep lakes and reservoirs may be due to stratification, resulting in the development of anaerobic conditions in the bottom water zone and the dissolution of the iron and manganese from floor deposits*."

Long Lake has historically been characterized as having very low DO at depth, with levels in September to October below 4 mg/L at depths greater than 15 m (Kangasniemi,1989)[12]. Nordin (2006)[13] reported that Long Lake stratifies into hyperlimnion and hypolimnion sections in April and May and remains stratified until October through November. Appendix II Graph 27 displays the inverse relationship between historical DO vs Mn-T reported at 1 mb since 2005 that occurs during late summer and fall when DO levels decline to below 3 mg/L.

SLR (2015)[14] suggested these findings have potential implications for the means by which sediments and Contaminants of Potential Concern (COPC) are distributed in Long Lake. They suggested that the deepest portion of the lake has the greatest potential to accumulate and retain COPCs whose mobility in aquatic systems is affected by oxygen availability in overlying waters and sediments.

It is conceivable that manganese has a greater loading rate from the parent rock and substrate materials, with mobility accelerated by anoxic conditions at depth (SLR, 2015); The regional geology of Long Lake is divided in half with the Nanaimo group in the southern half and the Island Plutonic Suite (IPS) in the northern half (SLR, 2015); this could have implications for different loading of arsenic and possibly manganese and other metals from parent material (SLR, 2015).

The Mn-T concentrations in deep waters of the lakes do not appear to be mine related, as concentrations at most discharge locations remains low; however, the WQG exceedances are of concerns for assessing potential effects in the receiving environment and trends will continue to be monitored in subsequent years.

11 Casey,T.J. 2009. Iron and Manganese in Water Occurrence, Drinking Water Standards and Treatment Options through the Aquavarra Research LMT Water Engineering Papers. Paper 3..

12 Kangasniemi, B.J.1989.Campbell River Area Middle Quinsam Lake Sub-Basin Water Quality Assessment and Objectives. Ministry of Environment, Lands and Parks. Summary.

13 Nordin, R.N.2006.An Evaluation of the sediment quality and invertebrate benthic communities of Long and Middle Quinsam Lakes with regards to local coal mining activity.

14SLR.2015. Sediment Quality, Toxicity, and Bioavailability Review with Background Assessment Based on Current Knowledge of Sediment Dynamics and interpretation or Pre and Post Mining Sediment Concentrations and Distribution.

Arsenic

Arsenic has become a parameter of interest in the Quinsam watershed, particularly for Long Lake; however, this parameter is not observed to be elevated in the receiving waters. In the 2019 monitoring programs, arsenic concentrations were well below the WQG (0.005 mg/L), in the four lakes monitored. Arsenic concentrations in sediment were elevated above guidelines in Long Lake, No Name Lake, and Lower Quinsam Lake as presented in the *2017-18 Annual Water Quality Monitoring Report* and in ex-situ groundwater throughout the site due to the host rock geology (See Appendix IX). The water quality data confirm that arsenic found in the sediment is not transported into the water column, even during times of anoxic conditions.

Copper and Zinc

Total copper and zinc were not elevated above average and maximum WQGs this year. A new copper guideline has been derived and water quality results will be applied to this guideline starting in spring 2020.

## 9.2 RIVER AND STREAM SITES

The table below summarizes those river and stream sites that were observed to have parameters in excess of the WQGs. This table is also available in Appendix I, Table 3.

**Table 16: Summary of Water Quality Guideline Exceedances in the Streams and Rivers**

**SUMMARY OF WATER QUALITY GUIDELINE OBSERVATIONS AT RECEIVING MONITORING LOCATIONS - 2019-2020**

| EMS ID & Site Name | Parameter (mg/L or pH Units) | Guideline Limit | Result | Date | Guideline | Sampling Events Exceeding Guideline |
|---|---|---|---|---|---|---|
| E292112 - Lower Wetland Outlet (LWO) | TSS | 5 | 6 | Spring 5 in 30 | A | Spring 5 in 30 |
| | Al-D | 0.05 | 0.097 | Spring 5 in 30 | A | Spring 5 in 30 |
| | | 0.1 | 0.106, 0.111 and 0.129 | Spring 5 in 30 | M | (3/5) weekly samples collected in spring |
| | Fe-D | 0.35 | 0.54 | May | M | (1/5) Weekly samples collected in spring |
| E297230 - Quinsam River Upstream of Mining Operations (IR1) | Al-D | 0.05 | 0.0506 | Spring 5 in 30 | A | Spring 5 in 30 |
| E297231 - Iron River Upstream of 7SA5 (IR6) | Al-D | 0.05 | 0.062 | Spring 5 in 30 | A | Spring 5 in 30 |
| E297232 - Iron River Downstream of 7SA5 (IR8) | Al-D | 0.50 | 0.0585 and 0.0558 | Spring and fall 5 in 30 | A | Average of spring and fall 5 in 30 results |
| | | 0.01 | 0.108 | Fall 5 in 30 | M | (1/5) results in fall |
| | As-T | 0.005 | 0.00924 and 0.00613 | Jun & Aug | M | (2/16) sampling events |

***SO4 at LLE was calculated using a rolling average.**

Min = Minimum Water Quality Guidline (WQG) M = Maximum WQG, A = Average WQG

**For all Middle Quinsam Lake Sub-basin and Iron River results background hardness of 30 mg/L was used to calculate those parameters that are hardness dependent.**

### 9.2.1 *Middle Quinsam Lake Inflow (WA) EMS #0126402 and Outflow (WB) EMS #0900504*

Comparing Middle Quinsam Lake's upstream river site "*inlet"* (WA) EMS # 0126402 and outlet (WB) EMS #0900504 offers an opportunity to assess potential mine-related effects on Middle Quinsam Lake water quality. Furthermore, water quality results from WA are considered "baseline" for the Middle Quinsam sub-basin receiving environment stations as the site is situated upstream of any mine related discharge. Data obtained from WB (outlet of Middle Quinsam Lake) provides information on lake water quality after the addition of discharges from the South water management system, shallow and deep groundwater, Long Lake Outlet (LLO), mine related discharge from Settling Pond #4, and other anthropogenic sources (e.g., logging).

Summary statistics for the last five years are provided in Appendix I, Tables (41 through 70) with Tables (123 through 128) presenting water quality data for WA and WB with comparison to WQOs and WQGs. Appendix II, Graph (56) displays Middle Quinsam Lake daily inflow obtained at the Argonaut bridge hydrometric station and Graph (57) compares discharge at WB with precipitation. Appendix II, Graphs (48 through 52) display the parameters of interest or those found elevated above WQGs (dissolved sulphate, aluminum, total arsenic and zinc) in the Quinsam Sub-basin.

TSS results at WA and WB remained at or just above detection limits (2.0 mg/L) throughout all sampling events, as reported in previous years, and are expected to continue at low concentrations. Samples for WB are collected below the Coal Main road crossing on the Quinsam River and the low TSS results reflect the efforts made in reducing sediment and erosion at this location.

The pH values were similar at WA and WB, pH at WA and WB was weakly alkaline and within the WQG range of 6.5-9.0; pH values averaged 7.44 at WA and 7.65 at WB. Conductivity at WB reflected the mine influences (elevated conductivity and sulphate are considered signatures of mine influence). For example, average conductivity values were 75.6 µs/cm at WA and 155.5 µs/cm at WB.

Significant increases of average sulphate, hardness and sulfur concentrations are observed between WA and WB. With average sulphate results at WA (1.28 mg/L) and WB (31.4 mg/L), remain below the WQG of 128 mg/L at both stations (Appendix II, Graph 48). Like sulphate, annual average hardness concentrations display a significant increase from WA to WB with average concentrations of 19.4 mg/L and 39.2 mg/L, respectively. Concentrations of sulphur are also notably significant between the two stations with WA averaging (1.50 mg/L) and WB averaging (11.56 mg/L).

Dissolved metals displaying an observable increase in annual average concentrations between WA and WB include arsenic, iron and manganese likely attributed to mine related discharge. All total and dissolved metals remained below WQGs, and concentrations were similar to previous years. Decreases are observed between WA and WB for parameters such as copper and aluminum.

| | Statistic | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stn.Code | | Hard-T | SO4-D | Al-D | As-D | As-T | Cu-D | Cu-T | Fe-D | Fe-T | Mn-D | Mn-T | S-D | S-T | TSS | Zn-D |
| WA | Average | 19.4 | 1.28 | 0.0202 | 0.000106 | 0.000112 | 0.000550 | 0.000630 | 0.0120 | 0.0256 | 0.00069 | 0.00147 | 1.50 | 1.50 | 1.73 | 0.00250 |
| WB | Average | 39.2 | 31.4 | 0.0133 | 0.000180 | 0.000190 | 0.000470 | 0.000442 | 0.0283 | 0.0540 | 0.00320 | 0.00740 | 11.56 | 11.54 | 1.68 | 0.00250 |
| Increase / Decrease (WB-WA) | | 19.80 | 30.12 | -0.01 | 0.000074 | 0.000078 | -0.00008 | -0.0002 | 0.0163 | 0.0284 | 0.00251 | 0.00593 | 10.06 | 10.04 | -0.05 | 0.00 |

### 9.2.2 *No Name Outlet (NNO) EMS # E217017 and Long Lake Outlet (LLO) EMS # E219412*

Flow from No Name Lake (NNO) enters the west end of Long Lake and exits Long Lake at the site known as LLO. LLO discharges to Middle Quinsam Lake upstream of Middle Quinsam Lake outlet (WB). Water quality monitoring at NNO and LLO provides information on changes in water chemistry in both Long Lake and the channel connecting the two lakes. The sampling location on No Name Lake is considered to be outside of direct mine discharge but could be influenced by groundwater. Therefore, changes in water chemistry between NNO and LLO represent the incremental mine loading into Long Lake from various inputs, including shallow and deep groundwater (e.g. emanating from 2S/3S), Long Lake Seep discharge, mine related discharge from the South water management system, and other anthropogenic sources (e.g., logging).

As shown in Appendix I, Tables (129 through 134), average TSS concentrations for LLO and NNO remained below 2 mg/L during the three monitoring periods. Both NNO and LLO exhibited similar pH, averaging 7.30 at NNO and 7.44 at LLO, with no WQG exceedances.

Conductivity, sulphate and hardness levels increase between NNO and LLO, reflecting mine related influences on Long Lake. Annual average conductivity was 32 µs/cm at NNO and 213 µs/cm at LLO. Annual average sulphate was 1.89 mg/L at NNO and 64.8 mg/L at LLO. Sulphate concentrations at LLO are cyclic, highest during summer and decreasing during fall and winter along with higher flow rates and increased dilution, Appendix II, Graph (47). Sulphate was monitored weekly at LLO (until November 1$^{st}$) to assess water quality exiting Long Lake. Appendix I, Table (32) displays weekly values for sulphate and Appendix II, Graph 47, displays the average dissolved sulphate results from NNO compared to LLO. Like sulphate, water hardness increases from NNO (average of 14.5 mg/L) to LLO (average of 73 mg/L). Concentrations of sulphur also display a significant increase between the two sites related to mine discharges with averages of 1.50 mg/L at NNO and 20 mg/L at LLO.

Average concentrations of metals observed in NNO and LLO remained low, with many below laboratory DLs. Slight increases between the sites (NNO to LLO) are observed for parameters such as arsenic (T and D), manganese (T) and zinc (D). Decreases are observed between NNO and LLO for aluminum (D), copper (T and D) and iron (T and D). All total and dissolved metals were below their WQGs.

| | Statistic | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stn.Code | | Hard-T | SO4-D | Al-D | As-D | As-T | Cu-D | Cu-T | Fe-D | Fe-T | Mn-D | Mn-T | S-D | S-T | TSS | Zn-D |
| NNO | Average | 14.5 | 1.89 | 0.0229 | 0.00031 | 0.00031 | 0.00039 | 0.00031 | 0.0623 | 0.093 | 0.0041 | 0.0059 | 1.50 | 1.50 | 1.83 | 0.00250 |
| LLO | Average | 73.0 | 64.8 | 0.0163 | 0.00039 | 0.00042 | 0.00034 | 0.00028 | 0.0387 | 0.074 | 0.0041 | 0.0092 | 20.1 | 19.9 | 1.93 | 0.00282 |
| Increase / Decrease (LLO-NNO) | | 58.50 | 62.91 | -0.01 | 0.000080 | 0.000110 | -0.00005 | 0.0000 | -0.0236 | -0.0190 | 0.00000 | 0.00330 | 18.60 | 18.40 | 0.10 | 0.0003 |

Water quality data for sites LLO and NNO are presented in Appendix I, Tables (128 to 134) with comparison to WQOs and WQGs. Appendix II, Graph 49 to 52 compares POI on the Quinsam river and Graph 60 compares discharge with precipitation at LLO.

### 9.2.3 *Stream 1 – (7S) EMS # E292109 and Lower Wetland Outlet (LWO) EMS #E292112*

Results are displayed in Appendix I, Table 23 and Appendix II, Graph 61 displays discharge at 7S. The headwaters of Stream 1 are formed by the discharge of 7SSD, which combines with Stream 2 above sampling location 7S. Downstream of site 7S, Stream 1 enters the Lower Wetland then flows into the Quinsam River. Given the aquatic values (fish habitat) in the Quinsam River, the 7S station has been defined as the initial dilution zone for 7-South discharge water. This receiving environment site is used to evaluate the influence of 7-South operations on aquatic receptors. The Lower Wetland Outlet (LWO) station was established to monitor the cumulative water quality in Stream 1, and to understand overall contributions to the Quinsam River. The Lower Wetland Outlet station has not been representative of water quality from 7SSD nor from 7S.

There has been zero discharge from 7SSD since 2017, with only 24 hours and 12 days in 2016/2017; indicating the limited amount of surface loading from 7SSD discharge to the Lower Wetland.

Average sulphate was 5.1 mg/L at 7S, well below the WQG (128 mg/L), reflecting the water management measures employed at 7SSD sedimentation pond and surrounding 7-South operations. There was one TSS result (<16 mg/L) that was outside of normal range for this stream April 2019, due to the laboratory raising the reportable detection limit (RDL) to <16 mg/L due to limited initial sample amount. No other RDL parameters were outside of the normal range and all total and dissolved metals were below WQGs at 7S.

Downstream site LWO had neutral average pH during spring sampling (6.96). The site was dry during summer. During fall authorization was received from ENV to temporarily suspend monitoring from this site unless there is discharge from 7SSD. The spring 5 in 30 were the only sample set collected.

Spring sampling resulted in elevated concentrations of Al-D and Fe-D. These results are consistent with baseline measurements collected by Golder Associates[15] in June 2011, which showed WQG exceedances for iron (3.79 mg/L Fe-T and 2.52 mg/L for Fe-D) and aluminum (0.101 mg/L Al-D). Elevated metals concentrations such as iron, aluminum and copper at this station are attributed to natural causes associated with anoxic conditions in wetlands during spring, summer and fall. LWO is normally dry during the summer, low flow period. Elevated metals concentrations were localized to the wetland (beaver dam area) which is located downstream of 7S. Elevated concentrations of these parameters have not been observed at 7S since monitoring began. All other parameters were below WQGs; results for LWO are displayed in Appendix I, Tables (138 to 140).

### 9.2.4 *Quinsam River Downstream Site 1 (QRDS1) EMS # E286930, 7-South Quinsam River (7SQR) EMS # E292113 & Quinsam River Downstream of the Confluence with Iron River (IRQR) EMS # E299256*

Quinsam River Downstream Site 1 (QRDS1) is located approximately 2 km downstream from the Middle Quinsam Lake outlet (sampling site WB) and upstream of any inputs associated with 7-South operations. QRDS1 was established to monitor groundwater inputs from the underground

[15] Golder Associates. Quinsam 7-South Effluent Technical Assessment Report. 2011

disposal of 7-South tailings into the 2-North mine and the underground sub-aqueously stored PAG-CCR material from processing of 5-South coal stored in the river barrier pillar.

7-South Quinsam River monitoring station (7SQR) is on the Quinsam River approximately 4 km downstream of QRDS1. 7SQR water quality is used to evaluate the influence of 7-South mine related discharge to the Quinsam River downstream of the LWO, and groundwater inputs to the Quinsam River from sub-aqueously stored PAG-CCR in the 7-South mine. Appendix I, Tables (135 to 137 and 141 to 143) and Appendix II, Graphs (47 - 52) display relevant parameters of interest for these sites.

On November 1st, 2019 authorization was received through ENV to remove the monitoring location QRDS1 from the permit. The monitoring locations WB, 7SQR and IRQR provide sufficient information with respect to parameter loading from the mine on the Quinsam River. Any incremental loading that could be associated with stored tailings from 2-North mine and PAG-CCR from 7-South mine was not observed for sulphate as both (QRDS1 and 7SRQ) sites had the same average concentrations of 28 mg/L, well below the WQG (128 mg/L).

Quinsam River Downstream of the Confluence with Iron River (IRQR) is located about 5 km downstream of 7SQR and captures the full mixing of the Iron and Quinsam rivers.

From 7SQR to IRQR parameter concentrations remained below WQG's for both sites during the sampling periods. Average concentrations were higher upstream at 7SQR compared to downstream at IRQR for chromium, iron, manganese, sulphate, sulphur and zinc. Arsenic was higher at IRQR than upstream at 7SQR as a result of loading from the Iron river.

| | Statistic | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Stn.Code | | SO4-D | Al-D | As-D | As-T | Cd-D | Cr-D | Cu-D | Cu-T | Fe-D | Fe-T | Mn-D | Mn-T | S-D | S-T | Se-D | Se-T | Zn-D |
| 7SQR | Average | 28.2 | 0.0147 | 0.00034 | 0.00037 | 4.06E-06 | 0.00058 | 0.00046 | 0.00053 | 0.0643 | 0.105 | 0.0046 | 0.006 | 9.24 | 9.57 | 0.000050 | 0.000050 | 0.00268 |
| IRQR | Average | 17.4 | 0.0241 | 0.00056 | 0.00062 | 5.28E-06 | 0.00050 | 0.00056 | 0.00066 | 0.0524 | 0.095 | 0.0037 | 0.0050 | 6.01 | 5.78 | 7.6E-05 | 9.1E-05 | 0.00250 |
| Increase / Decrease ( IRQR-7SQR) | | -10.8 | 0.0094 | 0.00022 | 0.00025 | 1.22E-06 | -8E-05 | 0.0001 | 0.00013 | -0.012 | -0.01 | -9E-04 | -0.001 | -3.23 | -3.8 | 2.6E-05 | 4.1E-05 | -0.00018 |

### 9.2.5 *IRON RIVER*

The Iron River Baseline Summary Report was submitted to the ENV on March 31, 2016. The report reviewed the monitoring data at all sites in the Iron River, summarizing trends and parameters found to be naturally elevated due to the watershed geology and contact with the Benson/Dunsmuir members of the Comox Formation.

As part of the 7-South Area 5 permit application, baseline water quality data were collected at ten stations on the Iron River to gain an understanding of existing water quality and local influences. Additionally, six tributaries were monitored to identify incremental loading.

One year of monthly baseline samples was obtained at all sites to maximize interpretation of seasonal variations and trending on the Iron River. Post-baseline monitoring in 2019/2020 continued to consist of 5 in 30 and monthly sampling until November 1, 2020 at three stations on

the Iron River (IR1, IR6 and IR8) and one station on the Quinsam River, downstream of the confluence of the Iron River (IRQR).

Monitoring on the Iron River was supposed to be decreased after the baseline monitoring report was submitted. This year (2019-2020) monitoring was reduced in November with the removal of IR1 and the frequency of sampling at IR6 and IR8 was reduced to summer and fall 5 in 30 only. The monitoring frequency at the above two sites has been reduced from monthly and 5-in-30 three times per year to 5-in-30 two times per year (summer and fall). Monthly sampling has occurred at these sites since 2014 and a strong dataset is now available. The two seasons of worst water quality are summer and fall, so this reduction will provide the information necessary to compare to baseline data and to conditions at other sites.

Most general parameters (e.g., TSS and sulphate) had low concentrations at the four stations and remained well below WQGs. Hardness showed seasonal variability, with lower levels in spring and fall (higher flow) than in summer (low flow). A conservative approach was taken when calculating hardness dependent WQGs (using a background hardness of 30 mg/L).

Dissolved aluminum and total arsenic are the two primary parameters displaying a trend related to flows in the Iron River. Al-D concentrations were higher than the acute WQG (0.100 mg/L) during one event at IR8 in fall resulting in 0.108 mg/L and above the chronic WQG of (0.05 mg/L) at all three sites during spring and above IR6 and IR8 during fall.

As-T concentrations were elevated above WQGs (0.005 mg/L) during summer low flow at IR8 on two occasions, once in June (0.00924 mg/L) and once in August (0.00613 mg/L). Concentrations increased marginally from IR6 to IR8 (downstream) as displayed in Appendix II, Graph 55. IR6 neared guideline in the June monthly sampling event (0.00458 mg/L).

An inverse relationship between As-T and Al-D has been identified: Al-D is elevated during periods of higher flow while As-T is elevated at times of low flow (Appendix II, Graphs 53 to 55). In 2019-20 for example, As-T displayed highest concentrations at IR6 and IR8 in samples collected during the summer while Al-D is elevated during spring and fall.

All other parameters of interest were below WQG's at IR1, IR6, and IR8 and there were no parameters above WQGs observed at 7SQR or IRQR. Therefore, mixing of the Quinsam and Iron rivers continues to provide sufficient dilution to maintain water quality.

Appendix I, Tables (144 - 152) and Appendix II, Graphs (53 to 55) display relevant data for all Iron River sites graphed against flow.

# 10.0 BIOTA MONITORING IN THE RECEIVING ENVIRONMENT

Phytoplankton and zooplankton are monitored every year at one station in each of No Name, Long, Middle Quinsam, and Lower Quinsam lakes. The sampling sites are shown in Appendix IX, Figure 1. This section of the report describes sampling objectives, methods, QA/QC, and results for phytoplankton and zooplankton. Refer to Appendix IV for all historical and present phytoplankton data.

## 10.1 PHYTOPLANKTON

Phytoplankton are photosynthetic microorganisms that live in lakes at depths to where adequate sunlight can penetrate. They are the main primary producers in lakes, converting sunlight, $CO_2$, and water into organic matter, and are the foundation for the aquatic food web (Wetzel 2001). Phytoplankton includes algae and cyanobacteria, both of which contain at least one form of chlorophyll (chlorophyll *a*), the major photosynthetic pigment. They are sensitive to changes in water quality (Wetzel 2001). Many lakes have a spring and fall phytoplankton bloom (peak growth period) following the seasonal "overturns" or mixing of the water column, which redistribute nutrients through the water column.

Phytoplankton are monitored annually at one station each in No Name, Long, Middle Quinsam, and Lower Quinsam lakes, in the deepest area of the lakes, where routine water quality monitoring is conducted. From 2013 to 2019, phytoplankton samples have been collected at the four lakes once each during the spring, summer and fall 5 in 30-day water sampling periods defined in amended Permit PE 7008. From the 1990s to 2012, Permit PE 7008 required sampling at 1, 4, and 9 m depth in April through September at Long Lake and Middle Quinsam Lake, with No Name Lake added in 2012 and Lower Quinsam Lake added in 2013.

### 10.1.1 *METHODS*

#### 10.1.1.1 *Field Methods*

In 2019, samples were collected from 1 m depth using a 4 L Beta sampler. Chlorophyll *a* sample were collected as 1 L raw water samples, shipped to BV laboratory (Burnaby B.C.) and laboratory filtered for analysis. A 250 mL sample was preserved with Lugol's in the field and analyzed for community composition, i.e., counts and identification to lowest practical level (Stantec Consulting Ltd., Burnaby B.C.). Field replicates were collected for QA/QC in May and July 2019, from Long lake and No Name Lake, respectively.

#### 10.1.1.2 *Laboratory Methods*

Organisms were identified to lowest practical level (species where possible) using an inverted microscope. A 27 mL volume of lake water was settled in a chamber. Counts were made at 100X, 400X, and 1000X magnifications, to record the size range of phytoplankton.

### 10.1.2 *RESULTS*

#### 10.1.2.1 *Chlorophyll a*

This year samples were collected and sent to the laboratory during spring, summer and fall. The spring results were not released for both Middle and Lower Quinsam Lakes, due to the financial situation of the mine. The summer samples were not analyzed due laboratory error for all four lakes and the fall samples were obtained for Middle Quinsam and Long lakes.
Chlorophyll *a* concentrations provide an indication of overall phytoplankton biomass at any given time and provide a basis for comparing primary production among lakes. Table 17 provides data for samples collected from 1 m depth in 2019. Concentrations ranged from 0.92 µg/L (spring sample from No Name Lake) to 1.37 µg/L (Long Lake, fall sample).

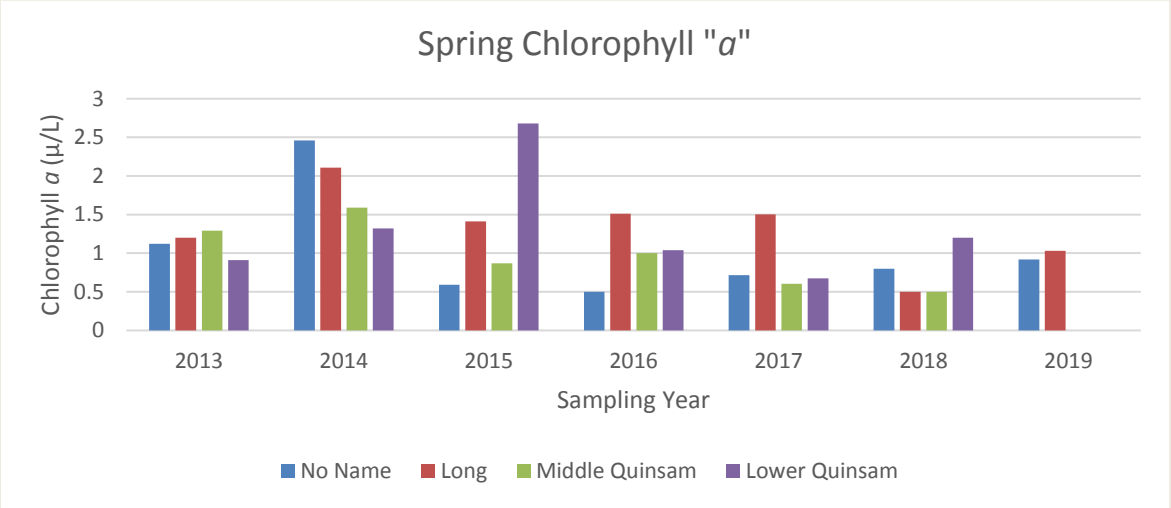
**Table 17: Chlorophyll a Concentrations, 1 m Depth, Quinsam Lakes System, 2019**

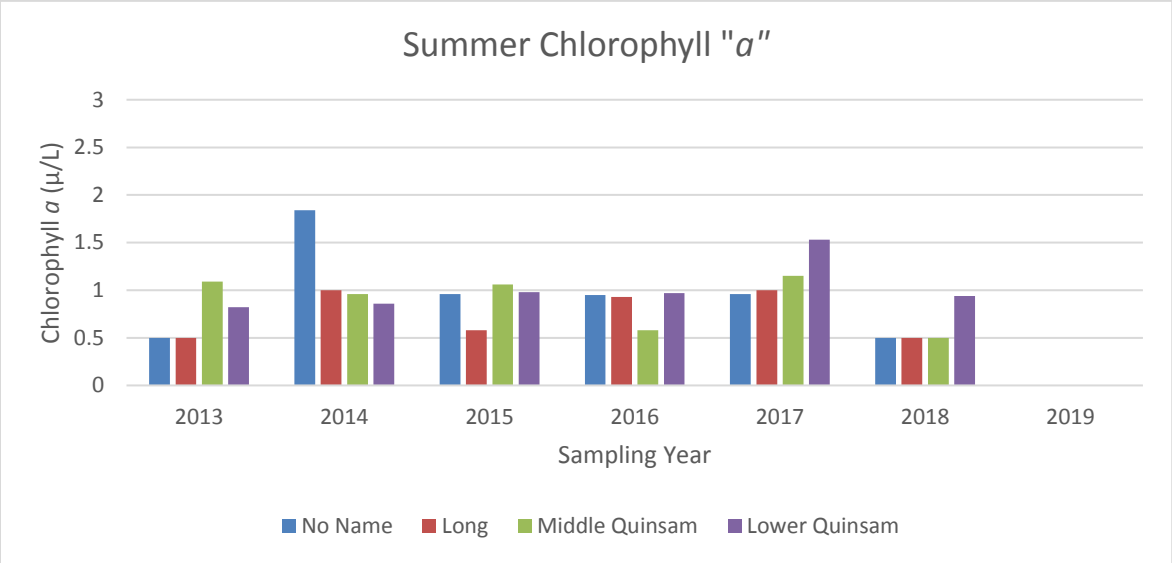
| **Lake** | **Chlorophyll *a* (µg/L)** | | |
|---|---|---|---|
| | **Spring** | **Summer** | **Fall** |
| No Name Lake (NNL) | 0.92 | No Results | N/A |
| Long Lake (LL) | 1.03 | No Results | 1.37 |
| Middle Quinsam (MQL) | No Results | No Results | 1.26 |
| Lower Quinsam (LQL) | No Results | No Results | N/A |

Concentrations of Chlorophyll *a* was within the range previously reported for all four lakes (NNL, LL, MQL and LQL) during spring and fall with LLM displaying the highest results.
Historically chlorophyll *a* concentrations reported for these lakes reflected oligotrophic conditions (mean of 1.7 µg/L, maximum of 4.5 µg/L), and low total phosphorous concentrations (mean of 8 µg/L, maximum of 18 µg/L), according to the trophic classification system for lakes developed by Vollenweider and Kerekes (1982; cited in Environment Canada 2004)[16]. Permit PE 7008 does not require nutrient analysis for the lakes, and nitrate, and ammonia data were not available to confirm this trophic classification.

Appendix IV and Figure 19 provide data for 2013 through 2019. Chlorophyll *a* result for 2019 spring and fall were within the range reported from 2013 to 2018 (0.48 to 2.68 µg/L).

[16] Vollenweider, R. and J. Kerekes. 1982. Eutrophication of Waters. Monitoring Assessment and Control. Organization for Economic Co-operation and Development (OECD) Paris. 55 pp. cited in Environment Canada 2004. Canadian Guidance Framework for the Management of Phosphorus in Freshwater Systems. Report No. 1-8. http://publications.gc.ca/collections/Collection/En1-34-8-2004E.pdf



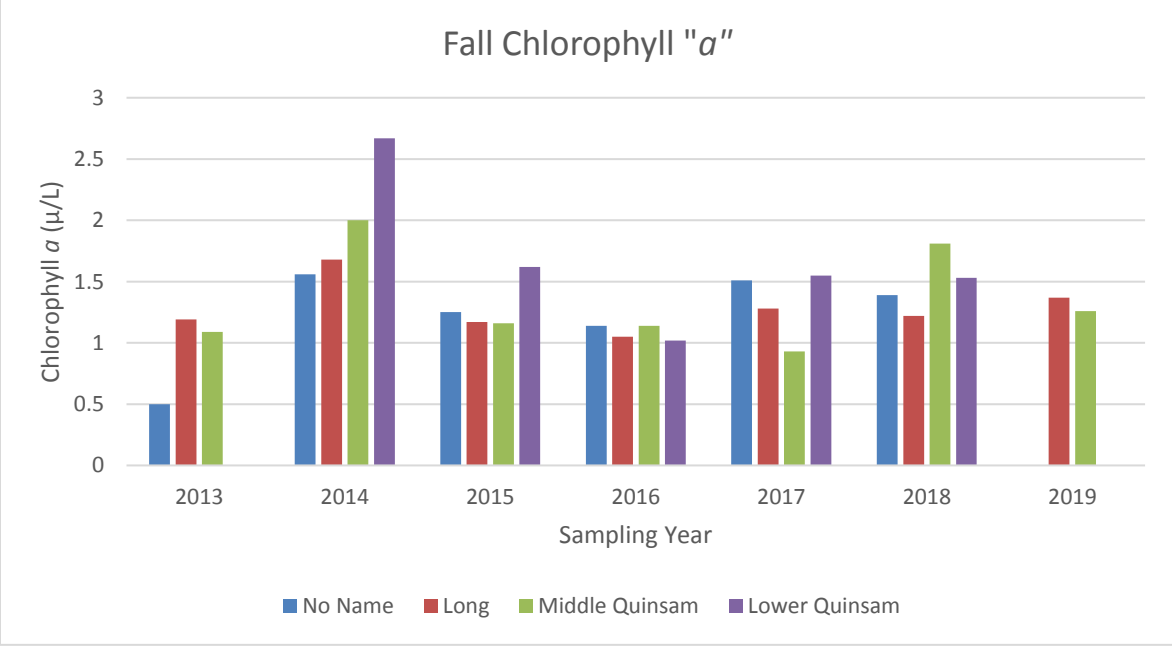




**Figure 19: Chlorophyll a (µg/L) at 1 m Depth, Quinsam Lakes System, 2013 – 2019**

### 10.1.2.2 *Phytoplankton Communities*

Phytoplankton taxonomy reports are included in Appendix IV and results are summarized here. Duplicate samples collected for Long Lake in May and Lower Quinsam Lake October showed good agreement for the paired samples (within 20% of duplicate samples).

Abundance is summarized in Table 18 as total and by size fraction (identified at 1000X, 400X, and 100X magnifications). Total abundance ranged from 320 to 2700 cells/mL in 2019. The smallest size fraction (less than 5 µm in size) comprised of 98 % of the total abundance.

**Table 18: Phytoplankton Abundance (cells/mL) in Quinsam Lake Systems, 2019**

| Lake | Date | Abundance (cells/mL) at 1 m depth | | | |
|---|---|---|---|---|---|
| | | Total | < 5 µm (1,000 X) | 5 to 25 µm (400 X) | > 25 µm (100 X) |
| Long | May 1 | 2,400 | 1,900 | 430 | 1.0 |
| Long—duplicate | May 1 | 2,100 | 1,700 | 420 | 1.7 |
| Middle Quinsam | May 2 | 320 | 260 | 60 | 1.2 |
| No Name | May 1 | 740 | 440 | 300 | 0.1 |
| Lower Quinsam | May 2 | 600 | 500 | 99 | 1.2 |
| Long | May 8 | 2,000 | 1,700 | 300 | 0.5 |
| Middle Quinsam | | 1,000 | 920 | 80 | 0.4 |
| No Name | | 2,700 | 2,100 | 570 | 0.03 |
| Lower Quinsam | | 2,100 | 1,800 | 310 | 11.9 |
| Long | July 30 | 2,600 | 2,300 | 220 | 1.3 |
| Middle Quinsam | | 1,800 | 1,600 | 220 | 0.7 |
| No Name | | 2,400 | 2,100 | 350 | 4.9 |
| No Name (duplicate) | | 2,200 | 1,800 | 370 | 9.0 |
| Lower Quinsam | | 1,900 | 1,500 | 320 | 1.0 |
| Long | Oct. 24 | 2,400 | 1,900 | 450 | 0.7 |
| Middle Quinsam | | 1,300 | 1,100 | 210 | 0.04 |

In 2019, abundance was greatest in spring at No Name, Long and Lower Quinsam lakes, summer in Long and No Name lakes and during fall in Long Lake. Total abundance was lowest in spring at Middle Quinsam lake, in summer at Long Lake and in fall at No Name Lake. The highest abundance was recorded in spring at No Name Lake (2700 cells/mL). Peak abundance and chlorophyll *a* concentrations did not always coincide, likely related to changes in size of abundant taxa over the sampling periods. There were two sets of samples collected during spring 2019 (May 1$^{st}$ and May 8$^{th}$) for graphing purposes only May 8$^{th}$ samples were used (See Spring Phytoplankton Abundance Graph 20, below).

Variation in total abundance among lakes and through the three seasonal sampling periods for 2013 through 2019 is shown in Figure 20. As noted for chlorophyll *a*, high variability among seasons, years, and lakes between 2013 and 2019 was likely related to variation in timing of spring and fall overturn and nutrient concentrations. Phytoplankton abundance data for 2019 were consistent with those of previous years for the two lakes (Long and Middle Quinsam Lakes) with No Name and

Lower Quinsam Lakes displaying higher abundance than previously reported in spring 2019. In summer No Name and Long Lakes had the greatest abundance with Long Lake displaying the greatest abundance recorded since 2013. Fall sampling only included Middle and Long Lakes due to a permit amendment and displayed greatest abundance in Long lake.

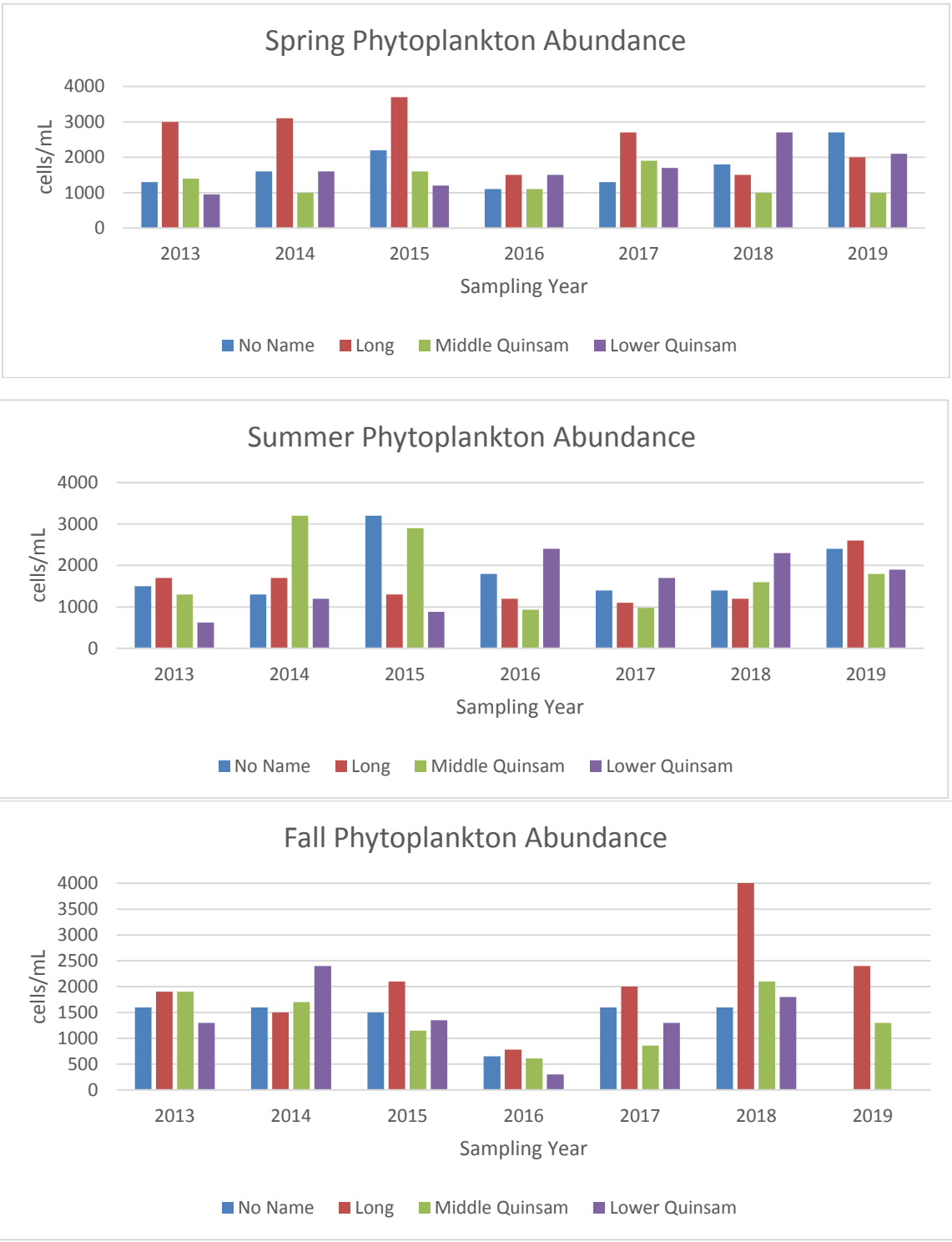



**Figure 20: Total Phytoplankton Abundance, 1 m Depth, Quinsam Lakes System, 2013 – 2019**

Species Composition:

There was no report for species composition for spring and summer 2019 due to the bankruptcy of the mine and reports not being issued.

Species composition data for October 24, 2019 samples are contained in Appendix IV, Attachment 2. The most abundant phytoplankton in both lakes were the very small (less than or equal to 5 µm) chrysoflagellates (*Ochromonas* spp. and *Chromulina* spp.). Although these ultra-nanoplankton species were very abundant numerically, they usually contribute little to algal biomass.

The most abundant of the larger algae were as follows:

- In Long Lake, larger *Ochromonas* spp. and the cryptophyte *Rhodomonas minuta* were predominant.
- In Middle Quinsam Lake, larger *Ochromonas* spp. were predominant and *Rhodomonas minuta* and the colonial chrysophyte *Dinobryon cylindricum* were common.

## 10.2 ZOOPLANKTON

Zooplankton form the second trophic level in the water column of lakes (secondary producers), grazing on phytoplankton, consuming organic matter, and providing a food source for juvenile fish (Wetzel 2001). Abundance and composition of the zooplankton community vary among lakes due to variation in water chemistry, lake characteristics, and grazing pressures from fish (Wetzel 2001[17]).

According to PE:7008, zooplankton are monitored in the Quinsam mine receiving environment three times per year at one station in each of No Name, Long, Middle Quinsam, and Lower Quinsam lakes. Since 2014, zooplankton samples have been collected once in the spring, summer, and fall during the 5 in 30 water quality sampling periods.

### 10.2.1.1 *Field Methods*

Zooplankton were collected from No Name, Long, Middle Quinsam, and Lower Quinsam lakes historically three times per year (once during each 5 in 30-day period). In 2019 there was an extra set of samples collected in spring at each lake. In the fall only Middle Quinsam and Long lakes were sampled pursuant to a permit amendment received on November 1st, 2019. Samples were collected using a Wisconsin Plankton Sampler (63 µm net) in a 10 m vertical tow, with one sample collected per lake. Samples were preserved with ethanol and sent to Fraser Environmental Services (Surrey B.C.) for taxonomic analyses.

### 10.2.1.2 *Laboratory Methods*

Organisms were counted and identified to lowest practical level.

[17] Wetzel R. 2001. Limnology: Lake and River Ecosystems 150 pp

### 10.2.2 *RESULTS*

Detailed zooplankton taxonomic composition results are provided in Appendix IV, Tables 1 through 3 and are summarized below. Abundance is the relative representation of a species in a particular ecosystem. It is usually measured as the number of individuals found per sample. Peak abundance ranged from 4255 organisms/sample (Long Lake, May) to 7153 organisms/sample (Middle Quinsam Lake, July) to 1663 organisms/sample (Long Lake, October). Lower Quinsam and Middle Quinsam Lakes had the lowest abundance among the four lakes, in the first set of samples collected during spring (May 1st). In No Name, Middle and Lower Quinsam lakes, maximum abundance was reported in the summer and in Long Lake, the maximum occurred in Spring. Middle Quinsam lake had a 7,153 organisms/sample reported in July and only 60 organisms/sample reported in October. Abundance was highest in Long Lake and lowest in Middle Quinsam Lake the fall.

Zooplankton organism abundance per sample collected in 2019 is displayed in Table 19, and Figure 21 below. For the two sample sets collected per lakes in May the results were summed. The most abundant of the Zooplankton were as follows:

- In No Name Lake spring samples all three groups *Rotifera, Calanoida and Cladocera* displayed similar results and in summer *Rotifera* was most abundant.
- In Long Lake spring and summer *Calanoida* and *Rotifera* were most abundant and in fall *Rotifera* was most abundant.
- In Middle Quinsam Lake, *Calanoida* were most abundant in summer, with *Rotifera* most abundant in the summer and in fall with *Calanoida*. Abundance was low in fall for Middle Quinsam lakes total count of 60.
- In Lower Quinsam Lake *Calanoida* were most abundant in spring with *Cladocera* most abundant in summer.

**Table 19: Zooplankton Abundance (Organisms/sample)**

| Lake-2019 | Month | Abundance (organisms/sample) | | | | |
|---|---|---|---|---|---|---|
| | | Total | Cyclopoida | Calanoida | Cladocera | Rotifera |
| No Name | *May | 2320 | 302 | 818 | 855 | 923 |
| No Name | August | 3857 | 61 | 650 | 593 | 2553 |
| No Name | October | N/A | N/A | N/A | N/A | N/A |
| | | | | | | |
| Long Lake | *May | 2898 | 505 | 2033 | 705 | 2369 |
| Long Lake | July | 2557 | 434 | 365 | 542 | 1216 |
| Long Lake | October | 1663 | 60 | 402 | 62 | 1139 |
| | | | | | | |
| Middle Quinsam | May | 5612 | 50 | 1554 | 372 | 114 |
| Middle Quinsam | July | 7153 | 152 | 551 | 771 | 5679 |
| Middle Quinsam | October | 60 | 2 | 22 | 14 | 22 |
| | | | | | | |
| Lower Quinsam | *May | 2090 | 159 | 1638 | 306 | 217 |
| Lower Quinsam | July | 2645 | 328 | 521 | 1464 | 332 |
| Lower Quinsam | October | N/A | N/A | N/A | N/A | N/A |

*May samples are a cumulative total of two sample sets

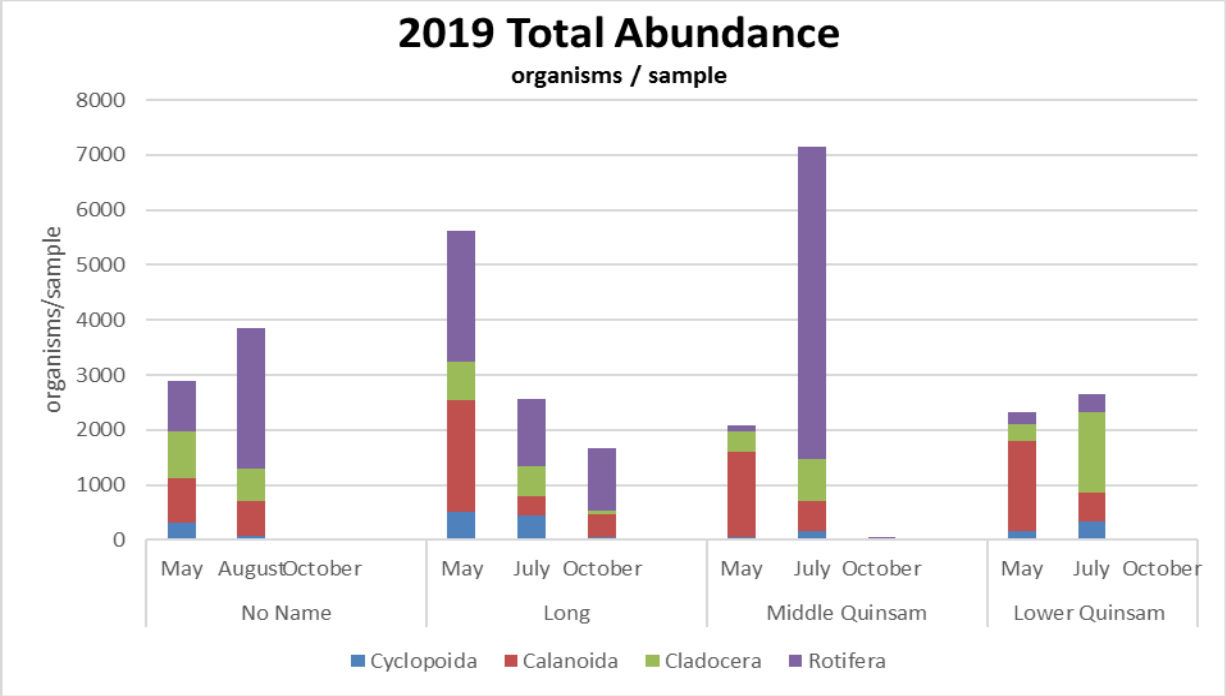
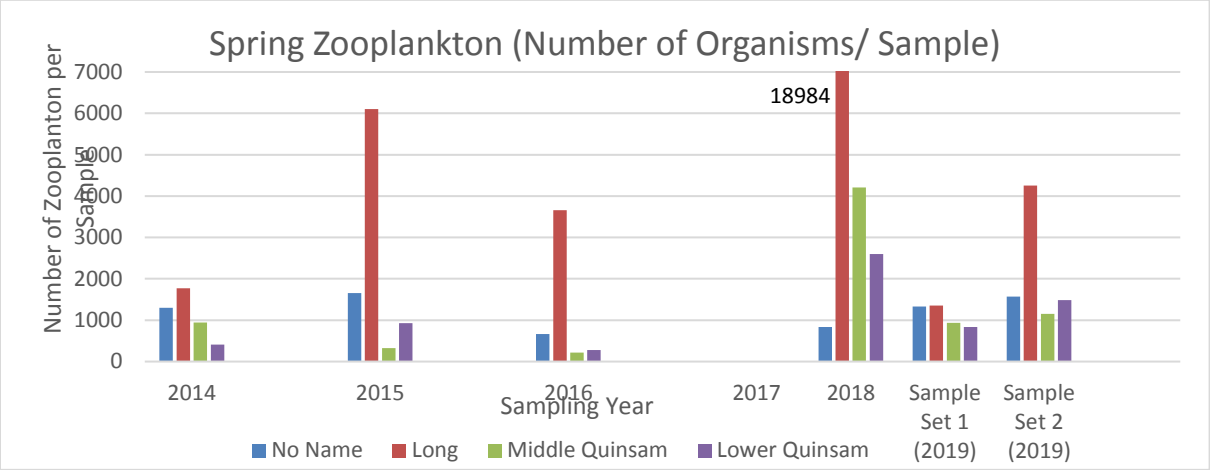
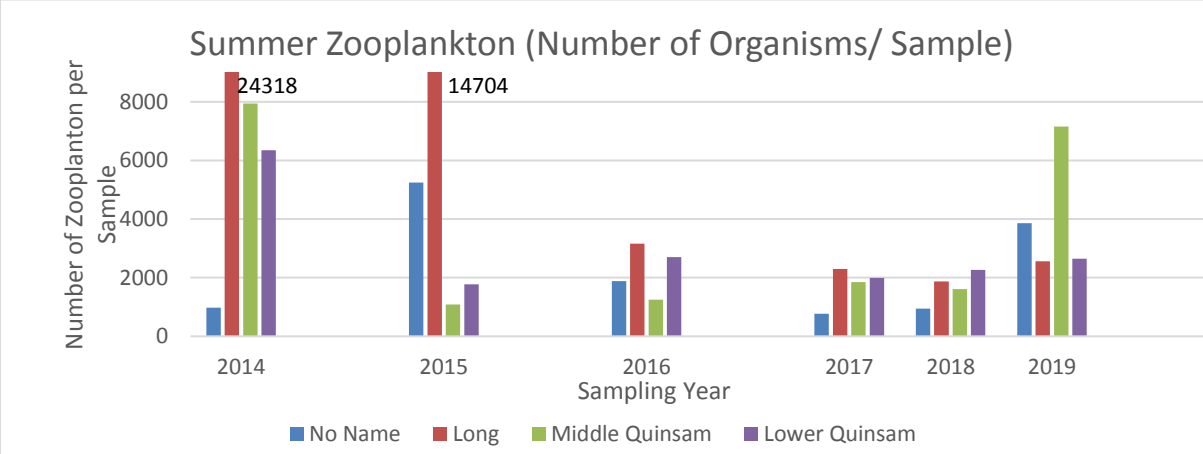



**Figure 21: 2019 Total Abundance**

Seasonal and spatial trends are displayed in Figure 22 below, for samples collected from 2014 through 2019. Results from the spring sampling where 2 sets were submitted are displayed below in the Spring Zooplankton chart. There has been high variability among lakes, seasons, and years. In general, abundance is highest for the summer samples, following peaks in levels of phytoplankton and organic matter; however, there are exceptions, including low abundance in No Name Lake in summer 2014, 2017 - 2018 and peak abundance in Lower Quinsam Lake in fall 2015. Variations in total abundance when comparing lake phytoplankton abundance may be related to the month sampled and phytoplankton blooms. For example, spring, and summer sampling should occur during the last weeks of the 5 in 30 with fall sampling occurring during the first week of the 5 in 30 for a better representation. Some spring and fall samples were collected in either too early in the spring or too late in the fall late, when the water colder representing the lowest species abundance and counts. This is mainly observed in Middle Quinsam lake during fall sampling events (2016, 2018 and 2019).

Differences in taxonomic composition are related to seasonal conditions, including food supply (phytoplankton and organic matter) and grazing pressures from fish. The larger copepods and cladocerans provide preferred food sources for fish. All four lakes are known to be fish bearing (e.g., salmon and trout species), but there is not enough information about fish populations to estimate grazing pressures on zooplankton.



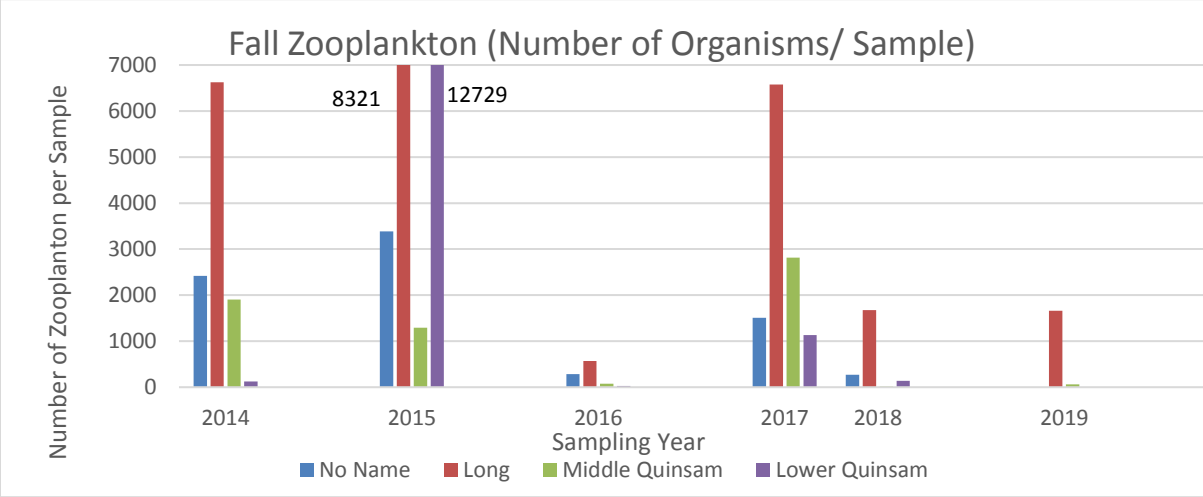




**Figure 22: Total Zooplankton Abundance (0 to 10 m Vertical Tows), Quinsam Lakes System, 2014 – 2019**

(No samples analyzed in Spring 2017. In fall 2019 only Middle Quinsam and Long lakes were sampled.)

## CONCLUSION

Water in lakes of the Quinsam River watershed near Quinsam Mine and in the Quinsam River itself is of good quality, meeting WQGs and WQOs on all sampling dates in 2019 in the Quinsam river and most WQGs and WQOs in the lakes. Sulphate remains slightly higher than the WQG in deep water (9 m and 1 mb) of Long Lake. Sulphate concentrations in Middle Quinsam Lake remained in low concentrations <65 mg/L at 1mb throughout the water column during all sampling periods.

Anoxic conditions represented by low DO levels in deep waters are common during summer and early fall in Long and Lower Quinsam lakes. This results in mobilization of iron in Lower Quinsam lake and manganese in Long lake. Concentrations of these metals in deep water were lower than in earlier years in both lakes.

No Name, Long, Middle Quinsam, and Lower Quinsam lakes support phytoplankton communities typical of oligotrophic conditions and distinct zooplankton communities in each lake that provide typical prey for fish. There were no indications of adverse effects of mine discharges on the plankton communities of lakes (density, taxonomic richness, composition) in the spring and summer samples. During the fall sampling event (Oct 24, 2019) Middle Quinsam lake had normal counts for phytoplankton but low counts for zooplankton yet higher than the previous year during fall. Future monitoring is required to determine if this is related to seasonal limnological conditions such as temperature.

While levels of iron are low in discharges from the mine, they can be elevated along with arsenic in groundwater and seeps entering Long Lake (Golder 2011, Cullen 2011, SLR 2015). However, seep monitoring conducted since 2011 has shown a notable decline in concentrations of these metals (except for iron) and groundwater monitoring indicates naturally elevated concentrations in wells established in the Dunsmuir rock formation. The presence of anoxic or suboxic conditions in deep lake waters during the summer and early fall (which develop naturally in Long and Lower Quinsam lakes) leads to conditions where metals that are sensitive to changes in the redox environment can be mobilized and enter the deep waters. The amount of mobilization varies from year to year: In 2019, there were WQG exceedances for total manganese at 1mb in Long Lake; both total and dissolved iron was elevated at 1mb in Lower Quinsam Lake. However, in earlier years, the concentrations of iron and manganese were higher in both Long and Lower Quinsam Lakes. Results from the 2016 Sediment and Benthic study and earlier studies, summarized in SLR (2015) cannot conclusively identify a mine-related source for these metals in Long Lake, aside from possible localized sources from seeps, and there are naturally elevated levels observed in other lakes in the watershed.

## 11.0 CLOSING

Water quality in the Middle Quinsam Sub-Basin remained consistent with previous years and is considered to be in good condition with little appreciable impacts associated with coal mining. The majority of parameters of concern were below Provincial guideline and objective levels indicating minimal health risk to sensitive aquatic receptors. For example, sulphate concentrations were recorded below its respective guideline during all sampling events in three out of four lakes sampled; this trend signifies water management features and controls at the mine site are effective.

This year, Quinsam experienced one permit limit exceedance for dissolved iron at Settling Pond #1 most likely attributed to anoxic conditions in the pond and fast rising water levels.

Parameters of interest and those displaying slightly elevated concentrations in the lakes include total and dissolved iron (LQL 1mb) and concentrations of manganese at (LLM 1mb) both are associated with anoxic concentrations at depth. The relationship between low DO and elevated iron and manganese in Long Lake 1mb and Lower Quinsam Lake 1mb has been demonstrated in Appendix II, Graphs (27, 44 and 45). This pattern of elevated manganese and iron at depth in these lakes has become more evident since the initiation of the 5 in 30 monitoring in 2013. Previously, there were occasional exceedances occurring during monthly sampling over summer and fall and all events were associated with low DO.

Dissolved sulphate was elevated above WQG in Long lake at 9m and 1mb.This may be attributed to low inflows and outflows during summer and fall causing limited lake turnover throughout the year. Appendix II Graph 28 displays historic sulphate in Long lake and shows the cyclic pattern of sulphate with the 9m and 1mb following a similar trend. Graph 29 displays the average 5 in 30 sulphate concentrations with the upper portion of the lake (1m and 4m's) fluctuating in concentrations highs and lows but the deeper portions remaining fairly stagnant indicating little to no turnover at deep. In Middle Quinsam Lake sulphate concentrations increased at depth during spring and summer with a reduction experienced during fall. At surface (1m and 4m) depths average sulphate concentrations were lowest recorded since the 5 in 30 monitoring began in 2013 averaging 7 mg/L. Related to reduced discharges from Settling Pond #4 from July through September. Concentrations increased during the fall at surface (1m and 4m) depths indicating commencement of discharge at Settling Pond #4. Average sulphate remained below WQG during all seasons in Middle Quinsam lake.

Quinsam anticipates that the efforts invested into the reclamation projects will continue to contribute to improved water quality in Long Lake. This will be determined over the next few years as vegetation starts to become established within the areas of 1 South through 4 South and concentrations of parameter loading start to decline.

Once again depth profiling has resulted in low pH conditions exceeding lower water quality guidelines of 6.5 observed in No Name Lake during spring and fall. However, there is little concern as the slightly acidic conditions are likely naturally occurring.

The Iron River was added to the receiving environment monitoring program during the 2014/2015 monitoring period as a result of the 7-South Area 5 mine approval. This development commenced in mid- July of 2018 with the initiation of blasting through the Long Lake fault zone. The project was complete in mid- January 2019. This system experiences naturally elevated concentrations (above water quality guidelines) of aluminum and arsenic; aluminum is present throughout the system (i.e. from IR1 through IR8) whereas arsenic is primarily detected below the sandstone unit

of the Dunsmuir member contact represented by monitoring location IR6. These parameters have continued to be observed throughout 2019-20 monitoring in this system with less frequent exceedances of aluminum in fall and arsenic during low flow sampling. Arsenic was elevated in IR6 and IR8 during June but only two sampling events exceeded guidelines at IR8 during the summer low flow. The reducing concentrations is possibly due to remediation of the borehole on the Iron river. The main intention for monitoring is to develop water quality objectives reflective of baseline conditions and monitoring any affects from mining in 7-South Area 5.

Quinsam Coal will continue to focus on site wide water management with a target of mitigating parameter of interest concentrations in the receiving environment. To date, Quinsam has demonstrated that the existing mine related controls and features implemented have been effective at reducing concentrations of certain parameters (e.g. sulphate). This trend is expected to persist and will be highlighted by future monitoring programs.

In closing, Quinsam trusts the information herein addresses the environmental responsibilities and provisions applicable to effluent permit PE: 7008.

Should you have any questions or concerns please contact the undersigned at Quinsam Coal Environmental Department 250-286-3224 Ext 225.

Kathleen Russell, B.Sc. Environmental Coordinator - Quinsam Coal Corporation

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# Table 1
# 2019-2020 Annual Report

| Description of Effluent, In-Mine Releases & Receiving Environment Monitoring Sites | | | |
|---|---|---|---|
| **EMS ID #** | **Monitoring Sites** | **Abbreviation (Station Code)** | ***Type of Water (MW, FW or GW)** |
| | **North Coal Mining Operation** | | |
| E207409 | Settling Pond #4 Decant | WD | **Discharge (MW)** |
| E207411 | Culvert, at Middle Quinsam Lake Road | WC | MW & FW |
| E283433 | 2-North Portal Sump (Adit Sump) | 2NPS | MW |
| E207412 | 2-North Pit Sump CCR Cover | WP | PAG-CCR Water Cover - MW |
| E292126 | South Dyke Sump | SDS | MW |
| | **South Coal Mine** | | |
| E218582 | Settling Pond #1 Decant | SPD | **Discharge (MW)** |
| E217014 | Culvert, Downstream End at Access Road | SPC | MW & FW |
| E217015 | South Pit Main Sump Water | 3S | PAG-CCR Water Cover (MW & FW) |
| E292127 | 2-South Pit In Pit Water Cover (2-South Standpipe) | 2S | PAG-CCR Water Cover (MW & FW) |
| E292128 | 1977 Bulk Sample Pit | 3S77 | MW & FW |
| E292129 | Culvert Downstream of 4 South Access Road | 4S-Lo | MW & FW |
| | **7-South Mining Operation** | | |
| E292069 | 7-South Surface Decant | 7SSD | **Discharge (MW & FW)** |
| E292110 | 7-South Adit Sump | 7SPS | MW |
| | **Seep Monitoring Sites** | | |
| E292131 | Long Lake Seeps | LLS & LLSM | GW / MW |
| | Culvert that collects groundwater and Coal Main logging road water entering MQL (PDSR) | PDSR | GW / SW |
| | **Receiving Environment Monitoring Sites - Near Initial Zone of Dilution (NIDZ)** | | |
| **Near Initial Dilution Zone (NIDZ) Monitoring Sites** | | | |
| E292130 | Long Lake Entrance (South end water entering Long Lake) | LLE | NIDZ |
| E292109 | Road Crossing Bridge on Stream 1 above the Lower Wetland (Downstream of 7SSD).The site name is Stream 1, 7S. | 7S | NIDZ |
| | **Receiving Water (Rivers & Lakes Monitoring Sites) 5 in 30 Monitoring Locations** | | |
| **North Coal Mining Operation** | | | |
| E0126402 | Quinsam River at Argonaut Road | WA | FW |
| E206618 | Middle Quinsam Lake Centre | MQL (1, 4, 9 & 1m from Bottom) | FW |
| E0900504 | Outflow from Middle Quinsam Lake | WB | FW |
| **South Coal Mine** | | | |
| E217018 | No Name Lake | NNL (1, 4, 9 & 1m from Bottom) | FW |
| E217017 | No Name Lake Outlet | NNO | FW |
| E206619 | Long Lake at Centre | LLM (1, 4, 9 & 1m from Bottom) | FW |
| E219412 | Long Lake Outlet | LLO | FW |
| **7-South Mining Operation (Areas 1 to 4)** | | | |
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| E292113 | Quinsam River Downstream of 7-South Mining Operation | 7SQR | FW |
| E292112 | Lower Wetland Outlet at the confluence of the Quinsam River | LWO | FW |
| E292118 | Lower Quinsam Lake Centre | LQL (1, 4, 9 & 1m from Bottom) | FW |
| **7-South (Proposed) Area 5 Mining Operation** | | | |
| E297230 | Iron River upstream of mining operations | IR1 | FW |
| E297231 | Iron River upstream of 7SA5 | IR6 | FW |
| E297232 | Iron River downstream of 7SA5 and 242 inputs | IR8 | FW |
| E299256 | Quinsam River downstream of confluence with Iron River | IRQR | FW |
| E292118 | Lower Quinsam Lake Centre | LQL (1, 4, 9 & 1m from Bottom) | FW |
| **Block 242 Mining Operation (Reclaimed / Not Monitored)** | | | |
| E225798 | Iron River upstream of the 242 influence | Not Monitored | FW |
| E225808 | Iron River downstream of the 242 influence | Not Monitored | FW |
| N/A | Old portal sump used for collection of water from underground | Reclaimed | FW / GW |
| **Long Lake Seep Passive Treatment System** | | | |
| N/A | Groundwater well (2-South Mine Pool) influent to the treatment system | QU11-11 (INF-EFF) | MW |
| N/A | Bio Cell Reactor | BCR-EFF | MW |
| N/A | Sulphide Polishing Cell | SPC-EFF | MW |
| N/A | 2-South Inflow | 2SI | MW |
| N/A | Aeration Lagoon | AL-EFF | Not in use |
| N/A | Settling Pond Effluent | SP-EFF | Not in use |

*** MW= Mine Water, FW= Freshwater, GW =Groundwater NIDZ = Near Intial Dilution Zone**

# Table 2

**SUMMARY OF PERMIT LIMIT EXCEEDANCES AND PERMIT NON-COMPLIANCES (April 1st, 2019 through March 31st, 2020)**

| EMS ID & Site Name | Permit Limit Exceedance (P) or Non-Compliance (PNC) | Parameter Exceeded / Other | Result (mg/L) | Requirement | Date | Non-Compliance Reason | Number of events or period for PNC or P. |
|---|---|---|---|---|---|---|---|
| E218582-Settling Pond #1 (SPD) | ND | TSS | 27.6 | Daily Composite | 25-Sep-19 | Beaver had clogged the decant riser. Water was turbid. This was not reported as an actual exceedance. | Not reported as an exceedance due to water not released. |
| | PNC | Flow rate | No results | Continuous Flow | Dec. 6 through 8th | Flow meter sensor failure. New flow meter installed December 11th. | 3/365 days |
| | P | Fe-D | 0.517 | 0.50 | Dec. 4, 2019 | A beaver dam had been blocking the decant since spring and most of fall at Settling Pond #1. Water levels in pond increased and the dam was removed causing a flushing and suction around decant structure possibly releasing iron into water column. Discharge water on December 4, 2019 resulted in elevated dissolved iron (0.517 mg/L). The permit limit applied to the discharge at SP1 is 0.50 mg/L. | This occurred for (1/9) samples collected. Spill report No. DGI: 193640. |
| E207409-Settling Pond #4 (WD) | ND | TSS / $SO_4$-D | No Results | Daily / Weekly | April 29 - May 1 and June 3rd. | Bankruptcy / mandatory holidays for all employees | (1/52) required weekly samples SO4 |
| | Used to calculate fees | Annual average authorized rate of discharge. | Annual average authorized rate of discharge was 0.09209 $m^3$ | Authorized annual average rate of discharge is 0.08$m^3$/s | April 1st, 2019 through March 31st, 2020 | Annual average rate of discharge resulted in 15% greater than authorized. The annual average rate of discharge is used for permit fee calculation purposes. | Exceeded by 15% |
| E292130- South end water entering Long Lake (LLE) | ND | Dissolved Sulphate | No Results | Weekly | June 3rd | Bankruptcy / mandatory holidays for all employees | (1/52) required weekly samples. |
| | ND | Metals (total and dissolved), Nutrients, TSS, alkalinity and acidity. | No Results | Monthly | September | Beaver Clogged Culvert | (1/12) monthly samples. |
| E219412 - Long Lake Outlet (LLO) | ND | Dissolved Sulphate | No Results | Weekly | June 3rd | Bankruptcy / mandatory holidays for all employees | (1/52) required weekly samples. |
| E207411- Culvert, at Middle Quinsam Lake Road (WC) | ND | TSS | No Results | Every two weeks | May 1st, 14th and June 25th | Bankruptcy / mandatory holidays for all employees | (3/26) samples were not collected on a biweekly schedule. |
| Site wide (E207409-WD, E207411-WC, E207412-WP, E283433-2NPS, E218582-SPD, E217015-3S,E292127-2S, E292128-3S77 and E292130-LLE) | ND | Weekly pH/ Conductivity | No Results | Weekly | June 3rd | Bankruptcy / mandatory holidays for all employees | (1/52) required weekly results for each site. |
| Receiving environment sites (E0126402-WA, E0900504 -WB, E286930-QRDS1, E219412 -LLO, E217017-NNO and E292112 -LWO) | PNC | Dissolved Sulphate | No Results | Weekly for 5 weeks during spring | April 10th and 11th | Samples were collected and submitted to the analytical laboratory. Dissolved sulphate was not reported due to laboratory error. | (1/5) required weekly results for each site during 5 in 30 sampling |
| Site wide (E207409-WD, E207411-WC, E207412-WP, E283433-2NPS, E218582-SPD, E217015-3S,E292127-2S, E292128-3S77 and E292130-LLE) | ND | Weekly pH/ Conductivity | No Results | Weekly | June 3rd | Bankruptcy / mandatory holidays for all employees | (1/13) required weekly results for each site. |
| E217018- NNL1, E206619-LLM1, E206618-MQL1 and E292118 -LQL1 | ND | Biological monitoring on all lakes - Chlorophyll "A" | No results for Chlorophyll "A" for spring MQL1 and LQL1 and summer for all lakes. | Once per sampling season | Spring / Summer | Samples were collected and submitted to the analytical laboratory, following bankruptcy and no payment from the Trustee (PWC) the results were not released for Chlorophyll "A" were not released. Report numbers B935003, B962530 - Middle Quinsam Lake, B935390, B962530 - Lower Quinsam Lake, B962481 - No Name Lake and B962530 - Long Lake | (2/2) Chlorophyll "A" for MQL1 and LQL1 during spring. (4/ 4) Chlorophyll "A" for MQL1, LQL1, LLM1 and NNL1 during summer. |
| E217018- NNL1, E206619-LLM1, E206618-MQL1 and E292118 -LQL1 | ND | Biological monitoring on all lakes - Species composition | No results for species compostion for spring and summer 2019 on all lakes. | Once per sampling season | Spring / summer | Samples were collected and submitted to the analytical laboratory, following bankruptcy and no payment from the Trustee (PWC) the results were not released. Species composition for report numbers: B932613, B962481 - No Name Lake, B932610, B962530 - Long Lake, B935003, B962530 - Middle Quinsam Lake, B935390, B962530 - Lower Quinsam Lake | (8/12) Species Composion for lakes during spring and summer |
| Lakes (E217018-NNL1, E206619-LLM1, E206618-MQL1 and E292118 -LQL1) and Rivers (E0126402-WA, E0900504 -WB, E286930-QRDS1, E219412 -LLO, E217017-NNO and E292112 -LWO, E292113-7SQR, E297230-IR1, E297231 -IR6, E297232 -IR8 and E299256 -IRQR) | PNC | All required water chemistry | No results | 5 weeks of sampling | Summer 5 in 30 sampling | Labortory did not receive payment from PwC Inc. trustee of the estate of Quinsam Coal Corp (PWC). | (1/5) weeks of in summer |
| E297231- Iron River Site 6 (IR6) | PNC | Missing all parameters for 1 sample set | No Results | 5 weeks of sampling | Fall 5 in 30 sampling | The IR8 site was collected instead of the IR6 site. | (1/5) weekly samples in fall |
| E292127- 2 South Pit in Pit Water Cover (CCR Water Cover) (2S) | PNC | Continuous (Outflow) | Missing 7 days of outflow data. | Daily | January 24-26, February 1-3 and 6 | Flow meter failure occurred. Flow meter was replaced. | (7/365 days) of contiuous flow required |

**Permit Noncompliance (PNC)**
**Not Determined (ND)**
**Permit Limit Exceenadance (P)**

# Table 3
# 2019-2020 Annual Report

**SUMMARY OF WATER QUALITY GUIDELINE OBSERVATIONS AT RECEIVING MONITORING LOCATIONS - 2019-2020**

| EMS ID & Site Name | Parameter (mg/L or pH Units) | Guideline Limit | Result | Date | Guideline | Sampling Events Exceeding Guideline |
|---|---|---|---|---|---|---|
| E217018 - No Name Lake (NNL) 6-12 metres | pH | 6.5 | 6.30 - 6.49 | Spring 5 in 30 | Min | (17/60) depths profiled during spring |
| | pH | 6.5 | 5.76 - 6.49 | Summer 5 in 30 | Min | (24/60) depths profiled during spring |
| E206619 - Long Lake Middle (LLM) 9 metre (9m) | SO4-D | 128 | 132 | Summer 5 in 30 | A | (4/4 weeks ) average for summer |
| E206619 - Long Lake Middle (LLM) 1 metre from bottom (1MB) | Hypolimnectic DO | Minimum 3 mg/L June - August | 0.55 - 2.96 | Summer 5 in 30 | Min | > 13m depths |
| | SO4-D | 128 | 130, 130 and 138 | Spring, summer and Fall 5 in 30 | A | Average of spring, summer (4/4 weeks) and fall, 5 in 30 results |
| | Mn-T | 0.70 | 1.03 | Fall 5 in 30 | A | Average of fall, 5 in 30 results |
| | | 0.80 | 0.993, 1.08, 1.24 and 1.07 | | M | (4/5) results in fall |
| E292118- Lower Quinsam Lake (LQL)1 metre from bottom (1MB) | Hypolimnectic DO | Minimum 3 mg/L June - August | 0 - 2.91 | Summer 5 in 30 | Min | > 11m depths |
| | Fe-T | 1.00 | 1.09 | Sep. 28 | M | (1/5) weekly samples |
| | Fe-D | 0.35 | 0.385, 0.419 & 0.397 | Summer 5 in 30 | M | (3/4) weekly samples |
| E292112 - Lower Wetland Outlet (LWO) | TSS | 5 | 6 | Spring 5 in 30 | A | Spring 5 in 30 |
| | Al-D | 0.05 | 0.097 | Spring 5 in 30 | A | Spring 5 in 30 |
| | | 0.1 | 0.106, 0.111 and 0.129 | Spring 5 in 30 | M | (3/5) weekly samples collected in spring |
| | Fe-D | 0.35 | 0.54 | May | M | (1/5) Weekly samples collected in spring |
| E297230 - Quinsam River Upstream of Mining Operations (IR1) | Al-D | 0.05 | 0.0506 | Spring 5 in 30 | A | Spring 5 in 30 |
| E297231 - Iron River Upstream of 7SA5 (IR6) | Al-D | 0.05 | 0.062 | Spring 5 in 30 | A | Spring 5 in 30 |
| E297232 - Iron River Downstream of 7SA5 (IR8) | Al-D | 0.50 | 0.0585 and 0.0558 | Spring and fall 5 in 30 | A | Average of spring and fall 5 in 30 results |
| | | 0.01 | 0.108 | Fall 5 in 30 | M | (1/5) results in fall |
| | As-T | 0.005 | 0.00924 and 0.00613 | Jun & Aug | M | (2/16) sampling events |
| E292130 - South end water entering Long Lake (LLE) | Fe-D | 0.35 | 0.411 to 0.985 | Apr., Jun., Oct, Nov. and Dec. | M | (5/11) Monthly sampling events |
| | Fe-T | 1.00 | 1.05 | Jun. | M | (1/11) Monthly sampling events |
| | SO4 | 128 | 130 to 475 | Rolling averages | A | (16/45) rolling averages < 128mg/L |
| E292131- Smaller seep into Long Lake (LLS) | As-T | 0.005 | 0.00518 | Mar. | M | (1/10) Monthly sampling events |
| | Fe-T | 1.00 | 1.09 to 2.11 | May, Jun., Jul., Aug., Dec., Jan., Feb., & Mar. | M | (8/10) Monthly sampling events |
| | Fe-D | 0.35 | 0.529 to 1.96 | Apr., May, Jun., Jul., Aug., Dec., Jan., Feb., & Mar. | M | (9/10) Monthly sampling events |
| E292131- Larger Seep into Long Lake (LLSM) | Fe-D | 0.35 | 0.401 and 0.783 | Apr., Jun. and Mar. | M | (3/8) Monthly sampling events |

***SO4 at LLE was calculated using a rolling average.**

Min = Minimum Water Quality Guidline (WQG) M = Maximum WQG, A = Average WQG

**For all Middle Quinsam Lake Sub-basin and Iron River results background hardness of 30 mg/L was used to calculate those parameters that are hardness dependent.**

# Table 4
# 2019-2020 Annual Report

| EMS ID | | E207409 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Settling Pond #4 | | | Authorized Discharge Location for the North Mining Operation | | | | | | | | | |
| Site Name | | WD | | | | | | | | | | | | |
| Date | | 1-Apr-19 | 6-May-19 | 11-Jun-19 | 10-Jul-19 | 12-Aug-19 | 9-Sep-19 | 1-Oct-19 | 4-Nov-19 | 4-Dec-19 | 6-Jan-20 | 10-Feb-20 | 2-Mar-20 | Permit Limit |
| Parameter | Unit | | | | | | | | | | | | | North |
| *SO4-D | mg/L | 591 | 479 | 838 | 855 | 955 | 556 | 372 | 305 | 460 | 372 | 513 | 734 | |
| TSS | mg/L | <4.0 | 2.3 | <4.0 | <4.0 | 5.6 | 1.7 | <4.0 | <4.0 | <4.0 | 3.6 | 1.6 | 2.4 | **25** |
| Alk-T | mg/L | 448 | 479 | 280 | 240 | 240 | 270 | 490 | 430 | 440 | 300 | 370 | 380 | |
| Acidity 8.3 | mg/L | 12.5 | 1.1 | 2.4 | 7.0 | 1.1 | 4.3 | <1.0 | <1.0 | 2.8 | <1.0 | 1.9 | 2.7 | |
| Al-T | mg/L | 0.0037 | 0.0062 | 0.0094 | | 0.0052 | 0.0096 | 0.005 | | 0.0106 | | 0.030 | | |
| As-T | mg/L | 0.00345 | 0.00271 | 0.00099 | | 0.00093 | 0.00099 | 0.00253 | | 0.00227 | | 0.00211 | | |
| Ba-T | mg/L | 0.0229 | 0.0211 | 0.0213 | | 0.0175 | 0.0165 | 0.0224 | | 0.026 | | 0.0203 | | |
| B-T | mg/L | 1.04 | 0.959 | 0.731 | | 0.755 | 0.896 | 0.856 | | 0.781 | | 0.749 | | |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | | <0.000010 | | |
| Ca-T | mg/L | 153 | 108 | 188 | | 204 | 213 | 96.3 | | 125 | | 118 | | |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | | <0.0010 | | |
| Co-T | mg/L | 0.00027 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | | 0.0002 | | 0.00042 | | |
| Cu-T | mg/L | 0.00107 | <0.00050 | 0.00085 | | <0.00050 | <0.00050 | <0.00050 | | <0.00050 | | 0.00077 | | |
| Hard-T | mg/L | 449 | 314 | 565 | | 610 | 637 | 281 | | 372 | | 353 | | |
| Fe-T | mg/L | 1.740 | 0.712 | 0.191 | | 0.095 | 0.110 | 0.398 | | 0.357 | | 0.553 | | |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | | <0.00020 | | |
| Mg-T | mg/L | 15.9 | 10.5 | 23.2 | | 24.5 | 25.2 | 9.85 | | 14.7 | | 14.2 | | |
| Mn-T | mg/L | 0.354 | 0.139 | 0.0257 | | 0.0408 | 0.0101 | 0.0389 | | 0.0981 | | 0.116 | | |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | | <0.0000020 | | |
| Mo-T | mg/L | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | | <0.0010 | | |
| Ni-T | mg/L | 0.0011 | <0.0010 | 0.0012 | | <0.0010 | <0.0010 | <0.0010 | | 0.0012 | | 0.002 | | |
| K-T | mg/L | 4.67 | 3.95 | 3.6 | | 3.49 | 3.79 | 3.37 | | 3.73 | | 3.49 | | |
| S-T | mg/L | 294 | 179 | 276 | | 295 | 315 | 139 | | 187 | | 181 | | |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | | <0.00010 | | |
| Si-T | mg/L | 3.51 | 3.04 | 2.25 | | 4.68 | 4.24 | 2.91 | | 3.38 | | 3.21 | | |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | | <0.000020 | | |
| Na-T | mg/L | 390 | 280 | 251 | | 223 | 246 | 280 | | 288 | | 252 | | |
| Sr-T | mg/L | 1.43 | 1.09 | 1.60 | | 1.66 | 1.76 | 0.872 | | 1.17 | | 1.05 | | |
| Zn-T | mg/L | 0.0057 | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | <0.0050 | | <0.0050 | | <0.0050 | | |
| Al-D | mg/L | <0.0030 | 0.0098 | <0.0030 | | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | 0.006 | 0.0101 | <0.0030 | **0.5** |
| As-D | mg/L | 0.00164 | 0.00139 | 0.00082 | | 0.00087 | 0.00081 | 0.00164 | 0.0016 | 0.00149 | 0.00106 | 0.00118 | 0.00088 | |
| Ba-D | mg/L | 0.0211 | 0.0196 | 0.0196 | | 0.0176 | 0.0156 | 0.0221 | 0.0212 | 0.0227 | 0.0202 | 0.0191 | 0.0214 | |
| B-D | mg/L | 1.01 | 0.954 | 0.873 | | 0.783 | 0.837 | 0.918 | 0.784 | 0.851 | 0.674 | 0.659 | 0.755 | |
| Be-D | mg/L | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Cd-D | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | |
| Ca-D | mg/L | 150 | 107 | 204 | | 207 | 202 | 97.9 | 95.5 | 124 | 109 | 108 | 142 | |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-D | mg/L | 0.00029 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00021 | 0.00028 | 0.00041 | 0.0002 | |
| Cu-D | mg/L | <0.00020 | <0.00020 | 0.00048 | | 0.00025 | 0.00025 | <0.00020 | <0.00020 | <0.00020 | 0.00024 | 0.00031 | 0.00029 | **0.02** |
| Hard-D | mg/L | 440 | 311 | 609 | | 619 | 601 | 286 | 281 | 366 | 330 | 325 | 414 | |
| Fe-D | mg/L | 0.0139 | <0.0050 | 0.0282 | | 0.0268 | 0.017 | 0.0052 | 0.0073 | 0.0092 | 0.0065 | 0.0059 | 0.008 | **0.3** |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | **0.05** |
| Mg-D | mg/L | 15.5 | 10.5 | 24.1 | | 24.7 | 23.6 | 10.2 | 10.3 | 13.7 | 13.8 | 13.2 | 14.7 | |
| Mn-D | mg/L | 0.359 | 0.133 | 0.0166 | | 0.023 | 0.0078 | 0.0387 | 0.0331 | 0.0990 | 0.0549 | 0.108 | 0.106 | |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | 0.000004 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000037 | <0.0000020 | <0.0000019 | |
| Mo-D | mg/L | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | 0.0013 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Ni-D | mg/L | 0.001 | <0.0010 | 0.0011 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0012 | 0.0012 | 0.0019 | <0.0010 | |
| K-D | mg/L | 4.64 | 4.06 | 3.93 | | 3.49 | 3.51 | 3.59 | 3.28 | 3.58 | 2.81 | 3.34 | 3.99 | |
| S-D | mg/L | 284 | 175 | 311 | | 298 | 289 | 144 | 134 | 180 | 156 | 162 | 220 | |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Si-D | mg/L | 3.42 | 2.95 | 2.56 | | 4.49 | 4.04 | 3.05 | 2.66 | 3.1 | 2.76 | 2.6 | 3.26 | |
| Na-D | mg/L | 392 | 281 | 271 | | 225 | 242 | 294 | 278 | 283 | 225 | 240 | 270 | |
| Sr-D | mg/L | 1.4 | 1.05 | 1.59 | | 1.65 | 1.69 | 0.936 | 0.864 | 1.080 | 0.936 | 0.938 | 1.26 | |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | **0.1** |
| O&G | mg/L | <1.0 | | <5.0 | | 1.5 | | <1.0 | | <1.0 | | 1.1 | | **10** |
| * Sulphate is a monthly average | | | | | | | | | | | | | | |

# Table 5
# 2019-2020 Annual Report

| EMS ID | | E207412 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 2-North Pond PAG-CCR Water Cover | | | | | | | | | | | |
| Site Name | | WP | | | | | | | | | | | |
| Date | | 01-Apr-2019 | 06-May-2019 | 11-Jun-2019 | 15-Jul-2019 | 12-Aug-2019 | 09-Sep-2019 | 01-Oct-2019 | 06-Nov-2019 | 04-Dec-2019 | 09-Jan-2020 | 10-Feb-2020 | 02-Mar-2020 |
| Parameter | Unit | | | | | | | | | | | | |
| SO4-D | mg/L | 697 | 664 | 599 | 760 | 740 | 790 | 650 | 670 | 680 | 530 | 320 | 580 |
| TSS | mg/L | <16 | <4.0 | <4.0 | 4.4 | 7.2 | <4.0 | | 4.4 | <4.0 | 4.4 | 2.4 | 2.0 |
| Alk-T | mg/L | 300 | 264 | 240 | 200 | 190 | 200 | 290 | 300 | 330 | 220 | 95 | 160 |
| Acidity83 | mg/L | 3.4 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 1.7 | <1.0 | <1.0 | <1.0 | <1.0 |
| Al-T | mg/L | 0.0452 | 0.0177 | 0.0368 | 0.0214 | 0.0138 | 0.0057 | 0.0113 | 0.0130 | 0.0230 | 0.0892 | 0.0137 | 0.0299 |
| As-T | mg/L | 0.00091 | 0.00083 | 0.00079 | 0.00081 | 0.00072 | 0.00206 | 0.00470 | 0.00108 | 0.00070 | 0.00070 | 0.00014 | 0.00025 |
| Ba-T | mg/L | 0.0198 | 0.0175 | 0.0162 | 0.0182 | 0.0163 | 0.0169 | 0.0204 | 0.0170 | 0.0166 | 0.0152 | 0.0096 | 0.0146 |
| B-T | mg/L | 0.806 | 0.794 | 0.775 | 0.839 | 0.788 | 0.806 | 0.811 | 0.831 | 0.703 | 0.601 | 0.215 | 0.366 |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000010 | <0.000010 | 0.000014 |
| Ca-T | mg/L | 145 | 116 | 87.3 | 159 | 135 | 156 | 119 | 135 | 131 | 147 | 108 | 167 |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | 0.00097 | <0.00020 | <0.00020 | <0.00020 | 0.00021 | <0.00020 | 0.00049 | 0.00023 | 0.00042 | 0.00060 | 0.00083 | 0.00120 |
| Cu-T | mg/L | 0.00132 | <0.00050 | 0.00095 | 0.00088 | 0.00071 | <0.00050 | 0.00058 | <0.00050 | 0.00057 | 0.00132 | <0.00050 | 0.00081 |
| Hard-T | mg/L | 441 | 354 | 285 | 489 | 425 | 479 | 370 | 415 | 410 | 453 | 330 | 515 |
| Fe-T | mg/L | 0.207 | 0.056 | 0.118 | 0.077 | 0.090 | 0.172 | 1.21 | 0.234 | 0.270 | 0.321 | 0.028 | 0.126 |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 19.5 | 15.6 | 16.3 | 22.4 | 21.5 | 22.1 | 17.9 | 19.1 | 20.2 | 20.8 | 14.8 | 23.7 |
| Mn-T | mg/L | 0.0639 | 0.0131 | 0.0132 | 0.0125 | 0.0195 | 0.0216 | 0.151 | 0.0338 | 0.0514 | 0.0527 | 0.0614 | 0.105 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | 0.0038 | 0.0015 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0010 | 0.0015 | 0.0021 | 0.0023 | 0.0033 |
| K-T | mg/L | 3.73 | 3.94 | 3.69 | 3.80 | 3.62 | 4.00 | 3.74 | 3.78 | 3.53 | 2.66 | 1.03 | 1.71 |
| P-T | mg/L | 0.0029 | <0.0030 | | 0.0034 | 0.0082 | 0.0062 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 |
| S-T | mg/L | 268 | 244 | 210 | 278 | 265 | 310 | 237 | 244 | 243 | 204 | 110 | 192 |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00014 | 0.00013 | 0.00014 |
| Si-T | mg/L | 2.94 | 2.35 | 1.87 | 3.16 | 2.62 | 3.15 | 2.92 | 2.87 | 2.86 | 2.53 | 1.47 | 2.17 |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 290 | 255 | 271 | 266 | 256 | 275 | 277 | 311 | 295 | 201 | 41.0 | 77.9 |
| N-NO23 | mg/L | 0.032 | <0.020 | 0.406 | 0.038 | <0.020 | <0.020 | <0.020 | <0.020 | 0.045 | 0.036 | 0.056 | 0.090 |
| Sr-T | mg/L | 1.33 | 1.28 | 1.09 | 1.57 | 1.43 | 1.41 | 1.24 | 1.32 | 1.34 | 1.15 | 0.652 | 1.11 |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Al-D | mg/L | 0.0038 | 0.0056 | 0.0034 | 0.0040 | <0.0030 | <0.0030 | <0.0030 | 0.0046 | 0.0106 | 0.0078 | 0.0069 | 0.0075 |
| As-D | mg/L | 0.00065 | 0.00062 | 0.00063 | 0.00074 | 0.00064 | 0.00192 | 0.00174 | 0.00088 | 0.00051 | 0.00041 | <0.00010 | 0.00016 |
| Ba-D | mg/L | 0.0181 | 0.0174 | 0.0168 | 0.0168 | 0.0162 | 0.0162 | 0.0194 | 0.0167 | 0.0150 | 0.0148 | 0.0091 | 0.0148 |
| B-D | mg/L | 0.800 | 0.838 | 0.970 | 0.831 | 0.816 | 0.854 | 0.867 | 0.681 | 0.779 | 0.619 | 0.197 | 0.328 |
| Be-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Cd-D | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000010 |
| Ca-D | mg/L | 146 | 115 | 96.7 | 158 | 132 | 141 | 123 | 119 | 132 | 134 | 98.8 | 180 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | 0.00075 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00021 | 0.00040 | 0.00047 | 0.00085 | 0.00110 |
| Cu-D | mg/L | 0.00032 | 0.00029 | 0.00047 | 0.00062 | 0.00048 | 0.00091 | 0.00032 | 0.00030 | 0.00048 | 0.00050 | 0.00050 | 0.00048 |
| Hard-D | mg/L | 447 | 356 | 315 | 491 | 419 | 442 | 381 | 373 | 407 | 421 | 305 | 553 |
| Fe-D | mg/L | 0.0071 | 0.0066 | 0.0127 | 0.0180 | 0.0100 | 0.0477 | 0.186 | 0.137 | 0.0904 | 0.0361 | <0.0050 | 0.0067 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 20.0 | 16.5 | 17.8 | 23.3 | 22.1 | 21.8 | 18.2 | 18.4 | 18.9 | 20.8 | 14.1 | 24.9 |
| Mn-D | mg/L | 0.0544 | 0.0103 | 0.0032 | 0.0073 | 0.0019 | 0.0116 | 0.0032 | 0.0318 | 0.0504 | 0.0482 | 0.0584 | 0.0988 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000022 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0013 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | 0.0037 | 0.0016 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0011 | 0.0017 | 0.0019 | 0.0022 | 0.0032 |
| K-D | mg/L | 3.72 | 3.95 | 4.08 | 3.95 | 3.63 | 3.56 | 3.91 | 3.43 | 3.38 | 2.65 | 0.979 | 1.75 |
| S-D | mg/L | 260 | 243 | 240 | 301 | 273 | 269 | 235 | 221 | 238 | 201 | 97.9 | 194 |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00012 | <0.00010 | 0.00018 |
| Si-D | mg/L | 2.93 | 2.28 | 2.11 | 2.85 | 2.50 | 2.84 | 2.76 | 2.35 | 2.71 | 2.17 | 1.21 | 2.19 |
| Na-D | mg/L | 285 | 260 | 294 | 275 | 264 | 267 | 287 | 289 | 291 | 215 | 39.1 | 79.5 |
| Sr-D | mg/L | 1.25 | 1.30 | 1.14 | 1.42 | 1.38 | 1.49 | 1.31 | 1.20 | 1.23 | 1.10 | 0.593 | 1.12 |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |

# Table 6
# 2019-2020 Annual Report

| EMS ID | | E283433 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 2-North Portal Sump Effluent | | | | | | | | | | | | |
| Site Name | | 2NPS | | | | | | | | | | | | |
| Date | | 01-Apr-2019 | 06-May-2019 | 11-Jun-2019 | 15-Jul-2019 | 12-Aug-2019 | 09-Sep-2019 | 01-Oct-2019 | 04-Nov-2019 | 04-Dec-2019 | 09-Jan-2020 | 10-Feb-2020 | 02-Mar-2020 | 07-Apr-2020 |
| Parameter | Unit | | | | | | | | | | | | | |
| SO4-D | mg/L | 933 | 1010 | 1040 | 880 | 860 | 800 | 850 | 950 | 950 | 510 | 930 | 930 | 940 |
| Alk-T | mg/L | 293 | 311 | 360 | 300 | 310 | 270 | 310 | 290 | 320 | 150 | 280 | 150 | 260 |
| Acidity83 | mg/L | 13.0 | 7.5 | 8.8 | 9.2 | 11.1 | 7.7 | 7.3 | 7.5 | 12.1 | <1.0 | 7.7 | 9.1 | 3.8 |
| Al-T | mg/L | 0.0488 | 0.0514 | 0.0171 | 0.0243 | 0.0092 | 0.0516 | 0.0320 | 0.0276 | 0.0194 | 0.0560 | 0.120 | 0.0831 | 0.0312 |
| As-T | mg/L | 0.00077 | 0.00082 | 0.00053 | 0.00108 | 0.00098 | 0.00125 | 0.00113 | 0.00120 | 0.00059 | 0.00037 | 0.00121 | 0.00101 | 0.00087 |
| Ba-T | mg/L | 0.0120 | 0.0129 | 0.0110 | 0.0136 | 0.0122 | 0.0139 | 0.0129 | 0.0133 | 0.0147 | 0.0165 | 0.0129 | 0.0119 | 0.0124 |
| B-T | mg/L | 0.784 | 0.76 | 0.79 | 0.802 | 0.799 | 0.90 | 0.812 | 0.89 | 0.808 | 0.461 | 0.77 | 0.733 | 0.655 |
| Cd-T | mg/L | <0.000010 | <0.000020 | <0.000020 | <0.000010 | <0.000010 | <0.000020 | <0.000010 | <0.000020 | <0.000010 | 0.000018 | <0.000020 | 0.000014 | <0.000010 |
| Ca-T | mg/L | 273 | 276 | 298 | 250 | 250 | 228 | 237 | 256 | 262 | 171 | 277 | 275 | 253 |
| Cr-T | mg/L | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | 0.0022 | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0020 | <0.0010 | <0.0010 |
| Co-T | mg/L | 0.00112 | 0.00097 | 0.00068 | 0.00081 | 0.00069 | 0.00102 | 0.00101 | 0.00119 | 0.00174 | 0.00192 | 0.00235 | 0.00177 | 0.00121 |
| Cu-T | mg/L | <0.00050 | <0.0010 | <0.0010 | <0.00050 | <0.00050 | <0.0010 | <0.00050 | <0.0010 | 0.00051 | 0.00062 | 0.0021 | 0.00073 | <0.00050 |
| Hard-T | mg/L | 804 | 798 | 861 | 729 | 731 | 671 | 697 | 751 | 781 | 502 | 820 | 806 | 743 |
| Fe-T | mg/L | 0.256 | 0.262 | 0.145 | 0.274 | 0.235 | 0.264 | 0.369 | 0.347 | 0.264 | 0.058 | 0.397 | 0.322 | 0.178 |
| Pb-T | mg/L | <0.00020 | <0.00040 | <0.00040 | <0.00020 | <0.00020 | <0.00040 | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00040 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 29.6 | 26.6 | 28.3 | 25.6 | 25.9 | 24.6 | 25.4 | 26.9 | 30.8 | 18.1 | 31.2 | 29.3 | 27.2 |
| Mn-T | mg/L | 0.203 | 0.188 | 0.154 | 0.239 | 0.193 | 0.231 | 0.270 | 0.296 | 0.221 | 0.185 | 0.279 | 0.273 | 0.229 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000025 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000037 | <0.0000020 | <0.0000019 | <0.0000019 |
| Mo-T | mg/L | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0020 | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0020 | <0.0010 | <0.0010 |
| Ni-T | mg/L | 0.0032 | 0.0026 | <0.0020 | 0.0020 | 0.0019 | 0.0030 | 0.0026 | 0.0030 | 0.0030 | 0.0048 | 0.0060 | 0.0041 | 0.0032 |
| K-T | mg/L | 4.02 | 3.93 | 4.52 | 3.67 | 3.71 | 3.75 | 3.81 | 4.04 | 4.02 | 2.48 | 3.91 | 3.88 | 3.61 |
| S-T | mg/L | 366 | 357 | 350 | 307 | 314 | 313 | 317 | 327 | 341 | 197 | 340 | 358 | 331 |
| Se-T | mg/L | <0.00010 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00020 | <0.00010 | <0.00020 | <0.00010 | 0.00011 | <0.00020 | <0.00010 | <0.00010 |
| Si-T | mg/L | 3.31 | 3.29 | 3.71 | 3.11 | 3.25 | 3.12 | 3.04 | 3.07 | 3.33 | 1.84 | 3.00 | 3.13 | 2.67 |
| Ag-T | mg/L | <0.000020 | <0.000040 | <0.000040 | <0.000020 | <0.000020 | <0.000040 | <0.000020 | <0.000040 | <0.000020 | <0.000020 | <0.000040 | <0.000020 | <0.000020 |
| Na-T | mg/L | 242 | 202 | 245 | 233 | 232 | 248 | 241 | 253 | 240 | 127 | 218 | 222 | 216 |
| Sr-T | mg/L | 1.88 | 2.03 | 2.10 | 1.88 | 1.85 | 1.70 | 1.73 | 1.81 | 2.00 | 1.09 | 1.88 | 1.84 | 1.92 |
| Zn-T | mg/L | <0.0050 | <0.010 | <0.010 | <0.0050 | <0.0050 | <0.010 | <0.0050 | <0.010 | <0.0050 | <0.0050 | <0.010 | <0.0050 | <0.0050 |
| Al-D | mg/L | 0.0085 | 0.0104 | 0.0079 | 0.0033 | 0.0063 | 0.0079 | 0.0079 | 0.0171 | <0.0060 | 0.0149 | 0.0204 | 0.0235 | 0.0166 |
| As-D | mg/L | 0.00055 | 0.00057 | 0.00043 | 0.00075 | 0.00073 | 0.00078 | 0.00067 | 0.00066 | 0.00046 | 0.00036 | 0.00062 | 0.00061 | 0.00063 |
| Ba-D | mg/L | 0.0115 | 0.0125 | 0.0116 | 0.0125 | 0.0117 | 0.0128 | 0.0129 | 0.0121 | 0.0141 | 0.0176 | 0.0117 | 0.0111 | 0.0121 |
| B-D | mg/L | 0.764 | 0.81 | 0.95 | 0.798 | 0.82 | 0.816 | 0.840 | 0.77 | 0.87 | 0.470 | 0.66 | 0.67 | 0.607 |
| Be-D | mg/L | <0.00010 | <0.00020 | <0.00020 | <0.00010 | <0.00020 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00010 | <0.00020 | <0.00020 | <0.00010 |
| Cd-D | mg/L | 0.0000070 | <0.000010 | <0.000010 | 0.0000070 | <0.000020 | <0.000010 | <0.000010 | <0.000020 | <0.000020 | 0.000014 | <0.000020 | <0.000020 | <0.000010 |
| Ca-D | mg/L | 270 | 266 | 319 | 285 | 244 | 215 | 239 | 226 | 259 | 168 | 247 | 263 | 244 |
| Cr-D | mg/L | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0020 | 0.0017 | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0020 | <0.0020 | <0.0010 |
| Co-D | mg/L | 0.00110 | 0.00086 | <0.00040 | 0.00089 | 0.00069 | 0.00092 | 0.00101 | 0.00119 | 0.00177 | 0.00180 | 0.00226 | 0.00159 | 0.00115 |
| Cu-D | mg/L | <0.00020 | <0.00040 | <0.00040 | 0.00021 | <0.00040 | 0.00035 | 0.00022 | <0.00040 | <0.00040 | 0.00031 | 0.00047 | <0.00040 | 0.00023 |
| Hard-D | mg/L | 788 | 772 | 920 | 824 | 717 | 633 | 704 | 672 | 770 | 497 | 736 | 770 | 722 |
| Fe-D | mg/L | 0.0166 | <0.010 | 0.060 | 0.0128 | 0.024 | 0.0132 | 0.0165 | 0.016 | 0.218 | <0.0050 | 0.027 | 0.013 | <0.0050 |
| Pb-D | mg/L | <0.00020 | <0.00040 | <0.00040 | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00040 | <0.00040 | <0.00020 | <0.00040 | <0.00040 | <0.00020 |
| Mg-D | mg/L | 27.8 | 26.1 | 30.0 | 27.1 | 25.8 | 23.2 | 26.1 | 26.0 | 29.9 | 18.9 | 28.7 | 27.6 | 27.4 |
| Mn-D | mg/L | 0.197 | 0.186 | 0.126 | 0.248 | 0.184 | 0.213 | 0.279 | 0.276 | 0.199 | 0.193 | 0.254 | 0.253 | 0.222 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000024 | <0.0000020 | 0.0000024 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000019 |
| Mo-D | mg/L | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0020 | <0.0020 | <0.0010 |
| Ni-D | mg/L | 0.0029 | 0.0025 | <0.0020 | 0.0021 | <0.0020 | 0.0025 | 0.0027 | 0.0029 | 0.0034 | 0.0046 | 0.0058 | 0.0039 | 0.0031 |
| K-D | mg/L | 3.76 | 3.94 | 4.89 | 3.89 | 3.61 | 3.62 | 3.95 | 3.74 | 4.05 | 2.50 | 3.45 | 3.64 | 3.57 |
| S-D | mg/L | 338 | 348 | 397 | 338 | 309 | 292 | 320 | 291 | 330 | 200 | 294 | 328 | 316 |
| Se-D | mg/L | <0.00010 | <0.00020 | <0.00020 | <0.00010 | <0.00020 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00010 | <0.00020 | <0.00020 | <0.00010 |
| Si-D | mg/L | 3.17 | 3.13 | 4.33 | 3.31 | 2.96 | 2.66 | 2.83 | 2.66 | 3.15 | 1.75 | 2.30 | 2.75 | 2.50 |
| Na-D | mg/L | 226 | 208 | 271 | 249 | 229 | 234 | 255 | 242 | 241 | 131 | 204 | 211 | 218 |
| Sr-D | mg/L | 1.82 | 2.01 | 2.16 | 1.74 | 1.70 | 1.61 | 1.73 | 1.66 | 1.85 | 1.14 | 1.66 | 1.79 | 1.82 |
| Zn-D | mg/L | <0.0050 | <0.010 | <0.010 | <0.0050 | <0.010 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.0050 | <0.010 | <0.010 | <0.0050 |

# Table 7
# 2019-2020 Annual Report

| EMS ID | | E207411 | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Culvert, at Middle Quinsam Lake Road | | | | | | | | | | | | | | | | | |
| Site Name | | WC | | | | | | | | | | | | | | | | | |
| Date | | 1-Apr-19 | 15-Apr-19 | 6-May-19 | 14-May-19 | 27-May-19 | 11-Jun-19 | 25-Jun-19 | 10-Jul-19 | 12-Aug-19 | 9-Sep-19 | 16-Sep-19 | 1-Oct-19 | 21-Oct-19 | 4-Nov-19 | 4-Dec-19 | 6-Jan-20 | 10-Feb-20 | 2-Mar-20 |
| Paramete | Unit | | | | | | | | | | | | | | | | | | |
| SO4-D | mg/L | 726 | | 468 | | | 681 | | 650 | 680 | 660 | | 300 | | 380 | 500 | 390 | 370 | 560 |
| TSS | mg/L | <16 | <4.0 | <4.0 | <1.0 | <1.0 | <4.0 | 1.7 | 4.8 | <4.0 | <4.0 | <1.0 | <4.0 | 4.0 | <4.0 | <4.0 | 1.2 | <1.0 | 2.4 |
| Al-T | mg/L | 0.0030 | | | | | 0.0050 | | | 0.0052 | | | <0.0030 | | | 0.0057 | | 0.0221 | |
| As-T | mg/L | 0.00080 | | | | | 0.00084 | | | 0.00075 | | | 0.00069 | | | 0.00091 | | 0.00079 | |
| Ba-T | mg/L | 0.0209 | | | | | 0.0264 | | | 0.0241 | | | 0.0158 | | | 0.0221 | | 0.0154 | |
| B-T | mg/L | 1.08 | | | | | 0.814 | | | 0.893 | | | 0.827 | | | 0.719 | | 0.635 | |
| Cd-T | mg/L | <0.000010 | | | | | <0.000010 | | | <0.000010 | | | <0.000010 | | | <0.000010 | | <0.000010 | |
| Ca-T | mg/L | 149 | | | | | 123 | | | 120 | | | 84.3 | | | 113 | | 96.8 | |
| Cr-T | mg/L | <0.0010 | | | | | <0.0010 | | | <0.0010 | | | <0.0010 | | | <0.0010 | | <0.0010 | |
| Co-T | mg/L | <0.00020 | | | | | 0.00024 | | | <0.00020 | | | <0.00020 | | | <0.00020 | | <0.00020 | |
| Cu-T | mg/L | 0.00053 | | | | | <0.00050 | | | <0.00050 | | | <0.00050 | | | <0.00050 | | <0.00050 | |
| Hard-T | mg/L | 436 | | | | | 379 | | | 369 | | | 253 | | | 339 | | 288 | |
| Fe-T | mg/L | 0.229 | | | | | 0.137 | | | 0.205 | | | 0.065 | | | 0.100 | | 0.118 | |
| Pb-T | mg/L | <0.00020 | | | | | <0.00020 | | | <0.00020 | | | <0.00020 | | | <0.00020 | | <0.00020 | |
| Mg-T | mg/L | 15.8 | | | | | 17.6 | | | 17.0 | | | 10.2 | | | 13.5 | | 11.3 | |
| Mn-T | mg/L | 0.0598 | | | | | 0.0276 | | | 0.0591 | | | 0.0080 | | | 0.0092 | | 0.0162 | |
| Hg-T | mg/L | <0.0000020 | | | | | <0.0000020 | | | <0.0000020 | | | <0.0000020 | | | <0.0000020 | | <0.0000020 | |
| Mo-T | mg/L | <0.0010 | | | | | <0.0010 | | | <0.0010 | | | <0.0010 | | | <0.0010 | | <0.0010 | |
| Ni-T | mg/L | 0.0011 | | | | | 0.0012 | | | <0.0010 | | | <0.0010 | | | <0.0010 | | 0.0011 | |
| K-T | mg/L | 4.64 | | | | | 3.67 | | | 3.67 | | | 3.31 | | | 3.30 | | 2.72 | |
| S-T | mg/L | 285 | | | | | 232 | | | 241 | | | 142 | | | 172 | | 142 | |
| Se-T | mg/L | <0.00010 | | | | | <0.00010 | | | <0.00010 | | | <0.00010 | | | <0.00010 | | <0.00010 | |
| Si-T | mg/L | 3.49 | | | | | 3.40 | | | 6.71 | | | 3.16 | | | 3.29 | | 3.06 | |
| Ag-T | mg/L | <0.000020 | | | | | <0.000020 | | | <0.000020 | | | <0.000020 | | | <0.000020 | | <0.000020 | |
| Na-T | mg/L | 387 | | | | | 264 | | | 253 | | | 272 | | | 257 | | 196 | |
| Sr-T | mg/L | 1.43 | | | | | 1.35 | | | 1.32 | | | 0.842 | | | 1.08 | | 0.822 | |
| Zn-T | mg/L | <0.0050 | | | | | <0.0050 | | | <0.0050 | | | <0.0050 | | | <0.0050 | | <0.0050 | |
| Al-D | mg/L | <0.0030 | | | | | 0.0031 | | | 0.0036 | | | <0.0030 | | 0.0037 | 0.0041 | | 0.0135 | |
| As-D | mg/L | 0.00066 | | | | | 0.00086 | | | 0.00069 | | | 0.00060 | | 0.00068 | 0.00070 | | 0.00060 | |
| Ba-D | mg/L | 0.0203 | | | | | 0.0263 | | | 0.0239 | | | 0.0160 | | 0.0178 | 0.0202 | | 0.0147 | |
| B-D | mg/L | 1.05 | | | | | 0.973 | | | 0.912 | | | 0.886 | | 0.758 | 0.775 | | 0.569 | |
| Be-D | mg/L | <0.00010 | | | | | <0.00010 | | | <0.00010 | | | <0.00010 | | <0.00010 | <0.00010 | | <0.00010 | |
| Cd-D | mg/L | <0.0000050 | | | | | <0.0000050 | | | <0.000010 | | | <0.000010 | | <0.000010 | <0.000010 | | <0.000010 | |
| Ca-D | mg/L | 137 | | | | | 131 | | | 119 | | | 85.9 | | 91.5 | 111 | | 91.2 | |
| Cr-D | mg/L | <0.0010 | | | | | <0.0010 | | | <0.0010 | | | <0.0010 | | <0.0010 | <0.0010 | | <0.0010 | |
| Co-D | mg/L | <0.00020 | | | | | 0.00021 | | | <0.00020 | | | <0.00020 | | <0.00020 | <0.00020 | | <0.00020 | |
| Cu-D | mg/L | 0.00025 | | | | | 0.00036 | | | 0.00027 | | | <0.00020 | | <0.00020 | <0.00020 | | 0.00028 | |
| Hard-D | mg/L | 405 | | | | | 405 | | | 369 | | | 258 | | 273 | 330 | | 275 | |
| Fe-D | mg/L | 0.0155 | | | | | 0.0698 | | | 0.0903 | | | 0.0067 | | 0.0182 | 0.0080 | | 0.0084 | |
| Pb-D | mg/L | <0.00020 | | | | | <0.00020 | | | <0.00020 | | | <0.00020 | | <0.00020 | <0.00020 | | <0.00020 | |
| Mg-D | mg/L | 15.2 | | | | | 18.8 | | | 17.4 | | | 10.7 | | 10.9 | 13.0 | | 11.4 | |
| Mn-D | mg/L | 0.0605 | | | | | 0.0282 | | | 0.0585 | | | 0.0077 | | 0.0051 | 0.0089 | | 0.0153 | |
| Hg-D | mg/L | <0.0000020 | | | | | <0.0000020 | | | <0.0000020 | | | <0.0000020 | | <0.0000020 | <0.0000020 | | <0.0000020 | |
| Mo-D | mg/L | <0.0010 | | | | | <0.0010 | | | <0.0010 | | | <0.0010 | | <0.0010 | <0.0010 | | <0.0010 | |
| Ni-D | mg/L | 0.0012 | | | | | 0.0011 | | | <0.0010 | | | <0.0010 | | <0.0010 | <0.0010 | | 0.0011 | |
| K-D | mg/L | 4.51 | | | | | 3.95 | | | 3.67 | | | 3.56 | | 3.21 | 3.23 | | 2.73 | |
| S-D | mg/L | 280 | | | | | 261 | | | 238 | | | 147 | | 138 | 170 | | 134 | |
| Se-D | mg/L | <0.00010 | | | | | <0.00010 | | | <0.00010 | | | <0.00010 | | <0.00010 | <0.00010 | | <0.00010 | |
| Si-D | mg/L | 3.16 | | | | | 3.97 | | | 6.35 | | | 3.22 | | 2.71 | 3.03 | | 2.59 | |
| Na-D | mg/L | 372 | | | | | 288 | | | 256 | | | 291 | | 263 | 258 | | 196 | |
| Sr-D | mg/L | 1.42 | | | | | 1.40 | | | 1.27 | | | 0.894 | | 0.860 | 1.00 | | 0.779 | |
| Zn-D | mg/L | <0.0050 | | | | | <0.0050 | | | <0.0050 | | | <0.0050 | | <0.0050 | <0.0050 | | <0.0050 | |

# Table 8
# 2019-2020 Annual Report

| EMS ID | | E292126 |
|---|---|---|
| Site Description | | South Dyke Sump - Collects seepage from tailings dam that is pumped underground 2N mine |
| Site Name | | SDS |
| Date | | 01-Oct-2019 |
| Parameter | Unit | |
| SO4-D | mg/L | 810 |
| Alk-T | mg/L | 77 |
| Acidity83 | mg/L | 3.7 |
| Al-T | mg/L | 0.0257 |
| As-T | mg/L | 0.00021 |
| Ba-T | mg/L | 0.0128 |
| B-T | mg/L | 0.44 |
| Cd-T | mg/L | <0.000020 |
| Ca-T | mg/L | 247 |
| Cr-T | mg/L | <0.0020 |
| Co-T | mg/L | <0.00040 |
| Cu-T | mg/L | 0.0011 |
| Hard-T | mg/L | 776 |
| Fe-T | mg/L | 0.039 |
| Pb-T | mg/L | <0.00040 |
| Mg-T | mg/L | 38.6 |
| Mn-T | mg/L | 0.0190 |
| Hg-T | mg/L | 0.0000022 |
| Mo-T | mg/L | <0.0020 |
| Ni-T | mg/L | <0.0020 |
| K-T | mg/L | 3.46 |
| S-T | mg/L | 296 |
| Se-T | mg/L | <0.00020 |
| Si-T | mg/L | 0.39 |
| Ag-T | mg/L | <0.000040 |
| Na-T | mg/L | 77.0 |
| Sr-T | mg/L | 1.50 |
| Zn-T | mg/L | <0.010 |
| Al-D | mg/L | 0.0058 |
| As-D | mg/L | 0.00020 |
| Ba-D | mg/L | 0.0134 |
| B-D | mg/L | 0.400 |
| Be-D | mg/L | <0.00010 |
| Cd-D | mg/L | <0.000010 |
| Ca-D | mg/L | 242 |
| Cr-D | mg/L | <0.0010 |
| Co-D | mg/L | <0.00020 |
| Cu-D | mg/L | 0.00079 |
| Hard-D | mg/L | 760 |
| Fe-D | mg/L | 0.0095 |
| Pb-D | mg/L | <0.00020 |
| Mg-D | mg/L | 37.9 |
| Mn-D | mg/L | 0.0115 |
| Hg-D | mg/L | <0.0000020 |
| Mo-D | mg/L | <0.0010 |
| Ni-D | mg/L | <0.0010 |
| K-D | mg/L | 3.44 |
| S-D | mg/L | 290 |
| Se-D | mg/L | 0.00010 |
| Si-D | mg/L | 0.32 |
| Na-D | mg/L | 78.3 |
| Sr-D | mg/L | 1.52 |
| Zn-D | mg/L | <0.0050 |

# Table 9
# 2019-2020 Annual Report

| Site Description | | Groundwater / Surface Water from 2N Area at Road | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Site Name** | | **PDSR** | | | | | | |
| **Date** | | **01-Apr-2019** | **06-May-2019** | **04-Nov-2019** | **04-Dec-2019** | **06-Jan-2020** | **10-Feb-2020** | **02-Mar-2020** |
| **Parameter** | **Unit** | | | | | | | |
| **SO4-D** | mg/L | 584 | 635 | 580 | 670 | 290 | 270 | 470 |
| **TSS** | mg/L | <16 | 7.6 | <4.0 | <4.0 | <1.0 | 2.4 | <1.0 |
| **Alk-T** | mg/L | 173 | 192 | | | 110 | 110 | |
| **Acidity83** | mg/L | 5.6 | 1.2 | | | <1.0 | <1.0 | |
| **Al-T** | mg/L | 0.0880 | 0.0713 | 0.0099 | 0.0449 | 0.0184 | 0.0141 | 0.0278 |
| **As-T** | mg/L | 0.00015 | 0.00020 | 0.00010 | 0.00012 | <0.00010 | <0.00010 | <0.00010 |
| **Ba-T** | mg/L | 0.0251 | 0.0275 | 0.0322 | 0.0221 | 0.0124 | 0.0105 | 0.0145 |
| **B-T** | mg/L | 0.267 | 0.290 | 0.197 | 0.202 | 0.162 | 0.140 | 0.179 |
| **Cd-T** | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Ca-T** | mg/L | 223 | 223 | 174 | 185 | 126 | 106 | 157 |
| **Cr-T** | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **Co-T** | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Cu-T** | mg/L | 0.00077 | 0.00053 | <0.00050 | 0.00071 | <0.00050 | <0.00050 | <0.00050 |
| **Hard-T** | mg/L | 710 | 691 | 559 | 597 | 409 | 343 | 506 |
| **Fe-T** | mg/L | 0.092 | 0.080 | 0.011 | 0.045 | 0.015 | 0.010 | 0.025 |
| **Pb-T** | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Mg-T** | mg/L | 37.3 | 32.2 | 30.4 | 33.1 | 22.9 | 19.0 | 27.4 |
| **Mn-T** | mg/L | 0.0085 | 0.0080 | <0.0010 | 0.0033 | 0.0020 | 0.0013 | 0.0015 |
| **Hg-T** | mg/L | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 | | <0.0000019 |
| **Mo-T** | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **Ni-T** | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **K-T** | mg/L | 1.58 | 1.91 | 1.58 | 1.48 | 1.06 | 0.980 | 1.27 |
| **S-T** | mg/L | 244 | 232 | 182 | 193 | 115 | 102 | 166 |
| **Se-T** | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **Si-T** | mg/L | 3.85 | 3.65 | 3.01 | 3.16 | 3.22 | 3.05 | 3.22 |
| **Ag-T** | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| **Na-T** | mg/L | 60.9 | 53.0 | 58.2 | 55.9 | 38.8 | 29.4 | 40.7 |
| **Sr-T** | mg/L | 1.43 | 1.55 | 1.03 | 1.15 | 0.722 | 0.635 | 0.958 |
| **Zn-T** | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| **Al-D** | mg/L | 0.0058 | 0.0093 | 0.0056 | 0.0052 | 0.0083 | 0.0063 | 0.0072 |
| **As-D** | mg/L | 0.00013 | 0.00016 | <0.00010 | 0.00011 | <0.00010 | <0.00010 | <0.00010 |
| **Ba-D** | mg/L | 0.0233 | 0.0275 | 0.0297 | 0.0219 | 0.0122 | 0.0104 | 0.0150 |
| **B-D** | mg/L | 0.246 | 0.322 | 0.233 | 0.232 | 0.160 | 0.129 | 0.171 |
| **Be-D** | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **Cd-D** | mg/L | <0.0000050 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| **Ca-D** | mg/L | 234 | 231 | 215 | 210 | 110 | 104 | 167 |
| **Cr-D** | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **Co-D** | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Cu-D** | mg/L | 0.00035 | 0.00036 | 0.00044 | 0.00030 | 0.00030 | 0.00028 | 0.00030 |
| **Hard-D** | mg/L | 729 | 717 | 691 | 674 | 358 | 335 | 531 |
| **Fe-D** | mg/L | <0.0050 | 0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| **Pb-D** | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| **Mg-D** | mg/L | 35.1 | 34.2 | 37.5 | 36.5 | 20.3 | 18.4 | 27.7 |
| **Mn-D** | mg/L | 0.0022 | 0.0049 | <0.0010 | <0.0010 | 0.0013 | <0.0010 | <0.0010 |
| **Hg-D** | mg/L | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 | | <0.0000019 |
| **Mo-D** | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **Ni-D** | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| **K-D** | mg/L | 1.61 | 1.93 | 1.75 | 1.57 | 1.01 | 0.925 | 1.27 |
| **S-D** | mg/L | 239 | 238 | 216 | 206 | 106 | 93.6 | 161 |
| **Se-D** | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| **Si-D** | mg/L | 3.23 | 3.73 | 2.71 | 2.87 | 2.80 | 2.75 | 3.36 |
| **Na-D** | mg/L | 55.7 | 56.0 | 66.0 | 62.0 | 34.9 | 29.0 | 40.3 |
| **Sr-D** | mg/L | 1.39 | 1.56 | 1.33 | 1.22 | 0.670 | 0.587 | 0.984 |
| **Zn-D** | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |

# Table 10
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| EMS ID | | E218582 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Settling Pond # 1 - Authorized Discharge Loaction for South Mining Operation | | | | | | | | | | | | Permit |
| Site Name | | SPD | | | | | | (SPD was not discharging from May 14 through to September 12 with beaver activity until November 12) | | | | | | Limit-South |
| Date | | 01-Apr-2019 | 06-May-2019 | 11-Jun-2019 | 10-Jul-2019 | 12-Aug-2019 | 09-Sep-2019 | 01-Oct-2019 | 06-Nov-2019 | 04-Dec-2019 | 06-Jan-2020 | 10-Feb-2020 | 02-Mar-2020 | |
| Parameter | Unit | | | | | | | | | | | | | |
| SO4-D | mg/L | 334 | 269 | 260 | 230 | 270 | 260 | 300 | 220 | 61 | 240 | 110 | 320 | - |
| TSS | mg/L | <4.0 | <4.0 | <4.0 | 4.0 | 4.4 | <4.0 | <4.0 | <4.0 | 4.8 | 1.2 | 2.8 | <1.0 | **25** |
| Alk-T | mg/L | 90.8 | 77.0 | 58 | 71 | 94 | 92 | 120 | 76 | 38 | 83 | 30 | 93 | - |
| Acidity83 | mg/L | 2.1 | <1.0 | 1.5 | 2.3 | 2.2 | 1.3 | 2.2 | 3.2 | 7.3 | <1.0 | 4.0 | 1.5 | - |
| Al-T | mg/L | 0.0197 | | 0.0092 | | 0.187 | | 0.0053 | 0.0296 | 0.0700 | | 0.0353 | | - |
| As-T | mg/L | 0.00070 | | 0.00160 | | 0.00384 | | 0.00089 | 0.00066 | 0.00093 | | 0.00039 | | - |
| Ba-T | mg/L | 0.0128 | | 0.0156 | | 0.0230 | | 0.0208 | 0.0133 | 0.0111 | | 0.0089 | | - |
| B-T | mg/L | 0.221 | | 0.174 | | 0.218 | | 0.247 | 0.155 | 0.080 | | 0.063 | | - |
| Cd-T | mg/L | <0.000010 | | <0.000010 | | 0.000012 | | <0.000010 | <0.000010 | 0.000018 | | <0.000010 | | - |
| Ca-T | mg/L | 133 | | 108 | | 120 | | 129 | 87.1 | 45.0 | | 37.3 | | - |
| Cr-T | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | | - |
| Co-T | mg/L | 0.00022 | | 0.00084 | | 0.00216 | | 0.00023 | 0.00035 | 0.00089 | | 0.00059 | | - |
| Cu-T | mg/L | <0.00050 | | <0.00050 | | 0.00150 | | <0.00050 | <0.00050 | 0.00073 | | <0.00050 | | - |
| Hard-T | mg/L | 407 | | 336 | | 369 | | 394 | 265 | 141 | | 117 | | - |
| Fe-T | mg/L | 0.178 | | 0.361 | | 1.35 | | 0.301 | 0.499 | 0.880 | | 0.551 | | - |
| Pb-T | mg/L | <0.00020 | | <0.00020 | | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | | - |
| Mg-T | mg/L | 18.4 | | 15.9 | | 16.7 | | 17.3 | 11.4 | 6.93 | | 5.83 | | - |
| Mn-T | mg/L | 0.0380 | | 0.165 | | 0.271 | | 0.0423 | 0.155 | 0.230 | | 0.100 | | - |
| Hg-T | mg/L | <0.0000020 | | <0.0000020 | | <0.0000020 | | <0.0000020 | <0.0000020 | 0.0000044 | | <0.0000020 | | - |
| Mo-T | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | | - |
| Ni-T | mg/L | 0.0011 | | 0.0024 | | 0.0030 | | 0.0011 | 0.0011 | 0.0011 | | <0.0010 | | - |
| K-T | mg/L | 1.34 | | 0.927 | | 1.64 | | 1.71 | 1.29 | 0.805 | | 0.385 | | - |
| S-T | mg/L | 133 | | 105 | | 107 | | 118 | 71.8 | 38.8 | | 35.5 | | - |
| Se-T | mg/L | <0.00010 | | <0.00010 | | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | | - |
| Si-T | mg/L | 2.19 | | 0.69 | | 2.33 | | 2.71 | 3.23 | 4.97 | | 2.71 | | - |
| Ag-T | mg/L | <0.000020 | | <0.000020 | | <0.000020 | | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | | - |
| Na-T | mg/L | 19.9 | | 18.3 | | 20.3 | | 27.5 | 18.5 | 10.1 | | 8.18 | | - |
| Sr-T | mg/L | 0.805 | | 0.691 | | 0.759 | | 0.820 | 0.503 | 0.269 | | 0.209 | | - |
| Zn-T | mg/L | <0.0050 | | <0.0050 | | 0.0057 | | <0.0050 | <0.0050 | <0.0050 | | <0.0050 | | - |
| Al-D | mg/L | 0.0057 | | 0.0061 | | 0.0034 | | <0.0030 | 0.0188 | 0.0711 | 0.0405 | 0.0222 | 0.0116 | **0.5** |
| As-D | mg/L | 0.00054 | | 0.00147 | | 0.00232 | | 0.00083 | 0.00057 | 0.00072 | 0.00051 | 0.00031 | 0.00040 | - |
| Ba-D | mg/L | 0.0121 | | 0.0156 | | 0.0210 | | 0.0206 | 0.0131 | 0.0065 | 0.0099 | 0.0074 | 0.0101 | - |
| B-D | mg/L | 0.191 | | 0.224 | | 0.218 | | 0.258 | 0.132 | <0.050 | 0.154 | 0.053 | 0.140 | - |
| Be-D | mg/L | <0.00010 | | <0.00010 | | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | - |
| Cd-D | mg/L | <0.0000050 | | 0.0000080 | | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | - |
| Ca-D | mg/L | 133 | | 118 | | 118 | | 131 | 80.9 | 27.6 | 94.0 | 32.8 | 130 | - |
| Cr-D | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | - |
| Co-D | mg/L | <0.00020 | | 0.00076 | | 0.00049 | | <0.00020 | 0.00034 | 0.00055 | 0.00028 | 0.00039 | 0.00028 | - |
| Cu-D | mg/L | 0.00031 | | 0.00046 | | <0.00020 | | 0.00022 | 0.00033 | 0.00065 | 0.00052 | 0.00029 | 0.00024 | **0.02** |
| Hard-D | mg/L | 399 | | 364 | | 361 | | 400 | 248 | 86.4 | 283 | 104 | 388 | - |
| Fe-D | mg/L | 0.0275 | | 0.205 | | 0.258 | | 0.157 | 0.268 | **0.517** | 0.122 | 0.319 | 0.0544 | **0.5** |
| Pb-D | mg/L | <0.00020 | | <0.00020 | | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | **0.05** |
| Mg-D | mg/L | 16.0 | | 17.0 | | 16.4 | | 17.7 | 11.1 | 4.27 | 11.7 | 5.29 | 15.5 | - |
| Mn-D | mg/L | 0.0271 | | 0.152 | | 0.230 | | 0.0395 | 0.149 | 0.160 | 0.0512 | 0.0715 | 0.0473 | - |
| Hg-D | mg/L | <0.0000020 | | <0.0000020 | | <0.0000020 | | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | - |
| Mo-D | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | 0.0068 | <0.0010 | <0.0010 | <0.0010 | - |
| Ni-D | mg/L | 0.0011 | | 0.0021 | | 0.0016 | | 0.0013 | 0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | - |
| K-D | mg/L | 1.19 | | 0.984 | | 1.58 | | 1.79 | 1.20 | 0.588 | 1.06 | 0.320 | 1.11 | - |
| S-D | mg/L | 123 | | 121 | | 104 | | 120 | 69.4 | 19.0 | 80.6 | 29.2 | 111 | - |
| Se-D | mg/L | <0.00010 | | <0.00010 | | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | - |
| Si-D | mg/L | 2.03 | | 0.81 | | 1.94 | | 2.56 | 2.96 | 4.95 | 2.40 | 2.24 | 2.33 | - |
| Na-D | mg/L | 17.3 | | 20.1 | | 20.0 | | 29.1 | 17.6 | 6.46 | 22.0 | 7.24 | 16.0 | - |
| Sr-D | mg/L | 0.766 | | 0.738 | | 0.721 | | 0.850 | 0.485 | 0.156 | 0.561 | 0.171 | 0.705 | - |
| Zn-D | mg/L | <0.0050 | | <0.0050 | | <0.0050 | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | **0.2** |
| O&G | mg/L | <1.0 | | <5.0 | | <1.0 | | <1.0 | | <1.0 | | <1.0 | | **<DL** |

# Table 11
# 2019-2020 Annual Report

| Site Description | | Long Lake Seep Passive Treatment System (PTS) Influent for Treament System (2-South Mine Pool) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Name | | INF | | | | | | | | |
| Date | | 16-May-2019 | 20-Jun-2019 | 16-Jul-2019 | 12-Aug-2019 | 09-Sep-2019 | 01-Oct-2019 | 06-Nov-2019 | 04-Dec-2019 | 09-Jan-2020 |
| Parameter | | | | | | | | | | |
| SO4-D | mg/L | 542 | 550 | 590 | 640 | 600 | 580 | 600 | 630 | 650 |
| TSS | mg/L | 6.4 | 8.8 | 9.6 | 9.6 | 10.0 | | | 10.8 | 10 |
| Alk-T | mg/L | 260 | 250 | 260 | 270 | 270 | | 250 | 270 | 230 |
| Acidity83 | mg/L | 9.1 | 8.1 | 15.1 | 8.3 | 13.8 | | 15.1 | 11.1 | 11.1 |
| N-NH3 | mg/L | 0.061 | | | 0.12 | | | 0.13 | 0.12 | 0.12 |
| N-NO23 | mg/L | <0.020 | <0.020 | | <0.020 | <0.020 | | <0.020 | <0.020 | <0.020 |
| P-D | mg/L | <0.0020 | | | <0.030 | | | | | |
| Al-T | mg/L | <0.0030 | <0.0060 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | 0.0040 | 0.0055 | 0.180 |
| As-T | mg/L | 0.00325 | 0.00361 | 0.00398 | 0.00417 | 0.00493 | 0.00498 | 0.00550 | 0.00589 | 0.00498 |
| Ba-T | mg/L | 0.0228 | 0.0236 | 0.0234 | 0.0226 | 0.0212 | 0.0225 | 0.0231 | 0.0267 | 0.0235 |
| B-T | mg/L | 0.664 | 0.77 | 0.741 | 0.765 | 0.731 | 0.721 | 0.738 | 0.705 | 0.716 |
| Cd-T | mg/L | <0.000010 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-T | mg/L | 214 | 226 | 232 | 227 | 214 | 215 | 231 | 233 | 245 |
| Cr-T | mg/L | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | 0.00048 | <0.00040 | 0.00037 | 0.00036 | 0.00030 | 0.00033 | 0.00070 | 0.00118 | 0.00288 |
| Cu-T | mg/L | 0.00075 | 0.0017 | 0.00064 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00554 |
| Hard-T | mg/L | 589 | 622 | 637 | 627 | 591 | 595 | 638 | 645 | 679 |
| Fe-T | mg/L | 3.23 | 3.64 | 3.55 | 3.52 | 3.54 | 3.54 | 4.12 | 4.23 | 4.83 |
| P-T | mg/L | <0.0020 | <0.0030 | | <0.0010 | 0.0089 | | <0.0030 | <0.0030 | <0.0030 |
| Pb-T | mg/L | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 13.5 | 14.0 | 14.2 | 14.5 | 13.8 | 14.2 | 14.8 | 15.2 | 16.2 |
| Mn-T | mg/L | 0.311 | 0.384 | 0.368 | 0.360 | 0.349 | 0.363 | 0.397 | 0.459 | 0.488 |
| Hg-T | mg/L | <0.0000020 | 0.0000023 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | | 0.0000030 | <0.0000020 |
| Mo-T | mg/L | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0012 | 0.0019 | 0.0054 |
| K-T | mg/L | 1.82 | 1.78 | 1.90 | 1.91 | 1.86 | 1.86 | 1.96 | 1.98 | 1.95 |
| S-T | mg/L | 201 | 210 | 205 | 210 | 198 | 206 | 210 | 227 | 223 |
| Se-T | mg/L | <0.00010 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-T | mg/L | 3.25 | 3.35 | 3.27 | 3.39 | 3.16 | 3.12 | 3.25 | 3.52 | 3.48 |
| Ag-T | mg/L | <0.000020 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 109 | 113 | 117 | 120 | 118 | 121 | 126 | 117 | 120 |
| Sr-T | mg/L | 1.93 | 2.07 | 2.18 | 2.07 | 2.13 | 2.03 | 2.15 | 2.31 | 2.27 |
| Zn-T | mg/L | 0.0064 | <0.010 | 0.0056 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0068 |
| Al-D | mg/L | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.012 | <0.0030 | <0.0030 | 0.0046 | 0.0437 |
| As-D | mg/L | 0.00313 | 0.00358 | 0.00377 | 0.00399 | 0.00492 | 0.00491 | 0.00511 | 0.00541 | 0.00463 |
| Ba-D | mg/L | 0.0222 | 0.0230 | 0.0234 | 0.0227 | 0.0216 | 0.0227 | 0.0230 | 0.0257 | 0.0250 |
| B-D | mg/L | 0.733 | 0.679 | 0.722 | 0.739 | 0.78 | 0.744 | 0.637 | 0.736 | 0.668 |
| Cd-D | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.000010 | <0.000040 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-D | mg/L | 212 | 227 | 241 | 224 | 216 | 221 | 213 | 233 | 233 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0040 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | 0.00054 | 0.00036 | 0.00041 | 0.00036 | <0.00080 | 0.00034 | 0.00071 | 0.00117 | 0.00280 |
| Cu-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00080 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Hard-D | mg/L | 584 | 623 | 664 | 618 | 599 | 613 | 592 | 643 | 649 |
| Fe-D | mg/L | 3.23 | 3.53 | 3.84 | 3.48 | 3.65 | 3.63 | 4.02 | 4.42 | 4.50 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00080 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 13.4 | 13.5 | 15.3 | 14.5 | 14.3 | 15.0 | 14.7 | 14.8 | 16.1 |
| Mn-D | mg/L | 0.318 | 0.358 | 0.376 | 0.352 | 0.363 | 0.376 | 0.402 | 0.472 | 0.494 |
| Hg-D | mg/L | <0.0000020 | 0.0000029 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 |
| Mo-D | mg/L | <0.0010 | 0.0044 | <0.0010 | <0.0010 | <0.0040 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0040 | <0.0010 | 0.0013 | 0.0020 | 0.0052 |
| K-D | mg/L | 1.76 | 1.90 | 1.96 | 1.88 | 1.83 | 1.96 | 1.87 | 1.89 | 1.90 |
| S-D | mg/L | 198 | 217 | 231 | 209 | 206 | 211 | 196 | 220 | 216 |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00040 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-D | mg/L | 3.30 | 3.43 | 3.40 | 3.34 | 3.13 | 3.07 | 2.87 | 3.38 | 3.23 |
| Na-D | mg/L | 107 | 104 | 121 | 119 | 120 | 128 | 123 | 118 | 115 |
| Sr-D | mg/L | 1.92 | 2.01 | 2.10 | 2.06 | 2.03 | 2.08 | 2.01 | 2.18 | 2.27 |
| Zn-D | mg/L | 0.0093 | <0.0050 | 0.0052 | <0.0050 | <0.020 | <0.0050 | <0.0050 | <0.0050 | 0.0075 |
| H2SEquiv | mg/L | 0.00101 | | | | 0.000957 | | | | 0.000957 |

# Table 12
# 2019-2020 Annual Report

| Site Description | | PTS - Biochemical Reactor (BCREFF) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Name | | BCREFF | | | | | | | | |
| Date | | 16-May-2019 | 20-Jun-2019 | 16-Jul-2019 | 12-Aug-2019 | 09-Sep-2019 | 01-Oct-2019 | 06-Nov-2019 | 04-Dec-2019 | 09-Jan-2020 |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | 212 | 350 | 440 | 530 | 510 | 430 | 530 | 530 | 600 |
| TSS | mg/L | 7.6 | 6.9 | | <4.0 | <4.0 | | | 11.6 | 26 |
| Alk-T | mg/L | 460 | 320 | 360 | 180 | 190 | | 250 | 250 | 240 |
| Acidity83 | mg/L | 14.7 | 7.5 | 28.3 | <1.0 | 1.0 | | 8.3 | 7.2 | 5.0 |
| N-NH3 | mg/L | 0.18 | | | 0.040 | | | 0.043 | 0.089 | 0.066 |
| N-NO23 | mg/L | 0.043 | <0.020 | | <0.020 | <0.020 | | <0.020 | <0.020 | <0.020 |
| P-D | mg/L | <0.020 | | | <0.0030 | | | | | |
| Al-T | mg/L | 0.0103 | 0.0098 | 0.0084 | 0.0088 | 0.0035 | <0.0030 | 0.0036 | 0.0067 | 0.0119 |
| As-T | mg/L | 0.00089 | 0.00045 | 0.00044 | 0.00156 | 0.00170 | 0.00253 | 0.00139 | 0.00384 | 0.00016 |
| Ba-T | mg/L | 0.0260 | 0.0289 | 0.0317 | 0.0231 | 0.0199 | 0.0233 | 0.0236 | 0.0223 | 0.0326 |
| B-T | mg/L | 0.719 | 0.81 | 0.769 | 0.719 | 0.740 | 0.654 | 0.679 | 0.607 | 0.606 |
| Cd-T | mg/L | <0.000010 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-T | mg/L | 189 | 197 | 224 | 173 | 174 | 171 | 214 | 192 | 232 |
| Cr-T | mg/L | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00035 | 0.00109 | <0.00020 |
| Cu-T | mg/L | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Hard-T | mg/L | 519 | 544 | 616 | 488 | 489 | 477 | 592 | 530 | 643 |
| Fe-T | mg/L | <0.010 | 0.066 | <0.010 | 0.195 | 0.185 | 0.286 | 0.581 | 2.56 | 0.015 |
| P-T | mg/L | 0.0321 | <0.030 | | 0.0051 | 0.0053 | | <0.0030 | <0.0030 | 0.0072 |
| Pb-T | mg/L | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 11.4 | 12.5 | 13.9 | 13.8 | 13.2 | 12.4 | 13.8 | 12.4 | 15.3 |
| Mn-T | mg/L | 0.202 | 0.216 | 0.277 | 0.0168 | 0.0158 | 0.0650 | 0.269 | 0.439 | 0.366 |
| Hg-T | mg/L | <0.000020 | <0.0000020 | <0.000020 | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | <0.000040 |
| Mo-T | mg/L | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0017 | <0.0010 |
| K-T | mg/L | 2.23 | 2.05 | 2.08 | 1.93 | 1.78 | 1.65 | 1.87 | 1.73 | 1.88 |
| S-T | mg/L | 81.9 | 134 | 164 | 194 | 193 | 158 | 187 | 184 | 205 |
| Se-T | mg/L | <0.00010 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-T | mg/L | 5.03 | 4.46 | 4.34 | 2.99 | 2.79 | 3.80 | 3.63 | 3.11 | 3.40 |
| Ag-T | mg/L | <0.000020 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 101 | 106 | 117 | 116 | 116 | 107 | 121 | 101 | 120 |
| Sr-T | mg/L | 1.71 | 1.91 | 2.17 | 1.84 | 1.93 | 1.70 | 1.98 | 1.89 | 2.16 |
| Zn-T | mg/L | <0.0050 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Al-D | mg/L | 0.0099 | 0.0075 | 0.0101 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | 0.0038 |
| As-D | mg/L | 0.00083 | 0.00037 | 0.00035 | 0.00138 | 0.00162 | 0.00211 | 0.00101 | 0.00215 | 0.00021 |
| Ba-D | mg/L | 0.0246 | 0.0282 | 0.0292 | 0.0232 | 0.0195 | 0.0239 | 0.0231 | 0.0230 | 0.0351 |
| B-D | mg/L | 0.73 | 0.752 | 0.77 | 0.740 | 0.772 | 0.708 | 0.604 | 0.638 | 0.591 |
| Cd-D | mg/L | <0.000010 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-D | mg/L | 177 | 192 | 226 | 173 | 176 | 175 | 194 | 204 | 222 |
| Cr-D | mg/L | <0.0020 | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | 0.0015 | <0.0010 | <0.0010 |
| Co-D | mg/L | <0.00040 | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | 0.00035 | 0.00094 | <0.00020 |
| Cu-D | mg/L | <0.00040 | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Hard-D | mg/L | 490 | 529 | 621 | 488 | 497 | 491 | 540 | 562 | 619 |
| Fe-D | mg/L | <0.010 | 0.0051 | 0.010 | 0.112 | 0.127 | 0.0579 | 0.112 | 1.78 | 0.0124 |
| Pb-D | mg/L | <0.00040 | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 11.7 | 12.2 | 14.0 | 13.9 | 13.7 | 13.0 | 13.5 | 12.9 | 15.5 |
| Mn-D | mg/L | 0.199 | 0.220 | 0.265 | 0.0173 | 0.0159 | 0.0673 | 0.270 | 0.434 | 0.375 |
| Hg-D | mg/L | <0.0000020 | <0.000040 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 |
| Mo-D | mg/L | <0.0020 | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | <0.0020 | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | 0.0012 | 0.0016 | <0.0010 |
| K-D | mg/L | 2.11 | 2.09 | 2.12 | 1.88 | 1.81 | 1.73 | 1.75 | 1.77 | 1.86 |
| S-D | mg/L | 283 | 406 | 240 | 193 | 189 | 162 | 178 | 183 | 255 |
| Se-D | mg/L | 0.00214 | 0.00106 | 0.0179 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00027 | 0.00278 |
| Si-D | mg/L | 4.79 | 4.35 | 4.32 | 3.07 | 2.78 | 3.72 | 3.06 | 3.17 | 3.19 |
| Na-D | mg/L | 101 | 106 | 119 | 116 | 122 | 115 | 116 | 107 | 118 |
| Sr-D | mg/L | 1.59 | 1.83 | 1.95 | 1.80 | 1.95 | 1.75 | 1.84 | 1.83 | 2.17 |
| Zn-D | mg/L | <0.010 | <0.0050 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| H2SEquiv | mg/L | 74.4 | | | | 0.000957 | | | | 0.00882 |

# Table 13
# 2019-2020 Annual Report

| Site Description | | PTS - Sulphide Polishing Cell | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Name | | Sulphide Polishing Cell (SPCEFF) | | | | | (All discharge water from the treatment system was directed into 2-South pit at 2SI) | | | |
| Date | | 16-May-2019 | 20-Jun-2019 | 16-Jul-2019 | 12-Aug-2019 | 09-Sep-2019 | 01-Oct-2019 | 06-Nov-2019 | 04-Dec-2019 | 09-Jan-2020 |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | 229 | 250 | 380 | 400 | 360 | 420 | 420 | 400 | 540 |
| TSS | mg/L | 13.6 | 13 | | 10.8 | <4.0 | | | 9.6 | 5.6 |
| Alk-T | mg/L | 440 | 380 | 390 | 390 | 380 | | 360 | 280 | 250 |
| Acidity83 | mg/L | 10.4 | 5.0 | 21.8 | 7.7 | 5.2 | | 10.3 | 5.5 | <1.0 |
| N-NH3 | mg/L | 0.22 | | | 0.055 | | | 0.045 | 0.033 | 0.026 |
| N-NO23 | mg/L | <0.020 | <0.020 | | <0.020 | <0.020 | | <0.020 | <0.020 | <0.020 |
| P-D | mg/L | <0.0020 | | | <0.0030 | | | | | |
| Al-T | mg/L | 0.0039 | 0.0062 | 0.0067 | 0.0059 | <0.0030 | 0.0076 | 0.0061 | 0.0050 | 0.0166 |
| As-T | mg/L | 0.00402 | 0.00608 | 0.00731 | 0.00337 | 0.00220 | 0.00236 | 0.00462 | 0.00301 | 0.00188 |
| Ba-T | mg/L | 0.0385 | 0.0568 | 0.0650 | 0.0592 | 0.0536 | 0.0509 | 0.0491 | 0.0396 | 0.0442 |
| B-T | mg/L | 0.629 | 0.80 | 0.777 | 0.795 | 0.707 | 0.653 | 0.629 | 0.547 | 0.578 |
| Cd-T | mg/L | <0.000010 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-T | mg/L | 194 | 189 | 224 | 218 | 194 | 204 | 215 | 175 | 214 |
| Cr-T | mg/L | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | 0.00472 | 0.00124 | 0.00064 | 0.00072 | 0.00038 | 0.00034 | 0.00081 | 0.00025 | 0.00025 |
| Cu-T | mg/L | 0.00198 | 0.0029 | 0.00178 | 0.00139 | <0.00050 | 0.00095 | 0.00305 | <0.00050 | 0.00190 |
| Hard-T | mg/L | 536 | 519 | 613 | 602 | 538 | 567 | 596 | 488 | 596 |
| Fe-T | mg/L | 4.62 | 4.86 | 4.47 | 1.87 | 0.522 | 0.761 | 5.33 | 2.26 | 1.37 |
| P-T | mg/L | 0.0059 | 0.011 | | 0.0053 | 0.0091 | | 0.016 | <0.0030 | <0.0030 |
| Pb-T | mg/L | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 12.6 | 11.7 | 13.3 | 14.2 | 12.9 | 13.8 | 14.5 | 12.3 | 14.7 |
| Mn-T | mg/L | 0.936 | 0.403 | 0.290 | 0.255 | 0.144 | 0.0945 | 0.178 | 0.0996 | 0.173 |
| Hg-T | mg/L | <0.0000020 | 0.0000026 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 |
| Mo-T | mg/L | 0.0039 | 0.0027 | 0.0018 | 0.0018 | 0.0012 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| K-T | mg/L | 1.92 | 2.14 | 2.15 | 2.07 | 1.86 | 1.85 | 1.74 | 1.47 | 1.70 |
| S-T | mg/L | 91.3 | 110 | 152 | 159 | 142 | 157 | 158 | 146 | 187 |
| Se-T | mg/L | <0.00010 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-T | mg/L | 5.97 | 5.83 | 5.30 | 5.36 | 4.46 | 4.35 | 4.86 | 3.58 | 3.40 |
| Ag-T | mg/L | <0.000020 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 107 | 106 | 118 | 120 | 115 | 118 | 121 | 97.1 | 114 |
| Sr-T | mg/L | 1.73 | 1.77 | 2.15 | 2.06 | 1.99 | 1.93 | 2.02 | 1.72 | 1.98 |
| Zn-T | mg/L | <0.0050 | <0.010 | 0.0057 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Al-D | mg/L | 0.0036 | 0.0035 | 0.0064 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 |
| As-D | mg/L | 0.00199 | 0.00445 | 0.00506 | 0.00176 | 0.00153 | 0.00145 | 0.00329 | 0.00225 | 0.00100 |
| Ba-D | mg/L | 0.0348 | 0.0538 | 0.0592 | 0.0547 | 0.0531 | 0.0514 | 0.0467 | 0.0362 | 0.0432 |
| B-D | mg/L | 0.656 | 0.725 | 0.725 | 0.755 | 0.755 | 0.682 | 0.538 | 0.532 | 0.551 |
| Cd-D | mg/L | 0.0000050 | <0.0000050 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-D | mg/L | 187 | 189 | 219 | 207 | 196 | 210 | 195 | 170 | 205 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0040 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | 0.00437 | 0.00111 | 0.00060 | 0.00063 | 0.00041 | 0.00033 | 0.00078 | 0.00023 | 0.00021 |
| Cu-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00025 | <0.00020 | <0.00020 | <0.00020 |
| Hard-D | mg/L | 516 | 518 | 602 | 575 | 542 | 584 | 545 | 474 | 572 |
| Fe-D | mg/L | 0.0775 | 2.49 | 2.68 | 0.184 | 0.0632 | 0.0196 | 3.91 | 1.31 | 0.0168 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 12.3 | 11.2 | 13.1 | 13.7 | 12.9 | 14.2 | 14.3 | 12.0 | 14.6 |
| Mn-D | mg/L | 0.917 | 0.379 | 0.270 | 0.214 | 0.153 | 0.0959 | 0.218 | 0.0958 | 0.177 |
| Hg-D | mg/L | <0.0000020 | 0.0000027 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 |
| Mo-D | mg/L | 0.0040 | 0.0070 | 0.0018 | 0.0017 | 0.0014 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0014 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| K-D | mg/L | 1.86 | 2.24 | 2.13 | 1.98 | 1.84 | 1.98 | 1.64 | 1.42 | 1.63 |
| S-D | mg/L | 90.0 | 118 | 154 | 149 | 137 | 160 | 146 | 135 | 180 |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-D | mg/L | 5.61 | 5.76 | 5.30 | 4.81 | 4.37 | 4.25 | 3.85 | 3.28 | 3.10 |
| Na-D | mg/L | 103 | 99.5 | 114 | 116 | 117 | 124 | 116 | 94.9 | 111 |
| Sr-D | mg/L | 1.74 | 1.69 | 2.02 | 1.96 | 1.95 | 2.02 | 1.86 | 1.54 | 1.95 |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| H2SEquiv | mg/L | 0.00521 | | | | 0.000957 | | | | 0.000957 |

# Table 14
# 2019-2020 Annual Report

| Site Description | | 2 South Inflow for Pit Water Cover - from LLSPTS | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Name | | 2SI | | | | | | | | | |
| Parameter | Date / Unit | 16-May-2019 | 16-Jul-2019 | 12-Aug-2019 | 09-Sep-2019 | 01-Oct-2019 | 06-Nov-2019 | 04-Dec-2019 | 09-Jan-2020 | 10-Feb-2020 | 02-Mar-2020 |
| SO4-D | mg/L | 201 | 400 | 380 | 360 | 390 | 350 | 450 | 430 | 180 | 180 |
| TSS | mg/L | 4.4 | <4.0 | <4.0 | <4.0 | | | <4.0 | 1.6 | | |
| Alk-T | mg/L | 340 | 310 | 350 | 340 | | 270 | 260 | 160 | 67 | 71 |
| Acidity83 | mg/L | 1.8 | <1.0 | <1.0 | <1.0 | | 3.0 | 1.6 | <1.0 | 1.5 | <1.0 |
| N-NH3 | mg/L | 0.11 | | 0.046 | | | 0.057 | 0.036 | 0.039 | | |
| N-NO23 | mg/L | <0.020 | | 0.023 | <0.020 | | <0.020 | 0.032 | 0.082 | | |
| P-D | mg/L | <0.0020 | | <0.0030 | | | | | | | |
| Al-T | mg/L | 0.0062 | 0.0068 | 0.0047 | 0.0074 | 0.0045 | 0.0067 | 0.0076 | 0.0154 | 0.0162 | 0.0170 |
| As-T | mg/L | 0.00109 | 0.00065 | 0.00040 | 0.00037 | 0.00015 | 0.00028 | 0.00042 | 0.00040 | 0.00013 | 0.00012 |
| Ba-T | mg/L | 0.0262 | 0.0460 | 0.0418 | 0.0378 | 0.0381 | 0.0328 | 0.0319 | 0.0247 | 0.0114 | 0.0107 |
| B-T | mg/L | 0.496 | 0.700 | 0.654 | 0.624 | 0.564 | 0.471 | 0.524 | 0.399 | 0.102 | 0.110 |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-T | mg/L | 156 | 200 | 189 | 172 | 178 | 171 | 182 | 157 | 67.0 | 70.4 |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | 0.00259 | 0.00046 | 0.00030 | <0.00020 | <0.00020 | 0.00020 | 0.00030 | 0.00040 | 0.00020 | 0.00021 |
| Cu-T | mg/L | 0.00070 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00055 | 0.00056 |
| Hard-T | mg/L | 437 | 553 | 528 | 483 | 503 | 484 | 512 | 443 | 201 | 208 |
| Fe-T | mg/L | 1.10 | 0.315 | 0.264 | 0.233 | 0.262 | 0.170 | 0.187 | 0.235 | 0.154 | 0.215 |
| P-T | mg/L | <0.0020 | <0.0030 | 0.0019 | 0.45 | | <0.0030 | <0.0030 | <0.0030 | | |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 11.5 | 13.2 | 13.8 | 13.1 | 13.9 | 13.6 | 14.2 | 12.7 | 8.23 | 7.69 |
| Mn-T | mg/L | 0.596 | 0.123 | 0.0904 | 0.0526 | 0.0536 | 0.0571 | 0.0922 | 0.110 | 0.0661 | 0.0650 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | | 0.0000021 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-T | mg/L | 0.0018 | 0.0013 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0010 | <0.0010 | <0.0010 |
| K-T | mg/L | 1.56 | 1.91 | 1.87 | 1.98 | 1.65 | 1.37 | 1.46 | 1.14 | 0.426 | 0.401 |
| S-T | mg/L | 84.5 | 142 | 146 | 139 | 149 | 132 | 161 | 140 | 56.3 | 54.5 |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-T | mg/L | 5.18 | 4.75 | 4.78 | 4.35 | 4.42 | 4.66 | 4.30 | 3.59 | 3.51 | 3.43 |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 84.0 | 110 | 109 | 108 | 107 | 93.8 | 95.5 | 70.3 | 14.0 | 14.9 |
| Sr-T | mg/L | 1.25 | 1.88 | 1.69 | 1.67 | 1.58 | 1.43 | 1.66 | 1.33 | 0.406 | 0.393 |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Al-D | mg/L | 0.0042 | 0.0041 | <0.0030 | 0.0034 | 0.0034 | 0.0041 | 0.0093 | 0.0075 | 0.0094 | 0.0090 |
| As-D | mg/L | 0.00084 | 0.00060 | 0.00035 | 0.00034 | 0.00019 | 0.00022 | 0.00037 | 0.00033 | <0.00010 | <0.00010 |
| Ba-D | mg/L | 0.0252 | 0.0450 | 0.0416 | 0.0379 | 0.0384 | 0.0337 | 0.0309 | 0.0256 | 0.0106 | 0.0107 |
| B-D | mg/L | 0.560 | 0.703 | 0.657 | 0.646 | 0.577 | 0.420 | 0.531 | 0.394 | 0.091 | 0.109 |
| Cd-D | mg/L | 0.0000050 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-D | mg/L | 155 | 213 | 189 | 178 | 179 | 161 | 178 | 148 | 61.5 | 67.5 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | 0.00253 | 0.00037 | 0.00029 | <0.00020 | <0.00020 | <0.00020 | 0.00029 | 0.00038 | 0.00020 | <0.00020 |
| Cu-D | mg/L | 0.00024 | 0.00029 | 0.00027 | 0.00032 | 0.00035 | 0.00029 | 0.00023 | <0.00020 | 0.00050 | 0.00050 |
| Hard-D | mg/L | 439 | 588 | 527 | 500 | 505 | 460 | 501 | 423 | 185 | 201 |
| Fe-D | mg/L | 0.0292 | 0.0528 | 0.0553 | 0.0604 | 0.0842 | 0.0851 | 0.0775 | 0.106 | 0.118 | 0.123 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 12.4 | 13.6 | 13.7 | 13.3 | 14.1 | 13.8 | 13.8 | 12.7 | 7.57 | 8.00 |
| Mn-D | mg/L | 0.632 | 0.117 | 0.0884 | 0.0525 | 0.0528 | 0.0587 | 0.0927 | 0.109 | 0.0605 | 0.0611 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000035 | <0.0000020 | | 0.0000044 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-D | mg/L | 0.0021 | 0.0012 | <0.0010 | 0.0016 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0010 | <0.0010 | <0.0010 |
| K-D | mg/L | 1.59 | 1.93 | 1.83 | 1.97 | 1.71 | 1.32 | 1.49 | 1.16 | 0.372 | 0.409 |
| S-D | mg/L | 87.3 | 152 | 146 | 136 | 149 | 129 | 155 | 133 | 48.3 | 56.6 |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-D | mg/L | 5.38 | 4.90 | 4.68 | 4.51 | 4.31 | 3.96 | 3.96 | 3.17 | 2.98 | 3.47 |
| Na-D | mg/L | 86.2 | 108 | 110 | 112 | 112 | 92.0 | 94.8 | 69.5 | 13.1 | 16.7 |
| Sr-D | mg/L | 1.29 | 1.77 | 1.71 | 1.63 | 1.62 | 1.38 | 1.54 | 1.26 | 0.355 | 0.410 |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| H2SEquiv | mg/L | 0.00101 | | | 0.000957 | | | | 0.000957 | | |

# Table 15
# 2019-2020 Annual Report

| EMS ID | | E292127 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 2 South Pit in Pit Water Cover (CCR Water Cover) | | | | | | | | | | | |
| Site Name | | 2S | | | | | | | | | | | |
| Date | | 1-Apr-19 | 6-May-19 | 11-Jun-19 | 16-Jul-19 | 12-Aug-19 | 9-Sep-19 | 1-Oct-19 | 4-Nov-19 | 4-Dec-19 | 6-Jan-20 | 10-Feb-20 | 2-Mar-20 |
| Parameter | Unit | | | | | | | | | | | | |
| SO4-D | mg/L | 210 | 248 | 230 | 270 | 280 | 430 | 450 | 440 | 360 | 380 | 210 | 110 |
| TSS | mg/L | <16 | | | | <4.0 | <4.0 | | | | | | |
| Alk-T | mg/L | 95.5 | 102 | 82 | 73 | 110 | 150 | 120 | 110 | 140 | 150 | 92 | 39 |
| Acidity83 | mg/L | <1.0 | <1.0 | <1.0 | 1.1 | <1.0 | 2.9 | <1.0 | 1.8 | 1.1 | <1.0 | <1.0 | <1.0 |
| Al-T | mg/L | 0.0155 | 0.03330 | 0.01330 | 0.0155 | 0.0448 | 0.0036 | 0.0046 | 0.013 | 0.018 | 0.0251 | 0.0156 | 0.0202 |
| As-T | mg/L | 0.00128 | 0.00125 | 0.00111 | 0.00164 | 0.00245 | 0.00651 | 0.00472 | 0.00301 | 0.00317 | 0.00305 | 0.00228 | 0.00054 |
| Ba-T | mg/L | 0.0129 | 0.0158 | 0.017 | 0.0196 | 0.0281 | 0.0345 | 0.0309 | 0.0274 | 0.0187 | 0.0193 | 0.0114 | 0.0067 |
| B-T | mg/L | 0.212 | 0.216 | 0.203 | 0.27 | 0.341 | 0.407 | 0.403 | 0.363 | 0.288 | 0.321 | 0.207 | 0.069 |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-T | mg/L | 84.7 | 93 | 79.9 | 87 | 113 | 165 | 158 | 165 | 123 | 145 | 91.1 | 41.2 |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00053 | <0.00020 | <0.00020 | <0.00020 | 0.00027 | <0.00020 | <0.00020 |
| Cu-T | mg/L | 0.00058 | 0.00079 | 0.00119 | 0.00131 | 0.00109 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00068 |
| Hard-T | mg/L | 255 | 272 | 243 | 266 | 338 | 488 | 474 | 495 | 368 | 431 | 268 | 121.000 |
| Fe-T | mg/L | 0.023 | 0.064 | 0.015 | 0.019 | 0.081 | 0.132 | 0.056 | 0.048 | 0.096 | 0.104 | 0.056 | 0.052 |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 10.5 | 9.76 | 10.4 | 11.7 | 13.6 | 18.5 | 19.1 | 20.0000 | 15 | 16.5 | 9.86 | 4.39 |
| Mn-T | mg/L | 0.0202 | 0.0078 | 0.0164 | 0.0284 | 0.0279 | 0.252 | 0.0247 | 0.0243 | 0.0686 | 0.101 | 0.0632 | 0.0065 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000022 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| K-T | mg/L | 1.08 | 1.26 | 1.33 | 1.59 | 1.88 | 2.38 | 2.27 | 2.19 | 1.56 | 1.55 | 1.14 | 0.4 |
| S-T | mg/L | 76.1 | 80.5 | 72 | 83.9 | 109 | 158 | 159 | 158 | 120 | 130 | 81.5 | 32.5 |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-T | mg/L | 1.21 | 1.24 | 0.7 | 0.52 | 1.19 | 2.04 | 1.4 | 1.2 | 1.43 | 1.67 | 1.35 | 1.51 |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 24.0 | 23.1 | 24.4 | 28.5 | 39.6 | 51.6 | 49.7 | 52.4 | 47.7 | 64.5 | 34.1 | 7.88 |
| Sr-T | mg/L | 0.514 | 0.583 | 0.514 | 0.614 | 0.745 | 1.15 | 1.11 | 1.09 | 0.84 | 0.992 | 0.601 | 0.258 |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Al-D | mg/L | <0.0030 | 0.0095 | 0.0086 | 0.0124 | 0.0052 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | 0.0067 |
| As-D | mg/L | 0.00115 | 0.0011 | 0.00115 | 0.00161 | 0.00233 | 0.0057 | 0.00396 | 0.00257 | 0.00279 | 0.00249 | 0.00167 | 0.00052 |
| Ba-D | mg/L | 0.0125 | 0.0147 | 0.0168 | 0.019 | 0.0278 | 0.0353 | 0.0315 | 0.0273 | 0.0196 | 0.0198 | 0.0105 | 0.007 |
| B-D | mg/L | 0.196 | 0.203 | 0.249 | 0.27 | 0.338 | 0.435 | 0.4080000 | 0.326 | 0.298 | 0.3130000 | 0.175 | 0.075 |
| Cd-D | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-D | mg/L | 84.6 | 85.8 | 82.8 | 87.6 | 112 | 166 | 161 | 150 | 130 | 135 | 80.3 | 43.2 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00057 | <0.00020 | <0.00020 | <0.00020 | 0.00023 | <0.00020 | <0.00020 |
| Cu-D | mg/L | 0.00047 | 0.00058 | 0.001 | 0.00133 | 0.00082 | <0.00020 | 0.00029 | 0.00026 | 0.00021 | <0.00020 | <0.00020 | 0.00057 |
| Hard-D | mg/L | 250 | 254 | 252 | 270 | 337 | 493 | 484 | 452 | 394 | 406 | 238 | 127 |
| Fe-D | mg/L | <0.0050 | <0.0050 | 0.005 | 0.0132 | 0.0136 | 0.0362 | 0.0132 | 0.0153 | 0.0215 | <0.0050 | <0.0050 | 0.014 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 9.52 | 9.76 | 11 | 12.5 | 13.7 | 19 | 19.9 | 18.9000 | 16.5 | 16.5 | 9.21 | 4.6 |
| Mn-D | mg/L | 0.0109 | 0.0011 | <0.0010 | 0.0229 | 0.006 | 0.263 | 0.0039 | 0.0193 | 0.0695 | 0.0956 | 0.0565 | 0.0048 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | 0.000003 | <0.0000020 | <0.0000020 | 0.0000047 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.001 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| K-D | mg/L | 1.01 | 1.2 | 1.39 | 1.68 | 1.88 | 2.38 | 2.34 | 2.06 | 1.7 | 1.55 | 0.995 | 0.443 |
| S-D | mg/L | 75.1 | 78 | 78.3 | 89.2 | 108 | 160 | 162 | 148 | 121 | 127 | 69.8 | 35.7 |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-D | mg/L | 1.16 | 1.14 | 0.81 | 0.55 | 1.13 | 2.05 | 1.37 | 1.05 | 1.35 | 1.47 | 1.06 | 1.56 |
| Na-D | mg/L | 23.1 | 22.4 | 26.1 | 30.2 | 39.4 | 54.4 | 53.3 | 49.2 | 52.7 | 64 | 32 | 8.44 |
| Sr-D | mg/L | 0.492 | 0.558 | 0.553 | 0.583 | 0.751 | 1.13 | 1.13 | 1.04 | 0.846 | 0.939 | 0.512 | 0.281 |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |

# Table 16
# 2019-2020 Annual Report

| EMS ID | | E217015 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 3 South Pit Main Water Sump (CCR Water Cover) | | | | | | | | | | | |
| Site Name | | 3S | | | | | | | | | | | |
| Date | | 1-Apr-19 | 6-May-19 | 11-Jun-19 | 16-Jul-19 | 12-Aug-19 | 9-Sep-19 | 1-Oct-19 | 4-Nov-19 | 4-Dec-19 | 6-Jan-20 | 10-Feb-20 | 2-Mar-20 |
| Parameter | Unit | | | | | | | | | | | | |
| SO4-D | mg/L | 490 | 478 | 502 | 400 | 410 | 460 | 540 | 590 | 560 | 450 | 570 | 440 |
| TSS | mg/L | | | | | <4.0 | | | | | | | |
| Alk-T | mg/L | 164 | 154 | 140 | 130 | 130 | 140 | 150 | 160 | 170 | 140 | 160 | 290 |
| Acidity83 | mg/L | 2.1 | <1.0 | 1.0 | 1.3 | <1.0 | 5.1 | 2.3 | 3.1 | 4.6 | 1.0 | 3.2 | 1.8 |
| Al-T | mg/L | 0.0185 | | 0.0378 | | 0.0103 | | 0.0104 | 0.0072 | | 0.0315 | 0.0855 | 0.0143 |
| As-T | mg/L | 0.00031 | | 0.00049 | | 0.00078 | | 0.00089 | 0.00052 | | 0.00077 | 0.00088 | 0.00048 |
| Ba-T | mg/L | 0.0147 | | 0.0161 | | 0.0173 | | 0.0226 | 0.0187 | | 0.0149 | 0.0167 | 0.0138 |
| B-T | mg/L | 0.346 | | 0.299 | | 0.347 | | 0.400 | 0.350 | | 0.266 | 0.269 | 0.308 |
| Cd-T | mg/L | <0.000010 | | <0.000010 | | <0.000010 | | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| Ca-T | mg/L | 221 | | 195 | | 170 | | 202 | 232 | | 182 | 254 | 259 |
| Cr-T | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | <0.00020 | | <0.00020 | | 0.00022 | | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 |
| Cu-T | mg/L | <0.00050 | | 0.00073 | | 0.00078 | | <0.00050 | <0.00050 | | <0.00050 | 0.00070 | <0.00050 |
| Hard-T | mg/L | 667 | | 597 | | 520 | | 609 | 696 | | 541 | 759 | 766 |
| Fe-T | mg/L | 0.035 | | 0.091 | | 0.046 | | 0.038 | 0.022 | | 0.072 | 0.190 | 0.041 |
| Pb-T | mg/L | <0.00020 | | <0.00020 | | <0.00020 | | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 27.8 | | 27.0 | | 23.2 | | 25.6 | 28.3 | | 21.2 | 29.9 | 28.9 |
| Mn-T | mg/L | 0.0116 | | 0.0243 | | 0.0258 | | 0.0080 | 0.0045 | | 0.0201 | 0.0334 | 0.0124 |
| Hg-T | mg/L | <0.0000020 | | <0.0000020 | | <0.0000020 | | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-T | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 |
| K-T | mg/L | 2.35 | | 2.38 | | 2.35 | | 2.58 | 2.48 | | 1.76 | 2.08 | 2.10 |
| S-T | mg/L | 206 | | 176 | | 155 | | 195 | 203 | | 154 | 225 | 222 |
| Se-T | mg/L | 0.00012 | | <0.00010 | | <0.00010 | | <0.00010 | 0.00014 | | 0.00015 | 0.00020 | 0.00017 |
| Si-T | mg/L | 1.94 | | 0.37 | | 0.83 | | 1.30 | 1.82 | | 1.79 | 2.23 | 2.11 |
| Ag-T | mg/L | <0.000020 | | <0.000020 | | <0.000020 | | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 32.3 | | 32.9 | | 35.6 | | 44.6 | 40.8 | | 40.8 | 32.5 | 30.7 |
| Sr-T | mg/L | 1.27 | | 1.24 | | 1.13 | | 1.34 | 1.43 | | 1.09 | 1.46 | 1.39 |
| Zn-T | mg/L | <0.0050 | | <0.0050 | | <0.0050 | | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | <0.0050 |
| Al-D | mg/L | 0.0052 | | 0.0056 | | 0.0045 | | <0.0030 | <0.0030 | | 0.0035 | <0.0030 | <0.0030 |
| As-D | mg/L | 0.00031 | | 0.00045 | | 0.00057 | | 0.00079 | 0.00048 | | 0.00066 | 0.00046 | 0.00040 |
| Ba-D | mg/L | 0.0145 | | 0.0152 | | 0.0172 | | 0.0221 | 0.0191 | | 0.0156 | 0.0142 | 0.0129 |
| B-D | mg/L | 0.335 | | 0.354 | | 0.346 | | 0.399 | 0.310 | | 0.268 | 0.210 | 0.271 |
| Cd-D | mg/L | <0.0000050 | | 0.0000090 | | <0.000010 | | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 |
| Ca-D | mg/L | 216 | | 202 | | 168 | | 204 | 217 | | 172 | 214 | 249 |
| Cr-D | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | <0.00020 | | <0.00020 | | <0.00020 | | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 |
| Cu-D | mg/L | 0.00030 | | 0.00064 | | 0.00036 | | <0.00020 | <0.00020 | | 0.00022 | <0.00020 | 0.00026 |
| Hard-D | mg/L | 644 | | 621 | | 515 | | 616 | 655 | | 516 | 641 | 742 |
| Fe-D | mg/L | 0.0061 | | 0.0176 | | 0.0213 | | <0.0050 | <0.0050 | | 0.0061 | <0.0050 | 0.0058 |
| Pb-D | mg/L | <0.00020 | | <0.00020 | | <0.00020 | | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 25.6 | | 28.0 | | 23.5 | | 25.8 | 27.4 | | 20.7 | 25.9 | 29.2 |
| Mn-D | mg/L | 0.0030 | | 0.0073 | | 0.0150 | | 0.0014 | 0.0023 | | 0.0201 | 0.0184 | 0.0086 |
| Hg-D | mg/L | <0.0000020 | | <0.0000020 | | <0.0000020 | | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-D | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | <0.0010 | | <0.0010 | | <0.0010 | | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 |
| K-D | mg/L | 2.37 | | 2.55 | | 2.34 | | 2.64 | 2.39 | | 1.77 | 1.74 | 2.07 |
| S-D | mg/L | 195 | | 195 | | 158 | | 194 | 193 | | 152 | 180 | 214 |
| Se-D | mg/L | 0.00011 | | <0.00010 | | <0.00010 | | <0.00010 | 0.00013 | | 0.00014 | 0.00015 | 0.00015 |
| Si-D | mg/L | 1.76 | | 0.38 | | 0.81 | | 1.23 | 1.62 | | 1.57 | 1.56 | 1.96 |
| Na-D | mg/L | 29.0 | | 33.4 | | 35.7 | | 46.1 | 39.6 | | 41.1 | 28.1 | 30.1 |
| Sr-D | mg/L | 1.27 | | 1.29 | | 1.12 | | 1.37 | 1.37 | | 1.09 | 1.20 | 1.40 |
| Zn-D | mg/L | <0.0050 | | <0.0050 | | <0.0050 | | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | <0.0050 |

# Table 17
# 2019-2020 Annual Report

| EMS ID | | E292128 | | |
|---|---|---|---|---|
| Site Description | | 3 South 77 Adit Pit- Exploration pit from 1977 | | |
| Site Name | | 3S77 | | |
| Date | | 15-Jul-19 | 1-Oct-19 | 25-Nov-19 |
| Parameter | Unit | | | |
| SO4-D | mg/L | 140 | 290 | 200 |
| TSS | mg/L | | | <4.0 |
| Alk-T | mg/L | 99 | 110 | 71 |
| Acidity83 | mg/L | 2.7 | 10.8 | 1.6 |
| Al-T | mg/L | 0.0046 | 0.0040 | 0.0045 |
| As-T | mg/L | 0.00174 | 0.00157 | 0.00019 |
| Ba-T | mg/L | 0.0212 | 0.0257 | 0.0179 |
| B-T | mg/L | 0.216 | 0.227 | 0.140 |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 |
| Ca-T | mg/L | 98.8 | 113 | 90.7 |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | <0.00020 | <0.00020 | <0.00020 |
| Cu-T | mg/L | <0.00050 | 0.00083 | <0.00050 |
| Hard-T | mg/L | 297 | 344 | 276 |
| Fe-T | mg/L | 0.075 | 0.032 | <0.010 |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 12.2 | 15.0 | 12.1 |
| Mn-T | mg/L | 0.0317 | 0.0330 | <0.0010 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 |
| Mo-T | mg/L | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | <0.0010 | <0.0010 | <0.0010 |
| K-T | mg/L | 1.40 | 1.36 | 1.00 |
| S-T | mg/L | 77.9 | 106 | 82.6 |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 |
| Si-T | mg/L | 3.38 | 3.56 | 2.71 |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 18.1 | 23.1 | 19.2 |
| Sr-T | mg/L | 0.639 | 0.763 | 0.573 |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 |
| Al-D | mg/L | 0.0034 | <0.0030 | 0.0037 |
| As-D | mg/L | 0.00166 | 0.00155 | 0.00022 |
| Ba-D | mg/L | 0.0193 | 0.0272 | 0.0172 |
| B-D | mg/L | 0.203 | 0.253 | 0.163 |
| Cd-D | mg/L | 0.0000060 | <0.000010 | <0.000010 |
| Ca-D | mg/L | 106 | 123 | 90.7 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | <0.00020 | <0.00020 | <0.00020 |
| Cu-D | mg/L | 0.00021 | 0.00029 | 0.00038 |
| Hard-D | mg/L | 314 | 371 | 274 |
| Fe-D | mg/L | 0.0424 | 0.0228 | <0.0050 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 11.9 | 15.6 | 11.6 |
| Mn-D | mg/L | 0.0317 | 0.0329 | <0.0010 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 |
| Mo-D | mg/L | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | <0.0010 | <0.0010 | <0.0010 |
| K-D | mg/L | 1.41 | 1.38 | 0.951 |
| S-D | mg/L | 82.4 | 108 | 81.8 |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 |
| Si-D | mg/L | 3.56 | 3.63 | 2.73 |
| Na-D | mg/L | 17.6 | 24.6 | 18.3 |
| Sr-D | mg/L | 0.591 | 0.801 | 0.582 |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 |

# Table 18
# 2019-2020 Annual Report

| EMS ID | | E292129 | | |
|---|---|---|---|---|
| Site Description | | 4 South Lower- Culvert Dowstream of Access Road | | |
| Site Name | | 4S-LO | | |
| Date | | 1-Apr-19 | 6-May-19 | 25-Nov-19 |
| Parameter | Unit | | | |
| SO4-D | mg/L | 134 | 147 | 170 |
| TSS | mg/L | <16 | | <4.0 |
| Alk-T | mg/L | 46.6 | 51.4 | 49 |
| Acidity83 | mg/L | 2.3 | <1.0 | 2.2 |
| Al-T | mg/L | 0.214 | 0.230 | 0.0315 |
| As-T | mg/L | 0.00021 | 0.00025 | 0.00017 |
| Ba-T | mg/L | 0.0111 | 0.0123 | 0.0101 |
| B-T | mg/L | 0.137 | 0.122 | 0.099 |
| Cd-T | mg/L | 0.000013 | 0.000011 | <0.000010 |
| Ca-T | mg/L | 54.3 | 56.9 | 56.2 |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | 0.00144 | 0.00167 | 0.00034 |
| Cu-T | mg/L | <0.00050 | <0.00050 | <0.00050 |
| Hard-T | mg/L | 165 | 169 | 171 |
| Fe-T | mg/L | 0.953 | 0.564 | 0.041 |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 7.16 | 6.64 | 7.37 |
| Mn-T | mg/L | 0.439 | 0.244 | 0.0495 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 |
| Mo-T | mg/L | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | 0.0020 | 0.0020 | <0.0010 |
| K-T | mg/L | 0.489 | 0.589 | 0.466 |
| S-T | mg/L | 52.5 | 53.9 | 50.0 |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 |
| Si-T | mg/L | 3.52 | 3.48 | 2.87 |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 13.4 | 12.5 | 13.2 |
| Sr-T | mg/L | 0.268 | 0.312 | 0.299 |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 |
| Al-D | mg/L | 0.0943 | 0.136 | 0.0233 |
| As-D | mg/L | 0.00017 | 0.00016 | 0.00017 |
| Ba-D | mg/L | 0.0104 | 0.0116 | 0.0099 |
| B-D | mg/L | 0.123 | 0.127 | 0.113 |
| Cd-D | mg/L | 0.0000110 | 0.0000100 | <0.000010 |
| Ca-D | mg/L | 51.4 | 56.3 | 56.5 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | 0.00134 | 0.00153 | 0.00031 |
| Cu-D | mg/L | 0.00027 | 0.00025 | 0.00030 |
| Hard-D | mg/L | 157 | 169 | 170 |
| Fe-D | mg/L | 0.761 | 0.322 | 0.0263 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 7.02 | 6.81 | 7.10 |
| Mn-D | mg/L | 0.424 | 0.191 | 0.0437 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 |
| Mo-D | mg/L | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | 0.0015 | 0.0019 | <0.0010 |
| K-D | mg/L | 0.469 | 0.564 | 0.452 |
| S-D | mg/L | 48.9 | 51.3 | 49.6 |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 |
| Si-D | mg/L | 3.10 | 3.45 | 2.94 |
| Na-D | mg/L | 12.7 | 12.2 | 12.5 |
| Sr-D | mg/L | 0.258 | 0.299 | 0.303 |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 |

# Table 19
# 2019-2020 Annual Report

| EMS ID | | E217014 | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | South Pit Culvert- Culvert, downstream of Settling Pond #1 discharge | | | | | | | | | | | | | | |
| Site Name | | SPC | | | | | | | | | | | | | | |
| Date | | 1-Apr-19 | 15-Apr-19 | 6-May-19 | 14-May-19 | 27-May-19 | 25-Sep-19 | 1-Oct-19 | 7-Oct-19 | 21-Oct-19 | 4-Nov-19 | 4-Dec-19 | 6-Jan-20 | 10-Feb-20 | 2-Mar-20 |
| Parameter | Unit | | | | | | | | | | | | | | | |
| SO4-D | mg/L | 84.6 | | 138 | | | 54 | 69 | | | 170 | 100 | 140 | 91 | 110 |
| TSS | mg/L | <16 | <4.0 | 14.8 | 1.1 | 1.7 | 7.2 | <4.0 | 6.8 | <4.0 | <4.0 | 4.0 | <1.0 | 3.2 | 1.6 |
| Alk-T | mg/L | 29.8 | | 45.5 | | | 41 | 41 | | | 53 | 39 | 45 | 31 | 33 |
| Acidity83 | mg/L | <1.0 | | <1.0 | | | 2.5 | 1.8 | | | 1.6 | <1.0 | <1.0 | <1.0 | <1.0 |
| Al-T | mg/L | 0.0625 | | | | | 0.414 | 0.128 | | | | 0.0672 | | 0.0608 | |
| As-T | mg/L | 0.00032 | | | | | 0.00169 | 0.00070 | | | | 0.00029 | | 0.00021 | |
| Ba-T | mg/L | 0.0075 | | | | | 0.0108 | 0.0090 | | | | 0.0079 | | 0.0055 | |
| B-T | mg/L | 0.062 | | | | | 0.067 | 0.062 | | | | 0.065 | | <0.050 | |
| Cd-T | mg/L | <0.000010 | | | | | <0.000010 | <0.000010 | | | | <0.000010 | | <0.000010 | |
| Ca-T | mg/L | 31.2 | | | | | 30.4 | 31.6 | | | | 39.0 | | 32.8 | |
| Cr-T | mg/L | <0.0010 | | | | | <0.0010 | <0.0010 | | | | <0.0010 | | <0.0010 | |
| Co-T | mg/L | <0.00020 | | | | | 0.00050 | <0.00020 | | | | <0.00020 | | <0.00020 | |
| Cu-T | mg/L | 0.00053 | | | | | 0.00170 | 0.00102 | | | | <0.00050 | | <0.00050 | |
| Hard-T | mg/L | 95.8 | | | | | 92.8 | 97.0 | | | | 120 | | 100 | |
| Fe-T | mg/L | 0.100 | | | | | 1.05 | 0.314 | | | | 0.123 | | 0.067 | |
| Pb-T | mg/L | <0.00020 | | | | | 0.00022 | <0.00020 | | | | <0.00020 | | <0.00020 | |
| Mg-T | mg/L | 4.35 | | | | | 4.09 | 4.38 | | | | 5.56 | | 4.44 | |
| Mn-T | mg/L | 0.0019 | | | | | 0.0653 | 0.0048 | | | | 0.0039 | | 0.0019 | |
| Hg-T | mg/L | 2.1E-06 | | | | | 0.0000050 | 5.9E-06 | | | | 2.5E-06 | | <0.0000020 | |
| Mo-T | mg/L | <0.0010 | | | | | <0.0010 | <0.0010 | | | | <0.0010 | | <0.0010 | |
| Ni-T | mg/L | <0.0010 | | | | | 0.0015 | <0.0010 | | | | <0.0010 | | <0.0010 | |
| K-T | mg/L | 0.335 | | | | | 0.520 | 0.459 | | | | 0.509 | | 0.390 | |
| S-T | mg/L | 27.2 | | | | | 19.3 | 21.6 | | | | 34.5 | | 28.0 | |
| Se-T | mg/L | <0.00010 | | | | | <0.00010 | <0.00010 | | | | <0.00010 | | <0.00010 | |
| Si-T | mg/L | 2.07 | | | | | 5.23 | 4.44 | | | | 3.67 | | 3.03 | |
| Ag-T | mg/L | <0.000020 | | | | | <0.000020 | <0.000020 | | | | <0.000020 | | <0.000020 | |
| Na-T | mg/L | 5.85 | | | | | 6.15 | 6.29 | | | | 8.78 | | 5.95 | |
| Sr-T | mg/L | 0.188 | | | | | 0.186 | 0.189 | | | | 0.242 | | 0.190 | |
| Zn-T | mg/L | <0.0050 | | | | | <0.0050 | <0.0050 | | | | <0.0050 | | <0.0050 | |
| Al-D | mg/L | 0.0507 | | | | | 0.122 | 0.106 | | | 0.0381 | 0.0556 | | 0.0383 | |
| As-D | mg/L | 0.00027 | | | | | 0.00091 | 0.00068 | | | 0.00028 | 0.00027 | | 0.00017 | |
| Ba-D | mg/L | 0.0073 | | | | | 0.0082 | 0.0091 | | | 0.0139 | 0.0073 | | 0.0052 | |
| B-D | mg/L | 0.057 | | | | | 0.069 | 0.068 | | | 0.099 | 0.064 | | <0.050 | |
| Cd-D | mg/L | <0.0000050 | | | | | <0.000010 | <0.000010 | | | <0.000010 | <0.000010 | | <0.000010 | |
| Ca-D | mg/L | 31.1 | | | | | 30.2 | 32.7 | | | 58.2 | 38.9 | | 30.6 | |
| Cr-D | mg/L | <0.0010 | | | | | <0.0010 | <0.0010 | | | <0.0010 | <0.0010 | | <0.0010 | |
| Co-D | mg/L | <0.00020 | | | | | <0.00020 | <0.00020 | | | <0.00020 | <0.00020 | | <0.00020 | |
| Cu-D | mg/L | 0.00048 | | | | | 0.00110 | 0.00098 | | | 0.00039 | 0.00038 | | 0.00030 | |
| Hard-D | mg/L | 95.1 | | | | | 91.8 | 101 | | | 180 | 120 | | 93.5 | |
| Fe-D | mg/L | 0.0778 | | | | | 0.314 | 0.248 | | | 0.0550 | 0.107 | | 0.0507 | |
| Pb-D | mg/L | <0.00020 | | | | | <0.00020 | <0.00020 | | | <0.00020 | <0.00020 | | <0.00020 | |
| Mg-D | mg/L | 4.21 | | | | | 4.01 | 4.56 | | | 8.44 | 5.49 | | 4.16 | |
| Mn-D | mg/L | <0.0010 | | | | | 0.0010 | <0.0010 | | | 0.0011 | 0.0031 | | 0.0013 | |
| Hg-D | mg/L | 2.5E-06 | | | | | 4.3E-06 | 5.7E-06 | | | <0.0000020 | 4.3E-06 | | <0.0000020 | |
| Mo-D | mg/L | <0.0010 | | | | | <0.0010 | <0.0010 | | | <0.0010 | <0.0010 | | <0.0010 | |
| Ni-D | mg/L | <0.0010 | | | | | 0.0010 | 0.0010 | | | <0.0010 | <0.0010 | | <0.0010 | |
| K-D | mg/L | 0.330 | | | | | 0.489 | 0.484 | | | 0.662 | 0.498 | | 0.340 | |
| S-D | mg/L | 26.8 | | | | | 16.9 | 22.1 | | | 52.1 | 33.4 | | 23.7 | |
| Se-D | mg/L | <0.00010 | | | | | <0.00010 | <0.00010 | | | <0.00010 | <0.00010 | | <0.00010 | |
| Si-D | mg/L | 1.97 | | | | | 5.55 | 4.41 | | | 3.11 | 3.50 | | 2.54 | |
| Na-D | mg/L | 5.60 | | | | | 6.02 | 6.61 | | | 13.7 | 8.87 | | 5.51 | |
| Sr-D | mg/L | 0.177 | | | | | 0.175 | 0.195 | | | 0.350 | 0.232 | | 0.162 | |
| Zn-D | mg/L | <0.0050 | | | | | <0.0050 | <0.0050 | | | <0.0050 | <0.0050 | | <0.0050 | |

# Table 20
# 2019-2020 Annual Report

| EMS ID | | E292130 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Long Lake Entrance- Last wetland prior to entering Long Lake, near the outlet | | | | | | | | | | | | |
| Site Name | | LLE | | | | | | | | | | | | WQG-Max |
| Date | | 01-Apr-2019 | 06-May-2019 | 11-Jun-2019 | 15-Jul-2019 | 12-Aug-2019 | Sep | 01-Oct-2019 | 06-Nov-2019 | 04-Dec-2019 | 09-Jan-2020 | 10-Feb-2020 | 02-Mar-2020 | |
| Parameter | Unit | | | | | | | | | | | | | |
| SO4-D | mg/L | 117 | 133 | 241 | 440 | 380 | Beaver dam | 140 | 140 | 110 | 110 | 80 | 110 | |
| TSS | mg/L | <16 | <4.0 | <4.0 | 5.2 | 4.0 | | <4.0 | <4.0 | 4.4 | 1.6 | 2.4 | <1.0 | 25 |
| Alk-T | mg/L | 35.3 | 41.5 | 80 | 130 | 140 | | 80 | 50 | 41 | 35 | 28 | 32 | |
| Acidity83 | mg/L | 2.7 | <1.0 | <1.0 | 4.0 | 3.6 | | 1.6 | 2.0 | 1.1 | <1.0 | <1.0 | <1.0 | |
| N-NH3 | mg/L | <0.015 | <0.015 | <0.015 | <0.015 | 0.016 | | 0.052 | 0.048 | 0.042 | <0.015 | 0.051 | 0.044 | 12.9 |
| N-NO23 | mg/L | 0.039 | <0.020 | <0.020 | <0.020 | <0.020 | | 0.141 | 0.025 | 0.066 | <0.020 | 0.024 | 0.039 | |
| Al-T | mg/L | 0.0506 | 0.0269 | 0.0092 | 0.0103 | 0.0038 | | 0.0299 | 0.0705 | 0.0924 | 0.101 | 0.0849 | 0.0869 | |
| As-T | mg/L | 0.00068 | 0.00081 | 0.00084 | 0.00081 | 0.00074 | | 0.00054 | 0.00110 | 0.00121 | 0.00055 | 0.00074 | 0.00081 | 0.005 |
| Ba-T | mg/L | 0.0146 | 0.0183 | 0.0344 | 0.0364 | 0.0342 | | 0.0203 | 0.0169 | 0.0129 | 0.0087 | 0.0075 | 0.0096 | 5 |
| B-T | mg/L | 0.082 | 0.091 | 0.200 | 0.354 | 0.295 | | 0.112 | 0.091 | 0.071 | 0.068 | <0.050 | 0.056 | |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | |
| Ca-T | mg/L | 41.0 | 46.6 | 100 | 175 | 150 | | 57.3 | 52.6 | 41.8 | 38.1 | 30.2 | 41.0 | |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-T | mg/L | <0.00020 | <0.00020 | 0.00021 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.11 |
| Cu-T | mg/L | 0.00060 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | 0.00081 | 0.00054 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.007 |
| Hard-T | mg/L | 128 | 142 | 315 | 547 | 477 | | 177 | 162 | 129 | 117 | 92.3 | 124 | |
| Fe-T | mg/L | 0.556 | 0.351 | 1.05 | 0.788 | 0.568 | | 0.784 | 0.506 | 0.591 | 0.201 | 0.156 | 0.395 | 1 |
| P-T | mg/L | 0.0079 | 0.0031 | 0.0030 | 0.0048 | 0.0027 | | <0.0030 | 0.0041 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | 0.01 |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.01763 |
| Mg-T | mg/L | 6.14 | 6.26 | 15.8 | 27.0 | 24.7 | | 8.35 | 7.34 | 5.94 | 5.19 | 4.08 | 5.35 | |
| Mn-T | mg/L | 0.0752 | 0.0383 | 0.112 | 0.120 | 0.0918 | | 0.151 | 0.0585 | 0.0624 | 0.0112 | 0.0145 | 0.0394 | 0.8 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 | 0.0000045 | <0.0000020 | <0.0000020 | <0.0000019 | 0.00001 |
| Mo-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 2 |
| Ni-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.025 |
| K-T | mg/L | 0.483 | 0.595 | 0.898 | 1.50 | 1.48 | | 0.756 | 0.649 | 0.548 | 0.476 | 0.378 | 0.427 | |
| S-T | mg/L | 39.5 | 43.5 | 101 | 177 | 151 | | 43.8 | 43.9 | 38.1 | 30.8 | 24.6 | 33.8 | |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Si-T | mg/L | 2.72 | 2.64 | 1.20 | 2.14 | 1.83 | | 3.96 | 3.63 | 3.77 | 3.09 | 3.04 | 2.89 | |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.0001 |
| Na-T | mg/L | 9.33 | 9.36 | 29.0 | 49.3 | 46.0 | | 13.3 | 12.2 | 9.71 | 9.02 | 5.56 | 7.02 | |
| Sr-T | mg/L | 0.244 | 0.290 | 0.595 | 1.08 | 0.946 | | 0.342 | 0.297 | 0.263 | 0.226 | 0.175 | 0.224 | |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | | 0.0102 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.033 |
| Al-D | mg/L | 0.0214 | 0.0127 | 0.0030 | <0.0030 | <0.0030 | | 0.0194 | 0.0276 | 0.0406 | 0.0455 | 0.0361 | 0.0380 | 0.1 |
| As-D | mg/L | 0.00050 | 0.00065 | 0.00084 | 0.00067 | 0.00069 | | 0.00052 | 0.00093 | 0.00085 | 0.00045 | 0.00060 | 0.00057 | |
| Ba-D | mg/L | 0.0143 | 0.0181 | 0.0358 | 0.0335 | 0.0332 | | 0.0200 | 0.0179 | 0.0124 | 0.0086 | 0.0068 | 0.0092 | |
| B-D | mg/L | 0.079 | 0.099 | 0.249 | 0.316 | 0.304 | | 0.116 | 0.083 | 0.070 | 0.061 | <0.050 | 0.057 | |
| Cd-D | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.0001702 |
| Ca-D | mg/L | 39.1 | 46.9 | 110 | 187 | 149 | | 56.0 | 50.4 | 41.1 | 36.1 | 27.0 | 39.9 | |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Cu-D | mg/L | 0.00045 | 0.00032 | 0.00028 | 0.00022 | <0.00020 | | 0.00072 | 0.00050 | 0.00045 | 0.00035 | 0.00033 | 0.00033 | |
| Hard-D | mg/L | 122 | 143 | 344 | 572 | 473 | | 174 | 157 | 128 | 111 | 82.7 | 122 | |
| Fe-D | mg/L | 0.424 | 0.203 | 0.985 | 0.133 | 0.0764 | | 0.588 | 0.411 | 0.513 | 0.147 | 0.109 | 0.334 | 0.35 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Mg-D | mg/L | 6.02 | 6.27 | 16.9 | 25.9 | 24.7 | | 8.30 | 7.44 | 6.01 | 4.96 | 3.73 | 5.35 | |
| Mn-D | mg/L | 0.0727 | 0.0371 | 0.117 | 0.117 | 0.0906 | | 0.152 | 0.0638 | 0.0617 | 0.0106 | 0.0129 | 0.0369 | |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | 0.0000022 | <0.0000020 | <0.0000020 | | <0.0000020 | 0.0000028 | 0.0000064 | <0.0000020 | <0.0000020 | <0.0000019 | |
| Mo-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Ni-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| K-D | mg/L | 0.469 | 0.581 | 0.975 | 1.42 | 1.48 | | 0.770 | 0.687 | 0.544 | 0.453 | 0.326 | 0.415 | |
| S-D | mg/L | 37.5 | 43.3 | 114 | 179 | 151 | | 43.3 | 44.7 | 34.8 | 30.2 | 21.1 | 34.1 | |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Si-D | mg/L | 2.49 | 2.62 | 1.46 | 2.12 | 1.73 | | 3.70 | 3.63 | 3.47 | 2.68 | 2.45 | 2.97 | |
| Na-D | mg/L | 9.46 | 9.96 | 31.0 | 47.7 | 46.2 | | 13.7 | 12.1 | 10.2 | 8.76 | 5.17 | 6.98 | |
| Sr-D | mg/L | 0.239 | 0.288 | 0.639 | 1.06 | 0.911 | | 0.346 | 0.331 | 0.232 | 0.217 | 0.146 | 0.225 | |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | 0.0071 | <0.0050 | <0.0050 | <0.0050 | |

# Table 21
# 2019-2020 Annual Report

| EMS ID. | | E292131 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Seep into Long Lake | | | | | | | | | | | |
| Site Name | | LLS | | | | | | | | | | | |
| Date | | 01-Apr-19 | 06-May-19 | 11-Jun-19 | 16-Jul-19 | 12-Aug-19 | Sep - Oct | 06-Nov-19 | 04-Dec-19 | 09-Jan-20 | 05-Feb-20 | 02-Mar-20 | WQG-Max (M) |
| Parameter | Unit | | | | | | | | | | | | |
| SO4-D | mg/L | 477 | 538 | 512 | 440 | 440 | No Flow | 360 | 490 | 420 | 570 | 750 | |
| TSS | mg/L | <16 | 4.4 | <4.0 | 4.0 | 7.2 | | 7.2 | 7.2 | 3.6 | 8.4 | 2.8 | 25 |
| Alk-T | mg/L | 249 | 246 | 260 | 240 | 260 | | 390 | 220 | 170 | 190 | 230 | |
| Acidity83 | mg/L | 16.6 | 4.1 | 7.7 | 10.9 | 9.2 | | <1.0 | 5.4 | 4.6 | 8.1 | 13.0 | |
| Al-T | mg/L | <0.0030 | 0.0047 | <0.0030 | <0.0030 | 0.0033 | | 0.0279 | 0.0232 | 0.0507 | 0.0410 | 0.0110 | |
| As-T | mg/L | 0.00256 | 0.00311 | 0.00289 | 0.00260 | 0.00278 | | 0.00052 | 0.00271 | 0.00226 | 0.00187 | 0.00518 | 0.005 |
| Ba-T | mg/L | 0.0194 | 0.0189 | 0.0199 | 0.0194 | 0.0202 | | 0.0186 | 0.0185 | 0.0174 | 0.0196 | 0.0194 | 5 |
| B-T | mg/L | 0.662 | 0.585 | 0.585 | 0.581 | 0.576 | | 0.376 | 0.501 | 0.442 | 0.511 | 0.601 | |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | |
| Ca-T | mg/L | 223 | 218 | 207 | 202 | 196 | | 165 | 182 | 169 | 202 | 244 | |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-T | mg/L | 0.00156 | 0.00153 | 0.00138 | 0.00117 | 0.00120 | | 0.00103 | 0.00137 | 0.00123 | 0.00182 | 0.00176 | 0.11 |
| Cu-T | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | | 0.00105 | 0.00065 | 0.00084 | 0.00088 | <0.00050 | 0.00482 |
| Hard-T | mg/L | 634 | 610 | 587 | 570 | 557 | | 473 | 521 | 484 | 581 | 696 | |
| Fe-T | mg/L | 0.988 | 1.16 | 1.26 | 1.25 | 1.41 | | 0.225 | 1.31 | 1.09 | 1.20 | 2.11 | 1 |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.01763 |
| Mg-T | mg/L | 19.0 | 16.2 | 16.9 | 16.1 | 16.3 | | 15.2 | 16.0 | 15.2 | 18.8 | 21.2 | |
| Mn-T | mg/L | 0.454 | 0.418 | 0.389 | 0.342 | 0.330 | | 0.0835 | 0.290 | 0.225 | 0.210 | 0.488 | 0.8706 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | 0.0000022 | <0.0000020 | <0.0000020 | <0.0000019 | 0.00001 |
| Mo-T | mg/L | 0.0012 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 2 |
| Ni-T | mg/L | 0.0029 | 0.0023 | 0.0022 | 0.0020 | 0.0020 | | 0.0050 | 0.0030 | 0.0031 | 0.0056 | 0.0043 | 0.025 |
| K-T | mg/L | 2.46 | 2.50 | 2.36 | 2.35 | 2.37 | | 2.14 | 2.31 | 2.16 | 2.10 | 2.62 | |
| S-T | mg/L | 220 | 214 | 184 | 170 | 173 | | 148 | 169 | 147 | 198 | 254 | |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | 0.00021 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Si-T | mg/L | 3.28 | 3.14 | 2.61 | 2.93 | 3.09 | | 2.41 | 2.71 | 2.69 | 2.84 | 3.17 | |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.0001 |
| Na-T | mg/L | 110 | 87.0 | 98.1 | 92.4 | 94.1 | | 59.6 | 78.8 | 70.4 | 75.6 | 104 | |
| Sr-T | mg/L | 1.97 | 2.11 | 1.90 | 1.87 | 1.82 | | 1.50 | 1.74 | 1.52 | 1.94 | 2.07 | |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.033 |
| Al-D | mg/L | 0.0038 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | | 0.0060 | 0.0030 | 0.0058 | 0.0054 | <0.0030 | 0.1 |
| As-D | mg/L | 0.00259 | 0.00277 | 0.00298 | 0.00230 | 0.00215 | | 0.00028 | 0.00187 | 0.00148 | 0.00119 | 0.00483 | |
| Ba-D | mg/L | 0.0188 | 0.0191 | 0.0198 | 0.0190 | 0.0191 | | 0.0187 | 0.0179 | 0.0178 | 0.0200 | 0.0195 | |
| B-D | mg/L | 0.630 | 0.614 | 0.669 | 0.575 | 0.582 | | 0.340 | 0.518 | 0.410 | 0.530 | 0.590 | |
| Cd-D | mg/L | 0.0000050 | <0.0000050 | 0.0000050 | <0.0000050 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.0001702 |
| Ca-D | mg/L | 209 | 215 | 224 | 218 | 192 | | 154 | 184 | 156 | 201 | 244 | |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-D | mg/L | 0.00161 | 0.00144 | 0.00132 | 0.00123 | 0.00119 | | 0.00104 | 0.00133 | 0.00101 | 0.00185 | 0.00152 | |
| Cu-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | 0.00060 | <0.00020 | 0.00023 | <0.00020 | <0.00020 | |
| Hard-D | mg/L | 593 | 605 | 635 | 613 | 546 | | 449 | 525 | 450 | 583 | 694 | |
| Fe-D | mg/L | 1.10 | 1.04 | 1.21 | 1.33 | 1.17 | | 0.0612 | 0.762 | 0.665 | 0.529 | 1.96 | 0.35 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Mg-D | mg/L | 17.2 | 16.5 | 18.2 | 16.6 | 16.1 | | 15.3 | 16.0 | 15.1 | 19.7 | 20.8 | |
| Mn-D | mg/L | 0.436 | 0.410 | 0.382 | 0.341 | 0.315 | | 0.0826 | 0.290 | 0.193 | 0.211 | 0.441 | |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | 0.0000025 | <0.0000020 | <0.0000020 | <0.0000019 | |
| Mo-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Ni-D | mg/L | 0.0028 | 0.0024 | 0.0021 | 0.0020 | 0.0020 | | 0.0049 | 0.0049 | 0.0030 | 0.0058 | 0.0035 | |
| K-D | mg/L | 2.28 | 2.47 | 2.46 | 2.39 | 2.34 | | 2.01 | 2.28 | 2.07 | 2.22 | 2.53 | |
| S-D | mg/L | 211 | 213 | 210 | 185 | 168 | | 140 | 163 | 139 | 200 | 234 | |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | | 0.00018 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Si-D | mg/L | 3.00 | 3.09 | 3.08 | 3.28 | 2.89 | | 2.19 | 2.64 | 2.43 | 2.71 | 3.21 | |
| Na-D | mg/L | 97.3 | 93.0 | 104 | 95.7 | 92.2 | | 58.0 | 80.2 | 67.0 | 78.9 | 98.6 | |
| Sr-D | mg/L | 1.96 | 2.08 | 1.95 | 1.73 | 1.73 | | 1.39 | 1.61 | 1.49 | 1.98 | 2.37 | |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | |

WQO are displayed for comparison purposes only.

# Table 22
# 2019-2020 Annual Report

| EMS ID. | | E292131 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Seep into Long Lake | | | | | | | | | |
| Site Name | | LLSM | | | | | | | | | WQO-Max |
| Date | | 01-Apr-19 | 06-May-19 | 11-Jun-19 | July - Oct | 25-Nov-19 | 04-Dec-19 | 09-Jan-20 | 05-Feb-20 | 02-Mar-20 | |
| Parameter | | | | | | | | | | | |
| SO4-D | mg/L | 462 | 389 | 421 | No Flow | 280 | 350 | 330 | 470 | 580 | |
| TSS | mg/L | <16 | <4.0 | <4.0 | | <4.0 | <4.0 | 3.2 | 5.2 | 1.2 | 25 |
| Alk-T | mg/L | 221 | 198 | 240 | | 140 | 160 | 110 | 190 | 220 | |
| Acidity83 | mg/L | 13.3 | 1.6 | 3.5 | | 7.2 | 4.2 | 1.7 | 7.5 | 5.0 | |
| Al-T | mg/L | 0.0034 | 0.0111 | <0.0030 | | 0.127 | 0.0217 | 0.259 | 0.0689 | 0.0139 | |
| As-T | mg/L | 0.00074 | 0.00080 | 0.00122 | | 0.00065 | 0.00043 | 0.00063 | 0.00072 | 0.00118 | 0.005 |
| Ba-T | mg/L | 0.0184 | 0.0185 | 0.0188 | | 0.0164 | 0.0169 | 0.0162 | 0.0204 | 0.0192 | 5 |
| B-T | mg/L | 0.575 | 0.472 | 0.497 | | 0.293 | 0.340 | 0.307 | 0.448 | 0.564 | |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000012 | |
| Ca-T | mg/L | 191 | 166 | 184 | | 138 | 140 | 127 | 183 | 216 | |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-T | mg/L | 0.00159 | 0.00104 | 0.00129 | | 0.00141 | 0.00070 | 0.00182 | 0.00102 | 0.00111 | 0.11 |
| Cu-T | mg/L | <0.00050 | <0.00050 | <0.00050 | | 0.00198 | 0.00086 | 0.00294 | 0.00089 | <0.00050 | 0.00482 |
| Hard-T | mg/L | 542 | 469 | 521 | | 399 | 406 | 372 | 527 | 615 | |
| Fe-T | mg/L | 0.502 | 0.492 | 0.787 | | 0.429 | 0.251 | 0.572 | 0.598 | 0.684 | 1 |
| Pb-T | mg/L | <0.00020 | <0.00020 | 0.00131 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.01763 |
| Mg-T | mg/L | 15.9 | 13.4 | 15.1 | | 13.2 | 13.6 | 13.2 | 17.3 | 18.7 | |
| Mn-T | mg/L | 0.338 | 0.218 | 0.312 | | 0.0958 | 0.101 | 0.0927 | 0.0979 | 0.206 | 0.8706 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | 0.00001 |
| Mo-T | mg/L | <0.0010 | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 2 |
| Ni-T | mg/L | 0.0030 | 0.0020 | 0.0022 | | 0.0051 | 0.0025 | 0.0049 | 0.0035 | 0.0039 | 0.025 |
| K-T | mg/L | 2.21 | 2.10 | 2.15 | | 1.94 | 1.98 | 1.73 | 2.02 | 2.26 | |
| S-T | mg/L | 181 | 157 | 161 | | 122 | 127 | 114 | 172 | 212 | |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 | | 0.00017 | 0.00015 | 0.00013 | 0.00011 | <0.00010 | |
| Si-T | mg/L | 3.08 | 2.69 | 2.42 | | 2.50 | 2.51 | 2.71 | 2.73 | 2.89 | |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.0001 |
| Na-T | mg/L | 91.4 | 67.6 | 87.3 | | 49.6 | 50.4 | 45.1 | 70.2 | 89.4 | |
| Sr-T | mg/L | 1.68 | 1.59 | 1.64 | | 1.17 | 1.25 | 1.06 | 1.76 | 1.83 | |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | 0.0052 | <0.0050 | <0.0050 | 0.033 |
| Al-D | mg/L | <0.0030 | 0.0031 | 0.0037 | | 0.0159 | 0.0079 | 0.0209 | 0.0073 | 0.0036 | 0.1 |
| As-D | mg/L | 0.00073 | 0.00063 | 0.00133 | | 0.00050 | 0.00040 | 0.00039 | 0.00042 | 0.00114 | |
| Ba-D | mg/L | 0.0178 | 0.0184 | 0.0188 | | 0.0162 | 0.0154 | 0.0163 | 0.0215 | 0.0186 | |
| B-D | mg/L | 0.565 | 0.474 | 0.608 | | 0.328 | 0.344 | 0.295 | 0.481 | 0.528 | |
| Cd-D | mg/L | 0.0000060 | <0.0000050 | 0.0000060 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000010 | 0.0001702 |
| Ca-D | mg/L | 186 | 161 | 202 | | 137 | 140 | 116 | 187 | 215 | |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | | 0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-D | mg/L | 0.00170 | 0.00099 | 0.00134 | | 0.00133 | 0.00070 | 0.00173 | 0.00099 | 0.00104 | |
| Cu-D | mg/L | <0.00020 | 0.00027 | <0.00020 | | 0.00127 | 0.00067 | 0.00163 | 0.00042 | 0.00027 | |
| Hard-D | mg/L | 524 | 457 | 575 | | 395 | 407 | 341 | 542 | 614 | |
| Fe-D | mg/L | 0.401 | 0.337 | 0.783 | | 0.248 | 0.211 | 0.242 | 0.207 | 0.460 | 0.35 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Mg-D | mg/L | 14.7 | 13.2 | 17.3 | | 12.9 | 13.9 | 12.3 | 18.1 | 18.6 | |
| Mn-D | mg/L | 0.336 | 0.207 | 0.316 | | 0.0933 | 0.101 | 0.0890 | 0.0960 | 0.197 | |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000020 | 0.0000053 | <0.0000020 | <0.0000020 | <0.0000019 | |
| Mo-D | mg/L | <0.0010 | <0.0010 | 0.0011 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Ni-D | mg/L | 0.0030 | 0.0019 | 0.0022 | | 0.0044 | 0.0025 | 0.0047 | 0.0035 | 0.0035 | |
| K-D | mg/L | 2.11 | 2.09 | 2.44 | | 1.92 | 1.89 | 1.68 | 2.14 | 2.26 | |
| S-D | mg/L | 178 | 156 | 195 | | 122 | 123 | 105 | 183 | 199 | |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | | 0.00017 | 0.00014 | 0.00011 | 0.00014 | <0.00010 | |
| Si-D | mg/L | 3.02 | 2.66 | 2.89 | | 2.50 | 2.44 | 2.28 | 2.73 | 2.70 | |
| Na-D | mg/L | 87.7 | 69.3 | 99.9 | | 47.3 | 53.2 | 42.2 | 73.2 | 89.5 | |
| Sr-D | mg/L | 1.58 | 1.53 | 1.80 | | 1.23 | 1.23 | 1.02 | 1.80 | 2.04 | |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | |

WQO are displayed for comparison purposes only.

# Table 23
# 2019-2020 Annual Report

| EMS ID | | E292109 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Stream 1 - Downstream of the 7SSD discharge, prior to entering the Lower Wetland Outlet | | | | | | | | |
| Site Name | | 7S | | | | | | | | |
| Date | | 01-Apr-19 | 06-May-19 | Jun - Oct | 06-Nov-19 | 04-Dec-19 | 09-Jan-20 | 10-Feb-20 | 02-Mar-20 | WQG-Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | 7.3 | 5.7 | | 4.7 | 4.1 | 3.9 | 4.3 | 6.0 | |
| TSS | mg/L | <16 | <4.0 | | <4.0 | <4.0 | <1.0 | 1.6 | 1.6 | 26.5 |
| Alk-T | mg/L | 14.9 | 17.7 | | 22 | 14 | 9.2 | 9.9 | 12 | |
| Acidity83 | mg/L | 1.10 | <1.0 | | 1.3 | <1.0 | <1.0 | <1.0 | <1.0 | |
| Al-T | mg/L | 0.0301 | 0.0196 | | 0.0182 | 0.0250 | 0.0482 | 0.0309 | 0.0264 | |
| As-T | mg/L | <0.00010 | 0.00011 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.005 |
| Ba-T | mg/L | 0.0017 | 0.0018 | | 0.0019 | 0.0014 | 0.0014 | 0.0012 | 0.0012 | |
| B-T | mg/L | <0.050 | <0.050 | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | |
| Cd-T | mg/L | <0.000010 | <0.000010 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | |
| Ca-T | mg/L | 5.48 | 5.99 | | 6.51 | 4.86 | 3.81 | 3.69 | 4.10 | |
| Cr-T | mg/L | <0.0010 | <0.0010 | | 0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-T | mg/L | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.11 |
| Cu-T | mg/L | <0.00050 | 0.00051 | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00482 |
| Hard-T | mg/L | 19.2 | 20.1 | | 22.5 | 16.8 | 13.3 | 12.9 | 14.0 | |
| Fe-T | mg/L | 0.017 | <0.010 | | 0.012 | 0.014 | 0.014 | <0.010 | <0.010 | 1 |
| Pb-T | mg/L | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.01763 |
| Mg-T | mg/L | 1.34 | 1.25 | | 1.51 | 1.13 | 0.915 | 0.889 | 0.921 | |
| Mn-T | mg/L | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.8706 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | |
| Mo-T | mg/L | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 2 |
| Ni-T | mg/L | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| K-T | mg/L | 0.112 | 0.12 | | 0.093 | 0.086 | 0.084 | 0.098 | 0.079 | |
| S-T | mg/L | <3.0 | <3.0 | | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 | |
| Se-T | mg/L | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Si-T | mg/L | 4.4 | 4.56 | | 4.77 | 4.22 | 3.90 | 3.68 | 3.72 | |
| Ag-T | mg/L | <0.000020 | <0.000020 | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.0001 |
| Na-T | mg/L | 1.75 | 1.74 | No Flow | 2.03 | 1.65 | 1.51 | 1.35 | 1.41 | |
| Sr-T | mg/L | 0.0227 | 0.0243 | | 0.0261 | 0.0196 | 0.0154 | 0.0147 | 0.0168 | |
| Zn-T | mg/L | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.033 |
| Al-D | mg/L | 0.0167 | 0.0211 | | 0.0162 | 0.0209 | 0.0358 | 0.0236 | 0.0249 | 0.1 |
| As-D | mg/L | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Ba-D | mg/L | 0.0014 | 0.0017 | | 0.0018 | 0.0013 | 0.0013 | 0.0011 | 0.0012 | |
| B-D | mg/L | <0.050 | <0.050 | | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | |
| Cd-D | mg/L | <0.0000050 | <0.0000050 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.0001702 |
| Ca-D | mg/L | 5.16 | 6.13 | | 6.13 | 4.77 | 3.71 | 3.33 | 4.10 | |
| Cr-D | mg/L | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-D | mg/L | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Cu-D | mg/L | 0.00023 | 0.00023 | | 0.00024 | 0.00030 | 0.00041 | 0.00030 | 0.00024 | |
| DOC | mg/L | 1.30 | 1.20 | | 1.7 | 1.7 | 1.8 | 2.0 | 1.2 | |
| Hard-D | mg/L | 17.8 | 20.7 | | 21.6 | 16.8 | 13.1 | 11.6 | 14.4 | |
| Fe-D | mg/L | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | 0.0100 | <0.0050 | <0.0050 | 0.35 |
| Pb-D | mg/L | <0.00020 | <0.00020 | | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Mg-D | mg/L | 1.2 | 1.3 | | 1.51 | 1.18 | 0.926 | 0.800 | 1.02 | |
| Mn-D | mg/L | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | |
| Mo-D | mg/L | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Ni-D | mg/L | <0.0010 | <0.0010 | | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| K-D | mg/L | 0.105 | 0.125 | | 0.070 | 0.084 | 0.078 | 0.081 | 0.079 | |
| S-D | mg/L | <3.0 | <3.0 | | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 | |
| Se-D | mg/L | <0.00010 | <0.00010 | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Si-D | mg/L | 4.01 | 4.78 | | 4.16 | 4.06 | 3.40 | 3.03 | 3.74 | |
| Na-D | mg/L | 1.66 | 1.74 | | 2.00 | 1.69 | 1.38 | 1.25 | 1.48 | |
| Sr-D | mg/L | 0.0224 | 0.0236 | | 0.0244 | 0.0179 | 0.0150 | 0.0126 | 0.0162 | |
| Zn-D | mg/L | <0.0050 | <0.0050 | | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | |

# Table 24
# 2019-2020 Annual Report

| EMS ID | | | E292069 | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | | Settling Pond at 7S - Permitted discharge location for the 7-South Mining Operation | | | | | | Permit Limits |
| Site Name | | | 7SSD - No discharge occurred this monitoring year | | | | | | |
| Date | | 01-Apr-19 | 06-May-19 | 15-Jul-19 | 12-Aug-19 | 09-Sep-19 | 01-Oct-19 | 09-Jan-20 | 7SSD |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 97.3 | 29.6 | 21 | 22 | 23 | 29 | 21 | 500 |
| TSS | mg/L | <16 | <4.0 | 5.2 | 6.4 | 14.4 | 4.8 | <1.0 | 25 |
| Alk-T | mg/L | 146 | 118 | 98 | 97 | 88 | 190 | 170 | |
| Acidity83 | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | |
| Al-T | mg/L | 0.0128 | 0.0199 | 0.0365 | 0.0199 | 0.0160 | 0.0097 | 0.0230 | |
| As-T | mg/L | 0.00163 | 0.00265 | 0.00934 | 0.00966 | 0.00680 | 0.00260 | 0.00102 | |
| Ba-T | mg/L | 0.0111 | 0.0058 | 0.0033 | 0.0033 | 0.0026 | 0.0086 | 0.0112 | |
| B-T | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | |
| Ca-T | mg/L | 63.4 | 34.2 | 22.7 | 20.6 | 15.3 | 55.0 | 51.3 | |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Cu-T | mg/L | 0.00075 | 0.00088 | 0.00113 | 0.00101 | 0.00104 | 0.00061 | 0.00051 | |
| Hard-T | mg/L | 225 | 127 | 102 | 101 | 87.6 | 212 | 178 | |
| Fe-T | mg/L | 0.057 | 0.046 | 0.067 | 0.035 | 0.030 | 0.040 | 0.149 | |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Mg-T | mg/L | 16.1 | 10.1 | 11.1 | 12.1 | 12.0 | 18.1 | 12.1 | |
| Mn-T | mg/L | 0.0440 | 0.0388 | 0.0901 | 0.0472 | 0.0346 | 0.0247 | 0.335 | |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000031 | 0.0000027 | 0.0000027 | |
| Mo-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Ni-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| K-T | mg/L | 0.672 | 0.464 | 0.936 | 1.01 | 0.947 | 0.787 | 0.459 | |
| S-T | mg/L | 34.5 | 9.0 | 6.8 | 7.2 | 7.4 | 11.1 | 6.7 | |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | |
| Si-T | mg/L | 4.80 | 3.57 | 5.36 | 6.88 | 3.82 | 3.25 | 4.90 | |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | |
| Na-T | mg/L | 9.62 | 5.78 | 7.12 | 7.49 | 7.70 | 8.54 | 6.85 | |
| Sr-T | mg/L | 0.246 | 0.164 | 0.130 | 0.132 | 0.118 | 0.253 | 0.188 | |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | |
| Al-D | mg/L | <0.0030 | 0.0033 | 0.0075 | 0.0049 | 0.0048 | <0.0030 | <0.0030 | 0.1 |
| As-D | mg/L | 0.00142 | 0.00259 | 0.00912 | 0.00923 | 0.00652 | 0.00238 | 0.00082 | |
| Ba-D | mg/L | 0.0103 | 0.0055 | 0.0028 | 0.0030 | 0.0022 | 0.0094 | 0.0105 | |
| B-D | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | |
| Cd-D | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000045 |
| Ca-D | mg/L | 65.4 | 34.1 | 22.3 | 20.1 | 15.8 | 51.9 | 46.6 | |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Co-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Cu-D | mg/L | 0.00059 | 0.00083 | 0.00099 | 0.00086 | 0.00088 | 0.00057 | 0.00037 | 0.014 |
| DOC | mg/L | 2.9 | 3.0 | 4.3 | 4.4 | 4.3 | 3.3 | <0.50 | |
| Hard-D | mg/L | 224 | 128 | 101 | 98.5 | 89.9 | 204 | 161 | |
| Fe-D | mg/L | 0.0149 | 0.0140 | 0.0307 | 0.0142 | 0.0073 | 0.0116 | 0.0195 | 0.35 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | |
| Mg-D | mg/L | 14.8 | 10.4 | 10.9 | 11.7 | 12.3 | 18.1 | 10.8 | |
| Mn-D | mg/L | 0.0285 | 0.0064 | 0.0526 | 0.0067 | 0.0031 | 0.0177 | 0.398 | |
| Hg-D | mg/L | 0.0000041 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000051 | <0.0000020 | <0.0000020 | |
| Mo-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| Ni-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | |
| K-D | mg/L | 0.624 | 0.465 | 0.972 | 0.972 | 0.927 | 0.780 | 0.371 | |
| S-D | mg/L | 30.5 | 8.9 | 7.4 | 6.7 | 6.9 | 11.2 | 4.9 | |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.016 |
| Si-D | mg/L | 4.68 | 3.52 | 5.34 | 6.47 | 3.96 | 3.38 | 4.83 | |
| Na-D | mg/L | 8.55 | 5.72 | 7.12 | 7.26 | 8.03 | 8.56 | 7.01 | |
| Sr-D | mg/L | 0.239 | 0.154 | 0.123 | 0.127 | 0.118 | 0.256 | 0.176 | |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | |

# Table 25
# 2019-2020 Annual Report

## Settling Pond # 4 - Daily Total Suspended Solid Results (WD)

**EMS ID** E207409

**Site Description** Settling Pond #4 (WD)

**TSS Permit Limit: 25.0 mg/L**

| Date | TSS | Date | TSS | Date | TSS | Date | TSS | Date | TSS |
|---|---|---|---|---|---|---|---|---|---|
| 1-Apr-19 | <4.0 | 5-May-19 | <4.0 | 11-Jun-19 | 4.8 | 20-Sep-19 | 4.4 | 21-Oct-19 | 4.0 |
| 2-Apr-19 | <4.0 | 6-May-19 | 2.3 | 12-Jun-19 | 8.8 | 21-Sep-19 | 4.0 | 22-Oct-19 | <4.0 |
| 3-Apr-19 | 4.0 | 7-May-19 | 1.1 | 13-Jun-19 | <4.0 | 22-Sep-19 | 4.8 | 23-Oct-19 | <4.0 |
| 4-Apr-19 | 6.4 | 8-May-19 | <4.3 | 14-Jun-19 | <4.0 | 23-Sep-19 | 5.2 | 24-Oct-19 | <4.0 |
| 5-Apr-19 | 4.8 | 9-May-19 | 3.3 | 15-Jun-19 | <4.0 | 24-Sep-19 | 7.2 | 25-Oct-19 | <4.0 |
| 6-Apr-19 | 4.8 | 10-May-19 | 1.6 | 16-Jun-19 | <4.0 | 25-Sep-19 | 4.0 | 26-Oct-19 | <4.0 |
| 7-Apr-19 | 12.8 | 11-May-19 | 1.3 | 17-Jun-19 | <4.0 | 26-Sep-19 | <4.0 | 27-Oct-19 | 5.2 |
| 8-Apr-19 | <4.0 | 12-May-19 | 2.1 | 18-Jun-19 | <4.0 | 27-Sep-19 | <4.0 | 28-Oct-19 | <4.0 |
| 9-Apr-19 | <4.0 | 13-May-19 | 3.5 | 19-Jun-19 | <4.0 | 28-Sep-19 | <4.0 | 29-Oct-19 | <4.0 |
| 10-Apr-19 | 6.4 | 14-May-19 | <4.0 | 20-Jun-19 | 4.4 | 29-Sep-19 | <4.0 | 30-Oct-19 | 4.0 |
| 11-Apr-19 | <4.0 | 15-May-19 | <4.0 | 21-Jun-19 | <4.0 | 30-Sep-19 | <4.0 | 31-Oct-19 | 1.1 |
| 12-Apr-19 | <4.0 | 16-May-19 | <4.0 | 22-Jun-19 | <4.0 | 1-Oct-19 | <4.0 | 4-Nov-19 | <4.0 |
| 13-Apr-19 | <4.0 | 17-May-19 | <4.0 | 23-Jun-19 | <4.0 | 2-Oct-19 | <4.0 | 12-Nov-19 | 4.4 |
| 14-Apr-19 | <4.0 | 18-May-19 | <4.0 | 24-Jun-19 | <4.0 | 3-Oct-19 | <4.0 | 18-Nov-19 | <4.0 |
| 15-Apr-19 | 5.1 | 19-May-19 | <4.0 | 26-Jun-19 | <4.0 | 4-Oct-19 | <4.0 | 25-Nov-19 | <4.0 |
| 16-Apr-19 | 5.7 | 20-May-19 | <4.0 | 3-Jul-19 | <4.0 | 5-Oct-19 | <4.0 | 4-Dec-19 | <4.0 |
| 17-Apr-19 | 5.9 | 21-May-19 | 1.9 | 10-Jul-19 | <4.0 | 6-Oct-19 | <4.0 | 9-Dec-19 | <16 |
| 18-Apr-19 | <4.0 | 22-May-19 | 1.7 | 12-Aug-19 | 5.6 | 7-Oct-19 | <4.0 | 16-Dec-19 | 2.4 |
| 19-Apr-19 | <4.0 | 23-May-19 | <1.0 | 15-Aug-19 | <4.0 | 8-Oct-19 | <4.0 | 23-Dec-19 | 2.4 |
| 20-Apr-19 | 6.0 | 24-May-19 | 1.4 | 16-Aug-19 | 6.8 | 9-Oct-19 | <4.0 | 31-Dec-19 | <1.0 |
| 21-Apr-19 | 5.6 | 25-May-19 | 2.7 | 17-Aug-19 | <4.0 | 10-Oct-19 | <4.0 | 6-Jan-20 | 3.6 |
| 22-Apr-19 | 5.2 | 26-May-19 | <1.0 | 18-Aug-19 | <4.0 | 11-Oct-19 | <4.0 | 15-Jan-20 | 4.0 |
| 23-Apr-19 | 7.2 | 27-May-19 | <1.0 | 11-Sep-19 | 1.7 | 12-Oct-19 | <4.0 | 20-Jan-20 | <1.0 |
| 24-Apr-19 | <4.0 | 28-May-19 | <1.0 | 12-Sep-19 | 1.5 | 13-Oct-19 | <4.0 | 27-Jan-20 | 2.4 |
| 25-Apr-19 | <4.0 | 29-May-19 | 1.5 | 13-Sep-19 | 1.2 | 14-Oct-19 | 4.4 | 3-Feb-20 | 3.6 |
| 26-Apr-19 | <4.0 | 5-Jun-19 | <4.0 | 14-Sep-19 | 1.4 | 15-Oct-19 | 3.3 | 10-Feb-20 | 1.6 |
| 27-Apr-19 | 4.4 | 6-Jun-19 | 4.4 | 15-Sep-19 | 1.1 | 16-Oct-19 | 2.2 | 18-Feb-20 | 1.6 |
| 28-Apr-19 | <4.0 | 7-Jun-19 | <4.0 | 16-Sep-19 | <4.0 | 17-Oct-19 | <4.0 | 2-Mar-20 | 2.4 |
| 2-May-19 | <4.0 | 8-Jun-19 | <4.0 | 17-Sep-19 | <4.0 | 18-Oct-19 | <4.0 | 9-Mar-20 | 3.2 |
| 3-May-19 | 5.2 | 9-Jun-19 | <4.0 | 18-Sep-19 | <4.0 | 19-Oct-19 | <4.0 | 16-Mar-20 | 6.0 |
| 4-May-19 | 4.4 | 10-Jun-19 | <4.0 | 19-Sep-19 | <4.0 | 20-Oct-19 | <4.0 | 24-Mar-20 | 2.8 |
| | | | | | | | | 30-Mar-20 | 2.8 |

**Notes:** TSS composite sample is required: monthly - no decant flow, weekly when max daily flow < 0.054$m^3/s$ & (until November 1st 2019) daily when max daily flow > 0.054$m^3/s$

Values highlighted in **bold red** indicate a permit limit exceedance

**PNC** (Permit Non-Compliance) indicates a required TSS sample was not collected

Permit amendment occurred on November 1, 2019 removing the daily composite TSS sample requirement

# Table 26
# 2019-2020 Annual Report

## Settling Pond # 1 - Total Suspended Solid Results (SPD)

**EMS ID**

**Site Description** **Settling Pond #1 (SPD)**

**TSS Permit Limit: 25.0 mg/L**

| Date | TSS mg/L | Date | TSS mg/L | Date | TSS mg/L | Date | TSS mg/L | Date | TSS mg/L |
|---|---|---|---|---|---|---|---|---|---|
| 1-Apr-19 | <4.0 | 2-May-19 | 4.4 | 6-Aug-19 | <4.0 | 9-Oct-19 | <4.0 | 9-Dec-19 | <16 |
| 2-Apr-19 | <4.0 | 3-May-19 | <4.0 | 12-Aug-19 | 4.4 | 10-Oct-19 | <4.0 | 16-Dec-19 | <1.0 |
| 3-Apr-19 | <4.0 | 4-May-19 | <4.0 | 19-Aug-19 | <4.0 | 11-Oct-19 | <4.0 | 23-Dec-19 | 2.8 |
| 4-Apr-19 | <4.0 | 5-May-19 | <4.0 | 9-Sep-19 | <4.0 | 12-Oct-19 | <4.0 | 31-Dec-19 | <1.0 |
| 5-Apr-19 | <4.0 | 6-May-19 | 2.0 | 13-Sep-19 | 1.9 | 13-Oct-19 | 4.4 | 6-Jan-20 | 1.2 |
| 6-Apr-19 | <4.0 | 6-May-19 | <4.0 | 14-Sep-19 | 2.8 | 14-Oct-19 | <4.0 | 15-Jan-20 | 3.6 |
| 7-Apr-19 | <4.0 | 7-May-19 | <1.0 | 15-Sep-19 | 1.1 | 15-Oct-19 | <4.0 | 20-Jan-20 | <1.0 |
| 8-Apr-19 | <4.0 | 8-May-19 | <6.0 | 16-Sep-19 | <4.0 | 16-Oct-19 | 3.6 | 27-Jan-20 | 2.8 |
| 9-Apr-19 | <4.0 | 9-May-19 | <1.0 | 17-Sep-19 | 1.8 | 17-Oct-19 | 3.7 | 3-Feb-20 | <1.0 |
| 10-Apr-19 | <4.0 | 10-May-19 | <1.0 | 18-Sep-19 | <4.0 | 18-Oct-19 | 4.0 | 10-Feb-20 | 2.8 |
| 11-Apr-19 | <4.0 | 11-May-19 | 1.9 | 19-Sep-19 | <4.0 | 19-Oct-19 | <4.0 | 18-Feb-20 | <1.0 |
| 12-Apr-19 | <4.0 | 12-May-19 | 1.5 | 20-Sep-19 | <4.0 | 20-Oct-19 | <4.0 | 2-Mar-20 | <1.0 |
| 13-Apr-19 | <4.0 | 13-May-19 | 2.3 | 21-Sep-19 | 4.4 | 21-Oct-19 | <4.0 | 9-Mar-20 | 2.4 |
| 14-Apr-19 | <4.0 | 14-May-19 | <4.0 | 22-Sep-19 | 5.2 | 22-Oct-19 | <4.0 | 16-Mar-20 | <1.0 |
| 15-Apr-19 | 3.8 | 15-May-19 | <4.0 | 23-Sep-19 | <4.0 | 23-Oct-19 | <4.0 | 24-Mar-20 | <1.0 |
| 16-Apr-19 | 2.2 | 16-May-19 | <4.0 | 24-Sep-19 | 6.4 | 24-Oct-19 | <4.0 | 30-Mar-20 | <1.0 |
| 17-Apr-19 | 1.6 | 17-May-19 | <4.0 | *25-Sep-19* | ***27.6*** | 25-Oct-19 | <4.0 | | |
| 18-Apr-19 | <4.0 | 18-May-19 | <4.0 | 27-Sep-19 | <4.0 | 26-Oct-19 | <4.0 | | |
| 19-Apr-19 | <4.0 | 19-May-19 | <4.0 | 28-Sep-19 | <4.0 | 27-Oct-19 | <4.0 | | |
| 20-Apr-19 | <4.0 | 20-May-19 | <4.0 | 29-Sep-19 | <4.0 | 28-Oct-19 | <4.0 | | |
| 21-Apr-19 | <4.0 | 21-May-19 | 1.9 | 30-Sep-19 | <4.0 | 29-Oct-19 | <4.0 | | |
| 22-Apr-19 | <4.0 | 22-May-19 | 1.6 | 1-Oct-19 | <4.0 | 30-Oct-19 | <4.0 | | |
| 23-Apr-19 | <4.0 | 23-May-19 | 1.2 | 2-Oct-19 | <4.0 | 31-Oct-19 | <4.0 | | |
| 24-Apr-19 | <4.0 | 24-May-19 | <1.0 | 4-Oct-19 | <4.0 | 6-Nov-19 | <4.0 | | |
| 25-Apr-19 | <4.0 | 25-May-19 | <1.0 | 5-Oct-19 | <4.0 | 12-Nov-19 | <4.0 | | |
| 26-Apr-19 | <4.0 | 26-May-19 | 1.3 | 6-Oct-19 | <4.0 | 18-Nov-19 | <4.0 | | |
| 27-Apr-19 | <4.0 | 11-Jun-19 | <4.0 | 7-Oct-19 | <4.0 | 25-Nov-19 | <4.0 | | |
| 28-Apr-19 | <4.0 | 10-Jul-19 | 4.0 | 8-Oct-19 | <4.0 | 4-Dec-19 | 4.8 | | |

**Notes:** TSS composite sample is required: monthly - no decant flow, weekly when max daily flow < 0.046$m^3$/s & (until November 1st 2019) daily when max daily flow > 0.046$m^3$/s

Values highlighted in **bold red** indicate a permit limit exceedance. *(September 25, 2019 Beaver activity)*

**PNC** (Permit Non-Compliance) indicates a required TSS sample was not collected.

Permit amendment occurred on November 1, 2019 removing the daily composite TSS sample requirement

# Table 27
# 2019-2020 Annual Report

**EMS ID** **E207409**

**DISCHARGE FROM SETTLING POND # 4 (WD)**

| Date | April | April | May | May | June | June | July | July | August | August | September | September |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) |
| **1** | **0.1960** | 0.1586 | **0.1960** | 0.1671 | 0.0000 | 0.0000 | 0.0200 | 0.0118 | 0.0000 | 0.0000 | 0.0180 | 0.0050 |
| **2** | **0.1810** | 0.1628 | **0.1770** | 0.1563 | 0.0000 | 0.0000 | 0.0210 | 0.0057 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **3** | **0.1800** | 0.1605 | **0.1960** | 0.1816 | 0.0000 | 0.0000 | 0.0210 | 0.0060 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **4** | **0.1840** | 0.1709 | **0.2140** | 0.2027 | 0.0260 | 0.0075 | 0.0020 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **5** | **0.1940** | 0.1857 | **0.2160** | 0.2062 | 0.0260 | 0.0204 | 0.0000 | 0.0000 | 0.0050 | 0.0000 | 0.0000 | 0.0000 |
| **6** | **0.2010** | 0.1891 | **0.2160** | 0.1828 | 0.0280 | 0.0206 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| **7** | **0.2050** | 0.1984 | **0.2180** | 0.2061 | 0.0270 | 0.0177 | 0.0160 | 0.0030 | 0.0150 | 0.0050 | 0.0000 | 0.0000 |
| **8** | **0.2050** | 0.1928 | **0.2180** | 0.1954 | 0.0260 | 0.0173 | 0.0200 | 0.0140 | 0.0220 | 0.0130 | 0.0000 | 0.0000 |
| **9** | **0.2030** | 0.1848 | **0.2120** | 0.1889 | 0.0290 | 0.0208 | 0.0190 | 0.0040 | 0.0210 | 0.0160 | **0.0600** | 0.0170 |
| **10** | **0.1860** | 0.1800 | **0.2070** | 0.2011 | 0.0290 | 0.0208 | 0.0000 | 0.0000 | 0.0210 | 0.0050 | **0.0660** | 0.0590 |
| **11** | **0.1910** | 0.1673 | **0.2120** | 0.2078 | 0.0260 | 0.0169 | 0.0000 | 0.0000 | 0.0110 | 0.0020 | **0.0760** | 0.0660 |
| **12** | **0.1950** | 0.1854 | **0.2110** | 0.1981 | 0.0280 | 0.0189 | 0.0000 | 0.0000 | 0.0100 | 0.0010 | **0.0910** | 0.0820 |
| **13** | **0.2040** | 0.1996 | **0.1990** | 0.1718 | 0.0280 | 0.0184 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1300** | 0.1070 |
| **14** | **0.1910** | 0.1634 | **0.1860** | 0.1721 | 0.0300 | 0.0175 | 0.0180 | 0.0050 | 0.0100 | 0.0030 | **0.1430** | 0.1350 |
| **15** | **0.1610** | 0.1279 | **0.1770** | 0.1712 | 0.0270 | 0.0175 | 0.0220 | 0.0140 | 0.0170 | 0.0030 | **0.1320** | 0.1250 |
| **16** | **0.1680** | 0.1518 | **0.1920** | 0.1720 | 0.0270 | 0.0180 | 0.0190 | 0.0030 | 0.0000 | 0.0000 | **0.1450** | 0.1330 |
| **17** | **0.1710** | 0.1466 | **0.1920** | 0.1804 | 0.0280 | 0.0193 | 0.0000 | 0.0000 | 0.0100 | 0.0010 | **0.1500** | 0.1390 |
| **18** | **0.1850** | 0.1639 | **0.1920** | 0.1822 | 0.0260 | 0.0172 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1570** | 0.1400 |
| **19** | **0.2150** | 0.1988 | **0.1960** | 0.1894 | 0.0280 | 0.0178 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1700** | 0.1590 |
| **20** | **0.2190** | 0.2065 | **0.2020** | 0.1974 | 0.0270 | 0.0167 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1920** | 0.1820 |
| **tr** | **0.2190** | 0.2045 | **0.2000** | 0.1453 | 0.0250 | 0.0166 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1940** | 0.1890 |
| **22** | **0.2090** | 0.2027 | **0.1440** | 0.0654 | 0.0250 | 0.0162 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1940** | 0.1920 |
| **23** | **0.2160** | 0.2075 | **0.1690** | 0.1033 | 0.0270 | 0.0186 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1950** | 0.1920 |
| **24** | **0.2120** | 0.2009 | 0.0450 | 0.0322 | 0.0260 | 0.0162 | 0.0000 | 0.0000 | 0.0030 | 0.0000 | **0.1860** | 0.1720 |
| **25** | **0.1910** | 0.1678 | 0.0420 | 0.0313 | 0.0260 | 0.0131 | 0.0000 | 0.0000 | 0.0180 | 0.0110 | **0.1600** | 0.1490 |
| **26** | **0.2150** | 0.1968 | 0.0410 | 0.0296 | 0.0110 | 0.0019 | 0.0000 | 0.0000 | 0.0190 | 0.0040 | **0.1640** | 0.1560 |
| **27** | **0.2090** | 0.2035 | 0.0420 | 0.0099 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0090 | 0.0010 | **0.1740** | 0.1640 |
| **28** | **0.2080** | 0.1989 | 0.0160 | 0.0016 | 0.0120 | 0.0007 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1670** | 0.1530 |
| **29** | **0.2050** | 0.1751 | 0.0370 | 0.0152 | 0.0210 | 0.0134 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1460** | 0.1340 |
| **30** | **0.1830** | 0.1597 | 0.0370 | 0.0083 | 0.0190 | 0.0114 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | **0.1480** | 0.1380 |
| **31** | | | 0.0000 | 0.0000 | | | 0.0000 | 0.0000 | 0.0110 | 0.0020 | | |
| **Monthly Max** | 0.2190 | | 0.2180 | | 0.0300 | | 0.0220 | | 0.0220 | | 0.1086 | |
| **Monthly Avg** | | 0.1804 | | 0.1346 | | 0.0137 | | 0.0021 | | 0.0022 | | 0.0996 |

**P** = Permit Limit Exceedance

**Bold** = TSS composite sample is required: **monthly** - no decant flow, **weekly** when max daily flow < 0.054$m^3$/s & when max daily flow > 0.054$m^3$/s

**PNC** = Permit Non-compliance

# Table 28
# 2019-2020 Annual Report

**EMS ID** **E207409**

**DISCHARGE FROM SETTLING POND # 4 (WD)**

| Date | October | October | November | November | December | December | January | January | February | February | March | March |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) |
| **1** | **0.1460** | 0.1310 | 0.1220 | 0.0952 | 0.129 | 0.117 | 0.1540 | 0.0990 | 0.2380 | 0.1931 | 0.0900 | 0.0836 |
| **2** | **0.1510** | 0.1390 | 0.1100 | 0.0925 | 0.136 | 0.130 | 0.1110 | 0.0982 | 0.2270 | 0.2165 | 0.0990 | 0.0859 |
| **3** | **0.1580** | 0.1540 | 0.0990 | 0.0894 | 0.151 | 0.141 | 0.1540 | 0.0937 | 0.2150 | 0.1714 | 0.1050 | 0.0898 |
| **4** | **0.1580** | 0.1490 | 0.1180 | 0.0952 | 0.151 | 0.145 | 0.1700 | 0.1015 | 0.1810 | 0.1749 | 0.0910 | 0.0823 |
| **5** | **0.1490** | 0.1400 | 0.1220 | 0.0824 | 0.135 | 0.124 | 0.1870 | 0.1765 | 0.1880 | 0.1831 | 0.0960 | 0.0877 |
| **6** | **0.1440** | 0.1370 | 0.1080 | 0.0911 | 0.133 | 0.121 | 0.1630 | 0.1369 | 0.1800 | 0.1678 | 0.1120 | 0.0902 |
| **7** | **0.1500** | 0.1440 | 0.1000 | 0.0891 | 0.141 | 0.128 | 0.1970 | 0.1738 | 0.1590 | 0.1277 | 0.0940 | 0.0856 |
| **8** | **0.1700** | 0.1620 | 0.1120 | 0.0914 | 0.133 | 0.127 | 0.1980 | 0.1897 | 0.1530 | 0.1433 | 0.0920 | 0.0854 |
| **9** | **0.1680** | 0.1270 | 0.1460 | 0.1325 | 0.13 | 0.109 | 0.1840 | 0.1308 | 0.1480 | 0.1412 | 0.0920 | 0.0794 |
| **10** | **0.1310** | 0.1040 | 0.1380 | 0.1139 | 0.132 | 0.117 | 0.1590 | 0.1161 | 0.1430 | 0.1350 | 0.1070 | 0.0919 |
| **11** | **0.1330** | 0.1120 | 0.1160 | 0.0997 | 0.14 | 0.132 | 0.1360 | 0.1322 | 0.1440 | 0.1382 | 0.0980 | 0.0835 |
| **12** | **0.1460** | 0.1160 | 0.1350 | 0.1233 | 0.149 | 0.140 | 0.1340 | 0.1093 | 0.1450 | 0.1360 | 0.1120 | 0.0873 |
| **13** | **0.1540** | 0.1480 | 0.1250 | 0.0976 | 0.134 | 0.127 | 0.1210 | 0.0430 | 0.1330 | 0.1290 | 0.1190 | 0.0919 |
| **14** | **0.1540** | 0.1410 | 0.1070 | 0.0945 | 0.132 | 0.124 | 0.1300 | 0.0663 | 0.1310 | 0.1218 | 0.0910 | 0.0800 |
| **15** | **0.1400** | 0.1260 | 0.1350 | 0.1284 | 0.13 | 0.113 | 0.1320 | 0.0354 | 0.1320 | 0.1273 | 0.0850 | 0.0764 |
| **16** | **0.1340** | 0.1220 | 0.1320 | 0.1093 | 0.131 | 0.103 | 0.0510 | 0.0184 | 0.1270 | 0.1120 | 0.1010 | 0.0808 |
| **17** | **0.1120** | 0.1050 | 0.1700 | 0.1587 | 0.136 | 0.132 | 0.0600 | 0.0268 | 0.1120 | 0.0995 | 0.1010 | 0.0861 |
| **18** | **0.1320** | 0.1280 | 0.1600 | 0.1525 | 0.141 | 0.132 | 0.0770 | 0.0548 | 0.1130 | 0.0997 | 0.0970 | 0.0845 |
| **19** | **0.1390** | 0.1347 | 0.1490 | 0.1119 | 0.132 | 0.121 | 0.0560 | 0.0340 | 0.1060 | 0.0921 | 0.0910 | 0.0808 |
| **20** | **0.1380** | 0.1240 | 0.1210 | 0.0993 | 0.136 | 0.120 | 0.1350 | 0.0885 | 0.1160 | 0.0883 | 0.0900 | 0.0798 |
| **21** | **0.1390** | 0.1200 | 0.1290 | 0.1015 | 0.133 | 0.122 | 0.2000 | 0.1711 | 0.1210 | 0.0932 | 0.0980 | 0.0790 |
| **22** | **0.1230** | 0.0852 | 0.1150 | 0.0978 | 0.132 | 0.113 | 0.2000 | 0.1817 | 0.1120 | 0.0889 | 0.1170 | 0.0903 |
| **23** | **0.0770** | 0.0643 | 0.1480 | 0.1357 | 0.097 | 0.087 | 0.2210 | 0.1936 | 0.0920 | 0.0824 | 0.1060 | 0.0877 |
| **24** | **0.0860** | 0.0794 | 0.1450 | 0.1386 | 0.106 | 0.091 | 0.2200 | 0.2007 | 0.0870 | 0.0822 | 0.1120 | 0.0865 |
| **25** | **0.0940** | 0.0803 | 0.1300 | 0.1202 | 0.13 | 0.106 | 0.2050 | 0.1860 | 0.0890 | 0.0838 | 0.0900 | 0.0758 |
| **26** | **0.0710** | 0.0517 | 0.1320 | 0.1171 | 0.093 | 0.081 | 0.2120 | 0.2054 | 0.1110 | 0.0864 | 0.1030 | 0.0862 |
| **27** | **0.0630** | 0.0534 | 0.1390 | 0.1069 | 0.107 | 0.087 | 0.2060 | 0.1906 | 0.1240 | 0.0911 | 0.1160 | 0.0879 |
| **28** | **0.0620** | 0.0540 | 0.1470 | 0.1285 | 0.111 | 0.100 | 0.1990 | 0.1959 | 0.1310 | 0.1191 | 0.1290 | 0.1084 |
| **29** | **0.0620** | 0.0256 | 0.1260 | 0.1117 | 0.102 | 0.092 | 0.2010 | 0.1910 | 0.1110 | 0.0875 | 0.1210 | 0.0913 |
| **30** | 0.0480 | 0.0226 | 0.1200 | 0.1075 | 0.124 | 0.103 | 0.2000 | 0.1927 | | | 0.1030 | 0.0868 |
| **31** | **0.0910** | 0.0570 | | | 0.153 | 0.134 | 0.2290 | 0.2077 | | | 0.1090 | 0.0920 |
| **Monthly Max** | 0.1700 | | 0.1700 | | 0.1530 | | 0.2290 | | 0.2380 | | 0.1290 | |
| **Monthly Avg** | | 0.1077 | | 0.1104 | | 0.1167 | | 0.1304 | | 0.1246 | | 0.0860 |

**P** = Permit Limit Exceedance

**Bold** = TSS composite sample is required: **monthly** - no decant flow, **weekly** when max daily flow < 0.054$m^3$/s & (until November 1st 2019) when max daily flow > 0.054$m^3$/s

**PNC** = Permit Non-compliance

# Table 29
# 2019-2020 Annual Report

| EMS ID | E218582 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **DISCHARGE FROM SETTLING POND # 1 (SPD)** | | | | | | | | | | | | |
| **Date** | **April** | **April** | **May** | **May** | **June** | **June** | **July** | **July** | **August** | **August** | **September** | **September** |
| | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) |
| **1** | 0.0410 | 0.0306 | **0.0840** | 0.0679 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **2** | 0.0440 | 0.0316 | **0.0580** | 0.0323 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **3** | **0.0480** | 0.0252 | 0.0340 | 0.0221 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **4** | 0.0040 | 0.0020 | 0.0310 | 0.0214 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **5** | 0.0350 | 0.0107 | 0.0320 | 0.0192 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **6** | **0.0620** | 0.0490 | 0.0280 | 0.0178 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **7** | 0.0460 | 0.0322 | 0.0290 | 0.0172 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **8** | 0.0280 | 0.0193 | 0.0270 | 0.0164 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **9** | 0.0180 | 0.0082 | 0.0280 | 0.0173 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **10** | 0.0120 | 0.0079 | 0.0270 | 0.0155 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **11** | 0.0110 | 0.0086 | 0.0250 | 0.0143 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **12** | 0.0090 | 0.0047 | 0.0300 | 0.0166 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* |
| **13** | 0.0080 | 0.0054 | 0.0300 | 0.0229 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0030* | *0.0000* |
| **14** | 0.0210 | 0.0098 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0460* | *0.0020* |
| **15** | 0.0140 | 0.0057 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.1290* | *0.0390* |
| **16** | 0.0050 | 0.0034 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.1340* | *0.0500* |
| **17** | 0.0060 | 0.0027 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0420* | *0.0360* |
| **18** | **0.0470** | 0.0188 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.3390* | *0.0830* |
| **19** | **0.0470** | 0.0229 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0280* | *0.0240* |
| **20** | 0.0320 | 0.0142 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0280* | *0.0210* |
| **21** | 0.0260 | 0.0123 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0260* | *0.0240* |
| **22** | 0.0410 | 0.0219 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0310* | *0.0260* |
| **23** | 0.0420 | 0.0245 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0330* | *0.0280* |
| **24** | 0.0130 | 0.0041 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0240* | *0.0170* |
| **25** | 0.0050 | 0.0020 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0610* | *0.0350* |
| **26** | 0.0050 | 0.0015 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0640* | *0.0510* |
| **27** | 0.0030 | 0.0013 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0640* | *0.0550* |
| **28** | 0.0260 | 0.0055 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0600* | *0.0460* |
| **29** | 0.0440 | 0.0184 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0550* | *0.0420* |
| **30** | **0.0800** | 0.0439 | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0000* | *0.0520* | *0.0390* |
| **31** | | | *0.0000* | *0.0000* | | | *0.0000* | *0.0000* | *0.0000* | *0.0000* | | |
| **Monthly Max** | 0.0800 | | 0.0840 | | 0.0000 | | 0.0000 | | 0.0000 | | 0.0050 | |
| **Monthly Avg** | | 0.01494 | | 0.00971 | | 0.0000 | | 0.0000 | | 0.00000 | | 0.00360 |

***Beaver dam / activity from May to November 12th, 2019. Obstructions and beaver activity caused many anomalous readings on sensor. Flow rate was zero for most of this period, difficult to calculated when flowing.***

**PNC** = Permit Non-compliance

**Bold** = TSS composite sample is required: **monthly** - no decant flow, **weekly** when max daily flow < 0.046$m^3$/s & **daily** when max daily flow > 0.046$m^3$/s

**No Flow=** NF

# Table 30
# 2019-2020 Annual Report

| EMS ID | E218582 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DISCHARGE FROM SETTLING POND # 1 (SPD) | | | | | | | | | | | | |
| **Date** | **October** | **October** | **November** | **November** | **December** | **December** | **January** | **January** | **February** | **February** | **March** | **March** |
| | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) | Max. (m3/s) | Daily (m3/s) |
| **1** | *0.0580* | *0.0400* | *0.0640* | *0.0390* | 0.0470 | 0.0010 | 0.0989 | 0.0877 | 0.1667 | 0.1279 | 0.0250 | 0.0250 |
| **2** | *0.0680* | *0.0600* | *0.0620* | *0.0150* | 0.0120 | 0.0110 | 0.0989 | 0.0877 | 0.0764 | 0.0639 | 0.0250 | 0.0250 |
| **3** | *0.1470* | *0.0960* | *0.0550* | *0.0220* | 0.0239 | 0.0280 | 0.1970 | 0.1816 | 0.0639 | 0.0443 | 0.1970 | 0.0341 |
| **4** | *0.1460* | *0.1330* | *0.0530* | *0.0230* | 0.0510 | 0.0470 | 0.1970 | 0.1970 | 0.0639 | 0.0443 | 0.0989 | 0.0639 |
| **5** | *0.1270* | *0.1150* | *0.0190* | *0.0130* | 0.0310 | 0.0270 | 0.1970 | 0.1816 | 0.0639 | 0.0534 | 0.0534 | 0.0341 |
| **6** | *0.1220* | *0.1200* | *0.0120* | *0.0070* | **Sensor Failure / PNC** | | 0.1970 | 0.1185 | 0.0534 | 0.0534 | 0.0989 | 0.0534 |
| **7** | *0.1340* | *0.1290* | *0.0310* | *0.0110* | | | 0.1970 | 0.1667 | 0.0534 | 0.0534 | 0.0639 | 0.0341 |
| **8** | *0.1660* | *0.1350* | *0.0330* | *0.0050* | | | 0.0989 | 0.0764 | 0.0534 | 0.0534 | 0.0341 | 0.0160 |
| **9** | *0.1540* | *0.1090* | *0.0310* | *0.0240* | 0.1090 | 0.0030 | 0.0639 | 0.0443 | 0.0534 | 0.0534 | 0.0639 | 0.0443 |
| **10** | *0.1140* | *0.0850* | *0.0590* | *0.0240* | 0.0920 | 0.0030 | 0.0443 | 0.0341 | 0.0534 | 0.0341 | 0.0250 | 0.0091 |
| **11** | *0.1090* | *0.0760* | *0.0610* | *0.0340* | 0.0960 | 0.0250 | 0.0341 | 0.0341 | 0.0250 | 0.0250 | 0.0091 | 0.0000 |
| **12** | *0.0830* | *0.0780* | *0.0780* | *0.0390* | 0.0764 | 0.0032 | 0.0250 | 0.0091 | 0.0250 | 0.0250 | 0.0764 | 0.0160 |
| **13** | *0.0760* | *0.0570* | 0.0810 | 0.0290 | 0.0160 | 0.0032 | 0.0443 | 0.0032 | 0.0250 | 0.0250 | 0.0534 | 0.0091 |
| **14** | *0.0650* | *0.0590* | 0.0710 | 0.0210 | 0.0341 | 0.0091 | 0.0341 | 0.0032 | 0.0250 | 0.0250 | 0.0091 | 0.0900 |
| **15** | *0.0890* | *0.0650* | 0.0880 | 0.0600 | 0.0443 | 0.0160 | 0.0341 | 0.0032 | 0.0250 | 0.0250 | 0.0639 | 0.0091 |
| **16** | *0.1100* | *0.0960* | 0.1270 | 0.0690 | 0.0341 | 0.0160 | 0.0341 | 0.0000 | 0.0250 | 0.0250 | 0.0443 | 0.0032 |
| **17** | *0.2020* | *0.1410* | 0.2770 | 0.2270 | 0.0630 | 0.0110 | 0.0443 | 0.0250 | 0.0250 | 0.0250 | 0.0443 | 0.0091 |
| **18** | *0.2150* | *0.2070* | 0.2960 | 0.2570 | 0.0443 | 0.0091 | 0.0160 | 0.0032 | 0.0250 | 0.0250 | 0.0443 | 0.0160 |
| **19** | *0.2160* | *0.2140* | 0.2360 | 0.1750 | 0.0534 | 0.0341 | 0.1382 | 0.0534 | 0.0250 | 0.0250 | 0.0877 | 0.0639 |
| **20** | *0.2160* | *0.1780* | 0.1880 | 0.0630 | 0.0534 | 0.0341 | 0.1667 | 0.1185 | 0.0250 | 0.0091 | 0.0639 | 0.0250 |
| **21** | *0.2230* | *0.2180* | 0.0750 | 0.0040 | 0.0534 | 0.0443 | 0.1667 | 0.1522 | 0.0032 | 0.0032 | 0.0639 | 0.0341 |
| **22** | *0.2250* | *0.2190* | 0.1050 | 0.0110 | 0.0877 | 0.0534 | 0.1185 | 0.0877 | 0.0032 | 0.0032 | 0.0534 | 0.0341 |
| **23** | *0.2280* | *0.1670* | 0.1310 | 0.0280 | 0.0480 | 0.0020 | 0.1088 | 0.0989 | 0.0032 | 0.0032 | 0.0877 | 0.0443 |
| **24** | *0.1070* | *0.0550* | 0.1290 | 0.0470 | 0.0639 | 0.0443 | 0.0989 | 0.0877 | 0.0032 | 0.0032 | 0.0534 | 0.0341 |
| **25** | *0.1420* | *0.1240* | 0.1090 | 0.0030 | 0.0639 | 0.0534 | 0.0764 | 0.0534 | 0.0032 | 0.0032 | 0.0639 | 0.0341 |
| **26** | *0.1330* | *0.1040* | 0.0920 | 0.0030 | 0.0989 | 0.0639 | 0.1522 | 0.1185 | 0.0032 | 0.0032 | 0.0639 | 0.0639 |
| **27** | *0.0910* | *0.0550* | 0.0960 | 0.0250 | 0.1088 | 0.0877 | 0.0989 | 0.0877 | 0.0250 | 0.0160 | 0.1667 | 0.1088 |
| **28** | *0.0470* | *0.0230* | 0.0630 | 0.0110 | 0.0764 | 0.0764 | 0.0989 | 0.0764 | 0.0250 | 0.0250 | 0.1185 | 0.0877 |
| **29** | *0.0390* | *0.0220* | 0.0000 | 0.0000 | 0.0764 | 0.0764 | 0.1088 | 0.0877 | 0.0250 | 0.0250 | 0.1088 | 0.0764 |
| **30** | *0.0250* | *0.0090* | 0.0480 | 0.0020 | 0.0470 | 0.0010 | 0.0989 | 0.0764 | | | 0.0989 | 0.0764 |
| **31** | *0.0550* | *0.0160* | | | 0.0989 | 0.0639 | 0.1522 | 0.0877 | | | 0.1382 | 0.0989 |
| **Monthly Max** | 0.228 | | 0.296 | | 0.109 | | 0.197 | | 0.167 | | 0.197 | |
| **Monthly Avg** | | 0.103 | | 0.043 | | 0.030 | | 0.079 | | 0.031 | | 0.041 |

***Beaver dam / activity from May to November 12th, 2019. Obstructions and beaver activity caused many anomalous readings on sensor. Flow rate was zero for most of this period, difficult to calculated when flowing.***

**PNC** = Permit Non-compliance

**Bold** = TSS composite sample is required: **monthly** - no decant flow, **weekly** when max daily flow < 0.046$m^3$/s & (until November 1st 2019) **daily** when max daily flow > 0.046$m^3$/s

**No Flow= NF**

# Table 31
# 2019-2020 Annual Report

**EMS ID E292069**
**DISCHARGE FROM 7-SOUTH SURFACE DECANT (7SSD)**

| Date | April | May | June | July | August | September | October | November | December | January | February | March |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Daily Average L/S | | | | | | | | | | | |
| 1 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 2 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 3 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 4 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 5 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 6 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 7 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 8 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 9 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 10 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 11 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 12 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 13 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 14 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 15 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 16 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 17 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 18 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 19 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 20 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 21 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 22 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 23 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 24 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 25 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 26 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 27 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 28 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 29 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 30 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |
| 31 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND |

**ND= No Discharge**
**Cummulative Daily Totalizer Value ($m^3$/day)**
**For Maximum Decant Flow (5.00 L/s)**

# Table 32
# 2019-2020 Annual Report

**Weekly/Monthly Sulphate (SO4-D)**

| EMS ID: | | E207409 | E207411 | E218582 | E217014 | | | | | E292130 | E219412 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| From | To | WD | WC | SPD | SPC | INF | BCREFF | SPCEFF | 2SI | LLE | LLO |
| 3-Feb-20 | 9-Feb-20 | 530 | | 220 | | | | | | 93 | |
| 10-Feb-20 | 16-Feb-20 | 470 | 370 | 110 | 91 | | | | 180 | 80 | |
| 17-Feb-20 | 23-Feb-20 | 540 | | 250 | | | | | 160 | 120 | |
| 2-Mar-20 | 8-Mar-20 | 590 | 560 | 320 | 110 | | | | 180 | 110 | |
| 9-Mar-20 | 15-Mar-20 | 740 | | 310 | | | | | | 100 | |
| 16-Mar-20 | 22-Mar-20 | 770 | | 340 | | | | | | 150 | |
| 23-Mar-20 | 29-Mar-20 | 840 | | 270 | | | | | | 150 | |
| 30-Mar-20 | 5-Apr-20 | 730 | | 380 | | | | | | 180 | |
| **Average** | | **549** | **530** | **254** | **106.3** | **605** | **491** | **385** | **303** | **196.0** | **64.8** |
| **Minimum** | | **160** | **300** | **47** | **54** | **530** | **212** | **120** | **59** | **57** | **2.9** |
| **Maximum** | | **1000** | **726** | **390** | **170** | **670** | **650** | **540** | **510** | **620** | **97** |

# Table 33
# 2019-2020 Annual Report

**Weekly/Monthly Total Suspended Solids (TSS)**

| EMS ID: | | E207411 | E217014 | | | | | E292130 | E219412 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| From | To | WC | SPC | INF | BCREFF | SPCEFF | 2SI | LLE | LLO | | |
| 1-Apr-19 | 7-Apr-19 | <16 | <16 | | | | | <16 | <4.0 | | |
| 8-Apr-19 | 14-Apr-19 | | | | | | | | <4.0 | | |
| 15-Apr-19 | 21-Apr-19 | <4.0 | <4.0 | | | | | | <4.0 | | |
| 22-Apr-19 | 28-Apr-19 | | | | | | | | <4.0 | | |
| 29-Apr-19 | 5-May-19 | | | | | | | | <4.0 | | |
| 6-May-19 | 12-May-19 | <4.0 | 14.8 | | | | <4.0 | <4.0 | | | |
| 13-May-19 | 19-May-19 | <1.0 | 1.1 | 6.4 | 7.6 | 13.6 | 4.4 | | | | |
| 27-May-19 | 2-Jun-19 | <1.0 | 1.7 | | | | | | | | |
| 10-Jun-19 | 16-Jun-19 | <4.0 | | | | | 4.4 | <4.0 | | | |
| 17-Jun-19 | 23-Jun-19 | | | 8.8 | 6.9 | 13 | | | | | |
| 24-Jun-19 | 30-Jun-19 | 1.7 | | | | | | | | | |
| 8-Jul-19 | 14-Jul-19 | 4.8 | | | | | | | | | |
| 15-Jul-19 | 21-Jul-19 | | | 9.6 | | | <4.0 | 5.2 | | | |
| 5-Aug-19 | 11-Aug-19 | | | | | | | | <4.0 | | |
| 12-Aug-19 | 18-Aug-19 | <4.0 | | 9.6 | <4.0 | 10.8 | <4.0 | 4.0 | <1.0 | | |
| 19-Aug-19 | 25-Aug-19 | | | | | | | | <1.0 | | |
| 26-Aug-19 | 1-Sep-19 | | | | | | | | <4.0 | | |
| 9-Sep-19 | 15-Sep-19 | <4.0 | | 10.0 | <4.0 | <4.0 | <4.0 | | | | |
| 16-Sep-19 | 22-Sep-19 | <1.0 | | | | | | | | | |
| 23-Sep-19 | 29-Sep-19 | | 7.2 | | | | | | | | |
| 30-Sep-19 | 6-Oct-19 | <4.0 | <4.0 | | | | | <4.0 | | | |
| 7-Oct-19 | 13-Oct-19 | <4.0 | 6.8 | | | | | | | | |
| 14-Oct-19 | 20-Oct-19 | | | | | | | | <4.0 | | |
| 21-Oct-19 | 27-Oct-19 | 4.0 | <4.0 | | | | | | 4.0 | | |
| 28-Oct-19 | 3-Nov-19 | | | | | | | | <4.0 | | |
| 4-Nov-19 | 10-Nov-19 | <4.0 | <4.0 | | | | | <4.0 | <4.0 | | |
| 11-Nov-19 | 17-Nov-19 | | | | | | | | <4.0 | | |
| 2-Dec-19 | 8-Dec-19 | <4.0 | 4.0 | 10.8 | 11.6 | 9.6 | <4.0 | 4.4 | | | |
| 6-Jan-20 | 12-Jan-20 | 1.2 | <1.0 | 10 | 26 | 5.6 | 1.6 | 1.6 | | | |
| 10-Feb-20 | 16-Feb-20 | <1.0 | 3.2 | | | | | 2.4 | | | |
| 2-Mar-20 | 8-Mar-20 | 2.4 | 1.6 | | | | | <1.0 | | | |
| **Average** | | **3.69** | **5.24** | **9.3** | **10.02** | **9.43** | **3.80** | **4.60** | **3.57** | | |
| **Minimum** | | **<1.0** | **<1.0** | **6.4** | **<4.0** | **<4.0** | **1.6** | **<1.0** | **<1.0** | | |
| **Maximum** | | **<16** | **<16** | **10.8** | **26** | **13.6** | **4.4** | **<16** | **4.0** | | |

# Table 34
# 2019-2020 Annual Report

**Field Conductivity (uS/cm) & pH (North Mine Area & 7-South)**

| EMS ID | E283433 | | E207409 | | E207412 | | E207411 | | | | E292069 | | E292109 | | GW and SW from 2N Area at Road | | E292126 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Name | 2-N-Portal Sump | | Settling Pond #4 | | 2 North Pit Sump | | North Pit Culvert | | 7 South Portal Sump | | Settling Pond at 7S | | Stream 1 -7S | | | | South Dyke Sump | |
| Site Code | 2NPS | | WD | | WP | | WC | | 7SPS | | 7SSD | | 7S | | PDSR | | SDS | |
| April 2020 | 1673.0 | 7.53 | 1760.0 | 7.66 | 1285.0 | 7.85 | 865.0 | 8.01 | 602.0 | 7.51 | dry | dry | 52.3 | 8.16 | 595.0 | 7.94 | 1390.0 | 7.30 |
| Minimum | 1349.0 | 7.27 | 1127.0 | 7.23 | 1238.0 | 7.18 | 865.0 | 7.38 | 332.0 | 5.25 | 201.0 | 7.20 | 30.8 | 6.57 | 595.0 | 7.50 | 2.2 | 7.23 |
| Maximum | 2100.0 | 8.02 | 2114.0 | 8.33 | 2005.0 | 8.56 | 1972.0 | 8.36 | 1838.0 | 8.03 | 537.0 | 8.68 | 210.0 | 8.16 | 1556.0 | 8.04 | 1420.0 | 8.00 |
| Average | 1880.2 | 7.61 | 1759.5 | 7.71 | 1693.5 | 7.96 | 1591.6 | 8.06 | 857.8 | 6.79 | 297.2 | 8.02 | 85.9 | 7.15 | 1120.6 | 7.73 | 951.9 | 7.50 |

# Table 35
# 2019-2020 Annual Report

**Field Conductivity (uS/cm) & pH (South Mine Area)**

| EMS ID | E292127 | | E217015 | | | | E218582 | | E292128 | | E292129 | | E217014 | | E292130 | | E292131 | | E292131 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Name | 2 South Pit CCR Water Cover | | 3 South Pit CCR Water | | LLSTS Settling Pond | | Settling Pond # 1 | | 3S77 | | 4 South Lower | | South Pit Culvert | | Long Lake Entry | | Seep into Long Lake | | Long Lake Middle Seep | |
| Site Code | 2S (2SS) | | 3S | | SPEFF | | SPD | | 3S77 | | 4SLO | | SPC | | LLE | | LLS | | LLSM | |
| April 2020 | 630.0 | 7.48 | 1036.0 | 7.97 | | | 641.0 | 7.87 | | | | | 367.0 | 8.05 | 331.8 | 6.56 | 1051.0 | 7.65 | 1110.0 | 7.45 |
| Minimum | 2.7 | 7.24 | 647.0 | 7.29 | 1080.0 | 7.12 | 207.0 | 6.49 | 333.0 | 6.91 | 260.0 | 7.18 | 86.7 | 7.23 | 157.7 | 6.56 | 1042.0 | 6.93 | 794.0 | 7.15 |
| Maximum | 1724.0 | 8.25 | 1494.0 | 8.13 | 1696.0 | 7.96 | 1017.0 | 8.14 | 756.0 | 7.98 | 657.0 | 7.62 | 513.0 | 8.05 | 1692.0 | 7.84 | 1646.0 | 7.65 | 1510.0 | 7.45 |
| Average | 819.0 | 7.91 | 1109.5 | 7.82 | 1438.4 | 7.53 | 669.4 | 7.42 | 572.5 | 7.43 | 396.5 | 7.35 | 265.9 | 7.58 | 685.2 | 7.28 | 1274.9 | 7.22 | 1114.5 | 7.28 |

# Table 36
# 2019-2020 Annual Report

**Field Conductivity (uS/cm) & pH (Rivers & Wetland)**

| EMS ID | E297230 | | E297231 | | E297232 | | E0126402 | | E0900504 | | E217017 | | E219412 | | E292112 | | E286930 | | E292113 | | E299256 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Name | Iron River Upstream Site 1 | | Iron River Site 6 | | Iron River Site 8 | | Mid Quinsam Lake Inlet | | Mid Quinsam Lake Outlet | | No Name Lake Outlet | | Long Lake Outlet | | Lower Wetland Outlet (7S) | | Quinsam River | | 7 South Quinsam River | | Iron River & Quinsam River | |
| Site Code | IR1 | | IR6 | | IR8 | | WA | | WB | | NNO | | LLO | | LWO | | QRDS1 | | 7SQR | | IRQR | |
| April 2020 | | | | | | | | | | | | | | | | | | | | | | |
| Minimum | 47.1 | 7.31 | 39.3 | 7.24 | 41.4 | 7.32 | 32.1 | 6.88 | 126.0 | 7.42 | 20.1 | 6.96 | 105.1 | 7.10 | 50.0 | 6.50 | 127.0 | 7.33 | 104.0 | 7.15 | 95.7 | 7.28 |
| Maximum | 136.0 | 8.00 | 135.0 | 8.00 | 136.0 | 7.90 | 175.6 | 7.84 | 246.0 | 8.14 | 42.3 | 7.90 | 378.0 | 7.75 | 82.0 | 7.50 | 243.0 | 7.80 | 349.0 | 8.11 | 239.0 | 8.10 |
| Average | 94.1 | 7.58 | 83.8 | 7.54 | 86.4 | 7.53 | 75.6 | 7.44 | 155.5 | 7.65 | 32.0 | 7.30 | 213.2 | 7.44 | 66.3 | 6.96 | 157.9 | 7.55 | 169.8 | 7.52 | 138.1 | 7.61 |

# TABLE 51
# 2019-2020 Annual Report

## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 1M2N | 26-Feb-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Acidity 8.3 | 1 | 1 | 4.2 | 4.2 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Al-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Alkalinity Total as | 1 | 1 | 480 | 480 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Cl-D | 1 | 1 | 11 | 11 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Fluoride | 0.05 | 0.05 | 0.12 | 0.12 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Hg-D | 0.0000019 | 0.0000019 | <0.0000019 | <0.0000019 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Hg-T | 0.0000019 | 0.0000019 | <0.0000019 | <0.0000019 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | P-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Sr-D | 0.001 | 0.001 | 1.30 | 1.30 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 1M2N | 26-Feb-20 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Alkalinity Total as | 1 | 1 | 90 | 90 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Bicarbonate | 1 | 1 | 110 | 110 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Bromide | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |

# TABLE 51
# 2019-2020 Annual Report

## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 242MW | 10-Dec-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 3S | 16-Jul-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3S | 16-Jul-19 | Acidity 8.3 | 1 | 1 | 1.3 | 1.3 | 0.0 | 1.00 |
| 3S | 16-Jul-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3S | 16-Jul-19 | Alkalinity Total as | 1 | 1 | 130 | 130 | 0.0 | 1.00 |
| 3S | 16-Jul-19 | Bicarbonate | 1 | 1 | 160 | 160 | 0.0 | 1.00 |
| 3S | 16-Jul-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3S | 16-Jul-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3S | 9-Sep-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3S | 9-Sep-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3S | 9-Sep-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3S | 9-Sep-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3S | 9-Sep-19 | SO4-D | 10 | 10 | 460 | 460 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | As-D | 0.0001 | 0.0001 | 0.00015 | 0.00015 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Ba-D | 0.001 | 0.001 | 0.0010 | 0.0010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | C-D | 0.5 | 0.5 | 2.3 | 2.3 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | N-NH3 | 0.015 | 0.015 | <0.015 | <0.015 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | NO2+NO3 | 0.02 | 0.02 | <0.020 | <0.020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Sr-D | 0.001 | 0.001 | 0.0112 | 0.0112 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |

# TABLE 51
# 2019-2020 Annual Report

## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 3SO | 4-Apr-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 3SO | 4-Apr-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Al-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Al-T | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | B-T | 0.05 | 0.05 | 0.775 | 0.775 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Fluoride | 0.05 | 0.05 | 0.059 | 0.059 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Hydrogen Sulphic | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | P-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | S2-T | 0.0018 | 0.0018 | <0.0018 | <0.0018 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | SO4-D | 1 | 1 | 180 | 180 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 5M#2 | 27-Jan-20 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 7SQR | 26-Aug-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Alkalinity Total as | 1 | 1 | 26 | 26 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | As-D | 0.0001 | 0.0001 | 0.00042 | 0.00042 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Ba-D | 0.001 | 0.001 | 0.0015 | 0.0015 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Ba-T | 0.001 | 0.001 | 0.0016 | 0.0016 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Bicarbonate | 1 | 1 | 32 | 32 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Mn-D | 0.001 | 0.001 | 0.0040 | 0.0040 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Si-D | 0.1 | 0.1 | 1.97 | 1.97 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | SO4-D | 1 | 1 | 9.6 | 9.6 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | S-T | 3 | 3 | 3.0 | <3.0 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | TSS | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 26-Aug-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Ba-D | 0.001 | 0.001 | 0.0035 | 0.0035 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Ba-T | 0.001 | 0.001 | 0.0037 | 0.0037 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | B-D | 0.05 | 0.05 | 0.052 | 0.052 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 7SQR | 22-Oct-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Hardness (as CaC | 0.5 | 0.5 | 40.4 | 40.4 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 7SQR | 22-Oct-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Ba-D | 0.001 | 0.001 | 0.0040 | 0.0040 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Fe-T | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| IR1 | 20-Jun-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Mg-D | 0.05 | 0.05 | 1.17 | 1.17 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Mn-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 20-Jun-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| IR1 | 6-Aug-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR1 | 6-Aug-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Ba-D | 0.001 | 0.001 | 0.0045 | 0.0045 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Ca-D | 0.05 | 0.05 | 13.6 | 13.6 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Fe-T | 0.01 | 0.01 | 0.028 | 0.028 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Mn-T | 0.001 | 0.001 | 0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | NO2+NO3 | 0.02 | 0.02 | <0.020 | <0.020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| IR6 | 18-Sep-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Sep-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Ba-D | 0.001 | 0.001 | 0.0041 | 0.0041 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Cd-D | 0.00001 | 0.00001 | 0.000013 | 0.000013 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Fe-T | 0.01 | 0.01 | 0.058 | 0.058 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Hard-D | 0.5 | 0.5 | 26.7 | 26.7 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Hardness (as CaC | 0.5 | 0.5 | 27.4 | 27.4 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | K-D | 0.05 | 0.05 | 0.185 | 0.185 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IR6 | 18-Nov-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| IRT3 | 25-Apr-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Mn-D | 0.001 | 0.001 | 0.0017 | 0.0017 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | SO4-D | 1 | 1 | 1.0 | <1.0 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT3 | 25-Apr-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Ca-D | 0.05 | 0.05 | 5.28 | 5.28 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| IRT4 | 7-May-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | 0.00050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| IRT4 | 7-May-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLE | 16-Mar-20 | SO4-D | 1 | 1 | 150 | 150 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Fe-T | 0.01 | 0.01 | 0.062 | 0.062 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | NO2+NO3 | 0.02 | 0.02 | <0.020 | <0.020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLM1 | 1-May-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Sr-D | 0.001 | 0.001 | 0.102 | 0.102 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 1-May-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | P-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | SO4-D | 1 | 1 | 47 | 47 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLM1 | 30-Oct-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM1 | 30-Oct-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | B-D | 0.05 | 0.05 | 0.071 | 0.071 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Na-T | 0.05 | 0.05 | 10.3 | 10.3 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | P-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 21-Aug-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Alkalinity Total as | 1 | 1 | 25 | 25 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | As-D | 0.0001 | 0.0001 | 0.00042 | 0.00042 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Bicarbonate | 1 | 1 | 31 | 31 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLM4 | 6-Nov-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Cu-D | 0.0002 | 0.0002 | 0.00033 | 0.00033 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Mn-D | 0.001 | 0.001 | 0.0047 | 0.0047 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | P-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Si-D | 0.1 | 0.1 | 3.21 | 3.21 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM4 | 6-Nov-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Alkalinity Total as | 1 | 1 | 49 | 49 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | As-D | 0.0001 | 0.0001 | 0.00024 | 0.00024 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | As-T | 0.0001 | 0.0001 | 0.00028 | 0.00028 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Ba-D | 0.001 | 0.001 | 0.0076 | 0.0076 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Bicarbonate | 1 | 1 | 60 | 60 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Li-D | 0.002 | 0.002 | 0.0025 | 0.0025 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLM9 | 13-Nov-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | P-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | SO4-D | 1 | 1 | 120 | 120 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Sr-T | 0.001 | 0.001 | 0.348 | 0.348 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLM9 | 13-Nov-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Alkalinity Total as | 1 | 1 | 55 | 55 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | As-T | 0.0001 | 0.0001 | 0.00021 | 0.00021 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Ba-T | 0.001 | 0.001 | 0.0118 | 0.0118 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Fe-T | 0.01 | 0.01 | 0.048 | 0.048 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Hardness (as CaC | 0.5 | 0.5 | 146 | 146 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Li-D | 0.002 | 0.002 | 0.0030 | 0.0030 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Li-T | 0.002 | 0.002 | 0.0030 | 0.0030 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | P-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | P-T | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLMB | 24-Oct-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLMB | 24-Oct-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Alkalinity Total as | 1 | 1 | 25 | 25 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Ba-D | 0.001 | 0.001 | 0.0042 | 0.0042 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Ba-T | 0.001 | 0.001 | 0.0043 | 0.0043 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Bicarbonate | 1 | 1 | 31 | 31 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Ca-D | 0.05 | 0.05 | 17.6 | 17.6 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Cu-D | 0.0002 | 0.0002 | 0.00034 | 0.00034 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Fe-T | 0.01 | 0.01 | 0.084 | 0.084 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Hardness (as CaC | 0.5 | 0.5 | 54.2 | 54.2 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLO | 4-Nov-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LLO | 4-Nov-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Al-D | 0.003 | 0.003 | 0.0232 | 0.0232 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | NO2+NO3 | 0.02 | 0.02 | <0.020 | <0.020 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL1 | 9-May-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Ba-D | 0.001 | 0.001 | 0.0033 | 0.0033 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LQL9 | 25-Apr-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | NO2+NO3 | 0.02 | 0.02 | <0.020 | <0.020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| LQL9 | 25-Apr-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MP | 20-Sep-19 | O&G | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MP | 20-Sep-19 | TSS | 4 | 4 | 4.8 | 4.8 | 0.0 | 1.00 |
| MP | 5-Mar-20 | O&G | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Ba-T | 0.001 | 0.001 | 0.0024 | 0.0024 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | 0.00050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Mg-D | 0.05 | 0.05 | 1.70 | 1.70 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Mn-T | 0.001 | 0.001 | 0.0049 | 0.0049 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| MQL1 | 18-Apr-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | NO2+NO3 | 0.02 | 0.02 | <0.020 | <0.020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | P-T | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL1 | 18-Apr-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | As-D | 0.0001 | 0.0001 | 0.00015 | 0.00015 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Ba-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Ba-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | P-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| MQL4 | 28-Aug-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 28-Aug-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | As-T | 0.0001 | 0.0001 | 0.00015 | 0.00015 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Ba-T | 0.001 | 0.001 | 0.0024 | 0.0024 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Ca-D | 0.05 | 0.05 | 12.3 | 12.3 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Ca-T | 0.05 | 0.05 | 12.2 | 12.2 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Fe-T | 0.01 | 0.01 | 0.046 | 0.046 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Hg-D | 0.000002 | 0.000002 | 0.0000028 | 0.0000028 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | K-D | 0.05 | 0.05 | 0.298 | 0.298 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Na-T | 0.05 | 0.05 | 18.4 | 18.4 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | P-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | SO4-D | 1 | 1 | 30 | 30 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| MQL4 | 20-Nov-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MQL4 | 20-Nov-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Ag-D | 0.00004 | 0.00004 | <0.000040 | <0.000040 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Al-D | 0.006 | 0.006 | <0.0060 | <0.0060 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Be-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Bi-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Co-D | 0.0004 | 0.0004 | 0.00349 | 0.00349 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Cr-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Cu-D | 0.0004 | 0.0004 | <0.00040 | <0.00040 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Hydrogen Sulphic | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Mo-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Pb-D | 0.0004 | 0.0004 | <0.00040 | <0.00040 | 0.0 | 1.00 |
| MW002 | 15-May-19 | P-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| MW002 | 15-May-19 | S2-T | 0.0019 | 0.0019 | <0.0019 | <0.0019 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Sb-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Se-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Sn-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Ti-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Tl-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| MW002 | 15-May-19 | V-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Zn-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| MW002 | 15-May-19 | Zr-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Ag-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Al-D | 0.015 | 0.015 | <0.015 | <0.015 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Be-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Bi-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Cd-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Co-D | 0.001 | 0.001 | 0.0036 | 0.0036 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Cr-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Cu-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Fluoride | 0.02 | 0.02 | 0.130 | 0.130 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Hydrogen Sulphic | 0.0019 | 0.0019 | <0.0019 | <0.0019 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Li-D | 0.01 | 0.01 | 0.015 | 0.015 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Mo-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Ni-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Pb-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | S2-T | 0.0018 | 0.0018 | <0.0018 | <0.0018 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Sb-D | 0.0025 | 0.0025 | <0.0025 | <0.0025 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Se-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Sn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | SO4-D | 10 | 10 | 1200 | 1200 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Ti-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Tl-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | U-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | V-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Zn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| MW002 | 5-Dec-19 | Zr-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Alkalinity Total as | 1 | 1 | 170 | 170 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Bicarbonate | 1 | 1 | 200 | 200 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Cl-D | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| MW004 | 27-Aug-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Fluoride | 0.02 | 0.02 | 0.084 | 0.084 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Na-D | 0.05 | 0.05 | 46.8 | 46.8 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Ni-D | 0.001 | 0.001 | 0.0011 | 0.0011 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | P-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| MW004 | 27-Aug-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Ba-D | 0.001 | 0.001 | 0.0011 | 0.0011 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Ba-T | 0.001 | 0.001 | 0.0012 | 0.0012 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Hard-D | 0.5 | 0.5 | 11.3 | 11.3 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | N-NO2 | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | SO4-D | 1 | 1 | 1.8 | 1.8 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| NNL1 | 9-Apr-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 9-Apr-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Ba-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Ba-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Fe-T | 0.01 | 0.01 | 0.066 | 0.066 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Hardness (as CaC | 0.5 | 0.5 | 15.5 | 15.5 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | K-T | 0.05 | 0.05 | 0.062 | 0.062 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | P-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Si-D | 0.1 | 0.1 | 2.66 | 2.66 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL1 | 7-Aug-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | As-D | 0.0001 | 0.0001 | 0.00041 | 0.00041 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Ba-D | 0.001 | 0.001 | 0.0013 | 0.0013 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| NNL4 | 14-Aug-19 | Ba-T | 0.001 | 0.001 | 0.0012 | 0.0012 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Cu-D | 0.0002 | 0.0002 | 0.00040 | 0.00040 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Fe-D | 0.005 | 0.005 | 0.119 | 0.119 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Mn-D | 0.001 | 0.001 | 0.0065 | 0.0065 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | P-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Sr-D | 0.001 | 0.001 | 0.0149 | 0.0149 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNL4 | 14-Aug-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | As-D | 0.0001 | 0.0001 | 0.00020 | 0.00020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Ba-D | 0.001 | 0.001 | 0.0011 | 0.0011 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Ba-T | 0.001 | 0.001 | 0.0012 | 0.0012 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| NNO | 30-Apr-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | K-D | 0.05 | 0.05 | 0.064 | 0.064 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | NO2+NO3 | 0.02 | 0.02 | <0.020 | <0.020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 30-Apr-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Alkalinity Total as | 1 | 1 | 13 | 13 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Ba-D | 0.001 | 0.001 | 0.0013 | 0.0013 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Ba-T | 0.001 | 0.001 | 0.0015 | 0.0015 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Bicarbonate | 1 | 1 | 16 | 16 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Cond-L | 2 | 2 | 37 | 37 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| NNO | 29-Oct-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Mn-T | 0.001 | 0.001 | 0.0064 | 0.0064 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| NNO | 29-Oct-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | As-D | 0.0001 | 0.0001 | 0.00011 | 0.00011 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Ca-D | 0.05 | 0.05 | 210 | 210 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Fe-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |

# TABLE 51
# 2019-2020 Annual Report

## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| PDSR | 4-Dec-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | U-D | 0.0001 | 0.0001 | 0.00044 | 0.00044 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 4-Dec-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Al-D | 0.003 | 0.003 | 0.0063 | 0.0063 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | As-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | As-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Ba-D | 0.001 | 0.001 | 0.0104 | 0.0104 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Bicarbonate | 1 | 1 | 140 | 140 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | B-T | 0.05 | 0.05 | 0.140 | 0.140 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Fe-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Fe-T | 0.01 | 0.01 | <0.010 | 0.010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Hard-D | 0.5 | 0.5 | 335 | 335 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | U-T | 0.0001 | 0.0001 | 0.00014 | 0.00014 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| PDSR | 10-Feb-20 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| PDSR | 10-Feb-20 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Al-D | 0.003 | 0.003 | 0.0179 | 0.0179 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Ca-T | 0.05 | 0.05 | 14.7 | 14.7 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Fe-T | 0.01 | 0.01 | 0.054 | 0.054 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Mn-D | 0.001 | 0.001 | 0.0020 | 0.0020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QRDS1 | 18-Apr-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Al-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Alkalinity Total as | 1 | 1 | 190 | 190 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Bicarbonate | 1 | 1 | 230 | 230 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Bromide | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Cl-D | 1 | 1 | 9.3 | 9.3 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU0813A | 26-Nov-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Si-D | 0.1 | 0.1 | 3.60 | 3.60 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0813A | 26-Nov-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Al-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Alkalinity Total as | 1 | 1 | 180 | 180 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Bicarbonate | 1 | 1 | 220 | 220 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Cl-D | 1 | 1 | 10 | 10 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Hard-D | 0.5 | 0.5 | 120 | 120 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Hg-D | 0.0000019 | 0.0000019 | <0.0000019 | <0.0000019 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | K-D | 0.05 | 0.05 | 2.22 | 2.22 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | SO4-D | 1 | 1 | 36 | 36 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0813A | 10-Mar-20 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Ag-D | 0.00004 | 0.00004 | <0.000040 | <0.000040 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Al-D | 0.006 | 0.006 | <0.0060 | <0.0060 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Alkalinity Total as | 1 | 1 | 200 | 200 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Be-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Bicarbonate | 1 | 1 | 250 | 250 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Bi-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Bromide | 0.01 | 0.01 | 0.18 | 0.18 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Cd-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Cl-D | 1 | 1 | 130 | 130 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Co-D | 0.0004 | 0.0004 | <0.00040 | <0.00040 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Cr-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Cu-D | 0.0004 | 0.0004 | <0.00040 | <0.00040 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU0821GD | 3-Sep-19 | Fluoride | 0.02 | 0.02 | 1.70 | 1.70 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Mn-D | 0.002 | 0.002 | 0.157 | 0.157 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Mo-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Ni-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Pb-D | 0.0004 | 0.0004 | <0.00040 | <0.00040 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Sb-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | S-D | 6 | 6 | <6.0 | <6.0 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Se-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Sn-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | SO4-D | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Ti-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Tl-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | U-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | V-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Zn-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU0821GD | 3-Sep-19 | Zr-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Ag-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Al-D | 0.015 | 0.015 | <0.015 | <0.015 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Alkalinity Total as | 1 | 1 | 210 | 210 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Be-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Bicarbonate | 1 | 1 | 260 | 260 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Bi-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Bromide | 0.01 | 0.01 | 1.2 | 1.2 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Cd-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Co-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Cr-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Cu-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Fluoride | 0.05 | 0.05 | 1.3 | 1.3 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Hg-D | 0.0000019 | 0.0000019 | <0.0000019 | <0.0000019 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Mo-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Ni-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Pb-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | pH-L | | | 8.15 | 8.15 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Sb-D | 0.0025 | 0.0025 | <0.0025 | <0.0025 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | S-D | 15 | 15 | <15 | <15 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Se-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Sn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | SO4-D | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Ti-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Tl-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | U-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | V-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Zn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU0821GD | 19-Feb-20 | Zr-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Ag-D | 0.00004 | 0.00004 | <0.000040 | <0.000040 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Al-D | 0.006 | 0.006 | <0.0060 | <0.0060 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Be-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Bi-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Bromide | 0.01 | 0.01 | 0.11 | 0.11 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Cd-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Co-D | 0.0004 | 0.0004 | <0.00040 | <0.00040 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Cr-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Cu-D | 0.0004 | 0.0004 | <0.00040 | <0.00040 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Hard-D | 0.5 | 0.5 | 56.9 | 56.9 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU0821GS | 27-Nov-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Mn-D | 0.002 | 0.002 | 0.136 | 0.136 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Mo-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Na-D | 0.1 | 0.1 | 112 | 112 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Ni-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Pb-D | 0.0004 | 0.0004 | <0.00040 | <0.00040 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | P-D | 0.003 | 0.003 | 0.18 | 0.18 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Sb-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | S-D | 6 | 6 | <6.0 | <6.0 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Se-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Sn-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | SO4-D | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Ti-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Tl-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Turb | 0.1 | 0.1 | 1.2 | 1.2 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | U-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | V-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Zn-D | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU0821GS | 27-Nov-19 | Zr-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | Alk-PP | 1 | 1 | 8.2 | 8.2 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | B-D | 0.1 | 0.25 | 1.81 | 1.81 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | Bicarbonate | 1 | 1 | 290 | 290 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | Bromide | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | Carbonate | 1 | 1 | 9.8 | 9.8 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | Fluoride | 0.05 | 0.05 | 2.0 | 2.0 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | Hg-D | 0.0000019 | 0.0000019 | <0.0000019 | <0.0000019 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | P-D | 0.001 | 0.001 | 0.17 | 0.17 | 0.0 | 1.00 |
| QU1008D | 18-Mar-20 | SO4-D | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Al-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | As-D | 0.0001 | 0.0001 | 0.122 | 0.122 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Fluoride | 0.05 | 0.05 | 0.28 | 0.28 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1009D | 5-Sep-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Al-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1009S | 27-May-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Cd-D | 0.000005 | 0.000005 | <0.0000050 | <0.0000050 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | SO4-D | 1 | 1 | 120 | 120 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1009S | 27-May-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Alkalinity Total as | 1 | 1 | 150 | 150 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Bicarbonate | 1 | 1 | 190 | 190 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Bromide | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | C-D | 0.5 | 0.5 | <0.50 | <0.50 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1010S | 30-Sep-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Alkalinity Total as | 1 | 1 | 150 | 150 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Bicarbonate | 1 | 1 | 180 | 180 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Bromide | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1010S | 11-Dec-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1010S | 11-Dec-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Al-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Alkalinity Total as | 1 | 1 | 560 | 560 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Hard-D | 0.5 | 0.5 | 142 | 142 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Li-D | 0.002 | 0.002 | 0.0024 | 0.0024 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Mn-D | 0.001 | 0.001 | 0.272 | 0.272 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Mo-D | 0.001 | 0.001 | 0.0022 | 0.0022 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | P-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | SO4-D | 2 | 2 | 270 | 270 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Sr-D | 0.001 | 0.001 | 0.540 | 0.540 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1013D | 24-Sep-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Ag-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Al-D | 0.015 | 0.015 | <0.015 | <0.015 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | As-D | 0.0005 | 0.0005 | 0.101 | 0.101 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Be-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Bi-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Ca-D | 0.25 | 0.25 | 372 | 372 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Cd-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Co-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Cr-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Cu-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Hydrogen Sulphic | 0.019 | 0.019 | <0.019 | <0.019 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Hard-D | 0.5 | 0.5 | 1160 | 1160 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Mo-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Na-D | 0.25 | 0.25 | 128 | 128 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Ni-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1101 | 23-Dec-19 | Pb-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | S2-T | 0.018 | 0.018 | <0.018 | <0.018 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Sb-D | 0.0025 | 0.0025 | <0.0025 | <0.0025 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Se-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Sn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Ti-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Tl-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | U-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | V-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Zn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1101 | 23-Dec-19 | Zr-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Al-D | 0.003 | 0.003 | <0.0030 | 0.0030 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Alkalinity Total as | 1 | 1 | 200 | 200 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Bicarbonate | 1 | 1 | 240 | 240 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Cl-D | 1 | 1 | 2.0 | 2.0 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | SO4-D | 1 | 1 | 150 | 150 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1105S | 16-Dec-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Al-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Bicarbonate | 1 | 1 | 470 | 470 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Bromide | 0.01 | 0.01 | 0.067 | 0.067 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Cl-D | 1 | 1 | 28 | 28 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1109S | 18-Dec-19 | Turb | 0.1 | 0.1 | 0.75 | 0.75 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1109S | 18-Dec-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Ag-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Al-D | 0.015 | 0.015 | <0.015 | <0.015 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Be-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Bi-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Cd-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Co-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Cr-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Cu-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Hydrogen Sulphic | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Mo-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Ni-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Pb-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | P-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | S2-T | 0.0018 | 0.0018 | <0.0018 | <0.0018 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Sb-D | 0.0025 | 0.0025 | <0.0025 | <0.0025 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | S-D | 15 | 15 | 613 | 613 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Se-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Si-D | 0.5 | 0.5 | 3.00 | 3.00 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Sn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | SO4-D | 10 | 10 | 1700 | 1700 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Ti-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Tl-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | V-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Zn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1410 | 11-Sep-19 | Zr-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Ag-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Al-D | 0.015 | 0.015 | <0.015 | <0.015 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | B-D | 0.25 | 0.25 | 1.20 | 1.20 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Be-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Bicarbonate | 1 | 1 | 360 | 360 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Bi-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Cd-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Co-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Cr-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Cu-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Fluoride | 0.05 | 0.05 | 0.17 | 0.17 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Hydrogen Sulphic | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Mo-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Ni-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Pb-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | S2-T | 0.0018 | 0.0018 | <0.0018 | <0.0018 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Sb-D | 0.0025 | 0.0025 | <0.0025 | <0.0025 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Se-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Sn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Ti-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Tl-D | 0.00005 | 0.00005 | <0.000050 | <0.000050 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | U-D | 0.0005 | 0.0005 | 0.00095 | 0.00095 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | V-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1410 | 20-Nov-19 | Zn-D | 0.025 | 0.025 | <0.025 | <0.025 | 0.0 | 1.00 |
| QU1410 | 20-Nov-19 | Zr-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Alkalinity Total as | 1 | 1 | 290 | 290 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | As-D | 0.0001 | 0.0005 | 0.109 | 0.109 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Bicarbonate | 1 | 1 | 350 | 350 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Fluoride | 0.05 | 0.05 | 0.17 | 0.17 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Hydrogen Sulphic | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Hard-D | 0.5 | 0.5 | 2010 | 2010 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | Li-D | 0.002 | 0.01 | 0.145 | 0.145 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | S2-T | 0.0018 | 0.0018 | <0.0018 | <0.0018 | 0.0 | 1.00 |
| QU1410 | 28-Jan-20 | SO4-D | 10 | 10 | 1800 | 1800 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | Cl-D | 1 | 1 | 5.0 | 5.0 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | Hydrogen Sulphic | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | Hg-D | 0.0000019 | 0.0000019 | <0.0000019 | <0.0000019 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | S2-T | 0.0018 | 0.0018 | <0.0018 | <0.0018 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | SO4-D | 10 | 10 | 1800 | 1800 | 0.0 | 1.00 |
| QU1410 | 24-Feb-20 | Turb | 0.1 | 0.1 | 21 | 21 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | As-T | 0.0001 | 0.0001 | 0.00070 | 0.00070 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Ba-D | 0.001 | 0.001 | 0.0091 | 0.0091 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Na-D | 0.05 | 0.05 | 6.61 | 6.61 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Ni-D | 0.001 | 0.001 | <0.0010 | 0.0010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| SPC | 1-Oct-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| SPC | 1-Oct-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| SPC | 2-Mar-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| SPC | 2-Mar-20 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| SPC | 2-Mar-20 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| SPC | 2-Mar-20 | Alkalinity Total as | 1 | 1 | 33 | 33 | 0.0 | 1.00 |
| SPC | 2-Mar-20 | Bicarbonate | 1 | 1 | 40 | 40 | 0.0 | 1.00 |
| SPC | 2-Mar-20 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| SPC | 2-Mar-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| SPC | 2-Mar-20 | SO4-D | 1 | 1 | 110 | 110 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Al-D | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Al-T | 0.003 | 0.003 | <0.0030 | <0.0030 | 0.0 | 1.00 |
| TB | 7-Nov-19 | As-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | As-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ba-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ba-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ca-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ca-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Fe-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Fe-T | 0.01 | 0.01 | <0.010 | <0.010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Hard-D | 0.5 | 0.5 | <0.50 | <0.50 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Hardness (as CaC | 0.5 | 0.5 | <0.50 | <0.50 | 0.0 | 1.00 |
| TB | 7-Nov-19 | K-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | K-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Mg-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Mg-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Mn-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Na-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Na-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| TB | 7-Nov-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Si-D | 0.1 | 0.1 | <0.10 | <0.10 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Si-T | 0.1 | 0.1 | <0.10 | <0.10 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | SO4-D | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Sr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Sr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| TB | 7-Nov-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Alkalinity Total as | 1 | 1 | 17 | 17 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Ba-D | 0.001 | 0.001 | 0.0012 | 0.0012 | 0.0 | 1.00 |
| WA | 17-Oct-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Bicarbonate | 1 | 1 | 21 | 21 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Mn-D | 0.001 | 0.001 | 0.0011 | 0.0011 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | SO4-D | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Sr-D | 0.001 | 0.001 | 0.0116 | 0.0116 | 0.0 | 1.00 |
| WA | 17-Oct-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |

# TABLE 51
# 2019-2020 Annual Report

## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| WA | 17-Oct-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| WA | 17-Oct-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 17-Oct-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Al-D | 0.003 | 0.003 | 0.0164 | 0.0164 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Alkalinity Total as | 1 | 1 | 20 | 20 | 0.0 | 1.00 |
| WA | 12-Nov-19 | As-T | 0.0001 | 0.0001 | 0.00013 | 0.00013 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Ba-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Ba-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Bicarbonate | 1 | 1 | 25 | 25 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Mn-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | S-D | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | S-T | 3 | 3 | <3.0 | <3.0 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |
| WA | 12-Nov-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| WA | 12-Nov-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WA | 12-Nov-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Ag-T | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Alk-PP | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Alkalinity Total as | 1 | 1 | 28 | 28 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Ba-D | 0.001 | 0.001 | 0.0011 | 0.0011 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Ba-T | 0.001 | 0.001 | 0.0011 | 0.0011 | 0.0 | 1.00 |
| WB | 12-Aug-19 | B-D | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Be-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Bicarbonate | 1 | 1 | 34 | 34 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Bi-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | B-T | 0.05 | 0.05 | <0.050 | <0.050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Carbonate | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Co-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Co-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Cr-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Cu-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Fe-T | 0.01 | 0.01 | 0.038 | 0.038 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Hg-T | 0.000002 | 0.000002 | <0.0000020 | <0.0000020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Li-D | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Li-T | 0.002 | 0.002 | <0.0020 | <0.0020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Mo-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Ni-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Ni-T | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Pb-T | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Sb-T | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | S-D | 3 | 3 | 3.3 | 3.3 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Sn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | S-T | 3 | 3 | 3.0 | <3.0 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Ti-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Tl-T | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | TSS | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WB | 12-Aug-19 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | U-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | V-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Zn-T | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WB | 12-Aug-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WC | 6-May-19 | TSS | 4 | 4 | <4.0 | <4.0 | 0.0 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| WD | 6-Jan-20 | Acidity 4.5 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Acidity 8.3 | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Ag-D | 0.00002 | 0.00002 | <0.000020 | <0.000020 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Alkalinity Total as | 1 | 1 | 300 | 300 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Ba-D | 0.001 | 0.001 | 0.0202 | 0.0202 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Be-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Bi-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Cd-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Cr-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Cu-D | 0.0002 | 0.0002 | 0.00024 | 0.00024 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Hydroxide | 1 | 1 | <1.0 | <1.0 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Mo-D | 0.001 | 0.001 | <0.0010 | <0.0010 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Pb-D | 0.0002 | 0.0002 | <0.00020 | <0.00020 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Sb-D | 0.0005 | 0.0005 | <0.00050 | <0.00050 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Se-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Sn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Ti-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Tl-D | 0.00001 | 0.00001 | <0.000010 | <0.000010 | 0.0 | 1.00 |
| WD | 6-Jan-20 | U-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| WD | 6-Jan-20 | V-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Zn-D | 0.005 | 0.005 | <0.0050 | <0.0050 | 0.0 | 1.00 |
| WD | 6-Jan-20 | Zr-D | 0.0001 | 0.0001 | <0.00010 | <0.00010 | 0.0 | 1.00 |
| 242MW | 10-Dec-19 | As-D | 0.0001 | 0.0001 | 0.0671 | 0.0670 | 0.1 | 1.00 |
| 5M#2 | 27-Jan-20 | Sr-D | 0.001 | 0.001 | 0.714 | 0.715 | 0.1 | 1.00 |
| IR6 | 18-Nov-19 | Ca-T | 0.05 | 0.05 | 9.55 | 9.56 | 0.1 | 1.00 |
| LLMB | 24-Oct-19 | pH-L | | | 7.13 | 7.14 | 0.1 | 1.00 |
| MQL4 | 20-Nov-19 | Sr-D | 0.001 | 0.001 | 0.0668 | 0.0667 | 0.1 | 1.00 |
| NNO | 29-Oct-19 | pH-L | | | 6.79 | 6.78 | 0.1 | 1.00 |
| PDSR | 10-Feb-20 | pH-L | | | 8.04 | 8.05 | 0.1 | 1.00 |
| QU0813A | 26-Nov-19 | Mg-D | 0.05 | 0.05 | 8.44 | 8.43 | 0.1 | 1.00 |
| QU0821GD | 3-Sep-19 | Fe-D | 0.01 | 0.01 | 0.892 | 0.891 | 0.1 | 1.00 |
| QU1009D | 5-Sep-19 | Sr-D | 0.001 | 0.001 | 0.986 | 0.985 | 0.1 | 1.00 |
| QU1101 | 23-Dec-19 | K-D | 0.25 | 0.25 | 6.74 | 6.73 | 0.1 | 1.00 |
| QU1410 | 11-Sep-19 | As-D | 0.0005 | 0.0005 | 0.0922 | 0.0921 | 0.1 | 1.00 |
| QU1410 | 11-Sep-19 | K-D | 0.25 | 0.25 | 7.42 | 7.41 | 0.1 | 1.00 |
| 7SQR | 26-Aug-19 | Ca-D | 0.05 | 0.05 | 8.89 | 8.87 | 0.2 | 1.00 |
| 7SQR | 26-Aug-19 | Na-D | 0.05 | 0.05 | 4.16 | 4.15 | 0.2 | 1.00 |
| IR6 | 18-Nov-19 | Ca-D | 0.05 | 0.05 | 9.30 | 9.28 | 0.2 | 1.00 |
| LLM4 | 6-Nov-19 | Hard-D | 0.5 | 0.5 | 56.0 | 56.1 | 0.2 | 1.00 |
| LLMB | 24-Oct-19 | Ca-T | 0.05 | 0.05 | 49.8 | 49.7 | 0.2 | 1.00 |
| LLO | 4-Nov-19 | Fe-D | 0.005 | 0.005 | 0.0556 | 0.0555 | 0.2 | 1.00 |
| LLO | 4-Nov-19 | Hard-D | 0.5 | 0.5 | 54.2 | 54.3 | 0.2 | 1.00 |
| NNL1 | 9-Apr-19 | Na-T | 0.05 | 0.05 | 0.979 | 0.977 | 0.2 | 1.00 |
| NNL1 | 7-Aug-19 | Ca-T | 0.05 | 0.05 | 4.53 | 4.52 | 0.2 | 1.00 |
| NNL1 | 7-Aug-19 | Mg-D | 0.05 | 0.05 | 0.980 | 0.978 | 0.2 | 1.00 |
| QU0813A | 10-Mar-20 | Na-D | 0.05 | 0.05 | 46.0 | 46.1 | 0.2 | 1.00 |
| QU0821GD | 3-Sep-19 | pH-L | | | 8.22 | 8.24 | 0.2 | 1.00 |
| QU0821GD | 19-Feb-20 | Ca-D | 0.25 | 0.25 | 90.7 | 90.5 | 0.2 | 1.00 |
| QU0821GD | 19-Feb-20 | Na-D | 0.25 | 0.25 | 480 | 481 | 0.2 | 1.00 |
| QU1008D | 18-Mar-20 | Sr-D | 0.002 | 0.005 | 0.0619 | 0.0618 | 0.2 | 1.00 |
| QU1009D | 5-Sep-19 | Fe-D | 0.005 | 0.005 | 0.473 | 0.472 | 0.2 | 1.00 |
| QU1009D | 5-Sep-19 | Li-D | 0.002 | 0.002 | 0.0403 | 0.0402 | 0.2 | 1.00 |
| QU1010S | 30-Sep-19 | As-D | 0.0001 | 0.0001 | 0.0967 | 0.0969 | 0.2 | 1.00 |
| QU1010S | 30-Sep-19 | Mg-D | 0.05 | 0.05 | 5.44 | 5.45 | 0.2 | 1.00 |
| QU1010S | 11-Dec-19 | Li-D | 0.002 | 0.002 | 0.0454 | 0.0453 | 0.2 | 1.00 |
| QU1013D | 24-Sep-19 | Ca-D | 0.05 | 0.05 | 51.1 | 51.0 | 0.2 | 1.00 |
| QU1109S | 18-Dec-19 | pH-L | | | 8.53 | 8.51 | 0.2 | 1.00 |
| QU1410 | 11-Sep-19 | pH-L | | | 8.10 | 8.12 | 0.2 | 1.00 |
| QU1410 | 11-Sep-19 | Sr-D | 0.005 | 0.005 | 4.29 | 4.28 | 0.2 | 1.00 |
| QU1410 | 20-Nov-19 | Ca-D | 0.25 | 0.25 | 512 | 511 | 0.2 | 1.00 |
| QU1410 | 20-Nov-19 | Sr-D | 0.005 | 0.005 | 4.47 | 4.48 | 0.2 | 1.00 |
| WA | 12-Nov-19 | Mg-D | 0.05 | 0.05 | 0.824 | 0.826 | 0.2 | 1.00 |
| WD | 6-Jan-20 | pH-L | | | 8.30 | 8.32 | 0.2 | 1.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 7SQR | 26-Aug-19 | Sr-D | 0.001 | 0.001 | 0.0328 | 0.0327 | 0.3 | 1.00 |
| 7SQR | 26-Aug-19 | Sr-T | 0.001 | 0.001 | 0.0329 | 0.0328 | 0.3 | 1.00 |
| 7SQR | 22-Oct-19 | K-D | 0.05 | 0.05 | 0.348 | 0.349 | 0.3 | 1.00 |
| IR6 | 18-Nov-19 | Si-T | 0.1 | 0.1 | 3.14 | 3.15 | 0.3 | 1.00 |
| IR6 | 18-Nov-19 | Sr-T | 0.001 | 0.001 | 0.0325 | 0.0324 | 0.3 | 1.00 |
| LLM4 | 21-Aug-19 | Ca-D | 0.05 | 0.05 | 32.3 | 32.2 | 0.3 | 1.00 |
| LLM4 | 21-Aug-19 | Ca-T | 0.05 | 0.05 | 31.7 | 31.6 | 0.3 | 1.00 |
| LLM4 | 21-Aug-19 | Hardness (as CaC | 0.5 | 0.5 | 95.0 | 94.7 | 0.3 | 1.00 |
| LLM4 | 21-Aug-19 | Mg-T | 0.05 | 0.05 | 3.83 | 3.82 | 0.3 | 1.00 |
| LLMB | 24-Oct-19 | Sr-D | 0.001 | 0.001 | 0.394 | 0.393 | 0.3 | 1.00 |
| MP | 5-Mar-20 | pH-L | | | 7.35 | 7.33 | 0.3 | 1.00 |
| MQL4 | 20-Nov-19 | Hard-D | 0.5 | 0.5 | 37.3 | 37.4 | 0.3 | 1.00 |
| MQL4 | 20-Nov-19 | Hardness (as CaC | 0.5 | 0.5 | 36.8 | 36.9 | 0.3 | 1.00 |
| MQL4 | 20-Nov-19 | K-T | 0.05 | 0.05 | 0.293 | 0.292 | 0.3 | 1.00 |
| MW004 | 27-Aug-19 | B-D | 0.05 | 0.05 | 0.287 | 0.286 | 0.3 | 1.00 |
| NNL4 | 14-Aug-19 | Si-D | 0.1 | 0.1 | 3.05 | 3.06 | 0.3 | 1.00 |
| NNO | 29-Oct-19 | Si-T | 0.1 | 0.1 | 3.32 | 3.33 | 0.3 | 1.00 |
| PDSR | 4-Dec-19 | Hard-D | 0.5 | 0.5 | 676 | 674 | 0.3 | 1.00 |
| QU0813A | 10-Mar-20 | Ca-D | 0.05 | 0.05 | 34.3 | 34.2 | 0.3 | 1.00 |
| QU0821GD | 3-Sep-19 | Si-D | 0.2 | 0.2 | 3.50 | 3.49 | 0.3 | 1.00 |
| QU0821GD | 19-Feb-20 | Hard-D | 0.5 | 0.5 | 289 | 288 | 0.3 | 1.00 |
| QU0821GS | 27-Nov-19 | Ba-D | 0.002 | 0.002 | 0.318 | 0.317 | 0.3 | 1.00 |
| QU0821GS | 27-Nov-19 | Si-D | 0.2 | 0.2 | 3.00 | 3.01 | 0.3 | 1.00 |
| QU1410 | 20-Nov-19 | K-D | 0.25 | 0.25 | 7.75 | 7.77 | 0.3 | 1.00 |
| QU1410 | 20-Nov-19 | S-D | 15 | 15 | 647 | 645 | 0.3 | 1.00 |
| WA | 17-Oct-19 | pH-L | | | 6.98 | 7.00 | 0.3 | 1.00 |
| 5M#2 | 27-Jan-20 | B-D | 0.05 | 0.05 | 0.819 | 0.816 | 0.4 | 1.00 |
| 5M#2 | 27-Jan-20 | K-T | 0.05 | 0.05 | 2.48 | 2.47 | 0.4 | 1.00 |
| 5M#2 | 27-Jan-20 | Na-D | 0.05 | 0.05 | 233 | 234 | 0.4 | 1.00 |
| 7SQR | 26-Aug-19 | Hard-D | 0.5 | 0.5 | 26.6 | 26.5 | 0.4 | 1.00 |
| 7SQR | 22-Oct-19 | Sr-T | 0.001 | 0.001 | 0.0760 | 0.0763 | 0.4 | 1.00 |
| IR6 | 18-Nov-19 | Al-D | 0.003 | 0.003 | 0.0781 | 0.0778 | 0.4 | 1.00 |
| IRT3 | 25-Apr-19 | Ba-D | 0.001 | 0.001 | 0.0245 | 0.0244 | 0.4 | 1.00 |
| IRT4 | 7-May-19 | Sr-D | 0.001 | 0.001 | 0.0255 | 0.0254 | 0.4 | 1.00 |
| LLM1 | 30-Oct-19 | Mg-D | 0.05 | 0.05 | 2.85 | 2.84 | 0.4 | 1.00 |
| LLM4 | 21-Aug-19 | S-T | 3 | 3 | 27.4 | 27.5 | 0.4 | 1.00 |
| LLM9 | 13-Nov-19 | Mg-D | 0.05 | 0.05 | 5.13 | 5.11 | 0.4 | 1.00 |
| LLO | 4-Nov-19 | K-D | 0.05 | 0.05 | 0.247 | 0.248 | 0.4 | 1.00 |
| LLO | 4-Nov-19 | Na-D | 0.05 | 0.05 | 5.49 | 5.51 | 0.4 | 1.00 |
| LQL1 | 9-May-19 | SO4-D | 1 | 1 | 24.2 | 24.1 | 0.4 | 1.00 |
| MQL4 | 28-Aug-19 | Mg-D | 0.05 | 0.05 | 0.908 | 0.904 | 0.4 | 1.00 |
| MQL4 | 20-Nov-19 | Si-D | 0.1 | 0.1 | 2.39 | 2.40 | 0.4 | 1.00 |
| MQL4 | 20-Nov-19 | Si-T | 0.1 | 0.1 | 2.22 | 2.23 | 0.4 | 1.00 |
| MW002 | 5-Dec-19 | Na-D | 0.25 | 0.25 | 76.3 | 76.0 | 0.4 | 1.00 |
| MW004 | 27-Aug-19 | Mn-D | 0.001 | 0.001 | 0.0688 | 0.0685 | 0.4 | 1.00 |
| NNO | 29-Oct-19 | Al-D | 0.003 | 0.003 | 0.0276 | 0.0277 | 0.4 | 1.00 |
| PDSR | 4-Dec-19 | B-D | 0.05 | 0.05 | 0.231 | 0.232 | 0.4 | 1.00 |
| QU0813A | 26-Nov-19 | K-D | 0.05 | 0.05 | 2.24 | 2.23 | 0.4 | 1.00 |
| QU0813A | 26-Nov-19 | Na-D | 0.05 | 0.05 | 47.8 | 48.0 | 0.4 | 1.00 |
| QU0813A | 10-Mar-20 | Ba-D | 0.001 | 0.001 | 0.238 | 0.237 | 0.4 | 1.00 |
| QU0813A | 10-Mar-20 | Mg-D | 0.05 | 0.05 | 8.38 | 8.35 | 0.4 | 1.00 |
| QU0821GD | 3-Sep-19 | As-D | 0.0002 | 0.0002 | 0.232 | 0.231 | 0.4 | 1.00 |
| QU0821GD | 3-Sep-19 | Mg-D | 0.1 | 0.1 | 4.85 | 4.83 | 0.4 | 1.00 |
| QU1009S | 27-May-19 | Turb | 0.1 | 0.1 | 67.0 | 66.7 | 0.4 | 1.00 |
| QU1013D | 24-Sep-19 | Fe-D | 0.005 | 0.005 | 0.551 | 0.549 | 0.4 | 1.00 |
| QU1101 | 23-Dec-19 | Mg-D | 0.25 | 0.25 | 56.7 | 56.9 | 0.4 | 1.00 |
| QU1410 | 24-Feb-20 | pH-L | | | 7.77 | 7.74 | 0.4 | 1.00 |
| WB | 12-Aug-19 | Ca-D | 0.05 | 0.05 | 8.96 | 9.00 | 0.4 | 1.00 |
| WB | 12-Aug-19 | Hard-D | 0.5 | 0.5 | 26.7 | 26.8 | 0.4 | 1.00 |
| 1M2N | 26-Feb-20 | Si-D | 0.1 | 0.1 | 3.76 | 3.74 | 0.5 | 1.01 |
| 3SO | 4-Apr-19 | Al-T | 0.003 | 0.003 | 0.0442 | 0.0440 | 0.5 | 1.00 |
| 3SO | 4-Apr-19 | Mg-D | 0.05 | 0.05 | 0.742 | 0.746 | 0.5 | 0.99 |
| 7SQR | 22-Oct-19 | Mg-T | 0.05 | 0.05 | 1.83 | 1.82 | 0.5 | 1.01 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| IR1 | 20-Jun-19 | Al-T | 0.003 | 0.003 | 0.0221 | 0.0222 | 0.5 | 1.00 |
| IR1 | 20-Jun-19 | K-T | 0.05 | 0.05 | 0.199 | 0.198 | 0.5 | 1.01 |
| IR6 | 18-Sep-19 | Hard-D | 0.5 | 0.5 | 37.5 | 37.3 | 0.5 | 1.01 |
| IR6 | 18-Sep-19 | Mg-D | 0.05 | 0.05 | 0.844 | 0.848 | 0.5 | 1.00 |
| IR6 | 18-Sep-19 | Sr-D | 0.001 | 0.001 | 0.0442 | 0.0444 | 0.5 | 1.00 |
| IR6 | 18-Nov-19 | K-T | 0.05 | 0.05 | 0.195 | 0.194 | 0.5 | 1.01 |
| LLM4 | 21-Aug-19 | Hard-D | 0.5 | 0.5 | 96.5 | 96.0 | 0.5 | 1.01 |
| LLM4 | 6-Nov-19 | Ca-D | 0.05 | 0.05 | 18.4 | 18.3 | 0.5 | 1.01 |
| MQL4 | 28-Aug-19 | Mg-T | 0.05 | 0.05 | 0.988 | 0.983 | 0.5 | 1.01 |
| MQL4 | 20-Nov-19 | Na-D | 0.05 | 0.05 | 18.7 | 18.6 | 0.5 | 1.01 |
| MW002 | 5-Dec-19 | S-D | 15 | 15 | 432 | 434 | 0.5 | 1.00 |
| MW004 | 27-Aug-19 | K-D | 0.05 | 0.05 | 1.87 | 1.86 | 0.5 | 1.01 |
| NNL4 | 14-Aug-19 | Al-D | 0.003 | 0.003 | 0.0195 | 0.0196 | 0.5 | 0.99 |
| QRDS1 | 18-Apr-19 | Sr-D | 0.001 | 0.001 | 0.0960 | 0.0955 | 0.5 | 1.01 |
| QU0813A | 10-Mar-20 | N-D | 0.02 | 0.02 | 0.206 | 0.207 | 0.5 | 1.00 |
| QU0821GD | 3-Sep-19 | B-D | 0.1 | 0.1 | 1.97 | 1.96 | 0.5 | 1.01 |
| QU1010S | 30-Sep-19 | Ba-D | 0.001 | 0.001 | 0.370 | 0.372 | 0.5 | 0.99 |
| QU1013D | 24-Sep-19 | pH-L | | | 8.39 | 8.35 | 0.5 | 1.00 |
| QU1109S | 18-Dec-19 | Sr-D | 0.001 | 0.001 | 0.411 | 0.409 | 0.5 | 1.00 |
| QU1410 | 11-Sep-19 | Hard-D | 0.5 | 0.5 | 2000 | 2010 | 0.5 | 1.00 |
| WA | 17-Oct-19 | Ca-D | 0.05 | 0.05 | 6.54 | 6.57 | 0.5 | 1.00 |
| WA | 12-Nov-19 | Si-D | 0.1 | 0.1 | 1.99 | 2.00 | 0.5 | 1.00 |
| 1M2N | 26-Feb-20 | Zn-T | 0.005 | 0.005 | 0.346 | 0.348 | 0.6 | 0.99 |
| 5M#2 | 27-Jan-20 | Ca-D | 0.05 | 0.05 | 61.8 | 62.2 | 0.6 | 0.99 |
| 5M#2 | 27-Jan-20 | Hard-D | 0.5 | 0.5 | 173 | 174 | 0.6 | 0.99 |
| 5M#2 | 27-Jan-20 | Sr-T | 0.001 | 0.001 | 0.628 | 0.632 | 0.6 | 0.99 |
| IR1 | 20-Jun-19 | Sr-D | 0.001 | 0.001 | 0.0691 | 0.0695 | 0.6 | 0.99 |
| IRT3 | 25-Apr-19 | Mg-T | 0.05 | 0.05 | 0.933 | 0.939 | 0.6 | 0.99 |
| IRT4 | 7-May-19 | Hard-D | 0.5 | 0.5 | 17.3 | 17.2 | 0.6 | 1.01 |
| LLM1 | 1-May-19 | Ca-D | 0.05 | 0.05 | 15.9 | 15.8 | 0.6 | 1.01 |
| LLM1 | 1-May-19 | Hard-D | 0.5 | 0.5 | 48.4 | 48.1 | 0.6 | 1.01 |
| LLM1 | 30-Oct-19 | Al-D | 0.003 | 0.003 | 0.0161 | 0.0160 | 0.6 | 1.01 |
| LLM4 | 6-Nov-19 | Si-T | 0.1 | 0.1 | 3.34 | 3.36 | 0.6 | 0.99 |
| LLM9 | 13-Nov-19 | Na-D | 0.05 | 0.05 | 17.1 | 17.0 | 0.6 | 1.01 |
| LLM9 | 13-Nov-19 | Si-T | 0.1 | 0.1 | 3.34 | 3.36 | 0.6 | 0.99 |
| LLO | 4-Nov-19 | Si-D | 0.1 | 0.1 | 3.19 | 3.21 | 0.6 | 0.99 |
| MQL4 | 20-Nov-19 | Mg-T | 0.05 | 0.05 | 1.56 | 1.57 | 0.6 | 0.99 |
| MW002 | 5-Dec-19 | Ca-D | 0.25 | 0.25 | 465 | 468 | 0.6 | 0.99 |
| MW002 | 5-Dec-19 | Mg-D | 0.25 | 0.25 | 51.0 | 51.3 | 0.6 | 0.99 |
| MW004 | 27-Aug-19 | Ba-D | 0.001 | 0.001 | 0.0360 | 0.0362 | 0.6 | 0.99 |
| MW004 | 27-Aug-19 | Mg-D | 0.05 | 0.05 | 17.9 | 18.0 | 0.6 | 0.99 |
| NNO | 30-Apr-19 | Al-D | 0.003 | 0.003 | 0.0312 | 0.0314 | 0.6 | 0.99 |
| QRDS1 | 18-Apr-19 | SO4-D | 1 | 1 | 46.8 | 47.1 | 0.6 | 0.99 |
| QU0813A | 26-Nov-19 | Mn-D | 0.001 | 0.001 | 0.0351 | 0.0349 | 0.6 | 1.01 |
| QU0813A | 10-Mar-20 | Sr-D | 0.001 | 0.001 | 0.476 | 0.473 | 0.6 | 1.01 |
| QU0821GD | 3-Sep-19 | Ba-D | 0.002 | 0.002 | 0.464 | 0.467 | 0.6 | 0.99 |
| QU0821GS | 27-Nov-19 | B-D | 0.1 | 0.1 | 1.79 | 1.78 | 0.6 | 1.01 |
| QU0821GS | 27-Nov-19 | Ca-D | 0.1 | 0.1 | 16.1 | 16.2 | 0.6 | 0.99 |
| QU1009D | 5-Sep-19 | Hard-D | 0.5 | 0.5 | 170 | 171 | 0.6 | 0.99 |
| QU1010S | 30-Sep-19 | Na-D | 0.05 | 0.05 | 34.3 | 34.5 | 0.6 | 0.99 |
| QU1013D | 24-Sep-19 | Mg-D | 0.05 | 0.05 | 3.60 | 3.58 | 0.6 | 1.01 |
| QU1410 | 11-Sep-19 | Ba-D | 0.005 | 0.005 | 0.0154 | 0.0155 | 0.6 | 0.99 |
| QU1410 | 11-Sep-19 | Fe-D | 0.025 | 0.025 | 1.71 | 1.70 | 0.6 | 1.01 |
| QU1410 | 11-Sep-19 | Mg-D | 0.25 | 0.25 | 181 | 180 | 0.6 | 1.01 |
| QU1410 | 20-Nov-19 | Fe-D | 0.025 | 0.025 | 1.67 | 1.66 | 0.6 | 1.01 |
| SPC | 1-Oct-19 | Ca-D | 0.05 | 0.05 | 32.5 | 32.7 | 0.6 | 0.99 |
| 242MW | 10-Dec-19 | Ca-D | 0.05 | 0.05 | 42.9 | 42.6 | 0.7 | 1.01 |
| 3SO | 4-Apr-19 | Fe-D | 0.005 | 0.005 | 0.0404 | 0.0401 | 0.7 | 1.01 |
| 3SO | 4-Apr-19 | Na-D | 0.05 | 0.05 | 1.00 | 0.993 | 0.7 | 1.01 |
| 7SQR | 22-Oct-19 | Si-D | 0.1 | 0.1 | 2.89 | 2.87 | 0.7 | 1.01 |
| IR1 | 20-Jun-19 | Sr-T | 0.001 | 0.001 | 0.0676 | 0.0681 | 0.7 | 0.99 |
| LLM1 | 30-Oct-19 | K-T | 0.05 | 0.05 | 0.280 | 0.282 | 0.7 | 0.99 |
| LLM4 | 6-Nov-19 | S-T | 3 | 3 | 13.3 | 13.4 | 0.7 | 0.99 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLM9 | 13-Nov-19 | Hard-D | 0.5 | 0.5 | 138 | 139 | 0.7 | 0.99 |
| LLMB | 24-Oct-19 | Si-D | 0.1 | 0.1 | 4.02 | 3.99 | 0.7 | 1.01 |
| LQL9 | 25-Apr-19 | Mg-D | 0.05 | 0.05 | 1.33 | 1.34 | 0.7 | 0.99 |
| MW002 | 15-May-19 | Hard-D | 0.5 | 0.5 | 1350 | 1340 | 0.7 | 1.01 |
| MW002 | 5-Dec-19 | Ba-D | 0.005 | 0.005 | 0.0145 | 0.0146 | 0.7 | 0.99 |
| MW002 | 5-Dec-19 | Hard-D | 0.5 | 0.5 | 1370 | 1380 | 0.7 | 0.99 |
| MW002 | 5-Dec-19 | Mn-D | 0.005 | 0.005 | 1.53 | 1.54 | 0.7 | 0.99 |
| MW004 | 27-Aug-19 | S-D | 3 | 3 | 145 | 144 | 0.7 | 1.01 |
| NNL1 | 7-Aug-19 | Fe-D | 0.005 | 0.005 | 0.0463 | 0.0460 | 0.7 | 1.01 |
| NNL1 | 7-Aug-19 | Hard-D | 0.5 | 0.5 | 15.2 | 15.3 | 0.7 | 0.99 |
| NNL1 | 7-Aug-19 | Sr-T | 0.001 | 0.001 | 0.0142 | 0.0141 | 0.7 | 1.01 |
| NNO | 29-Oct-19 | Sr-D | 0.001 | 0.001 | 0.0145 | 0.0146 | 0.7 | 0.99 |
| QRDS1 | 18-Apr-19 | Hardness (as CaC | 0.5 | 0.5 | 44.2 | 43.9 | 0.7 | 1.01 |
| QU0821GD | 19-Feb-20 | B-D | 0.25 | 0.25 | 2.95 | 2.93 | 0.7 | 1.01 |
| QU0821GD | 19-Feb-20 | K-D | 0.25 | 0.25 | 9.37 | 9.30 | 0.7 | 1.01 |
| QU0821GD | 19-Feb-20 | Mg-D | 0.25 | 0.25 | 15.2 | 15.1 | 0.7 | 1.01 |
| QU0821GS | 27-Nov-19 | K-D | 0.1 | 0.1 | 4.37 | 4.40 | 0.7 | 0.99 |
| QU0821GS | 27-Nov-19 | Mg-D | 0.1 | 0.1 | 4.04 | 4.01 | 0.7 | 1.01 |
| QU1009S | 27-May-19 | Alkalinity Total as | 1 | 1 | 137 | 138 | 0.7 | 0.99 |
| QU1010S | 11-Dec-19 | Sr-D | 0.001 | 0.001 | 0.427 | 0.430 | 0.7 | 0.99 |
| QU1013D | 24-Sep-19 | N-D | 0.02 | 0.02 | 0.294 | 0.292 | 0.7 | 1.01 |
| QU1101 | 23-Dec-19 | Mn-D | 0.005 | 0.005 | 2.98 | 3.00 | 0.7 | 0.99 |
| QU1109S | 18-Dec-19 | As-D | 0.0001 | 0.0001 | 0.151 | 0.150 | 0.7 | 1.01 |
| QU1410 | 20-Nov-19 | Mn-D | 0.005 | 0.005 | 1.54 | 1.53 | 0.7 | 1.01 |
| QU1410 | 20-Nov-19 | Na-D | 0.25 | 0.25 | 55.8 | 55.4 | 0.7 | 1.01 |
| QU1410 | 24-Feb-20 | Ba-D | 0.005 | 0.002 | 0.0147 | 0.0146 | 0.7 | 1.01 |
| SPC | 1-Oct-19 | Mg-D | 0.05 | 0.05 | 4.53 | 4.56 | 0.7 | 0.99 |
| WB | 12-Aug-19 | Sr-D | 0.001 | 0.001 | 0.0296 | 0.0298 | 0.7 | 0.99 |
| 242MW | 10-Dec-19 | Hard-D | 0.5 | 0.5 | 122 | 121 | 0.8 | 1.01 |
| 7SQR | 22-Oct-19 | Ca-T | 0.05 | 0.05 | 13.1 | 13.2 | 0.8 | 0.99 |
| 7SQR | 22-Oct-19 | Na-D | 0.05 | 0.05 | 13.0 | 13.1 | 0.8 | 0.99 |
| 7SQR | 22-Oct-19 | Na-T | 0.05 | 0.05 | 12.2 | 12.3 | 0.8 | 0.99 |
| IR1 | 20-Jun-19 | Na-D | 0.05 | 0.05 | 1.29 | 1.28 | 0.8 | 1.01 |
| LLM1 | 1-May-19 | Al-D | 0.003 | 0.003 | 0.0238 | 0.0236 | 0.8 | 1.01 |
| LLM1 | 30-Oct-19 | Al-T | 0.003 | 0.003 | 0.0264 | 0.0262 | 0.8 | 1.01 |
| LLMB | 24-Oct-19 | B-D | 0.05 | 0.05 | 0.124 | 0.125 | 0.8 | 0.99 |
| LLMB | 24-Oct-19 | B-T | 0.05 | 0.05 | 0.124 | 0.123 | 0.8 | 1.01 |
| LLMB | 24-Oct-19 | Ca-D | 0.05 | 0.05 | 51.5 | 51.1 | 0.8 | 1.01 |
| LQL1 | 9-May-19 | Al-T | 0.003 | 0.003 | 0.0371 | 0.0368 | 0.8 | 1.01 |
| LQL9 | 25-Apr-19 | Ca-D | 0.05 | 0.05 | 11.8 | 11.9 | 0.8 | 0.99 |
| LQL9 | 25-Apr-19 | SO4-D | 1 | 1 | 25.1 | 25.3 | 0.8 | 0.99 |
| MW002 | 5-Dec-19 | Fe-D | 0.025 | 0.025 | 3.87 | 3.84 | 0.8 | 1.01 |
| MW002 | 5-Dec-19 | Si-D | 0.5 | 0.5 | 3.66 | 3.69 | 0.8 | 0.99 |
| NNL1 | 7-Aug-19 | Al-D | 0.003 | 0.003 | 0.0127 | 0.0126 | 0.8 | 1.01 |
| NNL1 | 7-Aug-19 | Na-D | 0.05 | 0.05 | 1.28 | 1.27 | 0.8 | 1.01 |
| NNL4 | 14-Aug-19 | Ca-D | 0.05 | 0.05 | 4.87 | 4.91 | 0.8 | 0.99 |
| NNL4 | 14-Aug-19 | Na-D | 0.05 | 0.05 | 1.28 | 1.29 | 0.8 | 0.99 |
| NNO | 29-Oct-19 | Na-T | 0.05 | 0.05 | 1.25 | 1.26 | 0.8 | 0.99 |
| QU0813A | 26-Nov-19 | Ba-D | 0.001 | 0.001 | 0.264 | 0.262 | 0.8 | 1.01 |
| QU0813A | 26-Nov-19 | Hard-D | 0.5 | 0.5 | 123 | 122 | 0.8 | 1.01 |
| QU0813A | 10-Mar-20 | S-D | 3 | 3 | 12.0 | 12.1 | 0.8 | 0.99 |
| QU0821GD | 3-Sep-19 | Hard-D | 0.5 | 0.5 | 73.5 | 74.1 | 0.8 | 0.99 |
| QU0821GD | 19-Feb-20 | Si-D | 0.5 | 0.5 | 3.70 | 3.73 | 0.8 | 0.99 |
| QU1009D | 5-Sep-19 | S-D | 3 | 3 | 25.4 | 25.6 | 0.8 | 0.99 |
| QU1009S | 27-May-19 | Ba-D | 0.001 | 0.001 | 0.130 | 0.129 | 0.8 | 1.01 |
| QU1009S | 27-May-19 | Li-D | 0.002 | 0.002 | 0.0130 | 0.0129 | 0.8 | 1.01 |
| QU1101 | 23-Dec-19 | Ba-D | 0.005 | 0.005 | 0.0126 | 0.0125 | 0.8 | 1.01 |
| QU1410 | 28-Jan-20 | Ca-D | 0.05 | 0.25 | 521 | 517 | 0.8 | 1.01 |
| QU1410 | 28-Jan-20 | Sr-D | 0.001 | 0.005 | 5.07 | 5.11 | 0.8 | 0.99 |
| SPC | 1-Oct-19 | Al-T | 0.003 | 0.003 | 0.127 | 0.128 | 0.8 | 0.99 |
| SPC | 1-Oct-19 | Fe-D | 0.005 | 0.005 | 0.250 | 0.248 | 0.8 | 1.01 |
| SPC | 1-Oct-19 | K-D | 0.05 | 0.05 | 0.480 | 0.484 | 0.8 | 0.99 |
| 1M2N | 26-Feb-20 | Ba-D | 0.001 | 0.001 | 0.0326 | 0.0329 | 0.9 | 0.99 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 3SO | 4-Apr-19 | Al-D | 0.003 | 0.003 | 0.0324 | 0.0327 | 0.9 | 0.99 |
| 5M#2 | 27-Jan-20 | Fe-D | 0.005 | 0.005 | 0.325 | 0.328 | 0.9 | 0.99 |
| 5M#2 | 27-Jan-20 | S-T | 3 | 3 | 54.1 | 54.6 | 0.9 | 0.99 |
| 7SQR | 26-Aug-19 | Mg-D | 0.05 | 0.05 | 1.06 | 1.05 | 0.9 | 1.01 |
| 7SQR | 22-Oct-19 | Al-D | 0.003 | 0.003 | 0.0340 | 0.0343 | 0.9 | 0.99 |
| IR1 | 20-Jun-19 | Ca-T | 0.05 | 0.05 | 22.5 | 22.7 | 0.9 | 0.99 |
| IR6 | 18-Sep-19 | Na-D | 0.05 | 0.05 | 1.12 | 1.11 | 0.9 | 1.01 |
| IR6 | 18-Nov-19 | Na-D | 0.05 | 0.05 | 1.09 | 1.10 | 0.9 | 0.99 |
| LLM4 | 21-Aug-19 | K-D | 0.05 | 0.05 | 0.347 | 0.350 | 0.9 | 0.99 |
| LLM4 | 6-Nov-19 | Sr-D | 0.001 | 0.001 | 0.111 | 0.112 | 0.9 | 0.99 |
| LLM9 | 13-Nov-19 | Ca-T | 0.05 | 0.05 | 44.9 | 44.5 | 0.9 | 1.01 |
| LLM9 | 13-Nov-19 | Fe-D | 0.005 | 0.005 | 0.0233 | 0.0231 | 0.9 | 1.01 |
| LLMB | 24-Oct-19 | Ba-D | 0.001 | 0.001 | 0.0111 | 0.0112 | 0.9 | 0.99 |
| LLMB | 24-Oct-19 | Mn-T | 0.001 | 0.001 | 0.984 | 0.993 | 0.9 | 0.99 |
| LLO | 4-Nov-19 | Sr-D | 0.001 | 0.001 | 0.109 | 0.110 | 0.9 | 0.99 |
| LQL1 | 9-May-19 | Hard-D | 0.5 | 0.5 | 34.9 | 35.2 | 0.9 | 0.99 |
| LQL1 | 9-May-19 | Na-D | 0.05 | 0.05 | 11.1 | 11.0 | 0.9 | 1.01 |
| LQL9 | 25-Apr-19 | Hard-D | 0.5 | 0.5 | 34.9 | 35.2 | 0.9 | 0.99 |
| MQL4 | 28-Aug-19 | Sr-D | 0.001 | 0.001 | 0.0225 | 0.0227 | 0.9 | 0.99 |
| MQL4 | 20-Nov-19 | S-D | 3 | 3 | 10.8 | 10.9 | 0.9 | 0.99 |
| MQL4 | 20-Nov-19 | S-T | 3 | 3 | 11.1 | 11.0 | 0.9 | 1.01 |
| MW002 | 15-May-19 | Ca-D | 0.1 | 0.1 | 465 | 461 | 0.9 | 1.01 |
| NNL1 | 9-Apr-19 | Ca-D | 0.05 | 0.05 | 3.39 | 3.36 | 0.9 | 1.01 |
| NNL1 | 9-Apr-19 | Sr-T | 0.001 | 0.001 | 0.0107 | 0.0108 | 0.9 | 0.99 |
| NNL4 | 14-Aug-19 | Mg-D | 0.05 | 0.05 | 1.09 | 1.10 | 0.9 | 0.99 |
| NNO | 30-Apr-19 | Sr-D | 0.001 | 0.001 | 0.0113 | 0.0114 | 0.9 | 0.99 |
| NNO | 29-Oct-19 | Ca-D | 0.05 | 0.05 | 4.62 | 4.66 | 0.9 | 0.99 |
| PDSR | 4-Dec-19 | Ba-D | 0.001 | 0.001 | 0.0217 | 0.0219 | 0.9 | 0.99 |
| QU0813A | 26-Nov-19 | Ca-D | 0.05 | 0.05 | 35.4 | 35.1 | 0.9 | 1.01 |
| QU0821GD | 19-Feb-20 | Ba-D | 0.005 | 0.005 | 2.26 | 2.28 | 0.9 | 0.99 |
| QU1009D | 5-Sep-19 | Mg-D | 0.05 | 0.05 | 10.5 | 10.6 | 0.9 | 0.99 |
| QU1013D | 24-Sep-19 | K-D | 0.05 | 0.05 | 3.43 | 3.40 | 0.9 | 1.01 |
| QU1101 | 23-Dec-19 | Sr-D | 0.005 | 0.005 | 2.10 | 2.12 | 0.9 | 0.99 |
| QU1410 | 28-Jan-20 | pH-L | | | 7.73 | 7.66 | 0.9 | 1.01 |
| QU1410 | 28-Jan-20 | Si-D | 0.1 | 0.5 | 3.54 | 3.51 | 0.9 | 1.01 |
| SPC | 1-Oct-19 | S-D | 3 | 3 | 21.9 | 22.1 | 0.9 | 0.99 |
| WB | 12-Aug-19 | Mg-D | 0.05 | 0.05 | 1.06 | 1.05 | 0.9 | 1.01 |
| WD | 6-Jan-20 | As-D | 0.0001 | 0.0001 | 0.00105 | 0.00106 | 0.9 | 0.99 |
| WD | 6-Jan-20 | Ca-D | 0.05 | 0.05 | 108 | 109 | 0.9 | 0.99 |
| 1M2N | 26-Feb-20 | S-D | 3 | 3 | 203 | 205 | 1.0 | 0.99 |
| 7SQR | 26-Aug-19 | Fe-D | 0.005 | 0.005 | 0.0515 | 0.0510 | 1.0 | 1.01 |
| 7SQR | 22-Oct-19 | Mn-T | 0.001 | 0.001 | 0.0095 | 0.0096 | 1.0 | 0.99 |
| IR1 | 20-Jun-19 | Hardness (as CaC | 0.5 | 0.5 | 61.0 | 61.6 | 1.0 | 0.99 |
| IR1 | 20-Jun-19 | Si-D | 0.1 | 0.1 | 2.98 | 2.95 | 1.0 | 1.01 |
| IR6 | 18-Sep-19 | K-T | 0.05 | 0.05 | 0.197 | 0.199 | 1.0 | 0.99 |
| IR6 | 18-Nov-19 | Sr-D | 0.001 | 0.001 | 0.0310 | 0.0313 | 1.0 | 0.99 |
| LLO | 4-Nov-19 | Si-T | 0.1 | 0.1 | 3.11 | 3.14 | 1.0 | 0.99 |
| MQL1 | 18-Apr-19 | Fe-D | 0.005 | 0.005 | 0.0199 | 0.0197 | 1.0 | 1.01 |
| MQL1 | 18-Apr-19 | N-T | 0.02 | 0.02 | 0.101 | 0.100 | 1.0 | 1.01 |
| MQL1 | 18-Apr-19 | N-TKN | 0.02 | 0.02 | 0.101 | 0.100 | 1.0 | 1.01 |
| MQL4 | 28-Aug-19 | Ca-T | 0.05 | 0.05 | 8.45 | 8.37 | 1.0 | 1.01 |
| MW002 | 5-Dec-19 | K-D | 0.25 | 0.25 | 5.00 | 5.05 | 1.0 | 0.99 |
| NNL1 | 7-Aug-19 | Mg-T | 0.05 | 0.05 | 1.02 | 1.03 | 1.0 | 0.99 |
| NNO | 29-Oct-19 | Mg-T | 0.05 | 0.05 | 1.04 | 1.03 | 1.0 | 1.01 |
| PDSR | 4-Dec-19 | S-D | 3 | 3 | 204 | 206 | 1.0 | 0.99 |
| PDSR | 10-Feb-20 | Ca-D | 0.05 | 0.05 | 103 | 104 | 1.0 | 0.99 |
| PDSR | 10-Feb-20 | K-D | 0.05 | 0.05 | 0.934 | 0.925 | 1.0 | 1.01 |
| PDSR | 10-Feb-20 | Sr-D | 0.001 | 0.001 | 0.581 | 0.587 | 1.0 | 0.99 |
| QU0813A | 26-Nov-19 | As-D | 0.0001 | 0.0001 | 0.384 | 0.380 | 1.0 | 1.01 |
| QU0813A | 26-Nov-19 | Sr-D | 0.001 | 0.001 | 0.489 | 0.484 | 1.0 | 1.01 |
| QU0821GD | 19-Feb-20 | Mn-D | 0.005 | 0.005 | 0.0495 | 0.0500 | 1.0 | 0.99 |
| QU1008D | 18-Mar-20 | Fe-D | 0.01 | 0.025 | 0.103 | 0.104 | 1.0 | 0.99 |
| QU1009D | 5-Sep-19 | Ca-D | 0.05 | 0.05 | 50.6 | 51.1 | 1.0 | 0.99 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1009S | 27-May-19 | As-D | 0.0001 | 0.0001 | 0.0722 | 0.0715 | 1.0 | 1.01 |
| QU1010S | 30-Sep-19 | Sr-D | 0.001 | 0.001 | 0.392 | 0.396 | 1.0 | 0.99 |
| QU1013D | 24-Sep-19 | S-D | 3 | 3 | 102 | 101 | 1.0 | 1.01 |
| QU1410 | 11-Sep-19 | U-D | 0.0005 | 0.0005 | 0.00100 | 0.00101 | 1.0 | 0.99 |
| QU1410 | 20-Nov-19 | As-D | 0.0005 | 0.0005 | 0.0914 | 0.0905 | 1.0 | 1.01 |
| QU1410 | 20-Nov-19 | Hard-D | 0.5 | 0.5 | 2060 | 2040 | 1.0 | 1.01 |
| QU1410 | 28-Jan-20 | U-D | 0.0001 | 0.0005 | 0.00099 | 0.00098 | 1.0 | 1.01 |
| QU1410 | 24-Feb-20 | S-D | 15 | 6 | 601 | 595 | 1.0 | 1.01 |
| SPC | 1-Oct-19 | Fe-T | 0.01 | 0.01 | 0.311 | 0.314 | 1.0 | 0.99 |
| SPC | 1-Oct-19 | Sr-D | 0.001 | 0.001 | 0.193 | 0.195 | 1.0 | 0.99 |
| WA | 17-Oct-19 | Hard-D | 0.5 | 0.5 | 19.4 | 19.6 | 1.0 | 0.99 |
| WA | 17-Oct-19 | Hardness (as CaC | 0.5 | 0.5 | 21.1 | 20.9 | 1.0 | 1.01 |
| WA | 17-Oct-19 | Si-D | 0.1 | 0.1 | 2.01 | 2.03 | 1.0 | 0.99 |
| WA | 12-Nov-19 | Ca-D | 0.05 | 0.05 | 6.82 | 6.89 | 1.0 | 0.99 |
| WA | 12-Nov-19 | Hard-D | 0.5 | 0.5 | 20.4 | 20.6 | 1.0 | 0.99 |
| WB | 12-Aug-19 | Na-D | 0.05 | 0.05 | 4.10 | 4.06 | 1.0 | 1.01 |
| WB | 12-Aug-19 | Si-D | 0.1 | 0.1 | 1.92 | 1.90 | 1.0 | 1.01 |
| 5M#2 | 27-Jan-20 | Mg-D | 0.05 | 0.05 | 4.54 | 4.49 | 1.1 | 1.01 |
| 7SQR | 22-Oct-19 | Fe-T | 0.01 | 0.01 | 0.189 | 0.187 | 1.1 | 1.01 |
| IR1 | 20-Jun-19 | Si-T | 0.1 | 0.1 | 2.76 | 2.79 | 1.1 | 0.99 |
| IRT3 | 25-Apr-19 | K-D | 0.05 | 0.05 | 0.371 | 0.367 | 1.1 | 1.01 |
| IRT4 | 7-May-19 | Ba-D | 0.001 | 0.001 | 0.0270 | 0.0273 | 1.1 | 0.99 |
| LLM1 | 30-Oct-19 | Hard-D | 0.5 | 0.5 | 62.9 | 63.6 | 1.1 | 0.99 |
| LLM4 | 21-Aug-19 | Na-D | 0.05 | 0.05 | 9.99 | 10.1 | 1.1 | 0.99 |
| LLM4 | 21-Aug-19 | S-D | 3 | 3 | 27.4 | 27.7 | 1.1 | 0.99 |
| LLO | 4-Nov-19 | Ca-T | 0.05 | 0.05 | 17.6 | 17.8 | 1.1 | 0.99 |
| LQL9 | 25-Apr-19 | S-D | 3 | 3 | 9.0 | 9.1 | 1.1 | 0.99 |
| LQL9 | 25-Apr-19 | Si-D | 0.1 | 0.1 | 2.75 | 2.78 | 1.1 | 0.99 |
| MQL1 | 18-Apr-19 | Sr-T | 0.001 | 0.001 | 0.0954 | 0.0965 | 1.1 | 0.99 |
| MQL4 | 28-Aug-19 | K-D | 0.05 | 0.05 | 0.089 | 0.090 | 1.1 | 0.99 |
| MQL4 | 20-Nov-19 | Sr-T | 0.001 | 0.001 | 0.0705 | 0.0697 | 1.1 | 1.01 |
| MW002 | 15-May-19 | As-D | 0.0002 | 0.0002 | 0.00188 | 0.00186 | 1.1 | 1.01 |
| MW002 | 5-Dec-19 | C-D | 0.5 | 0.5 | 0.90 | 0.91 | 1.1 | 0.99 |
| NNL1 | 7-Aug-19 | Si-T | 0.1 | 0.1 | 2.68 | 2.65 | 1.1 | 1.01 |
| PDSR | 4-Dec-19 | Mg-D | 0.05 | 0.05 | 36.9 | 36.5 | 1.1 | 1.01 |
| QU0813A | 26-Nov-19 | Fe-D | 0.005 | 0.005 | 0.184 | 0.182 | 1.1 | 1.01 |
| QU0821GD | 19-Feb-20 | Cl-D | 10 | 10 | 890 | 900 | 1.1 | 0.99 |
| QU0821GS | 27-Nov-19 | As-D | 0.0002 | 0.0002 | 0.184 | 0.182 | 1.1 | 1.01 |
| QU1010S | 11-Dec-19 | Ba-D | 0.001 | 0.001 | 0.353 | 0.349 | 1.1 | 1.01 |
| QU1013D | 24-Sep-19 | Si-D | 0.1 | 0.1 | 3.70 | 3.66 | 1.1 | 1.01 |
| QU1410 | 24-Feb-20 | U-D | 0.0005 | 0.0002 | 0.00093 | 0.00094 | 1.1 | 0.99 |
| IR6 | 18-Sep-19 | As-D | 0.0001 | 0.0001 | 0.00082 | 0.00083 | 1.2 | 0.99 |
| IRT4 | 7-May-19 | Alkalinity Total as | 1 | 1 | 17.2 | 17.0 | 1.2 | 1.01 |
| LLM4 | 21-Aug-19 | K-T | 0.05 | 0.05 | 0.347 | 0.343 | 1.2 | 1.01 |
| LLM4 | 6-Nov-19 | Na-T | 0.05 | 0.05 | 5.65 | 5.58 | 1.2 | 1.01 |
| LLO | 4-Nov-19 | K-T | 0.05 | 0.05 | 0.248 | 0.251 | 1.2 | 0.99 |
| LQL1 | 9-May-19 | Sr-D | 0.001 | 0.001 | 0.0589 | 0.0596 | 1.2 | 0.99 |
| LQL9 | 25-Apr-19 | Al-D | 0.003 | 0.003 | 0.0318 | 0.0322 | 1.2 | 0.99 |
| MQL4 | 28-Aug-19 | Hardness (as CaC | 0.5 | 0.5 | 25.2 | 24.9 | 1.2 | 1.01 |
| MW004 | 27-Aug-19 | Ca-D | 0.05 | 0.05 | 166 | 164 | 1.2 | 1.01 |
| MW004 | 27-Aug-19 | Hard-D | 0.5 | 0.5 | 489 | 483 | 1.2 | 1.01 |
| NNL4 | 14-Aug-19 | Hard-D | 0.5 | 0.5 | 16.6 | 16.8 | 1.2 | 0.99 |
| NNO | 29-Oct-19 | Hardness (as CaC | 0.5 | 0.5 | 16.0 | 16.2 | 1.2 | 0.99 |
| NNO | 29-Oct-19 | Si-D | 0.1 | 0.1 | 3.24 | 3.28 | 1.2 | 0.99 |
| QU0813A | 26-Nov-19 | Li-D | 0.002 | 0.002 | 0.0494 | 0.0488 | 1.2 | 1.01 |
| QU0821GD | 19-Feb-20 | Hydrogen Sulphic | 0.0019 | 0.0019 | 0.086 | 0.085 | 1.2 | 1.01 |
| QU0821GD | 19-Feb-20 | S2-T | 0.0018 | 0.0018 | 0.081 | 0.080 | 1.2 | 1.01 |
| QU1008D | 18-Mar-20 | Si-D | 0.2 | 0.5 | 4.89 | 4.83 | 1.2 | 1.01 |
| QU1009S | 27-May-19 | Bicarbonate | 1 | 1 | 167 | 169 | 1.2 | 0.99 |
| QU1010S | 30-Sep-19 | K-D | 0.05 | 0.05 | 3.47 | 3.43 | 1.2 | 1.01 |
| QU1010S | 11-Dec-19 | Hard-D | 0.5 | 0.5 | 83.4 | 82.4 | 1.2 | 1.01 |
| QU1013D | 24-Sep-19 | As-D | 0.0001 | 0.0001 | 0.00403 | 0.00398 | 1.2 | 1.01 |
| QU1013D | 24-Sep-19 | Ba-D | 0.001 | 0.001 | 0.0242 | 0.0239 | 1.2 | 1.01 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1410 | 28-Jan-20 | Mg-D | 0.05 | 0.25 | 172 | 174 | 1.2 | 0.99 |
| SPC | 1-Oct-19 | Hard-D | 0.5 | 0.5 | 99.8 | 101 | 1.2 | 0.99 |
| WA | 17-Oct-19 | K-D | 0.05 | 0.05 | 0.085 | 0.086 | 1.2 | 0.99 |
| 1M2N | 26-Feb-20 | Al-T | 0.003 | 0.003 | 0.0080 | 0.0079 | 1.3 | 1.01 |
| 242MW | 10-Dec-19 | B-D | 0.05 | 0.05 | 0.076 | 0.077 | 1.3 | 0.99 |
| 3SO | 4-Apr-19 | N-T | 0.02 | 0.02 | 0.076 | 0.077 | 1.3 | 0.99 |
| 3SO | 4-Apr-19 | N-TKN | 0.02 | 0.02 | 0.076 | 0.077 | 1.3 | 0.99 |
| 7SQR | 26-Aug-19 | Al-D | 0.003 | 0.003 | 0.0077 | 0.0076 | 1.3 | 1.01 |
| 7SQR | 22-Oct-19 | Cu-T | 0.0005 | 0.0005 | 0.00079 | 0.00078 | 1.3 | 1.01 |
| IR6 | 18-Sep-19 | Al-D | 0.003 | 0.003 | 0.0316 | 0.0320 | 1.3 | 0.99 |
| IR6 | 18-Nov-19 | Al-T | 0.003 | 0.003 | 0.0959 | 0.0947 | 1.3 | 1.01 |
| IR6 | 18-Nov-19 | Fe-D | 0.005 | 0.005 | 0.0385 | 0.0390 | 1.3 | 0.99 |
| LLM1 | 1-May-19 | Si-D | 0.1 | 0.1 | 3.18 | 3.14 | 1.3 | 1.01 |
| LLM4 | 21-Aug-19 | Al-D | 0.003 | 0.003 | 0.0075 | 0.0076 | 1.3 | 0.99 |
| LLM4 | 6-Nov-19 | Mn-T | 0.001 | 0.001 | 0.0074 | 0.0075 | 1.3 | 0.99 |
| LLM9 | 13-Nov-19 | Ca-D | 0.05 | 0.05 | 46.6 | 47.2 | 1.3 | 0.99 |
| LLMB | 24-Oct-19 | Hard-D | 0.5 | 0.5 | 151 | 149 | 1.3 | 1.01 |
| LLMB | 24-Oct-19 | Si-T | 0.1 | 0.1 | 3.90 | 3.95 | 1.3 | 0.99 |
| MQL1 | 18-Apr-19 | B-D | 0.05 | 0.05 | 0.074 | 0.075 | 1.3 | 0.99 |
| MQL4 | 28-Aug-19 | Na-D | 0.05 | 0.05 | 3.06 | 3.10 | 1.3 | 0.99 |
| MW002 | 5-Dec-19 | pH-L | | | 7.89 | 7.79 | 1.3 | 1.01 |
| NNL1 | 7-Aug-19 | Ca-D | 0.05 | 0.05 | 4.46 | 4.52 | 1.3 | 0.99 |
| NNO | 29-Oct-19 | Hard-D | 0.5 | 0.5 | 15.5 | 15.7 | 1.3 | 0.99 |
| PDSR | 4-Dec-19 | K-D | 0.05 | 0.05 | 1.55 | 1.57 | 1.3 | 0.99 |
| QRDS1 | 18-Apr-19 | Si-T | 0.1 | 0.1 | 2.25 | 2.22 | 1.3 | 1.01 |
| QU0813A | 10-Mar-20 | Fe-D | 0.005 | 0.005 | 0.321 | 0.317 | 1.3 | 1.01 |
| QU0821GD | 19-Feb-20 | As-D | 0.0005 | 0.0005 | 0.155 | 0.153 | 1.3 | 1.01 |
| QU1008D | 18-Mar-20 | Ba-D | 0.002 | 0.005 | 0.0225 | 0.0228 | 1.3 | 0.99 |
| QU1009D | 5-Sep-19 | Si-D | 0.1 | 0.1 | 9.52 | 9.64 | 1.3 | 0.99 |
| QU1410 | 20-Nov-19 | Ba-D | 0.005 | 0.005 | 0.0159 | 0.0157 | 1.3 | 1.01 |
| WB | 12-Aug-19 | Mn-T | 0.001 | 0.001 | 0.0077 | 0.0078 | 1.3 | 0.99 |
| IR6 | 18-Nov-19 | Mg-T | 0.05 | 0.05 | 0.856 | 0.844 | 1.4 | 1.01 |
| IRT4 | 7-May-19 | Bicarbonate | 1 | 1 | 21.0 | 20.7 | 1.4 | 1.01 |
| IRT4 | 7-May-19 | K-D | 0.05 | 0.05 | 0.368 | 0.363 | 1.4 | 1.01 |
| LLM1 | 1-May-19 | Mg-D | 0.05 | 0.05 | 2.14 | 2.11 | 1.4 | 1.01 |
| LLM1 | 30-Oct-19 | Na-T | 0.05 | 0.05 | 6.46 | 6.37 | 1.4 | 1.01 |
| LLM4 | 21-Aug-19 | B-T | 0.05 | 0.05 | 0.071 | 0.072 | 1.4 | 0.99 |
| LLM4 | 21-Aug-19 | Si-T | 0.1 | 0.1 | 2.86 | 2.90 | 1.4 | 0.99 |
| LLM4 | 21-Aug-19 | Sr-D | 0.001 | 0.001 | 0.220 | 0.223 | 1.4 | 0.99 |
| LQL1 | 9-May-19 | K-T | 0.05 | 0.05 | 0.278 | 0.274 | 1.4 | 1.01 |
| MQL1 | 18-Apr-19 | Si-T | 0.1 | 0.1 | 2.16 | 2.19 | 1.4 | 0.99 |
| MQL4 | 28-Aug-19 | Al-T | 0.003 | 0.003 | 0.0143 | 0.0141 | 1.4 | 1.01 |
| MW002 | 15-May-19 | S-D | 6 | 6 | 430 | 424 | 1.4 | 1.01 |
| NNL1 | 9-Apr-19 | Ca-T | 0.05 | 0.05 | 3.53 | 3.58 | 1.4 | 0.99 |
| NNL1 | 7-Aug-19 | Al-T | 0.003 | 0.003 | 0.0147 | 0.0145 | 1.4 | 1.01 |
| NNL1 | 7-Aug-19 | Sr-D | 0.001 | 0.001 | 0.0145 | 0.0143 | 1.4 | 1.01 |
| NNO | 30-Apr-19 | K-T | 0.05 | 0.05 | 0.070 | 0.071 | 1.4 | 0.99 |
| PDSR | 10-Feb-20 | S-D | 3 | 3 | 94.9 | 93.6 | 1.4 | 1.01 |
| QU0813A | 26-Nov-19 | Fluoride | 0.05 | 0.05 | 0.72 | 0.73 | 1.4 | 0.99 |
| QU0821GD | 3-Sep-19 | Ca-D | 0.1 | 0.1 | 21.4 | 21.7 | 1.4 | 0.99 |
| QU0821GD | 3-Sep-19 | Na-D | 0.1 | 0.1 | 142 | 140 | 1.4 | 1.01 |
| QU0821GD | 3-Sep-19 | Sr-D | 0.002 | 0.002 | 0.565 | 0.557 | 1.4 | 1.01 |
| QU1101 | 23-Dec-19 | Si-D | 0.5 | 0.5 | 5.84 | 5.76 | 1.4 | 1.01 |
| QU1410 | 11-Sep-19 | Ca-D | 0.25 | 0.25 | 500 | 507 | 1.4 | 0.99 |
| QU1410 | 11-Sep-19 | Li-D | 0.01 | 0.01 | 0.139 | 0.137 | 1.4 | 1.01 |
| QU1410 | 11-Sep-19 | Mn-D | 0.005 | 0.005 | 1.44 | 1.42 | 1.4 | 1.01 |
| QU1410 | 20-Nov-19 | Li-D | 0.01 | 0.01 | 0.139 | 0.141 | 1.4 | 0.99 |
| QU1410 | 28-Jan-20 | Na-D | 0.05 | 0.25 | 50.8 | 51.5 | 1.4 | 0.99 |
| WB | 12-Aug-19 | Al-T | 0.003 | 0.003 | 0.0143 | 0.0145 | 1.4 | 0.99 |
| WB | 12-Aug-19 | Sr-T | 0.001 | 0.001 | 0.0287 | 0.0283 | 1.4 | 1.01 |
| 5M#2 | 27-Jan-20 | Ba-T | 0.001 | 0.001 | 0.0328 | 0.0333 | 1.5 | 0.98 |
| 7SQR | 26-Aug-19 | Si-T | 0.1 | 0.1 | 2.02 | 1.99 | 1.5 | 1.02 |
| 7SQR | 22-Oct-19 | K-T | 0.05 | 0.05 | 0.336 | 0.341 | 1.5 | 0.99 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 7SQR | 22-Oct-19 | Si-T | 0.1 | 0.1 | 2.69 | 2.73 | 1.5 | 0.99 |
| IR1 | 20-Jun-19 | Na-T | 0.05 | 0.05 | 1.29 | 1.31 | 1.5 | 0.98 |
| IR1 | 20-Jun-19 | SO4-D | 1 | 1 | 6.7 | 6.6 | 1.5 | 1.02 |
| IR6 | 18-Nov-19 | Mg-D | 0.05 | 0.05 | 0.833 | 0.846 | 1.5 | 0.98 |
| IRT3 | 25-Apr-19 | Al-D | 0.003 | 0.003 | 0.0600 | 0.0609 | 1.5 | 0.99 |
| LLM1 | 30-Oct-19 | Ca-D | 0.05 | 0.05 | 20.5 | 20.8 | 1.5 | 0.99 |
| LLM9 | 13-Nov-19 | Hardness (as CaC | 0.5 | 0.5 | 134 | 132 | 1.5 | 1.02 |
| LLMB | 24-Oct-19 | Bicarbonate | 1 | 1 | 67 | 68 | 1.5 | 0.99 |
| MQL4 | 28-Aug-19 | Fe-D | 0.005 | 0.005 | 0.0269 | 0.0273 | 1.5 | 0.99 |
| MQL4 | 20-Nov-19 | B-D | 0.05 | 0.05 | 0.066 | 0.065 | 1.5 | 1.02 |
| MQL4 | 20-Nov-19 | B-T | 0.05 | 0.05 | 0.068 | 0.069 | 1.5 | 0.99 |
| MW002 | 15-May-19 | SO4-D | 10 | 10 | 1300 | 1320 | 1.5 | 0.98 |
| MW002 | 5-Dec-19 | Sr-D | 0.005 | 0.005 | 3.92 | 3.98 | 1.5 | 0.98 |
| MW004 | 27-Aug-19 | Sr-D | 0.001 | 0.001 | 1.33 | 1.35 | 1.5 | 0.99 |
| NNL1 | 9-Apr-19 | Fe-T | 0.01 | 0.01 | 0.068 | 0.069 | 1.5 | 0.99 |
| NNL4 | 14-Aug-19 | K-T | 0.05 | 0.05 | 0.068 | 0.069 | 1.5 | 0.99 |
| NNO | 30-Apr-19 | Si-T | 0.1 | 0.1 | 3.28 | 3.33 | 1.5 | 0.98 |
| QRDS1 | 18-Apr-19 | Cu-T | 0.0005 | 0.0005 | 0.00066 | 0.00065 | 1.5 | 1.02 |
| QU0813A | 10-Mar-20 | As-D | 0.0001 | 0.0001 | 0.404 | 0.398 | 1.5 | 1.02 |
| QU0821GD | 3-Sep-19 | K-D | 0.1 | 0.1 | 4.63 | 4.56 | 1.5 | 1.02 |
| QU1009S | 27-May-19 | Sr-D | 0.001 | 0.001 | 0.267 | 0.271 | 1.5 | 0.99 |
| QU1010S | 11-Dec-19 | Si-D | 0.1 | 0.1 | 4.62 | 4.55 | 1.5 | 1.02 |
| QU1013D | 24-Sep-19 | Bicarbonate | 1 | 1 | 670 | 680 | 1.5 | 0.99 |
| SPC | 1-Oct-19 | As-D | 0.0001 | 0.0001 | 0.00069 | 0.00068 | 1.5 | 1.01 |
| WD | 6-Jan-20 | Si-D | 0.1 | 0.1 | 2.72 | 2.76 | 1.5 | 0.99 |
| 242MW | 10-Dec-19 | Fe-D | 0.005 | 0.005 | 12.4 | 12.2 | 1.6 | 1.02 |
| 3SO | 4-Apr-19 | K-D | 0.05 | 0.05 | 0.063 | 0.064 | 1.6 | 0.98 |
| 5M#2 | 27-Jan-20 | K-D | 0.05 | 0.05 | 2.58 | 2.54 | 1.6 | 1.02 |
| 5M#2 | 27-Jan-20 | S-D | 3 | 3 | 57.1 | 56.2 | 1.6 | 1.02 |
| 7SQR | 26-Aug-19 | K-D | 0.05 | 0.05 | 0.123 | 0.121 | 1.6 | 1.02 |
| 7SQR | 26-Aug-19 | K-T | 0.05 | 0.05 | 0.124 | 0.122 | 1.6 | 1.02 |
| IR6 | 18-Sep-19 | K-D | 0.05 | 0.05 | 0.183 | 0.186 | 1.6 | 0.98 |
| IRT4 | 7-May-19 | Na-T | 0.05 | 0.05 | 0.979 | 0.963 | 1.6 | 1.02 |
| LLM1 | 1-May-19 | Mn-D | 0.001 | 0.001 | 0.0064 | 0.0063 | 1.6 | 1.02 |
| LLM1 | 30-Oct-19 | Hardness (as CaC | 0.5 | 0.5 | 64.0 | 65.0 | 1.6 | 0.98 |
| LLM4 | 21-Aug-19 | Ba-D | 0.001 | 0.001 | 0.0064 | 0.0063 | 1.6 | 1.02 |
| LLM4 | 21-Aug-19 | Ba-T | 0.001 | 0.001 | 0.0063 | 0.0062 | 1.6 | 1.02 |
| LLM4 | 21-Aug-19 | Mg-D | 0.05 | 0.05 | 3.85 | 3.79 | 1.6 | 1.02 |
| LLM4 | 6-Nov-19 | K-T | 0.05 | 0.05 | 0.256 | 0.260 | 1.6 | 0.98 |
| LLMB | 24-Oct-19 | Na-D | 0.05 | 0.05 | 19.3 | 19.0 | 1.6 | 1.02 |
| LLO | 4-Nov-19 | Mg-D | 0.05 | 0.05 | 2.46 | 2.50 | 1.6 | 0.98 |
| NNL1 | 9-Apr-19 | Bicarbonate | 1 | 1 | 12.4 | 12.2 | 1.6 | 1.02 |
| NNO | 30-Apr-19 | Ca-T | 0.05 | 0.05 | 3.62 | 3.68 | 1.6 | 0.98 |
| NNO | 29-Oct-19 | K-D | 0.05 | 0.05 | 0.123 | 0.121 | 1.6 | 1.02 |
| QU1009D | 5-Sep-19 | Ba-D | 0.001 | 0.001 | 0.124 | 0.126 | 1.6 | 0.98 |
| QU1101 | 23-Dec-19 | Fe-D | 0.025 | 0.025 | 193 | 190 | 1.6 | 1.02 |
| QU1105S | 16-Dec-19 | Turb | 0.1 | 0.1 | 6.1 | 6.2 | 1.6 | 0.98 |
| QU1410 | 20-Nov-19 | Mg-D | 0.25 | 0.25 | 190 | 187 | 1.6 | 1.02 |
| QU1410 | 24-Feb-20 | Sr-D | 0.005 | 0.002 | 4.32 | 4.39 | 1.6 | 0.98 |
| SPC | 1-Oct-19 | B-T | 0.05 | 0.05 | 0.063 | 0.062 | 1.6 | 1.02 |
| SPC | 1-Oct-19 | Si-D | 0.1 | 0.1 | 4.34 | 4.41 | 1.6 | 0.98 |
| WD | 17-Jun-19 | SO4-D | 10 | 10 | 856 | 842 | 1.6 | 1.02 |
| 1M2N | 26-Feb-20 | As-D | 0.0001 | 0.0001 | 0.00539 | 0.00548 | 1.7 | 0.98 |
| 1M2N | 26-Feb-20 | Li-T | 0.002 | 0.002 | 0.0119 | 0.0121 | 1.7 | 0.98 |
| 242MW | 10-Dec-19 | Si-D | 0.1 | 0.1 | 3.64 | 3.58 | 1.7 | 1.02 |
| 5M#2 | 27-Jan-20 | Si-D | 0.1 | 0.1 | 3.60 | 3.54 | 1.7 | 1.02 |
| IR1 | 20-Jun-19 | Mg-T | 0.05 | 0.05 | 1.16 | 1.18 | 1.7 | 0.98 |
| IR6 | 18-Sep-19 | Sr-T | 0.001 | 0.001 | 0.0475 | 0.0483 | 1.7 | 0.98 |
| IR6 | 18-Nov-19 | As-D | 0.0001 | 0.0001 | 0.00059 | 0.00060 | 1.7 | 0.98 |
| IRT3 | 25-Apr-19 | Na-T | 0.05 | 0.05 | 0.922 | 0.938 | 1.7 | 0.98 |
| LLM4 | 6-Nov-19 | Ca-T | 0.05 | 0.05 | 17.5 | 17.8 | 1.7 | 0.98 |
| LLO | 4-Nov-19 | Na-T | 0.05 | 0.05 | 5.45 | 5.36 | 1.7 | 1.02 |
| LQL1 | 9-May-19 | Ca-D | 0.05 | 0.05 | 11.8 | 12.0 | 1.7 | 0.98 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LQL1 | 9-May-19 | Si-D | 0.1 | 0.1 | 2.38 | 2.34 | 1.7 | 1.02 |
| MQL4 | 28-Aug-19 | Hard-D | 0.5 | 0.5 | 23.6 | 24.0 | 1.7 | 0.98 |
| MQL4 | 28-Aug-19 | Si-D | 0.1 | 0.1 | 1.80 | 1.83 | 1.7 | 0.98 |
| MQL4 | 20-Nov-19 | Mn-T | 0.001 | 0.001 | 0.0059 | 0.0058 | 1.7 | 1.02 |
| NNL1 | 9-Apr-19 | Hardness (as CaC | 0.5 | 0.5 | 11.8 | 12.0 | 1.7 | 0.98 |
| NNL1 | 9-Apr-19 | Mg-T | 0.05 | 0.05 | 0.716 | 0.728 | 1.7 | 0.98 |
| NNL1 | 9-Apr-19 | Si-T | 0.1 | 0.1 | 3.58 | 3.64 | 1.7 | 0.98 |
| NNL1 | 7-Aug-19 | K-D | 0.05 | 0.05 | 0.060 | 0.061 | 1.7 | 0.98 |
| PDSR | 4-Dec-19 | Si-D | 0.1 | 0.1 | 2.92 | 2.87 | 1.7 | 1.02 |
| PDSR | 10-Feb-20 | Na-D | 0.05 | 0.05 | 29.5 | 29.0 | 1.7 | 1.02 |
| QU1101 | 23-Dec-19 | Li-D | 0.01 | 0.01 | 0.059 | 0.060 | 1.7 | 0.98 |
| QU1109S | 18-Dec-19 | Fe-D | 0.005 | 0.005 | 0.118 | 0.116 | 1.7 | 1.02 |
| QU1410 | 28-Jan-20 | Fe-D | 0.005 | 0.025 | 1.71 | 1.74 | 1.7 | 0.98 |
| QU1410 | 28-Jan-20 | K-D | 0.05 | 0.25 | 7.21 | 7.33 | 1.7 | 0.98 |
| QU1410 | 28-Jan-20 | S-D | 3 | 15 | 654 | 665 | 1.7 | 0.98 |
| WD | 6-Jan-20 | Al-D | 0.003 | 0.003 | 0.0061 | 0.0060 | 1.7 | 1.02 |
| 1M2N | 26-Feb-20 | SO4-D | 10 | 10 | 550 | 560 | 1.8 | 0.98 |
| 1M2N | 26-Feb-20 | Sr-T | 0.001 | 0.001 | 1.08 | 1.10 | 1.8 | 0.98 |
| 242MW | 10-Dec-19 | Sr-D | 0.001 | 0.001 | 0.0877 | 0.0861 | 1.8 | 1.02 |
| 3SO | 4-Apr-19 | Si-T | 0.1 | 0.1 | 2.79 | 2.84 | 1.8 | 0.98 |
| 3SO | 4-Apr-19 | Sr-T | 0.001 | 0.001 | 0.0112 | 0.0110 | 1.8 | 1.02 |
| 5M#2 | 27-Jan-20 | As-D | 0.0001 | 0.0001 | 0.00449 | 0.00441 | 1.8 | 1.02 |
| 7SQR | 26-Aug-19 | Ca-T | 0.05 | 0.05 | 9.03 | 8.87 | 1.8 | 1.02 |
| 7SQR | 22-Oct-19 | Mn-D | 0.001 | 0.001 | 0.0056 | 0.0057 | 1.8 | 0.98 |
| IR6 | 18-Nov-19 | Na-T | 0.05 | 0.05 | 1.13 | 1.15 | 1.8 | 0.98 |
| LLM1 | 30-Oct-19 | Mg-T | 0.05 | 0.05 | 2.83 | 2.78 | 1.8 | 1.02 |
| LLM9 | 13-Nov-19 | Fe-T | 0.01 | 0.01 | 0.054 | 0.055 | 1.8 | 0.98 |
| LLO | 4-Nov-19 | Al-D | 0.003 | 0.003 | 0.0168 | 0.0171 | 1.8 | 0.98 |
| MQL1 | 18-Apr-19 | Mg-T | 0.05 | 0.05 | 1.69 | 1.72 | 1.8 | 0.98 |
| MQL4 | 28-Aug-19 | Al-D | 0.003 | 0.003 | 0.0114 | 0.0112 | 1.8 | 1.02 |
| MW002 | 15-May-19 | Sr-D | 0.002 | 0.002 | 3.77 | 3.84 | 1.8 | 0.98 |
| MW002 | 15-May-19 | Turb | 0.1 | 0.1 | 51.6 | 50.7 | 1.8 | 1.02 |
| QU0813A | 10-Mar-20 | B-D | 0.05 | 0.05 | 0.668 | 0.680 | 1.8 | 0.98 |
| QU0813A | 10-Mar-20 | Li-D | 0.002 | 0.002 | 0.0454 | 0.0446 | 1.8 | 1.02 |
| QU1009S | 27-May-19 | Fluoride | 0.02 | 0.02 | 0.055 | 0.056 | 1.8 | 0.98 |
| QU1101 | 23-Dec-19 | B-D | 0.25 | 0.25 | 1.10 | 1.12 | 1.8 | 0.98 |
| QU1105S | 16-Dec-19 | Na-D | 0.05 | 0.05 | 88.3 | 89.9 | 1.8 | 0.98 |
| QU1410 | 11-Sep-19 | B-D | 0.25 | 0.25 | 1.12 | 1.10 | 1.8 | 1.02 |
| QU1410 | 28-Jan-20 | Ba-D | 0.001 | 0.005 | 0.0169 | 0.0172 | 1.8 | 0.98 |
| WA | 12-Nov-19 | Cu-D | 0.0002 | 0.0002 | 0.00054 | 0.00055 | 1.8 | 0.98 |
| WA | 12-Nov-19 | Sr-D | 0.001 | 0.001 | 0.0111 | 0.0113 | 1.8 | 0.98 |
| 242MW | 10-Dec-19 | K-D | 0.05 | 0.05 | 0.531 | 0.521 | 1.9 | 1.02 |
| 5M#2 | 27-Jan-20 | Ba-D | 0.001 | 0.001 | 0.0364 | 0.0357 | 1.9 | 1.02 |
| 5M#2 | 27-Jan-20 | Mn-T | 0.001 | 0.001 | 0.0947 | 0.0929 | 1.9 | 1.02 |
| 7SQR | 26-Aug-19 | Hardness (as CaC | 0.5 | 0.5 | 26.9 | 26.4 | 1.9 | 1.02 |
| 7SQR | 26-Aug-19 | Na-T | 0.05 | 0.05 | 4.19 | 4.11 | 1.9 | 1.02 |
| IR1 | 20-Jun-19 | As-D | 0.0001 | 0.0001 | 0.00054 | 0.00053 | 1.9 | 1.02 |
| IR1 | 20-Jun-19 | As-T | 0.0001 | 0.0001 | 0.00052 | 0.00051 | 1.9 | 1.02 |
| IRT3 | 25-Apr-19 | Hardness (as CaC | 0.5 | 0.5 | 15.9 | 16.2 | 1.9 | 0.98 |
| LLM1 | 30-Oct-19 | Ca-T | 0.05 | 0.05 | 21.0 | 21.4 | 1.9 | 0.98 |
| LLM1 | 30-Oct-19 | Fe-T | 0.01 | 0.01 | 0.107 | 0.109 | 1.9 | 0.98 |
| LLM4 | 21-Aug-19 | As-D | 0.0001 | 0.0001 | 0.00051 | 0.00052 | 1.9 | 0.98 |
| LLMB | 24-Oct-19 | Mn-D | 0.001 | 0.001 | 0.861 | 0.845 | 1.9 | 1.02 |
| MQL4 | 20-Nov-19 | Bicarbonate | 1 | 1 | 51 | 52 | 1.9 | 0.98 |
| MQL4 | 20-Nov-19 | Mg-D | 0.05 | 0.05 | 1.60 | 1.63 | 1.9 | 0.98 |
| MW002 | 15-May-19 | Fe-D | 0.01 | 0.01 | 4.27 | 4.19 | 1.9 | 1.02 |
| MW004 | 27-Aug-19 | Li-D | 0.002 | 0.002 | 0.0103 | 0.0105 | 1.9 | 0.98 |
| MW004 | 27-Aug-19 | Si-D | 0.1 | 0.1 | 2.60 | 2.65 | 1.9 | 0.98 |
| NNL1 | 9-Apr-19 | Si-D | 0.1 | 0.1 | 3.27 | 3.21 | 1.9 | 1.02 |
| PDSR | 10-Feb-20 | S-T | 3 | 3 | 104 | 102 | 1.9 | 1.02 |
| QRDS1 | 18-Apr-19 | Fe-D | 0.005 | 0.005 | 0.0257 | 0.0262 | 1.9 | 0.98 |
| QU0813A | 10-Mar-20 | Si-D | 0.1 | 0.1 | 3.72 | 3.65 | 1.9 | 1.02 |
| QU0821GD | 3-Sep-19 | Li-D | 0.004 | 0.004 | 0.0842 | 0.0858 | 1.9 | 0.98 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1010S | 30-Sep-19 | Si-D | 0.1 | 0.1 | 4.27 | 4.19 | 1.9 | 1.02 |
| SPC | 1-Oct-19 | Al-D | 0.003 | 0.003 | 0.104 | 0.106 | 1.9 | 0.98 |
| WB | 12-Aug-19 | K-D | 0.05 | 0.05 | 0.106 | 0.104 | 1.9 | 1.02 |
| WB | 12-Aug-19 | K-T | 0.05 | 0.05 | 0.104 | 0.106 | 1.9 | 0.98 |
| 1M2N | 26-Feb-20 | B-D | 0.05 | 0.05 | 1.03 | 1.01 | 2.0 | 1.02 |
| 1M2N | 26-Feb-20 | Mn-D | 0.001 | 0.001 | 0.350 | 0.357 | 2.0 | 0.98 |
| 1M2N | 26-Feb-20 | N-D | 0.02 | 0.02 | 0.357 | 0.350 | 2.0 | 1.02 |
| 1M2N | 26-Feb-20 | Si-T | 0.1 | 0.1 | 4.06 | 4.14 | 2.0 | 0.98 |
| IR6 | 18-Nov-19 | Si-D | 0.1 | 0.1 | 2.91 | 2.97 | 2.0 | 0.98 |
| IRT3 | 25-Apr-19 | Hard-D | 0.5 | 0.5 | 15.1 | 15.4 | 2.0 | 0.98 |
| IRT3 | 25-Apr-19 | K-T | 0.05 | 0.05 | 0.392 | 0.400 | 2.0 | 0.98 |
| LLM1 | 30-Oct-19 | As-T | 0.0001 | 0.0001 | 0.00050 | 0.00051 | 2.0 | 0.98 |
| LLM4 | 6-Nov-19 | Fe-T | 0.01 | 0.01 | 0.097 | 0.099 | 2.0 | 0.98 |
| LLM4 | 6-Nov-19 | Mg-T | 0.05 | 0.05 | 2.52 | 2.57 | 2.0 | 0.98 |
| LLM9 | 13-Nov-19 | Mn-D | 0.001 | 0.001 | 0.0197 | 0.0201 | 2.0 | 0.98 |
| LLM9 | 13-Nov-19 | S-D | 3 | 3 | 39.9 | 40.7 | 2.0 | 0.98 |
| MQL1 | 18-Apr-19 | Sr-D | 0.001 | 0.001 | 0.0939 | 0.0958 | 2.0 | 0.98 |
| MQL4 | 28-Aug-19 | Si-T | 0.1 | 0.1 | 2.03 | 1.99 | 2.0 | 1.02 |
| MW002 | 15-May-19 | N-D | 0.02 | 0.02 | 0.196 | 0.200 | 2.0 | 0.98 |
| NNL1 | 9-Apr-19 | Alkalinity Total as | 1 | 1 | 10.2 | 10.0 | 2.0 | 1.02 |
| NNL4 | 14-Aug-19 | Sr-T | 0.001 | 0.001 | 0.0147 | 0.0150 | 2.0 | 0.98 |
| NNO | 29-Oct-19 | Sr-T | 0.001 | 0.001 | 0.0152 | 0.0155 | 2.0 | 0.98 |
| PDSR | 10-Feb-20 | K-T | 0.05 | 0.05 | 1.00 | 0.980 | 2.0 | 1.02 |
| QU1009D | 5-Sep-19 | B-D | 0.05 | 0.05 | 0.607 | 0.595 | 2.0 | 1.02 |
| QU1009D | 5-Sep-19 | Mn-D | 0.001 | 0.001 | 0.0492 | 0.0502 | 2.0 | 0.98 |
| QU1010S | 30-Sep-19 | B-D | 0.05 | 0.05 | 0.553 | 0.542 | 2.0 | 1.02 |
| QU1010S | 30-Sep-19 | Mn-D | 0.001 | 0.001 | 0.0397 | 0.0389 | 2.0 | 1.02 |
| SPC | 1-Oct-19 | Bicarbonate | 1 | 1 | 49 | 50 | 2.0 | 0.98 |
| 5M#2 | 27-Jan-20 | Cl-D | 1 | 1 | 9.5 | 9.3 | 2.1 | 1.02 |
| 5M#2 | 27-Jan-20 | Na-T | 0.05 | 0.05 | 241 | 236 | 2.1 | 1.02 |
| IR6 | 18-Sep-19 | Ba-T | 0.001 | 0.001 | 0.0049 | 0.0048 | 2.1 | 1.02 |
| IRT4 | 7-May-19 | As-D | 0.0001 | 0.0001 | 0.00189 | 0.00193 | 2.1 | 0.98 |
| LLM1 | 30-Oct-19 | Ba-D | 0.001 | 0.001 | 0.0047 | 0.0048 | 2.1 | 0.98 |
| LLMB | 24-Oct-19 | Sr-T | 0.001 | 0.001 | 0.369 | 0.377 | 2.1 | 0.98 |
| LLMB | 24-Oct-19 | S-T | 3 | 3 | 42.7 | 43.6 | 2.1 | 0.98 |
| MQL1 | 18-Apr-19 | Al-D | 0.003 | 0.003 | 0.0192 | 0.0188 | 2.1 | 1.02 |
| MQL4 | 28-Aug-19 | Ca-D | 0.05 | 0.05 | 7.95 | 8.12 | 2.1 | 0.98 |
| NNL4 | 14-Aug-19 | Ca-T | 0.05 | 0.05 | 4.79 | 4.89 | 2.1 | 0.98 |
| NNO | 29-Oct-19 | Ca-T | 0.05 | 0.05 | 4.68 | 4.78 | 2.1 | 0.98 |
| QRDS1 | 18-Apr-19 | Alkalinity Total as | 1 | 1 | 43.0 | 42.1 | 2.1 | 1.02 |
| QRDS1 | 18-Apr-19 | Si-D | 0.1 | 0.1 | 2.35 | 2.40 | 2.1 | 0.98 |
| QU0821GD | 19-Feb-20 | Li-D | 0.01 | 0.01 | 0.188 | 0.192 | 2.1 | 0.98 |
| QU1101 | 23-Dec-19 | pH-L | | | 6.54 | 6.68 | 2.1 | 0.98 |
| QU1101 | 23-Dec-19 | S-D | 15 | 15 | 522 | 511 | 2.1 | 1.02 |
| QU1410 | 24-Feb-20 | Na-D | 0.25 | 0.1 | 52.7 | 51.6 | 2.1 | 1.02 |
| WA | 12-Nov-19 | Fe-D | 0.005 | 0.005 | 0.0096 | 0.0098 | 2.1 | 0.98 |
| WD | 6-Jan-20 | B-D | 0.05 | 0.05 | 0.688 | 0.674 | 2.1 | 1.02 |
| 3SO | 4-Apr-19 | Mn-D | 0.001 | 0.001 | 0.0045 | 0.0046 | 2.2 | 0.98 |
| 7SQR | 22-Oct-19 | Ca-D | 0.05 | 0.05 | 13.2 | 13.5 | 2.2 | 0.98 |
| 7SQR | 22-Oct-19 | Hard-D | 0.5 | 0.5 | 40.7 | 41.6 | 2.2 | 0.98 |
| 7SQR | 22-Oct-19 | Sr-D | 0.001 | 0.001 | 0.0781 | 0.0798 | 2.2 | 0.98 |
| IR1 | 20-Jun-19 | Alkalinity Total as | 1 | 1 | 60.3 | 59.0 | 2.2 | 1.02 |
| IR1 | 20-Jun-19 | Bicarbonate | 1 | 1 | 73.6 | 72.0 | 2.2 | 1.02 |
| LLM1 | 1-May-19 | SO4-D | 1 | 1 | 36.4 | 35.6 | 2.2 | 1.02 |
| LLM4 | 6-Nov-19 | Hardness (as CaC | 0.5 | 0.5 | 54.0 | 55.2 | 2.2 | 0.98 |
| MQL4 | 28-Aug-19 | Mn-T | 0.001 | 0.001 | 0.0047 | 0.0046 | 2.2 | 1.02 |
| MW002 | 15-May-19 | Mn-D | 0.002 | 0.002 | 1.37 | 1.34 | 2.2 | 1.02 |
| QU0813A | 26-Nov-19 | S-D | 3 | 3 | 13.9 | 13.6 | 2.2 | 1.02 |
| QU1010S | 11-Dec-19 | As-D | 0.0001 | 0.0001 | 0.100 | 0.0978 | 2.2 | 1.02 |
| QU1013D | 24-Sep-19 | Na-D | 0.05 | 0.05 | 371 | 363 | 2.2 | 1.02 |
| QU1109S | 18-Dec-19 | Ca-D | 0.05 | 0.05 | 28.1 | 27.5 | 2.2 | 1.02 |
| 5M#2 | 27-Jan-20 | Mn-D | 0.001 | 0.001 | 0.0983 | 0.0961 | 2.3 | 1.02 |
| IR1 | 20-Jun-19 | K-D | 0.05 | 0.05 | 0.219 | 0.224 | 2.3 | 0.98 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| IR6 | 18-Sep-19 | Bicarbonate | 1 | 1 | 43 | 44 | 2.3 | 0.98 |
| IR6 | 18-Sep-19 | Fe-D | 0.005 | 0.005 | 0.0172 | 0.0176 | 2.3 | 0.98 |
| IR6 | 18-Sep-19 | Si-D | 0.1 | 0.1 | 2.61 | 2.67 | 2.3 | 0.98 |
| IRT3 | 25-Apr-19 | Ca-T | 0.05 | 0.05 | 4.83 | 4.94 | 2.3 | 0.98 |
| IRT3 | 25-Apr-19 | Sr-D | 0.001 | 0.001 | 0.0211 | 0.0216 | 2.3 | 0.98 |
| LLM4 | 21-Aug-19 | SO4-D | 1 | 1 | 85 | 87 | 2.3 | 0.98 |
| LLM4 | 6-Nov-19 | Ba-D | 0.001 | 0.001 | 0.0043 | 0.0044 | 2.3 | 0.98 |
| LLM9 | 13-Nov-19 | K-T | 0.05 | 0.05 | 0.524 | 0.512 | 2.3 | 1.02 |
| LLM9 | 13-Nov-19 | Mg-T | 0.05 | 0.05 | 5.23 | 5.11 | 2.3 | 1.02 |
| LLMB | 24-Oct-19 | Mg-T | 0.05 | 0.05 | 5.18 | 5.30 | 2.3 | 0.98 |
| LLO | 4-Nov-19 | As-T | 0.0001 | 0.0001 | 0.00043 | 0.00044 | 2.3 | 0.98 |
| NNL1 | 9-Apr-19 | Mg-D | 0.05 | 0.05 | 0.695 | 0.711 | 2.3 | 0.98 |
| NNL1 | 9-Apr-19 | Na-D | 0.05 | 0.05 | 0.952 | 0.974 | 2.3 | 0.98 |
| NNO | 30-Apr-19 | Ca-D | 0.05 | 0.05 | 3.56 | 3.48 | 2.3 | 1.02 |
| QRDS1 | 18-Apr-19 | Bicarbonate | 1 | 1 | 52.5 | 51.3 | 2.3 | 1.02 |
| QU0813A | 10-Mar-20 | Mn-D | 0.001 | 0.001 | 0.0520 | 0.0508 | 2.3 | 1.02 |
| QU1008D | 18-Mar-20 | Cl-D | 1 | 1 | 4.4 | 4.3 | 2.3 | 1.02 |
| QU1105S | 16-Dec-19 | Mg-D | 0.05 | 0.05 | 9.37 | 9.59 | 2.3 | 0.98 |
| 5M#2 | 27-Jan-20 | Li-T | 0.002 | 0.002 | 0.0042 | 0.0041 | 2.4 | 1.02 |
| 7SQR | 26-Aug-19 | As-T | 0.0001 | 0.0001 | 0.00042 | 0.00043 | 2.4 | 0.98 |
| 7SQR | 26-Aug-19 | Fe-T | 0.01 | 0.01 | 0.081 | 0.083 | 2.4 | 0.98 |
| IR1 | 20-Jun-19 | Se-T | 0.0001 | 0.0001 | 0.00042 | 0.00041 | 2.4 | 1.02 |
| IRT3 | 25-Apr-19 | Sr-T | 0.001 | 0.001 | 0.0209 | 0.0214 | 2.4 | 0.98 |
| LLM4 | 21-Aug-19 | Si-D | 0.1 | 0.1 | 2.92 | 2.99 | 2.4 | 0.98 |
| LLM4 | 6-Nov-19 | Ba-T | 0.001 | 0.001 | 0.0041 | 0.0042 | 2.4 | 0.98 |
| LLM4 | 6-Nov-19 | Turb | 0.1 | 0.1 | 0.41 | 0.42 | 2.4 | 0.98 |
| LLM9 | 13-Nov-19 | S-T | 3 | 3 | 41.4 | 40.4 | 2.4 | 1.02 |
| LLO | 4-Nov-19 | As-D | 0.0001 | 0.0001 | 0.00042 | 0.00041 | 2.4 | 1.02 |
| LQL1 | 9-May-19 | Mn-T | 0.001 | 0.001 | 0.0041 | 0.0042 | 2.4 | 0.98 |
| LQL9 | 25-Apr-19 | As-D | 0.0001 | 0.0001 | 0.00041 | 0.00042 | 2.4 | 0.98 |
| LQL9 | 25-Apr-19 | Sr-D | 0.001 | 0.001 | 0.0625 | 0.0610 | 2.4 | 1.02 |
| MQL1 | 18-Apr-19 | Al-T | 0.003 | 0.003 | 0.0210 | 0.0205 | 2.4 | 1.02 |
| MQL1 | 18-Apr-19 | Bicarbonate | 1 | 1 | 55.0 | 53.7 | 2.4 | 1.02 |
| MQL4 | 28-Aug-19 | Na-T | 0.05 | 0.05 | 3.38 | 3.30 | 2.4 | 1.02 |
| MQL4 | 20-Nov-19 | Alkalinity Total as | 1 | 1 | 42 | 43 | 2.4 | 0.98 |
| MW004 | 27-Aug-19 | SO4-D | 10 | 10 | 430 | 420 | 2.4 | 1.02 |
| NNO | 30-Apr-19 | Hardness (as CaC | 0.5 | 0.5 | 12.3 | 12.6 | 2.4 | 0.98 |
| NNO | 30-Apr-19 | Mn-T | 0.001 | 0.001 | 0.0041 | 0.0042 | 2.4 | 0.98 |
| PDSR | 10-Feb-20 | B-D | 0.05 | 0.05 | 0.126 | 0.129 | 2.4 | 0.98 |
| QU0821GS | 27-Nov-19 | Li-D | 0.004 | 0.004 | 0.0708 | 0.0725 | 2.4 | 0.98 |
| QU1010S | 30-Sep-19 | N-D | 0.02 | 0.02 | 0.288 | 0.295 | 2.4 | 0.98 |
| QU1010S | 11-Dec-19 | Mg-D | 0.05 | 0.05 | 5.37 | 5.50 | 2.4 | 0.98 |
| QU1010S | 11-Dec-19 | Na-D | 0.05 | 0.05 | 33.0 | 33.8 | 2.4 | 0.98 |
| QU1109S | 18-Dec-19 | B-D | 0.05 | 0.05 | 1.67 | 1.63 | 2.4 | 1.02 |
| QU1410 | 24-Feb-20 | As-D | 0.0005 | 0.0002 | 0.0972 | 0.0949 | 2.4 | 1.02 |
| 1M2N | 26-Feb-20 | K-D | 0.05 | 0.05 | 4.81 | 4.93 | 2.5 | 0.98 |
| 242MW | 10-Dec-19 | Ba-D | 0.001 | 0.001 | 0.0686 | 0.0669 | 2.5 | 1.03 |
| 3SO | 4-Apr-19 | Ca-T | 0.05 | 0.05 | 3.30 | 3.22 | 2.5 | 1.02 |
| IRT4 | 7-May-19 | Si-D | 0.1 | 0.1 | 2.78 | 2.85 | 2.5 | 0.98 |
| LLM9 | 13-Nov-19 | Al-D | 0.003 | 0.003 | 0.0082 | 0.0080 | 2.5 | 1.02 |
| LLMB | 24-Oct-19 | K-T | 0.05 | 0.05 | 0.548 | 0.562 | 2.5 | 0.98 |
| MQL1 | 18-Apr-19 | Alkalinity Total as | 1 | 1 | 45.1 | 44.0 | 2.5 | 1.02 |
| MQL4 | 20-Nov-19 | Al-T | 0.003 | 0.003 | 0.0156 | 0.0160 | 2.5 | 0.98 |
| MW002 | 15-May-19 | Bicarbonate | 1 | 1 | 315 | 323 | 2.5 | 0.98 |
| NNL1 | 7-Aug-19 | Mn-T | 0.001 | 0.001 | 0.0040 | 0.0039 | 2.5 | 1.03 |
| NNO | 29-Oct-19 | Mg-D | 0.05 | 0.05 | 0.973 | 0.998 | 2.5 | 0.97 |
| PDSR | 10-Feb-20 | Sr-T | 0.001 | 0.001 | 0.651 | 0.635 | 2.5 | 1.03 |
| QU1010S | 11-Dec-19 | Ca-D | 0.05 | 0.05 | 24.5 | 23.9 | 2.5 | 1.03 |
| QU1105S | 16-Dec-19 | S2-T | 0.0018 | 0.0018 | 0.079 | 0.081 | 2.5 | 0.98 |
| QU1109S | 18-Dec-19 | Alkalinity Total as | 1 | 1 | 410 | 400 | 2.5 | 1.02 |
| SPC | 1-Oct-19 | Alkalinity Total as | 1 | 1 | 40 | 41 | 2.5 | 0.98 |
| WD | 6-Jan-20 | Hard-D | 0.5 | 0.5 | 322 | 330 | 2.5 | 0.98 |
| 1M2N | 26-Feb-20 | Na-D | 0.05 | 0.05 | 342 | 351 | 2.6 | 0.97 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 3SO | 4-Apr-19 | Hard-D | 0.5 | 0.5 | 11.5 | 11.2 | 2.6 | 1.03 |
| 7SQR | 22-Oct-19 | Mg-D | 0.05 | 0.05 | 1.89 | 1.94 | 2.6 | 0.97 |
| IRT3 | 25-Apr-19 | Ba-T | 0.001 | 0.001 | 0.0266 | 0.0273 | 2.6 | 0.97 |
| LLM1 | 1-May-19 | Na-T | 0.05 | 0.05 | 4.86 | 4.99 | 2.6 | 0.97 |
| LLM9 | 13-Nov-19 | Ba-T | 0.001 | 0.001 | 0.0078 | 0.0076 | 2.6 | 1.03 |
| LLMB | 24-Oct-19 | S-D | 3 | 3 | 46.5 | 45.3 | 2.6 | 1.03 |
| LLO | 4-Nov-19 | Mn-D | 0.001 | 0.001 | 0.0039 | 0.0038 | 2.6 | 1.03 |
| MW002 | 5-Dec-19 | B-D | 0.25 | 0.25 | 0.79 | 0.77 | 2.6 | 1.03 |
| NNL1 | 9-Apr-19 | Al-D | 0.003 | 0.003 | 0.0343 | 0.0352 | 2.6 | 0.97 |
| NNL1 | 9-Apr-19 | N-D | 0.02 | 0.02 | 0.150 | 0.154 | 2.6 | 0.97 |
| QU1009D | 5-Sep-19 | K-D | 0.05 | 0.05 | 1.90 | 1.95 | 2.6 | 0.97 |
| QU1009D | 5-Sep-19 | Na-D | 0.05 | 0.05 | 42.2 | 43.3 | 2.6 | 0.97 |
| QU1009S | 27-May-19 | Mn-D | 0.001 | 0.001 | 0.377 | 0.387 | 2.6 | 0.97 |
| 1M2N | 26-Feb-20 | As-T | 0.0001 | 0.0001 | 0.00579 | 0.00595 | 2.7 | 0.97 |
| 1M2N | 26-Feb-20 | Mg-D | 0.05 | 0.05 | 11.0 | 11.3 | 2.7 | 0.97 |
| LLMB | 24-Oct-19 | K-D | 0.05 | 0.05 | 0.570 | 0.555 | 2.7 | 1.03 |
| LLO | 4-Nov-19 | Sr-T | 0.001 | 0.001 | 0.109 | 0.112 | 2.7 | 0.97 |
| LQL9 | 25-Apr-19 | K-D | 0.05 | 0.05 | 0.266 | 0.259 | 2.7 | 1.03 |
| MQL1 | 18-Apr-19 | S-T | 3 | 3 | 19.0 | 18.5 | 2.7 | 1.03 |
| MW002 | 15-May-19 | Alkalinity Total as | 1 | 1 | 258 | 265 | 2.7 | 0.97 |
| QRDS1 | 18-Apr-19 | Al-T | 0.003 | 0.003 | 0.0341 | 0.0332 | 2.7 | 1.03 |
| QRDS1 | 18-Apr-19 | Sr-T | 0.001 | 0.001 | 0.0979 | 0.0953 | 2.7 | 1.03 |
| QU1009D | 5-Sep-19 | Turb | 0.1 | 0.1 | 3.8 | 3.7 | 2.7 | 1.03 |
| QU1010S | 11-Dec-19 | K-D | 0.05 | 0.05 | 3.33 | 3.42 | 2.7 | 0.97 |
| QU1410 | 11-Sep-19 | Bicarbonate | 1 | 1 | 370 | 380 | 2.7 | 0.97 |
| QU1410 | 28-Jan-20 | Acidity 8.3 | 1 | 1 | 21.6 | 22.2 | 2.7 | 0.97 |
| SPC | 1-Oct-19 | Hardness (as CaC | 0.5 | 0.5 | 99.7 | 97.0 | 2.7 | 1.03 |
| WA | 17-Oct-19 | Ca-T | 0.05 | 0.05 | 7.17 | 6.98 | 2.7 | 1.03 |
| WA | 17-Oct-19 | Mg-D | 0.05 | 0.05 | 0.756 | 0.777 | 2.7 | 0.97 |
| WD | 6-Jan-20 | Bicarbonate | 1 | 1 | 370 | 360 | 2.7 | 1.03 |
| 7SQR | 26-Aug-19 | Mg-T | 0.05 | 0.05 | 1.07 | 1.04 | 2.8 | 1.03 |
| 7SQR | 22-Oct-19 | S-D | 3 | 3 | 10.7 | 11.0 | 2.8 | 0.97 |
| IR6 | 18-Sep-19 | Alkalinity Total as | 1 | 1 | 35 | 36 | 2.8 | 0.97 |
| IRT3 | 25-Apr-19 | Na-D | 0.05 | 0.05 | 0.908 | 0.883 | 2.8 | 1.03 |
| LLM1 | 1-May-19 | Ba-D | 0.001 | 0.001 | 0.0035 | 0.0036 | 2.8 | 0.97 |
| LLM4 | 6-Nov-19 | K-D | 0.05 | 0.05 | 0.245 | 0.252 | 2.8 | 0.97 |
| LLM9 | 13-Nov-19 | Mn-T | 0.001 | 0.001 | 0.0251 | 0.0244 | 2.8 | 1.03 |
| LLM9 | 13-Nov-19 | Si-D | 0.1 | 0.1 | 3.15 | 3.24 | 2.8 | 0.97 |
| MW002 | 15-May-19 | K-D | 0.1 | 0.1 | 4.28 | 4.16 | 2.8 | 1.03 |
| NNL1 | 9-Apr-19 | K-T | 0.05 | 0.05 | 0.070 | 0.072 | 2.8 | 0.97 |
| NNO | 29-Oct-19 | As-T | 0.0001 | 0.0001 | 0.00035 | 0.00036 | 2.8 | 0.97 |
| QU1009S | 27-May-19 | Hard-D | 0.5 | 0.5 | 213 | 219 | 2.8 | 0.97 |
| SPC | 1-Oct-19 | Ca-T | 0.05 | 0.05 | 32.5 | 31.6 | 2.8 | 1.03 |
| 3SO | 4-Apr-19 | Si-D | 0.1 | 0.1 | 3.10 | 3.01 | 2.9 | 1.03 |
| LLM4 | 6-Nov-19 | Na-D | 0.05 | 0.05 | 5.48 | 5.64 | 2.9 | 0.97 |
| LLO | 4-Nov-19 | Mg-T | 0.05 | 0.05 | 2.47 | 2.40 | 2.9 | 1.03 |
| LQL1 | 9-May-19 | Fe-T | 0.01 | 0.01 | 0.070 | 0.068 | 2.9 | 1.03 |
| MQL4 | 28-Aug-19 | Sr-T | 0.001 | 0.001 | 0.0248 | 0.0241 | 2.9 | 1.03 |
| NNO | 29-Oct-19 | As-D | 0.0001 | 0.0001 | 0.00034 | 0.00035 | 2.9 | 0.97 |
| PDSR | 4-Dec-19 | Na-D | 0.05 | 0.05 | 60.2 | 62.0 | 2.9 | 0.97 |
| QRDS1 | 18-Apr-19 | K-T | 0.05 | 0.05 | 0.347 | 0.337 | 2.9 | 1.03 |
| QRDS1 | 18-Apr-19 | Mg-D | 0.05 | 0.05 | 1.69 | 1.74 | 2.9 | 0.97 |
| QU0821GD | 19-Feb-20 | Fe-D | 0.025 | 0.025 | 0.709 | 0.689 | 2.9 | 1.03 |
| QU1009S | 27-May-19 | Ca-D | 0.05 | 0.05 | 68.6 | 70.6 | 2.9 | 0.97 |
| QU1009S | 27-May-19 | Mg-D | 0.05 | 0.05 | 10.2 | 10.5 | 2.9 | 0.97 |
| QU1013D | 24-Sep-19 | Cl-D | 1 | 1 | 69 | 67 | 2.9 | 1.03 |
| QU1109S | 18-Dec-19 | Hard-D | 0.5 | 0.5 | 105 | 102 | 2.9 | 1.03 |
| QU1410 | 11-Sep-19 | Bromide | 0.05 | 0.05 | 0.35 | 0.34 | 2.9 | 1.03 |
| QU1410 | 24-Feb-20 | K-D | 0.25 | 0.1 | 7.35 | 7.14 | 2.9 | 1.03 |
| SPC | 1-Oct-19 | Cu-T | 0.0005 | 0.0005 | 0.00105 | 0.00102 | 2.9 | 1.03 |
| SPC | 1-Oct-19 | Mg-T | 0.05 | 0.05 | 4.51 | 4.38 | 2.9 | 1.03 |
| WA | 12-Nov-19 | K-D | 0.05 | 0.05 | 0.067 | 0.069 | 2.9 | 0.97 |
| 3SO | 4-Apr-19 | Ca-D | 0.05 | 0.05 | 3.37 | 3.27 | 3.0 | 1.03 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 5M#2 | 27-Jan-20 | Bicarbonate | 1 | 1 | 680 | 660 | 3.0 | 1.03 |
| LLM1 | 1-May-19 | Mg-T | 0.05 | 0.05 | 1.99 | 2.05 | 3.0 | 0.97 |
| LQL9 | 25-Apr-19 | P-T | 0.003 | 0.003 | 0.0033 | 0.0034 | 3.0 | 0.97 |
| MQL4 | 28-Aug-19 | SO4-D | 1 | 1 | 6.6 | 6.8 | 3.0 | 0.97 |
| MW004 | 27-Aug-19 | Co-D | 0.0002 | 0.0002 | 0.00033 | 0.00034 | 3.0 | 0.97 |
| NNL4 | 14-Aug-19 | Hardness (as CaC | 0.5 | 0.5 | 16.3 | 16.8 | 3.0 | 0.97 |
| PDSR | 10-Feb-20 | Si-D | 0.1 | 0.1 | 2.67 | 2.75 | 3.0 | 0.97 |
| QU0813A | 26-Nov-19 | B-D | 0.05 | 0.05 | 0.739 | 0.717 | 3.0 | 1.03 |
| SPC | 1-Oct-19 | B-D | 0.05 | 0.05 | 0.066 | 0.068 | 3.0 | 0.97 |
| SPC | 1-Oct-19 | K-T | 0.05 | 0.05 | 0.473 | 0.459 | 3.0 | 1.03 |
| WB | 12-Aug-19 | pH-L | | | 7.34 | 7.12 | 3.0 | 1.03 |
| WD | 6-Jan-20 | Fe-D | 0.005 | 0.005 | 0.0067 | 0.0065 | 3.0 | 1.03 |
| 1M2N | 26-Feb-20 | B-T | 0.05 | 0.05 | 0.959 | 0.989 | 3.1 | 0.97 |
| 1M2N | 26-Feb-20 | Hard-D | 0.5 | 0.5 | 346 | 357 | 3.1 | 0.97 |
| 242MW | 10-Dec-19 | Li-D | 0.002 | 0.002 | 0.0063 | 0.0065 | 3.1 | 0.97 |
| 5M#2 | 27-Jan-20 | Mg-T | 0.05 | 0.05 | 4.64 | 4.50 | 3.1 | 1.03 |
| IR6 | 18-Sep-19 | Mg-T | 0.05 | 0.05 | 0.905 | 0.877 | 3.1 | 1.03 |
| LLM1 | 1-May-19 | As-T | 0.0001 | 0.0001 | 0.00032 | 0.00033 | 3.1 | 0.97 |
| LLM1 | 1-May-19 | Na-D | 0.05 | 0.05 | 5.29 | 5.13 | 3.1 | 1.03 |
| LLM1 | 30-Oct-19 | S-T | 3 | 3 | 16.0 | 16.5 | 3.1 | 0.97 |
| LLMB | 24-Oct-19 | Fe-D | 0.005 | 0.005 | 0.0064 | 0.0066 | 3.1 | 0.97 |
| MW004 | 27-Aug-19 | Cu-D | 0.0002 | 0.0002 | 0.00033 | 0.00032 | 3.1 | 1.03 |
| PDSR | 10-Feb-20 | Mg-T | 0.05 | 0.05 | 19.6 | 19.0 | 3.1 | 1.03 |
| QRDS1 | 18-Apr-19 | Hard-D | 0.5 | 0.5 | 45.2 | 46.6 | 3.1 | 0.97 |
| QU0821GS | 27-Nov-19 | Sr-D | 0.002 | 0.002 | 0.447 | 0.461 | 3.1 | 0.97 |
| SPC | 1-Oct-19 | Cu-D | 0.0002 | 0.0002 | 0.00095 | 0.00098 | 3.1 | 0.97 |
| SPC | 1-Oct-19 | Si-T | 0.1 | 0.1 | 4.58 | 4.44 | 3.1 | 1.03 |
| LLM1 | 1-May-19 | Sr-T | 0.001 | 0.001 | 0.0978 | 0.101 | 3.2 | 0.97 |
| LLMB | 24-Oct-19 | Na-T | 0.05 | 0.05 | 18.3 | 18.9 | 3.2 | 0.97 |
| LQL1 | 9-May-19 | Ba-D | 0.001 | 0.001 | 0.0032 | 0.0031 | 3.2 | 1.03 |
| NNL1 | 9-Apr-19 | Fe-D | 0.005 | 0.005 | 0.0374 | 0.0386 | 3.2 | 0.97 |
| NNL1 | 7-Aug-19 | Na-T | 0.05 | 0.05 | 1.27 | 1.23 | 3.2 | 1.03 |
| PDSR | 4-Dec-19 | Sr-D | 0.001 | 0.001 | 1.26 | 1.22 | 3.2 | 1.03 |
| PDSR | 10-Feb-20 | Mg-D | 0.05 | 0.05 | 19.0 | 18.4 | 3.2 | 1.03 |
| QRDS1 | 18-Apr-19 | Ca-D | 0.05 | 0.05 | 15.3 | 15.8 | 3.2 | 0.97 |
| QU1008D | 18-Mar-20 | C-D | 0.5 | 0.5 | 3.2 | 3.1 | 3.2 | 1.03 |
| QU1010S | 11-Dec-19 | Fe-D | 0.005 | 0.005 | 0.220 | 0.213 | 3.2 | 1.03 |
| QU1010S | 11-Dec-19 | Mn-D | 0.001 | 0.001 | 0.0434 | 0.0448 | 3.2 | 0.97 |
| QU1109S | 18-Dec-19 | S-D | 3 | 3 | 70.3 | 68.1 | 3.2 | 1.03 |
| QU1410 | 11-Sep-19 | Na-D | 0.25 | 0.25 | 54.4 | 52.7 | 3.2 | 1.03 |
| SPC | 1-Oct-19 | S-T | 3 | 3 | 22.3 | 21.6 | 3.2 | 1.03 |
| SPD | 9-Mar-20 | SO4-D | 10 | 10 | 320 | 310 | 3.2 | 1.03 |
| WB | 12-Aug-19 | Si-T | 0.1 | 0.1 | 1.91 | 1.85 | 3.2 | 1.03 |
| WD | 6-Jan-20 | Li-D | 0.002 | 0.002 | 0.0092 | 0.0095 | 3.2 | 0.97 |
| 1M2N | 26-Feb-20 | Ca-D | 0.05 | 0.05 | 120 | 124 | 3.3 | 0.97 |
| IR1 | 20-Jun-19 | Ca-D | 0.05 | 0.05 | 24.3 | 23.5 | 3.3 | 1.03 |
| IR1 | 20-Jun-19 | Hard-D | 0.5 | 0.5 | 65.6 | 63.5 | 3.3 | 1.03 |
| LLM4 | 21-Aug-19 | Sr-T | 0.001 | 0.001 | 0.213 | 0.206 | 3.3 | 1.03 |
| LLM4 | 6-Nov-19 | Al-T | 0.003 | 0.003 | 0.0237 | 0.0245 | 3.3 | 0.97 |
| LLM4 | 6-Nov-19 | Fe-D | 0.005 | 0.005 | 0.0594 | 0.0575 | 3.3 | 1.03 |
| LQL9 | 25-Apr-19 | Mn-D | 0.001 | 0.001 | 0.0030 | 0.0031 | 3.3 | 0.97 |
| MW002 | 15-May-19 | Mg-D | 0.1 | 0.1 | 46.7 | 45.2 | 3.3 | 1.03 |
| NNO | 30-Apr-19 | Hard-D | 0.5 | 0.5 | 12.3 | 11.9 | 3.3 | 1.03 |
| PDSR | 10-Feb-20 | Na-T | 0.05 | 0.05 | 30.4 | 29.4 | 3.3 | 1.03 |
| QU1008D | 18-Mar-20 | As-D | 0.0002 | 0.0005 | 0.147 | 0.152 | 3.3 | 0.97 |
| QU1008D | 18-Mar-20 | Li-D | 0.004 | 0.01 | 0.0155 | 0.015 | 3.3 | 1.03 |
| QU1109S | 18-Dec-19 | Na-D | 0.05 | 0.05 | 243 | 235 | 3.3 | 1.03 |
| QU1410 | 11-Sep-19 | Alkalinity Total as | 1 | 1 | 300 | 310 | 3.3 | 0.97 |
| QU1410 | 20-Nov-19 | Si-D | 0.5 | 0.5 | 3.24 | 3.35 | 3.3 | 0.97 |
| WA | 17-Oct-19 | Cu-D | 0.0002 | 0.0002 | 0.00061 | 0.00059 | 3.3 | 1.03 |
| WA | 17-Oct-19 | Na-D | 0.05 | 0.05 | 0.779 | 0.805 | 3.3 | 0.97 |
| 1M2N | 26-Feb-20 | Bicarbonate | 1 | 1 | 590 | 570 | 3.4 | 1.04 |
| LLM1 | 1-May-19 | As-D | 0.0001 | 0.0001 | 0.00029 | 0.00030 | 3.4 | 0.97 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLM1 | 30-Oct-19 | Na-D | 0.05 | 0.05 | 6.32 | 6.54 | 3.4 | 0.97 |
| MW002 | 15-May-19 | Bromide | 0.01 | 0.01 | 0.30 | 0.29 | 3.4 | 1.03 |
| PDSR | 10-Feb-20 | Hardness (as CaC | 0.5 | 0.5 | 355 | 343 | 3.4 | 1.03 |
| QU0821GD | 19-Feb-20 | Sr-D | 0.005 | 0.005 | 2.11 | 2.04 | 3.4 | 1.03 |
| QU1010S | 11-Dec-19 | SO4-D | 1 | 1 | 6.0 | 5.8 | 3.4 | 1.03 |
| QU1410 | 20-Nov-19 | Alkalinity Total as | 1 | 1 | 300 | 290 | 3.4 | 1.03 |
| QU1410 | 28-Jan-20 | Mn-D | 0.001 | 0.005 | 1.46 | 1.51 | 3.4 | 0.97 |
| SPC | 1-Oct-19 | Na-T | 0.05 | 0.05 | 6.51 | 6.29 | 3.4 | 1.03 |
| 1M2N | 26-Feb-20 | Ba-T | 0.001 | 0.001 | 0.0313 | 0.0324 | 3.5 | 0.97 |
| IR6 | 18-Nov-19 | Bicarbonate | 1 | 1 | 29 | 28 | 3.5 | 1.04 |
| LLM1 | 30-Oct-19 | Mn-T | 0.001 | 0.001 | 0.0087 | 0.0084 | 3.5 | 1.04 |
| MW002 | 15-May-19 | Ni-D | 0.002 | 0.002 | 0.0029 | 0.0028 | 3.5 | 1.04 |
| PDSR | 10-Feb-20 | Si-T | 0.1 | 0.1 | 3.16 | 3.05 | 3.5 | 1.04 |
| QRDS1 | 18-Apr-19 | Ba-T | 0.001 | 0.001 | 0.0029 | 0.0028 | 3.5 | 1.04 |
| QU1010S | 30-Sep-19 | Hard-D | 0.5 | 0.5 | 78.9 | 76.2 | 3.5 | 1.04 |
| QU1010S | 11-Dec-19 | B-D | 0.05 | 0.05 | 0.538 | 0.557 | 3.5 | 0.97 |
| QU1105S | 16-Dec-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.084 | 0.087 | 3.5 | 0.97 |
| QU1410 | 28-Jan-20 | B-D | 0.05 | 0.25 | 1.17 | 1.13 | 3.5 | 1.04 |
| QU1410 | 28-Jan-20 | Bromide | 0.05 | 0.05 | 0.28 | 0.29 | 3.5 | 0.97 |
| WA | 12-Nov-19 | Na-T | 0.05 | 0.05 | 0.731 | 0.706 | 3.5 | 1.04 |
| WB | 12-Aug-19 | Mn-D | 0.001 | 0.001 | 0.0029 | 0.0028 | 3.5 | 1.04 |
| 3SO | 4-Apr-19 | Hardness (as CaC | 0.5 | 0.5 | 11.2 | 10.8 | 3.6 | 1.04 |
| 5M#2 | 27-Jan-20 | Alkalinity Total as | 1 | 1 | 560 | 540 | 3.6 | 1.04 |
| 5M#2 | 27-Jan-20 | Hardness (as CaC | 0.5 | 0.5 | 165 | 171 | 3.6 | 0.96 |
| LLM1 | 1-May-19 | Fe-D | 0.005 | 0.005 | 0.0424 | 0.0409 | 3.6 | 1.04 |
| LLM4 | 21-Aug-19 | Cu-D | 0.0002 | 0.0002 | 0.00028 | 0.00027 | 3.6 | 1.04 |
| LLM4 | 6-Nov-19 | Mg-D | 0.05 | 0.05 | 2.44 | 2.53 | 3.6 | 0.96 |
| LLM9 | 13-Nov-19 | Na-T | 0.05 | 0.05 | 17.1 | 16.5 | 3.6 | 1.04 |
| MQL1 | 18-Apr-19 | Na-D | 0.05 | 0.05 | 22.0 | 22.8 | 3.6 | 0.96 |
| NNL1 | 9-Apr-19 | Mn-D | 0.001 | 0.001 | 0.0057 | 0.0055 | 3.6 | 1.04 |
| QRDS1 | 18-Apr-19 | Ba-D | 0.001 | 0.001 | 0.0027 | 0.0028 | 3.6 | 0.96 |
| QU1008D | 18-Mar-20 | Mn-D | 0.002 | 0.005 | 0.162 | 0.168 | 3.6 | 0.96 |
| LLM9 | 13-Nov-19 | B-T | 0.05 | 0.05 | 0.110 | 0.106 | 3.7 | 1.04 |
| LLMB | 24-Oct-19 | Mg-D | 0.05 | 0.05 | 5.46 | 5.26 | 3.7 | 1.04 |
| MQL1 | 18-Apr-19 | Hardness (as CaC | 0.5 | 0.5 | 44.5 | 46.2 | 3.7 | 0.96 |
| MW002 | 15-May-19 | B-D | 0.1 | 0.1 | 0.83 | 0.80 | 3.7 | 1.04 |
| NNL4 | 14-Aug-19 | Mg-T | 0.05 | 0.05 | 1.06 | 1.10 | 3.7 | 0.96 |
| NNO | 30-Apr-19 | Si-D | 0.1 | 0.1 | 3.26 | 3.14 | 3.7 | 1.04 |
| PDSR | 10-Feb-20 | Ca-T | 0.05 | 0.05 | 110 | 106 | 3.7 | 1.04 |
| QU1109S | 18-Dec-19 | Fluoride | 0.05 | 0.05 | 0.55 | 0.53 | 3.7 | 1.04 |
| WB | 12-Aug-19 | Na-T | 0.05 | 0.05 | 3.86 | 3.72 | 3.7 | 1.04 |
| LLM1 | 1-May-19 | Mn-T | 0.001 | 0.001 | 0.0077 | 0.0080 | 3.8 | 0.96 |
| LLM4 | 21-Aug-19 | As-T | 0.0001 | 0.0001 | 0.00052 | 0.00054 | 3.8 | 0.96 |
| LLM9 | 13-Nov-19 | B-D | 0.05 | 0.05 | 0.102 | 0.106 | 3.8 | 0.96 |
| LLM9 | 13-Nov-19 | Li-T | 0.002 | 0.002 | 0.0027 | 0.0026 | 3.8 | 1.04 |
| NNL4 | 14-Aug-19 | Si-T | 0.1 | 0.1 | 2.82 | 2.93 | 3.8 | 0.96 |
| NNO | 29-Oct-19 | Na-D | 0.05 | 0.05 | 1.28 | 1.33 | 3.8 | 0.96 |
| QU1010S | 30-Sep-19 | Fe-D | 0.005 | 0.005 | 0.188 | 0.181 | 3.8 | 1.04 |
| QU1109S | 18-Dec-19 | Mn-D | 0.001 | 0.001 | 0.0239 | 0.0230 | 3.8 | 1.04 |
| 5M#2 | 27-Jan-20 | As-T | 0.0001 | 0.0001 | 0.00447 | 0.00465 | 3.9 | 0.96 |
| 7SQR | 22-Oct-19 | S-T | 3 | 3 | 10.1 | 10.5 | 3.9 | 0.96 |
| IRT3 | 25-Apr-19 | Mn-T | 0.001 | 0.001 | 0.0025 | 0.0026 | 3.9 | 0.96 |
| LLM1 | 1-May-19 | S-D | 3 | 3 | 13.0 | 12.5 | 3.9 | 1.04 |
| LLMB | 24-Oct-19 | Cu-D | 0.0002 | 0.0002 | 0.00026 | 0.00025 | 3.9 | 1.04 |
| LQL1 | 9-May-19 | Mg-D | 0.05 | 0.05 | 1.32 | 1.27 | 3.9 | 1.04 |
| MQL1 | 18-Apr-19 | B-T | 0.05 | 0.05 | 0.079 | 0.076 | 3.9 | 1.04 |
| QRDS1 | 18-Apr-19 | Na-D | 0.05 | 0.05 | 20.2 | 21.0 | 3.9 | 0.96 |
| QU0813A | 26-Nov-19 | C-D | 0.5 | 0.5 | 0.52 | <0.50 | 3.9 | 1.04 |
| QU1008D | 18-Mar-20 | Alkalinity Total as | 1 | 1 | 250 | 260 | 3.9 | 0.96 |
| QU1009S | 27-May-19 | Fe-D | 0.005 | 0.005 | 4.75 | 4.94 | 3.9 | 0.96 |
| QU1010S | 30-Sep-19 | Hydrogen Sulphic | 0.019 | 0.019 | 0.25 | 0.26 | 3.9 | 0.96 |
| QU1101 | 23-Dec-19 | N-D | 0.02 | 0.02 | 0.505 | 0.525 | 3.9 | 0.96 |
| QU1410 | 20-Nov-19 | Bromide | 0.05 | 0.05 | 0.26 | 0.25 | 3.9 | 1.04 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 3SO | 4-Apr-19 | Alkalinity Total as | 1 | 1 | 12.1 | 12.6 | 4.0 | 0.96 |
| 3SO | 4-Apr-19 | Bicarbonate | 1 | 1 | 14.7 | 15.3 | 4.0 | 0.96 |
| LLM1 | 30-Oct-19 | K-D | 0.05 | 0.05 | 0.279 | 0.268 | 4.0 | 1.04 |
| LLM1 | 30-Oct-19 | Mn-D | 0.001 | 0.001 | 0.0051 | 0.0049 | 4.0 | 1.04 |
| LLM1 | 30-Oct-19 | Si-T | 0.1 | 0.1 | 3.32 | 3.19 | 4.0 | 1.04 |
| LLO | 11-Jun-19 | SO4-D | 1 | 1 | 65.5 | 62.9 | 4.0 | 1.04 |
| QU0813A | 10-Mar-20 | Turb | 0.1 | 0.1 | 4.9 | 5.1 | 4.0 | 0.96 |
| QU1009D | 5-Sep-19 | N-D | 0.02 | 0.02 | 0.221 | 0.230 | 4.0 | 0.96 |
| 242MW | 10-Dec-19 | Fluoride | 0.05 | 0.05 | 0.10 | 0.096 | 4.1 | 1.04 |
| IR6 | 18-Sep-19 | Ca-T | 0.05 | 0.05 | 14.9 | 14.3 | 4.1 | 1.04 |
| LLM1 | 30-Oct-19 | Ba-T | 0.001 | 0.001 | 0.0048 | 0.0050 | 4.1 | 0.96 |
| NNO | 29-Oct-19 | K-T | 0.05 | 0.05 | 0.124 | 0.119 | 4.1 | 1.04 |
| QU0813A | 26-Nov-19 | Carbonate | 1 | 1 | 2.5 | 2.4 | 4.1 | 1.04 |
| SPC | 1-Oct-19 | Sr-T | 0.001 | 0.001 | 0.197 | 0.189 | 4.1 | 1.04 |
| WA | 12-Nov-19 | Na-D | 0.05 | 0.05 | 0.741 | 0.772 | 4.1 | 0.96 |
| IR6 | 18-Sep-19 | Hardness (as CaC | 0.5 | 0.5 | 40.9 | 39.2 | 4.2 | 1.04 |
| IRT3 | 25-Apr-19 | As-T | 0.0001 | 0.0001 | 0.00117 | 0.00122 | 4.2 | 0.96 |
| LLM4 | 6-Nov-19 | As-T | 0.0001 | 0.0001 | 0.00049 | 0.00047 | 4.2 | 1.04 |
| LQL1 | 9-May-19 | Mg-T | 0.05 | 0.05 | 1.40 | 1.46 | 4.2 | 0.96 |
| MQL1 | 18-Apr-19 | K-T | 0.05 | 0.05 | 0.377 | 0.393 | 4.2 | 0.96 |
| MQL4 | 28-Aug-19 | K-T | 0.05 | 0.05 | 0.097 | 0.093 | 4.2 | 1.04 |
| MW004 | 27-Aug-19 | Bromide | 0.01 | 0.01 | 0.073 | 0.070 | 4.2 | 1.04 |
| QRDS1 | 18-Apr-19 | Mn-T | 0.001 | 0.001 | 0.0049 | 0.0047 | 4.2 | 1.04 |
| QU0813A | 10-Mar-20 | Fluoride | 0.05 | 0.05 | 0.73 | 0.70 | 4.2 | 1.04 |
| QU1109S | 18-Dec-19 | Mg-D | 0.05 | 0.05 | 8.49 | 8.14 | 4.2 | 1.04 |
| QU1410 | 24-Feb-20 | Mg-D | 0.25 | 0.1 | 170 | 163 | 4.2 | 1.04 |
| 1M2N | 26-Feb-20 | Fe-D | 0.005 | 0.005 | 2.98 | 3.11 | 4.3 | 0.96 |
| 5M#2 | 27-Jan-20 | Bromide | 0.01 | 0.01 | 0.023 | 0.024 | 4.3 | 0.96 |
| 5M#2 | 27-Jan-20 | Li-D | 0.002 | 0.002 | 0.0047 | 0.0045 | 4.3 | 1.04 |
| 7SQR | 26-Aug-19 | Mn-T | 0.001 | 0.001 | 0.0046 | 0.0048 | 4.3 | 0.96 |
| 7SQR | 22-Oct-19 | As-T | 0.0001 | 0.0001 | 0.00045 | 0.00047 | 4.3 | 0.96 |
| IR1 | 20-Jun-19 | Al-D | 0.003 | 0.003 | 0.0212 | 0.0203 | 4.3 | 1.04 |
| IR6 | 18-Nov-19 | Alkalinity Total as | 1 | 1 | 24 | 23 | 4.3 | 1.04 |
| LQL9 | 25-Apr-19 | Mn-T | 0.001 | 0.001 | 0.0048 | 0.0046 | 4.3 | 1.04 |
| MQL1 | 18-Apr-19 | Hard-D | 0.5 | 0.5 | 43.5 | 45.4 | 4.3 | 0.96 |
| MQL4 | 28-Aug-19 | Fe-T | 0.01 | 0.01 | 0.048 | 0.046 | 4.3 | 1.04 |
| MQL4 | 20-Nov-19 | Ba-D | 0.001 | 0.001 | 0.0024 | 0.0023 | 4.3 | 1.04 |
| NNL1 | 7-Aug-19 | Mn-D | 0.001 | 0.001 | 0.0023 | 0.0024 | 4.3 | 0.96 |
| PDSR | 4-Dec-19 | Si-T | 0.1 | 0.1 | 3.30 | 3.16 | 4.3 | 1.04 |
| QU0821GS | 27-Nov-19 | Cl-D | 1 | 1 | 94 | 90 | 4.3 | 1.04 |
| QU1010S | 30-Sep-19 | S2-T | 0.018 | 0.018 | 0.23 | 0.24 | 4.3 | 0.96 |
| QU1013D | 24-Sep-19 | B-D | 0.05 | 0.05 | 1.41 | 1.35 | 4.3 | 1.04 |
| QU1105S | 16-Dec-19 | Mn-D | 0.001 | 0.001 | 0.204 | 0.213 | 4.3 | 0.96 |
| SPC | 1-Oct-19 | Ba-T | 0.001 | 0.001 | 0.0094 | 0.0090 | 4.3 | 1.04 |
| WA | 12-Nov-19 | K-T | 0.05 | 0.05 | 0.071 | 0.068 | 4.3 | 1.04 |
| WA | 12-Nov-19 | Sr-T | 0.001 | 0.001 | 0.0119 | 0.0114 | 4.3 | 1.04 |
| LLM9 | 13-Nov-19 | Sr-D | 0.001 | 0.001 | 0.332 | 0.347 | 4.4 | 0.96 |
| MQL4 | 28-Aug-19 | Turb | 0.1 | 0.1 | 0.22 | 0.23 | 4.4 | 0.96 |
| MW002 | 5-Dec-19 | As-D | 0.0005 | 0.0005 | 0.00178 | 0.00186 | 4.4 | 0.96 |
| MW002 | 5-Dec-19 | N-D | 0.02 | 0.02 | 0.234 | 0.224 | 4.4 | 1.04 |
| MW004 | 27-Aug-19 | Acidity 8.3 | 1 | 1 | 4.4 | 4.6 | 4.4 | 0.96 |
| QU1009D | 5-Sep-19 | Bicarbonate | 1 | 1 | 220 | 230 | 4.4 | 0.96 |
| QU1109S | 18-Dec-19 | Ba-D | 0.001 | 0.001 | 0.0534 | 0.0511 | 4.4 | 1.05 |
| WB | 12-Aug-19 | Ca-T | 0.05 | 0.05 | 8.57 | 8.20 | 4.4 | 1.05 |
| WB | 12-Aug-19 | Hardness (as CaC | 0.5 | 0.5 | 25.6 | 24.5 | 4.4 | 1.04 |
| IRT3 | 25-Apr-19 | Ca-D | 0.05 | 0.05 | 4.54 | 4.75 | 4.5 | 0.96 |
| IRT3 | 25-Apr-19 | Si-T | 0.1 | 0.1 | 2.84 | 2.97 | 4.5 | 0.96 |
| IRT4 | 7-May-19 | Mg-D | 0.05 | 0.05 | 1.01 | 0.966 | 4.5 | 1.05 |
| LLM9 | 13-Nov-19 | K-D | 0.05 | 0.05 | 0.538 | 0.563 | 4.5 | 0.96 |
| LLO | 4-Nov-19 | S-T | 3 | 3 | 13.6 | 13.0 | 4.5 | 1.05 |
| MQL1 | 18-Apr-19 | K-D | 0.05 | 0.05 | 0.367 | 0.384 | 4.5 | 0.96 |
| MW004 | 27-Aug-19 | Fe-D | 0.005 | 0.005 | 0.0173 | 0.0181 | 4.5 | 0.96 |
| NNL1 | 9-Apr-19 | Mn-T | 0.001 | 0.001 | 0.0065 | 0.0068 | 4.5 | 0.96 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| NNL4 | 14-Aug-19 | Fe-T | 0.01 | 0.01 | 0.087 | 0.091 | 4.5 | 0.96 |
| NNO | 30-Apr-19 | Al-T | 0.003 | 0.003 | 0.0390 | 0.0408 | 4.5 | 0.96 |
| NNO | 29-Oct-19 | Cu-D | 0.0002 | 0.0002 | 0.00045 | 0.00043 | 4.5 | 1.05 |
| NNO | 29-Oct-19 | Fe-T | 0.01 | 0.01 | 0.130 | 0.136 | 4.5 | 0.96 |
| QRDS1 | 18-Apr-19 | Cu-D | 0.0002 | 0.0002 | 0.00043 | 0.00045 | 4.5 | 0.96 |
| QU1010S | 30-Sep-19 | Ca-D | 0.05 | 0.05 | 22.6 | 21.6 | 4.5 | 1.05 |
| 242MW | 10-Dec-19 | Al-D | 0.003 | 0.003 | 0.0067 | 0.0064 | 4.6 | 1.05 |
| 5M#2 | 27-Jan-20 | Si-T | 0.1 | 0.1 | 3.17 | 3.32 | 4.6 | 0.95 |
| IRT3 | 25-Apr-19 | Mg-D | 0.05 | 0.05 | 0.904 | 0.863 | 4.6 | 1.05 |
| MQL1 | 18-Apr-19 | Ca-T | 0.05 | 0.05 | 15.0 | 15.7 | 4.6 | 0.96 |
| MW002 | 15-May-19 | Si-D | 0.2 | 0.2 | 3.31 | 3.16 | 4.6 | 1.05 |
| NNL4 | 14-Aug-19 | Al-T | 0.003 | 0.003 | 0.0149 | 0.0156 | 4.6 | 0.96 |
| NNO | 30-Apr-19 | Na-D | 0.05 | 0.05 | 1.11 | 1.06 | 4.6 | 1.05 |
| QU1010S | 11-Dec-19 | N-D | 0.02 | 0.02 | 0.298 | 0.312 | 4.6 | 0.96 |
| 1M2N | 26-Feb-20 | Li-D | 0.002 | 0.002 | 0.0110 | 0.0105 | 4.7 | 1.05 |
| 5M#2 | 27-Jan-20 | Ca-T | 0.05 | 0.05 | 58.2 | 61.0 | 4.7 | 0.95 |
| 7SQR | 22-Oct-19 | Fe-D | 0.005 | 0.005 | 0.0964 | 0.101 | 4.7 | 0.95 |
| LLM4 | 6-Nov-19 | Sr-T | 0.001 | 0.001 | 0.105 | 0.110 | 4.7 | 0.95 |
| MQL4 | 28-Aug-19 | Cu-D | 0.0002 | 0.0002 | 0.00042 | 0.00044 | 4.7 | 0.95 |
| NNL4 | 14-Aug-19 | Mn-T | 0.001 | 0.001 | 0.0042 | 0.0044 | 4.7 | 0.95 |
| PDSR | 10-Feb-20 | Ba-T | 0.001 | 0.001 | 0.0110 | 0.0105 | 4.7 | 1.05 |
| QU1008D | 18-Mar-20 | Turb | 0.1 | 0.1 | 42 | 44 | 4.7 | 0.95 |
| QU1009S | 27-May-19 | K-D | 0.05 | 0.05 | 0.660 | 0.692 | 4.7 | 0.95 |
| QU1105S | 16-Dec-19 | As-D | 0.0001 | 0.0001 | 0.0498 | 0.0522 | 4.7 | 0.95 |
| WA | 17-Oct-19 | Cond-L | 2 | 2 | 42 | 44 | 4.7 | 0.95 |
| WA | 12-Nov-19 | Si-T | 0.1 | 0.1 | 2.17 | 2.07 | 4.7 | 1.05 |
| NNL4 | 14-Aug-19 | Na-T | 0.05 | 0.05 | 1.23 | 1.29 | 4.8 | 0.95 |
| QU1109S | 18-Dec-19 | K-D | 0.05 | 0.05 | 3.43 | 3.27 | 4.8 | 1.05 |
| QU1109S | 18-Dec-19 | Si-D | 0.1 | 0.1 | 6.43 | 6.13 | 4.8 | 1.05 |
| WB | 12-Aug-19 | Fe-D | 0.005 | 0.005 | 0.0297 | 0.0283 | 4.8 | 1.05 |
| WB | 12-Aug-19 | Mg-T | 0.05 | 0.05 | 1.02 | 0.972 | 4.8 | 1.05 |
| 3SO | 4-Apr-19 | Cu-D | 0.0002 | 0.0002 | 0.00042 | 0.00040 | 4.9 | 1.05 |
| 7SQR | 22-Oct-19 | Cu-D | 0.0002 | 0.0002 | 0.00060 | 0.00063 | 4.9 | 0.95 |
| LLM1 | 1-May-19 | K-T | 0.05 | 0.05 | 0.200 | 0.210 | 4.9 | 0.95 |
| LLM1 | 30-Oct-19 | Fe-D | 0.005 | 0.005 | 0.0645 | 0.0614 | 4.9 | 1.05 |
| MW004 | 27-Aug-19 | Hg-D | 0.000002 | 0.000002 | 0.0000021 | <0.0000020 | 4.9 | 1.05 |
| QU0813A | 26-Nov-19 | Alk-PP | 1 | 1 | 2.1 | 2.0 | 4.9 | 1.05 |
| QU1010S | 11-Dec-19 | Fluoride | 0.05 | 0.05 | 0.63 | 0.60 | 4.9 | 1.05 |
| QU1013D | 24-Sep-19 | U-D | 0.0001 | 0.0001 | 0.00020 | 0.00021 | 4.9 | 0.95 |
| QU1410 | 24-Feb-20 | Ca-D | 0.25 | 0.1 | 518 | 493 | 4.9 | 1.05 |
| WA | 17-Oct-19 | Hg-D | 0.000002 | 0.000002 | 0.0000021 | <0.0000020 | 4.9 | 1.05 |
| WD | 6-Jan-20 | Mn-D | 0.001 | 0.001 | 0.0523 | 0.0549 | 4.9 | 0.95 |
| 242MW | 10-Dec-19 | Na-D | 0.05 | 0.05 | 3.46 | 3.29 | 5.0 | 1.05 |
| 242MW | 10-Dec-19 | Tl-D | 0.00001 | 0.00001 | 0.000041 | 0.000039 | 5.0 | 1.05 |
| IR1 | 20-Jun-19 | Ba-T | 0.001 | 0.001 | 0.0041 | 0.0039 | 5.0 | 1.05 |
| IRT4 | 7-May-19 | Mg-T | 0.05 | 0.05 | 1.01 | 0.961 | 5.0 | 1.05 |
| QRDS1 | 18-Apr-19 | K-D | 0.05 | 0.05 | 0.351 | 0.369 | 5.0 | 0.95 |
| WA | 17-Oct-19 | Sr-T | 0.001 | 0.001 | 0.0123 | 0.0117 | 5.0 | 1.05 |
| 242MW | 10-Dec-19 | SO4-D | 1 | 1 | 38 | 40 | 5.1 | 0.95 |
| IR6 | 18-Nov-19 | Se-D | 0.0001 | 0.0001 | 0.00019 | 0.00020 | 5.1 | 0.95 |
| NNL1 | 9-Apr-19 | As-T | 0.0001 | 0.0001 | 0.00019 | 0.00020 | 5.1 | 0.95 |
| NNO | 30-Apr-19 | Fe-D | 0.005 | 0.005 | 0.0384 | 0.0365 | 5.1 | 1.05 |
| QU1009D | 5-Sep-19 | C-D | 0.5 | 0.5 | 1.0 | 0.95 | 5.1 | 1.05 |
| QU1009S | 27-May-19 | Na-D | 0.05 | 0.05 | 8.39 | 8.83 | 5.1 | 0.95 |
| QU1009S | 27-May-19 | Si-D | 0.1 | 0.1 | 7.84 | 8.25 | 5.1 | 0.95 |
| QU1010S | 30-Sep-19 | Turb | 0.1 | 0.1 | 38 | 40 | 5.1 | 0.95 |
| QU1410 | 24-Feb-20 | Hard-D | 0.5 | 0.5 | 2000 | 1900 | 5.1 | 1.05 |
| QU1410 | 24-Feb-20 | Mn-D | 0.005 | 0.002 | 1.42 | 1.35 | 5.1 | 1.05 |
| SPD | 30-Mar-20 | SO4-D | 10 | 10 | 400 | 380 | 5.1 | 1.05 |
| MQL1 | 18-Apr-19 | Si-D | 0.1 | 0.1 | 2.08 | 2.19 | 5.2 | 0.95 |
| MW002 | 15-May-19 | Na-D | 0.1 | 0.1 | 78.7 | 74.7 | 5.2 | 1.05 |
| WA | 17-Oct-19 | Al-D | 0.003 | 0.003 | 0.0235 | 0.0223 | 5.2 | 1.05 |
| IRT4 | 7-May-19 | Na-D | 0.05 | 0.05 | 1.01 | 0.958 | 5.3 | 1.05 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LQL9 | 25-Apr-19 | Na-D | 0.05 | 0.05 | 11.0 | 11.6 | 5.3 | 0.95 |
| MQL1 | 18-Apr-19 | Ca-D | 0.05 | 0.05 | 14.6 | 15.4 | 5.3 | 0.95 |
| NNL1 | 7-Aug-19 | As-D | 0.0001 | 0.0001 | 0.00037 | 0.00039 | 5.3 | 0.95 |
| NNL1 | 7-Aug-19 | Cu-D | 0.0002 | 0.0002 | 0.00037 | 0.00039 | 5.3 | 0.95 |
| QRDS1 | 18-Apr-19 | S-T | 3 | 3 | 14.6 | 15.4 | 5.3 | 0.95 |
| QU0821GS | 27-Nov-19 | Fe-D | 0.01 | 0.01 | 0.555 | 0.585 | 5.3 | 0.95 |
| QU1010S | 11-Dec-19 | Al-D | 0.003 | 0.003 | 0.0039 | 0.0037 | 5.3 | 1.05 |
| QU1101 | 23-Dec-19 | Fluoride | 0.02 | 0.02 | 0.370 | 0.390 | 5.3 | 0.95 |
| 242MW | 10-Dec-19 | Ni-D | 0.001 | 0.001 | 0.0019 | 0.0018 | 5.4 | 1.06 |
| IR6 | 18-Sep-19 | Al-T | 0.003 | 0.003 | 0.0403 | 0.0382 | 5.4 | 1.05 |
| IR6 | 18-Nov-19 | Cu-T | 0.0005 | 0.0005 | 0.00076 | 0.00072 | 5.4 | 1.06 |
| LLM1 | 1-May-19 | K-D | 0.05 | 0.05 | 0.211 | 0.200 | 5.4 | 1.06 |
| LLO | 4-Nov-19 | S-D | 3 | 3 | 12.5 | 13.2 | 5.4 | 0.95 |
| NNL1 | 9-Apr-19 | As-D | 0.0001 | 0.0001 | 0.00018 | 0.00019 | 5.4 | 0.95 |
| NNL1 | 7-Aug-19 | As-T | 0.0001 | 0.0001 | 0.00038 | 0.00036 | 5.4 | 1.06 |
| NNO | 30-Apr-19 | Sr-T | 0.001 | 0.001 | 0.0109 | 0.0115 | 5.4 | 0.95 |
| QU0813A | 10-Mar-20 | Bromide | 0.01 | 0.01 | 0.019 | 0.018 | 5.4 | 1.06 |
| QU1009D | 5-Sep-19 | Alkalinity Total as | 1 | 1 | 180 | 190 | 5.4 | 0.95 |
| QU1009D | 5-Sep-19 | SO4-D | 1 | 1 | 72 | 76 | 5.4 | 0.95 |
| LLM1 | 1-May-19 | Si-T | 0.1 | 0.1 | 3.17 | 3.35 | 5.5 | 0.95 |
| NNL1 | 9-Apr-19 | Al-T | 0.003 | 0.003 | 0.0463 | 0.0489 | 5.5 | 0.95 |
| NNL1 | 9-Apr-19 | Sr-D | 0.001 | 0.001 | 0.0106 | 0.0112 | 5.5 | 0.95 |
| QU1410 | 24-Feb-20 | Acidity 8.3 | 1 | 1 | 16.7 | 15.8 | 5.5 | 1.06 |
| WA | 17-Oct-19 | Cu-T | 0.0005 | 0.0005 | 0.00089 | 0.00094 | 5.5 | 0.95 |
| WA | 12-Nov-19 | Hardness (as CaC | 0.5 | 0.5 | 20.4 | 19.3 | 5.5 | 1.06 |
| 242MW | 10-Dec-19 | Mg-D | 0.05 | 0.05 | 3.68 | 3.48 | 5.6 | 1.06 |
| 3SO | 4-Apr-19 | Mg-T | 0.05 | 0.05 | 0.713 | 0.674 | 5.6 | 1.06 |
| IRT3 | 25-Apr-19 | Si-D | 0.1 | 0.1 | 2.43 | 2.57 | 5.6 | 0.95 |
| LLM1 | 1-May-19 | Ba-T | 0.001 | 0.001 | 0.0035 | 0.0037 | 5.6 | 0.95 |
| WB | 12-Aug-19 | SO4-D | 1 | 1 | 8.6 | 9.1 | 5.6 | 0.95 |
| 3S | 9-Sep-19 | Bicarbonate | 1 | 1 | 180 | 170 | 5.7 | 1.06 |
| IR1 | 20-Jun-19 | Cd-T | 0.00001 | 0.00001 | 0.000018 | 0.000017 | 5.7 | 1.06 |
| IRT3 | 25-Apr-19 | Alkalinity Total as | 1 | 1 | 16.3 | 15.4 | 5.7 | 1.06 |
| IRT3 | 25-Apr-19 | Bicarbonate | 1 | 1 | 19.9 | 18.8 | 5.7 | 1.06 |
| LLMB | 24-Oct-19 | As-D | 0.0001 | 0.0001 | 0.00017 | 0.00018 | 5.7 | 0.94 |
| LQL1 | 9-May-19 | Si-T | 0.1 | 0.1 | 2.56 | 2.71 | 5.7 | 0.94 |
| LQL9 | 25-Apr-19 | Fe-D | 0.005 | 0.005 | 0.0480 | 0.0508 | 5.7 | 0.94 |
| MQL4 | 28-Aug-19 | As-T | 0.0001 | 0.0001 | 0.00018 | 0.00017 | 5.7 | 1.06 |
| NNO | 30-Apr-19 | Bicarbonate | 1 | 1 | 11.9 | 12.6 | 5.7 | 0.94 |
| QRDS1 | 18-Apr-19 | Mg-T | 0.05 | 0.05 | 1.81 | 1.71 | 5.7 | 1.06 |
| QU0821GS | 27-Nov-19 | Fluoride | 0.05 | 0.05 | 1.7 | 1.8 | 5.7 | 0.94 |
| QU1008D | 18-Mar-20 | Ca-D | 0.1 | 0.25 | 2.37 | 2.51 | 5.7 | 0.94 |
| QU1410 | 11-Sep-19 | Cl-D | 1 | 1 | 5.1 | 5.4 | 5.7 | 0.94 |
| QU1410 | 20-Nov-19 | SO4-D | 10 | 10 | 1700 | 1800 | 5.7 | 0.94 |
| WA | 12-Nov-19 | Ca-T | 0.05 | 0.05 | 6.88 | 6.50 | 5.7 | 1.06 |
| IR6 | 18-Sep-19 | Na-T | 0.05 | 0.05 | 1.24 | 1.17 | 5.8 | 1.06 |
| IR6 | 18-Sep-19 | Si-T | 0.1 | 0.1 | 3.00 | 2.83 | 5.8 | 1.06 |
| LLM4 | 6-Nov-19 | S-D | 3 | 3 | 13.3 | 14.1 | 5.8 | 0.94 |
| LLMB | 24-Oct-19 | Al-T | 0.003 | 0.003 | 0.0067 | 0.0071 | 5.8 | 0.94 |
| LQL1 | 9-May-19 | S-T | 3 | 3 | 8.3 | 8.8 | 5.8 | 0.94 |
| LQL9 | 25-Apr-19 | Bicarbonate | 1 | 1 | 38.4 | 40.7 | 5.8 | 0.94 |
| NNO | 30-Apr-19 | Mg-T | 0.05 | 0.05 | 0.782 | 0.829 | 5.8 | 0.94 |
| QU1101 | 23-Dec-19 | Acidity 8.3 | 1 | 1 | 185 | 196 | 5.8 | 0.94 |
| WA | 17-Oct-19 | Si-T | 0.1 | 0.1 | 2.47 | 2.33 | 5.8 | 1.06 |
| 1M2N | 26-Feb-20 | Mn-T | 0.001 | 0.001 | 0.359 | 0.381 | 5.9 | 0.94 |
| 1M2N | 26-Feb-20 | Na-T | 0.05 | 0.05 | 344 | 365 | 5.9 | 0.94 |
| LQL1 | 9-May-19 | Ba-T | 0.001 | 0.001 | 0.0033 | 0.0035 | 5.9 | 0.94 |
| LQL9 | 25-Apr-19 | Alkalinity Total as | 1 | 1 | 31.5 | 33.4 | 5.9 | 0.94 |
| MQL1 | 18-Apr-19 | Mn-D | 0.001 | 0.001 | 0.0033 | 0.0035 | 5.9 | 0.94 |
| MW002 | 15-May-19 | Li-D | 0.004 | 0.004 | 0.0140 | 0.0132 | 5.9 | 1.06 |
| QU1410 | 24-Feb-20 | N-D | 0.02 | 0.02 | 0.246 | 0.232 | 5.9 | 1.06 |
| WA | 17-Oct-19 | Mn-T | 0.001 | 0.001 | 0.0049 | 0.0052 | 5.9 | 0.94 |
| 1M2N | 26-Feb-20 | Mg-T | 0.05 | 0.05 | 11.4 | 12.1 | 6.0 | 0.94 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLM1 | 30-Oct-19 | Sr-T | 0.001 | 0.001 | 0.130 | 0.138 | 6.0 | 0.94 |
| NNO | 30-Apr-19 | Alkalinity Total as | 1 | 1 | 9.7 | 10.3 | 6.0 | 0.94 |
| NNO | 29-Oct-19 | Al-T | 0.003 | 0.003 | 0.0403 | 0.0428 | 6.0 | 0.94 |
| WA | 12-Nov-19 | Mg-T | 0.05 | 0.05 | 0.792 | 0.746 | 6.0 | 1.06 |
| 1M2N | 26-Feb-20 | Fe-T | 0.01 | 0.01 | 3.34 | 3.55 | 6.1 | 0.94 |
| 242MW | 10-Dec-19 | Cl-D | 1 | 1 | 1.7 | 1.6 | 6.1 | 1.06 |
| IR6 | 18-Nov-19 | As-T | 0.0001 | 0.0001 | 0.00068 | 0.00064 | 6.1 | 1.06 |
| IR6 | 18-Nov-19 | Mn-T | 0.001 | 0.001 | 0.0016 | 0.0017 | 6.1 | 0.94 |
| LLM1 | 1-May-19 | Hardness (as CaC | 0.5 | 0.5 | 47.8 | 50.8 | 6.1 | 0.94 |
| MQL4 | 20-Nov-19 | Fe-D | 0.005 | 0.005 | 0.0306 | 0.0288 | 6.1 | 1.06 |
| NNL1 | 9-Apr-19 | K-D | 0.05 | 0.05 | 0.064 | 0.068 | 6.1 | 0.94 |
| NNL1 | 9-Apr-19 | P-D | 0.002 | 0.002 | 0.0034 | 0.0032 | 6.1 | 1.06 |
| NNO | 30-Apr-19 | Mn-D | 0.001 | 0.001 | 0.0034 | 0.0032 | 6.1 | 1.06 |
| QU0821GD | 3-Sep-19 | P-D | 0.003 | 0.003 | 0.16 | 0.17 | 6.1 | 0.94 |
| QU0821GD | 19-Feb-20 | Turb | 0.1 | 0.1 | 6.8 | 6.4 | 6.1 | 1.06 |
| QU1410 | 11-Sep-19 | Fluoride | 0.05 | 0.05 | 0.17 | 0.16 | 6.1 | 1.06 |
| WB | 12-Aug-19 | As-D | 0.0001 | 0.0001 | 0.00016 | 0.00017 | 6.1 | 0.94 |
| WB | 12-Aug-19 | As-T | 0.0001 | 0.0001 | 0.00016 | 0.00017 | 6.1 | 0.94 |
| 242MW | 10-Dec-19 | Mn-D | 0.001 | 0.001 | 0.838 | 0.788 | 6.2 | 1.06 |
| LQL1 | 9-May-19 | As-T | 0.0001 | 0.0001 | 0.00047 | 0.00050 | 6.2 | 0.94 |
| LQL1 | 9-May-19 | Fe-D | 0.005 | 0.005 | 0.0450 | 0.0423 | 6.2 | 1.06 |
| QU1105S | 16-Dec-19 | Li-D | 0.002 | 0.002 | 0.0471 | 0.0501 | 6.2 | 0.94 |
| WA | 17-Oct-19 | Fe-D | 0.005 | 0.005 | 0.0183 | 0.0172 | 6.2 | 1.06 |
| 7SQR | 22-Oct-19 | Al-T | 0.003 | 0.003 | 0.0734 | 0.0689 | 6.3 | 1.07 |
| MW002 | 15-May-19 | Ba-D | 0.002 | 0.002 | 0.0130 | 0.0122 | 6.3 | 1.07 |
| WA | 17-Oct-19 | Fe-T | 0.01 | 0.01 | 0.131 | 0.123 | 6.3 | 1.07 |
| NNO | 30-Apr-19 | Mg-D | 0.05 | 0.05 | 0.827 | 0.776 | 6.4 | 1.07 |
| QU1105S | 16-Dec-19 | K-D | 0.05 | 0.05 | 2.59 | 2.76 | 6.4 | 0.94 |
| QU1105S | 16-Dec-19 | N-D | 0.02 | 0.02 | 0.209 | 0.196 | 6.4 | 1.07 |
| WD | 6-Jan-20 | Na-D | 0.05 | 0.05 | 211 | 225 | 6.4 | 0.94 |
| 3SO | 4-Apr-19 | Mn-T | 0.001 | 0.001 | 0.0064 | 0.0060 | 6.5 | 1.07 |
| QU0821GD | 19-Feb-20 | P-D | 0.001 | 0.001 | 0.016 | 0.015 | 6.5 | 1.07 |
| WA | 17-Oct-19 | Ba-T | 0.001 | 0.001 | 0.0016 | 0.0015 | 6.5 | 1.07 |
| LLM1 | 30-Oct-19 | Sr-D | 0.001 | 0.001 | 0.126 | 0.118 | 6.6 | 1.07 |
| LLO | 4-Nov-19 | Mn-T | 0.001 | 0.001 | 0.0063 | 0.0059 | 6.6 | 1.07 |
| MQL1 | 18-Apr-19 | S-D | 3 | 3 | 16.1 | 17.2 | 6.6 | 0.94 |
| QU1008D | 18-Mar-20 | Na-D | 0.1 | 0.25 | 118 | 126 | 6.6 | 0.94 |
| WD | 6-Jan-20 | K-D | 0.05 | 0.05 | 2.63 | 2.81 | 6.6 | 0.94 |
| LLM1 | 1-May-19 | Ca-T | 0.05 | 0.05 | 15.9 | 17.0 | 6.7 | 0.94 |
| NNO | 30-Apr-19 | Na-T | 0.05 | 0.05 | 1.01 | 1.08 | 6.7 | 0.94 |
| QU1410 | 24-Feb-20 | Si-D | 0.5 | 0.2 | 2.93 | 2.74 | 6.7 | 1.07 |
| IR6 | 18-Sep-19 | Cu-T | 0.0005 | 0.0005 | 0.00076 | 0.00071 | 6.8 | 1.07 |
| LQL1 | 9-May-19 | Na-T | 0.05 | 0.05 | 11.3 | 12.1 | 6.8 | 0.93 |
| QU1009S | 27-May-19 | S-D | 3 | 3 | 34.3 | 36.7 | 6.8 | 0.93 |
| QU1109S | 18-Dec-19 | N-D | 0.02 | 0.02 | 0.383 | 0.410 | 6.8 | 0.93 |
| 242MW | 10-Dec-19 | Co-D | 0.0002 | 0.0002 | 0.00239 | 0.00223 | 6.9 | 1.07 |
| 3S | 9-Sep-19 | Alkalinity Total as | 1 | 1 | 150 | 140 | 6.9 | 1.07 |
| 7SQR | 26-Aug-19 | Cu-D | 0.0002 | 0.0002 | 0.00042 | 0.00045 | 6.9 | 0.93 |
| IR6 | 18-Sep-19 | Cd-T | 0.00001 | 0.00001 | 0.000015 | 0.000014 | 6.9 | 1.07 |
| LLM1 | 1-May-19 | Turb | 0.1 | 0.1 | 0.30 | 0.28 | 6.9 | 1.07 |
| LLO | 25-Jun-19 | SO4-D | 1 | 1 | 75 | 70 | 6.9 | 1.07 |
| MQL4 | 20-Nov-19 | As-D | 0.0001 | 0.0001 | 0.00015 | 0.00014 | 6.9 | 1.07 |
| NNO | 30-Apr-19 | SO4-D | 1 | 1 | 1.5 | 1.4 | 6.9 | 1.07 |
| PDSR | 10-Feb-20 | Cu-D | 0.0002 | 0.0002 | 0.00030 | 0.00028 | 6.9 | 1.07 |
| QU1010S | 30-Sep-19 | Li-D | 0.002 | 0.002 | 0.0511 | 0.0477 | 6.9 | 1.07 |
| QU1101 | 23-Dec-19 | SO4-D | 10 | 10 | 1500 | 1400 | 6.9 | 1.07 |
| QU1105S | 16-Dec-19 | C-D | 0.5 | 0.5 | 1.5 | 1.4 | 6.9 | 1.07 |
| QU1105S | 16-Dec-19 | Fluoride | 0.05 | 0.05 | 0.15 | 0.14 | 6.9 | 1.07 |
| QU1109S | 18-Dec-19 | Li-D | 0.002 | 0.002 | 0.0583 | 0.0544 | 6.9 | 1.07 |
| QU1410 | 24-Feb-20 | Alkalinity Total as | 1 | 1 | 280 | 300 | 6.9 | 0.93 |
| WA | 17-Oct-19 | As-D | 0.0001 | 0.0001 | 0.00015 | 0.00014 | 6.9 | 1.07 |
| NNL4 | 14-Aug-19 | K-D | 0.05 | 0.05 | 0.069 | 0.074 | 7.0 | 0.93 |
| QU1105S | 16-Dec-19 | Sr-D | 0.001 | 0.001 | 0.467 | 0.501 | 7.0 | 0.93 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LLM1 | 30-Oct-19 | S-D | 3 | 3 | 16.0 | 14.9 | 7.1 | 1.07 |
| PDSR | 10-Feb-20 | SO4-D | 10 | 10 | 290 | 270 | 7.1 | 1.07 |
| QU1410 | 20-Nov-19 | Cl-D | 1 | 1 | 5.4 | 5.8 | 7.1 | 0.93 |
| 242MW | 10-Dec-19 | S-D | 3 | 3 | 13.0 | 12.1 | 7.2 | 1.07 |
| IRT3 | 25-Apr-19 | Fe-D | 0.005 | 0.005 | 0.0654 | 0.0703 | 7.2 | 0.93 |
| IRT4 | 7-May-19 | Sr-T | 0.001 | 0.001 | 0.0258 | 0.0240 | 7.2 | 1.08 |
| NNO | 30-Apr-19 | Cu-D | 0.0002 | 0.0002 | 0.00043 | 0.00040 | 7.2 | 1.08 |
| QRDS1 | 18-Apr-19 | B-D | 0.05 | 0.05 | 0.067 | 0.072 | 7.2 | 0.93 |
| QU1010S | 11-Dec-19 | Cl-D | 1 | 1 | 4.3 | 4.0 | 7.2 | 1.08 |
| 1M2N | 26-Feb-20 | Hardness (as CaC | 0.5 | 0.5 | 330 | 355 | 7.3 | 0.93 |
| 1M2N | 26-Feb-20 | K-T | 0.05 | 0.05 | 5.05 | 5.44 | 7.4 | 0.93 |
| LLMB | 24-Oct-19 | SO4-D | 1 | 1 | 140 | 130 | 7.4 | 1.08 |
| PDSR | 10-Feb-20 | U-D | 0.0001 | 0.0001 | 0.00013 | 0.00014 | 7.4 | 0.93 |
| QU1009D | 5-Sep-19 | P-D | 0.003 | 0.003 | 0.014 | 0.013 | 7.4 | 1.08 |
| QU1010S | 11-Dec-19 | P-D | 0.003 | 0.003 | 0.026 | 0.028 | 7.4 | 0.93 |
| QU1013D | 24-Sep-19 | Co-D | 0.0002 | 0.0002 | 0.00026 | 0.00028 | 7.4 | 0.93 |
| QU1410 | 24-Feb-20 | Fe-D | 0.025 | 0.01 | 1.81 | 1.68 | 7.4 | 1.08 |
| WD | 6-Jan-20 | Co-D | 0.0002 | 0.0002 | 0.00026 | 0.00028 | 7.4 | 0.93 |
| QRDS1 | 18-Apr-19 | B-T | 0.05 | 0.05 | 0.069 | 0.064 | 7.5 | 1.08 |
| WD | 6-Jan-20 | Mg-D | 0.05 | 0.05 | 12.8 | 13.8 | 7.5 | 0.93 |
| QRDS1 | 18-Apr-19 | S-D | 3 | 3 | 16.4 | 17.7 | 7.6 | 0.93 |
| QU1105S | 16-Dec-19 | B-D | 0.05 | 0.05 | 0.573 | 0.618 | 7.6 | 0.93 |
| 1M2N | 26-Feb-20 | Ca-T | 0.05 | 0.05 | 113 | 122 | 7.7 | 0.93 |
| LLO | 4-Nov-19 | Al-T | 0.003 | 0.003 | 0.0226 | 0.0244 | 7.7 | 0.93 |
| NNO | 29-Oct-19 | Cu-T | 0.0005 | 0.0005 | 0.00054 | <0.00050 | 7.7 | 1.08 |
| QU1105S | 16-Dec-19 | Ba-D | 0.001 | 0.001 | 0.163 | 0.176 | 7.7 | 0.93 |
| 3SO | 4-Apr-19 | Fe-T | 0.01 | 0.01 | 0.067 | 0.062 | 7.8 | 1.08 |
| IR6 | 18-Sep-19 | Cu-D | 0.0002 | 0.0002 | 0.00080 | 0.00074 | 7.8 | 1.08 |
| QRDS1 | 18-Apr-19 | Na-T | 0.05 | 0.05 | 22.7 | 21.0 | 7.8 | 1.08 |
| QU1008D | 18-Mar-20 | K-D | 0.1 | 0.25 | 0.62 | 0.67 | 7.8 | 0.93 |
| LLM4 | 6-Nov-19 | Al-D | 0.003 | 0.003 | 0.0170 | 0.0184 | 7.9 | 0.92 |
| MQL1 | 18-Apr-19 | Na-T | 0.05 | 0.05 | 22.0 | 23.8 | 7.9 | 0.92 |
| QU1105S | 16-Dec-19 | Hard-D | 0.5 | 0.5 | 158 | 171 | 7.9 | 0.92 |
| 1M2N | 26-Feb-20 | S-T | 3 | 3 | 215 | 233 | 8.0 | 0.92 |
| 7SQR | 22-Oct-19 | As-D | 0.0001 | 0.0001 | 0.00039 | 0.00036 | 8.0 | 1.08 |
| LQL1 | 9-May-19 | Bicarbonate | 1 | 1 | 44.0 | 40.6 | 8.0 | 1.08 |
| QU1009D | 5-Sep-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.12 | 0.13 | 8.0 | 0.92 |
| QU1010S | 30-Sep-19 | Cl-D | 1 | 1 | 5.2 | 4.8 | 8.0 | 1.08 |
| QU1010S | 30-Sep-19 | Fluoride | 0.05 | 0.05 | 0.60 | 0.65 | 8.0 | 0.92 |
| WA | 12-Nov-19 | Mn-T | 0.001 | 0.001 | 0.0012 | 0.0013 | 8.0 | 0.92 |
| LLM1 | 1-May-19 | Chloro-a | 0.1 | 0.1 | 1.030 | 0.950 | 8.1 | 1.08 |
| LQL1 | 9-May-19 | Alkalinity Total as | 1 | 1 | 36.1 | 33.3 | 8.1 | 1.08 |
| IRT4 | 7-May-19 | Hardness (as CaC | 0.5 | 0.5 | 17.8 | 16.4 | 8.2 | 1.09 |
| LLM1 | 30-Oct-19 | Alkalinity Total as | 1 | 1 | 25 | 23 | 8.3 | 1.09 |
| LQL9 | 25-Apr-19 | Cu-D | 0.0002 | 0.0002 | 0.00063 | 0.00058 | 8.3 | 1.09 |
| NNO | 29-Oct-19 | Mn-D | 0.001 | 0.001 | 0.0050 | 0.0046 | 8.3 | 1.09 |
| QU1008D | 18-Mar-20 | Mg-D | 0.1 | 0.25 | 0.23 | <0.25 | 8.3 | 0.92 |
| QU1010S | 11-Dec-19 | Se-D | 0.0001 | 0.0001 | 0.00088 | 0.00081 | 8.3 | 1.09 |
| WA | 12-Nov-19 | Cu-T | 0.0005 | 0.0005 | 0.00063 | 0.00058 | 8.3 | 1.09 |
| LQL1 | 9-May-19 | Cu-T | 0.0005 | 0.0005 | 0.00062 | 0.00057 | 8.4 | 1.09 |
| WA | 17-Oct-19 | Mg-T | 0.05 | 0.05 | 0.767 | 0.834 | 8.4 | 0.92 |
| IR6 | 18-Sep-19 | SO4-D | 1 | 1 | 3.4 | 3.7 | 8.5 | 0.92 |
| LLM1 | 1-May-19 | S-T | 3 | 3 | 12.4 | 13.5 | 8.5 | 0.92 |
| QU1410 | 24-Feb-20 | Bicarbonate | 1 | 1 | 340 | 370 | 8.5 | 0.92 |
| WA | 17-Oct-19 | K-T | 0.05 | 0.05 | 0.089 | 0.097 | 8.6 | 0.92 |
| WA | 12-Nov-19 | Al-T | 0.003 | 0.003 | 0.0206 | 0.0189 | 8.6 | 1.09 |
| 1M2N | 26-Feb-20 | Bromide | 0.01 | 0.01 | 0.11 | 0.12 | 8.7 | 0.92 |
| 3SO | 4-Apr-19 | Ba-T | 0.001 | 0.001 | 0.0012 | 0.0011 | 8.7 | 1.09 |
| LLE | 18-Feb-20 | SO4-D | 1 | 1 | 110 | 120 | 8.7 | 0.92 |
| LQL1 | 9-May-19 | As-D | 0.0001 | 0.0001 | 0.00044 | 0.00048 | 8.7 | 0.92 |
| PDSR | 10-Feb-20 | Alkalinity Total as | 1 | 1 | 120 | 110 | 8.7 | 1.09 |
| QU0813A | 26-Nov-19 | P-D | 0.003 | 0.003 | 0.060 | 0.055 | 8.7 | 1.09 |
| QU0821GS | 27-Nov-19 | Bicarbonate | 1 | 1 | 240 | 220 | 8.7 | 1.09 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1009D | 5-Sep-19 | S2-T | 0.0018 | 0.0018 | 0.11 | 0.12 | 8.7 | 0.92 |
| QU1009S | 27-May-19 | C-D | 0.5 | 0.5 | 1.2 | 1.1 | 8.7 | 1.09 |
| QU1101 | 23-Dec-19 | Cl-D | 1 | 1 | 2.4 | 2.2 | 8.7 | 1.09 |
| WA | 12-Nov-19 | As-D | 0.0001 | 0.0001 | 0.00011 | 0.00012 | 8.7 | 0.92 |
| WD | 6-Jan-20 | Ni-D | 0.001 | 0.001 | 0.0011 | 0.0012 | 8.7 | 0.92 |
| WD | 6-Jan-20 | S-D | 3 | 3 | 143 | 156 | 8.7 | 0.92 |
| 3SO | 4-Apr-19 | Na-T | 0.05 | 0.05 | 0.954 | 0.874 | 8.8 | 1.09 |
| WB | 12-Aug-19 | Al-D | 0.003 | 0.003 | 0.0142 | 0.0130 | 8.8 | 1.09 |
| MQL1 | 18-Apr-19 | Fe-T | 0.01 | 0.01 | 0.035 | 0.032 | 9.0 | 1.09 |
| MW004 | 27-Aug-19 | Al-D | 0.003 | 0.003 | 0.0053 | 0.0058 | 9.0 | 0.91 |
| QU1008D | 18-Mar-20 | Hard-D | 0.5 | 0.5 | 6.87 | 6.28 | 9.0 | 1.09 |
| WA | 17-Oct-19 | Al-T | 0.003 | 0.003 | 0.116 | 0.106 | 9.0 | 1.09 |
| WD | 6-Jan-20 | Sr-D | 0.001 | 0.001 | 0.855 | 0.936 | 9.0 | 0.91 |
| LLM1 | 30-Oct-19 | As-D | 0.0001 | 0.0001 | 0.00046 | 0.00042 | 9.1 | 1.10 |
| LQL1 | 9-May-19 | Hardness (as CaC | 0.5 | 0.5 | 33.6 | 36.8 | 9.1 | 0.91 |
| QRDS1 | 18-Apr-19 | As-T | 0.0001 | 0.0001 | 0.00023 | 0.00021 | 9.1 | 1.10 |
| QU1010S | 30-Sep-19 | P-D | 0.003 | 0.003 | 0.023 | 0.021 | 9.1 | 1.10 |
| 7SQR | 22-Oct-19 | Alkalinity Total as | 1 | 1 | 31 | 34 | 9.2 | 0.91 |
| IRT4 | 7-May-19 | Ca-T | 0.05 | 0.05 | 5.45 | 4.97 | 9.2 | 1.10 |
| MQL1 | 18-Apr-19 | Cu-D | 0.0002 | 0.0002 | 0.00051 | 0.00056 | 9.3 | 0.91 |
| QU1410 | 28-Jan-20 | P-D | 0.001 | 0.001 | 0.0041 | 0.0045 | 9.3 | 0.91 |
| IR6 | 18-Sep-19 | As-T | 0.0001 | 0.0001 | 0.00089 | 0.00081 | 9.4 | 1.10 |
| LQL1 | 9-May-19 | Ca-T | 0.05 | 0.05 | 11.2 | 12.3 | 9.4 | 0.91 |
| QU1410 | 24-Feb-20 | Li-D | 0.01 | 0.004 | 0.123 | 0.112 | 9.4 | 1.10 |
| 242MW | 10-Dec-19 | P-D | 0.003 | 0.003 | 0.011 | 0.010 | 9.5 | 1.10 |
| IR1 | 20-Jun-19 | Fe-D | 0.005 | 0.005 | 0.0055 | <0.0050 | 9.5 | 1.10 |
| LLM4 | 21-Aug-19 | Al-T | 0.003 | 0.003 | 0.0077 | 0.0070 | 9.5 | 1.10 |
| MW002 | 15-May-19 | Cl-D | 1 | 1 | 2.2 | 2.0 | 9.5 | 1.10 |
| QRDS1 | 18-Apr-19 | Acidity 8.3 | 1 | 1 | 1.0 | 1.1 | 9.5 | 0.91 |
| QU1009S | 27-May-19 | Bromide | 0.01 | 0.01 | 0.044 | 0.040 | 9.5 | 1.10 |
| QU1101 | 23-Dec-19 | Turb | 0.1 | 0.1 | 550 | 500 | 9.5 | 1.10 |
| QU1109S | 18-Dec-19 | SO4-D | 10 | 10 | 220 | 200 | 9.5 | 1.10 |
| SPC | 1-Oct-19 | Ni-T | 0.001 | 0.001 | 0.0011 | <0.0010 | 9.5 | 1.10 |
| SPC | 1-Oct-19 | TSS | 4 | 4 | 4.4 | <4.0 | 9.5 | 1.10 |
| 5M#2 | 27-Jan-20 | N-D | 0.02 | 0.02 | 0.184 | 0.167 | 9.7 | 1.10 |
| IRT4 | 7-May-19 | K-T | 0.05 | 0.05 | 0.387 | 0.351 | 9.8 | 1.10 |
| LLM9 | 13-Nov-19 | Cu-D | 0.0002 | 0.0002 | 0.00032 | 0.00029 | 9.8 | 1.10 |
| QU1009D | 5-Sep-19 | Acidity 8.3 | 1 | 1 | 2.9 | 3.2 | 9.8 | 0.91 |
| 7SQR | 22-Oct-19 | Bicarbonate | 1 | 1 | 38 | 42 | 10.0 | 0.90 |
| IR6 | 18-Nov-19 | Se-T | 0.0001 | 0.0001 | 0.00021 | 0.00019 | 10.0 | 1.11 |
| NNO | 30-Apr-19 | As-T | 0.0001 | 0.0001 | 0.00019 | 0.00021 | 10.0 | 0.90 |
| QRDS1 | 18-Apr-19 | As-D | 0.0001 | 0.0001 | 0.00019 | 0.00021 | 10.0 | 0.90 |
| QU0821GS | 27-Nov-19 | Alkalinity Total as | 1 | 1 | 210 | 190 | 10.0 | 1.11 |
| QU1105S | 16-Dec-19 | Ca-D | 0.05 | 0.05 | 47.7 | 52.7 | 10.0 | 0.91 |
| WA | 17-Oct-19 | As-T | 0.0001 | 0.0001 | 0.00019 | 0.00021 | 10.0 | 0.90 |
| MQL4 | 20-Nov-19 | Cu-D | 0.0002 | 0.0002 | 0.00052 | 0.00047 | 10.1 | 1.11 |
| IRT3 | 25-Apr-19 | Al-T | 0.003 | 0.003 | 0.139 | 0.154 | 10.2 | 0.90 |
| LLM1 | 30-Oct-19 | Bicarbonate | 1 | 1 | 31 | 28 | 10.2 | 1.11 |
| LLM1 | 30-Oct-19 | Cu-D | 0.0002 | 0.0002 | 0.00037 | 0.00041 | 10.3 | 0.90 |
| LLM1 | 1-May-19 | Bicarbonate | 1 | 1 | 30.4 | 27.4 | 10.4 | 1.11 |
| LQL1 | 9-May-19 | Sr-T | 0.001 | 0.001 | 0.0560 | 0.0622 | 10.5 | 0.90 |
| NNL1 | 7-Aug-19 | Turb | 0.1 | 0.1 | 0.30 | 0.27 | 10.5 | 1.11 |
| PDSR | 4-Dec-19 | Cu-D | 0.0002 | 0.0002 | 0.00027 | 0.00030 | 10.5 | 0.90 |
| QU1009D | 5-Sep-19 | Cl-D | 1 | 1 | 1.8 | 2.0 | 10.5 | 0.90 |
| IRT3 | 25-Apr-19 | As-D | 0.0001 | 0.0001 | 0.00108 | 0.00097 | 10.7 | 1.11 |
| IRT4 | 7-May-19 | Al-D | 0.003 | 0.003 | 0.0346 | 0.0385 | 10.7 | 0.90 |
| IRT4 | 7-May-19 | Si-T | 0.1 | 0.1 | 2.96 | 2.66 | 10.7 | 1.11 |
| NNO | 30-Apr-19 | Fe-T | 0.01 | 0.01 | 0.053 | 0.059 | 10.7 | 0.90 |
| QU0821GD | 19-Feb-20 | C-D | 0.5 | 0.5 | 5.9 | 5.3 | 10.7 | 1.11 |
| LLO | 4-Nov-19 | SO4-D | 1 | 1 | 35 | 39 | 10.8 | 0.90 |
| IRT4 | 7-May-19 | Cu-D | 0.0002 | 0.0002 | 0.00026 | 0.00029 | 10.9 | 0.90 |
| QU1009S | 27-May-19 | S2-T | 0.0019 | 0.0019 | 0.0087 | 0.0078 | 10.9 | 1.12 |
| QU1105S | 16-Dec-19 | S-D | 3 | 3 | 45.9 | 51.2 | 10.9 | 0.90 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| IR1 | 20-Jun-19 | Cu-D | 0.0002 | 0.0002 | 0.00048 | 0.00043 | 11.0 | 1.12 |
| LLM1 | 1-May-19 | Alkalinity Total as | 1 | 1 | 25.0 | 22.4 | 11.0 | 1.12 |
| SPC | 1-Oct-19 | SO4-D | 1 | 1 | 77 | 69 | 11.0 | 1.12 |
| LLM4 | 21-Aug-19 | Turb | 0.1 | 0.1 | 0.19 | 0.17 | 11.1 | 1.12 |
| QU1010S | 11-Dec-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.19 | 0.17 | 11.1 | 1.12 |
| QU1013D | 24-Sep-19 | Fluoride | 0.02 | 0.02 | 0.190 | 0.170 | 11.1 | 1.12 |
| IR6 | 18-Nov-19 | Ba-T | 0.001 | 0.001 | 0.0042 | 0.0047 | 11.2 | 0.89 |
| MW004 | 27-Aug-19 | As-D | 0.0001 | 0.0001 | 0.00042 | 0.00047 | 11.2 | 0.89 |
| IRT3 | 25-Apr-19 | Fe-T | 0.01 | 0.01 | 0.117 | 0.131 | 11.3 | 0.89 |
| LLM9 | 13-Nov-19 | Turb | 0.1 | 0.1 | 0.25 | 0.28 | 11.3 | 0.89 |
| IR1 | 6-Aug-19 | Cu-T | 0.0005 | 0.0005 | 0.00058 | 0.00065 | 11.4 | 0.89 |
| WD | 6-Jan-20 | SO4-D | 10 | 10 | 460 | 410 | 11.5 | 1.12 |
| 3SO | 4-Apr-19 | As-T | 0.0001 | 0.0001 | 0.00016 | 0.00018 | 11.8 | 0.89 |
| LQL1 | 9-May-19 | Mn-D | 0.001 | 0.001 | 0.0016 | 0.0018 | 11.8 | 0.89 |
| MW002 | 5-Dec-19 | Bromide | 0.05 | 0.05 | 0.16 | 0.18 | 11.8 | 0.89 |
| QU1009S | 27-May-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.0090 | 0.0080 | 11.8 | 1.12 |
| QU1009S | 27-May-19 | N-D | 0.02 | 0.02 | 0.108 | 0.096 | 11.8 | 1.12 |
| QU1010S | 11-Dec-19 | S2-T | 0.0018 | 0.0018 | 0.18 | 0.16 | 11.8 | 1.12 |
| QU1410 | 24-Feb-20 | Fluoride | 0.05 | 0.05 | 0.18 | 0.16 | 11.8 | 1.12 |
| WA | 12-Nov-19 | Fe-T | 0.01 | 0.01 | 0.018 | 0.016 | 11.8 | 1.12 |
| WD | 6-Jan-20 | TSS | 1 | 1 | 3.2 | 3.6 | 11.8 | 0.89 |
| LLM1 | 1-May-19 | N-D | 0.02 | 0.02 | 0.133 | 0.150 | 12.0 | 0.89 |
| LLM9 | 13-Nov-19 | Al-T | 0.003 | 0.003 | 0.0133 | 0.0118 | 12.0 | 1.13 |
| QU1410 | 24-Feb-20 | C-D | 0.5 | 0.5 | 0.78 | 0.88 | 12.0 | 0.89 |
| WA | 17-Oct-19 | Na-T | 0.05 | 0.05 | 0.768 | 0.866 | 12.0 | 0.89 |
| PDSR | 4-Dec-19 | K-T | 0.05 | 0.05 | 1.67 | 1.48 | 12.1 | 1.13 |
| 3SO | 4-Apr-19 | K-T | 0.05 | 0.05 | 0.078 | 0.069 | 12.2 | 1.13 |
| PDSR | 4-Dec-19 | Al-D | 0.003 | 0.003 | 0.0046 | 0.0052 | 12.2 | 0.88 |
| LQL1 | 9-May-19 | K-D | 0.05 | 0.05 | 0.266 | 0.301 | 12.3 | 0.88 |
| LLM1 | 1-May-19 | Al-T | 0.003 | 0.003 | 0.0299 | 0.0339 | 12.5 | 0.88 |
| LLMB | 24-Oct-19 | Turb | 0.1 | 0.1 | 1.7 | 1.5 | 12.5 | 1.13 |
| QU1010S | 30-Sep-19 | SO4-D | 1 | 1 | 3.0 | 3.4 | 12.5 | 0.88 |
| QU1010S | 11-Dec-19 | Turb | 0.1 | 0.1 | 17 | 15 | 12.5 | 1.13 |
| IRT4 | 7-May-19 | Ba-T | 0.001 | 0.001 | 0.0321 | 0.0283 | 12.6 | 1.13 |
| NNL4 | 14-Aug-19 | As-T | 0.0001 | 0.0001 | 0.00037 | 0.00042 | 12.7 | 0.88 |
| QU1013D | 24-Sep-19 | Turb | 0.1 | 0.1 | 3.7 | 4.2 | 12.7 | 0.88 |
| LLM1 | 1-May-19 | Cu-D | 0.0002 | 0.0002 | 0.00041 | 0.00036 | 13.0 | 1.14 |
| QU1105S | 16-Dec-19 | Si-D | 0.1 | 0.1 | 2.87 | 3.27 | 13.0 | 0.88 |
| MQL4 | 20-Nov-19 | Al-D | 0.003 | 0.003 | 0.0138 | 0.0121 | 13.1 | 1.14 |
| QU1105S | 16-Dec-19 | Fe-D | 0.005 | 0.005 | 1.14 | 1.30 | 13.1 | 0.88 |
| 1M2N | 26-Feb-20 | Cu-T | 0.0005 | 0.0005 | 0.00510 | 0.00582 | 13.2 | 0.88 |
| 3SO | 4-Apr-19 | SO4-D | 1 | 1 | 2.1 | 2.4 | 13.3 | 0.88 |
| IR6 | 18-Sep-19 | Se-D | 0.0001 | 0.0001 | 0.00024 | 0.00021 | 13.3 | 1.14 |
| IR6 | 18-Sep-19 | Se-T | 0.0001 | 0.0001 | 0.00024 | 0.00021 | 13.3 | 1.14 |
| QU0821GD | 19-Feb-20 | Acidity 8.3 | 1 | 1 | 7.7 | 8.8 | 13.3 | 0.88 |
| QU0813A | 26-Nov-19 | N-D | 0.02 | 0.02 | 0.183 | 0.160 | 13.4 | 1.14 |
| IR1 | 6-Aug-19 | Mg-T | 0.05 | 0.05 | 0.720 | 0.825 | 13.6 | 0.87 |
| QU1109S | 18-Dec-19 | Alk-PP | 1 | 1 | 11 | 9.6 | 13.6 | 1.15 |
| LQL9 | 25-Apr-19 | N-T | 0.02 | 0.02 | 0.133 | 0.116 | 13.7 | 1.15 |
| LQL9 | 25-Apr-19 | N-TKN | 0.02 | 0.02 | 0.133 | 0.116 | 13.7 | 1.15 |
| QU1013D | 24-Sep-19 | Acidity 8.3 | 1 | 1 | 7.5 | 8.6 | 13.7 | 0.87 |
| 3S | 16-Jul-19 | SO4-D | 10 | 10 | 460 | 400 | 14.0 | 1.15 |
| IR6 | 18-Nov-19 | Hg-T | 0.000002 | 0.000002 | 0.0000023 | <0.0000020 | 14.0 | 1.15 |
| NNO | 30-Apr-19 | N-T | 0.02 | 0.02 | 0.140 | 0.161 | 14.0 | 0.87 |
| NNO | 30-Apr-19 | N-TKN | 0.02 | 0.02 | 0.140 | 0.161 | 14.0 | 0.87 |
| IR1 | 20-Jun-19 | Cd-D | 0.000005 | 0.000005 | 0.0000150 | 0.0000130 | 14.3 | 1.15 |
| IR1 | 6-Aug-19 | Mg-D | 0.05 | 0.05 | 0.738 | 0.852 | 14.3 | 0.87 |
| MQL1 | 18-Apr-19 | As-D | 0.0001 | 0.0001 | 0.00013 | 0.00015 | 14.3 | 0.87 |
| QU0813A | 26-Nov-19 | Turb | 0.1 | 0.1 | 1.5 | 1.3 | 14.3 | 1.15 |
| NNL1 | 9-Apr-19 | N-T | 0.02 | 0.02 | 0.168 | 0.194 | 14.4 | 0.87 |
| QU0821GD | 19-Feb-20 | N-D | 0.02 | 0.02 | 0.592 | 0.512 | 14.5 | 1.16 |
| LLM1 | 1-May-19 | P-T | 0.003 | 0.003 | 0.0070 | 0.0081 | 14.6 | 0.86 |
| MW002 | 15-May-19 | C-D | 0.5 | 0.5 | 0.57 | 0.66 | 14.6 | 0.86 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| MW002 | 5-Dec-19 | Cl-D | 1 | 1 | 1.9 | 2.2 | 14.6 | 0.86 |
| QU1009D | 5-Sep-19 | Bromide | 0.01 | 0.01 | 0.019 | 0.022 | 14.6 | 0.86 |
| LQL9 | 25-Apr-19 | Si-T | 0.1 | 0.1 | 2.55 | 2.20 | 14.7 | 1.16 |
| LLM1 | 1-May-19 | N-T | 0.02 | 0.02 | 0.125 | 0.145 | 14.8 | 0.86 |
| LLM1 | 1-May-19 | N-TKN | 0.02 | 0.02 | 0.125 | 0.145 | 14.8 | 0.86 |
| QU0821GS | 27-Nov-19 | Alk-PP | 1 | 1 | 2.5 | 2.9 | 14.8 | 0.86 |
| PDSR | 4-Dec-19 | Na-T | 0.05 | 0.05 | 64.9 | 55.9 | 14.9 | 1.16 |
| IR6 | 18-Nov-19 | Cu-D | 0.0002 | 0.0002 | 0.00079 | 0.00068 | 15.0 | 1.16 |
| QU1410 | 24-Feb-20 | B-D | 0.25 | 0.1 | 1.14 | 0.98 | 15.1 | 1.16 |
| 5M#2 | 27-Jan-20 | C-D | 0.5 | 0.5 | 1.4 | 1.2 | 15.4 | 1.17 |
| IRT3 | 25-Apr-19 | Ti-T | 0.005 | 0.005 | 0.0054 | 0.0063 | 15.4 | 0.86 |
| LQL1 | 9-May-19 | N-T | 0.02 | 0.02 | 0.084 | 0.098 | 15.4 | 0.86 |
| LQL1 | 9-May-19 | N-TKN | 0.02 | 0.02 | 0.084 | 0.098 | 15.4 | 0.86 |
| LQL1 | 9-May-19 | Turb | 0.1 | 0.1 | 0.42 | 0.36 | 15.4 | 1.17 |
| MP | 5-Mar-20 | TSS | 1 | 1 | 2.4 | 2.8 | 15.4 | 0.86 |
| MW002 | 15-May-19 | Fluoride | 0.02 | 0.02 | 0.120 | 0.140 | 15.4 | 0.86 |
| MW004 | 27-Aug-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.014 | 0.012 | 15.4 | 1.17 |
| PDSR | 10-Feb-20 | TSS | 1 | 1 | 2.8 | 2.4 | 15.4 | 1.17 |
| QU1410 | 20-Nov-19 | Acidity 8.3 | 1 | 1 | 22.3 | 19.1 | 15.5 | 1.17 |
| SPC | 1-Oct-19 | Mn-T | 0.001 | 0.001 | 0.0041 | 0.0048 | 15.7 | 0.85 |
| WB | 12-Aug-19 | Cu-D | 0.0002 | 0.0002 | 0.00055 | 0.00047 | 15.7 | 1.17 |
| IR1 | 20-Jun-19 | Se-D | 0.0001 | 0.0001 | 0.00035 | 0.00041 | 15.8 | 0.85 |
| 242MW | 10-Dec-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.0034 | 0.0029 | 15.9 | 1.17 |
| PDSR | 4-Dec-19 | SO4-D | 10 | 10 | 570 | 670 | 16.1 | 0.85 |
| 1M2N | 26-Feb-20 | Pb-T | 0.0002 | 0.0002 | 0.00442 | 0.00520 | 16.2 | 0.85 |
| MQL4 | 20-Nov-19 | Turb | 0.1 | 0.1 | 0.28 | 0.33 | 16.4 | 0.85 |
| LQL9 | 25-Apr-19 | N-D | 0.02 | 0.02 | 0.116 | 0.137 | 16.6 | 0.85 |
| LQL9 | 25-Apr-19 | Turb | 0.1 | 0.1 | 0.65 | 0.55 | 16.7 | 1.18 |
| MW004 | 27-Aug-19 | S2-T | 0.0018 | 0.0018 | 0.013 | 0.011 | 16.7 | 1.18 |
| PDSR | 10-Feb-20 | Mn-T | 0.001 | 0.001 | 0.0011 | 0.0013 | 16.7 | 0.85 |
| QU1013D | 24-Sep-19 | C-D | 0.5 | 0.5 | 1.1 | 1.3 | 16.7 | 0.85 |
| QU1109S | 18-Dec-19 | Carbonate | 1 | 1 | 13 | 11 | 16.7 | 1.18 |
| LQL1 | 9-May-19 | S-D | 3 | 3 | 8.2 | 9.7 | 16.8 | 0.85 |
| 1M2N | 26-Feb-20 | Cu-D | 0.0002 | 0.0002 | 0.00032 | 0.00027 | 16.9 | 1.19 |
| 242MW | 10-Dec-19 | S2-T | 0.0018 | 0.0018 | 0.0032 | 0.0027 | 16.9 | 1.19 |
| 7SQR | 26-Aug-19 | Al-T | 0.003 | 0.003 | 0.0123 | 0.0146 | 17.1 | 0.84 |
| QU1101 | 23-Dec-19 | Bromide | 0.05 | 0.05 | 0.21 | 0.25 | 17.4 | 0.84 |
| LLM1 | 30-Oct-19 | Si-D | 0.1 | 0.1 | 3.22 | 2.70 | 17.6 | 1.19 |
| PDSR | 4-Dec-19 | Mg-T | 0.05 | 0.05 | 39.6 | 33.1 | 17.9 | 1.20 |
| MQL1 | 18-Apr-19 | SO4-D | 1 | 1 | 40.9 | 49.0 | 18.0 | 0.83 |
| IR6 | 18-Nov-19 | Hg-D | 0.000002 | 0.000002 | 0.0000020 | 0.0000024 | 18.2 | 0.83 |
| IRT3 | 25-Apr-19 | Cu-D | 0.0002 | 0.0002 | 0.00036 | 0.00030 | 18.2 | 1.20 |
| IRT4 | 7-May-19 | SO4-D | 1 | 1 | <1.0 | 1.2 | 18.2 | 0.83 |
| LLO | 4-Nov-19 | Hg-T | 0.000002 | 0.000002 | 0.0000024 | <0.0000020 | 18.2 | 1.20 |
| MW002 | 5-Dec-19 | Hg-D | 0.000002 | 0.000002 | 0.0000024 | <0.0000020 | 18.2 | 1.20 |
| SPD | 30-Mar-20 | TSS | 1 | 1 | 1.2 | <1.0 | 18.2 | 1.20 |
| WD | 24-Mar-20 | SO4-D | 10 | 10 | 700 | 840 | 18.2 | 0.83 |
| PDSR | 4-Dec-19 | Ba-T | 0.001 | 0.001 | 0.0184 | 0.0221 | 18.3 | 0.83 |
| PDSR | 4-Dec-19 | S-T | 3 | 3 | 232 | 193 | 18.4 | 1.20 |
| PDSR | 10-Feb-20 | Al-T | 0.003 | 0.003 | 0.0117 | 0.0141 | 18.6 | 0.83 |
| QU0821GS | 27-Nov-19 | Carbonate | 1 | 1 | 2.9 | 3.5 | 18.8 | 0.83 |
| MQL1 | 18-Apr-19 | Ba-D | 0.001 | 0.001 | 0.0029 | 0.0024 | 18.9 | 1.21 |
| QU1410 | 11-Sep-19 | Acidity 8.3 | 1 | 1 | 14.5 | 12.0 | 18.9 | 1.21 |
| MW002 | 5-Dec-19 | Acidity 8.3 | 1 | 1 | 10.5 | 12.7 | 19.0 | 0.83 |
| MW002 | 15-May-19 | Hg-D | 0.000002 | 0.000002 | 0.0000068 | 0.0000056 | 19.4 | 1.21 |
| IR1 | 6-Aug-19 | Cu-D | 0.0002 | 0.0002 | 0.00051 | 0.00062 | 19.5 | 0.82 |
| 242MW | 10-Dec-19 | N-D | 0.02 | 0.02 | 0.156 | 0.190 | 19.7 | 0.82 |
| PDSR | 4-Dec-19 | B-T | 0.05 | 0.05 | 0.247 | 0.202 | 20.0 | 1.22 |
| QU1410 | 24-Feb-20 | Bromide | 0.05 | 0.05 | 0.33 | 0.27 | 20.0 | 1.22 |
| MW002 | 15-May-19 | Acidity 8.3 | 1 | 1 | 10.3 | 12.6 | 20.1 | 0.82 |
| LQL9 | 25-Apr-19 | Ca-T | 0.05 | 0.05 | 11.3 | 13.9 | 20.6 | 0.81 |
| MQL1 | 18-Apr-19 | As-T | 0.0001 | 0.0001 | 0.00013 | 0.00016 | 20.7 | 0.81 |
| QU1410 | 28-Jan-20 | C-D | 0.5 | 0.5 | 1.3 | 1.6 | 20.7 | 0.81 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| LQL9 | 25-Apr-19 | Hardness (as CaC | 0.5 | 0.5 | 33.5 | 41.3 | 20.9 | 0.81 |
| QU1410 | 24-Feb-20 | P-D | 0.001 | 0.001 | 0.0037 | 0.0030 | 20.9 | 1.23 |
| 3SO | 4-Apr-19 | P-D | 0.002 | 0.002 | 0.0034 | 0.0042 | 21.1 | 0.81 |
| LQL9 | 25-Apr-19 | Mg-T | 0.05 | 0.05 | 1.31 | 1.62 | 21.2 | 0.81 |
| SPC | 1-Oct-19 | Hg-D | 0.000002 | 0.000002 | 0.0000046 | 0.0000057 | 21.4 | 0.81 |
| MQL1 | 18-Apr-19 | N-D | 0.02 | 0.02 | 0.087 | 0.108 | 21.5 | 0.81 |
| PDSR | 4-Dec-19 | Hardness (as CaC | 0.5 | 0.5 | 741 | 597 | 21.5 | 1.24 |
| 5M#2 | 27-Jan-20 | Acidity 8.3 | 1 | 1 | 4.1 | 3.3 | 21.6 | 1.24 |
| NNL1 | 9-Apr-19 | Turb | 0.1 | 0.1 | 0.37 | 0.46 | 21.7 | 0.80 |
| QU0821GS | 27-Nov-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.041 | 0.051 | 21.7 | 0.80 |
| LLM1 | 30-Oct-19 | Turb | 0.1 | 0.1 | 0.49 | 0.61 | 21.8 | 0.80 |
| 1M2N | 26-Feb-20 | Cd-T | 0.00001 | 0.00001 | 0.000020 | 0.000016 | 22.2 | 1.25 |
| IR6 | 18-Sep-19 | Cd-D | 0.00001 | 0.00001 | 0.000012 | 0.000015 | 22.2 | 0.80 |
| NNL1 | 9-Apr-19 | Cu-D | 0.0002 | 0.0002 | 0.00032 | 0.00040 | 22.2 | 0.80 |
| PDSR | 4-Dec-19 | As-T | 0.0001 | 0.0001 | 0.00015 | 0.00012 | 22.2 | 1.25 |
| PDSR | 4-Dec-19 | U-T | 0.0001 | 0.0001 | 0.00045 | 0.00036 | 22.2 | 1.25 |
| QU1410 | 11-Sep-19 | Turb | 0.1 | 0.1 | 20 | 16 | 22.2 | 1.25 |
| PDSR | 4-Dec-19 | Ca-T | 0.05 | 0.05 | 232 | 185 | 22.5 | 1.25 |
| MW002 | 5-Dec-19 | Turb | 0.1 | 0.1 | 31 | 39 | 22.9 | 0.79 |
| QU0821GS | 27-Nov-19 | S2-T | 0.0018 | 0.0018 | 0.038 | 0.048 | 23.3 | 0.79 |
| QU1009S | 27-May-19 | Acidity 8.3 | 1 | 1 | 3.0 | 3.8 | 23.5 | 0.79 |
| QU1410 | 20-Nov-19 | Turb | 0.1 | 0.1 | 15 | 19 | 23.5 | 0.79 |
| PDSR | 4-Dec-19 | Cu-T | 0.0005 | 0.0005 | 0.00056 | 0.00071 | 23.6 | 0.79 |
| QU1009S | 27-May-19 | P-D | 0.003 | 0.003 | 0.014 | 0.011 | 24.0 | 1.27 |
| NNL1 | 9-Apr-19 | P-T | 0.002 | 0.002 | 0.0029 | 0.0037 | 24.2 | 0.78 |
| NNL1 | 9-Apr-19 | N-TKN | 0.02 | 0.02 | 0.130 | 0.166 | 24.3 | 0.78 |
| IRT4 | 7-May-19 | Fe-D | 0.005 | 0.005 | 0.0312 | 0.0399 | 24.5 | 0.78 |
| QU1009S | 27-May-19 | Cl-D | 1 | 1 | 1.4 | 1.8 | 25.0 | 0.78 |
| WD | 24-Mar-20 | TSS | 1 | 1 | 3.6 | 2.8 | 25.0 | 1.29 |
| 5M#2 | 27-Jan-20 | Pb-T | 0.0002 | 0.0002 | 0.00031 | 0.00040 | 25.4 | 0.78 |
| QU1013D | 24-Sep-19 | Bromide | 0.2 | 0.2 | 0.26 | <0.20 | 26.1 | 1.30 |
| WB | 12-Aug-19 | Acidity 8.3 | 1 | 1 | 1.3 | <1.0 | 26.1 | 1.30 |
| IR6 | 18-Nov-19 | Cd-T | 0.00001 | 0.00001 | 0.000013 | 0.000017 | 26.7 | 0.76 |
| PDSR | 4-Dec-19 | Sr-T | 0.001 | 0.001 | 1.51 | 1.15 | 27.1 | 1.31 |
| QU1410 | 28-Jan-20 | Cl-D | 1 | 1 | 6.7 | 5.1 | 27.1 | 1.31 |
| NNL1 | 9-Apr-19 | NO2+NO3 | 0.02 | 0.02 | 0.037 | 0.028 | 27.7 | 1.32 |
| NNL1 | 9-Apr-19 | N-NO3 | 0.02 | 0.02 | 0.037 | 0.028 | 27.7 | 1.32 |
| 242MW | 10-Dec-19 | Turb | 0.1 | 0.1 | 83 | 110 | 28.0 | 0.75 |
| QU1109S | 18-Dec-19 | S2-T | 0.0018 | 0.0018 | 0.24 | 0.18 | 28.6 | 1.33 |
| IRT4 | 7-May-19 | As-T | 0.0001 | 0.0001 | 0.00341 | 0.00255 | 28.9 | 1.34 |
| LQL1 | 9-May-19 | Cu-D | 0.0002 | 0.0002 | 0.00060 | 0.00082 | 31.0 | 0.73 |
| LQL1 | 9-May-19 | P-D | 0.003 | 0.003 | 0.0030 | 0.0041 | 31.0 | 0.73 |
| QU1109S | 18-Dec-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.26 | 0.19 | 31.1 | 1.37 |
| NNO | 29-Oct-19 | SO4-D | 1 | 1 | 1.6 | 2.2 | 31.6 | 0.73 |
| 7SQR | 22-Oct-19 | SO4-D | 1 | 1 | 26 | 36 | 32.3 | 0.72 |
| LLM4 | 21-Aug-19 | Fe-T | 0.01 | 0.01 | 0.021 | 0.015 | 33.3 | 1.40 |
| QU1008D | 18-Mar-20 | S2-T | 0.0018 | 0.0018 | 0.060 | 0.084 | 33.3 | 0.71 |
| SPC | 1-Oct-19 | Cr-T | 0.001 | 0.001 | 0.0014 | <0.0010 | 33.3 | 1.40 |
| QU1101 | 23-Dec-19 | Alkalinity Total as | 1 | 1 | 71 | 100 | 33.9 | 0.71 |
| 5M#2 | 27-Jan-20 | Turb | 0.1 | 0.1 | 2.2 | 3.1 | 34.0 | 0.71 |
| QU1008D | 18-Mar-20 | Hydrogen Sulphic | 0.002 | 0.002 | 0.063 | 0.089 | 34.2 | 0.71 |
| LQL9 | 25-Apr-19 | Sr-T | 0.001 | 0.001 | 0.0595 | 0.0844 | 34.6 | 0.70 |
| IR1 | 6-Aug-19 | Si-T | 0.1 | 0.1 | 2.03 | 2.89 | 35.0 | 0.70 |
| LQL9 | 25-Apr-19 | Cu-T | 0.0005 | 0.0005 | 0.00077 | 0.00054 | 35.1 | 1.43 |
| IR1 | 6-Aug-19 | Si-D | 0.1 | 0.1 | 2.03 | 2.91 | 35.6 | 0.70 |
| NNO | 30-Apr-19 | P-T | 0.003 | 0.003 | <0.0030 | 0.0043 | 35.6 | 0.70 |
| LQL9 | 25-Apr-19 | Ba-T | 0.001 | 0.001 | 0.0033 | 0.0023 | 35.7 | 1.43 |
| QU0813A | 26-Nov-19 | Se-D | 0.0001 | 0.0001 | 0.00066 | 0.00046 | 35.7 | 1.43 |
| MW004 | 27-Aug-19 | C-D | 0.5 | 0.5 | 2.6 | 1.8 | 36.4 | 1.44 |
| QU0813A | 10-Mar-20 | C-D | 0.5 | 0.5 | 0.77 | 0.53 | 36.9 | 1.45 |
| LLM4 | 21-Aug-19 | Fe-D | 0.005 | 0.005 | 0.0206 | 0.0141 | 37.5 | 1.46 |
| QU0813A | 26-Nov-19 | SO4-D | 1 | 1 | 41 | 28 | 37.7 | 1.46 |
| IR6 | 18-Nov-19 | SO4-D | 1 | 1 | 1.7 | 2.5 | 38.1 | 0.68 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| 1M2N | 26-Feb-20 | Turb | 0.1 | 0.1 | 19 | 28 | 38.3 | 0.68 |
| LQL9 | 25-Apr-19 | K-T | 0.05 | 0.05 | 0.239 | 0.353 | 38.5 | 0.68 |
| LLM4 | 6-Nov-19 | SO4-D | 1 | 1 | 37 | 25 | 38.7 | 1.48 |
| LQL9 | 25-Apr-19 | B-T | 0.05 | 0.05 | <0.050 | 0.074 | 38.7 | 0.68 |
| IR1 | 6-Aug-19 | Al-T | 0.003 | 0.003 | 0.0208 | 0.0309 | 39.1 | 0.67 |
| IRT4 | 7-May-19 | Ti-T | 0.005 | 0.005 | 0.0096 | 0.0064 | 40.0 | 1.50 |
| QU0813A | 10-Mar-20 | P-D | 0.003 | 0.003 | 0.018 | 0.027 | 40.0 | 0.67 |
| QU1105S | 16-Dec-19 | Bromide | 0.01 | 0.01 | 0.018 | 0.012 | 40.0 | 1.50 |
| QU1101 | 23-Dec-19 | Bicarbonate | 1 | 1 | 86 | 130 | 40.7 | 0.66 |
| QU1410 | 28-Jan-20 | Turb | 0.1 | 0.1 | 9.0 | 5.9 | 41.6 | 1.53 |
| QU0821GS | 27-Nov-19 | N-D | 0.02 | 0.02 | 0.496 | 0.325 | 41.7 | 1.53 |
| NNL4 | 14-Aug-19 | Turb | 0.1 | 0.1 | 0.24 | 0.37 | 42.6 | 0.65 |
| IRT4 | 7-May-19 | Fe-T | 0.01 | 0.01 | 0.247 | 0.160 | 42.8 | 1.54 |
| IR1 | 6-Aug-19 | Na-D | 0.05 | 0.05 | 0.653 | 1.01 | 42.9 | 0.65 |
| PDSR | 4-Dec-19 | Hg-D | 0.000002 | 0.000002 | 0.0000031 | <0.0000020 | 43.1 | 1.55 |
| QU1010S | 11-Dec-19 | C-D | 0.5 | 0.5 | 0.71 | 1.1 | 43.1 | 0.65 |
| QU1013D | 24-Sep-19 | Cu-D | 0.0002 | 0.0002 | <0.00020 | 0.00031 | 43.1 | 0.65 |
| IR1 | 6-Aug-19 | Na-T | 0.05 | 0.05 | 0.639 | 1.01 | 45.0 | 0.63 |
| LQL9 | 25-Apr-19 | P-D | 0.003 | 0.003 | 0.0031 | 0.0049 | 45.0 | 0.63 |
| NNO | 30-Apr-19 | Zr-T | 0.0001 | 0.0001 | <0.00010 | 0.00016 | 46.2 | 0.62 |
| SPC | 2-Mar-20 | TSS | 1 | 1 | <1.0 | 1.6 | 46.2 | 0.62 |
| IRT4 | 7-May-19 | Al-T | 0.003 | 0.003 | 0.230 | 0.143 | 46.6 | 1.61 |
| LQL1 | 9-May-19 | N-D | 0.02 | 0.02 | 0.085 | 0.138 | 47.5 | 0.62 |
| 1M2N | 26-Feb-20 | Hydrogen Sulphic | 0.002 | 0.002 | 0.16 | 0.26 | 47.6 | 0.62 |
| QU1013D | 24-Sep-19 | Carbonate | 1 | 1 | 7.7 | 4.7 | 48.4 | 1.64 |
| QU0813A | 26-Nov-19 | S2-T | 0.0018 | 0.0018 | 0.13 | 0.079 | 48.8 | 1.65 |
| LLM1 | 30-Oct-19 | Hg-T | 0.000002 | 0.000002 | 0.0000033 | <0.0000020 | 49.1 | 1.65 |
| 1M2N | 26-Feb-20 | Mo-D | 0.001 | 0.001 | 0.0035 | 0.0021 | 50.0 | 1.67 |
| 1M2N | 26-Feb-20 | S2-T | 0.0018 | 0.0018 | 0.15 | 0.25 | 50.0 | 0.60 |
| QU0813A | 26-Nov-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.14 | 0.084 | 50.0 | 1.67 |
| QU1013D | 24-Sep-19 | Alk-PP | 1 | 1 | 6.5 | 3.9 | 50.0 | 1.67 |
| SPC | 1-Oct-19 | Acidity 8.3 | 1 | 1 | 3.0 | 1.8 | 50.0 | 1.67 |
| QU1105S | 16-Dec-19 | P-D | 0.003 | 0.003 | 0.0047 | 0.0079 | 50.8 | 0.59 |
| 7SQR | 26-Aug-19 | Hg-D | 0.000002 | 0.000002 | 0.0000034 | <0.0000020 | 51.9 | 1.70 |
| QRDS1 | 18-Apr-19 | Mo-D | 0.001 | 0.001 | <0.0010 | 0.0017 | 51.9 | 0.59 |
| WA | 12-Nov-19 | SO4-D | 1 | 1 | <1.0 | 1.7 | 51.9 | 0.59 |
| NNL1 | 7-Aug-19 | SO4-D | 1 | 1 | 1.4 | 2.4 | 52.6 | 0.58 |
| QU1410 | 11-Sep-19 | N-D | 0.02 | 0.02 | 0.533 | 0.311 | 52.6 | 1.71 |
| QU0821GS | 27-Nov-19 | C-D | 0.5 | 0.5 | 1.5 | 0.87 | 53.2 | 1.72 |
| QU1410 | 28-Jan-20 | Co-D | 0.0002 | 0.001 | 0.00058 | <0.0010 | 53.2 | 0.58 |
| QU1410 | 20-Nov-19 | N-D | 0.02 | 0.02 | 0.280 | 0.487 | 54.0 | 0.57 |
| 242MW | 10-Dec-19 | C-D | 0.5 | 0.5 | 0.54 | 0.94 | 54.1 | 0.57 |
| 5M#2 | 27-Jan-20 | Cu-T | 0.0005 | 0.0005 | 0.00135 | 0.00077 | 54.7 | 1.75 |
| 5M#2 | 27-Jan-20 | Fe-T | 0.01 | 0.01 | 0.361 | 0.633 | 54.7 | 0.57 |
| IR1 | 6-Aug-19 | Al-D | 0.003 | 0.003 | 0.0166 | 0.0297 | 56.6 | 0.56 |
| IR1 | 6-Aug-19 | Mn-T | 0.001 | 0.001 | 0.0018 | <0.0010 | 57.1 | 1.80 |
| NNO | 30-Apr-19 | P-D | 0.003 | 0.003 | 0.0054 | <0.0030 | 57.1 | 1.80 |
| NNO | 29-Oct-19 | Fe-D | 0.005 | 0.005 | 0.163 | 0.0905 | 57.2 | 1.80 |
| MW002 | 15-May-19 | N-NH3 | 0.015 | 0.015 | 0.16 | 0.29 | 57.8 | 0.55 |
| QU0821GD | 3-Sep-19 | S2-T | 0.0018 | 0.0018 | 0.012 | 0.022 | 58.8 | 0.55 |
| LQL9 | 25-Apr-19 | S-T | 3 | 3 | 8.9 | 16.4 | 59.3 | 0.54 |
| QU0821GD | 3-Sep-19 | Hydrogen Sulphic | 0.002 | 0.002 | 0.013 | 0.024 | 59.5 | 0.54 |
| WD | 6-Jan-20 | Hg-D | 0.000002 | 0.000002 | <0.0000020 | 0.0000037 | 59.6 | 0.54 |
| 242MW | 10-Dec-19 | Acidity 8.3 | 1 | 1 | 23.8 | 12.8 | 60.1 | 1.86 |
| 3SO | 4-Apr-19 | P-T | 0.002 | 0.002 | 0.0045 | 0.0024 | 60.9 | 1.88 |
| WD | 6-Jan-20 | Alk-PP | 1 | 1 | <1.0 | 1.9 | 62.1 | 0.53 |
| QU1410 | 28-Jan-20 | Ni-D | 0.001 | 0.005 | 0.0026 | <0.0050 | 63.2 | 0.52 |
| MW002 | 15-May-19 | U-D | 0.0002 | 0.0002 | 0.00078 | 0.00040 | 64.4 | 1.95 |
| LQL9 | 25-Apr-19 | Al-T | 0.003 | 0.003 | 0.0437 | 0.0221 | 65.7 | 1.98 |
| IR1 | 6-Aug-19 | Cd-D | 0.00001 | 0.00001 | <0.000010 | 0.000020 | 66.7 | 0.50 |
| IRT4 | 7-May-19 | Mn-T | 0.001 | 0.001 | 0.0056 | 0.0028 | 66.7 | 2.00 |
| LLMB | 24-Oct-19 | Al-D | 0.003 | 0.003 | 0.0040 | 0.0080 | 66.7 | 0.50 |
| LQL1 | 9-May-19 | Hg-D | 0.000002 | 0.000002 | 0.0000040 | <0.0000020 | 66.7 | 2.00 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU0813A | 10-Mar-20 | Se-D | 0.0001 | 0.0001 | 0.00032 | 0.00016 | 66.7 | 2.00 |
| QU1105S | 16-Dec-19 | Acidity 8.3 | 1 | 1 | 2.0 | <1.0 | 66.7 | 2.00 |
| QU1410 | 24-Feb-20 | Co-D | 0.001 | 0.0004 | <0.0010 | 0.00049 | 68.5 | 2.04 |
| QU1410 | 20-Nov-19 | C-D | 0.5 | 0.5 | 0.92 | 1.9 | 69.5 | 0.48 |
| LQL1 | 9-May-19 | P-T | 0.003 | 0.003 | <0.0030 | 0.0062 | 69.6 | 0.48 |
| QU1410 | 11-Sep-19 | C-D | 0.5 | 0.5 | 2.5 | 1.2 | 70.3 | 2.08 |
| QU1410 | 24-Feb-20 | Ni-D | 0.005 | 0.002 | <0.0050 | 0.0024 | 70.3 | 2.08 |
| IR1 | 6-Aug-19 | Cd-T | 0.00001 | 0.00001 | <0.000010 | 0.000021 | 71.0 | 0.48 |
| QU1010S | 11-Dec-19 | Tl-D | 0.00001 | 0.00001 | 0.000021 | <0.000010 | 71.0 | 2.10 |
| IR1 | 6-Aug-19 | Bicarbonate | 1 | 1 | 27 | 57 | 71.4 | 0.47 |
| LQL9 | 25-Apr-19 | Na-T | 0.05 | 0.05 | 10.4 | 22.0 | 71.6 | 0.47 |
| MW004 | 27-Aug-19 | N-D | 0.02 | 0.02 | 0.256 | 0.120 | 72.3 | 2.13 |
| IR1 | 6-Aug-19 | Alkalinity Total as | 1 | 1 | 22 | 47 | 72.5 | 0.47 |
| IR1 | 6-Aug-19 | Hard-D | 0.5 | 0.5 | 20.3 | 44.2 | 74.1 | 0.46 |
| IR1 | 6-Aug-19 | Hardness (as CaC | 0.5 | 0.5 | 20.1 | 43.9 | 74.4 | 0.46 |
| LQL1 | 9-May-19 | Hg-T | 0.000002 | 0.000002 | 0.0000044 | <0.0000020 | 75.0 | 2.20 |
| QU0821GD | 3-Sep-19 | Turb | 0.1 | 0.1 | 0.72 | 1.6 | 75.9 | 0.45 |
| SPC | 1-Oct-19 | Hg-T | 0.000002 | 0.000002 | 0.0000026 | 0.0000059 | 77.6 | 0.44 |
| QU0813A | 10-Mar-20 | Hydrogen Sulphic | 0.002 | 0.002 | 0.029 | 0.066 | 77.9 | 0.44 |
| QU0813A | 10-Mar-20 | S2-T | 0.0018 | 0.0018 | 0.027 | 0.062 | 78.7 | 0.44 |
| MQL1 | 18-Apr-19 | P-D | 0.003 | 0.003 | <0.0030 | 0.0069 | 78.8 | 0.43 |
| WD | 6-Jan-20 | Carbonate | 1 | 1 | <1.0 | 2.3 | 78.8 | 0.43 |
| 3S | 9-Sep-19 | Acidity 8.3 | 1 | 1 | 2.2 | 5.1 | 79.5 | 0.43 |
| IR1 | 6-Aug-19 | Ca-D | 0.05 | 0.05 | 6.90 | 16.3 | 81.0 | 0.42 |
| IR1 | 6-Aug-19 | Ca-T | 0.05 | 0.05 | 6.85 | 16.2 | 81.1 | 0.42 |
| IR1 | 6-Aug-19 | Fe-D | 0.005 | 0.005 | 0.0142 | 0.0060 | 81.2 | 2.37 |
| SPD | 9-Mar-20 | TSS | 1 | 1 | <1.0 | 2.4 | 82.4 | 0.42 |
| MW004 | 27-Aug-19 | Turb | 0.1 | 0.1 | 0.95 | 0.39 | 83.6 | 2.44 |
| NNL4 | 14-Aug-19 | SO4-D | 1 | 1 | 2.5 | <1.0 | 85.7 | 2.50 |
| QU1008D | 18-Mar-20 | Ag-D | 0.00004 | 0.0001 | <0.000040 | <0.00010 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Al-D | 0.006 | 0.015 | <0.0060 | <0.015 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Be-D | 0.0002 | 0.0005 | <0.00020 | <0.00050 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Bi-D | 0.002 | 0.005 | <0.0020 | <0.0050 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Cd-D | 0.00002 | 0.00005 | <0.000020 | <0.000050 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Co-D | 0.0004 | 0.001 | <0.00040 | <0.0010 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Cr-D | 0.002 | 0.005 | <0.0020 | <0.0050 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Cu-D | 0.0004 | 0.001 | <0.00040 | <0.0010 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Mo-D | 0.002 | 0.005 | <0.0020 | <0.0050 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Ni-D | 0.002 | 0.005 | <0.0020 | <0.0050 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Pb-D | 0.0004 | 0.001 | <0.00040 | <0.0010 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Sb-D | 0.001 | 0.0025 | <0.0010 | <0.0025 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | S-D | 6 | 15 | <6.0 | <15 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Se-D | 0.0002 | 0.0005 | <0.00020 | <0.00050 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Sn-D | 0.01 | 0.025 | <0.010 | <0.025 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Ti-D | 0.01 | 0.025 | <0.010 | <0.025 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Tl-D | 0.00002 | 0.00005 | <0.000020 | <0.000050 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | U-D | 0.0002 | 0.0005 | <0.00020 | <0.00050 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | V-D | 0.01 | 0.025 | <0.010 | <0.025 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Zn-D | 0.01 | 0.025 | <0.010 | <0.025 | 85.7 | 0.40 |
| QU1008D | 18-Mar-20 | Zr-D | 0.0002 | 0.0005 | <0.00020 | <0.00050 | 85.7 | 0.40 |
| QU1410 | 24-Feb-20 | Ag-D | 0.0001 | 0.00004 | <0.00010 | <0.000040 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Al-D | 0.015 | 0.006 | <0.015 | <0.0060 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Be-D | 0.0005 | 0.0002 | <0.00050 | <0.00020 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Bi-D | 0.005 | 0.002 | <0.0050 | <0.0020 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Cd-D | 0.00005 | 0.00002 | <0.000050 | <0.000020 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Cr-D | 0.005 | 0.002 | <0.0050 | <0.0020 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Cu-D | 0.001 | 0.0004 | <0.0010 | <0.00040 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Mo-D | 0.005 | 0.002 | <0.0050 | <0.0020 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Pb-D | 0.001 | 0.0004 | <0.0010 | <0.00040 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Sb-D | 0.0025 | 0.001 | <0.0025 | <0.0010 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Se-D | 0.0005 | 0.0002 | <0.00050 | <0.00020 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Sn-D | 0.025 | 0.01 | <0.025 | <0.010 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Ti-D | 0.025 | 0.01 | <0.025 | <0.010 | 85.7 | 2.50 |

# TABLE 51
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## Replicate Samples and Relative Percent Difference Values

| Stn.Code 1 | Date | Parameter | Lab MDL 1 | Lab MDL 2 | Result 1 | Result 2 | Rel.% Diff. | Ratio |
|---|---|---|---|---|---|---|---|---|
| QU1410 | 24-Feb-20 | Tl-D | 0.00005 | 0.00002 | <0.000050 | <0.000020 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | V-D | 0.025 | 0.01 | <0.025 | <0.010 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Zn-D | 0.025 | 0.01 | <0.025 | <0.010 | 85.7 | 2.50 |
| QU1410 | 24-Feb-20 | Zr-D | 0.0005 | 0.0002 | <0.00050 | <0.00020 | 85.7 | 2.50 |
| QU1010S | 30-Sep-19 | Al-D | 0.003 | 0.003 | 0.0053 | 0.0134 | 86.6 | 0.40 |
| IR1 | 6-Aug-19 | SO4-D | 1 | 1 | 1.2 | 3.1 | 88.4 | 0.39 |
| IR1 | 6-Aug-19 | Fe-T | 0.01 | 0.01 | 0.026 | <0.010 | 88.9 | 2.60 |
| QU1109S | 18-Dec-19 | C-D | 0.5 | 0.5 | <0.50 | 1.3 | 88.9 | 0.38 |
| IR1 | 6-Aug-19 | K-D | 0.05 | 0.05 | 0.066 | 0.178 | 91.8 | 0.37 |
| IR1 | 6-Aug-19 | Se-T | 0.0001 | 0.0001 | <0.00010 | 0.00027 | 91.9 | 0.37 |
| MQL1 | 18-Apr-19 | Turb | 0.1 | 0.1 | 0.30 | 0.84 | 94.7 | 0.36 |
| IR1 | 6-Aug-19 | K-T | 0.05 | 0.05 | 0.060 | 0.177 | 98.7 | 0.34 |
| IR1 | 6-Aug-19 | Se-D | 0.0001 | 0.0001 | <0.00010 | 0.00030 | 100.0 | 0.33 |
| PDSR | 4-Dec-19 | Al-T | 0.003 | 0.003 | 0.0149 | 0.0449 | 100.3 | 0.33 |
| IR1 | 6-Aug-19 | Ba-D | 0.001 | 0.001 | <0.0010 | 0.0031 | 102.4 | 0.32 |
| IR1 | 6-Aug-19 | Ba-T | 0.001 | 0.001 | <0.0010 | 0.0031 | 102.4 | 0.32 |
| PDSR | 4-Dec-19 | Mn-T | 0.001 | 0.001 | <0.0010 | 0.0033 | 107.0 | 0.30 |
| LQL9 | 25-Apr-19 | As-T | 0.0001 | 0.0001 | 0.00046 | 0.00013 | 111.9 | 3.54 |
| QU1410 | 28-Jan-20 | Zr-D | 0.0001 | 0.0005 | 0.00014 | <0.00050 | 112.5 | 0.28 |
| PDSR | 4-Dec-19 | Fe-T | 0.01 | 0.01 | 0.012 | 0.045 | 115.8 | 0.27 |
| LQL9 | 25-Apr-19 | Fe-T | 0.01 | 0.01 | 0.123 | 0.032 | 117.4 | 3.84 |
| QU1410 | 28-Jan-20 | Al-D | 0.003 | 0.015 | 0.0037 | <0.015 | 120.9 | 0.25 |
| IR1 | 6-Aug-19 | Sr-D | 0.001 | 0.001 | 0.0117 | 0.0530 | 127.7 | 0.22 |
| LLM4 | 21-Aug-19 | Mn-T | 0.001 | 0.001 | 0.0051 | 0.0011 | 129.0 | 4.64 |
| IR1 | 6-Aug-19 | Sr-T | 0.001 | 0.001 | 0.0117 | 0.0556 | 130.5 | 0.21 |
| IR1 | 6-Aug-19 | As-D | 0.0001 | 0.0001 | 0.00012 | 0.00059 | 132.4 | 0.20 |
| IR1 | 6-Aug-19 | As-T | 0.0001 | 0.0001 | 0.00012 | 0.00059 | 132.4 | 0.20 |
| LLM4 | 21-Aug-19 | Mn-D | 0.001 | 0.001 | 0.0050 | <0.0010 | 133.3 | 5.00 |
| QU1101 | 23-Dec-19 | P-D | 0.015 | 0.003 | <0.015 | <0.0030 | 133.3 | 5.00 |
| QU1410 | 28-Jan-20 | Ag-D | 0.00002 | 0.0001 | <0.000020 | <0.00010 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Be-D | 0.0001 | 0.0005 | <0.00010 | <0.00050 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Bi-D | 0.001 | 0.005 | <0.0010 | <0.0050 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Cd-D | 0.00001 | 0.00005 | <0.000010 | <0.000050 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Cr-D | 0.001 | 0.005 | <0.0010 | <0.0050 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Cu-D | 0.0002 | 0.001 | <0.00020 | <0.0010 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Mo-D | 0.001 | 0.005 | 0.0010 | <0.0050 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Pb-D | 0.0002 | 0.001 | <0.00020 | <0.0010 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Sb-D | 0.0005 | 0.0025 | <0.00050 | <0.0025 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Se-D | 0.0001 | 0.0005 | <0.00010 | <0.00050 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Sn-D | 0.005 | 0.025 | <0.0050 | <0.025 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Ti-D | 0.005 | 0.025 | <0.0050 | <0.025 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Tl-D | 0.00001 | 0.00005 | <0.000010 | <0.000050 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | V-D | 0.005 | 0.025 | <0.0050 | <0.025 | 133.3 | 0.20 |
| QU1410 | 28-Jan-20 | Zn-D | 0.005 | 0.025 | <0.0050 | <0.025 | 133.3 | 0.20 |
| QU0813A | 26-Nov-19 | Zr-D | 0.0001 | 0.0001 | <0.00010 | 0.00057 | 140.3 | 0.18 |
| 1M2N | 26-Feb-20 | Alk-PP | 1 | 1 | <1.0 | 6.8 | 148.7 | 0.15 |
| 1M2N | 26-Feb-20 | Carbonate | 1 | 1 | <1.0 | 8.2 | 156.5 | 0.12 |
| QU1410 | 20-Nov-19 | P-D | 0.03 | 0.003 | <0.030 | 0.0031 | 162.5 | 9.68 |
| 5M#2 | 27-Jan-20 | Mo-D | 0.001 | 0.001 | 0.0462 | <0.0010 | 191.5 | 46.20 |

**Table 38**
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| Relative Percent Difference Values Greater Than 20 % | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Stn.Code** | **Date** | **Parameter** | **Lab MDL 1** | **Result 1** | **Result 2** | **RPD** | **Ratio** |
| MW002 | 15-May-19 | Acidity 8.3 | 1 | 10.3 | 12.6 | 20 | 0.82 |
| LQL9 | 25-Apr-19 | Ca-T | 0.05 | 11.3 | 13.9 | 21 | 0.81 |
| LQL9 | 25-Apr-19 | Hardness | 0.5 | 33.5 | 41.3 | 21 | 0.81 |
| LQL9 | 25-Apr-19 | Mg-T | 0.05 | 1.31 | 1.62 | 21 | 0.81 |
| PDSR | 4-Dec-19 | Hardness | 0.5 | 741 | 597 | 22 | 1.24 |
| PDSR | 4-Dec-19 | Ca-T | 0.05 | 232 | 185 | 23 | 1.25 |
| NNL1 | 9-Apr-19 | N-TKN | 0.02 | 0.13 | 0.166 | 24 | 0.78 |
| IRT4 | 7-May-19 | Fe-D | 0.005 | 0.0312 | 0.0399 | 25 | 0.78 |
| PDSR | 4-Dec-19 | Sr-T | 0.001 | 1.51 | 1.15 | 27 | 1.31 |
| QU1410 | 28-Jan-20 | Cl-D | 1 | 6.7 | 5.1 | 27 | 1.31 |
| IRT4 | 7-May-19 | As-T | 0.0001 | 0.00341 | 0.00255 | 29 | 1.34 |
| 7SQR | 22-Oct-19 | SO4-D | 1 | 26 | 36 | 32 | 0.72 |
| QU1101 | 23-Dec-19 | Alk-T | 1 | 71 | 100 | 34 | 0.71 |
| LQL9 | 25-Apr-19 | Sr-T | 0.001 | 0.0595 | 0.0844 | 35 | 0.7 |
| IR1 | 6-Aug-19 | Si-T | 0.1 | 2.03 | 2.89 | 35 | 0.7 |
| IR1 | 6-Aug-19 | Si-D | 0.1 | 2.03 | 2.91 | 36 | 0.7 |
| QU0813A | 26-Nov-19 | Se-D | 0.0001 | 0.00066 | 0.00046 | 36 | 1.43 |
| QU0813A | 26-Nov-19 | SO4-D | 1 | 41 | 28 | 38 | 1.46 |
| LQL9 | 25-Apr-19 | K-T | 0.05 | 0.239 | 0.353 | 39 | 0.68 |
| LLM4 | 6-Nov-19 | SO4-D | 1 | 37 | 25 | 39 | 1.48 |
| IR1 | 6-Aug-19 | Al-T | 0.003 | 0.0208 | 0.0309 | 39 | 0.67 |
| QU0813A | 10-Mar-20 | P-D | 0.003 | 0.018 | 0.027 | 40 | 0.67 |
| IRT4 | 7-May-19 | Fe-T | 0.01 | 0.247 | 0.16 | 43 | 1.54 |
| IR1 | 6-Aug-19 | Na-D | 0.05 | 0.653 | 1.01 | 43 | 0.65 |
| IR1 | 6-Aug-19 | Na-T | 0.05 | 0.639 | 1.01 | 45 | 0.63 |
| IRT4 | 7-May-19 | Al-T | 0.003 | 0.23 | 0.143 | 47 | 1.61 |
| QU1013D | 24-Sep-19 | Carbonate | 1 | 7.7 | 4.7 | 48 | 1.64 |
| **All values with an RPD > 20% and one or more results greater than 5 X DL** | | | | | | | |

**Table 39**
**2019-2020 Annual Report**

| Relative Percent Difference Values Greater Than 50 % | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Stn.Code** | **Date** | **Parameter** | **DL 1** | **Result 1** | **Result 2** | **RPD** | **Ratio** |
| QU1013D | 24-Sep-19 | Alk-PP | 1 | 6.5 | 3.9 | 50 | 1.67 |
| 5M#2 | 27-Jan-20 | Fe-T | 0.01 | 0.361 | 0.633 | 55 | 0.57 |
| IR1 | 6-Aug-19 | Al-D | 0.003 | 0.0166 | 0.0297 | 57 | 0.56 |
| NNO | 29-Oct-19 | Fe-D | 0.005 | 0.163 | 0.0905 | 57 | 1.8 |
| MW002 | 15-May-19 | N-NH3 | 0.015 | 0.16 | 0.29 | 58 | 0.55 |
| LQL9 | 25-Apr-19 | S-T | 3 | 8.9 | 16.4 | 59 | 0.54 |
| 242MW | 10-Dec-19 | Acidity 8.3 | 1 | 23.8 | 12.8 | 60 | 1.86 |
| LQL9 | 25-Apr-19 | Al-T | 0.003 | 0.0437 | 0.0221 | 66 | 1.98 |
| IRT4 | 7-May-19 | Mn-T | 0.001 | 0.0056 | 0.0028 | 67 | 2 |
| LQL9 | 25-Apr-19 | Na-T | 0.05 | 10.4 | 22 | 72 | 0.47 |
| IR1 | 6-Aug-19 | Alk-T | 1 | 22 | 47 | 73 | 0.47 |
| IR1 | 6-Aug-19 | Hard-D | 0.5 | 20.3 | 44.2 | 74 | 0.46 |
| IR1 | 6-Aug-19 | Hard-D | 0.5 | 20.1 | 43.9 | 74 | 0.46 |
| 3S | 9-Sep-19 | Acidity 8.3 | 1 | 2.2 | 5.1 | 80 | 0.43 |
| IR1 | 6-Aug-19 | Ca-D | 0.05 | 6.9 | 16.3 | 81 | 0.42 |
| IR1 | 6-Aug-19 | Ca-T | 0.05 | 6.85 | 16.2 | 81 | 0.42 |
| PDSR | 4-Dec-19 | Al-T | 0.003 | 0.0149 | 0.0449 | 100 | 0.33 |
| LQL9 | 25-Apr-19 | Fe-T | 0.01 | 0.123 | 0.032 | 117 | 3.84 |
| IR1 | 6-Aug-19 | Sr-D | 0.001 | 0.0117 | 0.053 | 128 | 0.22 |
| LLM4 | 21-Aug-19 | Mn-T | 0.001 | 0.0051 | 0.0011 | 129 | 4.64 |
| IR1 | 6-Aug-19 | Sr-T | 0.001 | 0.0117 | 0.0556 | 131 | 0.21 |
| IR1 | 6-Aug-19 | As-D | 0.0001 | 0.00012 | 0.00059 | 132 | 0.2 |
| IR1 | 6-Aug-19 | As-T | 0.0001 | 0.00012 | 0.00059 | 132 | 0.2 |
| QU0813A | 26-Nov-19 | Zr-D | 0.0001 | 0.0001 | 0.00057 | 140 | 0.18 |
| 1M2N | 26-Feb-20 | Alk-PP | 1 | 1 | 6.8 | 149 | 0.15 |
| 1M2N | 26-Feb-20 | Carbonate | 1 | 1 | 8.2 | 157 | 0.12 |
| QU1410 | 20-Nov-19 | P-D | 0.03 | 0.03 | 0.0031 | 163 | 9.68 |
| 5M#2 | 27-Jan-20 | Mo-D | 0.001 | 0.0462 | 0.001 | 192 | 46.2 |

**All values with an RPD > 50% and one or more results greater than 5 X DL**

# Table 40
# 2019-2020 Annual Report

## Daily Precipitation (mm)

| DATE | APRIL | MAY | JUNE | JULY | AUG | SEPT | OCT | NOV | DEC | JAN | FEB | MAR |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.3 | 0.00 | 0.00 | 0.00 | 2.9 | 27.3 | 0.0 |
| 2 | 0.0 | 0.3 | 0.2 | 0.0 | 16.4 | 3.6 | 4.30 | 0.00 | 1.30 | 3.3 | 6.5 | 0.6 |
| 3 | 0.0 | 0.0 | 0.0 | 0.0 | 5.7 | 0.0 | 12.10 | 0.00 | 2.00 | 31.4 | 2.2 | 6.8 |
| 4 | 0.8 | 0.0 | 1.1 | 0.0 | 0.0 | 0.0 | 0.00 | 0.10 | 1.90 | 2.5 | 0.1 | 1.2 |
| 5 | 0.4 | 0.0 | 2.3 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.80 | 6.9 | 3.3 | 0.0 |
| 6 | 1.7 | 0.0 | 7.4 | 1.0 | 0.0 | 0.0 | 4.50 | 0.10 | 2.90 | 6.2 | 10.1 | 8.0 |
| 7 | 0.5 | 0.0 | 0.0 | 1.7 | 0.0 | 0.0 | 6.00 | 0.00 | 0.20 | 21.3 | 8.6 | 0.0 |
| 8 | 0.0 | 0.0 | 0.3 | 0.2 | 0.0 | 0.0 | 0.80 | 1.20 | 0.10 | 21.3 | 12.8 | 6.2 |
| 9 | 1.2 | 0.0 | 6.8 | 0.0 | 0.0 | 10.1 | 0.00 | 8.10 | 0.00 | 0.0 | 0.3 | 0.0 |
| 10 | 0.0 | 0.0 | 1.3 | 6.2 | 0.6 | 8.1 | 0.00 | 0.10 | 0.20 | 0.0 | 0.1 | 0.1 |
| 11 | 0.0 | 0.0 | 0.0 | 7.3 | 0.0 | 2.0 | 0.00 | 10.00 | 5.20 | 6.4 | 0.0 | 4.4 |
| 12 | 0.0 | 0.0 | 0.0 | 2.4 | 0.2 | 4.4 | 3.60 | 5.90 | 5.60 | 0.8 | 0.0 | 0.1 |
| 13 | 0.0 | 0.2 | 0.0 | 0.0 | 18.6 | 12.0 | 0.00 | 0.00 | 0.10 | 0.0 | 0.0 | 0.0 |
| 14 | 0.0 | 3.4 | 0.0 | 7.6 | 0.0 | 1.6 | 0.40 | 5.80 | 0.00 | 0.0 | 1.0 | 0.4 |
| 15 | 0.0 | 0.1 | 0.0 | 6.0 | 0.0 | 4.9 | 9.30 | 7.50 | 0.10 | 0.0 | 1.3 | 0.0 |
| 16 | 3.6 | 3.8 | 0.0 | 1.7 | 0.0 | 5.9 | 7.30 | 28.40 | 1.90 | 0.0 | 1.4 | 0.0 |
| 17 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.6 | 11.10 | 14.20 | 4.50 | 4.2 | 1.1 | 0.0 |
| 18 | 0.0 | 0.1 | 0.0 | 2.5 | 0.0 | 8.4 | 6.90 | 5.80 | 10.40 | 0.0 | 0.4 | 0.0 |
| 19 | 0.0 | 0.0 | 0.0 | 14.5 | 0.0 | 2.8 | 3.50 | 0.20 | 3.20 | 24.6 | 0.0 | 0.0 |
| 20 | 0.3 | 10.2 | 0.0 | 0.0 | 0.0 | 0.6 | 2.60 | 0.10 | 3.90 | 13.3 | 0.1 | 0.0 |
| 21 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 13.90 | 0.10 | 0.50 | 9.1 | 0.1 | 0.0 |
| 22 | 0.0 | 0.0 | 0.0 | 0.0 | 0.6 | 0.5 | 0.20 | 1.10 | 0.40 | 19.0 | 0.1 | 0.0 |
| 23 | 0.0 | 0.0 | 1.2 | 0.0 | 0.0 | 7.3 | 0.00 | 11.10 | 0.10 | 10.7 | 2.3 | 0.0 |
| 24 | 0.0 | 0.0 | 0.1 | 14.7 | 4.0 | 8.6 | 2.40 | 0.90 | 0.70 | 9.8 | 10.2 | 3.2 |
| 25 | 0.8 | 0.0 | 0.0 | 0.0 | 0.6 | 0.1 | 9.00 | 0.10 | 0.10 | 6.8 | 0.0 | 0.6 |
| 26 | 0.0 | 0.0 | 1.4 | 0.6 | 0.0 | 4.3 | 0.00 | 0.00 | 0.60 | 0.3 | 2.8 | 0.0 |
| 27 | 0.5 | 0.0 | 8.9 | 4.1 | 0.0 | 1.4 | 0.00 | 0.00 | 0.10 | 22.5 | 2.5 | 5.9 |
| 28 | 0.0 | 0.0 | 11.3 | 0.1 | 0.0 | 0.1 | 0.00 | 0.00 | 0.00 | 15.2 | 2.5 | 0.5 |
| 29 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.30 | 1.9 | 6.0 | 0.6 |
| 30 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 1.30 | 15.1 | | 1.0 |
| 31 | | 0.0 | | 4.4 | 0.0 | | 0.00 | | 19.00 | 9.3 | | 5.2 |
| **Monthly Total (mm)** | **9.80** | **18.10** | **42.30** | **75.30** | **46.90** | **87.60** | **97.90** | **100.80** | **67.40** | **264.80** | **103.10** | **44.80** |

**2019 -2020 Annual Total (mm)** **958.80**

# Table 41
# 2019-2020 Annual Report

| 2015-16 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WA** | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E0126402** | Quinsam River at Argonaut Road Upstream of Mining Operation. | Average | 0.00014 | 0.000153 | 0.025 | 0.0215 | 20 | 0.0000732 | 0.00001318 | 0.000889 | 0.00075 | 0.025 | 0.0143 | 0.00121 | 0.00059 | 0.0000011 | 0.0000010 | 21.7 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.071 | 0.00396 | 0.0025 | 0.00300 | | 0.013 | 0.0079 |
| | | Count | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 4 | | 4 | 4 |
| | | Minimum | <0.00010 | <0.00010 | 0.0141 | 0.0122 | 16.9 | <0.0000050 | <0.0000050 | <0.00050 | 0.00049 | 0.013 | 0.0094 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 18.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <0.50 | <0.0050 | <0.0050 | <0.0050 | | <0.020 | 0.0054 |
| | | Maximum | 0.00029 | 0.00023 | 0.0373 | 0.0414 | 23.2 | 0.000033 | 0.000123 | 0.00199 | 0.00154 | 0.065 | 0.0234 | 0.0023 | 0.0018 | 0.0000022 | <0.0000020 | 33.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.73 | 0.023 | <0.0050 | 0.0045 | | 0.022 | 0.0106 |
| | | Geometric Mean | 0.000123 | 0.000138 | 0.0243 | 0.0204 | 19.9 | 0.00000586 | 0.00000429 | 0.000798 | 0.00070 | 0.023 | 0.0135 | 0.00107 | 0.00055 | 0.00000106 | 0.000001 | 21.5 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 0.991 | 0.00293 | 0.0025 | 0.00290 | | 0.0122 | 0.0076 |
| | | Count <DL | 3 | 2 | 0 | 0 | 0 | 11 | 11 | 1 | 0 | 0 | 0 | 4 | 13 | 13 | 14 | 0 | 14 | 14 | 14 | 14 | 1 | 13 | 14 | 3 | | 3 | 0 |
| | | Standard Deviation | 0.000067 | 0.000061 | 0.0061 | 0.0077 | 2.3 | 0.0000756 | 0.00003216 | 0.000434 | 0.0003 | 0.013 | 0.0053 | 0.00058 | 0.00035 | 0.00000032 | 0 | 3.6 | 0 | 0.00000 | 0.000000 | 0.000000 | 0.363 | 0.00548 | 1E-10 | 0.00100 | | 0.006 | 0.0028 |
| | | 1st Quartile | 0.000102 | 0.000108 | 0.021 | 0.0168 | 17.9 | <0.000010 | <0.0000050 | 0.000655 | 0.00058 | 0.018 | 0.0100 | 0.00065 | <0.0010 | <0.0000020 | <0.000002 | 19.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 0.835 | <0.0050 | <0.0050 | <0.0050 | | <0.020 | 0.0056 |
| | | Median | 0.00014 | 0.00016 | 0.0234 | 0.0196 | 20.8 | <0.000010 | <0.0000050 | 0.00077 | 0.00065 | 0.022 | 0.0117 | 0.00125 | <0.0010 | <0.0000020 | <0.000002 | 21.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.175 | <0.0050 | <0.0050 | <0.0050 | | <0.020 | 0.0078 |
| | | 3rd Quartile | 0.000175 | 0.0002 | 0.0302 | 0.0244 | 22 | <0.000010 | <0.0000050 | 0.00108 | 0.00072 | 0.028 | 0.019 | 0.00148 | <0.0010 | <0.0000020 | <0.0000020 | 22 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.248 | <0.0050 | <0.0050 | 0.003 | | 0.013 | 0.01020 |
| **WD** | Settling Pond #4 | Average | 0.00331 | 0.00195 | 0.0164 | 0.01384 | 376 | 0.000009 | 0.00000431 | 0.00072 | 0.00046 | 0.440 | 0.01146 | 0.047 | 0.03862 | 0.00000125 | 0.000001 | 312 | 0.00065 | 0.00071 | 0.000100 | 0.000100 | 526 | 0.01061 | 0.00250 | 0.0038 | | 0.01 | 0.0306 |
| **E207409** | | Count | 8 | 8 | 8 | 8 | 12 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 52 | 8 | 8 | 1 | | 1 | 1 |
| | | Minimum | 0.00193 | 0.00118 | 0.0038 | <0.0030 | 320 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.203 | <0.0050 | 0.0117 | <0.0010 | <0.0000020 | <0.0000020 | 264 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 258 | <0.0050 | <0.0050 | 0.0038 | | <0.020 | 0.0306 |
| | | Maximum | 0.00439 | 0.00259 | 0.0556 | 0.0682 | 434 | 0.000029 | 0.000012 | 0.00143 | 0.00162 | 0.651 | 0.0233 | 0.0838 | 0.0783 | 0.000003 | <0.0000020 | 375 | 0.0011 | 0.0016 | <0.00020 | <0.00020 | 820 | 0.0674 | <0.0050 | 0.0038 | | <0.020 | 0.0306 |
| | | Geometric Mean | 0.00322 | 0.00189 | 0.0112 | 0.00733 | 375 | 0.000007 | 0.0000035 | 0.000609 | 0.000342 | 0.414 | 0.00959 | 0.0391 | 0.01506 | 0.00000115 | 0.000001 | 309 | 0.0006 | 0.0006 | 0.000100 | 0.000100 | 515 | 0.00377 | 0.00250 | 0.0038 | | 0.01 | 0.0306 |
| | | Count <DL | 0 | 0 | 0 | 1 | 0 | 6 | 6 | 2 | 1 | 0 | 1 | 0 | 2 | 7 | 8 | 0 | 6 | 6 | 8 | 8 | 0 | 7 | 8 | 0 | | 1 | 0 |
| | | Standard Deviation | 0.00074 | 0.00048 | 0.0176 | 0.02211 | 33 | 0.0000086 | 0.00000357 | 0.000421 | 0.000479 | 0.148 | 0.00666 | 0.0277 | 0.03026 | 0.00000071 | 0.0000000 | 43 | 0.00028 | 0.00042 | 0.000000 | 0.000000 | 106 | 0.02295 | 3E-11 | 0 | | 0.0000 | 0 |
| | | 1st Quartile | 0.00308 | 0.0017 | 0.0068 | 0.00518 | 360 | <0.000010 | <0.0000050 | 0.000452 | 0.00026 | 0.333 | 0.0072 | 0.0268 | 0.0191 | <0.0000020 | <0.0000020 | 269 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 454 | <0.0050 | <0.0050 | 0.0038 | | <0.020 | 0.03060 |
| | | Median | 0.0034 | 0.00208 | 0.0099 | 0.00625 | 374 | <0.000010 | <0.0000050 | 0.00065 | 0.000305 | 0.492 | 0.01075 | 0.0403 | 0.0355 | <0.0000020 | <0.0000020 | 311 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 515 | <0.0050 | <0.0050 | 0.0038 | | <0.020 | 0.031 |
| | | 3rd Quartile | 0.00364 | 0.00221 | 0.0152 | 0.0093 | 396 | 0.000007 | 0.00000375 | 0.000907 | 0.00043 | 0.516 | 0.01385 | 0.0691 | 0.0642 | <0.0000020 | <0.0000020 | 342 | 0.00065 | 0.00065 | <0.00020 | <0.00020 | 582 | <0.0050 | <0.0050 | 0.0038 | | <0.020 | 0.03060 |
| **MW001D** | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | | 0.0195 | | 0.0314 | 91.6 | | 0.00000775 | | 0.00179 | | 0.0058 | | 0.0106 | | 0.0000056 | | | 0.0005 | | 0.0001 | 25.7 | | 0.0025 | | 0.178 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.0186 | | 0.0302 | 89.8 | | <0.0000050 | | 0.00131 | | <0.0050 | | 0.006 | | 0.0000048 | | | <0.0010 | | <0.00020 | 24.8 | | <0.0050 | | 0.174 | | |
| | | Maximum | | 0.0205 | | 0.0326 | 93.4 | | 0.000013 | | 0.00227 | | 0.0091 | | 0.0153 | | 0.0000064 | | | <0.0010 | | <0.00020 | 26.6 | | <0.0050 | | 0.182 | | |
| | | Geometric Mean | | 0.0195 | | 0.0314 | 91.6 | | 0.0000057 | | 0.00172 | | 0.00477 | | 0.0096 | | 0.0000055 | | | 0.0005 | | 0.0001 | 25.7 | | 0.0025 | | 0.178 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 1 | | 0 | | 1 | | 0 | | 0 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.0013 | | 0.0017 | 2.5 | | 0.00000742 | | 0.00068 | | 0.00467 | | 0.006600 | | 0.0000011 | | | 0 | | 0 | 1.3 | | 0 | | 0.006 | | |
| | | 1st Quartile | | 0.0191 | | 0.0308 | 90.7 | | 0.00000512 | | 0.00155 | | 0.00415 | | 0.0083 | | 0.0000052 | | | <0.0010 | | <0.00020 | 25.2 | | <0.0050 | | 0.176 | | |
| | | Median | | 0.0195 | | 0.0314 | 91.6 | | 0.00000775 | | 0.00179 | | 0.0058 | | 0.0106 | | 0.0000056 | | | <0.0010 | | <0.00020 | 25.7 | | <0.0050 | | 0.178 | | |
| | | 3rd Quartile | | 0.02 | | 0.032 | 92.5 | | 0.00001038 | | 0.00203 | | 0.00745 | | 0.013 | | 0.000006 | | | <0.0010 | | <0.00020 | 26.2 | | <0.0050 | | 0.180 | | |
| **MW001S** | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | | 0.00024 | | 0.0015 | 361 | | 0.000093 | | 0.00046 | | 0.107 | | 1.79 | | 0.0000037 | | | 0.0022 | | 0.0001000 | 884 | | 0.0025 | | 0.00280 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.00015 | | <0.0030 | 356 | | 0.000076 | | 0.00038 | | 0.055 | | 1.59 | | 0.0000035 | | | 0.0017 | | <0.00020 | 790 | | <0.0050 | | 0.0023 | | |
| | | Maximum | | 0.00032 | | <0.0030 | 366 | | 0.000109 | | 0.00055 | | 0.159 | | 1.99 | | 0.0000039 | | | 0.0027 | | <0.00020 | 979 | | <0.0050 | | 0.0032 | | |
| | | Geometric Mean | | 0.00022 | | 0.0015 | 361 | | 0.000091 | | 0.00046 | | 0.0935 | | 1.78 | | 0.0000037 | | | 0.0021 | | 0.0001000 | 879 | | 0.0025 | | 0.0027 | | |
| | | Count <DL | | 0 | | 2 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | | 0 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.00012 | | 0 | 7.1 | | 0.0000233 | | 0.00012 | | 0.0735 | | 0.28 | | 0.0000003 | | | 0.0007 | | 0.0000000 | 133 | | 0 | | 0.00060 | | |
| | | 1st Quartile | | 0.00019 | | <0.0030 | 358.5 | | 0.0000842 | | 0.00042 | | 0.081 | | 1.69 | | 0.0000036 | | | 0.002 | | <0.00020 | 837 | | <0.0050 | | 0.00250 | | |
| | | Median | | 0.00024 | | <0.0030 | 361 | | 0.000093 | | 0.00046 | | 0.107 | | 1.79 | | 0.0000037 | | | 0.0022 | | <0.00020 | 884 | | <0.0050 | | 0.00280 | | |
| | | | | 0.00028 | | <0.0030 | 363.5 | | 0.000101 | | 0.00051 | | 0.133 | | 1.89 | | 0.0000038 | | | 0.0024 | | <0.00020 | 931 | | <0.0050 | | 0.00300 | | |
| **MW006D** | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | | 0.0287 | | 0.0326 | 81.3 | | 0.0000043 | | 0.00068 | | 0.0034 | | 0.0009 | | 0.0000045 | | | 0.000500 | | 0.0001000 | 11.8 | | 0.00250 | | 0.156 | | |
| | | Count | | 3 | | 3 | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | | 3 | | 3 | 3 | | 3 | | 3 | | |
| | | Minimum | | 0.0278 | | 0.022 | 77.7 | | <0.0000050 | | 0.0005 | | <0.0050 | | <0.0010 | | 0.0000036 | | | <0.0010 | | <0.00020 | 11.1 | | <0.0050 | | 0.147 | | |
| | | Maximum | | 0.0292 | | 0.0506 | 84.1 | | 0.000008 | | 0.00082 | | 0.0051 | | 0.0017 | | 0.0000054 | | | <0.0010 | | <0.00020 | 12.7 | | <0.0050 | | 0.16 | | |
| | | Geometric Mean | | 0.0287 | | 0.0303 | 81.3 | | 0.0000037 | | 0.00067 | | 0.00317 | | 0.00075 | | 0.0000044 | | | 0.000500 | | 0.0001000 | 11.7 | | 0.0025 | | 0.156 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 2 | | 0 | | 2 | | 2 | | 0 | | | 3 | | 3 | 0 | | 3 | | 0 | | |
| | | Standard Deviation | | 0.0008 | | 0.0157 | 3.3 | | 0.0000032 | | 0.00017 | | 0.0015 | | 0.00069 | | 0.0000009 | | | 0.000000 | | 0.0000000 | 0.8 | | 4E-11 | | 0.008 | | |
| | | 1st Quartile | | 0.0284 | | 0.0236 | 80 | | <0.0000050 | | 0.00062 | | <0.0050 | | <0.0010 | | 0.000004 | | | <0.0010 | | <0.00020 | 11.3 | | <0.0050 | | 0.154 | | |
| | | Median | | 0.029 | | 0.0251 | 82.2 | | <0.0000050 | | 0.00073 | | <0.0050 | | <0.0010 | | 0.0000044 | | | <0.0010 | | <0.00020 | 11.5 | | <0.0050 | | 0.16 | | |
| | | 3rd Quartile | | 0.0291 | | 0.0378 | 83.2 | | 0.00000525 | | 0.00078 | | 0.0038 | | 0.0011 | | 0.0000049 | | | <0.0010 | | <0.00020 | 12.1 | | <0.0050 | | 0.16 | | |
| **MW006S** | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | | 0.0018 | | 0.01640 | 191.3 | | 0.000021 | | 0.00118 | | 0.0142 | | 0.0201 | | 0.0000049 | | | 0.0007 | | 0.0001 | 573.7 | | 0.00250 | | 0.0561 | | |
| | | Count | | 3 | | 3 | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | | 3 | | 3 | 3 | | 3 | | 3 | | |
| | | Minimum | | 0.00157 | | 0.0069 | 180 | | 0.0000107 | | 0.00078 | | 0.0052 | | 0.0122 | | <0.000002 | | | <0.0010 | | <0.00020 | 559 | | <0.0050 | | 0.0525 | | |
| | | Maximum | | 0.00202 | | 0.034 | 199 | | 0.0000283 | | 0.00141 | | 0.0226 | | 0.0302 | | 0.0000071 | | | 0.0011 | | <0.00020 | 585 | | <0.0050 | | 0.063 | | |
| | | Geometric Mean | | 0.00179 | | 0.0125 | 191.2 | | 0.0000194 | | 0.00114 | | 0.0121 | | 0.0188 | | 0.0000036 | | | 0.00065 | | 0.0001000 | 573.6 | | 0.0025 | | 0.0559 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | | | 2 | | 3 | 0 | | 3 | | 0 | | |
| | | Standard Deviation | | 0.00023 | | 0.0153 | 10.0 | | 0.000009 | | 0.000350 | | 0.0087 | | 0.0092 | | 0.0000034 | | | 0.00035 | | 0.0000000 | 13.3 | | 4E-11 | | 0.0059 | | |
| | | 1st Quartile | | 0.00168 | | 0.00760 | 187.5 | | 0.0000174 | | 0.00107 | | 0.01 | | 0.0150 | | 0.00000385 | | | <0.0010 | | <0.00020 | 568 | | <0.0050 | | 0.0528 | | |
| | | Median | | 0.0018 | | 0.00830 | 195 | | 0.000024 | | 0.00136 | | 0.0149 | | 0.0179 | | 0.0000067 | | | <0.0010 | | <0.00020 | 577.0 | | <0.0050 | | 0.053 | | |
| | | 3rd Quartile | | 0.00191 | | 0.02120 | 197 | | 0.0000262 | | 0.00138 | | 0.0188 | | 0.0241 | | 0.0000069 | | | 0.0008 | | <0.00020 | 581 | | <0.0050 | | 0.058 | | |
| **WC** | | Average | 0.00111 | 0.00102 | 0.0151 | 0.01532 | 307 | 0.0000056 | 0.00000294 | 0.001084 | 0.000328 | 0.085 | 0.0142 | 0.0072 | 0.00512 | 0.000001 | 0.00000115 | 263 | 0.0005 | 0.00059 | 0.000123 | 0.000100 | 504 | 0.00250 | 0.00250 | | | | |
| **E207411** | 2-North Pit Culvert discharge into Middle Quinsam Lake | Count | 8 | 8 | 8 | 8 | 7 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 8 | 8 | | | | |
| | | Minimum | 0.00039 | 0.00073 | <0.0030 | <0.0030 | 231 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.045 | 0.0079 | 0.0037 | <0.0010 | <0.0000020 | <0.0000020 | 163 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 348 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00155 | 0.00133 | 0.0283 | 0.059 | 365 | 0.000010 | 0.000006 | 0.00692 | 0.00074 | 0.125 | 0.0266 | 0.0123 | 0.0087 | <0.0000020 | 0.0000022 | 329 | <0.0010 | 0.0012 | 0.00028 | <0.00020 | 670 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.00104 | 0.00101 | 0.01127 | 0.00942 | 304 | 0.0000055 | 0.00000279 | 0.00038 | 0.000253 | 0.0810 | 0.0128 | 0.0068 | 0.00414 | 0.000001 | 0.0000011 | 257 | 0.0005 | 0.00056 | 0.000114 | 0.000100 | 495 | 0.00250 | 0.0025 | | | | |
| | | Count <DL | 0 | 0 | 1 | 1 | 0 | 7 | 7 | 7 | 3 | 0 | 0 | 0 | 1 | 8 | 7 | 0 | 8 | 7 | 7 | 8 | 0 | 8 | 8 | | | | |
| | | Standard Deviation | 0.00033 | 0.00021 | 0.00993 | 0.01848 | 47 | 0.0000018 | 0.0000012 | 0.002358 | 0.000228 | 0.026 | 0.0073 | 0.0027 | 0.00238 | 0 | 0.00000042 | 57 | 0 | 0.00025 | 0.000064 | 0.000000 | 97 | 3E-11 | 3E-11 | | | | |
| | | 1st Quartile | 0.00109 | 0.00084 | 0.00865 | 0.00628 | 287 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.067 | 0.00840 | 0.0059 | 0.00423 | <0.0000020 | <0.0000020 | 229 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 443 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00114 | 0.00108 | 0.0116 | 0.0085 | 297 | <0.000010 | <0.0000050 | <0.00050 | 0.000325 | 0.092 | 0.0113 | 0.0072 | 0.0057 | <0.0000020 | <0.0000020 | 266 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 488 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00124 | 0.00114 | 0.02455 | 0.01435 | 343 | <0.000010 | <0.0000050 | <0.00050 | 0.000452 | 0.0980 | 0.0183 | 0.0083 | 0.00605 | <0.0000020 | <0.0000020 | 306 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 562 | <0.0050 | <0.0050 | | | | |
| **MQL1** | Middle Quinsam Lake 1 metre below surface | Average | 0.00027 | 0.0002200 | 0.0198 | 0.0161 | 40.3 | 0.0000066 | 0.00000273 | 0.00098 | 0.0006 | 0.135 | 0.0225 | 0.0104 | 0.00167 | 0.000001 | 0.00000100 | 38.1 | 0.0005 | 0.0005 | 0.000159 | 0.0001 | 31.9 | 0.00363 | 0.0025 | 0.00335 | | | |
| **E206618** | | Count | 15 | 15 | 15 | 15 | 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 4 | | | |
| | | Minimum | 0.00011 | 0.00011 | 0.0064 | 0.0078 | 31 | <0.000010 | <0.000005 | 0.00055 | 0.00043 | 0.029 | 0.0073 | 0.0034 | <0.0010 | <0.000002 | <0.000002 | 30.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 22.8 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Maximum | 0.00069 | 0.00034 | 0.0352 | 0.0216 | 49.4 | 0.000029 | 0.000006 | 0.00429 | 0.00086 | 1.48 | 0.0404 | 0.0283 | 0.0052 | <0.000002 | <0.000002 | 59.3 | <0.0010 | <0.0010 | 0.00074 | <0.00020 | 38.9 | 0.0169 | <0.0050 | 0.007 | | | |
| | | Geometric Mean | 0.00023 | 0.00021 | 0.018 | 0.0153 | 39.8 | 0.0000056 | 0.00000265 | 0.00082 | 0.00059 | 0.048 | 0.0206 | 0.0082 | 0.00113 | 0.000001 | 0.000001 | 37.6 | 0.0005 | 0.0005 | 0.000124 | 0.00010000 | 31.4 | 0.00297 | 0.0025 | 0.00236 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 14 | 14 | 0 | 0 | 0 | 0 | 0 | 7 | 15 | 15 | 0 | 15 | 15 | 13 | 15 | 0 | 13 | 15 | 2 | | | |
| | | Standard Deviation | 0.00016 | 0.00008 | 0.0083 | 0.0047 | 7 | 0.0000062 | 0.0000009 | 0.00093 | 0.00014 | 0.372 | 0.0095 | 0.008 | 0.00162 | 0 | 0 | 6.9 | 0 | 0 | 0.000173 | 0 | 5.6 | 0.00373 | 4E-11 | 0.00291 | | | |
| | | 1st Quartile | 0.00016 | 0.00016 | 0.0138 | 0.012 | 36.9 | <0.000010 | <0.0000050 | 0.00062 | 0.000500 | 0.034 | 0.0158 | 0.0044 | <0.0010 | <0.0000020 | <0.0000020 | 34.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 26.6 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Median | 0.0002 | 0.0002000 | 0.0204 | 0.0179 | 39.9 | <0.000010 | <0.000005 | 0.000660 | 0.00058 | 0.037 | 0.0218 | 0.0077 | 0.00100 | <0.0000020 | <0.0000020 | 36.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 34.10 | <0.0050 | <0.0050 | 0.0027 | | | |
| | | 3rd Quartile | 0.00035 | 0.00027 | 0.0254 | 0.0194 | 44.2 | <0.000010 | <0.000005 | 0.00086 | 0.00067 | 0.045 | 0.0282 | 0.0124 | 0.00205 | <0.000002 | <0.000002 | 40 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 35.9 | <0.0050 | <0.0050 | 0.00505 | | | |
| **MQLB** | Middle Quinsam Lake 1 metre from bottom | Average | 0.0002 | 0.00019 | 0.01115 | 0.00678 | 40.8 | 0.004658 | 0.00003567 | 0.000527 | 0.00046 | 0.493 | 0.0813 | 0.429 | 0.3947 | 0.000001 | 0.00000100 | 54.8 | 0.00057 | 0.0005 | 0.0001 | 0.0001 | 45.6 | 0.004450 | 0.0025 | 0.00390 | | | |
| **E206618** | | Count | 15 | 15 | 15 | 15 | 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 4 | | | |
| | | Minimum | 0.00013 | 0.0001 | <0.0030 | <0.0030 | 36.1 | <0.000010 | <0.000005 | <0.00050 | 0.00034 | 0.0590 | 0.01 | 0.0192 | 0.0028 | <0.000002 | <0.000002 | 37.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 31.6 | <0.0050 | <0.0050 | 0.0023 | | | |
| | | Maximum | 0.00037 | 0.00041 | 0.0211 | 0.0106 | 47.3 | 0.0698 | 0.000484 | 0.00092 | 0.00068 | 2.75 | 0.534 | 1.58 | 1.5 | <0.000002 | <0.000002 | 63.2 | 0.0016 | <0.0010 | <0.00020 | <0.00020 | 53.5 | 0.0317 | <0.0050 | 0.0053 | | | |
| | | Geometric Mean | 0.00019 | 0.00018 | 0.00927 | 0.00559 | 40.7 | 0.0000094 | 0.0000043 | 0.000473 | 0.000450 | 0.192 | 0.0383 | 0.1332 | 0.0877 | 0.000001 | 0.000001 | 54.5 | 0.00054 | 0.0005 | 0.0001 | 0.0001 | 45.3 | 0.00296 | 0.0025 | 0.00380 | | | |
| | | Count <DL | 0 | 0 | 1 | 3 | 0 | 14 | 12 | 5 | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 0 | 14 | 15 | 15 | 15 | 0 | 14 | 15 | 0 | | | |
| | | Standard Deviation | 0.00007 | 0.00008 | 0.00592 | 0.00336 | 4.1 | 0.018021 | 0.00012406 | 0.000238 | 0.0001 | 0.862 | 0.1342 | 0.6029 | 0.5804 | 0 | 0 | 6 | 0.00028 | 0 | 0 | 0.00000000 | 5.8 | 0.00754 | 4E-11 | 0.00130 | | | |
| | | 1st Quartile | 0.00015 | 0.00013 | 0.00595 | 0.00445 | 39.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00039 | 0.07 | 0.0142 | 0.028 | 0.0182 | <0.0000020 | <0.0000020 | 53.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 44 | <0.0050 | <0.0050 | 0.0033 | | | |
| | | Median | 0.00019 | 0.0001600 | 0.0106 | 0.0078 | 40.4 | <0.000010 | <0.000005 | 0.00054 | 0.000420 | 0.118 | 0.0284 | 0.0796 | 0.0768 | <0.0000020 | <0.0000020 | 55.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 45.4 | <0.0050 | <0.0050 | 0.0041 | | | |
| | | 3rd Quartile | 0.00024 | 0.00021 | 0.016 | 0.00955 | 40.8 | <0.000010 | <0.0000050 | 0.00069 | 0.00048 | 0.31 | 0.0874 | 0.6370 | 0.572 | <0.000002 | <0.000002 | 56.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 48.7 | <0.0050 | <0.0050 | 0.0048 | | | |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 42
# 2019-2020 Annual Report

| 2015-16 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NNL1** | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E217018** | No Name Lake 1 metre below surface | Average | 0.00029 | 0.000290 | 0.0245 | 0.0208 | 12.9 | 0.0000062 | 0.00000267 | 0.000339 | 0.00053 | 0.042 | 0.0303 | 0.004 | 0.00289 | 0.000001 | 0.000001 | 15 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 2.31 | 0.0142 | 0.00279 | 0.0068 | | | |
| | | Count | 15 | 15 | 15 | 15 | 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 4 | | | |
| | | Minimum | 0.00019 | 0.00019 | 0.0059 | 0.006 | 11.4 | <0.000010 | <0.0000050 | <0.00050 | 0.00023 | 0.023 | 0.0112 | 0.0024 | <0.0010 | <0.0000020 | <0.0000020 | 11.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.32 | <0.0050 | <0.0050 | 0.0038 | | | |
| | | Maximum | 0.00045 | 0.00036 | 0.0486 | 0.0343 | 14.6 | 0.000023 | 0.000005 | 0.00068 | 0.00091 | 0.078 | 0.0611 | 0.0095 | 0.0084 | <0.0000020 | <0.0000020 | 17.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.95 | 0.125 | 0.0068 | 0.0133 | | | |
| | | Geometric Mean | 0.00029 | 0.00028 | 0.0215 | 0.0186 | 12.8 | 0.00000550 | 0.00000262 | 0.000313 | 0.0005 | 0.04 | 0.0266 | 0.00360 | 0.00188 | 0.00000100 | 0.00000100 | 14.9 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 2.2 | 0.00462 | 0.00267 | 0.00600 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 14 | 14 | 11 | 0 | 0 | 0 | 0 | 5 | 15 | 15 | 0 | 15 | 15 | 15 | 15 | 0 | 11 | 14 | 0 | | | |
| | | Standard Deviation | 0.000070 | 0.00005 | 0.0118 | 0.0090 | 1.5 | 0.0000046 | 0.00000065 | 0.000158 | 0.00019 | 0.014 | 0.0146 | 0.0019 | 0.00237 | 0.00000000 | 0.00000000 | 1.6 | 0 | 0 | 0.00000000 | 0 | 0.78 | 0.03242 | 0.00111 | 0.0044 | | | |
| | | 1st Quartile | 0.00023 | 0.00024 | 0.0136 | 0.0122 | 11.5 | <0.000010 | <0.000005 | <0.00050 | 0.0004 | 0.03 | 0.0174 | 0.0028 | <0.0010 | <0.000002 | <0.000002 | 13.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.72 | <0.0050 | <0.0050 | 0.0044 | | | |
| | | Median | 0.00031 | 0.000310 | 0.0227 | 0.0218 | 12.8 | <0.000010 | <0.0000050 | <0.00050 | 0.00054 | 0.044 | 0.0331 | 0.00320 | 0.00280 | <0.0000020 | <0.0000020 | 15 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.03 | <0.0050 | <0.0050 | 0.005 | | | |
| | | 3rd Quartile | 0.00034 | 0.00032 | 0.033 | 0.0274 | 14.1 | <0.000010 | <0.0000050 | 0.000375 | 0.00066 | 0.047 | 0.0390 | 0.0044 | 0.00415 | <0.0000020 | <0.0000020 | 16.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.52 | 0.0051 | <0.0050 | 0.0074 | | | |
| **NNLB** | No Name Lake 1 metre from bottom | Average | 0.00025 | 0.00022 | 0.0335 | 0.0274 | 11.4 | 0.000005 | 0.0000025 | 0.000416 | 0.00055 | 0.184 | 0.1027 | 0.0303 | 0.0237 | 0.000001 | 0.000001 | 16.7 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 4.82 | 0.0025 | 0.002500 | 0.00420 | | | |
| **E217018** | | Count | 15 | 15 | 15 | 15 | 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 4 | | | |
| | | Minimum | 0.00015 | 0.00016 | 0.0249 | 0.0202 | 10.2 | <0.000010 | <0.0000050 | <0.00050 | 0.00029 | 0.092 | 0.0438 | 0.0061 | 0.0023 | <0.0000020 | <0.0000020 | 15.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.06 | <0.0050 | <0.0050 | 0.0024 | | | |
| | | Maximum | 0.00035 | 0.00031 | 0.0434 | 0.0333 | 12.7 | <0.000010 | <0.0000050 | 0.00077 | 0.00139 | 0.416 | 0.197 | 0.094 | 0.0807 | <0.0000020 | <0.0000020 | 19.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 5.81 | <0.0050 | <0.0050 | 0.0067 | | | |
| | | Geometric Mean | 0.00024 | 0.000210 | 0.0331 | 0.027 | 11.4 | 0.000005 | 0.0000025 | 0.000368 | 0.00051 | 0.164 | 0.0896 | 0.0161 | 0.0087 | 0.00000100 | 0.00000100 | 16.7 | 0.0005000 | 0.0005 | 0.0001 | 0.0001 | 4.8 | 0.0025 | 0.0025 | 0.00400 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 9 | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | | | |
| | | Standard Deviation | 0.00006 | 0.00004 | 0.0057 | 0.0044 | 1 | 1E-13 | 1E-13 | 0.000218 | 0.00026 | 0.099 | 0.0557 | 0.0345 | 0.031 | 0.00000000 | 0.00000000 | 1.1 | 0 | 0.0000000 | 0 | 0 | 0.46 | 4E-11 | 0.000000 | 0.00180 | | | |
| | | 1st Quartile | 0.00023 | 0.0002 | 0.0289 | 0.0243 | 10.6 | <0.000010 | <0.000005 | <0.00050 | 0.00042 | 0.12 | 0.0516 | 0.0074 | 0.003 | <0.000002 | <0.000002 | 16 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.51 | <0.0050 | <0.0050 | 0.0032 | | | |
| | | Median | 0.00025 | 0.00021 | 0.0345 | 0.0286 | 11.5 | <0.000010 | <0.0000050 | <0.00050 | 0.00048 | 0.136 | 0.0844 | 0.0077 | 0.0036 | <0.0000020 | <0.0000020 | 16.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.84 | <0.0050 | <0.0050 | 0.0039 | | | |
| | | 3rd Quartile | 0.00026 | 0.00023 | 0.0377 | 0.031 | 12.1 | <0.000010 | <0.0000050 | 0.000640 | 0.0006 | 0.254 | 0.159 | 0.0596 | 0.0505 | <0.0000020 | <0.0000020 | 17.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 5.08 | <0.0050 | <0.0050 | 0.005 | | | |
| **NNO** | No Name Lake Outlet | Average | 0.00026 | 0.00026 | 0.0358 | 0.0302 | 12.36 | 0.0000055 | 0.00000275 | 0.0007 | 0.00073 | 0.061 | 0.0386 | 0.006 | 0.00432 | 0.0000010 | 0.0000013 | 14.5 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.8 | 0.00324 | 0.0025 | 0.00274 | 0.0028 | 0.0122 | 0.009 |
| **E217017** | | Count | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 5 | 5 | 5 | 5 |
| | | Minimum | 0.00021 | 0.00019 | 0.02 | 0.0167 | 9.55 | <0.000005 | <0.000005 | <0.00050 | 0.00034 | 0.044 | 0.0223 | 0.0026 | <0.0010 | <0.000002 | <0.000002 | 12.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.19 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.020 | 0.0051 |
| | | Maximum | 0.00031 | 0.00039 | 0.0501 | 0.0434 | 15.3 | 0.000015 | 0.0000050 | 0.00193 | 0.00262 | 0.101 | 0.0719 | 0.0151 | 0.0137 | <0.000002 | 0.000004 | 17.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.69 | 0.0099 | <0.0050 | 0.0039 | 0.0042 | 0.021 | 0.0154 |
| | | Geometric Mean | 0.00026 | 0.00025 | 0.0347 | 0.0295 | 12.25 | 0.00000486 | 0.00000268 | 0.000543 | 0.0006 | 0.059 | 0.0352 | 0.0048 | 0.0024 | 0.000001 | 0.00000115 | 14.5 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.72 | 0.00287 | 0.0025 | 0.0025 | 0.00253 | 0.0116 | 0.0082 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 9 | 9 | 4 | 0 | 0 | 0 | 0 | 3 | 10 | 9 | 0 | 10 | 10 | 10 | 10 | 0 | 9 | 10 | 1 | 1 | 4 | 0 |
| | | Standard Deviation | 0.00004 | 0.00006 | 0.0089 | 0.0068 | 1.77 | 0.0000035 | 0.00000079 | 0.000542 | 0.00067 | 0.0190 | 0.0181 | 0.0045 | 0.00448 | 0 | 0.00000095 | 1.5 | 0 | 0.00000 | 0.000000 | 0.000000 | 0.59 | 0.00234 | 4E-11 | 0.00107 | 0.0012 | 0.0049 | 0.0043 |
| | | 1st Quartile | 0.00024 | 0.0002 | 0.0304 | 0.0277 | 11.18 | <0.000010 | <0.0000050 | <0.00050 | 0.00045 | 0.05 | 0.0234 | 0.0027 | 0.00078 | <0.000002 | <0.0000020 | 13.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.36 | <0.0050 | <0.0050 | 0.0027 | 0.0025 | <0.020 | 0.0058 |
| | | Median | 0.00027 | 0.00026 | 0.0357 | 0.03 | 12.05 | <0.000010 | <0.000005 | 0.00061 | 0.00050 | 0.054 | 0.0327 | 0.0042 | 0.003 | <0.0000020 | <0.000002 | 14.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.44 | <0.0050 | <0.0050 | 0.0029 | 0.0028 | <0.020 | 0.0074 |
| | | 3rd Quartile | 0.00029 | 0.0003 | 0.0408 | 0.0320 | 13.23 | <0.000010 | <0.000005 | 0.000893 | 0.00067 | 0.06 | 0.0495 | 0.0073 | 0.00578 | <0.000002 | <0.0000020 | 15.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.26 | <0.0050 | <0.0050 | 0.0032 | 0.0035 | <0.020 | 0.011 |
| **LLS** | Small Seep into Long Lake | Average | 0.00474 | 0.00196 | 0.0398 | 0.01257 | 228 | 0.00001200 | 0.00001014 | 0.000967 | 0.000681 | 1.777 | 0.00836 | 0.4052 | 0.394 | 0.0000010 | 0.0000010 | 604 | 0.0036 | 0.0034 | 0.000100 | 0.0001 | 533 | 0.00338 | 0.00309 | | | | |
| **E292131** | | Count | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | | | | |
| | | Minimum | 0.00078 | 0.00037 | <0.0030 | <0.0030 | 159 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.271 | <0.0050 | 0.0966 | 0.0949 | <0.0000020 | <0.0000020 | 393 | 0.0015 | 0.0015 | <0.00020 | <0.00020 | 281 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.0113 | 0.0038 | 0.226 | 0.0651 | 263 | 0.000072 | 0.0000693 | 0.00364 | 0.00324 | 5.48 | 0.0334 | 0.602 | 0.58 | <0.0000020 | <0.0000020 | 791 | 0.0121 | 0.0108 | <0.00020 | <0.00020 | 709 | 0.0104 | 0.0096 | | | | |
| | | Geometric Mean | 0.00388 | 0.00157 | 0.0114 | 0.00559 | 226 | 0.0000073 | 0.00000476 | 0.000642 | 0.000268 | 1.265 | 0.00604 | 0.3645 | 0.3528 | 0.000001 | 0.000001 | 591 | 0.003 | 0.0029 | 0.000100 | 0.0001 | 511 | 0.00299 | 0.0028 | | | | |
| | | Count <DL | 0 | 0 | 2 | 3 | 0 | 9 | 7 | 5 | 7 | 0 | 4 | 0 | 0 | 12 | 12 | 0 | 0 | 0 | 12 | 12 | 0 | 10 | 11 | | | | |
| | | Standard Deviation | 0.0028 | 0.00117 | 0.06927 | 0.02002 | 32 | 0.0000192 | 0.00001914 | 0.000985 | 0.001047 | 1.562 | 0.00852 | 0.1543 | 0.1562 | 0 | 0 | 126 | 0.0029 | 0.0025 | 0.000000 | 0.000000 | 148 | 0.00234 | 0.00205 | | | | |
| | | 1st Quartile | 0.00285 | 0.00115 | 0.00532 | 0.00278 | 211 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.777 | <0.0050 | 0.357 | 0.2978 | <0.0000020 | <0.0000020 | 535 | 0.0022 | 0.002 | <0.00020 | <0.00020 | 405 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00468 | 0.0016 | 0.0083 | 0.0050 | 243 | <0.000010 | <0.000005 | 0.000755 | <0.00020 | 1.21 | 0.0065 | 0.447 | 0.438 | <0.0000020 | <0.0000020 | 648 | 0.0024 | 0.0024 | <0.00020 | <0.00020 | 580 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00559 | 0.00282 | 0.02655 | 0.00808 | 249 | 0.0000062 | 0.00000592 | 0.001132 | 0.000677 | 2.418 | 0.00902 | 0.5075 | 0.5108 | <0.0000020 | <0.0000020 | 694 | 0.0039 | 0.0039 | <0.00020 | <0.00020 | 660 | <0.0050 | <0.0050 | | | | |
| **LLSM** | Long Lake Middle Seep | Average | 0.00137 | 0.00096 | 0.02277 | 0.01510 | 195.1 | 0.000005 | 0.00000434 | 0.000583 | 0.000446 | 0.445 | 0.00489 | 0.1838 | 0.1805 | 0.000001 | 0.00000151 | 509 | 0.0027 | 0.0026 | 0.0001 | 0.0001 | 459 | 0.0025 | 0.0025 | | | | |
| **E292131** | | Count | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | | | |
| | | Minimum | 0.00059 | 0.00036 | <0.0030 | 0.004 | 173 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.249 | <0.0050 | 0.0722 | 0.0591 | <0.0000020 | <0.0000020 | 455 | 0.0018 | 0.0015 | <0.00020 | <0.00020 | 370 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00188 | 0.00140 | 0.0549 | 0.0396 | 228 | <0.000010 | 0.000009 | 0.00141 | 0.00101 | 0.669 | 0.0123 | 0.285 | 0.298 | <0.0000020 | 0.0000032 | 561 | 0.0044 | 0.0041 | <0.00020 | <0.00020 | 617 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.00127 | 0.00087 | 0.01168 | 0.011 | 194 | 0.000005 | 0.00000379 | 0.000451 | 0.00034 | 0.419 | 0.00402 | 0.1628 | 0.1557 | 0.000001 | 0.00000134 | 508 | 0.0026 | 0.0025 | 0.000100 | 0.0001 | 451 | 0.0025 | 0.00250 | | | | |
| | | Count <DL | 0 | 0 | 2 | 0 | 0 | 7 | 4 | 4 | 1 | 0 | 4 | 0 | 0 | 7 | 5 | 0 | 0 | 0 | 7 | 7 | 0 | 7 | 7 | | | | |
| | | Standard Deviation | 0.0005 | 0.00041 | 0.02073 | 0.0129 | 22.6 | 1E-13 | 0.00000256 | 0.000461 | 0.00036 | 0.158 | 0.00366 | 0.0901 | 0.0952 | 0.0000000 | 0.0000009 | 39 | 0.0008 | 0.0009 | 0 | 0 | 90 | 0 | 0 | | | | |
| | | 1st Quartile | 0.001 | 0.00064 | 0.00705 | 0.0053 | 174 | <0.000010 | <0.0000050 | <0.00050 | 0.00023 | 0.344 | <0.0050 | 0.1177 | 0.1122 | <0.0000020 | <0.0000020 | 487 | 0.0023 | 0.0021 | <0.00020 | <0.00020 | 382 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00156 | 0.00117 | 0.0134 | 0.012 | 193 | <0.000010 | <0.000005 | <0.00050 | 0.00024 | 0.445 | <0.0050 | 0.154 | 0.1540 | <0.0000020 | <0.0000020 | 504 | 0.0026 | 0.0023 | <0.00020 | <0.00020 | 453 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00176 | 0.00126 | 0.03775 | 0.0199 | 212 | <0.000010 | 0.00000575 | 0.000835 | 0.000655 | 0.531 | 0.00595 | 0.2700 | 0.264 | <0.0000020 | 0.0000017 | 537 | 0.0027 | 0.003 | <0.00020 | <0.00020 | 505 | <0.0050 | <0.0050 | | | | |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 43
# 2019-2020 Annual Report

| 2015-16 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| MW002 | Ex-situ 2-3 South shallow groundwater well beside 3-South Pit (1 Seam) | Average | | 0.0005 | | 0.0032 | 200 | | 0.0000074 | | 0.000997 | | 2.38 | | 2.56 | | 0.0000032 | | | 0.0026 | | 0.000100 | 1195 | | 0.0025 | | 0.00330 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.00037 | | <0.0030 | 193 | | 0.000005 | | <0.00020 | | 2.06 | | 2.29 | | 0.0000024 | | | 0.0023 | | <0.00020 | 1150 | | <0.0050 | | 0.0023 | | |
| | | Maximum | | 0.00069 | | 0.0059 | 210 | | 0.000011 | | 0.00369 | | 2.77 | | 2.69 | | 0.0000037 | | | 0.0028 | | <0.00020 | 1220 | | <0.0050 | | 0.0053 | | |
| | | Geometric Mean | | 0.00049 | | 0.00268 | 199.9 | | 0.0000071 | | 0.000246 | | 2.36 | | 2.55 | | 0.0000031 | | | 0.0026 | | 0.000100 | 1194.7 | | 0.0025 | | 0.0031 | | |
| | | Count <DL | | 0 | | 2 | 0 | | 0 | | 3 | | 0 | | 0 | | 0 | | | 0 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.00014 | | 0.00213 | 7.7 | | 0.0000026 | | 0.001795 | | 0.3 | | 0.18 | | 0.0000006 | | | 0.0002 | | 0.000000 | 31.1 | | 0 | | 0.0014 | | |
| | | 1st Quartile | | 0.0004 | | <0.0030 | 194.5 | | 0.0000058 | | <0.00020 | | 2.23 | | 2.54 | | 0.0000028 | | | 0.0026 | | <0.00020 | 1187.5 | | <0.0050 | | 0.0024 | | |
| | | Median | | 0.00047 | | 0.0027 | 198.5 | | 0.0000068 | | <0.00020 | | 2.34 | | 2.63 | | 0.0000032 | | | 0.0028 | | <0.00020 | 1205 | | <0.0050 | | 0.0028 | | |
| | | 3rd Quartile | | 0.00057 | | 0.0044 | 204 | | 0.0000084 | | 0.000998 | | 2.48 | | 2.65 | | 0.0000036 | | | 0.0028 | | <0.00020 | 1212.5 | | <0.0050 | | 0.00380 | | |
| QU1009D | Ex-situ 4-South deep groundwater well. Down gradient of 4-South Mine. Base of Dunsmuir Member. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | | 0.122 | | 0.02190 | 185.5 | | 0.0000025 | | 0.000100 | | 0.205 | | 0.0164 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 80.6 | | 0.00250 | | 0.0340 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.118 | | 0.0046 | 185 | | <0.0000050 | | <0.00020 | | 0.194 | | 0.0147 | | <0.0000020 | | | <0.0010 | | <0.00020 | 76.8 | | <0.0050 | | 0.03 | | |
| | | Maximum | | 0.125 | | 0.0392 | 186 | | <0.0000050 | | <0.00020 | | 0.216 | | 0.018 | | <0.0000020 | | | <0.0010 | | <0.00020 | 84.4 | | <0.0050 | | 0.038 | | |
| | | Geometric Mean | | 0.121 | | 0.0134 | 185.5 | | 0.0000025 | | 0.000100 | | 0.205 | | 0.0163 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 80.5 | | 0.00250 | | 0.0338 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 2 | | 2 | | 0 | | 0 | | 2 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.005 | | 0.0245 | 0.7 | | 0.0000000 | | 0.000000 | | 0.016 | | 0.0023 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 5.4 | | 0.00000 | | 0.0057 | | |
| | | 1st Quartile | | 0.12 | | 0.01320 | 185.2 | | <0.0000050 | | <0.00020 | | 0.2 | | 0.0155 | | <0.0000020 | | | <0.0010 | | <0.00020 | 78.7 | | <0.0050 | | 0.032 | | |
| | | Median | | 0.122 | | 0.02190 | 185.5 | | <0.0000050 | | <0.00020 | | 0.205 | | 0.0164 | | <0.0000020 | | | <0.0010 | | <0.00020 | 80.6 | | <0.0050 | | 0.034 | | |
| | | 3rd Quartile | | 0.123 | | 0.03060 | 185.8 | | <0.0000050 | | <0.00020 | | 0.21 | | 0.0172 | | <0.0000020 | | | <0.0010 | | <0.00020 | 82.5 | | <0.0050 | | 0.036 | | |
| QU1009S | Ex-situ 4-South shallow groundwater well. Fracture zone 10 m below till. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | | 0.0857 | | 0.00150 | 134.5 | | 0.0000025 | | 0.000100 | | 5.42 | | 0.366 | | 0.0000043 | | | 0.000500 | | 0.0001000 | 111.9 | | 0.00250 | | 0.0335 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.0787 | | <0.0030 | 129 | | <0.0000050 | | <0.00020 | | 5.01 | | 0.326 | | 0.0000033 | | | <0.0010 | | <0.00020 | 97.8 | | <0.0050 | | 0.0333 | | |
| | | Maximum | | 0.0927 | | <0.0030 | 140 | | <0.0000050 | | <0.00020 | | 5.84 | | 0.406 | | 0.0000053 | | | <0.0010 | | <0.00020 | 126 | | <0.0050 | | 0.0338 | | |
| | | Geometric Mean | | 0.0854 | | 0.0015 | 134.4 | | 0.0000025 | | 0.000100 | | 5.41 | | 0.364 | | 0.0000042 | | | 0.0005 | | 0.0001000 | 111.0 | | 0.00250 | | 0.0335 | | |
| | | Count <DL | | 0 | | 2 | 0 | | 2 | | 2 | | 0 | | 0 | | 0 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.0099 | | 0 | 7.8 | | 0.0000000 | | 0.000000 | | 0.59 | | 0.057 | | 0.0000014 | | | 0 | | 0.0000000 | 19.9 | | 0.00000 | | 0.0004 | | |
| | | 1st Quartile | | 0.0822 | | <0.0030 | 131.8 | | <0.0000050 | | <0.00020 | | 5.22 | | 0.346 | | 0.0000038 | | | <0.0010 | | <0.00020 | 104.8 | | <0.0050 | | 0.0334 | | |
| | | Median | | 0.0857 | | <0.0030 | 134.5 | | <0.0000050 | | <0.00020 | | 5.42 | | 0.366 | | 0.0000043 | | | <0.0010 | | <0.00020 | 111.9 | | <0.0050 | | 0.0335 | | |
| | | 3rd Quartile | | 0.0892 | | <0.0030 | 137.2 | | <0.0000050 | | <0.00020 | | 5.63 | | 0.386 | | 0.0000048 | | | <0.0010 | | <0.00020 | 119 | | <0.0050 | | 0.0337 | | |
| SPD | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| EZ18582 | Settling Pond # 1 | Average | 0.00159 | 0.00125 | 0.0362 | 0.0179 | 80.00 | 0.0000108 | 0.00000818 | 0.00117 | 0.00054 | 0.568 | 0.0871 | 0.1744 | 0.15571 | 0.000001 | 0.000001 | 448 | 0.0043 | 0.0042 | 0.0001 | 0.000108 | 337.4 | 0.00361 | 0.00394 | 0.0131 | | 0.5050 | 0.0147 |
| | | Count | 13 | 13 | 13 | 13 | 10 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 36 | 13 | 13 | 2 | | 2 | 2 |
| | | Minimum | 0.00034 | 0.00018 | 0.0077 | 0.0031 | 46.20 | <0.000010 | <0.0000050 | 0.00062 | 0.00028 | 0.092 | 0.0103 | 0.0219 | <0.0020 | <0.0000020 | <0.0000020 | 305 | 0.001 | <0.0020 | <0.00020 | <0.00020 | 41.9 | <0.0050 | <0.0050 | 0.0078 | | <0.020 | 0.0053 |
| | | Maximum | 0.00414 | 0.00333 | 0.0893 | 0.0447 | 110.0 | 0.00003 | 0.000020 | 0.0041 | 0.00093 | 1.64 | 0.226 | 0.647 | 0.571 | <0.0000020 | <0.0000020 | 584 | 0.0105 | 0.0116 | <0.00020 | <0.00040 | 505 | 0.0083 | 0.0079 | 0.0184 | | <2.0 | 0.0241 |
| | | Geometric Mean | 0.00124 | 0.00089 | 0.0267 | 0.0131 | 78.1 | 0.0000087 | 0.00000596 | 0.00098 | 0.00051 | 0.37 | 0.0605 | 0.1008 | 0.04528 | 0.0000010 | 0.0000010 | 440 | 0.00310 | 0.00309 | 0.0001 | 0.000105 | 299.50 | 0.0032 | 0.00353 | 0.012 | | 0.1000 | 0.0113 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 0 | 0 | 0 | 0 | 0 | 1 | 13 | 13 | 0 | 0 | 1 | 13 | 13 | 0 | 10 | 9 | 0 | | 2 | 0 |
| | | Standard Deviation | 0.00114 | 0.00102 | 0.0266 | 0.0147 | 17.3 | 0.0000081 | 0.00000664 | 0.00096 | 0.00018 | 0.519 | 0.0675 | 0.1942 | 0.19427 | 0.0000000 | 0 | 90.0 | 0.0035 | 0.00349 | 0.0000000 | 0.000028 | 125.7 | 0.00214 | 0.00202 | 0.0075 | | 0.7 | 0.0133 |
| | | 1st Quartile | 0.00068 | 0.00053 | 0.0114 | 0.0075 | 70.7 | <0.000010 | <0.0000050 | 0.00068 | 0.00042 | 0.161 | 0.0305 | 0.0383 | 0.0125 | <0.0000020 | <0.0000020 | 362 | 0.0017 | 0.0017 | <0.00020 | <0.00020 | 288.8 | <0.0050 | <0.0050 | 0.0104 | | 0.2575 | 0.01 |
| | | Median | 0.00130 | 0.00083 | 0.029 | 0.0111 | 80.2 | <0.000010 | 0.0000054 | 0.00079 | 0.00049 | 0.267 | 0.0777 | 0.124 | 0.106 | <0.0000020 | <0.0000020 | 475 | 0.0021 | 0.0024 | <0.00020 | <0.00020 | 359.00 | <0.0050 | <0.0050 | 0.0131 | | 0.505 | 0.01470 |
| | | 3rd Quartile | 0.00205 | 0.00203 | 0.0547 | 0.0242 | 89.4 | 0.000018 | 0.00001100 | 0.00104 | 0.00066 | 0.94 | 0.1150 | 0.157 | 0.161 | <0.0000020 | <0.0000020 | 502 | 0.0071 | 0.0058 | <0.00020 | <0.00020 | 426 | <0.0050 | 0.0054 | 0.01580 | | 0.7525 | 0.01940 |
| LLE | Long Lake Entrance (LLE) | Average | 0.00092 | 0.00072 | 0.0889 | 0.03440 | 55.9 | 0.00000700 | 0.00000361 | 0.001265 | 0.00079 | 0.418 | 0.1551 | 0.107 | 0.0912 | 0.000001 | 0.0000010 | 250 | 0.00082 | 0.00072 | 0.000115 | 0.000100 | 210.4 | 0.00353 | 0.00250 | 0.0092 | 0.0045 | 0.0392 | 0.01736 |
| EZ92130 | | Count | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 10 | 11 | 11 | 11 | 11 | 11 | 11 | 41 | 11 | 11 | 19 | 1 | 12 | 12 |
| | | Minimum | 0.00027 | 0.00025 | 0.0137 | 0.0044 | 39.2 | <0.000010 | <0.0000050 | <0.00050 | 0.00022 | 0.268 | 0.0239 | 0.0171 | 0.0019 | <0.0000020 | <0.0000020 | 140 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 64.6 | <0.0050 | <0.0050 | 0.004 | 0.0045 | <0.020 | <0.0050 |
| | | Maximum | 0.00197 | 0.00133 | 0.235 | 0.0803 | 82.1 | 0.0000270 | 0.0000062 | 0.00568 | 0.00343 | 0.753 | 0.406 | 0.26 | 0.258 | <0.0000020 | <0.0000020 | 416 | 0.0023 | 0.0019 | 0.00026 | <0.00020 | 481 | 0.0109 | <0.0050 | 0.0319 | 0.0045 | 0.11 | 0.0470 |
| | | Geometric Mean | 0.00078 | 0.00064 | 0.0648 | 0.0226 | 54.2 | 0.0000058 | 0.00000334 | 0.000859 | 0.00053 | 0.403 | 0.1124 | 0.0766 | 0.0511 | 0.000001 | 0.000001 | 233.0 | 0.00066 | 0.00062 | 0.000109 | 0.000100 | 192.9 | 0.00307 | 0.00250 | 0.0079 | 0.0045 | 0.0263 | 0.0113 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 10 | 7 | 2 | 0 | 0 | 0 | 0 | 0 | 10 | 11 | 0 | 9 | 9 | 10 | 11 | 0 | 9 | 11 | 0 | 0 | 5 | 2 |
| | | Standard Deviation | 0.00055 | 0.00037 | 0.0655 | 0.02750 | 14.9 | 0.0000066 | 0.00000158 | 0.001516 | 0.00094 | 0.131 | 0.1212 | 0.0836 | 0.0821 | 0 | 0 | 101 | 0.00071 | 0.00049 | 0.000048 | 0.000000 | 91.5 | 0.0026 | 0.00000 | 0.0062 | 0 | 0.0351 | 0.01594 |
| | | 1st Quartile | 0.00051 | 0.00046 | 0.0385 | 0.008 | 46.1 | <0.000010 | <0.0000050 | 0.000665 | 0.00027 | 0.332 | 0.067 | 0.0377 | 0.031 | <0.0000020 | <0.0000020 | 184 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 145 | <0.0050 | <0.0050 | 0.0053 | 0.0045 | <0.020 | 0.00575 |
| | | Median | 0.00085 | 0.00064 | 0.0917 | 0.0345 | 49.2 | <0.000010 | <0.000005 | 0.00084 | 0.00042 | 0.411 | 0.105 | 0.0839 | 0.0785 | <0.0000020 | <0.0000020 | 215 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 189 | <0.0050 | <0.0050 | 0.0083 | 0.0045 | 0.028 | 0.01145 |
| | | 3rd Quartile | 0.00122 | 0.00094 | 0.114 | 0.049 | 64.2 | <0.000010 | 0.000005 | 0.0012 | 0.00072 | 0.452 | 0.2205 | 0.173 | 0.129 | <0.0000020 | <0.0000020 | 314 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 235 | <0.0050 | <0.0050 | 0.01050 | 0.0045 | 0.0555 | 0.02232 |
| LLM1 | Long Lake Middle 1 metre below Surface | Average | 0.00056 | 0.00052 | 0.0147 | 0.0102 | 33.3 | 0.00005470 | 0.0000025 | 0.000579 | 0.00040 | 0.037 | 0.015 | 0.0082 | 0.0012 | 0.000001 | 0.000001 | 94 | 0.00059 | 0.00050 | 0.000213 | 0.000100 | 81.1 | 0.00415 | 0.00250 | 0.00268 | | | |
| EZ06619 | | Count | 15 | 15 | 15 | 15 | 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 4 | | | |
| | | Minimum | 0.00037 | 0.00034 | 0.0064 | 0.0035 | 26 | <0.000010 | <0.0000050 | <0.00050 | 0.00029 | 0.018 | 0.0057 | 0.0036 | <0.0010 | <0.0000020 | <0.0000020 | 66 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 44.8 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Maximum | 0.00084 | 0.00094 | 0.0327 | 0.0175 | 39.5 | 0.000699 | <0.0000050 | 0.00219 | 0.00054 | 0.08 | 0.0306 | 0.0193 | 0.0053 | <0.0000020 | <0.0000020 | 125 | 0.0019 | <0.0010 | 0.00179 | <0.00020 | 108 | 0.0128 | <0.0050 | 0.0046 | | | |
| | | Geometric Mean | 0.00054 | 0.0005 | 0.0131 | 0.0094 | 32.8 | 0.0000093 | 0.0000025 | 0.00039 | 0.00039 | 0.034 | 0.0132 | 0.0071 | 0.00083 | 0.000001 | 0.000001 | 91.6 | 0.00055 | 0.00050 | 0.000121 | 0.000100 | 78.2 | 0.00345 | 0.00250 | 0.00234 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 11 | 15 | 11 | 0 | 0 | 0 | 0 | 10 | 15 | 15 | 0 | 14 | 15 | 14 | 15 | 0 | 11 | 15 | 1 | | | |
| | | Standard Deviation | 0.00015 | 0.00015 | 0.0076 | 0.0039 | 6.3 | 0.00017840 | 1E-13 | 0.000671 | 0.00009 | 0.019 | 0.0073 | 0.0049 | 0.00134 | 0 | 0 | 21.6 | 0.00036 | 0.00000 | 0.000436 | 0.000000 | 20.9 | 0.00313 | 0.00000 | 0.00148 | | | |
| | | 1st Quartile | 0.00044 | 0.00042 | 0.0096 | 0.0079 | 27.5 | <0.000010 | <0.0000050 | <0.00050 | 0.00035 | 0.024 | 0.009 | 0.0048 | <0.0010 | <0.0000020 | <0.0000020 | 73.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 59.6 | <0.0050 | <0.0050 | 0.00205 | | | |
| | | Median | 0.00051 | 0.00048 | 0.0133 | 0.01 | 34.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00037 | 0.033 | 0.016 | 0.0069 | <0.0010 | <0.0000020 | <0.0000020 | 90.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 88.3 | <0.0050 | <0.0050 | 0.00255 | | | |
| | | 3rd Quartile | 0.00064 | 0.00058 | 0.0176 | 0.0128 | 38.8 | 0.00001100 | <0.0000050 | 0.000485 | 0.00048 | 0.0420 | 0.019 | 0.0086 | 0.00135 | <0.0000020 | <0.0000020 | 114 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 97.4 | 0.0045 | <0.0050 | 0.00318 | | | |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 44
# 2019-2020 Annual Report

| 2015-16 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **LLMB** | | Average | 0.00032 | 0.00026 | 0.0126 | 0.00773 | 46.1 | 0.00000500 | 0.00000283 | 0.000432 | 0.00041 | 0.059 | 0.01377 | 2.345 | 2.141 | 0.000001 | 0.000001 | 124.2 | 0.00050 | 0.00050 | 0.000100 | 0.000109 | 107.8 | 0.00271 | 0.00250 | 0.00310 | | | | |
| **E206619** | | Count | 15 | 15 | 15 | 15 | 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 4 | | | | |
| | | Minimum | 0.00024 | 0.00021 | 0.0032 | <0.0030 | 43.2 | <0.000010 | <0.0000050 | <0.00050 | 0.00023 | 0.021 | <0.0050 | 0.291 | 0.238 | <0.0000020 | <0.0000020 | 114 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 104 | <0.0050 | <0.0050 | 0.0025 | | | | |
| | | Maximum | 0.00044 | 0.00033 | 0.0211 | 0.0127 | 49.6 | <0.000010 | 0.000005 | 0.00107 | 0.00064 | 0.116 | 0.0402 | 5.69 | 5.41 | <0.0000020 | <0.0000020 | 132 | <0.0010 | <0.0010 | <0.00020 | 0.00023 | 115 | 0.0056 | <0.0050 | 0.0034 | | | | |
| | Long Lake Middle 1 metre From Bottom | Geometric Mean | 0.00031 | 0.00026 | 0.0112 | 0.00615 | 46.1 | 0.000005 | 0.00000274 | 0.000364 | 0.0004 | 0.052 | 0.00974 | 1.35 | 1.206 | 0.000001 | 0.000001 | 124.1 | 0.00050 | 0.00050 | 0.000100 | 0.000106 | 107.8 | 0.00264 | 0.00250 | 0.00300 | | | | |
| | | Count <DL | 0 | 0 | 0 | 3 | 0 | 15 | 13 | 10 | 0 | 0 | 2 | 0 | 0 | 15 | 15 | 0 | 15 | 15 | 15 | 14 | 0 | 14 | 15 | 0 | | | | |
| | | Standard Deviation | 0.00006 | 0.00004 | 0.0056 | 0.00418 | 2.4 | 1E-13 | 0.00000088 | 0.00029 | 0.00013 | 0.031 | 0.01174 | 2.09 | 1.9470 | 0 | 0 | 5.1 | 0.00000 | 0.00000 | 0.000000 | 0.000034 | 3.4 | 0.0008 | 0.00000 | 0.00040 | | | | |
| | | 1st Quartile | 0.00027 | 0.00024 | 0.0092 | 0.0049 | 44.8 | <0.000010 | <0.0000050 | <0.00050 | 0.00033 | 0.034 | 0.0058 | 0.391 | 0.335 | <0.0000020 | <0.0000020 | 120 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 105 | <0.0050 | <0.0050 | 0.0029 | | | | |
| | | Median | 0.00032 | 0.00026 | 0.0114 | 0.0084 | 46.4 | <0.000010 | <0.000005 | <0.00050 | 0.00038 | 0.053 | 0.00890 | 1.91 | 1.83 | <0.0000020 | <0.0000020 | 125 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 108.0 | <0.0050 | <0.0050 | 0.0032 | | | | |
| | | 3rd Quartile | 0.00035 | 0.0003 | 0.0166 | 0.0115 | 46.6 | <0.000010 | <0.0000050 | 0.000585 | 0.00046 | 0.076 | 0.02410 | 4.165 | 3.615 | <0.0000020 | <0.0000020 | 128.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 109 | <0.0050 | <0.0050 | 0.0033 | | | | |
| **LLO** | | Average | 0.00044 | 0.0004 | 0.0179 | 0.0117 | 32.7 | 0.0000048 | 0.00000250 | 0.000735 | 0.00047 | 0.0429 | 0.01723 | 0.0094 | 0.00186 | 0.000001 | 0.000001 | 91.2 | 0.00321 | 0.00050 | 0.000212 | 0.000100 | 66.2 | 0.00405 | 0.00250 | 0.00506 | | 0.088 | 0.00588 |
| **E219412** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 52 | 15 | 15 | 5 | | 5 | 5 |
| | | Minimum | 0.00035 | 0.00027 | 0.0039 | 0.0038 | 20.8 | <0.000005 | <0.0000050 | <0.00050 | 0.00027 | <0.010 | <0.0050 | 0.0031 | <0.0010 | <0.0000020 | <0.0000020 | 44.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 11.7 | <0.0050 | <0.0050 | <0.0050 | | <0.020 | <0.0050 |
| | | Maximum | 0.00059 | 0.00049 | 0.0371 | 0.025 | 40.6 | <0.000010 | <0.0000050 | 0.00559 | 0.00129 | 0.099 | 0.039 | 0.0229 | 0.0056 | <0.0000020 | <0.0000020 | 123 | 0.0412 | <0.0010 | 0.00178 | <0.00020 | 113 | 0.0258 | <0.0050 | 0.0098 | | 0.295 | 0.009 |
| | Long Lake Outlet | Geometric Mean | 0.00044 | 0.00039 | 0.0145 | 0.0098 | 32.1 | 0.0000048 | 0.0000025 | 0.000407 | 0.00043 | 0.0314 | 0.01251 | 0.0078 | 0.00129 | 0.0000010 | 0.0000010 | 87.6 | 0.00067 | 0.00050 | 0.000121 | 0.000100 | 57.9 | 0.00292 | 0.00250 | 0.00442 | | 0.0372 | 0.00504 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 10 | 0 | 2 | 2 | 0 | 6 | 15 | 15 | 0 | 14 | 15 | 14 | 15 | 0 | 14 | 15 | 2 | | 2 | 2 |
| | | Standard Deviation | 0.00007 | 0.00007 | 0.011 | 0.0066 | 6.1 | 0.0000006 | 1E-13 | 0.001364 | 0.00025 | 0.0294 | 0.01226 | 0.0059 | 0.00165 | 0 | 0 | 24.9 | 0.01051 | 0.00000 | 0.000434 | 0.000000 | 29.2 | 0.00602 | 4E-11 | 0.00299 | | 0.1217 | 0.00323 |
| | | 1st Quartile | 0.00038 | 0.00035 | 0.0084 | 0.0056 | 27.7 | <0.000010 | <0.000005 | <0.00050 | 0.00034 | 0.0195 | 0.0064 | 0.0047 | <0.0010 | <0.000002 | <0.000002 | 67.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 42.1 | <0.0050 | <0.0050 | <0.0050 | | <0.020 | <0.0050 |
| | | Median | 0.00045 | 0.00041 | 0.0158 | 0.0125 | 35.2 | <0.000010 | <0.0000050 | <0.00050 | 0.0004 | 0.034 | 0.0138 | 0.0091 | 0.0016 | <0.0000020 | <0.0000020 | 101 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 66.1 | <0.0050 | <0.0050 | 0.0051 | | 0.024 | 0.0066 |
| | | 3rd Quartile | 0.00048 | 0.00046 | 0.0278 | 0.0168 | 37.7 | <0.000010 | <0.0000050 | 0.0006 | 0.00044 | 0.064 | 0.0292 | 0.0120 | 0.0022 | <0.0000020 | <0.0000020 | 112.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 90.8 | <0.0050 | <0.0050 | 0.0054 | | 0.101 | 0.00880 |
| **WB** | | Average | 0.00024 | 0.00022 | 0.0185 | 0.015 | 39 | 0.0000049 | 0.0000028 | 0.000687 | 0.00057 | 0.045 | 0.0196 | 0.0109 | 0.00107 | 0.0000010 | 0.0000010 | 40.9 | 0.00073 | 0.00050 | 0.000100 | 0.000100 | 34.6 | 0.00250 | 0.00250 | 0.00536 | | 0.0100 | 0.00892 |
| **E0900504** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 5 | | 5 | 5 |
| | | Minimum | 0.00012 | 0.00013 | 0.0068 | 0.0072 | 26.4 | <0.000005 | <0.0000050 | <0.00050 | 0.00046 | 0.03 | 0.0093 | 0.0027 | <0.0010 | <0.0000020 | <0.0000020 | 27.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 18.3 | <0.0050 | <0.0050 | <0.0050 | | <0.020 | <0.0050 |
| | | Maximum | 0.00044 | 0.00034 | 0.0257 | 0.0211 | 48 | 0.000006 | 0.000007 | 0.00169 | 0.00086 | 0.094 | 0.0392 | 0.0188 | 0.0059 | <0.0000020 | <0.0000020 | 62.2 | 0.0026 | <0.0010 | <0.00020 | <0.00020 | 48.7 | <0.0050 | <0.0050 | 0.0102 | | <0.020 | 0.016 |
| | Middle Quinsam Lake Outlet | Geometric Mean | 0.00023 | 0.000210 | 0.0175 | 0.0143 | 38.3 | 0.0000483 | 0.00000268 | 0.000599 | 0.00056 | 0.042 | 0.0185 | 0.009 | 0.00073 | 0.000001 | 0.000001 | 39.8 | 0.00061 | 0.00050 | 0.000100 | 0.000100 | 33.5 | 0.00250 | 0.00250 | 0.00458 | | 0.0100 | 0.00664 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 14 | 14 | 3 | 0 | 0 | 0 | 0 | 11 | 15 | 15 | 0 | 13 | 15 | 15 | 15 | 0 | 15 | 15 | 2 | | 5 | 2 |
| | | Standard Deviation | 0.00009 | 0.00008 | 0.0058 | 0.0046 | 7.3 | 0.00000071 | 0.00000116 | 0.000379 | 0.0001 | 0.0180 | 0.0073 | 0.0057 | 0.00141 | 0 | 0 | 10 | 0.00062 | 0.00000 | 0.000000 | 0.000000 | 8.5 | 4E-11 | 4E-11 | 0.00332 | | 0 | 0.00651 |
| | | 1st Quartile | 0.00018 | 0.00015 | 0.0144 | 0.0108 | 32.2 | <0.000010 | <0.000005 | 0.000535 | 0.00052 | 0.032 | 0.0154 | 0.0046 | <0.0010 | <0.000002 | <0.000002 | 35.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 29.3 | <0.0050 | <0.0050 | <0.0050 | | <0.020 | <0.0050 |
| | | Median | 0.00025 | 0.000230 | 0.0202 | 0.0157 | 40.9 | <0.000010 | <0.0000050 | 0.00062 | 0.00055 | 0.041 | 0.0179 | 0.0122 | <0.0010 | <0.0000020 | <0.0000020 | 37 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 35.0 | <0.0050 | <0.0050 | 0.0044 | | <0.020 | 0.0086 |
| | | 3rd Quartile | 0.00029 | 0.000280 | 0.0234 | 0.019 | 46 | <0.000010 | <0.000005 | 0.00072 | 0.00058 | 0.045 | 0.0238 | 0.0152 | 0.0008 | <0.0000020 | <0.0000020 | 44 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 38.7 | <0.0050 | <0.0050 | 0.0072 | | <0.020 | 0.015 |
| **7SSD** | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E292069** | | Average | 0.00265 | 0.00224 | 0.2187 | 0.0147 | 134.2 | 0.0000096 | 0.00000485 | 0.00181 | 0.00093 | 0.34 | 0.01843 | 0.0741 | 0.03816 | 0.00000109 | 0.00000116 | 172 | 0.00063 | 0.00071 | 0.00011 | 0.0001 | 35.3 | 0.00845 | 0.00308 | | | | |
| | | Count | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | | | | |
| | | Minimum | 0.00067 | 0.00037 | 0.0088 | <0.0030 | 50.1 | <0.000005 | <0.0000050 | 0.00087 | 0.00049 | 0.037 | <0.0050 | 0.0109 | <0.0010 | <0.0000020 | <0.0000020 | 60.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 10.5 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00952 | 0.00921 | 0.927 | 0.0508 | 208 | 0.000031 | 0.000021 | 0.00371 | 0.00202 | 1.16 | 0.0547 | 0.16 | 0.0962 | 0.0000028 | 0.0000042 | 298 | 0.0012 | 0.0046 | 0.00029 | <0.00020 | 98.6 | 0.0912 | 0.0142 | | | | |
| | Settling Pond at 7S- Discharge to Stream 1 -7S | Geometric Mean | 0.00198 | 0.00139 | 0.0953 | 0.00797 | 122.4 | 0.00000740 | 0.00000358 | 0.00167 | 0.00087 | 0.203 | 0.0117 | 0.0601 | 0.01342 | 0.00000105 | 0.00000107 | 157 | 0.00059 | 0.00056 | 0.000105 | 0.000100 | 29.2 | 0.00379 | 0.00273 | | | | |
| | | Count <DL | 0 | 0 | 0 | 5 | 0 | 13 | 15 | 0 | 0 | 0 | 3 | 0 | 4 | 19 | 19 | 0 | 16 | 19 | 19 | 20 | 0 | 16 | 19 | | | | |
| | | Standard Deviation | 0.00243 | 0.00252 | 0.2831 | 0.01484 | 51.4 | 0.0000082 | 0.0000051 | 0.00079 | 0.00038 | 0.366 | 0.01779 | 0.0428 | 0.0341 | 0.0000004 | 0.00000072 | 69.2 | 0.00026 | 0.00092 | 0.000042 | 0.000000 | 23.9 | 0.01987 | 0.00262 | | | | |
| | | 1st Quartile | 0.00123 | 0.00066 | 0.032 | 0.00278 | 89 | <0.000010 | <0.0000050 | 0.0014 | 0.00071 | 0.109 | 0.00622 | 0.0369 | 0.0025 | <0.0000020 | <0.0000020 | 125.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 20 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00171 | 0.00117 | 0.0872 | 0.0083 | 153 | <0.000010 | <0.000005 | 0.0016 | 0.0008 | 0.162 | 0.0105 | 0.0844 | 0.040 | <0.0000020 | <0.0000020 | 177 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25.6 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00268 | 0.00241 | 0.276 | 0.0219 | 166.5 | 0.0000105 | 0.0000031 | 0.00186 | 0.00117 | 0.446 | 0.02672 | 0.0925 | 0.06542 | <0.000002 | <0.000002 | 204.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 41.8 | <0.0050 | <0.0050 | | | | |
| **7S** | | Average | 0.000108 | 0.000149 | 0.0474 | 0.0396 | 18.9 | 0.0000622 | 0.00000035 | 0.009704 | 0.00055 | 0.0235 | 0.00976 | 0.00057 | 0.0005 | 0.00000111 | 0.00000112 | 20.1 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 4.280 | 0.00250 | 0.00250 | | | | |
| **E292109** | | Count | 18 | 18 | 18 | 18 | 17 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 17 | 18 | 18 | | | | |
| | | Minimum | <0.00010 | <0.00010 | 0.0163 | 0.0129 | 11.4 | <0.000005 | <0.0000050 | <0.00050 | 0.00027 | <0.010 | <0.0050 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 13 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.19 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00022 | 0.00039 | 0.134 | 0.0948 | 38 | 0.0000320 | 0.000008 | 0.165 | 0.00197 | 0.09 | 0.032 | 0.0018 | <0.0010 | 0.0000029 | 0.0000022 | 40.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 7.65 | <0.0050 | <0.0050 | | | | |
| | Stream 1-7S discharge to LWO | Geometric Mean | 0.000098 | 0.000114 | 0.0372 | 0.032 | 17.7 | 0.0000513 | 0.00000314 | 0.000643 | 0.00046 | 0.0152 | 0.00647 | 0.00054 | 0.0005 | 0.00000106 | 0.00000109 | 19.2 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 4.08 | 0.00250 | 0.00250 | | | | |
| | | Count <DL | 5 | 7 | 0 | 0 | 0 | 17 | 14 | 8 | 0 | 6 | 7 | 17 | 18 | 17 | 16 | 0 | 18 | 18 | 18 | 18 | 0 | 18 | 18 | | | | |
| | | Standard Deviation | 0.000047 | 0.000110 | 0.0363 | 0.0273 | 7.4 | 0.0000648 | 0.00000196 | 0.038758 | 0.00042 | 0.0243 | 0.00953 | 0.00031 | 0 | 0.00000045 | 0.00000036 | 7 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 1.45 | 3E-11 | 3E-11 | | | | |
| | | 1st Quartile | 0.000062 | <0.00010 | 0.0187 | 0.0173 | 12.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00033 | <0.010 | <0.0050 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 14.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.26 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00011 | 0.00012 | 0.0374 | 0.0337 | 16 | <0.000010 | <0.000005 | 0.00053 | 0.00038 | 0.015 | 0.0064 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 18.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.99 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00013 | 0.000205 | 0.0604 | 0.0511 | 23.9 | <0.000010 | <0.0000050 | 0.000932 | 0.00055 | 0.0265 | 0.01078 | <0.0010 | <0.0010 | <0.000002 | <0.0000020 | 23.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.84 | <0.0050 | <0.0050 | | | | |
| **QU0813A** | | Average | | 0.4 | | 0.0099 | 171.5 | | 0.0000025 | | 0.000100 | | 0.21 | | 0.052 | | 0.0000018 | | | 0.000500 | | 0.0001000 | 18.4 | | 0.00250 | | 0.1750 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.393 | | 0.0032 | 162 | | <0.0000050 | | <0.00020 | | 0.176 | | 0.0346 | | <0.0000020 | | | <0.0010 | | <0.00020 | 14.5 | | <0.0050 | | 0.137 | | |
| | | Maximum | | 0.415 | | 0.0251 | 179 | | <0.0000050 | | <0.00020 | | 0.262 | | 0.0739 | | 0.0000041 | | | <0.0010 | | <0.00020 | 24.3 | | <0.0050 | | 0.216 | | |
| | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (No. 4 Seam) | Geometric Mean | | 0.4 | | 0.0069 | 171.4 | | 0.0000025 | | 0.000100 | | 0.208 | | 0.0501 | | 0.0000014 | | | 0.000500 | | 0.0001000 | 18 | | 0.00250 | | 0.1720 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 4 | | 4 | | 0 | | 0 | | 3 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.01 | | 0.0103 | 7.1 | | 0 | | 0.000000 | | 0.037 | | 0.0163 | | 0.0000016 | | | 0.000000 | | 0.0000000 | 4.7 | | 0.00000 | | 0.0330 | | |
| | | 1st Quartile | | 0.395 | | 0.0038 | 168.8 | | <0.0000050 | | <0.00020 | | 0.193 | | 0.0446 | | <0.0000020 | | | <0.0010 | | <0.00020 | 14.7 | | <0.0050 | | 0.16 | | |
| | | Median | | 0.396 | | 0.0056 | 172.5 | | <0.0000050 | | <0.00020 | | 0.202 | | 0.0497 | | <0.000002 | | | <0.0010 | | <0.00020 | 17.5 | | <0.0050 | | 0.173 | | |
| | | 3rd Quartile | | 0.402 | | 0.0116 | 175.2 | | <0.0000050 | | <0.00020 | | 0.219 | | 0.057 | | 0.00000178 | | | <0.0010 | | <0.00020 | 21.2 | | <0.0050 | | 0.188 | | |
| **QU0813B** | | Average | | 0.468 | | 0.0332 | 120.2 | | 0.0000034 | | 0.000100 | | 0.1124 | | 0.0896 | | 0.0000028 | | | 0.000500 | | 0.0001000 | 9.19 | | 0.00250 | | 0.1920 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.455 | | 0.0057 | 116 | | <0.0000050 | | <0.00020 | | 0.084 | | 0.0808 | | <0.0000020 | | | <0.0010 | | <0.00020 | 8.72 | | <0.0050 | | 0.155 | | |
| | | Maximum | | 0.487 | | 0.112 | 125 | | 0.000006 | | <0.00020 | | 0.156 | | 0.107 | | 0.0000069 | | | <0.0010 | | <0.00020 | 9.44 | | <0.0050 | | 0.208 | | |
| | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (Till & SST contact) | Geometric Mean | | 0.467 | | 0.0137 | 120.2 | | 0.0000031 | | 0.000100 | | 0.1089 | | 0.0891 | | 0.0000020 | | | 0.000500 | | 0.0001000 | 9.19 | | 0.00250 | | 0.1910 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 3 | | 4 | | 0 | | 0 | | 2 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.015 | | 0.0526 | 4.4 | | 0.0000018 | | 0.000000 | | 0.033 | | 0.0119 | | 0.0000028 | | | 0.000000 | | 0.0000000 | 0.3 | | 0.00000 | | 0.0250 | | |
| | | 1st Quartile | | 0.457 | | 0.0062 | 116.8 | | <0.0000050 | | <0.00020 | | 0.088 | | 0.0824 | | <0.000002 | | | <0.0010 | | <0.00020 | 9.11 | | <0.0050 | | 0.19 | | |
| | | Median | | 0.464 | | 0.0074 | 120 | | <0.000005 | | <0.00020 | | 0.1047 | | 0.0854 | | 0.00000165 | | | <0.0010 | | <0.00020 | 9.3 | | <0.0050 | | 0.203 | | |
| | | 3rd Quartile | | 0.474 | | 0.0344 | 123.5 | | 0.00000338 | | <0.00020 | | 0.129 | | 0.0926 | | 0.00000345 | | | <0.0010 | | <0.00020 | 9.39 | | <0.0050 | | 0.206 | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 45
# 2019-2020 Annual Report

| 2015-16 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| QU0821GD | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 4 Seam) | Average | | 0.161 | | 0.0116 | 206.0 | | 0.000006 | | 0.000133 | | 1.075 | | 0.171 | | 0.0000021 | | | 0.00067 | | 0.000133 | 0.25 | | 0.00333 | | 0.049 | | |
| | | Count | | 3 | | 3 | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | | 3 | | 3 | 3 | | 3 | | 3 | | |
| | | Minimum | | 0.116 | | 0.0034 | 191 | | <0.000010 | | <0.00020 | | 0.735 | | 0.127 | | <0.0000020 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.0224 | | |
| | | Maximum | | 0.222 | | 0.0174 | 216 | | 0.000007 | | <0.00040 | | 1.41 | | 0.194 | | 0.0000032 | | | <0.0020 | | <0.00040 | <0.50 | | <0.010 | | 0.0703 | | |
| | | Geometric Mean | | 0.155 | | 0.0094 | 205.7 | | 0.00000594 | | 0.000126 | | 1.038 | | 0.168 | | 0.0000019 | | | 0.00063 | | 0.000126 | 0.25 | | 0.00315 | | 0.0441 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 1 | | 3 | | 0 | | 0 | | 1 | | | 3 | | 3 | 3 | | 3 | | 0 | | |
| | | Standard Deviation | | 0.055 | | 0.00730 | 13.2 | | 0.000001 | | 0.000058 | | 0.338 | | 0.038 | | 0.0000011 | | | 0.00029 | | 0.000058 | 0 | | 0.00144 | | 0.0244 | | |
| | | 1st Quartile | | 0.131 | | 0.0087 | 201 | | 0.0000055 | | <0.00020 | | 0.908 | | 0.159 | | 0.0000016 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.0383 | | |
| | | Median | | 0.146 | | 0.0141 | 211 | | 0.000006 | | <0.00020 | | 1.08 | | 0.191 | | 0.0000022 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.0543 | | |
| | | 3rd Quartile | | 0.184 | | 0.0158 | 213.5 | | 0.0000065 | | 0.00015 | | 1.245 | | 0.192 | | 0.0000027 | | | 0.00075 | | 0.00015 | <0.50 | | 0.00375 | | 0.0623 | | |
| QU0821GS | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 1 Seam) | Average | | 0.274 | | 0.009 | 196.5 | | 0.0000034 | | 0.0001 | | 0.786 | | 0.1498 | | 0.0000024 | | | 0.000500 | | 0.0001000 | 0.725 | | 0.00685 | | 0.205 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 3 | | |
| | | Minimum | | 0.215 | | 0.0044 | 190 | | <0.0000050 | | <0.00020 | | 0.381 | | 0.0831 | | <0.0000020 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.127 | | |
| | | Maximum | | 0.365 | | 0.0177 | 201 | | 0.000006 | | <0.00020 | | 1.06 | | 0.191 | | 0.0000044 | | | <0.0010 | | <0.00020 | 2.15 | | 0.0199 | | 0.249 | | |
| | | Geometric Mean | | 0.267 | | 0.0078 | 196.4 | | 0.0000031 | | 0.0001 | | 0.726 | | 0.1426 | | 0.0000020 | | | 0.000500 | | 0.0001000 | 0.428 | | 0.0042 | | 0.197 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 3 | | 4 | | 0 | | 0 | | 2 | | | 4 | | 4 | 3 | | 3 | | 0 | | |
| | | Standard Deviation | | 0.069 | | 0.0059 | 5.4 | | 0.0000018 | | 0 | | 0.326 | | 0.0491 | | 0.0000017 | | | 0.000000 | | 0.0000000 | 0.95 | | 0.0087 | | 0.068 | | |
| | | 1st Quartile | | 0.223 | | 0.006 | 193 | | <0.0000050 | | <0.00020 | | 0.592 | | 0.128 | | <0.0000020 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.184 | | |
| | | Median | | 0.257 | | 0.007 | 197.5 | | <0.0000050 | | <0.00020 | | 0.852 | | 0.1625 | | 0.00000215 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.24 | | |
| | | 3rd Quartile | | 0.307 | | 0.0099 | 201 | | 0.00000338 | | <0.00020 | | 1.045 | | 0.1842 | | 0.00000358 | | | <0.0010 | | <0.00020 | 0.725 | | 0.00685 | | 0.244 | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| QU1010D | Ex-situ 2-North deep groundwater well. Down gradient of u/g tailings disposal, measures water quality & hydraulic head downstream of 2-North workings. (No. 1 Seam / Mudstone). | Average | | 0.0148 | | 0.0128 | 95.1 | | 0.000006 | | 0.00010 | | 10.9 | | 0.514 | | 0.0000053 | | | 0.00050 | | 0.000100 | 1.087 | | 0.0025 | | 0.07560 | | |
| | | Count | | 3 | | 3 | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | | 3 | | 3 | 3 | | 3 | | 3 | | |
| | | Minimum | | 0.0143 | | 0.0053 | 91.2 | | 0.000005 | | <0.00020 | | 10.1 | | 0.51 | | 0.0000039 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.0688 | | |
| | | Maximum | | 0.0151 | | 0.0271 | 97.3 | | 0.000007 | | <0.00020 | | 11.3 | | 0.517 | | 0.0000061 | | | <0.0010 | | <0.00020 | <5.0 | | <0.0050 | | 0.0814 | | |
| | | Geometric Mean | | 0.0148 | | 0.0095 | 95.1 | | 0.000006 | | 0.00010 | | 10.9 | | 0.514 | | 0.0000052 | | | 0.00050 | | 0.000100 | 0.683 | | 0.0025 | | 0.07550 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 0 | | 3 | | 0 | | 0 | | 0 | | | 3 | | 3 | 2 | | 3 | | 0 | | |
| | | Standard Deviation | | 0.0005 | | 0.0124 | 3.4 | | 0.000001 | | 0.00000 | | 0.7 | | 0.00 | | 0.0000012 | | | 0.00000 | | 0.000000 | 1.2 | | 0.0000 | | 0.00640 | | |
| | | 1st Quartile | | 0.0147 | | 0.0056 | 94 | | 0.000006 | | <0.00020 | | 10.6 | | 0.512 | | 0.000005 | | | <0.0010 | | <0.00020 | 0.38 | | <0.0050 | | 0.0728 | | |
| | | Median | | 0.0151 | | 0.0059 | 96.8 | | 0.000007 | | <0.00020 | | 11.2 | | 0.514 | | 0.000006 | | | <0.0010 | | <0.00020 | 0.51 | | <0.0050 | | 0.0767 | | |
| | | 3rd Quartile | | 0.0151 | | 0.0165 | 97 | | 0.000007 | | <0.00020 | | 11.2 | | 0.516 | | 0.000006 | | | <0.0010 | | <0.00020 | 1.505 | | <0.0050 | | 0.0791 | | |
| QU1010S | Ex-situ 2-North shallow groundwater well. Down gradient of u/g tailings disposal, measures water quality & hydraulic head downstream of 2-North workings. (No. 1 Seam / Sandstone). | Average | | 0.122 | | 0.01023 | 147.7 | | 0.0000025 | | 0.0001 | | 0.278 | | 0.0347 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 16.6 | | 0.00250 | | 0.0532 | | |
| | | Count | | 3 | | 3 | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | | 3 | | 3 | 3 | | 3 | | 3 | | |
| | | Minimum | | 0.121 | | <0.0030 | 144 | | <0.000005 | | <0.00020 | | 0.217 | | 0.0318 | | <0.000002 | | | <0.0010 | | <0.00020 | 14.8 | | <0.0050 | | 0.0516 | | |
| | | Maximum | | 0.123 | | 0.0225 | 152 | | <0.000005 | | <0.00020 | | 0.339 | | 0.0385 | | <0.000002 | | | <0.0010 | | <0.00020 | 18 | | <0.0050 | | 0.0545 | | |
| | | Geometric Mean | | 0.122 | | 0.00609 | 147.6 | | 0.0000025 | | 0.0001 | | 0.273 | | 0.0346 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 16.5 | | 0.0025 | | 0.0532 | | |
| | | Count <DL | | 0 | | 1 | 0 | | 3 | | 3 | | 0 | | 0 | | 3 | | | 3 | | 3 | 0 | | 3 | | 0 | | |
| | | Standard Deviation | | 0.001 | | 0.01094 | 4.0 | | 0.0000000 | | 0 | | 0.061 | | 0.0035 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 1.6 | | 4E-11 | | 0.0015 | | |
| | | 1st Quartile | | 0.122 | | 0.0041 | 145.5 | | <0.0000050 | | <0.00020 | | 0.248 | | 0.0328 | | <0.0000020 | | | <0.0010 | | <0.00020 | 15.9 | | <0.0050 | | 0.0525 | | |
| | | Median | | 0.123 | | 0.0067 | 147 | | <0.0000050 | | <0.00020 | | 0.278 | | 0.0337 | | <0.0000020 | | | <0.0010 | | <0.00020 | 17 | | <0.0050 | | 0.0534 | | |
| | | 3rd Quartile | | 0.123 | | 0.0146 | 149.5 | | <0.0000050 | | <0.00020 | | 0.308 | | 0.0361 | | <0.0000020 | | | <0.0010 | | <0.00020 | 17.5 | | <0.0050 | | 0.054 | | |
| QU1011D | Ex-situ 2-North deep groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | | 0.0169 | | 0.0143 | 205 | | 0.0000025 | | 0.00226 | | 0.747 | | 0.22 | | 0.0000042 | | | 0.0005 | | 0.0001 | 5.9 | | 0.0025 | | 0.030 | | |
| | | Count | | 1 | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | 0.0169 | | 0.0143 | 205 | | <0.0000050 | | 0.00226 | | 0.747 | | 0.22 | | 0.0000042 | | | <0.0010 | | <0.00020 | 5.89 | | <0.0050 | | 0.0304 | | |
| | | Maximum | | 0.0169 | | 0.0143 | 205 | | <0.0000050 | | 0.00226 | | 0.747 | | 0.22 | | 0.0000042 | | | <0.0010 | | <0.00020 | 5.89 | | <0.0050 | | 0.0304 | | |
| | | Geometric Mean | | 0.0169 | | 0.0143 | 205 | | 0.0000025 | | 0.00226 | | 0.747 | | 0.22 | | 0.0000042 | | | 0.0005 | | 0.0001 | 5.9 | | 0.0025 | | 0.030 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | | 1 | | 1 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | | 0.00000 | | 0.0000 | 0 | | 0.0000000 | | 0.00000 | | 0.00 | | 0.000 | | 0.0000000 | | | 0.00000 | | 0.000000 | 0.0 | | 0.0000 | | 0.000 | | |
| | | 1st Quartile | | 0.0169 | | 0.0143 | 205 | | <0.0000050 | | 0.00226 | | 0.747 | | 0.22 | | 0.0000042 | | | <0.0010 | | <0.00020 | 5.89 | | <0.0050 | | 0.0304 | | |
| | | Median | | 0.0169 | | 0.0143 | 205 | | <0.0000050 | | 0.00226 | | 0.747 | | 0.22 | | 0.0000042 | | | <0.0010 | | <0.00020 | 5.89 | | <0.0050 | | 0.0304 | | |
| | | 3rd Quartile | | 0.0169 | | 0.0143 | 205 | | <0.0000050 | | 0.00226 | | 0.747 | | 0.22 | | 0.0000042 | | | <0.0010 | | <0.00020 | 5.89 | | <0.0050 | | 0.0304 | | |
| QU1011S | Ex-situ 2-North shallow groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | | 0.00223 | | 0.0168 | 86 | | 0.0000060 | | 0.00041 | | 0.227 | | 0.0564 | | 0.0000052 | | | 0.0005 | | 0.0001000 | 4.26 | | 0.00250 | | 0.0073 | | |
| | | Count | | 1 | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | 0.00223 | | 0.0168 | 86 | | 0.000006 | | 0.00041 | | 0.227 | | 0.0564 | | 0.0000052 | | | <0.0010 | | <0.00020 | 4.26 | | <0.0050 | | 0.0073 | | |
| | | Maximum | | 0.00223 | | 0.0168 | 86 | | 0.000006 | | 0.00041 | | 0.227 | | 0.0564 | | 0.0000052 | | | <0.0010 | | <0.00020 | 4.26 | | <0.0050 | | 0.0073 | | |
| | | Geometric Mean | | 0.00223 | | 0.0168 | 86 | | 0.0000060 | | 0.00041 | | 0.227 | | 0.0564 | | 0.0000052 | | | 0.0005 | | 0.0001000 | 4.26 | | 0.0025 | | 0.0073 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | | 1 | | 1 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | | 0 | | 0 | 0 | | 0.0000000 | | 0 | | 0 | | 0 | | 0.0000000 | | | 0 | | 0.0000000 | 0 | | 0 | | 0 | | |
| | | 1st Quartile | | 0.00223 | | 0.0168 | 86 | | 0.000006 | | 0.00041 | | 0.227 | | 0.0564 | | 0.0000052 | | | <0.0010 | | <0.00020 | 4.26 | | <0.0050 | | 0.0073 | | |
| | | Median | | 0.00223 | | 0.0168 | 86 | | 0.000006 | | 0.00041 | | 0.227 | | 0.0564 | | 0.0000052 | | | <0.0010 | | <0.00020 | 4.26 | | <0.0050 | | 0.0073 | | |
| | | 3rd Quartile | | 0.00223 | | 0.0168 | 86 | | 0.000006 | | 0.00041 | | 0.227 | | 0.0564 | | 0.0000052 | | | <0.0010 | | <0.00020 | 4.26 | | <0.0050 | | 0.0073 | | |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 46
# 2019-2020 Annual Report

| 2015-16 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **QU1105S** | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | | 0.0782 | | 0.00920 | 229 | | 0.0000025 | | 0.000125 | | 1.25 | | 0.3147 | | 0.0000044 | | | 0.000500 | | 0.0001000 | 151.3 | | 0.00250 | | 0.031 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.0456 | | 0.0032 | 126 | | <0.0000050 | | <0.00020 | | 0.189 | | 0.037 | | <0.0000020 | | | <0.0010 | | <0.00020 | 55.3 | | <0.0050 | | 0.0178 | | |
| | | Maximum | | 0.0913 | | 0.0243 | 335 | | <0.0000050 | | 0.0002 | | 2.64 | | 0.736 | | 0.0000063 | | | <0.0010 | | <0.00020 | 303 | | <0.0050 | | 0.0394 | | |
| | | Geometric Mean | | 0.0753 | | 0.00640 | 213 | | 0.0000025 | | 0.000119 | | 0.707 | | 0.1852 | | 0.0000036 | | | 0.000500 | | 0.0001000 | 123.4 | | 0.00250 | | 0.030 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 4 | | 3 | | 0 | | 0 | | 1 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.0219 | | 0.01010 | 97 | | 0.0000000 | | 0.000050 | | 1.221 | | 0.3145 | | 0.0000023 | | | 0.000000 | | 0.0000000 | 110.5 | | 0.00000 | | 0.010 | | |
| | | 1st Quartile | | 0.0754 | | 0.004 | 160 | | <0.0000050 | | <0.00020 | | 0.244 | | 0.097 | | 0.0000037 | | | <0.0010 | | <0.00020 | 78.2 | | <0.0050 | | 0.0265 | | |
| | | Median | | 0.0878 | | 0.0046 | 229 | | <0.0000050 | | <0.00020 | | 1.086 | | 0.243 | | 0.00000505 | | | <0.0010 | | <0.00020 | 123.4 | | <0.0050 | | 0.0332 | | |
| | | 3rd Quartile | | 0.0906 | | 0.0098 | 298 | | <0.0000050 | | 0.000125 | | 2.092 | | 0.4608 | | 0.0000057 | | | <0.0010 | | <0.00020 | 196.5 | | <0.0050 | | 0.0375 | | |
| **QU1109S** | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | | 0.108 | | 0.0062 | 401 | | 0.0000025 | | 0.0001 | | 0.1647 | | 0.0156 | | 0.0000020 | | | 0.0005 | | 0.0001 | 284 | | 0.0025 | | 0.071 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.080 | | <0.0030 | 280 | | <0.0000050 | | <0.00020 | | 0.0889 | | 0.0087 | | <0.0000020 | | | <0.0010 | | <0.00020 | 166 | | <0.0050 | | 0.0445 | | |
| | | Maximum | | 0.126 | | 0.0165 | 516 | | <0.0000050 | | <0.00020 | | 0.214 | | 0.02 | | 0.0000031 | | | <0.0010 | | <0.00020 | 442 | | <0.0050 | | 0.0906 | | |
| | | Geometric Mean | | 0.107 | | 0.00411 | 391 | | 0.0000025 | | 0.0001 | | 0.1557 | | 0.0149 | | 0.0000017 | | | 0.0005 | | 0.0001 | 266 | | 0.0025 | | 0.069 | | |
| | | Count <DL | | 0 | | 1 | 0 | | 4 | | 4 | | 0 | | 0 | | 2 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.020 | | 0.0069 | 97 | | 0.0000000 | | 0.00000 | | 0.0580 | | 0.00490 | | 0.0000012 | | | 0.00000 | | 0.000000 | 118.0 | | 0.0000 | | 0.019 | | |
| | | 1st Quartile | | 0.103 | | 0.00285 | 359 | | <0.000005 | | <0.00020 | | 0.1347 | | 0.0142 | | <0.0000020 | | | <0.0010 | | <0.00020 | 212 | | <0.0050 | | 0.0669 | | |
| | | Median | | 0.114 | | 0.0034 | 404 | | <0.0000050 | | <0.00020 | | 0.178 | | 0.017 | | 0.00000195 | | | <0.0010 | | <0.00020 | 265 | | <0.0050 | | 0.075 | | |
| | | 3rd Quartile | | 0.119 | | 0.00675 | 445 | | <0.0000050 | | <0.00020 | | 0.208 | | 0.0183 | | 0.00000295 | | | <0.0010 | | <0.00020 | 337 | | <0.0050 | | 0.0794 | | |
| **7SQR** | 7-South Quinsam River downstream of 7-South Mining Operation | Average | 0.00049 | 0.00044 | 0.0374 | 0.0201 | 38.8 | 0.00001321 | 0.00001043 | 0.00088 | 0.00082 | 0.11 | 0.0536 | 0.0072 | 0.00301 | 0.0000011 | 0.00000116 | 40.7 | 0.00074 | 0.00050 | 0.000100 | 0.000100 | 31 | 0.00277 | 0.0025 | 0.00780 | | 0.0152 | 0.015 |
| **E292113** | | Count | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 21 | 5 | | 5 | 5 |
| | | Minimum | 0.00027 | 0.00023 | 0.0114 | 0.0095 | 24 | <0.0000050 | <0.0000050 | 0.00053 | 0.00045 | 0.051 | 0.0286 | 0.003 | <0.0010 | <0.0000020 | <0.0000020 | 26.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 14 | <0.0050 | <0.0050 | 0.0053 | | <0.020 | 0.0069 |
| | | Maximum | 0.00094 | 0.00067 | 0.156 | 0.0908 | 51.5 | 0.00018 | 0.000161 | 0.00194 | 0.004 | 0.215 | 0.0903 | 0.0129 | 0.0062 | 0.000003 | 0.0000043 | 67.2 | 0.0056 | <0.0010 | <0.00020 | <0.00020 | 45.8 | 0.0081 | <0.0050 | 0.0103 | | 0.025 | 0.024 |
| | | Geometric Mean | 0.00046 | 0.00042 | 0.0294 | 0.017 | 38 | 0.00000555 | 0.00000334 | 0.0008 | 0.0007 | 0.101 | 0.0506 | 0.0067 | 0.00243 | 0.00000105 | 0.00000107 | 39.8 | 0.00056 | 0.00050 | 0.000100 | 0.000100 | 29.9 | 0.00264 | 0.0025 | 0.00760 | | 0.0139 | 0.0135 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 19 | 18 | 0 | 0 | 0 | 0 | 0 | 3 | 20 | 20 | 0 | 20 | 21 | 21 | 21 | 0 | 20 | 21 | 0 | | 3 | 0 |
| | | Standard Deviation | 0.00017 | 0.00013 | 0.0353 | 0.0173 | 8.2 | 0.00003824 | 0.00003452 | 0.00044 | 0.00075 | 0.045 | 0.0184 | 0.0026 | 0.00162 | 0.00000044 | 0.00000072 | 9 | 0.00111 | 0.00000 | 0.000000 | 0.000000 | 7.9 | 0.00122 | 0 | 0.0019 | | 0.0073 | 0.0075 |
| | | 1st Quartile | 0.00037 | 0.00035 | 0.0208 | 0.0125 | 32.7 | <0.000010 | <0.0000050 | 0.00061 | 0.00054 | 0.069 | 0.0398 | 0.0054 | 0.0017 | <0.0000020 | <0.0000020 | 35.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25 | <0.0050 | <0.0050 | 0.0073 | | <0.020 | 0.01 |
| | | Median | 0.00044 | 0.00040 | 0.025 | 0.0152 | 36.3 | <0.000010 | <0.0000050 | 0.00069 | 0.00061 | 0.113 | 0.0507 | 0.0072 | 0.0034 | <0.0000020 | <0.0000020 | 37.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 32.3 | <0.0050 | <0.0050 | 0.0074 | | <0.020 | 0.0123 |
| | | 3rd Quartile | 0.00058 | 0.00054 | 0.0393 | 0.0196 | 47.7 | <0.000010 | <0.0000050 | 0.00087 | 0.00085 | 0.129 | 0.0649 | 0.0085 | 0.0041 | <0.0000020 | <0.0000020 | 43.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 36.60 | <0.0050 | <0.0050 | 0.0088 | | 0.021 | 0.022 |
| **LQL1** | Lower Quinsam Lake 1 metre below surface | Average | 0.00067 | 0.00061 | 0.0185 | 0.0142 | 35.9 | 0.0000057 | 0.00000363 | 0.000633 | 0.00055 | 0.080 | 0.0414 | 0.0135 | 0.00563 | 0.00000100 | 0.00000100 | 34.3 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 21.3 | 0.01197 | 0.00250 | 0.00330 | | | |
| **E292118** | | Count | 15 | 15 | 15 | 15 | 9 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 7 | | | |
| | | Minimum | 0.00046 | 0.00042 | 0.0079 | 0.0065 | 27.3 | <0.000005 | <0.000005 | <0.00050 | 0.00040 | 0.025 | 0.0096 | 0.0029 | <0.0010 | <0.000002 | <0.000002 | 24.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.6 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Maximum | 0.00114 | 0.00084 | 0.0344 | 0.0239 | 42.7 | 0.000018 | 0.0000080 | 0.00110 | 0.00077 | 0.222 | 0.132 | 0.0586 | 0.0361 | <0.000002 | <0.000002 | 40.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 24.0 | 0.124 | <0.0050 | 0.0047 | | | |
| | | Geometric Mean | 0.00065 | 0.00060 | 0.0161 | 0.0134 | 35.6 | 0.0000052 | 0.00000325 | 0.000578 | 0.00054 | 0.067 | 0.0322 | 0.0091 | 0.00156 | 0.00000100 | 0.00000100 | 34.0 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 21.1 | 0.00411 | 0.00250 | 0.00302 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 14 | 11 | 3 | 0 | 0 | 0 | 0 | 8 | 15 | 15 | 0 | 15 | 15 | 15 | 15 | 0 | 11 | 15 | 1 | | | |
| | | Standard Deviation | 0.00018 | 0.00013 | 0.0101 | 0.0050 | 4.9 | 0.0000035 | 0.00000200 | 0.000251 | 0.00010 | 0.052 | 0.0313 | 0.0149 | 0.01007 | 0.00000000 | 0.00000000 | 4.3 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 2.6 | 0.03121 | 4E-11 | 0.00117 | | | |
| | | 1st Quartile | 0.00052 | 0.00048 | 0.0102 | 0.0116 | 34.4 | <0.000010 | <0.0000050 | 0.00058 | 0.00050 | 0.040 | 0.0168 | 0.0054 | <0.0010 | <0.0000020 | <0.0000020 | 32.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 19.8 | <0.0050 | <0.0050 | 0.00300 | | | |
| | | Median | 0.00069 | 0.00065 | 0.0131 | 0.0130 | 36.8 | <0.000010 | <0.0000050 | 0.00062 | 0.00055 | 0.068 | 0.0388 | 0.0062 | <0.0010 | <0.0000020 | <0.0000020 | 35.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 22.2 | <0.0050 | <0.0050 | 0.0037 | | | |
| | | 3rd Quartile | 0.00075 | 0.00068 | 0.0280 | 0.0170 | 38.8 | <0.000010 | 0.00000425 | 0.000760 | 0.00062 | 0.103 | 0.0479 | 0.0161 | 0.00460 | <0.000002 | <0.000002 | 36.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 23.4 | 0.00410 | <0.0050 | 0.00385 | | | |
| **LQLB** | LQLB 1 metre from Bottom | Average | 0.00206 | 0.00097 | 0.0317 | 0.0181 | 34.1 | 0.0000089 | 0.00000605 | 0.00106 | 0.00070 | 1.184 | 0.2998 | 0.3515 | 0.2078 | 0.00000100 | 0.00000100 | 34.6 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 15.6 | 0.00431 | 0.00250 | 0.00587 | | | |
| **E292118** | | Count | 15 | 15 | 15 | 15 | 8 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 7 | | | |
| | | Minimum | 0.00048 | 0.00041 | 0.0193 | 0.0074 | 25.4 | <0.000005 | <0.000005 | 0.00063 | 0.00040 | 0.074 | 0.0425 | 0.0059 | 0.0016 | <0.000002 | <0.000002 | 28.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 12.0 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Maximum | 0.00598 | 0.00141 | 0.0475 | 0.0377 | 37.4 | 0.000017 | 0.0000130 | 0.00342 | 0.00151 | 4.19 | 0.599 | 0.980 | 0.750 | <0.000002 | <0.000002 | 41.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 20.4 | 0.0203 | <0.0050 | 0.0098 | | | |
| | | Geometric Mean | 0.00162 | 0.00091 | 0.0307 | 0.0169 | 33.9 | 0.0000076 | 0.00000520 | 0.00094 | 0.00067 | 0.662 | 0.2212 | 0.1549 | 0.0894 | 0.00000100 | 0.00000100 | 34.4 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 15.5 | 0.00319 | 0.00250 | 0.00498 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 8 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 0 | 15 | 15 | 15 | 15 | 0 | 13 | 15 | 1 | | | |
| | | Standard Deviation | 0.00152 | 0.00035 | 0.0084 | 0.0074 | 4.1 | 0.0000049 | 0.00000327 | 0.00070 | 0.00027 | 1.198 | 0.1944 | 0.3377 | 0.2188 | 0.00000000 | 0.00000000 | 4.1 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 2.2 | 0.00503 | 4E-11 | 0.00268 | | | |
| | | 1st Quartile | 0.00089 | 0.00062 | 0.0260 | 0.0132 | 33.6 | <0.000010 | <0.000005 | 0.00070 | 0.00056 | 0.260 | 0.0937 | 0.0446 | 0.0347 | <0.0000020 | <0.0000020 | 32.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 14.4 | <0.0050 | <0.0050 | 0.00510 | | | |
| | | Median | 0.00154 | 0.00106 | 0.0314 | 0.0169 | 35.6 | <0.000010 | 0.0000060 | 0.00081 | 0.00065 | 0.774 | 0.314 | 0.270 | 0.156 | <0.0000020 | <0.0000020 | 34.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.3 | <0.0050 | <0.0050 | 0.0063 | | | |
| | | 3rd Quartile | 0.00274 | 0.00124 | 0.0351 | 0.0200 | 36.9 | 0.0000135 | 0.0000080 | 0.00116 | 0.00076 | 1.860 | 0.4270 | 0.6080 | 0.3465 | <0.000002 | <0.000002 | 37.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 16.2 | <0.0050 | <0.0050 | 0.00690 | | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 47
# 2019-2020 Annual Report

| 2016-17 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WA | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| E0126402 | Quinsam River at Argonaut Road Upstream of Mining Operation. | Average | 0.000124 | 0.000151 | 0.0266 | 0.0212 | 21 | 0.0000056 | 0.00000272 | 0.000879 | 0.00068 | 0.021 | 0.01248 | 0.00146 | 0.00058 | 0.0000011 | 0.00000014 | 20.4 | 0.0005 | 0.00054 | 0.000118 | 0.000117 | 1.34 | 0.00250 | 0.0025 | | | | |
| | | Count | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | | | | |
| | | Minimum | <0.00010 | <0.00010 | 0.0172 | 0.0142 | 17.2 | <0.000010 | <0.0000050 | <0.00050 | 0.00035 | 0.01 | <0.0050 | <0.0010 | <0.0010 | <0.000002 | <0.0000002 | 18.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 0.97 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00029 | 0.00028 | 0.0536 | 0.0343 | 24.2 | 0.000014 | 0.000006 | 0.00356 | 0.0017 | 0.046 | 0.0238 | 0.0042 | 0.0018 | 0.0000032 | 0.0000031 | 22.2 | <0.0010 | 0.0012 | 0.00039 | 0.00037 | 2.12 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.000113 | 0.000141 | 0.025 | 0.0207 | 20.9 | 0.0000053 | 0.00000264 | 0.000749 | 0.00064 | 0.019 | 0.0112 | 0.00122 | 0.00054 | 0.00000108 | 0.00000128 | 20.4 | 0.0005 | 0.00053 | 0.000109 | 0.000109 | 1.32 | 0.00250 | 0.0025 | | | | |
| | | Count <DL | 3 | 1 | 0 | 0 | 0 | 15 | 15 | 1 | 0 | 0 | 1 | 4 | 15 | 15 | 12 | 0 | 16 | 15 | 15 | 15 | 0 | 16 | 16 | | | | |
| | | Standard Deviation | 0.000058 | 0.000056 | 0.0111 | 0.0049 | 1.5 | 0.0000023 | 0.00000088 | 0.000734 | 0.00031 | 0.009 | 0.00538 | 0.00096 | 0.00032 | 0.0000055 | 0.00000079 | 1.3 | 0 | 0.00017 | 0.000072 | 0.000067 | 0.28 | 4E-11 | 4E-11 | | | | |
| | | 1st Quartile | 0.000108 | 0.00012 | 0.0199 | 0.0174 | 20.2 | <0.000010 | <0.0000050 | 0.000658 | 0.00054 | 0.016 | 0.0093 | 0.00095 | <0.0010 | <0.0000020 | <0.0000020 | 19.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.21 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00012 | 0.000145 | 0.0232 | 0.0218 | 21.0 | <0.000010 | <0.0000050 | 0.00071 | 0.00058 | 0.02 | 0.0124 | 0.00135 | <0.0010 | <0.0000020 | <0.000002 | 20.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.3 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.000132 | 0.000155 | 0.0274 | 0.0236 | 21.8 | <0.000010 | <0.0000050 | 0.000772 | 0.0007 | 0.024 | 0.01498 | 0.00152 | <0.0010 | <0.0000020 | 0.0000014 | 21.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.44 | <0.0050 | <0.0050 | | | | |
| WD | Settling Pond #4 | Average | 0.00203 | 0.00108 | 0.0467 | 0.01319 | 366.5 | 0.0000282 | 0.00000775 | 0.00193 | 0.00059 | 0.637 | 0.0132 | 0.2017 | 0.09038 | 0.000001 | 0.000001 | 403 | 0.01831 | 0.00395 | 0.000100 | 0.000100 | 733 | 0.01471 | 0.00325 | | | | |
| E207409 | | Count | 9 | 8 | 9 | 8 | 13 | 9 | 8 | 9 | 8 | 9 | 8 | 9 | 8 | 8 | 8 | 9 | 9 | 8 | 9 | 8 | 53 | 9 | 8 | | | | |
| | | Minimum | 0.00093 | 0.00032 | 0.0045 | <0.0030 | 321 | <0.000010 | <0.0000050 | 0.00055 | 0.00024 | 0.215 | 0.0094 | 0.009 | <0.0010 | <0.0000020 | <0.0000020 | 292 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 320 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00361 | 0.00181 | 0.178 | 0.0297 | 413 | 0.000115 | 0.000033 | 0.00369 | 0.00095 | 1.33 | 0.0180 | 0.551 | 0.362 | <0.0000020 | <0.0000020 | 664 | 0.0925 | 0.0263 | <0.00020 | <0.00020 | 1170 | 0.0507 | 0.0085 | | | | |
| | | Geometric Mean | 0.00182 | 0.00095 | 0.0236 | 0.00967 | 365.4 | 0.0000131 | 0.0000048 | 0.00147 | 0.00054 | 0.506 | 0.0129 | 0.1103 | 0.02302 | 0.000001 | 0.000001 | 390 | 0.0031 | 0.0011 | 0.000100 | 0.000100 | 703 | 0.00701 | 0.00291 | | | | |
| | | Count <DL | 0 | 0 | 0 | 1 | 0 | 5 | 4 | 0 | 0 | 0 | 0 | 0 | 1 | 8 | 8 | 0 | 3 | 5 | 9 | 8 | 0 | 5 | 7 | | | | |
| | | Standard Deviation | 0.00101 | 0.00053 | 0.0564 | 0.00952 | 28.7 | 0.0000383 | 0.00001045 | 0.00139 | 0.00023 | 0.438 | 0.003 | 0.1889 | 0.12317 | 0 | 0.0000000 | 118 | 0.03134 | 0.00904 | 0.000000 | 0.000000 | 211 | 0.01837 | 0.00212 | | | | |
| | | 1st Quartile | 0.00133 | 0.00076 | 0.0064 | 0.00695 | 337 | <0.000010 | <0.0000050 | 0.00069 | 0.00044 | 0.279 | 0.0106 | 0.0893 | 0.00422 | <0.0000020 | <0.0000020 | 304 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 579 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00157 | 0.00103 | 0.0268 | 0.0102 | 375 | <0.000010 | 0.00000375 | 0.00119 | 0.00056 | 0.42 | 0.0134 | 0.137 | 0.0403 | <0.0000020 | <0.0000020 | 389 | 0.0013 | <0.0010 | <0.00020 | <0.00020 | 676 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00248 | 0.00153 | 0.0521 | 0.01992 | 387 | 0.000038 | 0.000006 | 0.00332 | 0.00073 | 0.893 | 0.0152 | 0.366 | 0.1335 | <0.0000020 | <0.0000020 | 419 | 0.0267 | 0.00135 | <0.00020 | <0.00020 | 896 | 0.0168 | <0.0050 | | | | |
| MW001D | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | | 0.0208 | | 0.1134 | 87.8 | | 0.00000425 | | 0.00204 | | 0.0968 | | 0.0078 | | 0.0000058 | | | 0.0005 | | 0.0001 | 26.8 | | 0.0025 | | 0.168 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.0193 | | 0.0989 | 87.1 | | <0.0000050 | | 0.00177 | | 0.0746 | | 0.0051 | | 0.0000048 | | | <0.0010 | | <0.00020 | 25.8 | | <0.0050 | | 0.164 | | |
| | | Maximum | | 0.0223 | | 0.128 | 88.4 | | 0.000006 | | 0.0023 | | 0.119 | | 0.0106 | | 0.0000067 | | | <0.0010 | | <0.00020 | 27.9 | | <0.0050 | | 0.172 | | |
| | | Geometric Mean | | 0.0207 | | 0.1125 | 87.7 | | 0.00000387 | | 0.00202 | | 0.0942 | | 0.0074 | | 0.0000057 | | | 0.0005 | | 0.0001 | 26.8 | | 0.0025 | | 0.168 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.0021 | | 0.0206 | 0.9 | | 0.00000247 | | 0.00037 | | 0.0314 | | 0.003900 | | 0.0000013 | | | 0 | | 0 | 1.5 | | 0 | | 0.006 | | |
| | | 1st Quartile | | 0.0201 | | 0.1062 | 87.4 | | 0.00000338 | | 0.0019 | | 0.0857 | | 0.0065 | | 0.0000053 | | | <0.0010 | | <0.00020 | 26.3 | | <0.0050 | | 0.166 | | |
| | | Median | | 0.0208 | | 0.1134 | 87.8 | | 0.00000425 | | 0.00204 | | 0.0968 | | 0.0078 | | 0.0000058 | | | <0.0010 | | <0.00020 | 26.8 | | <0.0050 | | 0.168 | | |
| | | 3rd Quartile | | 0.0216 | | 0.1207 | 88.1 | | 0.00000512 | | 0.00217 | | 0.1079 | | 0.0092 | | 0.0000062 | | | <0.0010 | | <0.00020 | 27.4 | | <0.0050 | | 0.170 | | |
| MW001S | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | | 0.00009 | | 0.01045 | 355.5 | | 0.000066 | | 0.0001 | | 0.057 | | 1.316 | | 0.0000043 | | | 0.002 | | 0.0001000 | 810 | | 0.0025 | | 0.00330 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | <0.00010 | | <0.0030 | 348 | | 0.0000291 | | <0.00020 | | 0.0284 | | 0.681 | | 0.0000032 | | | 0.0012 | | <0.00020 | 644 | | <0.0050 | | 0.003 | | |
| | | Maximum | | 0.00013 | | 0.0194 | 363 | | 0.000103 | | <0.00020 | | 0.0857 | | 1.95 | | 0.0000054 | | | 0.0027 | | <0.00020 | 977 | | <0.0050 | | 0.0036 | | |
| | | Geometric Mean | | 0.00008 | | 0.00539 | 355.4 | | 0.0000547 | | 0.0001 | | 0.0493 | | 1.152 | | 0.0000042 | | | 0.0018 | | 0.0001000 | 793 | | 0.0025 | | 0.0033 | | |
| | | Count <DL | | 1 | | 1 | 0 | | 0 | | 2 | | 0 | | 0 | | 0 | | | 0 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.000057 | | 0.01266 | 10.6 | | 0.0000523 | | 0 | | 0.0405 | | 0.897 | | 0.0000016 | | | 0.0011 | | 0.0000000 | 235 | | 0 | | 0.00040 | | |
| | | 1st Quartile | | 0.00007 | | 0.00597 | 351.8 | | 0.0000476 | | <0.00020 | | 0.0427 | | 0.998 | | 0.0000038 | | | 0.0016 | | <0.00020 | 727 | | <0.0050 | | 0.00320 | | |
| | | Median | | 0.00009 | | 0.01045 | 355.5 | | 0.000066 | | <0.00020 | | 0.057 | | 1.316 | | 0.0000043 | | | 0.002 | | <0.00020 | 810 | | <0.0050 | | 0.00330 | | |
| | | | | 0.00011 | | 0.01492 | 359.2 | | 0.000085 | | <0.00020 | | 0.0714 | | 1.633 | | 0.0000048 | | | 0.0023 | | <0.00020 | 893 | | <0.0050 | | 0.00340 | | |
| MW006D | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | | 0.0284 | | 0.021 | 80.2 | | 0.0000025 | | 0.00088 | | 0.0087 | | 0.001 | | 0.0000069 | | | 0.000500 | | 0.0001000 | 11.8 | | 0.00515 | | 0.165 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.0277 | | 0.0194 | 78.1 | | <0.0000050 | | 0.00064 | | <0.0050 | | <0.0010 | | 0.0000059 | | | <0.0010 | | <0.00020 | 11.6 | | <0.0050 | | 0.165 | | |
| | | Maximum | | 0.0291 | | 0.0226 | 82.4 | | <0.0000050 | | 0.00111 | | 0.0148 | | 0.0015 | | 0.0000079 | | | <0.0010 | | <0.00020 | 12 | | 0.0078 | | 0.165 | | |
| | | Geometric Mean | | 0.0284 | | 0.0209 | 80.2 | | 0.0000025 | | 0.00084 | | 0.00608 | | 0.00087 | | 0.0000068 | | | 0.000500 | | 0.0001000 | 11.8 | | 0.00442 | | 0.165 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 2 | | 0 | | 1 | | 1 | | 0 | | | 2 | | 2 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | | 0.001 | | 0.0023 | 3.0 | | 0.0000000 | | 0.00033 | | 0.0087 | | 0.00071 | | 0.0000014 | | | 0.000000 | | 0.0000000 | 0.3 | | 0.00375 | | 0 | | |
| | | 1st Quartile | | 0.028 | | 0.0202 | 79.2 | | <0.0000050 | | 0.00076 | | 0.00558 | | 0.00075 | | 0.0000064 | | | <0.0010 | | <0.00020 | 11.7 | | 0.00382 | | 0.165 | | |
| | | Median | | 0.0284 | | 0.021 | 80.2 | | <0.0000050 | | 0.00088 | | 0.0087 | | 0.001 | | 0.0000069 | | | <0.0010 | | <0.00020 | 11.8 | | 0.00515 | | 0.165 | | |
| | | 3rd Quartile | | 0.0288 | | 0.0218 | 81.3 | | <0.0000050 | | 0.00099 | | 0.01172 | | 0.00125 | | 0.0000074 | | | <0.0010 | | <0.00020 | 11.9 | | 0.00648 | | 0.165 | | |
| MW006S | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | | 0.00164 | | 0.00540 | 179.0 | | 0.0000225 | | 0.00082 | | 0.0156 | | 0.0501 | | 0.0000058 | | | 0.0005 | | 0.0001 | 606.5 | | 0.00250 | | 0.0556 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.00156 | | 0.0041 | 172 | | 0.000015 | | 0.0008 | | 0.0073 | | 0.0451 | | 0.0000053 | | | <0.0010 | | <0.00020 | 606 | | <0.0050 | | 0.0536 | | |
| | | Maximum | | 0.00173 | | 0.0067 | 186 | | 0.00003 | | 0.00084 | | 0.0239 | | 0.0551 | | 0.0000064 | | | <0.0010 | | <0.00020 | 607 | | <0.0050 | | 0.058 | | |
| | | Geometric Mean | | 0.00164 | | 0.0052 | 178.9 | | 0.0000212 | | 0.00082 | | 0.0132 | | 0.0498 | | 0.0000058 | | | 0.00050 | | 0.0001000 | 606.5 | | 0.0025 | | 0.0556 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.00012 | | 0.0018 | 9.9 | | 0.0000011 | | 0.000030 | | 0.0117 | | 0.0071 | | 0.0000008 | | | 0 | | 0.0000000 | 0.7 | | 0 | | 0.0028 | | |
| | | 1st Quartile | | 0.0016 | | 0.00480 | 175.5 | | 0.0000188 | | 0.00081 | | 0.0114 | | 0.0476 | | 0.0000056 | | | <0.0010 | | <0.00020 | 606.2 | | <0.0050 | | 0.0546 | | |
| | | Median | | 0.00164 | | 0.00540 | 179 | | 0.0000225 | | 0.00082 | | 0.0156 | | 0.0501 | | 0.0000058 | | | <0.0010 | | <0.00020 | 606.5 | | <0.0050 | | 0.0556 | | |
| | | 3rd Quartile | | 0.00169 | | 0.00600 | 182.5 | | 0.0000262 | | 0.00083 | | 0.0198 | | 0.0526 | | 0.0000061 | | | <0.0010 | | <0.00020 | 606.8 | | <0.0050 | | 0.0566 | | |
| WC | | Average | 0.0008 | 0.00067 | 0.019 | 0.0112 | 315 | 0.000024 | 0.0000205 | 0.000751 | 0.000413 | 0.19 | 0.0214 | 0.1125 | 0.1117 | 0.000001 | 0.000001 | 391 | 0.01929 | 0.0191 | 0.000100 | 0.000100 | 691 | 0.01013 | 0.00884 | | | | |
| E207411 | 2-North Pit Culvert discharge into Middle Quinsam Lake | Count | 7 | 7 | 7 | 7 | 2 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 6 | 6 | 7 | 7 | 7 | 7 | 7 | 12 | 7 | 7 | | | | |
| | | Minimum | 0.00054 | 0.00035 | 0.0063 | 0.0037 | 282 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.039 | 0.0095 | 0.0075 | 0.0031 | <0.0000020 | <0.0000020 | 290 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 482 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00111 | 0.00096 | 0.0416 | 0.0179 | 348 | 0.000116 | 0.000096 | 0.00176 | 0.00075 | 0.451 | 0.0506 | 0.533 | 0.545 | <0.0000020 | <0.0000020 | 524 | 0.114 | 0.111 | <0.00020 | <0.00020 | 1080 | 0.0507 | 0.0438 | | | | |
| | | Geometric Mean | 0.00078 | 0.00064 | 0.0149 | 0.0098 | 313.3 | 0.00001 | 0.00000776 | 0.00055 | 0.000348 | 0.1480 | 0.0171 | 0.036 | 0.0251 | 0.000001 | 0.000001 | 381 | 0.00219 | 0.00218 | 0.000100 | 0.000100 | 664 | 0.00451 | 0.00422 | | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 5 | 3 | 3 | 1 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 4 | 4 | 7 | 7 | 0 | 5 | 5 | | | | |
| | | Standard Deviation | 0.00022 | 0.00019 | 0.0142 | 0.0055 | 46.7 | 0.0000414 | 0.0000344 | 0.000631 | 0.000231 | 0.143 | 0.0166 | 0.1928 | 0.1998 | 2E-14 | 2E-14 | 94 | 0.0422 | 0.04109 | 0.000000 | 0.000000 | 209 | 0.01799 | 0.01546 | | | | |
| | | 1st Quartile | 0.00062 | 0.00058 | 0.0082 | 0.0068 | 298.5 | <0.000010 | <0.0000050 | <0.00050 | 0.000270 | 0.107 | 0.01020 | 0.0132 | 0.006 | <0.0000020 | <0.0000020 | 314 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 535 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00084 | 0.00066 | 0.0136 | 0.0117 | 315 | <0.000010 | 0.000006 | 0.00056 | 0.00035 | 0.132 | 0.0132 | 0.0213 | 0.0166 | <0.0000020 | <0.0000020 | 370 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 600 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00095 | 0.00078 | 0.0274 | 0.0158 | 331.5 | 0.000016 | 0.000017 | 0.001095 | 0.000575 | 0.2470 | 0.028 | 0.0998 | 0.1026 | <0.0000020 | <0.0000020 | 463 | 0.00950 | 0.01035 | <0.00020 | <0.00020 | 853 | 0.0051 | 0.00405 | | | | |
| MQL1 | Middle Quinsam Lake 1 metre below surface | Average | 0.00019 | 0.0001600 | 0.0256 | 0.0194 | 32.6 | 0.000005 | 0.00000303 | 0.000703 | 0.00061 | 0.043 | 0.0187 | 0.0059 | 0.00153 | 0.00000134 | 0.00000112 | 34.3 | 0.00067 | 0.00065 | 0.0001 | 0.0001 | 27.64 | 0.0025 | 0.00276 | 0.0036 | | | |
| E206618 | | Count | 15 | 15 | 15 | 15 | 4 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 3 | | | |
| | | Minimum | 0.00011 | 0.00011 | 0.0134 | 0.0113 | 29 | <0.000010 | <0.0000050 | <0.00050 | 0.0004 | 0.028 | 0.0064 | 0.0039 | <0.0010 | <0.0000020 | <0.0000020 | 22.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 7.66 | <0.0050 | <0.0050 | 0.0029 | | | |
| | | Maximum | 0.0008 | 0.0002 | 0.0635 | 0.0323 | 37.1 | <0.000010 | 0.000008 | 0.00114 | 0.00142 | 0.065 | 0.0309 | 0.0072 | 0.0051 | 0.0000042 | 0.0000028 | 39.5 | 0.0018 | 0.0017 | <0.00020 | <0.00020 | 38.7 | <0.0050 | 0.0064 | 0.0042 | | | |
| | | Geometric Mean | 0.00016 | 0.00016 | 0.0228 | 0.0186 | 32.5 | 0.000005 | 0.00000283 | 0.000663 | 0.00058 | 0.041 | 0.0175 | 0.0058 | 0.00094 | 0.00000118 | 0.00000107 | 34 | 0.00059 | 0.00059 | 0.0001 | 0.00010000 | 26.24 | 0.0025 | 0.00266 | 0.0035 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 13 | 1 | 0 | 0 | 0 | 0 | 10 | 13 | 14 | 0 | 13 | 13 | 15 | 15 | 0 | 15 | 14 | 0 | | | |
| | | Standard Deviation | 0.00017 | 0.00003 | 0.0144 | 0.0061 | 3.4 | 1E-13 | 0.00000152 | 0.000239 | 0.00024 | 0.013 | 0.0066 | 0.0011 | 0.00168 | 0.00000093 | 0.00000046 | 4.2 | 0.00044 | 0.00041 | 0 | 0 | 7.44 | 4E-11 | 0.00101 | 0.0007 | | | |
| | | 1st Quartile | 0.00013 | 0.00014 | 0.0165 | 0.0152 | 30.9 | <0.000010 | <0.0000050 | 0.000565 | 0.000480 | 0.032 | 0.0148 | 0.0048 | <0.0010 | <0.0000020 | <0.0000020 | 32.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 24.45 | <0.0050 | <0.0050 | 0.0032 | | | |
| | | Median | 0.00015 | 0.0001700 | 0.0203 | 0.0175 | 32.2 | <0.000010 | <0.0000050 | 0.000680 | 0.00053 | 0.038 | 0.0176 | 0.0061 | <0.0010 | <0.0000020 | <0.0000020 | 34.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 28.30 | <0.0050 | <0.0050 | 0.0036 | | | |
| | | 3rd Quartile | 0.00018 | 0.00018 | 0.031 | 0.0231 | 34 | <0.000010 | <0.0000050 | 0.00073 | 0.00064 | 0.052 | 0.0220 | 0.0068 | 0.00230 | <0.0000020 | <0.0000020 | 37.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 31.35 | <0.0050 | <0.0050 | 0.0039 | | | |
| MQLB | Middle Quinsam Lake 1 metre from bottom | Average | 0.000154 | 0.000133 | 0.0202 | 0.0164 | 34.6 | 0.000005 | 0.00000274 | 0.000559 | 0.00058 | 0.071 | 0.0238 | 0.033 | 0.02559 | 0.000001 | 0.00000100 | 34.2 | 0.00068 | 0.00067 | 0.0001 | 0.0001 | 25.8 | 0.002500 | 0.0025 | 0.00430 | | | |
| E206618 | | Count | 15 | 15 | 15 | 15 | 4 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 3 | | | |
| | | Minimum | <0.00010 | <0.00010 | 0.0076 | 0.0047 | 32.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00032 | 0.0160 | 0.0082 | 0.0017 | <0.0010 | <0.0000020 | <0.0000020 | 28.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 17 | <0.0050 | <0.0050 | 0.0031 | | | |
| | | Maximum | 0.00034 | 0.00017 | 0.043 | 0.0291 | 36 | <0.000010 | 0.0000061 | 0.00079 | 0.00093 | 0.231 | 0.0498 | 0.159 | 0.131 | <0.0000020 | <0.0000020 | 39.7 | 0.0019 | 0.0018 | <0.00020 | <0.00020 | 40 | <0.0050 | <0.0050 | 0.0059 | | | |
| | | Geometric Mean | 0.000142 | 0.000128 | 0.017 | 0.0144 | 34.5 | 0.000005 | 0.00000265 | 0.000534 | 0.000570 | 0.05 | 0.0209 | 0.0115 | 0.00414 | 0.000001 | 0.000001 | 34.1 | 0.0006 | 0.00059 | 0.0001 | 0.0001 | 25.2 | 0.0025 | 0.0025 | 0.00410 | | | |
| | | Count <DL | 1 | 1 | 0 | 0 | 0 | 15 | 14 | 2 | 0 | 0 | 0 | 0 | 5 | 15 | 15 | 0 | 13 | 13 | 15 | 15 | 0 | 15 | 15 | 0 | | | |
| | | Standard Deviation | 0.000065 | 0.000033 | 0.0123 | 0.0078 | 1.6 | 1E-13 | 0.00000093 | 0.00015 | 0.00014 | 0.07 | 0.0126 | 0.0484 | 0.04098 | 0 | 0 | 3 | 0.00048 | 0.00046 | 0 | 0.00000000 | 6.2 | 4E-11 | 4E-11 | 0.00150 | | | |
| | | 1st Quartile | 0.000115 | 0.00011 | 0.0102 | 0.00860 | 33.6 | <0.000010 | <0.0000050 | 0.000525 | 0.0005 | 0.029 | 0.0142 | 0.0042 | <0.0010 | <0.0000020 | <0.0000020 | 32.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 23 | <0.0050 | <0.0050 | 0.0034 | | | |
| | | Median | 0.00014 | 0.0001400 | 0.0166 | 0.0175 | 34.8 | <0.000010 | <0.0000050 | 0.00055 | 0.000580 | 0.038 | 0.0174 | 0.0066 | 0.0014 | <0.0000020 | <0.0000020 | 34.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 23.8 | <0.0050 | <0.0050 | 0.0038 | | | |
| | | 3rd Quartile | 0.000185 | 0.00016 | 0.0248 | 0.022 | 35.8 | <0.000010 | <0.0000050 | 0.00064 | 0.00065 | 0.076 | 0.0318 | 0.0506 | 0.04005 | <0.0000020 | <0.0000020 | 36.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 24.6 | <0.0050 | <0.0050 | 0.0048 | | | |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 48
# 2019-2020 Annual Report

| 2016-17 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NNL1** | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E217018** | No Name Lake 1 metre below surface | Average | 0.00033 | 0.000350 | 0.0418 | 0.035 | 13.6 | 0.000005 | 0.0000025 | 0.000517 | 0.00073 | 0.086 | 0.0603 | 0.005 | 0.00291 | 0.00000128 | 0.00000119 | 13.9 | 0.0005 | 0.00066 | 0.0001 | 0.0001 | 1.025 | 0.0025 | 0.0025 | 0.0087 | | | |
| | | Count | 15 | 15 | 15 | 15 | 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 3 | | | |
| | | Minimum | 0.00018 | 0.00022 | 0.0221 | 0.017 | 11.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00037 | 0.035 | 0.0325 | 0.0032 | <0.0010 | <0.0000020 | <0.0000020 | 9.96 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <0.50 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Maximum | 0.00055 | 0.00053 | 0.0803 | 0.0603 | 16.8 | <0.000010 | <0.0000050 | 0.00112 | 0.00279 | 0.127 | 0.0817 | 0.0081 | 0.0053 | 0.000004 | 0.0000025 | 19.4 | <0.0010 | 0.0029 | <0.00020 | <0.00020 | 1.95 | <0.0050 | <0.0050 | 0.0163 | | | |
| | | Geometric Mean | 0.00031 | 0.00033 | 0.0376 | 0.0327 | 13.4 | 0.00000500 | 0.0000025 | 0.000454 | 0.00063 | 0.08 | 0.058 | 0.00480 | 0.00248 | 0.00000116 | 0.00000112 | 13.64 | 0.0005 | 0.00056 | 0.0001 | 0.0001 | 0.849 | 0.0025 | 0.0025 | 0.00523 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 6 | 0 | 0 | 0 | 0 | 1 | 13 | 13 | 0 | 15 | 14 | 15 | 15 | 3 | 15 | 15 | 1 | | | |
| | | Standard Deviation | 0.000130 | 0.00012 | 0.0208 | 0.0135 | 2.7 | 1E-13 | 1E-13 | 0.00027 | 0.00059 | 0.03 | 0.0162 | 0.0014 | 0.00148 | 0.00000081 | 0.00000049 | 2.87 | 0 | 0.00062 | 0.00000000 | 0 | 0.553 | 4E-11 | 4E-11 | 0.00765 | | | |
| | | 1st Quartile | 0.00024 | 0.00025 | 0.0256 | 0.0232 | 11.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00048 | 0.058 | 0.0501 | 0.0043 | 0.00195 | <0.0000020 | <0.0000020 | 11.95 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 0.755 | <0.0050 | <0.0050 | 0.0049 | | | |
| | | Median | 0.00028 | 0.000310 | 0.0305 | 0.0317 | 12.2 | <0.000010 | <0.0000050 | 0.00056 | 0.00055 | 0.093 | 0.0635 | 0.00460 | 0.00310 | <0.0000020 | <0.0000020 | 12.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 0.97 | <0.0050 | <0.0050 | 0.0088 | | | |
| | | 3rd Quartile | 0.00046 | 0.00048 | 0.0639 | 0.0487 | 16.3 | <0.000010 | <0.0000050 | 0.00064 | 0.0007 | 0.107 | 0.0718 | 0.0055 | 0.00425 | <0.0000020 | <0.0000020 | 16.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.42 | <0.0050 | <0.0050 | 0.01255 | | | |
| **NNLB** | No Name Lake 1 metre from bottom | Average | 0.00025 | 0.00022 | 0.0478 | 0.0384 | 10.4 | 0.000005 | 0.0000025 | 0.000441 | 0.00049 | 0.136 | 0.0812 | 0.011 | 0.00672 | 0.00000107 | 0.00000109 | 12.6 | 0.0005 | 0.00068 | 0.0001 | 0.0001 | 2.62 | 0.0025 | 0.003070 | 0.00500 | | | |
| **E217018** | | Count | 15 | 15 | 15 | 15 | 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 3 | | | |
| | | Minimum | 0.00017 | 0.00017 | 0.0338 | 0.0309 | 9.72 | <0.000010 | <0.0000050 | <0.00050 | 0.00026 | 0.049 | 0.0303 | 0.0024 | <0.0010 | <0.0000020 | <0.0000020 | 11 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 0.68 | <0.0050 | <0.0050 | 0.0027 | | | |
| | | Maximum | 0.00037 | 0.00029 | 0.0756 | 0.0549 | 11.3 | <0.000010 | <0.0000050 | 0.00111 | 0.00091 | 0.255 | 0.168 | 0.0364 | 0.0291 | 0.0000021 | 0.0000023 | 14.5 | <0.0010 | 0.0032 | <0.00020 | <0.00020 | 3.77 | <0.0050 | 0.0111 | 0.0065 | | | |
| | | Geometric Mean | 0.00024 | 0.000220 | 0.0466 | 0.0377 | 10.39 | 0.000005 | 0.0000025 | 0.000387 | 0.00046 | 0.119 | 0.0721 | 0.0079 | 0.00383 | 0.00000105 | 0.00000106 | 12.5 | 0.0005000 | 0.00057 | 0.0001 | 0.0001 | 2.36 | 0.0025 | 0.00276 | 0.00470 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 8 | 0 | 0 | 0 | 0 | 1 | 14 | 14 | 0 | 15 | 14 | 15 | 15 | 0 | 15 | 14 | 0 | | | |
| | | Standard Deviation | 0.00006 | 0.00004 | 0.0118 | 0.0076 | 0.59 | 1E-13 | 1E-13 | 0.00025 | 0.00017 | 0.067 | 0.0401 | 0.0097 | 0.00756 | 0.00000028 | 0.00000034 | 1.1 | 0 | 0.0007000 | 0 | 0 | 0.99 | 4E-11 | 0.002220 | 0.00200 | | | |
| | | 1st Quartile | 0.0002 | 0.00019 | 0.0408 | 0.0327 | 10.1 | <0.000010 | <0.0000050 | <0.00050 | 0.00037 | 0.065 | 0.0507 | 0.0036 | 0.00145 | <0.0000020 | <0.0000020 | 11.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.49 | <0.0050 | <0.0050 | 0.0043 | | | |
| | | Median | 0.00023 | 0.0002 | 0.0438 | 0.0358 | 10.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00048 | 0.141 | 0.0830 | 0.0092 | 0.0059 | <0.0000020 | <0.0000020 | 12.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.78 | <0.0050 | <0.0050 | 0.0059 | | | |
| | | 3rd Quartile | 0.0003 | 0.00026 | 0.0528 | 0.0395 | 10.6 | <0.000010 | <0.0000050 | 0.000585 | 0.00054 | 0.181 | 0.0957 | 0.0138 | 0.0088 | <0.0000020 | <0.0000020 | 13.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.32 | <0.0050 | <0.0050 | 0.0062 | | | |
| **NNO** | No Name Lake Outlet | Average | 0.00036 | 0.00034 | 0.0457 | 0.0352 | 13.16 | 0.0000077 | 0.00000283 | 0.000591 | 0.00054 | 0.091 | 0.0582 | 0.006 | 0.00256 | 0.0000024 | 0.0000013 | 14 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.2 | 0.0025 | 0.0025 | 0.0082 | 0.0097 | | |
| **E217017** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 2 | 2 | | |
| | | Minimum | 0.00017 | 0.0002 | 0.0257 | 0.0192 | 9.74 | <0.000010 | <0.0000050 | <0.00050 | 0.00021 | 0.03 | 0.0252 | 0.0031 | <0.0010 | <0.000002 | <0.000002 | 10.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 0.58 | <0.0050 | <0.0050 | 0.0066 | 0.0084 | | |
| | | Maximum | 0.00061 | 0.00055 | 0.0766 | 0.0588 | 17.5 | 0.000046 | 0.0000050 | 0.00188 | 0.00094 | 0.152 | 0.084 | 0.0166 | 0.0051 | 0.0000074 | 0.0000033 | 18 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.06 | <0.0050 | <0.0050 | 0.0099 | 0.011 | | |
| | | Geometric Mean | 0.00033 | 0.00033 | 0.0423 | 0.0330 | 12.93 | 0.0000058 | 0.00000274 | 0.000484 | 0.00052 | 0.082 | 0.0546 | 0.0054 | 0.00203 | 0.00000169 | 0.00000117 | 13.8 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.11 | 0.0025 | 0.0025 | 0.0081 | 0.0096 | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 14 | 13 | 6 | 0 | 0 | 0 | 0 | 3 | 10 | 13 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | 0 | | |
| | | Standard Deviation | 0.00015 | 0.00012 | 0.0189 | 0.0135 | 2.6 | 0.0000106 | 0.00000088 | 0.000434 | 0.00017 | 0.0390 | 0.0193 | 0.0033 | 0.00144 | 0.00000229 | 0.00000079 | 2.5 | 0 | 0.00000 | 0.000000 | 0.000000 | 0.5 | 4E-11 | 4E-11 | 0.0023 | 0.0018 | | |
| | | 1st Quartile | 0.00022 | 0.00026 | 0.0309 | 0.0247 | 11.1 | <0.000010 | <0.0000050 | <0.00050 | 0.00047 | 0.056 | 0.0434 | 0.0044 | 0.00165 | <0.0000020 | <0.0000020 | 12.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 0.88 | <0.0050 | <0.0050 | 0.0074 | 0.009 | | |
| | | Median | 0.00031 | 0.0003 | 0.0374 | 0.0307 | 12.5 | <0.000010 | <0.0000050 | 0.00056 | 0.00053 | 0.095 | 0.0624 | 0.0051 | 0.0026 | <0.0000020 | <0.0000020 | 12.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.05 | <0.0050 | <0.0050 | 0.0082 | 0.0097 | | |
| | | 3rd Quartile | 0.00048 | 0.00044 | 0.0655 | 0.0454 | 15.5 | <0.000010 | <0.0000050 | 0.00066 | 0.00055 | 0.118 | 0.0728 | 0.0066 | 0.0033 | 0.00000315 | <0.0000020 | 16.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.68 | <0.0050 | <0.0050 | 0.0091 | 0.0104 | | |
| **LLS** | Small Seep into Long Lake | Average | 0.00376 | 0.0017 | 0.0081 | 0.0065 | 233.4 | 0.00000500 | 0.00000667 | 0.000273 | 0.000236 | 1.159 | 0.00598 | 0.288 | 0.286 | 0.0000011 | 0.0000010 | 556 | 0.0016 | 0.0015 | 0.000100 | 0.0001 | 500 | 0.00282 | 0.0025 | 0.0021 | | | |
| **E292131** | | Count | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 3 | | | |
| | | Minimum | 0.00077 | 0.00055 | <0.0030 | <0.0030 | 201 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.255 | <0.0050 | 0.159 | 0.152 | <0.0000020 | <0.0000020 | 431 | 0.0011 | 0.0011 | <0.00020 | <0.00020 | 333 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Maximum | 0.00939 | 0.00292 | 0.0206 | 0.0128 | 256 | <0.000010 | 0.000049 | 0.00053 | 0.00051 | 3.6 | 0.022 | 0.439 | 0.443 | 0.0000025 | <0.0000020 | 744 | 0.0028 | 0.0025 | <0.00020 | <0.00020 | 656 | 0.0064 | <0.0050 | 0.003 | | | |
| | | Geometric Mean | 0.00292 | 0.00148 | 0.00551 | 0.00533 | 232.8 | 0.000005 | 0.00000345 | 0.000266 | 0.00019 | 0.857 | 0.00384 | 0.272 | 0.27 | 0.00000108 | 0.000001 | 548 | 0.0015 | 0.0015 | 0.000100 | 0.0001 | 488 | 0.0027 | 0.0025 | 0.0019 | | | |
| | | Count <DL | 0 | 0 | 3 | 2 | 0 | 12 | 10 | 11 | 6 | 0 | 9 | 0 | 0 | 11 | 12 | 0 | 0 | 0 | 12 | 12 | 0 | 11 | 12 | 1 | | | |
| | | Standard Deviation | 0.00257 | 0.00083 | 0.00669 | 0.00383 | 17 | 1E-13 | 0.00001337 | 0.000081 | 0.000158 | 0.968 | 0.00745 | 0.096 | 0.095 | 0.00000043 | 0 | 96 | 0.0005 | 0.0005 | 0.000000 | 0.000000 | 114 | 0.00113 | 1E-10 | 0.00101 | | | |
| | | 1st Quartile | 0.00176 | 0.00089 | 0.00285 | 0.00428 | 226 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.492 | <0.0050 | 0.22 | 0.222 | <0.0000020 | <0.0000020 | 458 | 0.0013 | 0.0013 | <0.00020 | <0.00020 | 393 | <0.0050 | <0.0050 | 0.00165 | | | |
| | | Median | 0.00348 | 0.00172 | 0.0056 | 0.0054 | 231.5 | <0.000010 | <0.0000050 | <0.00050 | 0.000170 | 0.91 | <0.0050 | 0.300 | 0.289 | <0.0000020 | <0.0000020 | 574 | 0.0014 | 0.0013 | <0.00020 | <0.00020 | 543 | <0.0050 | <0.0050 | 0.0023 | | | |
| | | 3rd Quartile | 0.00537 | 0.00237 | 0.01478 | 0.0094 | 246.5 | <0.000010 | <0.0000050 | <0.00050 | 0.000360 | 1.56 | 0.00328 | 0.359 | 0.354 | <0.0000020 | <0.0000020 | 612 | 0.0016 | 0.0016 | <0.00020 | <0.00020 | 571 | <0.0050 | <0.0050 | 0.00265 | | | |
| **LLSM** | Long Lake Middle Seep | Average | 0.00181 | 0.00122 | 0.02865 | 0.01710 | 212.9 | 0.000005 | 0.00000531 | 0.000483 | 0.000408 | 0.562 | 0.00579 | 0.1786 | 0.1749 | 0.000001 | 0.000001 | 525 | 0.0021 | 0.0021 | 0.0001 | 0.0001 | 470 | 0.0025 | 0.0025 | | | | |
| **E292131** | | Count | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | | | | |
| | | Minimum | 0.00111 | 0.00048 | <0.0030 | 0.004 | 163 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.288 | <0.0050 | 0.0842 | 0.0902 | <0.0000020 | <0.0000020 | 377 | 0.0016 | 0.0016 | <0.00020 | <0.00020 | 320 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00282 | 0.00178 | 0.107 | 0.0613 | 235 | <0.000010 | 0.000017 | 0.00154 | 0.00081 | 0.758 | 0.0144 | 0.281 | 0.252 | <0.0000020 | <0.0000020 | 653 | 0.0035 | 0.0032 | <0.00020 | <0.00020 | 519 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.00172 | 0.00115 | 0.01314 | 0.0113 | 211.7 | 0.000005 | 0.00000401 | 0.000364 | 0.00035 | 0.532 | 0.00434 | 0.1671 | 0.164 | 0.000001 | 0.000001 | 518 | 0.002 | 0.0021 | 0.000100 | 0.0001 | 466 | 0.0025 | 0.00250 | | | | |
| | | Count <DL | 0 | 0 | 1 | 0 | 0 | 8 | 5 | 6 | 1 | 0 | 5 | 0 | 0 | 8 | 8 | 0 | 0 | 0 | 8 | 8 | 0 | 8 | 8 | | | | |
| | | Standard Deviation | 0.00061 | 0.00042 | 0.03627 | 0.0191 | 22.6 | 1E-13 | 0.00000512 | 0.000472 | 0.00022 | 0.182 | 0.00491 | 0.0661 | 0.0629 | 0.0000000 | 0.0000000 | 86 | 0.0006 | 0.0005 | 0 | 0 | 66 | 3E-11 | 3E-11 | | | | |
| | | 1st Quartile | 0.00128 | 0.00107 | 0.00402 | 0.0052 | 209 | <0.000010 | <0.0000050 | <0.00050 | 0.000235 | 0.414 | <0.0050 | 0.1360 | 0.1272 | <0.0000020 | <0.0000020 | 473 | 0.0017 | 0.0018 | <0.00020 | <0.00020 | 459 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00176 | 0.0011 | 0.01645 | 0.0108 | 216.5 | <0.000010 | <0.0000050 | <0.00050 | 0.00043 | 0.602 | <0.0050 | 0.1775 | 0.1790 | <0.0000020 | <0.0000020 | 535 | 0.002 | 0.002 | <0.00020 | <0.00020 | 491 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.0022 | 0.00153 | 0.03158 | 0.0173 | 227 | <0.000010 | 0.00000575 | 0.000392 | 0.000508 | 0.72 | 0.0086 | 0.2222 | 0.2275 | <0.0000020 | <0.0000020 | 580 | 0.0021 | 0.0022 | <0.00020 | <0.00020 | 512 | <0.0050 | <0.0050 | | | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 49
# 2019-2020 Annual Report

| 2016-17 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **MW002** | Ex-situ 2-3 South shallow groundwater well beside 3-South Pit (1 Seam) | Average | | 0.0006 | | 0.00395 | 203.2 | | 0.0000081 | | 0.000100 | | 2.68 | | 2.53 | | 0.0000031 | | | 0.0027 | | 0.000100 | 1265 | | 0.0025 | | 0.00190 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.0004 | | <0.0030 | 187 | | <0.0000050 | | <0.00020 | | 2.39 | | 2.4 | | <0.0000020 | | | 0.0025 | | <0.00020 | 1210 | | <0.0050 | | <0.0020 | | |
| | | Maximum | | 0.00082 | | 0.0097 | 215 | | 0.000012 | | <0.00020 | | 3.07 | | 2.68 | | 0.0000051 | | | 0.0029 | | <0.00020 | 1320 | | <0.0050 | | 0.0046 | | |
| | | Geometric Mean | | 0.00058 | | 0.00287 | 203 | | 0.0000068 | | 0.0001 | | 2.67 | | 2.53 | | 0.0000027 | | | 0.0027 | | 0.000100 | 1264 | | 0.0025 | | 0.00146 | | |
| | | Count <DL | | 0 | | 2 | 0 | | 1 | | 4 | | 0 | | 0 | | 1 | | | 0 | | 4 | 0 | | 4 | | 3 | | |
| | | Standard Deviation | | 0.0002 | | 0.00391 | 11.7 | | 0.0000047 | | 0 | | 0.29 | | 0.12 | | 0.0000017 | | | 0.0002 | | 0.000000 | 49 | | 0 | | 0.0018 | | |
| | | 1st Quartile | | 0.00046 | | <0.0030 | 200.5 | | 0.00000512 | | <0.00020 | | 2.51 | | 2.48 | | 0.0000025 | | | 0.0026 | | <0.00020 | 1232 | | <0.0050 | | <0.0020 | | |
| | | Median | | 0.0006 | | 0.0023 | 205.5 | | 0.000009 | | <0.00020 | | 2.62 | | 2.51 | | 0.00000315 | | | 0.0026 | | <0.00020 | 1265 | | <0.0050 | | <0.0020 | | |
| | | 3rd Quartile | | 0.00074 | | 0.00475 | 208.2 | | 0.000012 | | <0.00020 | | 2.79 | | 2.56 | | 0.00000375 | | | 0.0028 | | <0.00020 | 1297 | | <0.0050 | | 0.00190 | | |
| **QU1009D** | Ex-situ 4-South deep groundwater well. Down gradient of 4-South Mine. Base of Dunsmuir Member. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | | 0.0988 | | 0.00150 | 186 | | 0.0000025 | | 0.000100 | | 0.544 | | 0.131 | | 0.0000028 | | | 0.000500 | | 0.0001000 | 89.3 | | 0.00250 | | 0.0403 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.098 | | <0.0030 | 184 | | <0.0000050 | | <0.00020 | | 0.346 | | 0.115 | | <0.0000020 | | | <0.0010 | | <0.00020 | 84.8 | | <0.0050 | | 0.0338 | | |
| | | Maximum | | 0.1 | | <0.0030 | 188 | | <0.0000050 | | <0.00020 | | 0.741 | | 0.147 | | 0.0000045 | | | <0.0010 | | <0.00020 | 93.8 | | <0.0050 | | 0.0468 | | |
| | | Geometric Mean | | 0.0988 | | 0.0015 | 186 | | 0.0000025 | | 0.000100 | | 0.506 | | 0.13 | | 0.0000021 | | | 0.000500 | | 0.0001000 | 89.2 | | 0.00250 | | 0.0398 | | |
| | | Count <DL | | 0 | | 2 | 0 | | 2 | | 2 | | 0 | | 0 | | 1 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.0016 | | 0 | 2.8 | | 0.0000000 | | 0.000000 | | 0.279 | | 0.023 | | 0.0000025 | | | 0.000000 | | 0.0000000 | 6.4 | | 0.00000 | | 0.0092 | | |
| | | 1st Quartile | | 0.0983 | | <0.0030 | 185 | | <0.0000050 | | <0.00020 | | 0.445 | | 0.123 | | 0.00000188 | | | <0.0010 | | <0.00020 | 87 | | <0.0050 | | 0.037 | | |
| | | Median | | 0.0988 | | <0.0030 | 186 | | <0.0000050 | | <0.00020 | | 0.544 | | 0.131 | | 0.00000275 | | | <0.0010 | | <0.00020 | 89.3 | | <0.0050 | | 0.0403 | | |
| | | 3rd Quartile | | 0.0994 | | <0.0030 | 187 | | <0.0000050 | | <0.00020 | | 0.642 | | 0.139 | | 0.00000362 | | | <0.0010 | | <0.00020 | 91.6 | | <0.0050 | | 0.0436 | | |
| **QU1009S** | Ex-situ 4-South shallow groundwater well. Fracture zone 10 m below till. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | | 0.0868 | | 0.00150 | 144.5 | | 0.0000025 | | 0.000100 | | 5.4 | | 0.38 | | 0.0000046 | | | 0.000500 | | 0.0001000 | 112.5 | | 0.00250 | | 0.0290 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.0829 | | <0.0030 | 132 | | <0.0000050 | | <0.00020 | | 5.07 | | 0.354 | | 0.0000033 | | | <0.0010 | | <0.00020 | 109 | | <0.0050 | | 0.0232 | | |
| | | Maximum | | 0.0907 | | <0.0030 | 157 | | <0.0000050 | | <0.00020 | | 5.72 | | 0.405 | | 0.0000058 | | | <0.0010 | | <0.00020 | 116 | | <0.0050 | | 0.0347 | | |
| | | Geometric Mean | | 0.0867 | | 0.0015 | 144 | | 0.0000025 | | 0.000100 | | 5.39 | | 0.379 | | 0.0000044 | | | 0.0005 | | 0.0001000 | 112.4 | | 0.00250 | | 0.0284 | | |
| | | Count <DL | | 0 | | 2 | 0 | | 2 | | 2 | | 0 | | 0 | | 0 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.0055 | | 0 | 17.7 | | 0.0000000 | | 0.000000 | | 0.46 | | 0.036 | | 0.0000018 | | | 0 | | 0.0000000 | 4.9 | | 0.00000 | | 0.0081 | | |
| | | 1st Quartile | | 0.0849 | | <0.0030 | 138.2 | | <0.0000050 | | <0.00020 | | 5.23 | | 0.367 | | 0.0000039 | | | <0.0010 | | <0.00020 | 110.8 | | <0.0050 | | 0.0261 | | |
| | | Median | | 0.0868 | | <0.0030 | 144.5 | | <0.0000050 | | <0.00020 | | 5.4 | | 0.38 | | 0.0000046 | | | <0.0010 | | <0.00020 | 112.5 | | <0.0050 | | 0.029 | | |
| | | 3rd Quartile | | 0.0888 | | <0.0030 | 150.8 | | <0.0000050 | | <0.00020 | | 5.56 | | 0.392 | | 0.0000052 | | | <0.0010 | | <0.00020 | 114.2 | | <0.0050 | | 0.0318 | | |
| **SPD** | Settling Pond # 1 | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E218582** | | Average | 0.00093 | 0.00064 | 0.0597 | 0.01586 | 102.00 | 0.000005 | 0.00000438 | 0.001293 | 0.00076 | 0.893 | 0.0812 | 0.1021 | 0.09174 | 0.00000116 | 0.000001 | 318.3 | 0.00269 | 0.00255 | 0.0001 | 0.000100 | 282.6 | 0.00250 | 0.0025 | 0.0105 | 0.0073 | | |
| | | Count | 12 | 12 | 12 | 12 | 10 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 45 | 12 | 12 | 10 | 11 | | |
| | | Minimum | 0.0003 | 0.00023 | 0.0032 | <0.0030 | 22.50 | <0.000010 | <0.0000050 | <0.00050 | 0.00031 | 0.145 | 0.0102 | 0.0059 | <0.0010 | <0.0000020 | <0.0000020 | 37.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 32.8 | <0.0050 | <0.0050 | 0.0053 | 0.0026 | | |
| | | Maximum | 0.00335 | 0.00273 | 0.254 | 0.0768 | 280.0 | <0.000010 | 0.000015 | 0.00321 | 0.00153 | 2.85 | 0.138 | 0.544 | 0.56 | 0.0000029 | <0.0000020 | 520 | 0.0067 | 0.0073 | <0.00020 | <0.00020 | 632 | <0.0050 | <0.0050 | 0.0218 | 0.0228 | | |
| | | Geometric Mean | 0.00075 | 0.00049 | 0.0284 | 0.00978 | 81 | 0.000005 | 0.00000357 | 0.001085 | 0.00071 | 0.501 | 0.0619 | 0.0541 | 0.0194 | 0.0000011 | 0.0000010 | 266.6 | 0.00189 | 0.00171 | 0.0001 | 0.000100 | 225.40 | 0.0025 | 0.0025 | 0.0095 | 0.00600 | | |
| | | Count <DL | 0 | 0 | 0 | 1 | 0 | 12 | 8 | 1 | 0 | 0 | 0 | 0 | 3 | 11 | 12 | 0 | 2 | 3 | 12 | 12 | 0 | 12 | 12 | 0 | 0 | | |
| | | Standard Deviation | 0.00080 | 0.00068 | 0.0715 | 0.02031 | 74.1 | 1E-13 | 0.00000371 | 0.000791 | 0.00031 | 0.969 | 0.0507 | 0.1468 | 0.15459 | 0.0000006 | 0 | 150.4 | 0.00226 | 0.00228 | 0.000000 | 0.000000 | 163.3 | 1E-10 | 1E-10 | 0.0053 | 0.0058 | | |
| | | 1st Quartile | 0.00055 | 0.00032 | 0.0069 | 0.00538 | 48.8 | <0.000010 | <0.0000050 | 0.00091 | 0.00058 | 0.202 | 0.0331 | 0.0271 | 0.0044 | <0.0000020 | <0.0000020 | 183.5 | 0.001 | 0.00095 | <0.00020 | <0.00020 | 151 | <0.0050 | <0.0050 | 0.0071 | 0.004 | | |
| | | Median | 0.00074 | 0.0004 | 0.0386 | 0.0106 | 92 | <0.000010 | <0.0000050 | 0.00103 | 0.00074 | 0.298 | 0.0934 | 0.0607 | 0.04905 | <0.0000020 | <0.0000020 | 341.5 | 0.00165 | 0.0014 | <0.00020 | <0.00020 | 267.00 | <0.0050 | <0.0050 | 0.0088 | 0.0055 | | |
| | | 3rd Quartile | 0.00099 | 0.00063 | 0.0866 | 0.01485 | 118.5 | <0.000010 | 0.00000500 | 0.001655 | 0.00082 | 1.748 | 0.1260 | 0.0921 | 0.09335 | <0.0000020 | <0.0000020 | 440.5 | 0.0037 | 0.00342 | <0.00020 | <0.00020 | 441 | <0.0050 | <0.0050 | 0.01040 | 0.0087 | | |
| **LLE** | Long Lake Entrance (LLE) | Average | 0.00085 | 0.00072 | 0.065 | 0.02323 | 71.9 | 0.00000500 | 0.00000282 | 0.000583 | 0.00046 | 0.327 | 0.165 | 0.0499 | 0.0472 | 0.00000135 | 0.0000014 | 268.8 | 0.00050 | 0.0005 | 0.0001 | 0.000100 | 229.6 | 0.0025 | 0.00250 | 0.0081 | 0.0084 | 0.0395 | 0.01663 |
| **E292130** | | Count | 14 | 14 | 14 | 14 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 13 | 13 | 14 | 14 | 14 | 14 | 14 | 52 | 14 | 14 | 13 | 2 | 12 | 12 |
| | | Minimum | 0.00055 | 0.00049 | 0.0071 | <0.0030 | 38.1 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.142 | 0.0306 | 0.0184 | 0.0024 | <0.0000020 | <0.0000020 | 95.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 81.3 | <0.0050 | <0.0050 | 0.004 | 0.0063 | <0.020 | <0.0050 |
| | | Maximum | 0.00144 | 0.00119 | 0.192 | 0.0676 | 106 | <0.000010 | 0.000007 | 0.00131 | 0.00072 | 0.812 | 0.595 | 0.107 | 0.119 | 0.0000028 | 0.0000058 | 610 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 566 | <0.0050 | <0.0050 | 0.0182 | 0.0106 | 0.105 | 0.0560 |
| | | Geometric Mean | 0.00082 | 0.0007 | 0.0402 | 0.01441 | 68.8 | 0.000005 | 0.00000269 | 0.0005 | 0.000423 | 0.298 | 0.1246 | 0.0453 | 0.0355 | 0.00000123 | 0.00000114 | 219.9 | 0.0005 | 0.0005 | 0.0001 | 0.000100 | 198.6 | 0.0025 | 0.00250 | 0.0074 | 0.0082 | 0.0269 | 0.0109 |
| | | Count <DL | 0 | 0 | 0 | 1 | 0 | 14 | 13 | 5 | 1 | 0 | 0 | 0 | 0 | 10 | 12 | 0 | 14 | 14 | 14 | 14 | 0 | 14 | 14 | 0 | 0 | 5 | 3 |
| | | Standard Deviation | 0.00024 | 0.00019 | 0.0572 | 0.01985 | 21.2 | 1E-13 | 0.0000012 | 0.000328 | 0.000158 | 0.166 | 0.1477 | 0.0232 | 0.0299 | 0.00000067 | 0.00000133 | 179.1 | 0 | 0 | 0 | 0.000000 | 133.7 | 1E-10 | 0.00000 | 0.0038 | 0.003 | 0.0328 | 0.01515 |
| | | 1st Quartile | 0.00067 | 0.00056 | 0.0141 | 0.0062 | 58.8 | <0.000010 | <0.0000050 | <0.00050 | 0.00038 | 0.24 | 0.093 | 0.035 | 0.0273 | <0.0000020 | <0.0000020 | 135.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 139.8 | <0.0050 | <0.0050 | 0.0062 | 0.0074 | <0.020 | 0.00542 |
| | | Median | 0.0008 | 0.00072 | 0.0601 | 0.02075 | 73.1 | <0.000010 | <0.0000050 | 0.00055 | 0.00047 | 0.302 | 0.119 | 0.0468 | 0.0496 | <0.0000020 | <0.0000020 | 197.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 183.5 | <0.0050 | <0.0050 | 0.007 | 0.0084 | 0.028 | 0.015 |
| | | 3rd Quartile | 0.00091 | 0.00076 | 0.0959 | 0.03645 | 87.4 | <0.000010 | <0.0000050 | 0.000742 | 0.000568 | 0.326 | 0.1755 | 0.060 | 0.0598 | <0.0000020 | <0.0000020 | 397.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 267.2 | <0.0050 | <0.0050 | 0.00970 | 0.0095 | 0.0652 | 0.02325 |
| **LLM1** | Long Lake Middle 1 metre below Surface | Average | 0.00047 | 0.00044 | 0.0324 | 0.0256 | 31.9 | 0.00000500 | 0.00000485 | 0.000433 | 0.00053 | 0.068 | 0.0407 | 0.0084 | 0.0027 | 0.00000108 | 0.00000126 | 63.1 | 0.00050 | 0.00050 | 0.0001000 | 0.000100 | 50.43 | 0.00250 | 0.00250 | 0.0038 | | | |
| **E206619** | | Count | 15 | 15 | 15 | 15 | 6 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 5 | | | |
| | | Minimum | 0.00034 | 0.0003 | 0.0073 | 0.0066 | 13.4 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.032 | 0.0193 | 0.0043 | <0.0010 | <0.000002 | <0.000002 | 12.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.6 | <0.0050 | <0.0050 | 0.0027 | | | |
| | | Maximum | 0.00071 | 0.00063 | 0.0775 | 0.0513 | 37.8 | <0.000010 | 0.0000241 | 0.00132 | 0.001 | 0.127 | 0.0719 | 0.0204 | 0.0107 | 0.0000022 | 0.0000035 | 91.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 81.1 | <0.0050 | <0.0050 | 0.0057 | | | |
| | | Geometric Mean | 0.00045 | 0.00043 | 0.0233 | 0.0206 | 30.2 | 0.000005 | 0.00000341 | 0.00037 | 0.000469 | 0.062 | 0.0371 | 0.0076 | 0.0016 | 0.00000105 | 0.00000115 | 52.5 | 0.00050 | 0.00050 | 0.0001000 | 0.000100 | 35.94 | 0.0025 | 0.00250 | 0.0037 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 12 | 9 | 1 | 0 | 0 | 0 | 6 | 14 | 13 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | | | |
| | | Standard Deviation | 0.00012 | 0.00011 | 0.0265 | 0.0170 | 9.3 | 0.00000000 | 0.00000606 | 0.000295 | 0.000225 | 0.032 | 0.0185 | 0.0044 | 0.00288 | 0.00000031 | 0.00000072 | 29.7 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 27.88 | 4E-11 | 0.00000 | 0.0012 | | | |
| | | 1st Quartile | 0.00038 | 0.00036 | 0.0114 | 0.0124 | 33.2 | <0.000010 | <0.0000050 | <0.00050 | 0.000385 | 0.044 | 0.0276 | 0.0052 | <0.0010 | <0.0000020 | <0.0000020 | 39 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 30.85 | <0.0050 | <0.0050 | 0.003 | | | |
| | | Median | 0.0004 | 0.0004 | 0.018 | 0.018 | 35.4 | <0.000010 | <0.0000050 | <0.00050 | 0.0005 | 0.059 | 0.033 | 0.0077 | 0.002 | <0.0000020 | <0.000002 | 76.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 62.5 | <0.0050 | <0.0050 | 0.0033 | | | |
| | | 3rd Quartile | 0.0006 | 0.00055 | 0.0584 | 0.0445 | 36.8 | <0.000010 | <0.0000050 | 0.000565 | 0.000615 | 0.0940 | 0.0562 | 0.0088 | 0.0034 | <0.0000020 | <0.0000020 | 84.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 69.45 | <0.0050 | <0.0050 | 0.0043 | | | |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 50
# 2019-2020 Annual Report

| 2016-17 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **LLMB** | Long Lake Middle 1 metre From Bottom | Average | 0.00029 | 0.00024 | 0.0168 | 0.0119 | 48.8 | 0.00000500 | 0.00000411 | 0.00039 | 0.000419 | 0.052 | 0.01493 | 0.3531 | 0.1721 | 0.000001 | 0.000001 | 134 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | | 0.00250 | 0.00250 | 0.00360 | | | |
| **E206619** | | Count | 15 | 15 | 15 | 15 | 6 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 5 | | | |
| | | Minimum | 0.00017 | 0.00019 | 0.0095 | 0.0044 | 47.1 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.026 | <0.0050 | 0.0378 | <0.0010 | <0.000002 | <0.000002 | 87.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 123 | <0.0050 | <0.0050 | 0.003 | | | |
| | | Maximum | 0.00034 | 0.00029 | 0.0278 | 0.0236 | 50.3 | <0.000010 | 0.0000186 | 0.00085 | 0.00091 | 0.075 | 0.0317 | 1.02 | 0.62 | <0.000002 | <0.000002 | 158 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 138 | <0.0050 | <0.0050 | 0.0047 | | | |
| | | Geometric Mean | 0.00029 | 0.00024 | 0.016 | 0.0101 | 48.7 | 0.000005 | 0.00000314 | 0.000346 | 0.000385 | 0.05 | 0.01112 | 0.2128 | 0.03415 | 0.000001 | 0.000001 | 133 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 131.1 | 0.00250 | 0.00250 | 0.00360 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 13 | 10 | 1 | 0 | 2 | 0 | 3 | 15 | 15 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | | | |
| | | Standard Deviation | 0.00004 | 0.00003 | 0.0057 | 0.0068 | 1.3 | 1E-13 | 0.00000451 | 0.000214 | 0.000172 | 0.013 | 0.0106 | 0.337 | 0.2069 | 0 | 0 | 15.4 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 3.4 | 4E-11 | 0.00000 | 0.00070 | | | |
| | | 1st Quartile | 0.00028 | 0.00022 | 0.013 | 0.0051 | 48 | <0.000010 | <0.0000050 | <0.00050 | 0.00035 | 0.043 | 0.00605 | 0.0754 | 0.02275 | <0.0000020 | <0.0000020 | 131 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 130 | <0.0050 | <0.0050 | 0.0031 | | | |
| | | Median | 0.00029 | 0.00024 | 0.0144 | 0.0107 | 48.4 | <0.000010 | <0.0000050 | <0.00050 | 0.00041 | 0.05 | 0.01180 | 0.174 | 0.0506 | <0.0000020 | <0.0000020 | 134 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 132.0 | <0.0050 | <0.0050 | 0.0033 | | | |
| | | 3rd Quartile | 0.0003 | 0.00026 | 0.0201 | 0.0176 | 49.9 | <0.000010 | <0.0000050 | 0.00058 | 0.00046 | 0.06 | 0.02400 | 0.4845 | 0.361 | <0.000002 | <0.000002 | 143.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 132.5 | <0.0050 | <0.0050 | 0.004 | | | |
| **LLO** | Long Lake Outlet | Average | 0.00045 | 0.00043 | 0.0383 | 0.0241 | 29.1 | 0.0000056 | 0.00000250 | 0.000458 | 0.00051 | 0.0680 | 0.0397 | 0.0075 | 0.00198 | 0.00000149 | 0.00000165 | 64.7 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 57 | 0.00250 | 0.00250 | 0.00401 | 0.00530 | | |
| **E219412** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 52 | 15 | 15 | 7 | 2 | | |
| | | Minimum | 0.00034 | 0.0003 | 0.0088 | 0.0046 | 15 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.015 | 0.0116 | 0.0033 | <0.0010 | <0.000002 | <0.000002 | 18.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 10.7 | <0.0050 | <0.0050 | <0.0020 | 0.0027 | | |
| | | Maximum | 0.00057 | 0.00057 | 0.102 | 0.0568 | 38.6 | 0.000014 | <0.0000050 | 0.001 | 0.00108 | 0.158 | 0.087 | 0.0152 | 0.0052 | 0.0000047 | 0.000006 | 91.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 101 | <0.0050 | <0.0050 | 0.007 | 0.0079 | | |
| | | Geometric Mean | 0.00044 | 0.00042 | 0.0258 | 0.0177 | 27.9 | 0.0000054 | 0.0000025 | 0.000399 | 0.000443 | 0.055 | 0.0323 | 0.0067 | 0.00146 | 0.0000013 | 0.0000014 | 58.2 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 49.8 | 0.00250 | 0.00250 | 0.00346 | 0.00460 | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 14 | 15 | 8 | 1 | 0 | 0 | 0 | 5 | 12 | 11 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 1 | 0 | | |
| | | Standard Deviation | 0.00007 | 0.00007 | 0.0345 | 0.0185 | 7.9 | 0.0000023 | 1E-13 | 0.000255 | 0.000272 | 0.046 | 0.0264 | 0.0035 | 0.00142 | 0.00000113 | 0.00000141 | 24.6 | 0 | 0.00000 | 0.000000 | 0.000000 | 26.2 | 4E-11 | 4E-11 | 0.00202 | 0.0037 | | |
| | | 1st Quartile | 0.00039 | 0.00038 | 0.0113 | 0.0086 | 25.1 | <0.000010 | <0.0000050 | <0.00050 | 0.00037 | 0.036 | 0.0199 | 0.0048 | <0.0010 | <0.0000020 | <0.0000020 | 48.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 32.6 | <0.0050 | <0.0050 | 0.0028 | 0.004 | | |
| | | Median | 0.00043 | 0.00041 | 0.0209 | 0.016 | 32.9 | <0.000010 | <0.0000050 | <0.00050 | 0.00042 | 0.043 | 0.0285 | 0.0072 | 0.0017 | <0.000002 | <0.000002 | 76.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 62.5 | <0.0050 | <0.0050 | 0.0039 | 0.0053 | | |
| | | 3rd Quartile | 0.0005 | 0.00047 | 0.0712 | 0.04 | 34.2 | <0.000010 | <0.0000050 | 0.000605 | 0.00056 | 0.110 | 0.0635 | 0.0100 | 0.00295 | <0.0000020 | 0.0000015 | 80.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 77.5 | <0.0050 | <0.0050 | 0.0053 | 0.0066 | | |
| **WB** | Middle Quinsam Lake Outlet | Average | 0.00021 | 0.00021 | 0.0265 | 0.0202 | 30.9 | 0.000005 | 0.00000323 | 0.000641 | 0.00066 | 0.049 | 0.0265 | 0.0072 | 0.00185 | 0.0000013 | 0.0000011 | 35.3 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 28.6 | 0.00250 | 0.00250 | 0.00320 | | | |
| **E0900504** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 4 | | | |
| | | Minimum | 0.0001 | 0.00014 | 0.0137 | 0.0129 | 22.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00045 | 0.023 | 0.0114 | 0.0038 | <0.0010 | <0.000002 | <0.000002 | 27.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 17.7 | <0.0050 | <0.0050 | 0.0021 | | | |
| | | Maximum | 0.00037 | 0.00025 | 0.0506 | 0.0385 | 35.7 | <0.000010 | 0.00001 | 0.00135 | 0.00147 | 0.099 | 0.0568 | 0.0103 | 0.0071 | 0.0000048 | 0.0000022 | 44.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 40.4 | <0.0050 | <0.0050 | 0.005 | | | |
| | | Geometric Mean | 0.0002 | 0.000210 | 0.0237 | 0.019 | 30.7 | 0.000005 | 0.00000291 | 0.000591 | 0.00062 | 0.045 | 0.0241 | 0.007 | 0.00122 | 0.00000111 | 0.00000105 | 35.1 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 27.9 | 0.00250 | 0.00250 | 0.00310 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 13 | 2 | 0 | 0 | 0 | 0 | 7 | 14 | 14 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | | | |
| | | Standard Deviation | 0.00007 | 0.00004 | 0.0136 | 0.0078 | 3.8 | 1E-13 | 0.00000208 | 0.000267 | 0.00027 | 0.0230 | 0.013 | 0.0019 | 0.00182 | 0.00000098 | 0.00000031 | 4.3 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 6.3 | 4E-11 | 4E-11 | 0.0013 | | | |
| | | 1st Quartile | 0.00016 | 0.00018 | 0.0169 | 0.0152 | 30.4 | <0.000010 | <0.0000050 | 0.000535 | 0.00052 | 0.034 | 0.0174 | 0.0058 | <0.0010 | <0.0000020 | <0.0000020 | 32.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 24.4 | <0.0050 | <0.0050 | 0.0025 | | | |
| | | Median | 0.0002 | 0.000220 | 0.0182 | 0.0177 | 31.5 | <0.000010 | <0.0000050 | 0.00057 | 0.00054 | 0.044 | 0.0245 | 0.0075 | 0.0014 | <0.0000020 | <0.0000020 | 34.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 28.9 | <0.0050 | <0.0050 | 0.0029 | | | |
| | | 3rd Quartile | 0.00026 | 0.000240 | 0.0382 | 0.0227 | 33.5 | <0.000010 | <0.0000050 | 0.00073 | 0.00068 | 0.056 | 0.0286 | 0.0087 | 0.00285 | <0.000002 | <0.000002 | 38.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 31.4 | <0.0050 | <0.0050 | 0.0036 | | | |
| **7SSD** | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E292069** | Settling Pond at 7S- Discharge to Stream 1 -7S | Average | 0.00251 | 0.00204 | 0.1667 | 0.00909 | 141.8 | 0.0000064 | 0.00000368 | 0.00161 | 0.001 | 0.248 | 0.01791 | 0.0834 | 0.05288 | 0.00000119 | 0.000001 | 147 | 0.00059 | 0.0005 | 0.0001 | 0.0001 | 15.82 | 0.0025 | 0.0025 | | | | |
| | | Count | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 16 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | 17 | | | | |
| | | Minimum | 0.00063 | 0.00029 | 0.0228 | <0.0030 | 50.7 | <0.000010 | <0.0000050 | 0.00055 | 0.00043 | 0.057 | <0.0050 | 0.01 | <0.0010 | <0.0000020 | <0.0000020 | 63.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 8.22 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.0112 | 0.01 | 1.03 | 0.0298 | 219 | 0.000019 | 0.000009 | 0.00511 | 0.00347 | 1.37 | 0.085 | 0.479 | 0.423 | 0.0000029 | <0.0000020 | 230 | 0.002 | <0.0010 | <0.00020 | <0.00020 | 31 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.0016 | 0.00114 | 0.0823 | 0.00501 | 130.5 | 0.00000590 | 0.00000322 | 0.00128 | 0.00084 | 0.154 | 0.00975 | 0.0570 | 0.01442 | 0.00000112 | 0.00000101 | 138.1 | 0.00054 | 0.0005 | 0.000100 | 0.000100 | 14.94 | 0.0025 | 0.00250 | | | | |
| | | Count <DL | 0 | 0 | 0 | 6 | 0 | 14 | 13 | 0 | 0 | 0 | 4 | 0 | 2 | 14 | 17 | 0 | 16 | 17 | 17 | 17 | 0 | 17 | 17 | | | | |
| | | Standard Deviation | 0.00284 | 0.00261 | 0.2564 | 0.01005 | 51.3 | 0.0000036 | 0.00000231 | 0.00127 | 0.00075 | 0.326 | 0.02177 | 0.1071 | 0.1006 | 0.00000054 | 0 | 49.7 | 0.00036 | 0 | 0 | 0.000000 | 5.7 | 4E-11 | 0.00000 | | | | |
| | | 1st Quartile | 0.0007 | 0.0006 | 0.0443 | <0.0030 | 114 | <0.000010 | <0.0000050 | 0.00077 | 0.0006 | 0.088 | 0.005 | 0.0382 | 0.0035 | <0.0000020 | <0.0000020 | 108.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 11.2 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.0012 | 0.00073 | 0.0596 | 0.0046 | 154 | <0.000010 | <0.0000050 | 0.00105 | 0.00066 | 0.115 | 0.0073 | 0.054 | 0.024 | <0.0000020 | <0.0000020 | 155 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.7 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00271 | 0.0023 | 0.194 | 0.0135 | 174 | <0.000010 | <0.0000050 | 0.00176 | 0.00114 | 0.293 | 0.0247 | 0.0784 | 0.0482 | <0.0000020 | <0.0000020 | 181.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 19.7 | <0.0050 | <0.0050 | | | | |
| **7S** | Stream 1-7S discharge to LWO | Average | 0.000099 | 0.000086 | 0.0489 | 0.038 | 15.4 | 0.000005 | 0.00000329 | 0.000409 | 0.00039 | 0.0172 | 0.00975 | 0.0006 | 0.00054 | 0.00000109 | 0.00000146 | 16.5 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 2.990 | 0.00278 | 0.00250 | | | | |
| **E292109** | | Count | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | | | | |
| | | Minimum | <0.00010 | <0.00010 | 0.0163 | 0.0177 | 10.3 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | <0.010 | <0.0050 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 12.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.26 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00018 | 0.00023 | 0.13 | 0.0776 | 26.8 | <0.000010 | 0.00001 | 0.00112 | 0.00062 | 0.075 | 0.037 | 0.0014 | 0.0011 | 0.0000022 | 0.0000046 | 24.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.37 | 0.0064 | <0.0050 | | | | |
| | | Geometric Mean | 0.00009 | 0.000073 | 0.0403 | 0.034 | 14.9 | 0.000005 | 0.00000294 | 0.000355 | 0.000349 | 0.0104 | 0.00589 | 0.00057 | 0.00053 | 0.00000106 | 0.00000127 | 16.1 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 2.87 | 0.00267 | 0.00250 | | | | |
| | | Count <DL | 5 | 9 | 0 | 0 | 0 | 14 | 12 | 9 | 2 | 8 | 6 | 12 | 13 | 13 | 11 | 0 | 14 | 14 | 14 | 14 | 0 | 13 | 14 | | | | |
| | | Standard Deviation | 0.000042 | 0.000057 | 0.034 | 0.0195 | 4.2 | 1E-13 | 0.00000215 | 0.00026 | 0.000164 | 0.0206 | 0.01134 | 0.00027 | 0.00016 | 0.00000032 | 0.00000104 | 3.7 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 0.8 | 0.00104 | 1E-10 | | | | |
| | | 1st Quartile | <0.00010 | <0.00010 | 0.0257 | 0.0234 | 13.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00032 | <0.010 | <0.0050 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 13.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.48 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00011 | <0.00010 | 0.0359 | 0.0326 | 14.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00041 | <0.010 | 0.0051 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 15.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.98 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.000127 | 0.000108 | 0.0599 | 0.0465 | 16 | <0.000010 | <0.0000050 | 0.000568 | 0.000492 | 0.0172 | 0.01052 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 17.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.59 | <0.0050 | <0.0050 | | | | |
| **QU0813A** | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (No. 4 Seam) | Average | 0.458 | 0.427 | 0.0178 | 0.00338 | 175.8 | 0.0000050 | 0.0000025 | 0.000250 | 0.000100 | 0.24 | 0.216 | 0.0492 | 0.0556 | | 0.0000016 | | 0.000500 | 0.000500 | 0.0001000 | 0.0001000 | 17.8 | 0.00250 | 0.00250 | | 0.1480 | | |
| | | Count | 1 | 4 | 1 | 4 | 4 | 1 | 4 | 1 | 4 | 1 | 4 | 1 | 4 | | 4 | | 1 | 4 | 1 | 4 | 4 | 1 | 4 | | 4 | | |
| | | Minimum | 0.458 | 0.405 | 0.0178 | <0.0030 | 169 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.24 | 0.205 | 0.0492 | 0.0431 | | <0.0000020 | | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 17 | <0.0050 | <0.0050 | | 0.0931 | | |
| | | Maximum | 0.458 | 0.447 | 0.0178 | 0.0057 | 180 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.24 | 0.222 | 0.0492 | 0.0813 | | 0.0000034 | | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 19.2 | <0.0050 | <0.0050 | | 0.174 | | |
| | | Geometric Mean | 0.458 | 0.426 | 0.0178 | 0.0028 | 175.7 | 0.0000050 | 0.0000025 | 0.00025 | 0.000100 | 0.24 | 0.216 | 0.0492 | 0.0538 | | 0.0000014 | | 0.000500 | 0.000500 | 0.0001000 | 0.0001000 | 17.8 | 0.0025 | 0.00250 | | 0.1437 | | |
| | | Count <DL | 0 | 0 | 0 | 2 | 0 | 1 | 4 | 1 | 4 | 0 | 0 | 0 | 0 | | 3 | | 1 | 4 | 1 | 4 | 0 | 1 | 4 | | 0 | | |
| | | Standard Deviation | 0 | 0.017 | 0 | 0.0022 | 5.0 | 0.0000000 | 0 | 0 | 0.000000 | 0.000 | 0.008 | 0 | 0.0175 | | 0.0000012 | | 0.000000 | 0.000000 | 0.0000000 | 0.0000000 | 1 | 0 | 0.00000 | | 0.0375 | | |
| | | 1st Quartile | 0.458 | 0.42 | 0.0178 | <0.0030 | 173.5 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.24 | 0.213 | 0.0492 | 0.0452 | | <0.0000020 | | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 17.2 | <0.0050 | <0.0050 | | 0.1395 | | |
| | | Median | 0.458 | 0.427 | 0.0178 | 0.00315 | 177 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.24 | 0.218 | 0.0492 | 0.049 | | <0.0000020 | | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 17.4 | <0.0050 | <0.0050 | | 0.1625 | | |
| | | 3rd Quartile | 0.458 | 0.434 | 0.0178 | 0.0050 | 179.2 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.24 | 0.221 | 0.0492 | 0.0594 | | 0.0000016 | | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 18.1 | <0.0050 | <0.0050 | | 0.171 | | |
| **QU0813B** | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (Till & SST contact) | Average | 0.519 | 0.497 | 0.248 | 0.0124 | 127.5 | 0.0000050 | 0.0000079 | 0.00086 | 0.000100 | 0.411 | 0.143 | 0.084 | 0.0832 | | 0.0000056 | | 0.0005 | 0.005000 | 0.0001 | 0.0001000 | 9.39 | 0.0025 | 0.00512 | | 0.2370 | | |
| | | Count | 1 | 4 | 1 | 4 | 4 | 1 | 4 | 1 | 4 | 1 | 4 | 1 | 4 | | 4 | | 1 | 4 | 1 | 4 | 4 | 1 | 4 | | 4 | | |
| | | Minimum | 0.519 | 0.469 | 0.248 | 0.0073 | 124 | <0.000010 | <0.0000050 | 0.00086 | <0.00020 | 0.411 | 0.109 | 0.084 | 0.0749 | | 0.0000021 | | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 9.05 | <0.0050 | <0.0050 | | 0.213 | | |
| | | Maximum | 0.519 | 0.528 | 0.248 | 0.0201 | 131 | <0.000010 | 0.000024 | 0.00086 | <0.00020 | 0.411 | 0.228 | 0.084 | 0.0888 | | 0.0000121 | | <0.0010 | 0.0185 | <0.00020 | <0.00020 | 9.62 | <0.0050 | 0.013 | | 0.299 | | |
| | | Geometric Mean | 0.519 | 0.496 | 0.248 | 0.0114 | 127.5 | 0.0000050 | 0.0000044 | 0.00086 | 0.000100 | 0.411 | 0.136 | 0.084 | 0.083 | | 0.0000044 | | 0.0005 | 0.001230 | 0.0001 | 0.0001000 | 9.39 | 0.0025 | 0.00378 | | 0.2350 | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 4 | 0 | 0 | 0 | 0 | | 0 | | 1 | 3 | 1 | 4 | 0 | 1 | 3 | | 0 | | |
| | | Standard Deviation | 0.000 | 0.026 | 0.00 | 0.0059 | 3.1 | 0.0000000 | 0.0000108 | 0.00000 | 0.000000 | 0.00 | 0.057 | 0.000 | 0.0065 | | 0.0000045 | | 0.00000 | 0.009000 | 0.000000 | 0.0000000 | 0.3 | 0.0000 | 0.00525 | | 0.0410 | | |
| | | 1st Quartile | 0.519 | 0.479 | 0.248 | 0.0081 | 125.5 | <0.000010 | <0.0000050 | 0.00086 | <0.00020 | 0.411 | 0.114 | 0.084 | 0.0794 | | 0.0000028 | | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 9.28 | <0.0050 | <0.0050 | | 0.215 | | |
| | | Median | 0.519 | 0.495 | 0.248 | 0.0111 | 127.5 | <0.000010 | <0.0000050 | 0.00086 | <0.00020 | 0.411 | 0.118 | 0.084 | 0.0844 | | 0.000004 | | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 9.44 | <0.0050 | <0.0050 | | 0.218 | | |
| | | 3rd Quartile | 0.519 | 0.513 | 0.248 | 0.0154 | 129.5 | <0.000010 | 0.00000788 | 0.00086 | <0.00020 | 0.411 | 0.147 | 0.084 | 0.0882 | | 0.0000067 | | <0.0010 | 0.005 | <0.00020 | <0.00020 | 9.56 | <0.0050 | 0.00512 | | 0.24 | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 51
# 2019-2020 Annual Report

| 2016-17 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| QU0821GD | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 4 Seam) | Average | | 0.158 | | 0.0056 | 213.0 | | 0.0000052 | | 0.00013 | | 0.934 | | 0.1111 | | 0.0000027 | | | 0.0005 | | 0.0001 | 0.35 | | 0.0025 | | 0.082 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.111 | | 0.0036 | 197 | | <0.0000050 | | <0.00020 | | 0.303 | | 0.0535 | | <0.0000020 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.0579 | | |
| | | Maximum | | 0.208 | | 0.0084 | 220 | | 0.0000133 | | 0.00022 | | 1.59 | | 0.174 | | 0.0000049 | | | <0.0010 | | <0.00020 | 0.64 | | <0.0050 | | 0.104 | | |
| | | Geometric Mean | | 0.155 | | 0.0053 | 212.8 | | 0.0000038 | | 0.000122 | | 0.799 | | 0.1023 | | 0.0000021 | | | 0.0005 | | 0.0001 | 0.316 | | 0.0025 | | 0.0794 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 3 | | 3 | | 0 | | 0 | | 2 | | | 4 | | 4 | 3 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.04 | | 0.00220 | 10.9 | | 0.0000054 | | 0.00006 | | 0.529 | | 0.0494 | | 0.0000020 | | | 0 | | 0 | 0.195 | | 0.00000 | | 0.0234 | | |
| | | 1st Quartile | | 0.143 | | 0.004 | 210.5 | | <0.0000050 | | <0.00020 | | 0.714 | | 0.091 | | <0.0000020 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.0639 | | |
| | | Median | | 0.158 | | 0.0052 | 217.5 | | <0.0000050 | | <0.00020 | | 0.922 | | 0.1085 | | 0.00000245 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.083 | | |
| | | 3rd Quartile | | 0.174 | | 0.0067 | 220 | | 0.0000052 | | 0.00013 | | 1.142 | | 0.1282 | | 0.00000415 | | | <0.0010 | | <0.00020 | 0.35 | | <0.0050 | | 0.101 | | |
| QU0821GS | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 1 Seam) | Average | | 0.198 | | 0.008 | 207.0 | | 0.0000031 | | 0.000125 | | 0.546 | | 0.0912 | | 0.0000041 | | | 0.000620 | | 0.0001250 | 0.512 | | 0.00312 | | 0.0899 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.153 | | 0.0066 | 200 | | <0.0000050 | | <0.00020 | | 0.314 | | 0.0698 | | 0.0000024 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.0385 | | |
| | | Maximum | | 0.218 | | 0.0097 | 222 | | <0.000010 | | <0.00040 | | 1.01 | | 0.128 | | 0.0000078 | | | <0.0020 | | <0.00040 | 1.01 | | <0.010 | | 0.154 | | |
| | | Geometric Mean | | 0.196 | | 0.0079 | 206.8 | | 0.0000030 | | 0.000119 | | 0.483 | | 0.0884 | | 0.0000036 | | | 0.000590 | | 0.0001190 | 0.43 | | 0.00297 | | 0.0793 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 4 | | 4 | | 0 | | 0 | | 0 | | | 4 | | 4 | 2 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.03 | | 0.0016 | 10.1 | | 0.0000013 | | 0.00005 | | 0.327 | | 0.027 | | 0.0000025 | | | 0.000250 | | 0.0000500 | 0.359 | | 0.00125 | | 0.0498 | | |
| | | 1st Quartile | | 0.194 | | 0.0068 | 202.2 | | <0.0000050 | | <0.00020 | | 0.316 | | 0.0717 | | 0.0000026 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.0592 | | |
| | | Median | | 0.21 | | 0.0079 | 203 | | <0.0000050 | | <0.00020 | | 0.43 | | 0.0834 | | 0.000003 | | | <0.0010 | | <0.00020 | 0.395 | | <0.0050 | | 0.0836 | | |
| | | 3rd Quartile | | 0.214 | | 0.0092 | 207.8 | | 0.00000312 | | 0.000125 | | 0.66 | | 0.103 | | 0.0000046 | | | 0.00062 | | 0.000125 | 0.658 | | 0.00312 | | 0.1142 | | |
| QU1010D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Ex-situ 2-North deep groundwater well. Down gradient of u/g tailings disposal, measures water quality & hydraulic head downstream of 2-North workings. (No. 1 Seam / Mudstone). | Average | | 0.0152 | | 0.0129 | 92.3 | | 0.000022 | | 0.00085 | | 10.2 | | 0.433 | | 0.0000023 | | | 0.00100 | | 0.000430 | 0.25 | | 0.0050 | | 0.06650 | | |
| | | Count | | 1 | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | 0.0152 | | 0.0129 | 92.3 | | 0.000022 | | 0.00085 | | 10.2 | | 0.433 | | 0.0000023 | | | <0.0020 | | 0.00043 | <0.50 | | <0.010 | | 0.0665 | | |
| | | Maximum | | 0.0152 | | 0.0129 | 92.3 | | 0.000022 | | 0.00085 | | 10.2 | | 0.433 | | 0.0000023 | | | <0.0020 | | 0.00043 | <0.50 | | <0.010 | | 0.0665 | | |
| | | Geometric Mean | | 0.0152 | | 0.0129 | 92.3 | | 0.000022 | | 0.00085 | | 10.2 | | 0.433 | | 0.0000023 | | | 0.00100 | | 0.000430 | 0.25 | | 0.0050 | | 0.06650 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 0 | | 0 | | 0 | | 0 | | 0 | | | 1 | | 0 | 1 | | 1 | | 0 | | |
| | | Standard Deviation | | 0.0000 | | 0.0000 | 0 | | 0.000000 | | 0.00000 | | 0.0 | | 0.00 | | 0.0000000 | | | 0.00000 | | 0.000000 | 0.0 | | 0.0000 | | 0.00000 | | |
| | | 1st Quartile | | 0.0152 | | 0.0129 | 92.3 | | 0.000022 | | 0.00085 | | 10.2 | | 0.433 | | 0.0000023 | | | <0.0020 | | 0.00043 | <0.50 | | <0.010 | | 0.0665 | | |
| | | Median | | 0.0152 | | 0.0129 | 92.3 | | 0.000022 | | 0.00085 | | 10.2 | | 0.433 | | 0.0000023 | | | <0.0020 | | 0.00043 | <0.50 | | <0.010 | | 0.0665 | | |
| | | 3rd Quartile | | 0.0152 | | 0.0129 | 92.3 | | 0.000022 | | 0.00085 | | 10.2 | | 0.433 | | 0.0000023 | | | <0.0020 | | 0.00043 | <0.50 | | <0.010 | | 0.0665 | | |
| QU1010S | Ex-situ 2-North shallow groundwater well. Down gradient of u/g tailings disposal, measures water quality & hydraulic head downstream of 2-North workings. (No. 1 Seam / Sandstone). | Average | | 0.133 | | 0.0188 | 151.0 | | 0.0000025 | | 0.0001 | | 0.351 | | 0.0531 | | 0.0000054 | | | 0.000500 | | 0.0001000 | 49.8 | | 0.00250 | | 0.0686 | | |
| | | Count | | 1 | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | 0.133 | | 0.0188 | 151 | | <0.0000050 | | <0.00020 | | 0.351 | | 0.0531 | | 0.0000054 | | | <0.0010 | | <0.00020 | 49.8 | | <0.0050 | | 0.0686 | | |
| | | Maximum | | 0.133 | | 0.0188 | 151 | | <0.0000050 | | <0.00020 | | 0.351 | | 0.0531 | | 0.0000054 | | | <0.0010 | | <0.00020 | 49.8 | | <0.0050 | | 0.0686 | | |
| | | Geometric Mean | | 0.133 | | 0.01880 | 151.0 | | 0.0000025 | | 0.0001 | | 0.351 | | 0.0531 | | 0.0000054 | | | 0.000500 | | 0.0001000 | 49.8 | | 0.0025 | | 0.0686 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 1 | | 1 | | 0 | | 0 | | 0 | | | 1 | | 1 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | | 0 | | 0 | 0.0 | | 0.0000000 | | 0 | | 0 | | 0 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 0 | | 0 | | 0 | | |
| | | 1st Quartile | | 0.133 | | 0.0188 | 151 | | <0.0000050 | | <0.00020 | | 0.351 | | 0.0531 | | 0.0000054 | | | <0.0010 | | <0.00020 | 49.8 | | <0.0050 | | 0.0686 | | |
| | | Median | | 0.133 | | 0.0188 | 151 | | <0.0000050 | | <0.00020 | | 0.351 | | 0.0531 | | 0.0000054 | | | <0.0010 | | <0.00020 | 49.8 | | <0.0050 | | 0.0686 | | |
| | | 3rd Quartile | | 0.133 | | 0.0188 | 151 | | <0.0000050 | | <0.00020 | | 0.351 | | 0.0531 | | 0.0000054 | | | <0.0010 | | <0.00020 | 49.8 | | <0.0050 | | 0.0686 | | |
| QU1011D | Ex-situ 2-North deep groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | | 0.00905 | | 0.0215 | 360 | | 0.0000025 | | 0.0001 | | 4.09 | | 0.453 | | 0.0000031 | | | 0.0005 | | 0.0001 | 1.0 | | 0.0025 | | 0.076 | | |
| | | Count | | 1 | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | 0.00905 | | 0.0215 | 360 | | <0.0000050 | | <0.00020 | | 4.09 | | 0.453 | | 0.0000031 | | | <0.0010 | | <0.00020 | 0.95 | | <0.0050 | | 0.0764 | | |
| | | Maximum | | 0.00905 | | 0.0215 | 360 | | <0.0000050 | | <0.00020 | | 4.09 | | 0.453 | | 0.0000031 | | | <0.0010 | | <0.00020 | 0.95 | | <0.0050 | | 0.0764 | | |
| | | Geometric Mean | | 0.00905 | | 0.0215 | 360 | | 0.0000025 | | 0.0001 | | 4.09 | | 0.453 | | 0.0000031 | | | 0.0005 | | 0.0001 | 1.0 | | 0.0025 | | 0.076 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 1 | | 1 | | 0 | | 0 | | 0 | | | 1 | | 1 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | | 0.00000 | | 0.0000 | 0 | | 0.0000000 | | 0.00000 | | 0.00 | | 0.000 | | 0.0000000 | | | 0.00000 | | 0.000000 | 0.0 | | 0.0000 | | 0.000 | | |
| | | 1st Quartile | | 0.00905 | | 0.0215 | 360 | | <0.0000050 | | <0.00020 | | 4.09 | | 0.453 | | 0.0000031 | | | <0.0010 | | <0.00020 | 0.95 | | <0.0050 | | 0.0764 | | |
| | | Median | | 0.00905 | | 0.0215 | 360 | | <0.0000050 | | <0.00020 | | 4.09 | | 0.453 | | 0.0000031 | | | <0.0010 | | <0.00020 | 0.95 | | <0.0050 | | 0.0764 | | |
| | | 3rd Quartile | | 0.00905 | | 0.0215 | 360 | | <0.0000050 | | <0.00020 | | 4.09 | | 0.453 | | 0.0000031 | | | <0.0010 | | <0.00020 | 0.95 | | <0.0050 | | 0.0764 | | |
| QU1011S | Ex-situ 2-North shallow groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | | 0.00495 | | 0.012 | 106.3 | | 0.0000025 | | 0.000175 | | 0.265 | | 0.0602 | | 0.0000055 | | | 0.0005 | | 0.0001000 | 5.84 | | 0.00250 | | 0.0125 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.00169 | | 0.0056 | 59.6 | | <0.0000050 | | <0.00020 | | 0.179 | | 0.0488 | | 0.0000048 | | | <0.0010 | | <0.00020 | 3.94 | | <0.0050 | | 0.0055 | | |
| | | Maximum | | 0.0082 | | 0.0183 | 153 | | <0.0000050 | | 0.00025 | | 0.352 | | 0.0716 | | 0.0000063 | | | <0.0010 | | <0.00020 | 7.73 | | <0.0050 | | 0.0195 | | |
| | | Geometric Mean | | 0.00372 | | 0.0101 | 95.5 | | 0.0000025 | | 0.000158 | | 0.251 | | 0.0591 | | 0.0000055 | | | 0.0005 | | 0.0001000 | 5.52 | | 0.0025 | | 0.0104 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 2 | | 1 | | 0 | | 0 | | 0 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.0046 | | 0.009 | 66 | | 0.0000000 | | 0.000106 | | 0.122 | | 0.0161 | | 0.0000011 | | | 0 | | 0.0000000 | 2.68 | | 0 | | 0.0099 | | |
| | | 1st Quartile | | 0.00332 | | 0.0088 | 83 | | <0.0000050 | | 0.000138 | | 0.222 | | 0.0545 | | 0.0000052 | | | <0.0010 | | <0.00020 | 4.89 | | <0.0050 | | 0.009 | | |
| | | Median | | 0.00494 | | 0.0119 | 106.3 | | <0.0000050 | | 0.000175 | | 0.265 | | 0.0602 | | 0.0000055 | | | <0.0010 | | <0.00020 | 5.84 | | <0.0050 | | 0.0125 | | |
| | | 3rd Quartile | | 0.00657 | | 0.0151 | 129.6 | | <0.0000050 | | 0.000213 | | 0.309 | | 0.0659 | | 0.0000059 | | | <0.0010 | | <0.00020 | 6.78 | | <0.0050 | | 0.016 | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 52
# 2019-2020 Annual Report

| 2016-17 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| QU1105S | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | | 0.0716 | | 0.00562 | 207.8 | | 0.0000033 | | 0.000178 | | 1.395 | | 0.176 | | 0.0000049 | | | 0.000500 | | 0.0001000 | 92.9 | | 0.00250 | | 0.030 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.0362 | | <0.0030 | 82.8 | | <0.0000050 | | <0.00020 | | 0.358 | | 0.0988 | | 0.0000024 | | | <0.0010 | | <0.00020 | 42.3 | | <0.0050 | | 0.0126 | | |
| | | Maximum | | 0.103 | | 0.0083 | 329 | | 0.0000055 | | 0.00027 | | 2.46 | | 0.254 | | 0.0000108 | | | <0.0010 | | <0.00020 | 156 | | <0.0050 | | 0.0479 | | |
| | | Geometric Mean | | 0.065 | | 0.00472 | 170.7 | | 0.0000030 | | 0.000160 | | 1.038 | | 0.1629 | | 0.0000040 | | | 0.000500 | | 0.0001000 | 80.4 | | 0.00250 | | 0.027 | | |
| | | Count <DL | | 0 | | 1 | 0 | | 3 | | 2 | | 0 | | 0 | | 0 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.0344 | | 0.00295 | 136.6 | | 0.0000015 | | 0.000090 | | 1.063 | | 0.0765 | | 0.0000040 | | | 0.000000 | | 0.0000000 | 54.7 | | 0.00000 | | 0.015 | | |
| | | 1st Quartile | | 0.0452 | | 0.00465 | 93.1 | | <0.0000050 | | <0.00020 | | 0.549 | | 0.117 | | 0.000003 | | | <0.0010 | | <0.00020 | 49.8 | | <0.0050 | | 0.0222 | | |
| | | Median | | 0.0737 | | 0.00635 | 209.8 | | <0.0000050 | | 0.00017 | | 1.382 | | 0.1755 | | 0.0000032 | | | <0.0010 | | <0.00020 | 86.6 | | <0.0050 | | 0.0298 | | |
| | | 3rd Quartile | | 0.1001 | | 0.00732 | 324.5 | | 0.00000325 | | 0.000248 | | 2.228 | | 0.2345 | | 0.0000051 | | | <0.0010 | | <0.00020 | 129.8 | | <0.0050 | | 0.0377 | | |
| QU1109S | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | | 0.077 | | 0.006 | 512 | | 0.0000054 | | 0.0001 | | 0.2270 | | 0.0217 | | 0.0000015 | | | 0.0005 | | 0.0001 | 477 | | 0.0025 | | 0.029 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.067 | | 0.0045 | 458 | | <0.0000050 | | <0.00020 | | 0.171 | | 0.0193 | | <0.0000020 | | | <0.0010 | | <0.00020 | 435 | | <0.0050 | | <0.0020 | | |
| | | Maximum | | 0.095 | | 0.0097 | 554 | | 0.000014 | | <0.00020 | | 0.292 | | 0.0233 | | 0.0000028 | | | <0.0010 | | <0.00020 | 540 | | <0.0050 | | 0.0469 | | |
| | | Geometric Mean | | 0.076 | | 0.0057 | 510.5 | | 0.0000039 | | 0.0001 | | 0.2220 | | 0.0216 | | 0.0000013 | | | 0.0005 | | 0.0001 | 475 | | 0.0025 | | 0.015 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 3 | | 4 | | 0 | | 0 | | 3 | | | 4 | | 4 | 0 | | 4 | | 1 | | |
| | | Standard Deviation | | 0.013 | | 0.0025 | 45.1 | | 0.0000058 | | 0.00000 | | 0.0560 | | 0.00170 | | 0.0000009 | | | 0.00000 | | 0.000000 | 50.0 | | 0.0000 | | 0.020 | | |
| | | 1st Quartile | | 0.068 | | 0.0046 | 483.5 | | <0.0000050 | | <0.00020 | | 0.186 | | 0.0213 | | <0.0000020 | | | <0.0010 | | <0.00020 | 436 | | <0.0050 | | 0.02635 | | |
| | | Median | | 0.072 | | 0.0048 | 518 | | <0.0000050 | | <0.00020 | | 0.223 | | 0.0221 | | <0.0000020 | | | <0.0010 | | <0.00020 | 467 | | <0.0050 | | 0.03485 | | |
| | | 3rd Quartile | | 0.082 | | 0.0062 | 546.5 | | 0.00000538 | | <0.00020 | | 0.264 | | 0.0225 | | 0.00000145 | | | <0.0010 | | <0.00020 | 508 | | <0.0050 | | 0.0379 | | |
| 7SQR | 7-South Quinsam River downstream of 7-South Mining Operation | Average | 0.0008 | 0.00058 | 0.0419 | 0.0212 | 32.2 | 0.0000053 | 0.00000332 | 0.000781 | 0.00061 | 0.109 | 0.0484 | 0.0075 | 0.00245 | 0.00000156 | 0.00000109 | 35.9 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 28.9 | 0.0025 | 0.0025 | 0.00610 | | | |
| E292113 | | Count | 22 | 22 | 22 | 22 | 21 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 4 | | | |
| | | Minimum | 0.00021 | 0.0002 | 0.0136 | 0.009 | 22.9 | <0.000010 | <0.0000050 | <0.00050 | 0.00042 | 0.045 | 0.0211 | 0.0028 | <0.0010 | <0.000002 | <0.000002 | 24.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 12.5 | <0.0050 | <0.0050 | 0.0038 | | | |
| | | Maximum | 0.00558 | 0.00244 | 0.203 | 0.0448 | 37.8 | 0.000012 | 0.000012 | 0.00213 | 0.00089 | 0.465 | 0.0804 | 0.0359 | 0.0056 | 0.0000046 | 0.000003 | 44.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 39.3 | <0.0050 | <0.0050 | 0.0117 | | | |
| | | Geometric Mean | 0.0005 | 0.00045 | 0.0307 | 0.0186 | 32 | 0.0000052 | 0.00000293 | 0.000701 | 0.0006 | 0.093 | 0.0459 | 0.0064 | 0.00192 | 0.00000129 | 0.00000105 | 35.6 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 28.2 | 0.0025 | 0.0025 | 0.00540 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 21 | 19 | 1 | 0 | 0 | 0 | 0 | 5 | 18 | 21 | 0 | 22 | 22 | 22 | 22 | 0 | 22 | 22 | 0 | | | |
| | | Standard Deviation | 0.0013 | 0.00056 | 0.0432 | 0.0111 | 3.8 | 0.00000150 | 0.00000236 | 0.000432 | 0.00014 | 0.088 | 0.0159 | 0.0066 | 0.00142 | 0.00000122 | 0.00000043 | 4.8 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 5.7 | 0 | 0 | 0.0038 | | | |
| | | 1st Quartile | 0.00037 | 0.00033 | 0.0171 | 0.0121 | 29.6 | <0.000010 | <0.0000050 | 0.000552 | 0.00051 | 0.065 | 0.0381 | 0.0048 | 0.00142 | <0.0000020 | <0.0000020 | 33.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25.8 | <0.0050 | <0.0050 | 0.004 | | | |
| | | Median | 0.00042 | 0.00036 | 0.0242 | 0.0164 | 33.3 | <0.000010 | <0.0000050 | 0.00062 | 0.00058 | 0.085 | 0.0462 | 0.006 | 0.0028 | <0.000002 | <0.0000020 | 37 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 30 | <0.0050 | <0.0050 | 0.0044 | | | |
| | | 3rd Quartile | 0.00048 | 0.00046 | 0.0519 | 0.0292 | 34.8 | <0.000010 | <0.0000050 | 0.0008 | 0.00066 | 0.117 | 0.0554 | 0.0078 | 0.0031 | <0.0000020 | <0.0000020 | 38.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 32.60 | <0.0050 | <0.0050 | 0.0066 | | | |
| LQL1 | Lower Quinsam Lake 1 metre below surface | Average | 0.00054 | 0.00051 | 0.0723 | 0.0321 | 29.6 | 0.0000075 | 0.00000434 | 0.000851 | 0.00070 | 0.133 | 0.0468 | 0.0069 | 0.00186 | 0.00000116 | 0.00000129 | 31.8 | 0.00091 | 0.00050 | 0.000100 | 0.000100 | 17.5 | 0.00250 | 0.00250 | 0.0117 | | | |
| E292118 | | Count | 16 | 16 | 16 | 16 | 4 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 3 | | | |
| | | Minimum | 0.00032 | 0.00026 | 0.0069 | 0.0071 | 25.2 | <0.000010 | <0.0000050 | <0.00050 | 0.00036 | 0.033 | 0.0161 | 0.0035 | <0.0010 | <0.0000020 | <0.0000020 | 25.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 10.5 | <0.0050 | <0.0050 | 0.0044 | | | |
| | | Maximum | 0.00071 | 0.00081 | 0.374 | 0.0813 | 34.3 | 0.000025 | 0.0000150 | 0.00195 | 0.00128 | 0.587 | 0.0862 | 0.0203 | 0.0053 | 0.0000024 | 0.0000028 | 42.3 | 0.0070 | <0.0010 | <0.00020 | <0.00020 | 23.3 | <0.0050 | <0.0050 | 0.0220 | | | |
| | | Geometric Mean | 0.00053 | 0.00049 | 0.0337 | 0.0241 | 29.4 | 0.0000063 | 0.00000358 | 0.000711 | 0.00066 | 0.092 | 0.0431 | 0.0062 | 0.00117 | 0.00000111 | 0.00000119 | 31.4 | 0.00059 | 0.00050 | 0.000100 | 0.000100 | 16.9 | 0.00250 | 0.00250 | 0.0094 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 13 | 11 | 3 | 0 | 0 | 0 | 0 | 8 | 14 | 13 | 0 | 15 | 16 | 16 | 16 | 0 | 16 | 16 | 0 | | | |
| | | Standard Deviation | 0.00011 | 0.00015 | 0.1009 | 0.0245 | 3.7 | 0.0000058 | 0.00000343 | 0.000512 | 0.00024 | 0.145 | 0.0188 | 0.0040 | 0.00184 | 0.00000043 | 0.00000062 | 5.3 | 0.00162 | 0.00000 | 0.000000 | 0.000000 | 4.4 | 4E-11 | 4E-11 | 0.0092 | | | |
| | | 1st Quartile | 0.00045 | 0.00043 | 0.0118 | 0.0113 | 28.1 | <0.000010 | <0.0000050 | 0.000565 | 0.00049 | 0.052 | 0.0384 | 0.0049 | <0.0010 | <0.0000020 | <0.0000020 | 28.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 14.5 | <0.0050 | <0.0050 | 0.0066 | | | |
| | | Median | 0.00052 | 0.00048 | 0.0276 | 0.0244 | 29.4 | <0.000010 | <0.0000050 | 0.000700 | 0.00065 | 0.070 | 0.0435 | 0.0056 | 0.00080 | <0.0000020 | <0.0000020 | 29.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 16.8 | <0.0050 | <0.0050 | 0.0087 | | | |
| | | 3rd Quartile | 0.00064 | 0.00063 | 0.0888 | 0.0457 | 30.9 | <0.000010 | 0.0000060 | 0.000990 | 0.00085 | 0.144 | 0.0516 | 0.0082 | 0.0034 | <0.0000020 | <0.0000020 | 36.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 21.8 | <0.0050 | <0.0050 | 0.0154 | | | |
| LQLB | LQLB 1 metre from Bottom | Average | 0.00119 | 0.00066 | 0.0840 | 0.0331 | 29.0 | 0.0000110 | 0.00000612 | 0.00100 | 0.00072 | 0.684 | 0.1917 | 0.2085 | 0.1350 | 0.00000107 | 0.00000134 | 29.1 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 12.8 | 0.00321 | 0.00250 | 0.0131 | | | |
| E292118 | | Count | 16 | 16 | 16 | 16 | 4 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 3 | | | |
| | | Minimum | 0.00038 | 0.00028 | 0.0259 | 0.0095 | 26.7 | <0.000010 | <0.0000050 | 0.00062 | 0.00042 | 0.102 | 0.0461 | 0.0072 | 0.0016 | <0.0000020 | <0.0000020 | 24.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 10.3 | <0.0050 | <0.0050 | 0.0042 | | | |
| | | Maximum | 0.00271 | 0.00128 | 0.437 | 0.0813 | 33.6 | 0.000026 | 0.0000120 | 0.00211 | 0.00119 | 2.36 | 0.498 | 0.689 | 0.392 | 0.0000021 | 0.0000027 | 34.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.2 | 0.0139 | <0.0050 | 0.0267 | | | |
| | | Geometric Mean | 0.00096 | 0.00061 | 0.0518 | 0.0265 | 28.9 | 0.0000090 | 0.00000543 | 0.00092 | 0.00069 | 0.396 | 0.1405 | 0.0650 | 0.0369 | 0.00000105 | 0.00000124 | 29.0 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 12.7 | 0.00278 | 0.00250 | 0.0098 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 8 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 12 | 0 | 16 | 16 | 16 | 16 | 0 | 15 | 16 | 0 | | | |
| | | Standard Deviation | 0.00081 | 0.00028 | 0.1115 | 0.0237 | 3.1 | 0.0000072 | 0.00000287 | 0.00045 | 0.00021 | 0.693 | 0.1533 | 0.2557 | 0.1599 | 0.00000027 | 0.00000063 | 3.0 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 1.4 | 0.00285 | 4E-11 | 0.0120 | | | |
| | | 1st Quartile | 0.00060 | 0.00050 | 0.0290 | 0.0168 | 27.4 | <0.000010 | 0.00000438 | 0.00066 | 0.00058 | 0.150 | 0.0789 | 0.0173 | 0.0054 | <0.0000020 | <0.0000020 | 27.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 12.0 | <0.0050 | <0.0050 | 0.0062 | | | |
| | | Median | 0.00073 | 0.00060 | 0.0332 | 0.0230 | 28.0 | 0.0000085 | 0.00000590 | 0.00083 | 0.00072 | 0.270 | 0.0985 | 0.0438 | 0.0350 | <0.0000020 | <0.000002 | 27.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 12.7 | <0.0050 | <0.0050 | 0.0083 | | | |
| | | 3rd Quartile | 0.00193 | 0.00078 | 0.0752 | 0.0478 | 29.6 | 0.0000138 | 0.00000810 | 0.00120 | 0.00083 | 1.168 | 0.3492 | 0.4218 | 0.3062 | <0.0000020 | 0.00000127 | 32.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 13.6 | <0.0050 | <0.0050 | 0.0175 | | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 53
# 2019-2020 Annual Report

| 2017 -18 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WA | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| E0126402 | Quinsam River at Argonaut Road Upstream of Mining Operation. | Average | 0.00011 | 0.000099 | 0.0288 | 0.0228 | 20.9 | 0.000005 | 0.0000025 | 0.000687 | 0.00068 | 0.0161 | 0.0147 | 0.00114 | 0.00057 | 0.0000010 | 0.0000010 | 19.8 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 0.916 | 0.00250 | 0.0025 | | | | |
| | | Count | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | | | | |
| | | Minimum | <0.00010 | <0.00010 | 0.0174 | 0.0148 | 16.9 | <0.000010 | <0.0000050 | <0.00050 | 0.00055 | <0.010 | 0.0076 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 17 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <0.50 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.0002 | 0.00017 | 0.0885 | 0.0359 | 23.9 | <0.000010 | <0.0000050 | 0.00101 | 0.001 | 0.023 | 0.0308 | 0.0021 | 0.0011 | <0.0000020 | <0.0000020 | 22.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.43 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.000101 | 0.00009 | 0.0262 | 0.0222 | 20.8 | 0.000005 | 0.0000025 | 0.00066 | 0.00067 | 0.0153 | 0.0139 | 0.00101 | 0.00055 | 0.000001 | 0.000001 | 19.8 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 0.795 | 0.00250 | 0.0025 | | | | |
| | | Count <DL | 4 | 6 | 0 | 0 | 0 | 16 | 16 | 1 | 0 | 1 | 0 | 5 | 14 | 16 | 16 | 0 | 16 | 16 | 16 | 16 | 6 | 16 | 16 | | | | |
| | | Standard Deviation | 0.000041 | 0.000041 | 0.0171 | 0.0059 | 2.2 | 1E-14 | 4E-15 | 0.000182 | 0.00013 | 0.0046 | 0.0057 | 0.00051 | 0.00019 | 0 | 0 | 1.5 | 0 | 0.00000 | 0.000000 | 0.000000 | 0.424 | 4E-11 | 4E-11 | | | | |
| | | 1st Quartile | 0.000095 | <0.00010 | 0.0202 | 0.0186 | 20.2 | <0.000010 | <0.0000050 | 0.000625 | 0.00061 | 0.014 | 0.0109 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 18.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <1.0 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00012 | 0.00011 | 0.0245 | 0.0221 | 21.2 | <0.000010 | <0.0000050 | 0.00066 | 0.00062 | 0.017 | 0.0138 | 0.0012 | <0.0010 | <0.0000020 | <0.0000020 | 20 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.05 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00013 | 0.00013 | 0.0293 | 0.0264 | 22.7 | <0.000010 | <0.0000050 | 0.000762 | 0.00072 | 0.0185 | 0.0159 | 0.00143 | <0.0010 | <0.0000020 | <0.0000020 | 21.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.275 | <0.0050 | <0.0050 | | | | |
| WD | Settling Pond #4 | Average | 0.00234 | 0.00146 | 0.03103 | 0.00926 | 369 | 0.0000257 | 0.00001214 | 0.00132 | 0.00061 | 0.502 | 0.01539 | 0.1064 | 0.0948 | 0.000001 | 0.000001 | 317 | 0.004 | 0.00378 | 0.000200 | 0.000250 | 506 | 0.00558 | 0.00668 | | | | |
| E207409 | | Count | 8 | 8 | 8 | 8 | 15 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 52 | 8 | 8 | | | | |
| | | Minimum | 0.0014 | 0.00097 | <0.015 | 0.0055 | 321 | <0.000010 | <0.0000050 | 0.00061 | 0.00041 | 0.166 | 0.0072 | 0.0376 | 0.0314 | <0.0000020 | <0.0000020 | 222 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 229 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00305 | 0.00226 | 0.14 | 0.0174 | 453 | 0.000068 | 0.0000271 | 0.00386 | 0.00088 | 1.17 | 0.0519 | 0.191 | 0.167 | <0.0000020 | <0.0000020 | 451 | 0.0117 | 0.0099 | <0.0010 | <0.0010 | 822 | <0.025 | <0.025 | | | | |
| | | Geometric Mean | 0.00225 | 0.0014 | 0.01864 | 0.00878 | 366 | 0.0000204 | 0.0000099 | 0.001094 | 0.000592 | 0.427 | 0.01216 | 0.0911 | 0.0781 | 0.000001 | 0.000001 | 310 | 0.0027 | 0.0027 | 0.000150 | 0.000183 | 490 | 0.00426 | 0.00509 | | | | |
| | | Count <DL | 0 | 0 | 2 | 3 | 0 | 3 | 4 | 2 | 3 | 0 | 3 | 0 | 0 | 8 | 8 | 0 | 3 | 4 | 8 | 8 | 0 | 7 | 7 | | | | |
| | | Standard Deviation | 0.00065 | 0.00046 | 0.04453 | 0.00359 | 43 | 0.0000191 | 0.00000764 | 0.001065 | 0.000179 | 0.315 | 0.01494 | 0.0583 | 0.057 | 1E-14 | 0.0000000 | 70 | 0.00386 | 0.00322 | 0.000185 | 0.000207 | 130 | 0.00456 | 0.00496 | | | | |
| | | 1st Quartile | 0.00205 | 0.00109 | 0.01148 | <0.015 | 337 | 0.0000163 | 0.00000725 | 0.000723 | <0.0010 | 0.298 | 0.0079 | 0.0518 | 0.0408 | <0.0000020 | <0.0000020 | 273 | 0.00167 | 0.00225 | <0.00020 | <0.00020 | 425 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00237 | 0.00138 | 0.0155 | 0.00835 | 350 | 0.0000235 | <0.0000025 | 0.00107 | 0.000515 | 0.452 | 0.0118 | 0.107 | 0.0914 | <0.0000020 | <0.0000020 | 319 | <0.0050 | <0.0050 | <0.00020 | <0.00020 | 498 | <0.0050 | 0.0042 | | | | |
| | | 3rd Quartile | 0.00291 | 0.00171 | 0.02455 | 0.00967 | 398 | 0.0000267 | 0.00001363 | 0.001265 | 0.000782 | 0.586 | <0.025 | 0.1442 | 0.1415 | <0.0000020 | <0.0000020 | 342 | 0.00458 | 0.00435 | 0.0002 | <0.0010 | 545 | 0.00845 | <0.025 | | | | |
| MW001D | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | | 0.0197 | | 0.0355 | 92.4 | | 0.00000375 | | 0.00143 | | 0.0080 | | 0.0082 | | 0.0000010 | | | 0.0005 | | 0.0001 | 27.4 | | 0.0025 | | 0.173 | | |
| | | Count | | 2 | | 2 | 1 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.0189 | | 0.0319 | 92.4 | | <0.0000050 | | 0.00124 | | <0.0050 | | 0.0029 | | <0.0000020 | | | <0.0010 | | <0.00020 | 26.6 | | <0.0050 | | 0.172 | | |
| | | Maximum | | 0.0205 | | 0.0391 | 92.4 | | 0.000005 | | 0.00161 | | 0.0135 | | 0.0134 | | <0.0000020 | | | <0.0010 | | <0.00020 | 28.2 | | <0.0050 | | 0.175 | | |
| | | Geometric Mean | | 0.0197 | | 0.0353 | 92.4 | | 0.00000354 | | 0.00141 | | 0.00581 | | 0.0062 | | 0.0000010 | | | 0.0005 | | 0.0001 | 27.4 | | 0.0025 | | 0.173 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 1 | | 0 | | 1 | | 0 | | 2 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.0011 | | 0.0051 | 0.0 | | 0.00000177 | | 0.00026 | | 0.00778 | | 0.007400 | | 0.0000000 | | | 0 | | 0 | 1.1 | | 1E-11 | | 0.002 | | |
| | | 1st Quartile | | 0.0193 | | 0.0337 | 92.4 | | 0.00000313 | | 0.00133 | | 0.00525 | | 0.0055 | | <0.0000020 | | | <0.0010 | | <0.00020 | 27 | | <0.0050 | | 0.173 | | |
| | | Median | | 0.0197 | | 0.0355 | 92.4 | | 0.00000375 | | 0.00143 | | 0.0080 | | 0.0082 | | <0.0000020 | | | <0.0010 | | <0.00020 | 27.4 | | <0.0050 | | 0.173 | | |
| | | 3rd Quartile | | 0.0201 | | 0.0373 | 92.4 | | 0.00000438 | | 0.00152 | | 0.01075 | | 0.0108 | | <0.0000020 | | | <0.0010 | | <0.00020 | 27.8 | | <0.0050 | | 0.174 | | |
| MW001S | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | | 0.000215 | | 0.0045 | 344 | | 0.000100 | | 0.000515 | | 0.0605 | | 2.53 | | 0.0000010 | | | 0.0025 | | 0.0003000 | 754 | | 0.0075 | | 0.00920 | | |
| | | Count | | 2 | | 2 | 1 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 1 | | 2 | | 2 | | |
| | | Minimum | | 0.00018 | | <0.0030 | 344 | | 0.000092 | | <0.0010 | | 0.047 | | 1.84 | | <0.0000020 | | | <0.0050 | | <0.00020 | 754 | | <0.0050 | | 0.0068 | | |
| | | Maximum | | <0.00050 | | <0.015 | 344 | | 0.000107 | | 0.00053 | | 0.074 | | 3.22 | | <0.0000020 | | | 0.0025 | | <0.0010 | 754 | | <0.025 | | 0.0117 | | |
| | | Geometric Mean | | 0.00021 | | 0.00335 | 344 | | 0.0000992 | | 0.000515 | | 0.059 | | 2.4341 | | 0.0000010 | | | 0.0025 | | 0.0002240 | 754 | | 0.00559 | | 0.0089 | | |
| | | Count <DL | | 1 | | 2 | 0 | | 0 | | 1 | | 0 | | 0 | | 2 | | | 1 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.000049 | | 0.00424 | 0 | | 0.0000106 | | 0.000021 | | 0.0191 | | 0.9758 | | 0.0000000 | | | 1E-11 | | 0.0002830 | 0 | | 0.00707 | | 0.00350 | | |
| | | 1st Quartile | | 0.000198 | | 0.003 | 344 | | 0.0000957 | | 0.000508 | | 0.0537 | | 2.185 | | <0.0000020 | | | <0.0050 | | 0.0002 | 754 | | 0.005 | | 0.00800 | | |
| | | Median | | 0.000215 | | 0.0045 | 344 | | 0.000100 | | 0.000515 | | 0.0605 | | 2.53 | | <0.0000020 | | | <0.0050 | | 0.0003 | 754 | | 0.0075 | | 0.00920 | | |
| | | 3rd Quartile | | 0.000233 | | 0.006 | 344 | | 0.000103 | | 0.000522 | | 0.0673 | | 2.875 | | <0.0000020 | | | <0.0050 | | 0.0004 | 754 | | 0.01 | | 0.01050 | | |
| MW006D | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | | 0.0299 | | 0.0221 | 76.8 | | 0.0000148 | | 0.00294 | | 0.0025 | | 0.0016 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 16.2 | | 0.00400 | | 0.164 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.0296 | | 0.0189 | 72.8 | | <0.0000050 | | 0.00073 | | <0.0050 | | 0.0014 | | <0.0000020 | | | <0.0010 | | <0.00020 | 12.9 | | <0.0050 | | 0.156 | | |
| | | Maximum | | 0.0301 | | 0.0254 | 80.9 | | 0.000027 | | 0.00516 | | <0.0050 | | 0.0019 | | <0.0000020 | | | <0.0010 | | <0.00020 | 19.5 | | 0.0055 | | 0.173 | | |
| | | Geometric Mean | | 0.0298 | | 0.0219 | 76.7 | | 0.0000082 | | 0.00194 | | 0.0025 | | 0.0016 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 15.9 | | 0.00371 | | 0.164 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 1 | | 0 | | 2 | | 0 | | 2 | | | 2 | | 2 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | | 0.0004 | | 0.0046 | 5.7 | | 0.0000173 | | 0.00313 | | 1E-11 | | 0.0004 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 4.7 | | 0.00212 | | 0.012 | | |
| | | 1st Quartile | | 0.0297 | | 0.0205 | 74.8 | | 0.00000862 | | 0.00184 | | <0.0050 | | 0.0015 | | <0.0000020 | | | <0.0010 | | <0.00020 | 14.6 | | 0.00325 | | 0.16 | | |
| | | Median | | 0.0299 | | 0.0221 | 76.8 | | 0.00001475 | | 0.00294 | | <0.0050 | | 0.0016 | | <0.0000020 | | | <0.0010 | | <0.00020 | 16.2 | | 0.00400 | | 0.164 | | |
| | | 3rd Quartile | | 0.03 | | 0.0238 | 78.9 | | 0.00002087 | | 0.00405 | | <0.0050 | | 0.0018 | | <0.0000020 | | | <0.0010 | | <0.00020 | 17.9 | | 0.00475 | | 0.169 | | |
| MW006S | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | | 0.00153 | | 0.00450 | 167.0 | | 0.00006 | | 0.00153 | | 0.0050 | | 0.0469 | | 0.0000010 | | | 0.0005 | | 0.0001 | 553.5 | | 0.00250 | | 0.0544 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.00151 | | 0.0036 | 165 | | 0.000027 | | 0.0011 | | <0.0050 | | 0.03 | | <0.0000020 | | | <0.0010 | | <0.00020 | 533 | | <0.0050 | | 0.0543 | | |
| | | Maximum | | 0.00155 | | 0.0054 | 169 | | 0.000093 | | 0.00197 | | 0.0075 | | 0.0639 | | <0.0000020 | | | <0.0010 | | <0.00020 | 574 | | <0.0050 | | 0.055 | | |
| | | Geometric Mean | | 0.00153 | | 0.0044 | 167.0 | | 0.0000501 | | 0.00147 | | 0.00433 | | 0.0438 | | 0.0000010 | | | 0.00050 | | 0.0001000 | 553.1 | | 0.0025 | | 0.0544 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 0 | | 0 | | 1 | | 0 | | 2 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.00003 | | 0.0013 | 2.8 | | 0.000047 | | 0.000620 | | 0.00354 | | 0.024 | | 0.0000000 | | | 0 | | 0.0000000 | 29 | | 1E-11 | | 0.0002 | | |
| | | 1st Quartile | | 0.00152 | | 0.00400 | 166 | | 0.0000435 | | 0.00132 | | 0.00375 | | 0.0385 | | <0.0000020 | | | <0.0010 | | <0.00020 | 543.2 | | <0.0050 | | 0.0544 | | |
| | | Median | | 0.00153 | | 0.00450 | 167 | | 0.00006 | | 0.00153 | | 0.0050 | | 0.0469 | | <0.0000020 | | | <0.0010 | | <0.00020 | 553.5 | | <0.0050 | | 0.0544 | | |
| | | 3rd Quartile | | 0.00154 | | 0.00500 | 168 | | 0.0000765 | | 0.00175 | | 0.00625 | | 0.0554 | | <0.0000020 | | | <0.0010 | | <0.00020 | 563.8 | | <0.0050 | | 0.0545 | | |
| WC | | Average | 0.0008 | 0.00065 | 0.01811 | 0.01128 | 381.5 | 0.0000288 | 0.00000589 | 0.000874 | 0.000609 | 0.083 | 0.01293 | 0.0207 | 0.01798 | 0.00000116 | 0.000001 | 287 | 0.00229 | 0.002 | 0.000200 | 0.000213 | 514 | 0.00500 | 0.00531 | | | | |
| E207411 | 2-North Pit Culvert discharge into Middle Quinsam Lake | Count | 8 | 8 | 8 | 8 | 2 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 12 | 8 | 8 | | | | |
| | | Minimum | 0.00047 | 0.00039 | <0.015 | 0.0061 | 353 | <0.000010 | <0.0000050 | <0.00050 | 0.00044 | 0.034 | <0.010 | 0.0096 | <0.0010 | <0.0000020 | <0.0000020 | 198 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 381 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00127 | 0.00121 | 0.0662 | 0.0272 | 410 | 0.000081 | <0.0000025 | 0.00149 | 0.00141 | 0.181 | 0.0297 | 0.0543 | 0.0472 | 0.0000023 | <0.0000020 | 379 | 0.0058 | 0.0052 | <0.0010 | <0.0010 | 757 | <0.025 | <0.025 | | | | |
| | | Geometric Mean | 0.00076 | 0.00062 | 0.01334 | 0.0098 | 380.4 | 0.000015 | 0.00000464 | 0.00072 | 0.000562 | 0.0740 | 0.01103 | 0.0174 | 0.01111 | 0.00000111 | 0.000001 | 282 | 0.00183 | 0.0015 | 0.000150 | 0.000163 | 501 | 0.00374 | 0.00408 | | | | |
| | | Count <DL | 0 | 0 | 2 | 2 | 0 | 6 | 7 | 4 | 2 | 0 | 3 | 0 | 1 | 7 | 8 | 0 | 3 | 5 | 8 | 8 | 0 | 8 | 8 | | | | |
| | | Standard Deviation | 0.00028 | 0.00025 | 0.01983 | 0.00738 | 40.3 | 0.0000328 | 0.0000044 | 0.000488 | 0.000326 | 0.046 | 0.0083 | 0.0149 | 0.0145 | 0.00000046 | 1E-14 | 57 | 0.00163 | 0.00157 | 0.000185 | 0.000181 | 131 | 0.00463 | 0.00452 | | | | |
| | | 1st Quartile | 0.00058 | 0.00054 | 0.00765 | 0.00728 | 367.2 | <0.000010 | <0.0000050 | 0.000505 | 0.000480 | 0.059 | 0.00750 | 0.0117 | 0.00985 | <0.0000020 | <0.0000020 | 254 | 0.00122 | 0.00088 | <0.00020 | <0.00020 | 434 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00073 | 0.0006 | 0.0118 | 0.0080 | 381.5 | 0.000015 | 0.00000375 | 0.000955 | <0.0010 | 0.07 | 0.0106 | 0.0149 | 0.0129 | <0.0000020 | <0.0000020 | 289 | 0.0022 | 0.00185 | <0.00020 | <0.00020 | 471 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00098 | 0.00066 | 0.01473 | 0.01135 | 395.8 | 0.0000385 | 0.00000845 | <0.0025 | 0.000535 | 0.0850 | 0.01448 | 0.0234 | 0.02465 | <0.0000020 | <0.0000020 | 320 | 0.00258 | 0.00252 | 0.0002 | 0.000275 | 538 | 0.005 | 0.00688 | | | | |
| MQL1 | Middle Quinsam Lake 1 metre below surface | Average | 0.00017 | 0.0001600 | 0.0185 | 0.0162 | 40.6 | 0.000005 | 0.00000273 | 0.0007 | 0.00111 | 0.036 | 0.0211 | 0.0054 | 0.00091 | 0.000001 | 0.00000100 | 35.5 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 32.2 | 0.00306 | 0.0025 | 0.0029 | | | |
| E206618 | | Count | 15 | 15 | 15 | 15 | 8 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 6 | | | |
| | | Minimum | 0.00011 | 0.0001 | 0.0103 | 0.0076 | 34.4 | <0.000010 | <0.0000050 | 0.00051 | 0.0004 | 0.025 | 0.0141 | 0.0014 | <0.0010 | <0.0000020 | <0.0000020 | 31.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 23.3 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Maximum | 0.00021 | 0.00022 | 0.0255 | 0.024 | 45.7 | <0.000010 | 0.000006 | 0.00098 | 0.00854 | 0.055 | 0.0318 | 0.0069 | 0.0035 | <0.0000020 | <0.0000020 | 39.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 36.9 | 0.0109 | <0.0050 | 0.0042 | | | |
| | | Geometric Mean | 0.00016 | 0.00015 | 0.0179 | 0.0155 | 40.5 | 0.000005 | 0.00000265 | 0.00068 | 0.00067 | 0.035 | 0.0203 | 0.0051 | 0.00073 | 0.000001 | 0.000001 | 35.4 | 0.0005 | 0.0005 | 0.0001 | 0.00010000 | 32 | 0.00276 | 0.0025 | 0.00264 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 14 | 0 | 0 | 0 | 0 | 0 | 10 | 14 | 14 | 0 | 15 | 15 | 15 | 15 | 0 | 14 | 15 | 1 | | | |
| | | Standard Deviation | 0.00004 | 0.00003 | 0.0048 | 0.0047 | 3.7 | 0 | 0.0000009 | 0.00016 | 0.00206 | 0.008 | 0.0061 | 0.0015 | 0.00081 | 0 | 0 | 2.1 | 0 | 0 | 0 | 0 | 3.8 | 0.00217 | 1E-10 | 0.00116 | | | |
| | | 1st Quartile | 0.00013 | 0.00013 | 0.0153 | 0.0129 | 39.4 | <0.000010 | <0.0000050 | 0.00057 | 0.000500 | 0.03 | 0.0168 | 0.0044 | <0.0010 | <0.0000020 | <0.0000020 | 34.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 31 | <0.0050 | <0.0050 | 0.0025 | | | |
| | | Median | 0.00017 | 0.0001700 | 0.0170 | 0.0166 | 40.5 | <0.000010 | <0.0000050 | 0.000620 | 0.00054 | 0.035 | 0.0185 | 0.0058 | <0.0010 | <0.0000020 | <0.0000020 | 35.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 32.20 | <0.0050 | <0.0050 | 0.0029 | | | |
| | | 3rd Quartile | 0.0002 | 0.00018 | 0.0228 | 0.0202 | 42.3 | <0.000010 | <0.0000050 | 0.0008 | 0.00061 | 0.037 | 0.0251 | 0.0063 | 0.00115 | <0.0000020 | <0.0000020 | 36.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 35.4 | <0.0050 | <0.0050 | 0.00375 | | | |
| MQLB | Middle Quinsam Lake 1 metre from bottom | Average | 0.000117 | 0.0001 | 0.0123 | 0.0104 | 42.6 | 0.000005 | 0.00000267 | 0.000613 | 0.00052 | 0.047 | 0.0179 | 0.0176 | 0.01197 | 0.000001 | 0.00000100 | 61.0 | 0.0005 | 0.00058 | 0.0001 | 0.0001 | 61.5 | 0.003650 | 0.0025 | 0.00323 | | | |
| E206618 | | Count | 15 | 15 | 15 | 15 | 8 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 6 | | | |
| | | Minimum | <0.00010 | <0.00010 | 0.0073 | 0.0046 | 38.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00038 | 0.0170 | 0.0079 | 0.0052 | <0.0010 | <0.0000020 | <0.0000020 | 27.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 23.8 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Maximum | 0.00019 | 0.00016 | 0.0185 | 0.0162 | 45.5 | <0.000010 | 0.000005 | 0.00147 | 0.00069 | 0.225 | 0.0347 | 0.0693 | 0.0637 | <0.0000020 | <0.0000020 | 116 | <0.0010 | 0.0017 | <0.00020 | <0.00020 | 136 | 0.0197 | <0.0050 | 0.0049 | | | |
| | | Geometric Mean | 0.000107 | 0.000091 | 0.0117 | 0.0098 | 42.5 | 0.000005 | 0.00000262 | 0.000549 | 0.000520 | 0.037 | 0.0163 | 0.0133 | 0.00581 | 0.000001 | 0.000001 | 56.6 | 0.0005 | 0.00054 | 0.0001 | 0.0001 | 55.2 | 0.00287 | 0.0025 | 0.00265 | | | |
| | | Count <DL | 3 | 5 | 0 | 0 | 0 | 15 | 14 | 3 | 0 | 0 | 0 | 0 | 1 | 14 | 14 | 0 | 15 | 14 | 15 | 15 | 0 | 14 | 15 | 2 | | | |
| | | Standard Deviation | 0.00005 | 0.000042 | 0.0041 | 0.0035 | 2.3 | 0 | 0.00000065 | 0.000306 | 0.00008 | 0.05 | 0.0083 | 0.0167 | 0.01655 | 0 | 0 | 23.9 | 0 | 0.00031 | 0 | 0.00000000 | 29.4 | 0.00444 | 1E-10 | 0.00179 | | | |
| | | 1st Quartile | 0.0001 | <0.00010 | 0.0081 | 0.00730 | 41.5 | <0.000010 | <0.0000050 | 0.000515 | 0.00047 | 0.028 | 0.0127 | 0.0076 | 0.00235 | <0.0000020 | <0.0000020 | 45.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 44.9 | <0.0050 | <0.0050 | 0.00163 | | | |
| | | Median | 0.00011 | 0.0001100 | 0.0133 | 0.0107 | 42.9 | <0.000010 | <0.0000050 | 0.000557 | 0.000520 | 0.038 | 0.0141 | 0.0119 | 0.0063 | <0.0000020 | <0.0000020 | 60.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 58.4 | <0.0050 | <0.0050 | 0.00395 | | | |
| | | 3rd Quartile | 0.00015 | 0.000125 | 0.0148 | 0.0127 | 44.1 | <0.000010 | <0.0000050 | 0.00069 | 0.00055 | 0.042 | 0.0229 | 0.0204 | 0.01425 | <0.0000020 | <0.0000020 | 72.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 72.7 | <0.0050 | <0.0050 | 0.00455 | | | |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 54
# 2019-2020 Annual Report

| 2017 -18 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NNL1** | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E217018** | No Name Lake 1 metre below surface | Average | 0.00027 | 0.000260 | 0.0294 | 0.0248 | 13.1 | 0.0000089 | 0.0000025 | 0.000561 | 0.00054 | 0.065 | 0.0418 | 0.00739 | 0.00437 | 0.00000109 | 0.000001 | 14.1 | 0.0005 | 0.0005 | 0.000126 | 0.0001 | 1.685 | 0.00438 | 0.0025 | 0.0051 | | | |
| | | Count | 15 | 15 | 15 | 15 | 8 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 6 | | | |
| | | Minimum | 0.00016 | 0.00015 | 0.0096 | 0.0092 | 10.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00032 | 0.028 | 0.0222 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 10.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <0.50 | <0.0050 | <0.0050 | 0.0044 | | | |
| | | Maximum | 0.00036 | 0.00037 | 0.0755 | 0.0511 | 15.2 | 0.000063 | <0.0000050 | 0.0021 | 0.0013 | 0.145 | 0.0939 | 0.0285 | 0.0252 | 0.0000023 | <0.0000020 | 17.1 | <0.0010 | <0.0010 | 0.00049 | <0.00020 | 3.2 | 0.0307 | <0.0050 | 0.0073 | | | |
| | | Geometric Mean | 0.00026 | 0.00025 | 0.0239 | 0.0221 | 13 | 0.00000590 | 0.0000025 | 0.000418 | 0.00051 | 0.058 | 0.0363 | 0.00501 | 0.00185 | 0.00000106 | 0.00000100 | 14 | 0.0005 | 0.0005 | 0.000111 | 0.0001 | 1.453 | 0.00295 | 0.0025 | 0.00500 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 14 | 15 | 9 | 0 | 0 | 0 | 1 | 5 | 13 | 14 | 0 | 15 | 15 | 14 | 15 | 2 | 14 | 15 | 0 | | | |
| | | Standard Deviation | 0.000070 | 0.00008 | 0.0188 | 0.0119 | 2.0 | 0.000015 | 0 | 0.000535 | 0.00024 | 0.035 | 0.0255 | 0.00788 | 0.00697 | 0.00000035 | 0.00000000 | 1.8 | 0 | 0 | 0.00010100 | 0 | 0.785 | 0.00728 | 1E-10 | 0.0011 | | | |
| | | 1st Quartile | 0.00019 | 0.00018 | 0.0113 | 0.0131 | 11.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00042 | 0.042 | 0.0251 | 0.0036 | <0.0010 | <0.0000020 | <0.0000020 | 12.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.345 | <0.0050 | <0.0050 | 0.0045 | | | |
| | | Median | 0.00027 | 0.000270 | 0.0300 | 0.0239 | 14.2 | <0.000010 | <0.0000050 | <0.00050 | 0.00048 | 0.055 | 0.0272 | 0.00420 | 0.00180 | <0.0000020 | <0.0000020 | 14.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.68 | <0.0050 | <0.0050 | 0.0047 | | | |
| | | 3rd Quartile | 0.00032 | 0.00033 | 0.0386 | 0.0309 | 14.5 | <0.000010 | <0.0000050 | 0.00061 | 0.00063 | 0.076 | 0.0519 | 0.00675 | 0.00405 | <0.0000020 | <0.0000020 | 15.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.9 | <0.0050 | <0.0050 | 0.005 | | | |
| **NNLB** | No Name Lake 1 metre from bottom | Average | 0.00021 | 0.0002 | 0.0343 | 0.0285 | 11.8 | 0.000005 | 0.00000267 | 0.000859 | 0.0005 | 0.129 | 0.0855 | 0.0282 | 0.0243 | 0.00000109 | 0.00000126 | 15.5 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 4.08 | 0.0025 | 0.002500 | 0.00620 | | | |
| **E217018** | | Count | 15 | 15 | 15 | 15 | 8 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 6 | | | |
| | | Minimum | 0.00016 | 0.00015 | 0.0138 | <0.0030 | 10.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00033 | 0.091 | 0.0507 | 0.0078 | 0.0026 | <0.0000020 | <0.0000020 | 12.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.7 | <0.0050 | <0.0050 | 0.0042 | | | |
| | | Maximum | 0.00032 | 0.00029 | 0.06 | 0.0519 | 14 | <0.000010 | 0.000005 | 0.00664 | 0.00134 | 0.233 | 0.156 | 0.0989 | 0.0984 | 0.0000022 | 0.0000034 | 18.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 5.13 | <0.0050 | <0.0050 | 0.0111 | | | |
| | | Geometric Mean | 0.00021 | 0.000190 | 0.0328 | 0.02419 | 11.8 | 0.000005 | 0.00000262 | 0.00047 | 0.00046 | 0.124 | 0.0812 | 0.0193 | 0.0134 | 0.00000106 | 0.00000115 | 15.4 | 0.0005000 | 0.0005 | 0.0001 | 0.0001 | 3.93 | 0.0025 | 0.0025 | 0.00590 | | | |
| | | Count <DL | 0 | 0 | 0 | 1 | 0 | 15 | 14 | 8 | 0 | 0 | 0 | 0 | 0 | 13 | 12 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | | | |
| | | Standard Deviation | 0.00005 | 0.00004 | 0.0104 | 0.01076 | 1.4 | 0 | 0.00000065 | 0.001616 | 0.00025 | 0.043 | 0.0311 | 0.0306 | 0.0311 | 0.00000032 | 0.00000069 | 1.6 | 0 | 0.0000000 | 0 | 0 | 1 | 1E-10 | 0.000000 | 0.00250 | | | |
| | | 1st Quartile | 0.00018 | 0.00017 | 0.0297 | 0.0274 | 10.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00038 | 0.097 | 0.0653 | 0.0117 | 0.0076 | <0.0000020 | <0.0000020 | 14.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.58 | <0.0050 | <0.0050 | 0.0049 | | | |
| | | Median | 0.0002 | 0.00018 | 0.0312 | 0.0284 | 11.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00042 | 0.125 | 0.0791 | 0.0137 | 0.0099 | <0.0000020 | <0.0000020 | 15.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.4 | <0.0050 | <0.0050 | 0.0054 | | | |
| | | 3rd Quartile | 0.00023 | 0.00022 | 0.0381 | 0.03055 | 13.0 | <0.000010 | <0.0000050 | 0.000705 | 0.00049 | 0.133 | 0.0864 | 0.0226 | 0.0189 | <0.0000020 | <0.0000020 | 16.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.84 | <0.0050 | <0.0050 | 0.0063 | | | |
| **NNO** | No Name Lake Outlet | Average | 0.00025 | 0.00024 | 0.0544 | 0.037 | 11.23 | 0.0000073 | 0.00000363 | 0.000625 | 0.00056 | 0.092 | 0.0564 | 0.00992 | 0.00658 | 0.0000014 | 0.0000012 | 13.17 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.633 | 0.00288 | 0.0025 | 0.0058 | 0.00519 | 0.0349 | 0.01655 |
| **E217017** | | Count | 15 | 16 | 15 | 16 | 15 | 15 | 16 | 15 | 16 | 15 | 16 | 15 | 16 | 15 | 15 | 15 | 15 | 16 | 15 | 16 | 15 | 15 | 16 | 14 | 14 | 14 | 14 |
| | | Minimum | 0.00017 | 0.00016 | 0.015 | 0.0134 | 6.5 | <0.000010 | <0.0000050 | <0.00050 | 0.00036 | 0.042 | 0.024 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 7.87 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <1.0 | <0.0050 | <0.0050 | 0.0026 | <0.0020 | <0.020 | 0.0058 |
| | | Maximum | 0.0004 | 0.00038 | 0.136 | 0.0664 | 16.6 | 0.000039 | 0.0000170 | 0.00111 | 0.00075 | 0.205 | 0.0901 | 0.0287 | 0.0231 | 0.0000028 | 0.0000027 | 16.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.7 | 0.0082 | <0.0050 | 0.0136 | 0.015 | 0.075 | 0.042 |
| | | Geometric Mean | 0.00024 | 0.00023 | 0.0462 | 0.0340 | 10.95 | 0.0000057 | 0.00000298 | 0.000572 | 0.00055 | 0.084 | 0.0529 | 0.0069 | 0.00409 | 0.00000125 | 0.00000112 | 12.87 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.43 | 0.00271 | 0.0025 | 0.0053 | 0.00433 | 0.0263 | 0.01364 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 14 | 14 | 3 | 0 | 0 | 0 | 1 | 1 | 11 | 13 | 0 | 15 | 16 | 15 | 16 | 3 | 14 | 16 | 0 | 1 | 5 | 7 |
| | | Standard Deviation | 0.00007 | 0.00006 | 0.0352 | 0.015 | 2.58 | 0.0000088 | 0.00000367 | 0.000241 | 0.00013 | 0.0430 | 0.0203 | 0.00795 | 0.00665 | 0.00000063 | 0.00000051 | 2.8 | 0 | 0.00000 | 0.000000 | 0.000000 | 0.723 | 0.00147 | 4E-11 | 0.0028 | 0.00347 | 0.0249 | 0.01195 |
| | | 1st Quartile | 0.00020 | 0.00019 | 0.0341 | 0.0263 | 9.86 | <0.000010 | <0.0000050 | 0.00052 | 0.00044 | 0.063 | 0.0416 | 0.00415 | 0.00245 | <0.0000020 | <0.0000020 | 11.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.265 | <0.0050 | <0.0050 | 0.0043 | 0.00333 | <0.020 | <0.020 |
| | | Median | 0.00025 | 0.00024 | 0.0432 | 0.0351 | 11.2 | <0.000010 | <0.0000050 | 0.00068 | 0.00055 | 0.081 | 0.0524 | 0.0069 | 0.00325 | <0.0000020 | <0.0000020 | 13.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.62 | <0.0050 | <0.0050 | 0.0052 | 0.0044 | 0.031 | <0.020 |
| | | 3rd Quartile | 0.00027 | 0.00026 | 0.0625 | 0.0483 | 12.4 | <0.000010 | <0.0000050 | 0.000765 | 0.00068 | 0.119 | 0.0763 | 0.01385 | 0.01103 | 0.00000155 | <0.0000020 | 15.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.08 | <0.0050 | <0.0050 | 0.0064 | 0.00577 | 0.0573 | 0.020 |
| **LLS** | Small Seep into Long Lake | Average | 0.00226 | 0.00163 | 0.0055 | 0.00332 | 213.3 | 0.00000670 | 0.00000377 | 0.000478 | 0.000324 | 0.69 | 0.30810 | 0.1757 | 0.1784 | 0.0000010 | 0.0000010 | 526 | 0.00155 | 0.00146 | 0.0001133 | 0.000133 | 470 | 0.00333 | 0.00333 | 0.0031 | 0.0025 | 0.01 | 0.021 |
| **E292131** | | Count | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 3 | 2 | 1 | 1 |
| | | Minimum | 0.00034 | 0.00026 | <0.0030 | <0.0030 | 161 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.088 | <0.0050 | 0.0343 | 0.0316 | <0.0000020 | <0.0000020 | 405 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 377 | <0.0050 | <0.0050 | 0.0026 | 0.0021 | <0.020 | 0.021 |
| | | Maximum | 0.00492 | 0.00443 | 0.0129 | 0.009 | 252 | <0.000050 | <0.00025 | <0.0025 | 0.00084 | 2.05 | 1.5 | 0.357 | 0.358 | <0.0000020 | <0.0000020 | 677 | <0.0050 | <0.0050 | <0.0010 | <0.0010 | 567 | <0.025 | <0.025 | 0.0036 | 0.0029 | <0.020 | 0.021 |
| | | Geometric Mean | 0.00165 | 0.00117 | 0.00402 | 0.00257 | 210.7 | 0.0000057 | 0.00000314 | 0.000394 | 0.000256 | 0.421 | 0.04709 | 0.1367 | 0.1368 | 0.000001 | 0.000001 | 519 | 0.00144 | 0.00132 | 0.0001114 | 0.000114 | 466 | 0.00286 | 0.00286 | 0.0031 | 0.0025 | 0.01 | 0.021 |
| | | Count <DL | 0 | 0 | 5 | 8 | 0 | 12 | 11 | 8 | 5 | 0 | 2 | 0 | 0 | 11 | 11 | 0 | 2 | 3 | 12 | 12 | 0 | 12 | 12 | 0 | 0 | 1 | 0 |
| | | Standard Deviation | 0.00171 | 0.00139 | 0.00415 | 0.00267 | 34 | 0.0000058 | 0.00000313 | 0.000349 | 0.00022 | 0.655 | 0.56137 | 0.1191 | 0.1226 | 0 | 0 | 85 | 0.00057 | 0.00061 | 0.0001115 | 0.000115 | 60 | 0.00289 | 0.00289 | 0.0005 | 0.0006 | 0 | 0 |
| | | 1st Quartile | 0.00093 | 0.00058 | <0.0030 | <0.0030 | 189.8 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.164 | 0.01375 | 0.077 | 0.0788 | <0.0000020 | <0.0000020 | 453 | 0.00135 | 0.0012 | <0.00020 | <0.00020 | 410 | <0.0050 | <0.0050 | 0.0029 | 0.0023 | <0.020 | 0.021 |
| | | Median | 0.00147 | 0.00109 | 0.0038 | <0.0030 | 211.5 | <0.000010 | <0.0000050 | <0.00050 | 0.000340 | 0.429 | 0.0304 | 0.150 | 0.1535 | <0.0000020 | <0.0000020 | 529 | 0.0014 | 0.0014 | <0.00020 | <0.00020 | 480 | <0.0050 | <0.0050 | 0.0031 | 0.0025 | <0.020 | 0.021 |
| | | 3rd Quartile | 0.0037 | 0.00213 | 0.00847 | 0.00465 | 248.2 | <0.000010 | <0.0000050 | 0.000565 | 0.000410 | 1.143 | 0.22225 | 0.298 | 0.3155 | <0.0000020 | <0.0000020 | 555 | 0.00202 | 0.00183 | <0.00020 | <0.00020 | 496 | <0.0050 | <0.0050 | 0.0033 | 0.0027 | <0.020 | 0.021 |
| **LLSM** | Long Lake Middle Seep | Average | 0.00226 | 0.00119 | 0.0658 | 0.01168 | 193.2 | 0.0000057 | 0.0000043 | 0.001088 | 0.000719 | 1.006 | 0.18570 | 0.1703 | 0.1634 | 0.000001 | 0.00000126 | 491 | 0.0024 | 0.00252 | 0.0001 | 0.000133 | 438 | 0.00312 | 0.0039 | 0.003 | 0.0029 | 0.01 | 0.018 |
| **E292131** | | Count | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 11 | 11 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 12 | 4 | 4 | 2 | 2 |
| | | Minimum | 0.0004 | 0.00025 | 0.0035 | <0.0030 | 80.4 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.14 | 0.0073 | 0.0376 | 0.0369 | <0.0000020 | <0.0000020 | 304 | 0.0011 | 0.0012 | <0.00020 | <0.00020 | 288 | <0.0050 | <0.0050 | 0.0021 | 0.0021 | <0.020 | <0.020 |
| | | Maximum | 0.00624 | 0.00258 | 0.527 | 0.03 | 241 | 0.0000130 | <0.000025 | 0.00655 | 0.00319 | 3.63 | 1.1 | 0.35 | 0.296 | <0.0000020 | 0.0000039 | 631 | 0.0079 | 0.008 | <0.00020 | <0.0010 | 532 | 0.0099 | <0.025 | 0.0036 | 0.0035 | <0.020 | 0.026 |
| | | Geometric Mean | 0.00159 | 0.00089 | 0.0169 | 0.00847 | 186.2 | 0.0000054 | 0.00000344 | 0.000593 | 0.00043 | 0.627 | 0.0598 | 0.1342 | 0.1313 | 0.000001 | 0.00000113 | 482 | 0.0021 | 0.00218 | 0.0001100 | 0.000114 | 432 | 0.0028 | 0.00319 | 0.0029 | 0.0028 | 0.01 | 0.0161 |
| | | Count <DL | 0 | 0 | 0 | 2 | 0 | 11 | 10 | 5 | 4 | 0 | 0 | 0 | 0 | 11 | 10 | 0 | 0 | 1 | 12 | 12 | 0 | 11 | 11 | 0 | 0 | 2 | 1 |
| | | Standard Deviation | 0.00173 | 0.00081 | 0.14790 | 0.0098 | 47 | 0.0000023 | 0.00000369 | 0.001769 | 0.00087 | 1.023 | 0.32000 | 0.1106 | 0.1005 | 0.0000000 | 0.0000009 | 94 | 0.0018 | 0.00182 | 0 | 0.000115 | 72 | 0.00214 | 0.00334 | 0.0007 | 0.0006 | 4E-11 | 0.0113 |
| | | 1st Quartile | 0.00077 | 0.00042 | 0.0056 | 0.00652 | 164.5 | <0.000010 | <0.0000050 | <0.00050 | 0.000265 | 0.22 | 0.02210 | 0.0790 | 0.0842 | <0.0000020 | <0.0000020 | 445 | 0.0016 | 0.00162 | <0.00020 | <0.00020 | 400 | <0.0050 | <0.0050 | 0.0026 | 0.0027 | <0.020 | 0.014 |
| | | Median | 0.00269 | 0.00119 | 0.0081 | <0.015 | 204.5 | <0.000010 | <0.0000050 | 0.000595 | 0.00048 | 0.789 | 0.04290 | 0.15 | 0.1430 | <0.0000020 | <0.0000020 | 490 | 0.0019 | 0.00205 | <0.00020 | <0.00020 | 441 | <0.0050 | <0.0050 | 0.0031 | 0.0029 | <0.020 | 0.018 |
| | | 3rd Quartile | 0.00306 | 0.00174 | 0.04240 | 0.01348 | 232.8 | <0.000010 | 0.00000313 | 0.000822 | 0.00068 | 1.238 | 0.1735 | 0.2662 | 0.2708 | <0.0000020 | <0.0000020 | 542 | 0.0024 | 0.0027 | <0.00020 | <0.00020 | 490 | <0.0050 | <0.0050 | 0.0034 | 0.0031 | <0.020 | 0.022 |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 55
# 2019-2020 Annual Report

| 2017 -18 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| MW002 | Ex-situ 2-3 South shallow groundwater well beside 3-South Pit (1 Seam) | Average | 0.00086 | 0.00098 | 0.00695 | 0.0105 | 229.5 | 0.0000150 | 0.0000106 | 0.00075 | 0.000445 | 2.64 | 2.92 | 1.77 | 1.77 | 0.0000010 | 0.0000010 | 1220 | 0.00225 | 0.0024 | 0.000300 | 0.000400 | 1282 | 0.00750 | 0.01 | | 0.00277 | | |
| | | Count | 2 | 4 | 2 | 4 | 4 | 2 | 4 | 2 | 4 | 2 | 4 | 2 | 4 | 1 | 4 | 2 | 2 | 4 | 2 | 4 | 4 | 2 | 4 | | 4 | | |
| | | Minimum | 0.00074 | 0.00066 | 0.0064 | 0.005 | 209 | <0.000010 | 0.000005 | <0.00050 | 0.00028 | 2.3 | 2.44 | 1.69 | 1.69 | <0.0000020 | <0.0000020 | 1170 | 0.002 | 0.002 | <0.00020 | <0.00020 | 1220 | <0.0050 | <0.0050 | | <0.0020 | | |
| | | Maximum | 0.00097 | 0.00122 | <0.015 | 0.022 | 249 | <0.000050 | <0.000025 | <0.0025 | <0.0010 | 2.98 | 3.42 | 1.85 | 1.95 | <0.0000020 | <0.0000020 | 1270 | <0.0050 | <0.0050 | <0.0010 | <0.0010 | 1360 | <0.025 | <0.025 | | 0.0038 | | |
| | | Geometric Mean | 0.00085 | 0.00096 | 0.00693 | 0.00887 | 228.7 | 0.0000112 | 0.0000099 | 0.00056 | 0.000433 | 2.62 | 2.8992 | 1.77 | 1.767 | 0.0000010 | 0.0000010 | 1218 | 0.00224 | 0.0024 | 0.000224 | 0.000334 | 1280 | 0.00559 | 0.00836 | | 0.00247 | | |
| | | Count <DL | 0 | 0 | 1 | 2 | 0 | 2 | 3 | 2 | 3 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 1 | 3 | 2 | 4 | 0 | 2 | 4 | | 1 | | |
| | | Standard Deviation | 0.00016 | 0.00025 | 0.00078 | 0.00776 | 21.4 | 0.0000141 | 0.0000038 | 0.00071 | 0.00011 | 0.48 | 0.4016 | 0.11 | 0.1208 | 0.0000000 | 0.0000000 | 70 | 0.00035 | 0.00025 | 0.000283 | 0.000200 | 73 | 0.00707 | 0.005 | | 0.00126 | | |
| | | 1st Quartile | 0.0008 | 0.00086 | 0.00668 | 0.00688 | 212 | 0.00001 | 0.00001063 | 0.0005 | 0.000445 | 2.47 | 2.7625 | 1.73 | 1.7125 | <0.0000020 | <0.0000020 | 1195 | 0.0021 | 0.00237 | 0.0002 | 0.0004 | 1220 | 0.005 | 0.01000 | | 0.00235 | | |
| | | Median | 0.00086 | 0.00103 | 0.00695 | <0.015 | 230 | 0.000015 | <0.000025 | 0.00075 | <0.0010 | 2.64 | 2.91 | 1.77 | 1.72 | <0.0000020 | <0.0000020 | 1220 | 0.00225 | <0.0050 | 0.0003 | <0.0010 | 1275 | 0.0075 | <0.025 | | 0.00315 | | |
| | | 3rd Quartile | 0.00091 | 0.00116 | 0.00722 | 0.01112 | 247.5 | 0.00002 | <0.000025 | 0.001 | <0.0010 | 2.81 | 3.0675 | 1.81 | 1.7775 | <0.0000020 | <0.0000020 | 1245 | 0.00237 | <0.0050 | 0.0004 | <0.0010 | 1337 | 0.01 | <0.025 | | 0.00358 | | |
| QU1009D | Ex-situ 4-South deep groundwater well. Down gradient of 4-South Mine. Base of Dunsmuir Member. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | | 0.101 | | 0.00250 | 185 | | 0.0000063 | | 0.000550 | | 0.655 | | 0.1165 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 83.7 | | 0.00250 | | 0.0265 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.100 | | <0.0030 | 184 | | <0.0000050 | | 0.00033 | | 0.517 | | 0.098 | | <0.0000020 | | | <0.0010 | | <0.00020 | 79 | | <0.0050 | | 0.0178 | | |
| | | Maximum | | 0.102 | | 0.0035 | 186 | | 0.00001 | | 0.00076 | | 0.793 | | 0.135 | | <0.0000020 | | | <0.0010 | | <0.00020 | 88.4 | | <0.0050 | | 0.0352 | | |
| | | Geometric Mean | | 0.101 | | 0.00229 | 185 | | 0.0000050 | | 0.000500 | | 0.6403 | | 0.115 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 83.6 | | 0.00250 | | 0.0250 | | |
| | | Count <DL | | 0 | | 1 | 0 | | 1 | | 0 | | 0 | | 0 | | 2 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.001 | | 0.00141 | 1.4 | | 0.0000053 | | 0.000300 | | 0.1952 | | 0.0262 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 6.6 | | 0.00000 | | 0.0123 | | |
| | | 1st Quartile | | 0.101 | | 0.00200 | 184.5 | | 0.00000438 | | 0.00044 | | 0.586 | | 0.1073 | | <0.0000020 | | | <0.0010 | | <0.00020 | 81.3 | | <0.0050 | | 0.0221 | | |
| | | Median | | 0.101 | | 0.00250 | 185 | | 0.00000625 | | 0.00055 | | 0.655 | | 0.1165 | | <0.0000020 | | | <0.0010 | | <0.00020 | 83.7 | | <0.0050 | | 0.0265 | | |
| | | 3rd Quartile | | 0.101 | | 0.00300 | 185.5 | | 0.00000813 | | 0.00065 | | 0.724 | | 0.1258 | | <0.0000020 | | | <0.0010 | | <0.00020 | 86.1 | | <0.0050 | | 0.0309 | | |
| QU10095 | Ex-situ 4-South shallow groundwater well. Fracture zone 10 m below till. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | | 0.0838 | | 0.00150 | 137.5 | | 0.0000025 | | 0.000155 | | 5.55 | | 0.3955 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 128.0 | | 0.00250 | | 0.0295 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.0807 | | <0.0030 | 136 | | <0.0000050 | | <0.00020 | | 5.37 | | 0.389 | | <0.0000020 | | | <0.0010 | | <0.00020 | 128 | | <0.0050 | | 0.0283 | | |
| | | Maximum | | 0.0869 | | <0.0030 | 139 | | <0.0000050 | | 0.00021 | | 5.73 | | 0.402 | | <0.0000020 | | | <0.0010 | | <0.00020 | 128 | | <0.0050 | | 0.0307 | | |
| | | Geometric Mean | | 0.0837 | | 0.0015 | 137.5 | | 0.0000025 | | 0.000145 | | 5.5471 | | 0.3954 | | 0.0000010 | | | 0.0005 | | 0.0001000 | 128.0 | | 0.00250 | | 0.0295 | | |
| | | Count <DL | | 0 | | 2 | 0 | | 2 | | 1 | | 0 | | 0 | | 2 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.0044 | | 0 | 2.1 | | 0.0000000 | | 0.000078 | | 0.2546 | | 0.0092 | | 0.0000000 | | | 0 | | 0.0000000 | 0.0 | | 0.00000 | | 0.0017 | | |
| | | 1st Quartile | | 0.0822 | | <0.0030 | 136.8 | | <0.0000050 | | 0.000128 | | 5.46 | | 0.3922 | | <0.0000020 | | | <0.0010 | | <0.00020 | 128 | | <0.0050 | | 0.0289 | | |
| | | Median | | 0.0838 | | <0.0030 | 137.5 | | <0.0000050 | | 0.000155 | | 5.55 | | 0.3955 | | <0.0000020 | | | <0.0010 | | <0.00020 | 128 | | <0.0050 | | 0.0295 | | |
| | | 3rd Quartile | | 0.0854 | | <0.0030 | 138.2 | | <0.0000050 | | 0.000183 | | 5.64 | | 0.3988 | | <0.0000020 | | | <0.0010 | | <0.00020 | 128 | | <0.0050 | | 0.0301 | | |
| SPD | Settling Pond # 1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E218582 | | Average | 0.00109 | 0.00072 | 0.0599 | 0.02083 | 103.30 | 0.0000076 | 0.00000538 | 0.000991 | 0.00058 | 0.638 | 0.1611 | 0.0668 | 0.05851 | 0.00000121 | 0.00000117 | 215 | 0.00136 | 0.00104 | 0.0001 | 0.000100 | 204.2 | 0.00250 | 0.0025 | 0.113 | 0.0053 | 0.3925 | 0.0396 |
| | | Count | 14 | 14 | 14 | 14 | 16 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 40 | 14 | 14 | 12 | 11 | 8 | 8 |
| | | Minimum | 0.00037 | 0.0002 | 0.0045 | <0.0030 | 40.80 | <0.000010 | <0.0000050 | <0.00050 | 0.0003 | 0.088 | 0.0104 | 0.0142 | <0.0010 | <0.0000020 | <0.0000020 | 127 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 94.5 | <0.0050 | <0.0050 | 0.0037 | 0.0032 | <0.020 | <0.020 |
| | | Maximum | 0.00282 | 0.00151 | 0.249 | 0.078 | 275.0 | 0.000032 | 0.000021 | 0.00219 | 0.00083 | 2.25 | 0.614 | 0.220 | 0.241 | 0.0000026 | 0.0000023 | 333 | 0.0031 | 0.0028 | <0.00020 | <0.00020 | 367 | <0.0050 | <0.0050 | 1.27 | 0.0098 | <2.0 | 0.17 |
| | | Geometric Mean | 0.00088 | 0.0006 | 0.0351 | 0.01169 | 91.9 | 0.0000062 | 0.00000409 | 0.000883 | 0.00056 | 0.411 | 0.1009 | 0.0494 | 0.02626 | 0.0000011 | 0.0000011 | 206 | 0.00109 | 0.00086 | 0.0001 | 0.000100 | 196.50 | 0.0025 | 0.0025 | 0.0113 | 0.00500 | 0.0750 | 0.0207 |
| | | Count <DL | 0 | 0 | 0 | 1 | 0 | 12 | 8 | 1 | 0 | 0 | 0 | 0 | 2 | 12 | 12 | 0 | 5 | 7 | 14 | 14 | 0 | 14 | 14 | 0 | 0 | 8 | 5 |
| | | Standard Deviation | 0.00079 | 0.00042 | 0.0641 | 0.0226 | 55.9 | 0.0000075 | 0.00000522 | 0.000484 | 0.00015 | 0.664 | 0.1674 | 0.0554 | 0.06226 | 0.0000005 | 0.00000044 | 64.0 | 0.00091 | 0.0007 | 0.000000 | 0.000000 | 55.9 | 1E-10 | 1E-10 | 0.3644 | 0.0021 | 0.504 | 0.0564 |
| | | 1st Quartile | 0.00049 | 0.00034 | 0.0206 | 0.0053 | 63.1 | <0.000010 | <0.0000050 | 0.000685 | 0.0005 | 0.233 | 0.0592 | 0.0281 | 0.0277 | <0.0000020 | <0.0000020 | 165 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 170.2 | <0.0050 | <0.0050 | 0.0065 | 0.0037 | <0.020 | <0.020 |
| | | Median | 0.00089 | 0.00069 | 0.0423 | 0.009 | 101.2 | <0.000010 | <0.0000050 | 0.00079 | 0.0006 | 0.353 | 0.102 | 0.0563 | 0.04405 | <0.0000020 | <0.0000020 | 195 | 0.00115 | 0.0008 | <0.00020 | <0.00020 | 204.50 | <0.0050 | <0.0050 | 0.0076 | 0.0046 | 0.055 | <0.020 |
| | | 3rd Quartile | 0.00128 | 0.00101 | 0.072 | 0.0363 | 121.8 | <0.000010 | 0.00000500 | 0.001267 | 0.00064 | 0.772 | 0.1878 | 0.077 | 0.06368 | <0.0000020 | <0.0000020 | 268 | 0.00195 | 0.00127 | <0.00020 | <0.00020 | 236.2 | <0.0050 | <0.0050 | 0.01010 | 0.0059 | <2.0 | 0.03930 |
| LLE | Long Lake Entrance (LLE) | Average | 0.000999 | 0.000814 | 0.06775 | 0.02976 | 72.2 | 0.00000790 | 0.00000429 | 0.000698 | 0.000586 | 0.49 | 0.2533 | 0.0871 | 0.0855 | 0.00000131 | 0.0000016 | 289.5 | 0.00079 | 0.00079 | 0.000157 | 0.000157 | 261.41 | 0.00393 | 0.00648 | 0.0094 | 0.0064 | 0.0502 | 0.04829 |
| E292130 | | Count | 14 | 14 | 14 | 14 | 13 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 12 | 12 | 14 | 14 | 14 | 14 | 14 | 48 | 14 | 14 | 10 | 5 | 11 | 11 |
| | | Minimum | 0.00024 | 0.00018 | <0.015 | 0.0039 | 22.8 | <0.000010 | <0.0000050 | <0.00050 | 0.00029 | 0.059 | 0.0524 | 0.0107 | 0.0097 | <0.0000020 | <0.0000020 | 55.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.1 | <0.0050 | <0.0050 | 0.0033 | 0.0029 | <0.020 | <0.0050 |
| | | Maximum | 0.00163 | 0.00136 | 0.203 | 0.0734 | 160 | <0.000050 | 0.000012 | <0.0025 | 0.00088 | 2.17 | 1.27 | 0.251 | 0.281 | 0.000003 | 0.0000042 | 866 | <0.0050 | <0.0050 | <0.0010 | <0.0010 | 906 | <0.025 | 0.0347 | 0.0306 | 0.0093 | 0.154 | 0.2500 |
| | | Geometric Mean | 0.000828 | 0.000681 | 0.0515 | 0.02138 | 60.4 | 0.0000063 | 0.00000352 | 0.000611 | 0.000559 | 0.325 | 0.1686 | 0.0501 | 0.0486 | 0.00000119 | 0.0000014 | 191.4 | 0.00063 | 0.00063 | 0.000126 | 0.000126 | 150.17 | 0.00315 | 0.00404 | 0.0077 | 0.006 | 0.0261 | 0.02019 |
| | | Count <DL | 2 | 2 | 1 | 2 | 0 | 14 | 10 | 5 | 2 | 0 | 0 | 0 | 0 | 10 | 8 | 0 | 14 | 14 | 14 | 14 | 0 | 14 | 12 | 0 | 0 | 7 | 4 |
| | | Standard Deviation | 0.000502 | 0.000408 | 0.05007 | 0.02087 | 44.3 | 0.0000073 | 0.00000331 | 0.000343 | 0.000179 | 0.583 | 0.3125 | 0.085 | 0.0871 | 0.00000072 | 0.00000103 | 296.9 | 0.00073 | 0.00073 | 0.000145 | 0.000145 | 281.27 | 0.00363 | 0.00889 | 0.0078 | 0.0024 | 0.0555 | 0.07722 |
| | | 1st Quartile | 0.000612 | 0.00045 | 0.03148 | 0.0085 | 46.6 | <0.000010 | <0.0000050 | 0.000543 | 0.000455 | 0.215 | 0.100 | 0.0192 | 0.0189 | <0.0000020 | <0.0000020 | 110.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 85 | <0.0050 | <0.0050 | 0.0063 | 0.0057 | <0.020 | <0.020 |
| | | Median | 0.001085 | 0.00087 | 0.0622 | 0.0306 | 60.9 | <0.000010 | <0.0000050 | 0.00059 | 0.000565 | 0.323 | 0.144 | 0.0509 | 0.0492 | <0.0000020 | <0.0000020 | 142 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 125 | <0.0050 | <0.0050 | 0.0075 | 0.0071 | <0.020 | 0.013 |
| | | 3rd Quartile | 0.001415 | 0.001112 | 0.08378 | 0.04108 | 84 | <0.000010 | 0.00000513 | 0.00094 | 0.000732 | 0.359 | 0.2923 | 0.139 | 0.123 | <0.0000020 | 0.0000212 | 315.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 312.5 | <0.0050 | 0.00513 | 0.00880 | 0.0071 | 0.0975 | 0.03200 |
| LLM1 | Long Lake Middle 1 metre below Surface | Average | 0.00044 | 0.00043 | 0.0202 | 0.0172 | 32.4 | 0.00000500 | 0.0000025 | 0.001167 | 0.00041 | 0.051 | 0.031 | 0.0068 | 0.00203 | 0.000001 | 0.000001 | 82.2 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 69.6 | 0.00250 | 0.00250 | 0.00319 | | | |
| E206619 | | Count | 15 | 15 | 15 | 15 | 10 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 7 | | | |
| | | Minimum | 0.00024 | 0.00023 | 0.0065 | 0.0044 | 14.8 | <0.000010 | <0.0000050 | <0.00050 | 0.00022 | 0.016 | 0.0088 | 0.0011 | <0.0010 | <0.0000020 | <0.0000020 | 23.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 12.6 | <0.0050 | <0.0050 | <0.0020 | | | |
| | | Maximum | 0.00062 | 0.00061 | 0.0503 | 0.0449 | 47.8 | <0.000010 | <0.0000050 | 0.00899 | 0.0007 | 0.109 | 0.0774 | 0.0090 | 0.0066 | <0.0000020 | <0.0000020 | 133 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 117 | <0.0050 | <0.0050 | 0.0060 | | | |
| | | Geometric Mean | 0.00042 | 0.00041 | 0.0161 | 0.014 | 30.3 | 0.000005 | 0.0000025 | 0.00055 | 0.00038 | 0.042 | 0.0251 | 0.0063 | 0.00154 | 0.000001 | 0.000001 | 71.3 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 57.7 | 0.0025 | 0.00250 | 0.00264 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 7 | 0 | 0 | 0 | 0 | 3 | 14 | 14 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 2 | | | |
| | | Standard Deviation | 0.00013 | 0.00014 | 0.0137 | 0.0114 | 11.4 | 0.00000000 | 0 | 0.002248 | 0.00015 | 0.032 | 0.0218 | 0.002 | 0.00167 | 0 | 0 | 39.5 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 36.3 | 1E-10 | 0.00000 | 0.00186 | | | |
| | | 1st Quartile | 0.00033 | 0.0003 | 0.0083 | 0.0079 | 26.8 | <0.000010 | <0.0000050 | <0.00050 | 0.0003 | 0.022 | 0.0146 | 0.0059 | 0.00115 | <0.0000020 | <0.0000020 | 48.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 38.8 | <0.0050 | <0.0050 | 0.00205 | | | |
| | | Median | 0.00043 | 0.00043 | 0.017 | 0.0125 | 32.7 | <0.000010 | <0.0000050 | 0.00050 | 0.00037 | 0.039 | 0.0261 | 0.0073 | 0.0016 | <0.0000020 | <0.0000020 | 81.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 72.2 | <0.0050 | <0.0050 | 0.0031 | | | |
| | | 3rd Quartile | 0.00056 | 0.00057 | 0.0294 | 0.0247 | 40.1 | <0.000010 | <0.0000050 | 0.000785 | 0.0005 | 0.0720 | 0.036 | 0.0083 | 0.00225 | <0.0000020 | <0.0000020 | 122 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 103.5 | <0.0050 | <0.0050 | 0.00405 | | | |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 56
# 2019-2020 Annual Report

| 2017 -18 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **LLMB** | Long Lake Middle 1 metre From Bottom | Average | 0.00028 | 0.00023 | 0.0125 | 0.009 | 57.6 | 0.00000500 | 0.0000025 | 0.004655 | 0.00037 | 0.07 | 0.02570 | 0.5811 | 0.5005 | 0.000001 | 0.000001 | 133.7 | 0.00050 | 0.00050 | 0.000126 | 0.000100 | 127.5 | 0.00250 | 0.00250 | 0.00410 | | | |
| **E206619** | | Count | 15 | 15 | 15 | 15 | 10 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 7 | | | |
| | | Minimum | 0.0002 | 0.00017 | 0.0067 | 0.0043 | 55.8 | <0.000010 | <0.0000050 | <0.00050 | 0.00026 | 0.013 | 0.0081 | 0.0014 | 0.0014 | <0.0000020 | <0.0000020 | 127 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 122 | <0.0050 | <0.0050 | 0.0023 | | | |
| | | Maximum | 0.00036 | 0.0003 | 0.0216 | 0.0155 | 61.7 | <0.000010 | <0.0000050 | 0.0655 | 0.00055 | 0.156 | 0.0742 | 1.63 | 1.45 | <0.0000020 | <0.0000020 | 143 | <0.0010 | <0.0010 | 0.00034 | <0.00020 | 134 | <0.0050 | <0.0050 | 0.0071 | | | |
| | | Geometric Mean | 0.00028 | 0.00022 | 0.0114 | 0.0082 | 57.6 | 0.000005 | 0.0000025 | 0.000421 | 0.00036 | 0.061 | 0.0185 | 0.2585 | 0.1299 | 0.000001 | 0.000001 | 133.6 | 0.00050 | 0.00050 | 0.000115 | 0.000100 | 127.5 | 0.00250 | 0.00250 | 0.00380 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 11 | 0 | 0 | 0 | 0 | 0 | 14 | 14 | 0 | 15 | 15 | 13 | 15 | 0 | 15 | 15 | 0 | | | |
| | | Standard Deviation | 0.00005 | 0.00004 | 0.0056 | 0.0042 | 1.9 | 0 | 0 | 0.016833 | 0.00008 | 0.037 | 0.022 | 0.6065 | 0.6002 | 0 | 0 | 4.3 | 0.00000 | 0.00000 | 0.000071 | 0.000000 | 3.0 | 1E-10 | 0.00000 | 0.00170 | | | |
| | | 1st Quartile | 0.00024 | 0.00020 | 0.0084 | 0.0056 | 56.3 | <0.000010 | <0.0000050 | <0.00050 | 0.00032 | 0.048 | 0.0097 | 0.1435 | 0.0692 | <0.0000020 | <0.0000020 | 132 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 126 | <0.0050 | <0.0050 | 0.003 | | | |
| | | Median | 0.00028 | 0.00022 | 0.0088 | 0.0073 | 57.1 | <0.000010 | <0.0000050 | <0.00050 | 0.00034 | 0.054 | 0.01160 | 0.258 | 0.14 | <0.0000020 | <0.0000020 | 133 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 127.0 | <0.0050 | <0.0050 | 0.0034 | | | |
| | | 3rd Quartile | 0.00032 | 0.00026 | 0.0188 | 0.0136 | 58.7 | <0.000010 | <0.0000050 | 0.00038 | 0.00041 | 0.097 | 0.04810 | 1.26 | 1.17 | <0.0000020 | <0.0000020 | 135 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 129.5 | <0.0050 | <0.0050 | 0.0049 | | | |
| **LLO** | Long Lake Outlet | Average | 0.00051 | 0.0004 | 0.058 | 0.015 | 36.6 | 0.0000054 | 0.00000275 | 0.000523 | 0.00042 | 0.1270 | 0.0294 | 0.0332 | 0.0048 | 0.00000122 | 0.00000109 | 92.3 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 68.5 | 0.00250 | 0.00250 | 0.0078 | 0.00540 | 0.0503 | 0.00864 |
| **E219412** | | Count | 18 | 18 | 18 | 18 | 19 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 18 | 17 | 18 | 18 | 18 | 18 | 18 | 52 | 18 | 18 | 9 | 7 | 8 | 8 |
| | | Minimum | 0.00027 | 0.00023 | 0.0071 | 0.004 | 20.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00026 | 0.024 | 0.0061 | 0.0047 | 0.0015 | <0.0000020 | <0.0000020 | 37.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.9 | <0.0050 | <0.0050 | 0.0032 | 0.0033 | <0.020 | <0.0050 |
| | | Maximum | 0.00139 | 0.0006 | 0.287 | 0.054 | 54.9 | 0.000012 | 0.000007 | 0.00144 | 0.00098 | 0.643 | 0.084 | 0.279 | 0.0138 | 0.0000034 | 0.0000026 | 134 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 119 | <0.0050 | <0.0050 | 0.0167 | 0.0112 | 0.134 | 0.015 |
| | | Geometric Mean | 0.00047 | 0.00038 | 0.0294 | 0.0107 | 35.2 | 0.0000052 | 0.00000265 | 0.000427 | 0.00039 | 0.077 | 0.0229 | 0.0147 | 0.0041 | 0.0000011 | 0.0000011 | 84.7 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 60.6 | 0.00250 | 0.00250 | 0.0069 | 0.00500 | 0.0341 | 0.00729 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 17 | 17 | 10 | 0 | 0 | 0 | 0 | 0 | 16 | 16 | 0 | 18 | 18 | 18 | 18 | 0 | 18 | 18 | 0 | 0 | 2 | 5 |
| | | Standard Deviation | 0.00026 | 0.00010 | 0.0813 | 0.0136 | 9.8 | 0.0000016 | 0.00000106 | 0.000357 | 0.00019 | 0.161 | 0.0232 | 0.0664 | 0.0029 | 0.00000065 | 0.00000039 | 34.5 | 0 | 0.00000 | 0.000000 | 0.000000 | 31.3 | 3E-11 | 3E-11 | 0.0042 | 0.0027 | 0.0454 | 0.00439 |
| | | 1st Quartile | 0.00035 | 0.00031 | 0.0132 | 0.0054 | 28.8 | <0.000010 | <0.0000050 | <0.00050 | 0.00031 | 0.037 | 0.0153 | 0.0075 | 0.0031 | <0.0000020 | <0.0000020 | 55.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 42.6 | <0.0050 | <0.0050 | 0.0047 | 0.004 | 0.0205 | 0.00595 |
| | | Median | 0.00044 | 0.00043 | 0.0261 | 0.0094 | 39.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00035 | 0.075 | 0.0197 | 0.0103 | 0.0043 | <0.0000020 | <0.0000020 | 107 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 60.5 | <0.0050 | <0.0050 | 0.0066 | 0.0042 | 0.0305 | <0.020 |
| | | 3rd Quartile | 0.00055 | 0.00045 | 0.0523 | 0.022 | 43.5 | <0.000010 | <0.0000050 | 0.000752 | 0.00041 | 0.129 | 0.036 | 0.0165 | 0.0057 | <0.0000020 | <0.0000020 | 118.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 97.6 | <0.0050 | <0.0050 | 0.0095 | 0.0057 | 0.0723 | 0.01050 |
| **WB** | Middle Quinsam Lake Outlet | Average | 0.00019 | 0.00018 | 0.0184 | 0.0159 | 41.2 | 0.000005 | 0.00002294 | 0.000564 | 0.00063 | 0.036 | 0.0256 | 0.0068 | 0.0024 | 0.0000012 | 0.0000010 | 38.2 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 34.3 | 0.00250 | 0.00250 | 0.00430 | 0.00350 | 0.0100 | 0.00886 |
| **E0900504** | | Count | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 16 | 15 | 16 | 16 | 16 | 16 | 16 | 17 | 16 | 16 | 9 | 7 | 8 | 8 |
| | | Minimum | 0.00013 | 0.00012 | 0.0096 | 0.0082 | 32.9 | <0.000010 | <0.0000050 | <0.00050 | 0.00044 | 0.027 | 0.0187 | 0.0032 | 0.001 | <0.0000020 | <0.0000020 | 32.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 28.7 | <0.0050 | <0.0050 | 0.0031 | 0.0023 | <0.020 | <0.0050 |
| | | Maximum | 0.00025 | 0.00022 | 0.0288 | 0.0228 | 45.2 | <0.000010 | 0.000006 | 0.00094 | 0.00144 | 0.051 | 0.0387 | 0.0120 | 0.0056 | 0.000004 | <0.0000020 | 61.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 54 | <0.0050 | <0.0050 | 0.0073 | 0.0049 | <0.020 | 0.025 |
| | | Geometric Mean | 0.00018 | 0.000180 | 0.0174 | 0.0151 | 41 | 0.000005 | 0.00000279 | 0.000539 | 0.00059 | 0.036 | 0.0252 | 0.0064 | 0.0022 | 0.00000109 | 0.000001 | 37.8 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 34 | 0.00250 | 0.00250 | 0.00420 | 0.00350 | 0.0100 | 0.0065 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 16 | 14 | 2 | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 0 | 16 | 16 | 16 | 16 | 0 | 16 | 16 | 0 | 0 | 8 | 5 |
| | | Standard Deviation | 0.00003 | 0.00003 | 0.0062 | 0.0051 | 3.2 | 1E-14 | 0.0000012 | 0.00016 | 0.00027 | 0.0070 | 0.0053 | 0.0025 | 0.0011 | 0.00000075 | 0 | 6.8 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 5.8 | 4E-11 | 4E-11 | 0.0013 | 0.0009 | 1E-10 | 0.00748 |
| | | 1st Quartile | 0.00017 | 0.00015 | 0.012 | 0.0099 | 39.7 | <0.000010 | <0.0000050 | 0.000535 | 0.00050 | 0.032 | 0.0225 | 0.005 | 0.0018 | <0.0000020 | <0.0000020 | 34.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 30.8 | <0.0050 | <0.0050 | 0.0036 | 0.003 | <0.020 | <0.0050 |
| | | Median | 0.00018 | 0.000190 | 0.0185 | 0.0172 | 41.8 | <0.000010 | <0.0000050 | 0.000555 | 0.00055 | 0.036 | 0.024 | 0.0063 | 0.0023 | <0.0000020 | <0.0000020 | 36.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 32.3 | <0.0050 | <0.0050 | 0.004 | 0.0037 | <0.020 | 0.0087 |
| | | 3rd Quartile | 0.00021 | 0.000200 | 0.024 | 0.02 | 43 | <0.000010 | <0.0000050 | 0.000615 | 0.0006 | 0.039 | 0.0278 | 0.0085 | 0.0027 | <0.0000020 | <0.0000020 | 38.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 35.5 | <0.0050 | <0.0050 | 0.0044 | 0.004 | <0.020 | 0.01025 |
| **7SSD** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **E292069** | Settling Pond at 7S- Discharge to Stream 1 -7S | Average | 0.00283 | 0.00223 | 0.0893 | 0.00465 | 143.3 | 0.0000065 | 0.00000357 | 0.00149 | 0.00127 | 0.18 | 0.02697 | 0.0621 | 0.03594 | 0.000001 | 0.000001 | 140.4 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 19.26 | 0.0025 | 0.0025 | 0.0232 | 0.0094 | 0.01 | 0.01 |
| | | Count | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 12 | 12 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 1 | 1 | 1 | 1 |
| | | Minimum | 0.00047 | 0.00029 | 0.0136 | <0.0030 | 45.4 | <0.000010 | <0.0000050 | 0.00064 | 0.00049 | 0.026 | <0.0050 | 0.0084 | <0.0010 | <0.0000020 | <0.0000020 | 43.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 6 | <0.0050 | <0.0050 | 0.0232 | 0.0094 | <0.020 | <0.020 |
| | | Maximum | 0.0112 | 0.00622 | 0.46 | 0.0105 | 195 | 0.000019 | 0.000009 | 0.00271 | 0.00266 | 0.592 | 0.0722 | 0.174 | 0.135 | <0.0000020 | <0.0000020 | 183 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 50.4 | <0.0050 | <0.0050 | 0.0232 | 0.0094 | <0.020 | <0.020 |
| | | Geometric Mean | 0.0018 | 0.00149 | 0.053 | 0.00382 | 133.7 | 0.00000590 | 0.00000322 | 0.00132 | 0.00106 | 0.128 | 0.01447 | 0.0440 | 0.01773 | 0.000001 | 0.000001 | 132 | 0.0005 | 0.0005 | 0.000100 | 0.000100 | 16.14 | 0.0025 | 0.00250 | 0.0232 | 0.0094 | 0.01 | 0.01 |
| | | Count <DL | 0 | 0 | 0 | 4 | 0 | 12 | 10 | 0 | 0 | 0 | 2 | 0 | 1 | 12 | 12 | 0 | 14 | 14 | 14 | 14 | 0 | 14 | 14 | 0 | 0 | 1 | 1 |
| | | Standard Deviation | 0.00304 | 0.002 | 0.1194 | 0.00285 | 46.1 | 0.0000041 | 0.00000198 | 0.00077 | 0.00082 | 0.165 | 0.02707 | 0.0489 | 0.0424 | 0 | 0 | 42.6 | 0 | 0 | 0 | 0.000000 | 12.6 | 1E-10 | 0.00000 | 0 | 0 | 0 | 0 |
| | | 1st Quartile | 0.00087 | 0.00076 | 0.0278 | 0.002 | 122.5 | <0.000010 | <0.0000050 | 0.00088 | 0.00069 | 0.072 | 0.00588 | 0.0261 | 0.0097 | <0.0000020 | <0.0000020 | 123.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 10.48 | <0.0050 | <0.0050 | 0.0232 | 0.0094 | <0.020 | <0.020 |
| | | Median | 0.0015 | 0.00134 | 0.0391 | 0.00425 | 152 | <0.000010 | <0.0000050 | 0.00117 | 0.00084 | 0.159 | 0.00985 | 0.0446 | 0.018 | <0.0000020 | <0.0000020 | 149 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.3 | <0.0050 | <0.0050 | 0.0232 | 0.0094 | <0.020 | <0.020 |
| | | 3rd Quartile | 0.00431 | 0.00329 | 0.092 | 0.0056 | 181.2 | <0.000010 | 0.0000044 | 0.00223 | 0.00199 | 0.176 | 0.0464 | 0.092 | 0.03787 | <0.0000020 | <0.0000020 | 178.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 24.45 | <0.0050 | <0.0050 | 0.0232 | 0.0094 | <0.020 | <0.020 |
| **7S** | Stream 1-7S discharge to LWO | Average | 0.000066 | 0.000062 | 0.0361 | 0.0319 | 14.1 | 0.000005 | 0.00000322 | 0.000366 | 0.00038 | 0.0126 | 0.0075 | 0.0005 | 0.0005 | 0.00000151 | 0.00000126 | 14.8 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 3.070 | 0.00250 | 0.00250 | | | | |
| **E292109** | | Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 8 | 8 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | | | | |
| | | Minimum | <0.00010 | <0.00010 | 0.0158 | 0.0149 | 8.4 | <0.000010 | <0.0000050 | <0.00050 | 0.00023 | <0.010 | <0.0050 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 11.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.3 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00014 | 0.00011 | 0.104 | 0.0713 | 27.2 | <0.000010 | 0.000009 | 0.00067 | 0.00052 | 0.047 | 0.024 | <0.0010 | <0.0010 | 0.0000028 | 0.0000031 | 23.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.10 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.000061 | 0.000059 | 0.0307 | 0.029 | 13.3 | 0.000005 | 0.00000288 | 0.000334 | 0.00037 | 0.0079 | 0.00546 | 0.0005 | 0.0005 | 0.00000138 | 0.00000115 | 14.4 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 3.01 | 0.00250 | 0.00250 | | | | |
| | | Count <DL | 7 | 7 | 0 | 0 | 0 | 9 | 8 | 6 | 0 | 7 | 4 | 9 | 9 | 5 | 7 | 0 | 9 | 9 | 9 | 9 | 0 | 9 | 9 | | | | |
| | | Standard Deviation | 0.000032 | 0.000024 | 0.0267 | 0.0167 | 5.4 | 0 | 0.00000217 | 0.000177 | 0.0001 | 0.0155 | 0.00698 | 0 | 0 | 0.00000074 | 0.00000074 | 3.7 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 0.62 | 4E-11 | 4E-11 | | | | |
| | | 1st Quartile | <0.00010 | <0.00010 | 0.0212 | 0.0216 | 11.5 | <0.000010 | <0.0000050 | <0.00050 | 0.00031 | <0.010 | <0.0050 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 13.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.5 | <0.0050 | <0.0050 | | | | |
| | | Median | <0.00010 | <0.00010 | 0.0284 | 0.0267 | 13.1 | <0.000010 | <0.0000050 | <0.00050 | 0.00036 | <0.010 | 0.0067 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 13.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.2 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | <0.00010 | <0.00010 | 0.0381 | 0.0375 | 15.3 | <0.000010 | <0.0000050 | 0.00052 | 0.00044 | <0.010 | 0.0092 | <0.0010 | <0.0010 | 0.00000212 | <0.0000020 | 15.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.5 | <0.0050 | <0.0050 | | | | |
| **QU0813A** | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (No. 4 Seam) | Average | | 0.408 | | 0.00215 | 177.0 | | 0.0000025 | | 0.000100 | | 0.2307 | | 0.0538 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 22.8 | | 0.00250 | | 0.1480 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.382 | | <0.0030 | 171 | | <0.0000050 | | <0.00020 | | 0.216 | | 0.0456 | | <0.0000020 | | | <0.0010 | | <0.00020 | 15.2 | | <0.0050 | | 0.12 | | |
| | | Maximum | | 0.435 | | 0.0041 | 181 | | <0.0000050 | | <0.00020 | | 0.249 | | 0.0637 | | <0.0000020 | | | <0.0010 | | <0.00020 | 30.1 | | <0.0050 | | 0.184 | | |
| | | Geometric Mean | | 0.408 | | 0.00193 | 177.0 | | 0.0000025 | | 0.000100 | | 0.2304 | | 0.0534 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 21.6 | | 0.00250 | | 0.1460 | | |
| | | Count <DL | | 0 | | 3 | 0 | | 4 | | 4 | | 0 | | 0 | | 4 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.024 | | 0.0013 | 4.5 | | 4E-15 | | 0.000000 | | 0.015 | | 0.0082 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 8.3 | | 0.00000 | | 0.0270 | | |
| | | 1st Quartile | | 0.391 | | <0.0030 | 174.8 | | <0.0000050 | | <0.00020 | | 0.2213 | | 0.048 | | <0.0000020 | | | <0.0010 | | <0.00020 | 15.8 | | <0.0050 | | 0.133 | | |
| | | Median | | 0.408 | | <0.0030 | 178 | | <0.0000050 | | <0.00020 | | 0.229 | | 0.053 | | <0.0000020 | | | <0.0010 | | <0.00020 | 22.9 | | <0.0050 | | 0.144 | | |
| | | 3rd Quartile | | 0.425 | | 0.0022 | 180.2 | | <0.0000050 | | <0.00020 | | 0.2385 | | 0.0588 | | <0.0000020 | | | <0.0010 | | <0.00020 | 29.9 | | <0.0050 | | 0.159 | | |
| **QU0813B** | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (Till & SST contact) | Average | | 0.506 | | 0.0678 | 135.8 | | 0.0000034 | | 0.000100 | | 0.2425 | | 0.0871 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 67.3 | | 0.00250 | | 0.1362 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.493 | | 0.0035 | 126 | | <0.0000050 | | <0.00020 | | 0.127 | | 0.0615 | | <0.0000020 | | | <0.0010 | | <0.00020 | 10.2 | | <0.0050 | | 0.0486 | | |
| | | Maximum | | 0.518 | | 0.241 | 147 | | 0.000006 | | <0.00020 | | 0.524 | | 0.143 | | <0.0000020 | | | <0.0010 | | <0.00020 | 221 | | <0.0050 | | 0.168 | | |
| | | Geometric Mean | | 0.505 | | 0.0174 | 135.5 | | 0.0000031 | | 0.000100 | | 0.2027 | | 0.0821 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 28.7 | | 0.00250 | | 0.1217 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 3 | | 4 | | 0 | | 0 | | 4 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.014 | | 0.1157 | 9.2 | | 0.0000018 | | 0.000000 | | 0.188 | | 0.0377 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 102.7 | | 0.00000 | | 0.0584 | | |
| | | 1st Quartile | | 0.493 | | 0.0046 | 129.8 | | <0.0000050 | | <0.00020 | | 0.1457 | | 0.0664 | | <0.0000020 | | | <0.0010 | | <0.00020 | 11 | | <0.0050 | | 0.1344 | | |
| | | Median | | 0.506 | | 0.0135 | 135 | | <0.0000050 | | <0.00020 | | 0.1595 | | 0.072 | | <0.0000020 | | | <0.0010 | | <0.00020 | 19 | | <0.0050 | | 0.164 | | |
| | | 3rd Quartile | | 0.518 | | 0.0767 | 141 | | 0.00000338 | | <0.00020 | | 0.2563 | | 0.0926 | | <0.0000020 | | | <0.0010 | | <0.00020 | 75.3 | | <0.0050 | | 0.1658 | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 57
# 2019-2020 Annual Report

| 2017 -18 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| QU0821GD | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 4 Seam) | Average | | 0.132 | | 0.0076 | 215.0 | | 0.00001033 | | 0.000367 | | 1.334 | | 0.1573 | | 0.0000010 | | | 0.00183 | | 0.000367 | 1.58 | | 0.00917 | | 0.1014 | | |
| | | Count | | 3 | | 3 | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | | 3 | | 3 | 3 | | 3 | | 3 | | |
| | | Minimum | | 0.121 | | <0.015 | 210 | | 0.000006 | | <0.00020 | | 0.982 | | 0.0799 | | <0.0000020 | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.0493 | | |
| | | Maximum | | 0.147 | | 0.0078 | 218 | | <0.000025 | | <0.0010 | | 1.73 | | 0.278 | | <0.0000020 | | | <0.0050 | | <0.0010 | 2.3 | | <0.025 | | 0.141 | | |
| | | Geometric Mean | | 0.131 | | 0.0076 | 215.0 | | 0.00000979 | | 0.000292 | | 1.2989 | | 0.1363 | | 0.0000010 | | | 0.00146 | | 0.000292 | 1.304 | | 0.00731 | | 0.0925 | | |
| | | Count <DL | | 0 | | 2 | 0 | | 2 | | 3 | | 0 | | 0 | | 3 | | | 3 | | 3 | 1 | | 3 | | 0 | | |
| | | Standard Deviation | | 0.014 | | 0.00017 | 4.4 | | 0.00000375 | | 0.000231 | | 0.3759 | | 0.1059 | | 0.0000000 | | | 0.00115 | | 0.000231 | 0.951 | | 0.00577 | | 0.0471 | | |
| | | 1st Quartile | | 0.124 | | <0.015 | 213.5 | | 0.00000925 | | 0.0003 | | 1.136 | | 0.097 | | <0.0000020 | | | 0.0015 | | 0.0003 | 1.22 | | 0.0075 | | 0.0817 | | |
| | | Median | | 0.127 | | <0.015 | 217 | | <0.000025 | | <0.0010 | | 1.29 | | 0.114 | | <0.0000020 | | | <0.0050 | | <0.0010 | 1.93 | | <0.025 | | 0.114 | | |
| | | 3rd Quartile | | 0.137 | | 0.00765 | 217.5 | | <0.000025 | | <0.0010 | | 1.51 | | 0.196 | | <0.0000020 | | | <0.0050 | | <0.0010 | 2.12 | | <0.025 | | 0.1275 | | |
| QU0821GS | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 1 Seam) | Average | | 0.195 | | 0.00832 | 201.2 | | 0.0000099 | | 0.000443 | | 0.3953 | | 0.0839 | | 0.0000010 | | | 0.001500 | | 0.0003000 | 0.613 | | 0.00750 | | 0.101 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.178 | | 0.006 | 194 | | <0.0000050 | | 0.00033 | | 0.286 | | 0.0493 | | <0.0000020 | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.0029 | | |
| | | Maximum | | 0.208 | | 0.0123 | 209 | | <0.000025 | | <0.0010 | | 0.555 | | 0.15 | | <0.0000020 | | | <0.0050 | | <0.0010 | 0.95 | | <0.025 | | 0.155 | | |
| | | Geometric Mean | | 0.194 | | 0.00803 | 201.2 | | 0.0000083 | | 0.000436 | | 0.3825 | | 0.0754 | | 0.0000010 | | | 0.001120 | | 0.0002240 | 0.587 | | 0.00559 | | 0.051 | | |
| | | Count <DL | | 0 | | 2 | 0 | | 3 | | 2 | | 0 | | 0 | | 4 | | | 4 | | 4 | 3 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.016 | | 0.00274 | 6.3 | | 0.0000049 | | 0.00008 | | 0.1194 | | 0.0469 | | 0.0000000 | | | 0.001150 | | 0.0002310 | 0.225 | | 0.00577 | | 0.0673 | | |
| | | 1st Quartile | | 0.183 | | 0.00712 | 197.8 | | 0.00000963 | | 0.000412 | | 0.315 | | 0.0512 | | <0.0000020 | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.0877 | | |
| | | Median | | 0.197 | | <0.015 | 201 | | 0.00001225 | | 0.00047 | | 0.37 | | 0.0681 | | <0.0000020 | | | 0.0015 | | 0.0003 | <1.0 | | 0.00750 | | 0.123 | | |
| | | 3rd Quartile | | 0.208 | | 0.0087 | 204.5 | | <0.000025 | | <0.0010 | | 0.45 | | 0.1008 | | <0.0000020 | | | <0.0050 | | <0.0010 | 0.613 | | <0.025 | | 0.1363 | | |
| QU1010D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Average | | 0.0141 | | 0.0098 | 92.2 | | 0.000014 | | 0.00061 | | 8.7 | | 0.3745 | | 0.0000010 | | | 0.00275 | | 0.000550 | 0.375 | | 0.0138 | | 0.07380 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.0139 | | 0.0045 | 91.3 | | <0.0000050 | | 0.00021 | | 7.95 | | 0.332 | | <0.0000020 | | | <0.0010 | | <0.00020 | <0.50 | | <0.0050 | | 0.0711 | | |
| | | Maximum | | 0.0144 | | <0.030 | 93.2 | | <0.000050 | | <0.0020 | | 9.45 | | 0.417 | | <0.0000020 | | | <0.010 | | <0.0020 | <1.0 | | <0.050 | | 0.0766 | | |
| | | Geometric Mean | | 0.0141 | | 0.0082 | 92.2 | | 0.000008 | | 0.00046 | | 8.6676 | | 0.3721 | | 0.0000010 | | | 0.00158 | | 0.000316 | 0.354 | | 0.0079 | | 0.07380 | | |
| | | Count <DL | | 0 | | 1 | 0 | | 2 | | 1 | | 0 | | 0 | | 2 | | | 2 | | 2 | 2 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.0004 | | 0.0074 | 1.3 | | 0.000016 | | 0.00056 | | 1.1 | | 0.06 | | 0.0000000 | | | 0.00318 | | 0.000636 | 0.2 | | 0.0159 | | 0.00390 | | |
| | | 1st Quartile | | 0.014 | | 0.00712 | 91.8 | | 0.00000813 | | 0.000407 | | 8.325 | | 0.3533 | | <0.0000020 | | | 0.00163 | | 0.000325 | 0.312 | | 0.00813 | | 0.0725 | | |
| | | Median | | 0.0141 | | 0.00975 | 92.2 | | 0.00001375 | | 0.000605 | | 8.7 | | 0.3745 | | <0.0000020 | | | 0.00275 | | 0.00055 | 0.375 | | 0.01375 | | 0.0738 | | |
| | | 3rd Quartile | | 0.0143 | | 0.01237 | 92.7 | | 0.00001937 | | 0.000803 | | 9.075 | | 0.3957 | | <0.0000020 | | | 0.00387 | | 0.000775 | 0.438 | | 0.01937 | | 0.0752 | | |
| QU1010S | Ex-situ 2-North shallow groundwater well. Down gradient of u/g tailings disposal, measures water quality & hydraulic head downstream of 2-North workings. (No. 1 Seam / Sandstone). | Average | | 0.113 | | 0.0083 | 152.0 | | 0.0000025 | | 0.0001 | | 0.2325 | | 0.0407 | | 0.0000010 | | | 0.000500 | | 0.0005300 | 19.9 | | 0.00250 | | 0.0551 | | |
| | | Count | | 2 | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | 0.112 | | <0.0030 | 152 | | <0.0000050 | | <0.00020 | | 0.221 | | 0.0361 | | <0.0000020 | | | <0.0010 | | <0.00020 | 19.6 | | <0.0050 | | 0.0468 | | |
| | | Maximum | | 0.113 | | 0.0151 | 152 | | <0.0000050 | | <0.00020 | | 0.244 | | 0.0453 | | <0.0000020 | | | <0.0010 | | 0.00096 | 20.1 | | <0.0050 | | 0.0634 | | |
| | | Geometric Mean | | 0.112 | | 0.00476 | 152.0 | | 0.0000025 | | 0.0001 | | 0.2322 | | 0.0404 | | 0.0000010 | | | 0.000500 | | 0.0003100 | 19.8 | | 0.0025 | | 0.0545 | | |
| | | Count <DL | | 0 | | 1 | 0 | | 2 | | 2 | | 0 | | 0 | | 2 | | | 2 | | 1 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | 0.001 | | 0.00962 | 0.0 | | 0.0000000 | | 0 | | 0.0163 | | 0.0065 | | 0.0000000 | | | 0.000000 | | 0.0006080 | 0.4 | | 1E-11 | | 0.0117 | | |
| | | 1st Quartile | | 0.112 | | 0.0049 | 152 | | <0.0000050 | | <0.00020 | | 0.2268 | | 0.0384 | | <0.0000020 | | | <0.0010 | | 0.000315 | 19.7 | | <0.0050 | | 0.051 | | |
| | | Median | | 0.113 | | 0.0083 | 152 | | <0.0000050 | | <0.00020 | | 0.2325 | | 0.0407 | | <0.0000020 | | | <0.0010 | | 0.00053 | 19.9 | | <0.0050 | | 0.0551 | | |
| | | 3rd Quartile | | 0.113 | | 0.0117 | 152 | | <0.0000050 | | <0.00020 | | 0.2382 | | 0.043 | | <0.0000020 | | | <0.0010 | | 0.000745 | 20 | | <0.0050 | | 0.0592 | | |
| QU1011D | Ex-situ 2-North deep groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | | 0.0088 | | 0.0075 | 305 | | 0.0000125 | | 0.0012 | | 4.44 | | 0.502 | | 0.0000010 | | | 0.0025 | | 0.0005 | 0.5 | | 0.0125 | | 0.160 | | |
| | | Count | | 1 | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | 0.0088 | | <0.015 | 305 | | <0.000025 | | 0.0012 | | 4.44 | | 0.502 | | <0.0000020 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.16 | | |
| | | Maximum | | 0.0088 | | <0.015 | 305 | | <0.000025 | | 0.0012 | | 4.44 | | 0.502 | | <0.0000020 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.16 | | |
| | | Geometric Mean | | 0.0088 | | 0.0075 | 305 | | 0.0000125 | | 0.0012 | | 4.44 | | 0.502 | | 0.0000010 | | | 0.0025 | | 0.0005 | 0.5 | | 0.0125 | | 0.160 | | |
| | | Count <DL | | 0 | | 1 | 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | | 1 | | 1 | 1 | | 1 | | 0 | | |
| | | Standard Deviation | | 0.00000 | | 0.0000 | 0 | | 0.0000000 | | 0.00000 | | 0.00 | | 0.000 | | 0.0000000 | | | 0.00000 | | 0.000000 | 0.0 | | 0.0000 | | 0.000 | | |
| | | 1st Quartile | | 0.0088 | | <0.015 | 305 | | <0.000025 | | 0.0012 | | 4.44 | | 0.502 | | <0.0000020 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.16 | | |
| | | Median | | 0.0088 | | <0.015 | 305 | | <0.000025 | | 0.0012 | | 4.44 | | 0.502 | | <0.0000020 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.16 | | |
| | | 3rd Quartile | | 0.0088 | | <0.015 | 305 | | <0.000025 | | 0.0012 | | 4.44 | | 0.502 | | <0.0000020 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.16 | | |
| QU1011S | Ex-situ 2-North shallow groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | | 0.00145 | | 0.0042 | 68.7 | | 0.0000025 | | 0.00027 | | 0.177 | | 0.0334 | | 0.0000010 | | | 0.0005 | | 0.0001000 | 5.3 | | 0.00250 | | 0.0076 | | |
| | | Count | | 1 | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | 0.00145 | | 0.0042 | 68.7 | | <0.0000050 | | 0.00027 | | 0.177 | | 0.0334 | | <0.0000020 | | | <0.0010 | | <0.00020 | 5.3 | | <0.0050 | | 0.0076 | | |
| | | Maximum | | 0.00145 | | 0.0042 | 68.7 | | <0.0000050 | | 0.00027 | | 0.177 | | 0.0334 | | <0.0000020 | | | <0.0010 | | <0.00020 | 5.3 | | <0.0050 | | 0.0076 | | |
| | | Geometric Mean | | 0.00145 | | 0.0042 | 68.7 | | 0.0000025 | | 0.00027 | | 0.177 | | 0.0334 | | 0.0000010 | | | 0.0005 | | 0.0001000 | 5.3 | | 0.0025 | | 0.0076 | | |
| | | Count <DL | | 0 | | 0 | 0 | | 1 | | 0 | | 0 | | 0 | | 1 | | | 1 | | 1 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | | 0 | | 0 | 0 | | 0.0000000 | | 0 | | 0 | | 0 | | 0.0000000 | | | 0 | | 0.0000000 | 0 | | 0 | | 0 | | |
| | | 1st Quartile | | 0.00145 | | 0.0042 | 68.7 | | <0.0000050 | | 0.00027 | | 0.177 | | 0.0334 | | <0.0000020 | | | <0.0010 | | <0.00020 | 5.3 | | <0.0050 | | 0.0076 | | |
| | | Median | | 0.00145 | | 0.0042 | 68.7 | | <0.0000050 | | 0.00027 | | 0.177 | | 0.0334 | | <0.0000020 | | | <0.0010 | | <0.00020 | 5.3 | | <0.0050 | | 0.0076 | | |
| | | 3rd Quartile | | 0.00145 | | 0.0042 | 68.7 | | <0.0000050 | | 0.00027 | | 0.177 | | 0.0334 | | <0.0000020 | | | <0.0010 | | <0.00020 | 5.3 | | <0.0050 | | 0.0076 | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 58
# 2019-2020 Annual Report

| 2017 -18 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **QU1105S** | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | | 0.0762 | | 0.00437 | 252.4 | | 0.0000041 | | 0.000135 | | 1.2705 | | 0.1618 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 108.8 | | 0.00250 | | 0.029 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.0487 | | <0.0030 | 89.8 | | <0.0000050 | | <0.00020 | | 0.492 | | 0.0751 | | <0.0000020 | | | <0.0010 | | <0.00020 | 50.8 | | <0.0050 | | 0.0189 | | |
| | | Maximum | | 0.0957 | | 0.008 | 442 | | 0.000009 | | 0.00024 | | 1.55 | | 0.24 | | <0.0000020 | | | <0.0010 | | <0.00020 | 166 | | <0.0050 | | 0.0396 | | |
| | | Geometric Mean | | 0.0739 | | 0.00372 | 217 | | 0.0000034 | | 0.000124 | | 1.1521 | | 0.1491 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 98.9 | | 0.00250 | | 0.028 | | |
| | | Count <DL | | 0 | | 1 | 0 | | 3 | | 3 | | 0 | | 0 | | 4 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.0204 | | 0.00269 | 147.6 | | 0.0000033 | | 0.000070 | | 0.519 | | 0.0681 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 51.2 | | 0.00000 | | 0.010 | | |
| | | 1st Quartile | | 0.0676 | | 0.00323 | 174.7 | | <0.0000050 | | <0.00020 | | 1.248 | | 0.135 | | <0.0000020 | | | <0.0010 | | <0.00020 | 76.1 | | <0.0050 | | 0.0221 | | |
| | | Median | | 0.0803 | | 0.004 | 239 | | <0.0000050 | | <0.00020 | | 1.52 | | 0.166 | | <0.0000020 | | | <0.0010 | | <0.00020 | 109.2 | | <0.0050 | | 0.0289 | | |
| | | 3rd Quartile | | 0.089 | | 0.00515 | 316.8 | | 0.00000413 | | 0.000135 | | 1.5425 | | 0.1927 | | <0.0000020 | | | <0.0010 | | <0.00020 | 142 | | <0.0050 | | 0.0358 | | |
| **QU1109S** | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | | 0.111 | | 0.00652 | 470 | | 0.0000100 | | 0.0004 | | 0.3168 | | 0.0429 | | 0.0000010 | | | 0.002 | | 0.0004 | 430.5 | | 0.01 | | 0.060 | | |
| | | Count | | 4 | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | 0.071 | | 0.0036 | 436 | | <0.0000050 | | <0.00020 | | 0.162 | | 0.0221 | | <0.0000020 | | | <0.0010 | | <0.00020 | 402 | | <0.0050 | | 0.0401 | | |
| | | Maximum | | 0.140 | | <0.015 | 538 | | <0.0000025 | | <0.0010 | | 0.402 | | 0.0531 | | <0.0000020 | | | <0.0050 | | <0.0010 | 458 | | <0.025 | | 0.0748 | | |
| | | Geometric Mean | | 0.107 | | 0.00624 | 469 | | 0.0000084 | | 0.000334 | | 0.2992 | | 0.0406 | | 0.0000010 | | | 0.00167 | | 0.000334 | 430 | | 0.00836 | | 0.058 | | |
| | | Count <DL | | 0 | | 3 | 0 | | 4 | | 4 | | 0 | | 0 | | 4 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | | 0.029 | | 0.0020 | 45 | | 0.0000050 | | 0.00020 | | 0.1076 | | 0.01430 | | 0.0000000 | | | 0.00100 | | 0.000200 | 24.3 | | 0.0050 | | 0.015 | | |
| | | 1st Quartile | | 0.103 | | 0.00652 | 447 | | 0.00001 | | 0.0004 | | 0.2865 | | 0.0394 | | <0.0000020 | | | 0.002 | | 0.0004 | 416.2 | | 0.01 | | 0.0534 | | |
| | | Median | | 0.116 | | <0.015 | 454 | | <0.0000025 | | <0.0010 | | 0.3515 | | 0.0483 | | <0.0000020 | | | <0.0050 | | <0.0010 | 431 | | <0.025 | | 0.0619 | | |
| | | 3rd Quartile | | 0.124 | | <0.015 | 478 | | <0.0000025 | | <0.0010 | | 0.3818 | | 0.0518 | | <0.0000020 | | | <0.0050 | | <0.0010 | 445.2 | | <0.025 | | 0.068 | | |
| **7SQR** | 7-South Quinsam River downstream of 7-South Mining Operation | Average | 0.00042 | 0.0004 | 0.0231 | 0.0183 | 39.5 | 0.000005 | 0.00000266 | 0.000671 | 0.00055 | 0.073 | 0.0496 | 0.0054 | 0.0044 | 0.000001 | 0.000001 | 37.2 | 0.00050 | 0.00050 | 0.000105 | 0.000100 | 31.5 | 0.00262 | 0.0025 | 0.00490 | 0.00530 | 0.0252 | 0.00732 |
| **E292113** | | Count | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 21 | 20 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 22 | 12 | 7 | 11 | 11 |
| | | Minimum | 0.00027 | 0.00025 | 0.0102 | 0.0071 | 26.4 | <0.000010 | <0.0000050 | <0.00050 | 0.00041 | 0.051 | 0.0324 | 0.0022 | 0.0015 | <0.0000020 | <0.0000020 | 28.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 17 | <0.0050 | <0.0050 | 0.0021 | 0.0033 | <0.020 | <0.0050 |
| | | Maximum | 0.00056 | 0.00055 | 0.0529 | 0.0574 | 45.2 | <0.000010 | 0.000006 | 0.00212 | 0.00099 | 0.099 | 0.0822 | 0.0079 | 0.0078 | <0.0000020 | <0.0000020 | 53.7 | <0.0010 | <0.0010 | 0.00021 | <0.00020 | 42.3 | 0.0051 | <0.0050 | 0.0174 | 0.0086 | 0.038 | <0.020 |
| | | Geometric Mean | 0.00041 | 0.00039 | 0.0207 | 0.0159 | 39.1 | 0.000005 | 0.0000026 | 0.000621 | 0.00054 | 0.072 | 0.0486 | 0.0051 | 0.0042 | 0.000001 | 0.000001 | 36.9 | 0.00050 | 0.00050 | 0.000103 | 0.000100 | 31.1 | 0.00258 | 0.0025 | 0.00420 | 0.00510 | 0.024 | 0.00633 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 22 | 21 | 1 | 0 | 0 | 0 | 0 | 0 | 21 | 20 | 0 | 22 | 22 | 21 | 22 | 0 | 21 | 22 | 0 | 0 | 1 | 9 |
| | | Standard Deviation | 0.00009 | 0.00009 | 0.0115 | 0.0115 | 5.2 | 0.00000000 | 0.00000075 | 0.00035 | 0.00014 | 0.014 | 0.0107 | 0.0015 | 0.0014 | 0 | 0 | 5 | 0.00000 | 0.00000 | 0.000023 | 0.000000 | 5.2 | 0.00055 | 0 | 0.004 | 0.0018 | 0.0075 | 0.00339 |
| | | 1st Quartile | 0.00037 | 0.00034 | 0.0143 | 0.0107 | 37 | <0.000010 | <0.0000050 | 0.000525 | 0.00048 | 0.064 | 0.0428 | 0.0043 | 0.0034 | <0.0000020 | <0.0000020 | 34.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 29 | <0.0050 | <0.0050 | 0.0036 | 0.0043 | 0.0215 | 0.00425 |
| | | Median | 0.00043 | 0.00040 | 0.0215 | 0.0152 | 41.9 | <0.000010 | <0.0000050 | 0.00058 | 0.00052 | 0.074 | 0.048 | 0.0055 | 0.0045 | <0.0000020 | <0.0000020 | 37.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 31.9 | <0.0050 | <0.0050 | 0.004 | 0.0045 | 0.023 | <0.020 |
| | | 3rd Quartile | 0.00047 | 0.00046 | 0.027 | 0.0214 | 42.9 | <0.000010 | <0.0000050 | 0.000702 | 0.00055 | 0.083 | 0.0542 | 0.0066 | 0.0053 | <0.0000020 | <0.0000020 | 38.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 34.40 | <0.0050 | <0.0050 | 0.0046 | 0.006 | 0.0305 | <0.020 |
| **LQL1** | Lower Quinsam Lake 1 metre below surface | Average | 0.00061 | 0.00058 | 0.0329 | 0.0251 | 34.9 | 0.000005 | 0.0000038 | 0.00087 | 0.00069 | 0.104 | 0.0652 | 0.0128 | 0.00581 | 0.00000115 | 0.00000112 | 32.8 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 21.1 | 0.00250 | 0.00250 | 0.005 | | | |
| **E292118** | | Count | 15 | 15 | 15 | 15 | 5 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 13 | 13 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 6 | | | |
| | | Minimum | 0.00047 | 0.0004 | 0.0077 | 0.0079 | 24.2 | <0.000010 | <0.0000050 | 0.00052 | 0.00042 | 0.037 | 0.0242 | 0.0037 | <0.0010 | <0.0000020 | <0.0000020 | 27.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 13.8 | <0.0050 | <0.0050 | 0.004 | | | |
| | | Maximum | 0.00076 | 0.00068 | 0.0871 | 0.0603 | 43.3 | <0.000010 | 0.0000090 | 0.0036 | 0.00167 | 0.219 | 0.136 | 0.0455 | 0.0291 | 0.0000029 | 0.0000026 | 39.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 27.1 | <0.0050 | <0.0050 | 0.0060 | | | |
| | | Geometric Mean | 0.0006 | 0.00057 | 0.0264 | 0.0203 | 34.2 | 0.000005 | 0.00000339 | 0.00074 | 0.00065 | 0.088 | 0.055 | 0.0092 | 0.0026 | 0.00000109 | 0.00000108 | 32.5 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 20.5 | 0.00250 | 0.00250 | 0.0049 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 10 | 0 | 0 | 0 | 0 | 0 | 3 | 12 | 12 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | | | |
| | | Standard Deviation | 0.0001 | 0.0001 | 0.0213 | 0.0164 | 7.8 | 0 | 0.0000021 | 0.00077 | 0.0003 | 0.061 | 0.0392 | 0.0125 | 0.00811 | 0.00000053 | 0.00000044 | 4.3 | 0 | 0.00000 | 0.000000 | 0.000000 | 5.1 | 1E-10 | 1E-10 | 0.0008 | | | |
| | | 1st Quartile | 0.00051 | 0.00049 | 0.0147 | 0.0111 | 30.7 | <0.000010 | <0.0000050 | 0.00057 | 0.00054 | 0.05 | 0.0324 | 0.0056 | 0.0012 | <0.0000020 | <0.0000020 | 29.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.6 | <0.0050 | <0.0050 | 0.0045 | | | |
| | | Median | 0.00066 | 0.00063 | 0.0309 | 0.0184 | 35.5 | <0.000010 | <0.0000050 | 0.000640 | 0.00063 | 0.086 | 0.0522 | 0.0067 | 0.00160 | <0.0000020 | <0.0000020 | 32 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 23.4 | <0.0050 | <0.0050 | 0.005 | | | |
| | | 3rd Quartile | 0.0007 | 0.00065 | 0.0452 | 0.0374 | 41 | <0.000010 | 0.0000050 | 0.000810 | 0.0007 | 0.143 | 0.0899 | 0.0148 | 0.00685 | <0.0000020 | <0.0000020 | 36.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25.4 | <0.0050 | <0.0050 | 0.0055 | | | |
| **LQLB** | LQLB 1 metre from Bottom | Average | 0.001 | 0.00073 | 0.0423 | 0.0303 | 31.7 | 0.0000074 | 0.00000626 | 0.00097 | 0.00068 | 0.44 | 0.2442 | 0.1377 | 0.1297 | 0.00000114 | 0.00000112 | 31.4 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 16.3 | 0.0025 | 0.00250 | 0.0067 | | | |
| **E292118** | | Count | 15 | 15 | 15 | 15 | 4 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 13 | 13 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 6 | | | |
| | | Minimum | 0.00048 | 0.00038 | 0.0241 | 0.0157 | 24.5 | <0.000010 | <0.0000050 | 0.0005 | 0.00056 | 0.086 | 0.0514 | 0.0044 | 0.0024 | <0.0000020 | <0.0000020 | 25.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 12.5 | <0.0050 | <0.0050 | 0.0049 | | | |
| | | Maximum | 0.00204 | 0.00119 | 0.0876 | 0.0681 | 35.7 | 0.000014 | 0.0000130 | 0.00268 | 0.00097 | 1.15 | 0.632 | 0.438 | 0.43 | 0.0000028 | 0.0000026 | 37.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 24.5 | <0.0050 | <0.0050 | 0.0086 | | | |
| | | Geometric Mean | 0.00086 | 0.00068 | 0.0395 | 0.0279 | 31.4 | 0.0000068 | 0.00000559 | 0.0009 | 0.00067 | 0.288 | 0.1668 | 0.0451 | 0.0318 | 0.00000108 | 0.00000108 | 31.2 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 15.8 | 0.0025 | 0.00250 | 0.0066 | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 9 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 12 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | | | |
| | | Standard Deviation | 0.00056 | 0.00029 | 0.0179 | 0.0138 | 4.9 | 0.0000032 | 0.00000299 | 0.00051 | 0.00011 | 0.383 | 0.2063 | 0.1608 | 0.1597 | 0.0000005 | 0.00000044 | 3.6 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 4.2 | 1E-10 | 1E-10 | 0.0013 | | | |
| | | 1st Quartile | 0.00051 | 0.00050 | 0.0297 | 0.0205 | 31 | <0.000010 | 0.000005 | 0.00073 | 0.00061 | 0.119 | 0.0809 | 0.0105 | 0.0069 | <0.0000020 | <0.0000020 | 29.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 12.9 | <0.0050 | <0.0050 | 0.0058 | | | |
| | | Median | 0.00068 | 0.00062 | 0.0368 | 0.0258 | 33.3 | <0.000010 | 0.00000520 | 0.00087 | 0.00065 | 0.209 | 0.125 | 0.028 | 0.0147 | <0.0000020 | <0.0000020 | 30.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.3 | <0.0050 | <0.0050 | 0.0071 | | | |
| | | 3rd Quartile | 0.00153 | 0.00099 | 0.0468 | 0.0378 | 34 | 0.00001 | 0.00000800 | 0.00091 | 0.0007 | 0.772 | 0.4275 | 0.2745 | 0.264 | <0.0000020 | <0.0000020 | 33.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 17.8 | <0.0050 | <0.0050 | 0.0072 | | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 59
# 2019-2020 Annual Report

| 2018 -19 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| WA | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| E0126402 | Quinsam River at Argonaut Road Upstream of Mining Operation. | Average | 0.00011 | 0.000111 | 0.0247 | 0.0208 | 20.2 | 0.000005 | 0.00000364 | 0.00089 | 0.0007 | 0.018 | 0.0139 | 0.00127 | 0.00059 | 0.0000010 | 0.00000016 | 19.5 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.14 | 0.00250 | 0.002398 | | | | |
| | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | | | | |
| | | Minimum | <0.00010 | <0.00010 | 0.0154 | 0.0152 | 15.6 | <0.000010 | <0.0000050 | 0.00059 | 0.00058 | 0.011 | 0.0069 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 17.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <1.0 | <0.0050 | 0.000964 | | | | |
| | | Maximum | 0.00016 | 0.00014 | 0.0317 | 0.0286 | 23 | <0.000010 | 0.0000196 | 0.0016 | 0.00085 | 0.028 | 0.0287 | 0.002 | 0.0014 | <0.0000020 | 0.0000031 | 21 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.9 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.000101 | 0.000107 | 0.0244 | 0.0205 | 20.1 | 0.000005 | 0.00000287 | 0.00084 | 0.00069 | 0.017 | 0.0132 | 0.00119 | 0.00056 | 0.000001 | 0.00000138 | 19.5 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.03 | 0.00250 | 0.002346 | | | | |
| | | Count <DL | 4 | 2 | 0 | 0 | 0 | 15 | 14 | 0 | 0 | 0 | 0 | 2 | 13 | 15 | 10 | 0 | 15 | 15 | 15 | 15 | 4 | 15 | 14 | | | | |
| | | Standard Deviation | 0.000041 | 0.000027 | 0.0041 | 0.0037 | 2.2 | 0 | 0.00000442 | 0.00034 | 0.0001 | 0.005 | 0.0051 | 0.00043 | 0.00026 | 0 | 0.00000083 | 0.9 | 0 | 0.00000 | 0.000000 | 0.000000 | 0.47 | 0 | 0.000397 | | | | |
| | | 1st Quartile | 0.00008 | 0.00011 | 0.0218 | 0.0183 | 18.8 | <0.000010 | <0.0000050 | 0.0007 | 0.0006 | 0.014 | 0.0111 | 0.0011 | <0.0010 | <0.0000020 | <0.0000020 | 18.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 0.8 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00012 | 0.00012 | 0.0248 | 0.0204 | 21.0 | <0.000010 | <0.0000050 | 0.00074 | 0.00068 | 0.016 | 0.0139 | 0.0012 | <0.0010 | <0.0000020 | <0.0000020 | 19.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.2 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00014 | 0.00013 | 0.0274 | 0.0225 | 21.6 | <0.000010 | <0.0000050 | 0.00092 | 0.00077 | 0.022 | 0.0154 | 0.00145 | <0.0010 | <0.0000020 | 0.0000022 | 20.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.4 | <0.0050 | <0.0050 | | | | |
| WD | Settling Pond #4 | Average | 0.00132 | 0.00205 | 0.0209 | 0.00488 | 368 | 0.000006 | 0.00000417 | 0.001028 | 0.00036 | 0.661 | 0.0162 | 0.1403 | 0.1347 | 0.000001 | 0.000001 | 385 | 0.0017 | 0.00182 | 0.000100 | 0.000167 | 579 | 0.00313 | 0.00417 | 0.0052 | 0.00380 | 0.024 | 0.05 |
| E207409 | | Count | 6 | 6 | 6 | 6 | 12 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 52 | 6 | 6 | 3 | 1 | 2 | 3 |
| | | Minimum | 0.00079 | 0.00113 | 0.0035 | <0.0030 | 252 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.055 | 0.0103 | 0.0412 | 0.0435 | <0.0000020 | <0.0000020 | 313 | 0.001 | <0.0010 | <0.00020 | <0.00020 | 411 | <0.0050 | <0.0050 | 0.0045 | 0.0038 | <0.020 | <0.020 |
| | | Maximum | 0.00207 | 0.00272 | 0.0679 | <0.015 | 437 | 0.000011 | <0.000025 | 0.00198 | <0.0010 | 1.54 | 0.0270 | 0.3 | 0.278 | <0.0000020 | <0.0000020 | 436 | 0.0041 | 0.0044 | <0.00020 | <0.0010 | 798 | 0.0063 | <0.025 | 0.0063 | 0.0038 | 0.038 | 0.13 |
| | | Geometric Mean | 0.00126 | 0.00193 | 0.0139 | 0.00437 | 363 | 0.0000057 | 0.0000033 | 0.000845 | 0.000321 | 0.424 | 0.0153 | 0.1125 | 0.1111 | 0.000001 | 0.000001 | 382 | 0.0014 | 0.0014 | 0.000100 | 0.000131 | 571 | 0.00292 | 0.00327 | 0.0051 | 0.00380 | 0.0195 | 0.0235 |
| | | Count <DL | 0 | 0 | 0 | 2 | 0 | 5 | 6 | 1 | 2 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 0 | 2 | 6 | 6 | 0 | 5 | 6 | 0 | 0 | 1 | 2 |
| | | Standard Deviation | 0.00045 | 0.00071 | 0.0235 | 0.0021 | 54 | 0.0000024 | 0.00000408 | 0.000646 | 0.000155 | 0.565 | 0.0062 | 0.096 | 0.0865 | 0 | 0.0000000 | 44 | 0.0012 | 0.00143 | 0.000000 | 0.000163 | 99 | 0.00155 | 0.00408 | 0.001 | 0 | 0.0198 | 0.0693 |
| | | 1st Quartile | 0.00107 | 0.00144 | 0.0107 | 0.004 | 358 | <0.000010 | <0.0000050 | 0.00072 | 0.000295 | 0.306 | 0.0122 | 0.0688 | 0.0697 | <0.0000020 | <0.0000020 | 367 | 0.001 | 0.00105 | <0.00020 | <0.00020 | 494 | <0.0050 | <0.0050 | 0.0046 | 0.0038 | 0.017 | <0.020 |
| | | Median | 0.00123 | 0.00226 | 0.0128 | 0.00515 | 382 | <0.000010 | <0.0000050 | 0.0008 | 0.0000435 | 0.49 | 0.014 | 0.1295 | 0.1285 | <0.0000020 | <0.0000020 | 389 | 0.0012 | 0.00125 | <0.00020 | <0.00020 | 565 | <0.0050 | <0.0050 | 0.0047 | 0.0038 | 0.024 | <0.020 |
| | | 3rd Quartile | 0.00147 | 0.00263 | 0.017 | 0.00608 | 404 | <0.000010 | <0.0000050 | 0.001435 | 0.0000455 | 0.984 | 0.0184 | 0.1773 | 0.167 | <0.0000020 | <0.0000020 | 414 | 0.0014 | 0.0022 | <0.00020 | <0.00020 | 654 | <0.0050 | <0.0050 | 0.0055 | 0.0038 | 0.031 | 0.07000 |
| MW001D | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | 0.0214 | | | 0.0326 | 92.2 | | 0.0000025 | | 0.001 | | 0.0074 | | 0.0139 | | 0.0000033 | | | 0.0005 | | 0.0001 | 27.3 | | 0.0025 | | 0.173 | | |
| | | Count | 2 | | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | 0.0212 | | | 0.0299 | 90.3 | | <0.0000050 | | 0.00083 | | 0.0058 | | 0.0061 | | <0.0000020 | | | <0.0010 | | <0.00020 | 26.8 | | <0.0050 | | 0.173 | | |
| | | Maximum | 0.0215 | | | 0.0354 | 94 | | <0.0000050 | | 0.00118 | | 0.0091 | | 0.0217 | | 0.0000055 | | | <0.0010 | | <0.00020 | 27.8 | | <0.0050 | | 0.173 | | |
| | | Geometric Mean | 0.0213 | | | 0.0325 | 92.1 | | 0.0000025 | | 0.00099 | | 0.0073 | | 0.0115 | | 0.0000024 | | | 0.0005 | | 0.0001 | 27.3 | | 0.0025 | | 0.173 | | |
| | | Count <DL | 0 | | | 0 | 0 | | 2 | | 0 | | 0 | | 0 | | 1 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | 0.0002 | | | 0.0039 | 2.6 | | 0 | | 0.00025 | | 0.0023 | | 0.011000 | | 0.0000032 | | | 0 | | 0 | 0.7 | | 0 | | 0 | | |
| | | 1st Quartile | 0.0213 | | | 0.0313 | 91.2 | | <0.0000050 | | 0.00092 | | 0.0066 | | 0.01 | | 0.00000212 | | | <0.0010 | | <0.00020 | 27 | | <0.0050 | | 0.173 | | |
| | | Median | 0.0214 | | | 0.0326 | 92.2 | | <0.0000050 | | 0.001 | | 0.0074 | | 0.0139 | | 0.00000325 | | | <0.0010 | | <0.00020 | 27.3 | | <0.0050 | | 0.173 | | |
| | | 3rd Quartile | 0.0214 | | | 0.034 | 93.1 | | <0.0000050 | | 0.00109 | | 0.0083 | | 0.0178 | | 0.00000437 | | | <0.0010 | | <0.00020 | 27.6 | | <0.0050 | | 0.173 | | |
| MW001S | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | 0.0001 | | | 0.003 | 327 | | 0.000104 | | 0.00135 | | 0.059 | | 2.83 | | 0.0000010 | | | 0.0025 | | 0.0002000 | 799 | | 0.005 | | 0.00500 | | |
| | | Count | 1 | | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | <0.00020 | | | <0.0060 | 327 | | 0.000104 | | 0.00135 | | 0.059 | | 2.83 | | <0.0000020 | | | 0.0025 | | <0.00040 | 799 | | <0.010 | | 0.005 | | |
| | | Maximum | <0.00020 | | | <0.0060 | 327 | | 0.000104 | | 0.00135 | | 0.059 | | 2.83 | | <0.0000020 | | | 0.0025 | | <0.00040 | 799 | | <0.010 | | 0.005 | | |
| | | Geometric Mean | 0.0001 | | | 0.003 | 327 | | 0.000104 | | 0.00135 | | 0.059 | | 2.83 | | 0.0000010 | | | 0.0025 | | 0.0002000 | 799 | | 0.005 | | 0.005 | | |
| | | Count <DL | 1 | | | 1 | 0 | | 0 | | 0 | | 0 | | 0 | | 1 | | | 0 | | 1 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | 0 | | | 0 | 0 | | 0 | | 0 | | 0 | | 0 | | 0.0000000 | | | 0 | | 0.0000000 | 0 | | 0 | | 0.00000 | | |
| | | 1st Quartile | <0.00020 | | | <0.0060 | 327 | | 0.000104 | | 0.00135 | | 0.059 | | 2.83 | | <0.0000020 | | | 0.0025 | | <0.00040 | 799 | | <0.010 | | 0.00500 | | |
| | | Median | <0.00020 | | | <0.0060 | 327 | | 0.000104 | | 0.00135 | | 0.059 | | 2.83 | | <0.0000020 | | | 0.0025 | | <0.00040 | 799 | | <0.010 | | 0.00500 | | |
| | | 3rd Quartile | <0.00020 | | | <0.0060 | 327 | | 0.000104 | | 0.00135 | | 0.059 | | 2.83 | | <0.0000020 | | | 0.0025 | | <0.00040 | 799 | | <0.010 | | 0.00500 | | |
| MW006D | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | 0.0273 | | | 0.0165 | 81.9 | | 0.0000025 | | 0.00094 | | 0.0025 | | 0.0008 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 12.4 | | 0.00250 | | 0.16 | | |
| | | Count | 2 | | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | 0.027 | | | 0.016 | 79.8 | | <0.0000050 | | 0.00073 | | <0.0050 | | <0.0010 | | <0.0000020 | | | <0.0010 | | <0.00020 | 12 | | <0.0050 | | 0.157 | | |
| | | Maximum | 0.0276 | | | 0.017 | 84 | | <0.0000050 | | 0.00116 | | <0.0050 | | 0.0011 | | <0.0000020 | | | <0.0010 | | <0.00020 | 12.7 | | <0.0050 | | 0.163 | | |
| | | Geometric Mean | 0.0273 | | | 0.0165 | 81.9 | | 0.0000025 | | 0.00092 | | 0.0025 | | 0.00074 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 12.3 | | 0.0025 | | 0.16 | | |
| | | Count <DL | 0 | | | 0 | 0 | | 2 | | 0 | | 2 | | 1 | | 2 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | 0.0004 | | | 0.0007 | 3.0 | | 0.0000000 | | 0.0003 | | 0 | | 0.00042 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 0.5 | | 0 | | 0.004 | | |
| | | 1st Quartile | 0.0272 | | | 0.0162 | 80.8 | | <0.0000050 | | 0.00084 | | <0.0050 | | 0.00065 | | <0.0000020 | | | <0.0010 | | <0.00020 | 12.2 | | <0.0050 | | 0.158 | | |
| | | Median | 0.0273 | | | 0.0165 | 81.9 | | <0.0000050 | | 0.00094 | | <0.0050 | | 0.0008 | | <0.0000020 | | | <0.0010 | | <0.00020 | 12.4 | | <0.0050 | | 0.16 | | |
| | | 3rd Quartile | 0.0274 | | | 0.0168 | 83 | | <0.0000050 | | 0.00105 | | <0.0050 | | 0.00095 | | <0.0000020 | | | <0.0010 | | <0.00020 | 12.5 | | <0.0050 | | 0.162 | | |
| MW006S | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | 0.00158 | | | 0.00245 | 156.5 | | 0.0000168 | | 0.00086 | | 0.0074 | | 0.0215 | | 0.0000010 | | | 0.0005 | | 0.0001 | 546.0 | | 0.00250 | | 0.0537 | | |
| | | Count | 2 | | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | 0.00149 | | | <0.0030 | 155 | | 0.000013 | | 0.00071 | | <0.0050 | | 0.0108 | | <0.0000020 | | | <0.0010 | | <0.00020 | 519 | | <0.0050 | | 0.0516 | | |
| | | Maximum | 0.00167 | | | 0.0034 | 158 | | 0.0000205 | | 0.00101 | | 0.0123 | | 0.0322 | | <0.0000020 | | | <0.0010 | | <0.00020 | 573 | | <0.0050 | | 0.056 | | |
| | | Geometric Mean | 0.00158 | | | 0.00226 | 156.5 | | 0.0000163 | | 0.00085 | | 0.00555 | | 0.0186 | | 0.0000010 | | | 0.00050 | | 0.0001000 | 545.3 | | 0.0025 | | 0.0537 | | |
| | | Count <DL | 0 | | | 1 | 0 | | 0 | | 0 | | 1 | | 0 | | 2 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | 0.00013 | | | 0.00134 | 2.1 | | 0.000005 | | 0.000210 | | 0.00693 | | 0.0151 | | 0.0000000 | | | 0 | | 0.0000000 | 38.2 | | 0 | | 0.003 | | |
| | | 1st Quartile | 0.00154 | | | 0.00198 | 155.8 | | 0.0000149 | | 0.00078 | | 0.00495 | | 0.0162 | | <0.0000020 | | | <0.0010 | | <0.00020 | 532.5 | | <0.0050 | | 0.0526 | | |
| | | Median | 0.00158 | | | 0.00245 | 156.5 | | 0.0000168 | | 0.00086 | | 0.0074 | | 0.0215 | | <0.0000020 | | | <0.0010 | | <0.00020 | 546.0 | | <0.0050 | | 0.0537 | | |
| | | 3rd Quartile | 0.00163 | | | 0.00292 | 157.2 | | 0.0000186 | | 0.00094 | | 0.00985 | | 0.0268 | | <0.0000020 | | | <0.0010 | | <0.00020 | 559.5 | | <0.0050 | | 0.0548 | | |
| WC | 2-North Pit Culvert discharge into Middle Quinsam Lake | Average | 0.0007 | 0.00084 | 0.0083 | 0.0068 | 332 | 0.000005 | 0.00000417 | 0.000548 | 0.00044 | 0.145 | 0.0317 | 0.0247 | 0.0261 | 0.000001 | 0.000001 | 318 | 0.00143 | 0.00163 | 0.000100 | 0.000167 | 518 | 0.00250 | 0.00417 | | | | |
| E207411 | | Count | 6 | 6 | 6 | 6 | 5 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 6 | 13 | 6 | 6 | | | | |
| | | Minimum | 0.00048 | 0.00056 | 0.0043 | 0.0048 | 257 | <0.000010 | <0.0000050 | <0.00050 | 0.00024 | 0.054 | 0.0133 | 0.0068 | 0.0072 | <0.0000020 | <0.0000020 | 274 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 304 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00094 | 0.00118 | 0.0149 | 0.0098 | 370 | <0.000010 | <0.000025 | 0.00098 | 0.0006 | 0.366 | 0.114 | 0.0594 | 0.0598 | <0.0000020 | <0.0000020 | 393 | 0.0056 | 0.0053 | <0.00020 | <0.0010 | 729 | <0.0050 | <0.025 | | | | |
| | | Geometric Mean | 0.00067 | 0.00081 | 0.0078 | 0.0066 | 329 | 0.000005 | 0.00000327 | 0.00049 | 0.00042 | 0.1130 | 0.0212 | 0.0168 | 0.0182 | 0.000001 | 0.000001 | 315 | 0.00084 | 0.00097 | 0.000100 | 0.000131 | 507 | 0.00250 | 0.00327 | | | | |
| | | Count <DL | 0 | 0 | 0 | 1 | 0 | 6 | 6 | 2 | 1 | 0 | 0 | 0 | 0 | 6 | 6 | 0 | 4 | 5 | 6 | 6 | 0 | 6 | 6 | | | | |
| | | Standard Deviation | 0.00019 | 0.00027 | 0.0036 | 0.0018 | 46 | 0.0000000 | 0.0000041 | 0.000275 | 0.00014 | 0.119 | 0.0404 | 0.0231 | 0.0236 | 0 | 0 | 45 | 0.00205 | 0.00197 | 0.000000 | 0.000163 | 110 | 0 | 0.00408 | | | | |
| | | 1st Quartile | 0.00056 | 0.00060 | 0.0069 | 0.0056 | 321 | <0.000010 | <0.0000050 | 0.000322 | 0.000350 | 0.061 | 0.01350 | 0.0076 | 0.0091 | <0.0000020 | <0.0000020 | 286 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 448 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00066 | 0.00085 | 0.0075 | 0.0068 | 343 | <0.000010 | <0.0000050 | 0.000585 | 0.00044 | 0.108 | 0.0158 | 0.0136 | 0.0142 | <0.0000020 | <0.0000020 | 306 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 524 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00086 | 0.00104 | 0.0087 | 0.0074 | 370 | <0.000010 | <0.0000050 | 0.000638 | 0.000560 | 0.1700 | 0.0179 | 0.0403 | 0.0438 | <0.0000020 | <0.0000020 | 339 | 0.00088 | 0.002 | <0.00020 | <0.00020 | 593 | <0.0050 | <0.0050 | | | | |
| MQL1 | Middle Quinsam Lake 1 metre below surface | Average | 0.00016 | 0.0001800 | 0.0177 | 0.0145 | 35.0 | 0.000005 | 0.0000025 | 0.000693 | 0.00061 | 0.037 | 0.0238 | 0.0071 | 0.00278 | 0.00000137 | 0.00000166 | 37 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 29.4 | 0.0025 | 0.0025 | 0.00333 | 0.00376 | 0.0100 | 0.02130 |
| E206618 | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 13 | 14 | 15 | 15 |
| | | Minimum | 0.00012 | 0.00014 | 0.0126 | 0.0093 | 29.7 | <0.000010 | <0.0000050 | <0.00050 | 0.00047 | 0.023 | 0.0152 | 0.0045 | <0.0010 | <0.0000020 | <0.0000020 | 26.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.6 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.020 | <0.020 |
| | | Maximum | 0.0002 | 0.00023 | 0.0293 | 0.0206 | 41.3 | <0.000010 | <0.0000050 | 0.00153 | 0.00128 | 0.05 | 0.0302 | 0.0099 | 0.0084 | 0.000004 | 0.0000035 | 51.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 49.1 | <0.0050 | <0.0050 | 0.0079 | 0.0072 | <0.020 | 0.18 |
| | | Geometric Mean | 0.00016 | 0.00018 | 0.0173 | 0.0142 | 34.8 | 0.000005 | 0.0000025 | 0.000653 | 0.00059 | 0.037 | 0.0234 | 0.0069 | 0.00145 | 0.00000119 | 0.00000143 | 36.3 | 0.0005 | 0.0005 | 0.0001 | 0.00010000 | 28 | 0.0025 | 0.0025 | 0.00292 | 0.00327 | 0.01 | 0.0121 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 1 | 0 | 0 | 0 | 0 | 7 | 13 | 10 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 2 | 6 | 15 | 14 |
| | | Standard Deviation | 0.00003 | 0.00003 | 0.0043 | 0.003 | 3.6 | 0 | 0 | 0.000265 | 0.0002 | 0.009 | 0.0039 | 0.0016 | 0.00312 | 0.00000099 | 0.00000101 | 7.6 | 0 | 0 | 0 | 0 | 9.6 | 0 | 0 | 0.00173 | 0.00179 | 0 | 0.04390 |
| | | 1st Quartile | 0.00014 | 0.00016 | 0.0151 | 0.0119 | 32.1 | <0.000010 | <0.0000050 | 0.0006 | 0.000520 | 0.032 | 0.0226 | 0.0062 | <0.0010 | <0.0000020 | <0.0000020 | 32.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 23.4 | <0.0050 | <0.0050 | 0.0025 | 0.00235 | <0.020 | <0.020 |
| | | Median | 0.00016 | 0.0001700 | 0.0170 | 0.0156 | 34.7 | <0.000010 | <0.0000050 | 0.000630 | 0.00053 | 0.035 | 0.0237 | 0.0069 | 0.00120 | <0.0000020 | <0.0000020 | 35.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 27.20 | <0.0050 | <0.0050 | 0.0032 | 0.00385 | <0.020 | <0.020 |
| | | 3rd Quartile | 0.00018 | 0.0002 | 0.0198 | 0.016 | 37.4 | <0.000010 | <0.0000050 | 0.000745 | 0.00062 | 0.044 | 0.0264 | 0.0082 | 0.00515 | <0.0000020 | 0.0000024 | 40.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 33.5 | <0.0050 | <0.0050 | 0.0036 | <0.010 | <0.020 | <0.020 |
| MQLB | Middle Quinsam Lake 1 metre from bottom | Average | 0.000108 | 0.000121 | 0.0123 | 0.0088 | 38.44 | 0.000005 | 0.0000025 | 0.00067 | 0.00056 | 0.042 | 0.0193 | 0.0859 | 0.0827 | 0.00000159 | 0.00000163 | 47.2 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 41.5 | 0.002500 | 0.0025 | 0.00440 | 0.00334 | 0.0100 | 0.0247 |
| E206618 | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 13 | 14 | 15 | 15 |
| | | Minimum | <0.00010 | <0.00010 | 0.0054 | 0.0041 | <1.0 | <0.000010 | <0.0000050 | 0.00056 | 0.00048 | 0.0180 | 0.0093 | 0.0028 | <0.0010 | <0.0000020 | <0.0000020 | 35.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 26.7 | <0.0050 | <0.0050 | 0.0025 | <0.0020 | <0.020 | <0.020 |
| | | Maximum | 0.00014 | 0.00016 | 0.0308 | 0.0121 | 52.2 | <0.000010 | <0.0000050 | 0.00085 | 0.00088 | 0.124 | 0.0359 | 0.634 | 0.63 | 0.0000053 | 0.0000057 | 53.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 49.3 | <0.0050 | <0.0050 | 0.0096 | 0.005 | <0.020 | 0.13 |
| | | Geometric Mean | 0.000102 | 0.000115 | 0.011 | 0.0085 | 30.43 | 0.000005 | 0.0000025 | 0.00066 | 0.000550 | 0.035 | 0.0175 | 0.0131 | 0.00429 | 0.00000134 | 0.00000136 | 46.8 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 40.8 | 0.0025 | 0.0025 | 0.00410 | 0.00294 | 0.01 | 0.0139 |
| | | Count <DL | 3 | 2 | 0 | 0 | 1 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 3 | 11 | 11 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | 6 | 15 | 13 |
| | | Standard Deviation | 0.000032 | 0.000034 | 0.0065 | 0.0024 | 11.77 | 0 | 0 | 0.00009 | 0.0001 | 0.032 | 0.0089 | 0.2067 | 0.21073 | 0.00000122 | 0.00000131 | 5.5 | 0 | 0 | 0 | 0.00000000 | 7.8 | 0 | 0 | 0.00180 | 0.00152 | 0 | 0.0389 |
| | | 1st Quartile | 0.00011 | 0.00011 | 0.0074 | 0.00660 | 36.5 | <0.000010 | <0.0000050 | 0.00058 | 0.0005 | 0.025 | 0.0116 | 0.0068 | 0.0012 | <0.0000020 | <0.0000020 | 45.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 35.4 | <0.0050 | <0.0050 | 0.0034 | 0.00225 | <0.020 | <0.020 |
| | | Median | 0.00012 | 0.0001300 | 0.0109 | 0.0098 | 41 | <0.000010 | <0.0000050 | 0.00067 | 0.000540 | 0.027 | 0.0161 | 0.0089 | 0.003 | <0.0000020 | <0.0000020 | 48.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 45 | <0.0050 | <0.0050 | 0.0039 | 0.00315 | <0.020 | <0.020 |
| | | 3rd Quartile | 0.00013 | 0.00014 | 0.0145 | 0.0106 | 42.6 | <0.000010 | <0.0000050 | 0.00071 | 0.00056 | 0.048 | 0.0266 | 0.0107 | 0.0062 | 0.0000016 | 0.0000017 | 51.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 47.2 | <0.0050 | <0.0050 | 0.0046 | <0.010 | <0.020 | <0.020 |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 60
# 2019-2020 Annual Report

| 2018 -19 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NNL1** | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E217018** | No Name Lake 1 metre below surface | Average | 0.00032 | 0.000340 | 0.0322 | 0.0284 | 11.23 | 0.000005 | 0.0000025 | 0.000694 | 0.00059 | 0.07 | 0.0511 | 0.0063 | 0.00490 | 0.00000141 | 0.00000152 | 14.8 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 1.81 | 0.0025 | 0.0025 | 0.00418 | 0.00466 | 0.0847 | 0.010 |
| | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 13 | 15 | 15 | 15 |
| | | Minimum | 0.00024 | 0.00025 | 0.0127 | 0.0118 | <1.0 | <0.000010 | <0.0000050 | <0.00050 | 0.00039 | 0.049 | 0.0365 | 0.0028 | 0.0012 | <0.0000020 | <0.0000020 | 13.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <1.0 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.020 | <0.020 |
| | | Maximum | 0.00043 | 0.00043 | 0.0645 | 0.0536 | 16.2 | <0.000010 | <0.0000050 | 0.0012 | 0.00115 | 0.11 | 0.0775 | 0.0146 | 0.0138 | 0.0000059 | 0.0000053 | 16.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.5 | <0.0050 | <0.0050 | 0.0069 | 0.0125 | 1.130 | <0.020 |
| | | Geometric Mean | 0.00031 | 0.00034 | 0.0281 | 0.0257 | 9.42 | 0.00000500 | 0.0000025 | 0.000656 | 0.00057 | 0.068 | 0.0497 | 0.00580 | 0.004 | 0.00000119 | 0.00000130 | 14.8 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 1.68 | 0.0025 | 0.0025 | 0.00380 | 0.00413 | 0.0137 | 0.01 |
| | | Count <DL | 0 | 0 | 0 | 0 | 1 | 15 | 15 | 1 | 0 | 0 | 0 | 0 | 0 | 13 | 11 | 0 | 15 | 15 | 15 | 15 | 1 | 15 | 15 | 1 | 6 | 14 | 15 |
| | | Standard Deviation | 0.000060 | 0.00005 | 0.0161 | 0.0124 | 4.0 | 0 | 0 | 0.000239 | 0.00018 | 0.019 | 0.0128 | 0.0032 | 0.0034 | 0.00000129 | 0.00000115 | 1 | 0 | 0 | 0.00000000 | 0 | 0.67 | 0 | 0 | 0.00161 | 0.00250 | 0.2892 | 0.000 |
| | | 1st Quartile | 0.00027 | 0.0003 | 0.0155 | 0.0169 | 10.25 | <0.000010 | <0.0000050 | 0.00059 | 0.0005 | 0.055 | 0.0411 | 0.0048 | 0.00290 | <0.0000020 | <0.0000020 | 14 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.45 | <0.0050 | <0.0050 | 0.003 | 0.00365 | <0.020 | <0.020 |
| | | Median | 0.00031 | 0.000340 | 0.0319 | 0.0288 | 12.1 | <0.000010 | <0.0000050 | 0.00066 | 0.00056 | 0.07 | 0.0475 | 0.00540 | 0.00380 | <0.0000020 | <0.0000020 | 14.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.80 | <0.0050 | <0.0050 | 0.0043 | <0.010 | <0.020 | <0.020 |
| | | 3rd Quartile | 0.00036 | 0.00038 | 0.0428 | 0.0357 | 13.45 | <0.000010 | <0.0000050 | 0.00071 | 0.00062 | 0.079 | 0.0592 | 0.006 | 0.00580 | <0.0000020 | 0.0000015 | 15.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.05 | <0.0050 | <0.0050 | 0.0054 | <0.010 | <0.020 | <0.020 |
| **NNLB** | No Name Lake 1 metre from bottom | Average | 0.00021 | 0.00025 | 0.0403 | 0.0344 | 11.3 | 0.000005 | 0.0000025 | 0.0007 | 0.00054 | 0.144 | 0.0854 | 0.0295 | 0.0259 | 0.00000205 | 0.00000185 | 15.5 | 0.0005 | 0.0005 | 0.0001 | 0.0001 | 4.4 | 0.0025 | 0.002500 | 0.00480 | 0.00430 | 0.0409 | 0.0182 |
| **E217018** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 13 | 15 | 15 | 15 |
| | | Minimum | 0.00017 | 0.00022 | 0.0327 | 0.0256 | 9.4 | <0.000010 | <0.0000050 | 0.00051 | 0.00038 | 0.114 | 0.0668 | 0.015 | 0.0134 | <0.0000020 | <0.0000020 | 13.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1 | <0.0050 | <0.0050 | 0.0034 | 0.0026 | <0.020 | <0.020 |
| | | Maximum | 0.00028 | 0.00033 | 0.0566 | 0.047 | 13.6 | <0.000010 | <0.0000050 | 0.00103 | 0.00092 | 0.216 | 0.112 | 0.0774 | 0.0698 | 0.0000068 | 0.0000049 | 16.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 5.9 | <0.0050 | <0.0050 | 0.0066 | 0.0065 | 0.051 | 0.090 |
| | | Geometric Mean | 0.00021 | 0.000250 | 0.0397 | 0.0339 | 11.2 | 0.000005 | 0.0000025 | 0.00067 | 0.00053 | 0.141 | 0.0847 | 0.0239 | 0.0205 | 0.00000144 | 0.00000145 | 15.5 | 0.0005000 | 0.0005 | 0.0001 | 0.0001 | 4.1 | 0.0025 | 0.0025 | 0.00470 | 0.00420 | 0.0386 | 0.0135 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 11 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | 5 | 1 | 12 |
| | | Standard Deviation | 0.00003 | 0.00003 | 0.0074 | 0.0063 | 1.3 | 0 | 0 | 0.00019 | 0.00014 | 0.032 | 0.0117 | 0.0239 | 0.0219 | 0.00000219 | 0.00000156 | 0.7 | 0 | 0.0000000 | 0 | 0 | 1.4 | 0 | 0.000000 | 0.00090 | 0.00100 | 0.011 | 0.0212 |
| | | 1st Quartile | 0.00018 | 0.00023 | 0.034 | 0.0301 | 10.6 | <0.000010 | <0.0000050 | 0.00054 | 0.00043 | 0.124 | 0.0774 | 0.0169 | 0.0139 | <0.0000020 | <0.0000020 | 15.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.4 | <0.0050 | <0.0050 | 0.0038 | 0.0036 | 0.037 | <0.020 |
| | | Median | 0.0002 | 0.00025 | 0.037 | 0.0330 | 11.2 | <0.000010 | <0.0000050 | 0.000600 | 0.00049 | 0.135 | 0.0833 | 0.0189 | 0.0158 | <0.0000020 | <0.0000020 | 15.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.8 | <0.0050 | <0.0050 | 0.005 | 0.0042 | 0.045 | <0.020 |
| | | 3rd Quartile | 0.00022 | 0.00026 | 0.044 | 0.0369 | 12.0 | <0.000010 | <0.0000050 | 0.000840 | 0.00062 | 0.147 | 0.0905 | 0.0215 | 0.019 | <0.0000020 | 0.00000175 | 15.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 5.2 | <0.0050 | <0.0050 | 0.0051 | <0.010 | 0.0485 | <0.020 |
| **NNO** | No Name Lake Outlet | Average | 0.00031 | 0.00032 | 0.0359 | 0.0288 | 13.7 | 0.000005 | 0.0000032 | 0.000709 | 0.0006 | 0.075 | 0.0522 | 0.0117 | 0.0135 | 0.0000021 | 0.0000020 | 14.7 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.94 | 0.0025 | 0.0025 | | | | |
| **E217017** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | | | | |
| | | Minimum | 0.00019 | 0.00021 | 0.0112 | 0.0081 | 8.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00027 | 0.048 | 0.0393 | 0.004 | 0.0029 | <0.0000020 | <0.0000020 | 12 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <1.0 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00041 | 0.00042 | 0.0551 | 0.044 | 22 | <0.000010 | 0.0000070 | 0.00141 | 0.00103 | 0.161 | 0.075 | 0.0408 | 0.086 | 0.0000074 | 0.0000073 | 19.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.9 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.0003 | 0.00031 | 0.0321 | 0.0254 | 13.4 | 0.000005 | 0.00002297 | 0.000615 | 0.00057 | 0.071 | 0.051 | 0.0089 | 0.0073 | 0.00000151 | 0.00000148 | 14.6 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 1.82 | 0.0025 | 0.0025 | | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 12 | 3 | 0 | 0 | 0 | 0 | 0 | 11 | 11 | 0 | 15 | 15 | 15 | 15 | 1 | 15 | 15 | | | | |
| | | Standard Deviation | 0.00007 | 0.00007 | 0.0147 | 0.0125 | 3.2 | 0 | 0.0000015 | 0.000373 | 0.0002 | 0.0290 | 0.0118 | 0.0109 | 0.022 | 0.00000211 | 0.00000205 | 1.9 | 0 | 0.00000 | 0.000000 | 0.000000 | 0.56 | 0 | 0 | | | | |
| | | 1st Quartile | 0.00025 | 0.00026 | 0.0276 | 0.0162 | 11.6 | <0.000010 | <0.0000050 | 0.000505 | 0.00046 | 0.056 | 0.0422 | 0.0055 | 0.004 | <0.0000020 | <0.0000020 | 13.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.8 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00032 | 0.00034 | 0.0397 | 0.0328 | 14.5 | <0.000010 | <0.0000050 | 0.00065 | 0.00063 | 0.066 | 0.0497 | 0.0068 | 0.0056 | <0.0000020 | <0.0000020 | 14.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.00 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00035 | 0.00037 | 0.0438 | 0.0387 | 15 | <0.000010 | <0.0000050 | 0.00094 | 0.00071 | 0.079 | 0.0598 | 0.0114 | 0.0076 | 0.00000195 | 0.0000017 | 15.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.2 | <0.0050 | <0.0050 | | | | |
| **LLS** | Small Seep into Long Lake | Average | 0.00161 | 0.00223 | 0.0324 | 0.00406 | 223 | 0.00002050 | 0.00000387 | 0.000764 | 0.000248 | 0.808 | 0.49620 | 0.375 | 0.357 | 0.0000010 | 0.0000011 | 577 | 0.00345 | 0.0032 | 0.000138 | 0.0001 | 534 | 0.00489 | 0.00284 | | | | |
| **E292131** | | Count | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | 13 | | | | |
| | | Minimum | 0.00062 | 0.00087 | <0.0030 | <0.0030 | 142 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.167 | 0.0373 | 0.155 | 0.151 | <0.0000020 | <0.0000020 | 505 | 0.0015 | 0.0015 | <0.00020 | <0.00020 | 376 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00385 | 0.00649 | 0.267 | 0.0142 | 255 | 0.000134 | 0.00001 | 0.00401 | 0.00065 | 2.77 | 1.44 | 0.546 | 0.508 | <0.0000020 | 0.0000022 | 649 | 0.0095 | 0.008 | <0.0010 | <0.00020 | 640 | 0.0163 | 0.0069 | | | | |
| | | Geometric Mean | 0.0014 | 0.00188 | 0.01052 | 0.00292 | 220 | 0.0000095 | 0.0000034 | 0.000494 | 0.000205 | 0.591 | 0.297 | 0.362 | 0.342 | 0.000001 | 0.00000106 | 575 | 0.00295 | 0.0028 | 0.000119 | 0.0001 | 530 | 0.00374 | 0.0027 | | | | |
| | | Count <DL | 0 | 0 | 2 | 6 | 0 | 10 | 9 | 8 | 5 | 0 | 0 | 0 | 0 | 13 | 12 | 0 | 1 | 0 | 13 | 13 | 0 | 11 | 12 | | | | |
| | | Standard Deviation | 0.00096 | 0.00156 | 0.07143 | 0.00409 | 34 | 0.0000361 | 0.00000237 | 0.001026 | 0.000162 | 0.721 | 0.4623 | 0.094 | 0.096 | 0 | 0.00000033 | 46 | 0.00232 | 0.002 | 0.000112 | 0.000000 | 71 | 0.00452 | 0.00122 | | | | |
| | | 1st Quartile | 0.00088 | 0.00126 | 0.0045 | <0.0030 | 203 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.371 | 0.16 | 0.339 | 0.298 | <0.0000020 | <0.0000020 | 550 | 0.0021 | 0.002 | <0.00020 | <0.00020 | 491 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00139 | 0.00169 | 0.0080 | 0.0033 | 238 | <0.000010 | <0.0000050 | <0.0010 | 0.000210 | 0.498 | 0.373 | 0.378 | 0.365 | <0.0000020 | <0.0000020 | 577 | 0.0023 | 0.0021 | <0.00020 | <0.00020 | 546 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00177 | 0.00281 | 0.0243 | 0.0035 | 245 | 0.000018 | 0.0000058 | 0.00063 | 0.000340 | 1.13 | 0.52600 | 0.419 | 0.429 | <0.0000020 | <0.0000020 | 609 | 0.0038 | 0.0035 | <0.00020 | <0.00020 | 579 | <0.010 | <0.0050 | | | | |
| **LLSM** | Long Lake Middle Seep | Average | 0.00056 | 0.00075 | 0.0543 | 0.00635 | 197 | 0.000005 | 0.00000433 | 0.000837 | 0.000496 | 0.432 | 0.21470 | 0.1953 | 0.1964 | 0.00000134 | 0.00000115 | 505 | 0.003 | 0.003 | 0.0001 | 0.0001 | 458 | 0.0025 | 0.0025 | | | | |
| **E292131** | | Count | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | |
| | | Minimum | 0.00026 | 0.00038 | <0.0030 | <0.0030 | 120 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | 0.132 | 0.0265 | 0.0742 | 0.0471 | <0.0000020 | <0.0000020 | 362 | 0.0012 | 0.0012 | <0.00020 | <0.00020 | 325 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00083 | 0.00130 | 0.186 | 0.0171 | 244 | <0.000010 | 0.000009 | 0.00242 | 0.00159 | 1.03 | 0.483 | 0.348 | 0.339 | 0.0000044 | 0.0000025 | 573 | 0.0061 | 0.0062 | <0.00020 | <0.00020 | 545 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 0.00054 | 0.00071 | 0.01521 | 0.00377 | 192 | 0.000005 | 0.00000377 | 0.000564 | 0.00032 | 0.375 | 0.1499 | 0.1752 | 0.1709 | 0.00000116 | 0.0000011 | 501 | 0.0026 | 0.0027 | 0.000100 | 0.0001 | 453 | 0.0025 | 0.00250 | | | | |
| | | Count <DL | 0 | 0 | 2 | 5 | 0 | 10 | 6 | 5 | 3 | 0 | 0 | 0 | 0 | 9 | 9 | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 10 | | | | |
| | | Standard Deviation | 0.00017 | 0.00025 | 0.07250 | 0.00654 | 47 | 0 | 0.00000251 | 0.000786 | 0.00048 | 0.248 | 0.16180 | 0.0924 | 0.0968 | 0.0000011 | 0.0000005 | 65 | 0.0015 | 0.0015 | 0 | 0 | 70 | 0 | 0 | | | | |
| | | 1st Quartile | 0.0005 | 0.00059 | 0.00352 | <0.0030 | 159 | <0.000010 | <0.0000050 | <0.00050 | 0.00013 | 0.294 | 0.08190 | 0.1342 | 0.1405 | <0.0000020 | <0.0000020 | 472 | 0.0018 | 0.0019 | <0.00020 | <0.00020 | 418 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00056 | 0.00074 | 0.01515 | 0.00235 | 220 | <0.000010 | <0.0000050 | 0.00044 | 0.00030 | 0.434 | 0.17750 | 0.169 | 0.1760 | <0.0000020 | <0.0000020 | 535 | 0.003 | 0.0027 | <0.00020 | <0.00020 | 451 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00062 | 0.00086 | 0.07505 | 0.01048 | 235 | <0.000010 | 0.00000648 | 0.001135 | 0.000705 | 0.489 | 0.3113 | 0.2635 | 0.2785 | <0.0000020 | <0.0000020 | 547 | 0.0034 | 0.0034 | <0.00020 | <0.00020 | 518 | <0.0050 | <0.0050 | | | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 61
# 2019-2020 Annual Report

| 2018 -19 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **MW002** | Ex-situ 2-3 South shallow groundwater well beside 3-South Pit (1 Seam) | Average | 0.00125 | 0.0017 | 0.01230 | 0.0085 | 249.7 | 0.0000100 | 0.0000281 | 0.00050 | 0.000533 | 4.04 | 3.36 | 1.31 | 1.63 | | 0.0000010 | 1220 | 0.0065 | 0.0044 | 0.000200 | 0.000450 | 1295 | 0.00500 | 0.0197 | 0.00570 | 0.00560 | 0.01 | 0.44 |
| | | Count | 6 | 1 | 1 | 6 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | 1 | 6 | | 6 | 1 | 1 | 6 | 1 | 6 | 6 | 1 | 6 | 1 | 6 | 1 | 1 |
| | | Minimum | 0.00088 | 0.0017 | 0.0123 | <0.0060 | 239 | <0.000020 | <0.000010 | <0.0010 | <0.00040 | 4.04 | 2.61 | 1.31 | 1.3 | | <0.0000020 | 1220 | 0.0065 | 0.002 | <0.00040 | <0.00040 | 1240 | <0.010 | <0.010 | 0.0057 | 0.0032 | <0.020 | 0.44 |
| | | Maximum | 0.00186 | 0.0017 | 0.0123 | 0.018 | 271 | <0.000020 | 0.000096 | <0.0010 | 0.001 | 4.04 | 4.2 | 1.31 | 1.83 | | <0.0000020 | 1220 | 0.0065 | 0.0142 | <0.00040 | <0.0010 | 1340 | <0.010 | 0.063 | 0.0057 | 0.0106 | <0.020 | 0.44 |
| | | Geometric Mean | 0.00121 | 0.0017 | 0.01230 | 0.00745 | 249.4 | 0.0000100 | 0.0000174 | 0.00050 | 0.000482 | 4.04 | 3.32 | 1.31 | 1.62 | | 0.0000010 | 1220 | 0.0065 | 0.0032 | 0.000200 | 0.000429 | 1294 | 0.00500 | 0.014 | 0.0057 | 0.0052 | 0.01 | 0.44 |
| | | Count <DL | 0 | 0 | 0 | 5 | 0 | 1 | 4 | 1 | 5 | 0 | 0 | 0 | 0 | | 6 | 0 | 0 | 4 | 1 | 6 | 0 | 1 | 5 | 0 | 0 | 1 | 0 |
| | | Standard Deviation | 0.00033 | 0 | 0.00000 | 0.00499 | 12.2 | 0.0000000 | 0.0000343 | 0.00000 | 0.000258 | 0 | 0.55 | 0.00 | 0.2 | | 0.0000000 | 0 | 0 | 0.00482 | 0.000000 | 0.000122 | 38 | 0.00000 | 0.0214 | 0.00000 | 0.0027 | 0 | 0 |
| | | 1st Quartile | 0.00112 | 0.0017 | 0.0123 | <0.015 | 241.8 | <0.000020 | <0.000025 | <0.0010 | <0.0010 | 4.04 | 3.03 | 1.31 | 1.55 | | <0.0000020 | 1220 | 0.0065 | <0.0050 | <0.00040 | <0.0010 | 1280 | <0.010 | <0.025 | 0.0057 | 0.0039 | <0.020 | 0.44 |
| | | Median | 0.00114 | 0.0017 | 0.0123 | <0.015 | 245 | <0.000020 | <0.000025 | <0.0010 | <0.0010 | 4.04 | 3.46 | 1.31 | 1.7 | | <0.0000020 | 1220 | 0.0065 | <0.0050 | <0.00040 | <0.0010 | 1285 | <0.010 | <0.025 | 0.0057 | 0.005 | <0.020 | 0.44 |
| | | 3rd Quartile | 0.0013 | 0.0017 | 0.0123 | <0.015 | 254.2 | <0.000020 | 0.0000256 | <0.0010 | <0.0010 | 4.04 | 3.52 | 1.31 | 1.75 | | <0.0000020 | 1220 | 0.0065 | <0.0050 | <0.00040 | <0.0010 | 1327 | <0.010 | <0.025 | 0.00570 | 0.00610 | <0.020 | 0.44 |
| **QU1009D** | Ex-situ 4-South deep groundwater well. Down gradient of 4-South Mine. Base of Dunsmuir Member. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | 0.0954 | | | 0.00150 | 173.3 | | 0.0000025 | | 0.000100 | | 0.620 | | 0.0834 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 87.1 | | 0.00250 | | 0.0149 | | 0.110 |
| | | Count | 3 | | | 3 | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | | 3 | | 3 | 3 | | 3 | | 3 | | 1 |
| | | Minimum | 0.0883 | | | <0.0030 | 158 | | <0.0000050 | | <0.00020 | | 0.434 | | 0.0618 | | <0.0000020 | | | <0.0010 | | <0.00020 | 80.1 | | <0.0050 | | 0.01 | | 0.110 |
| | | Maximum | 0.101 | | | <0.0030 | 185 | | <0.0000050 | | <0.00020 | | 0.724 | | 0.111 | | <0.0000020 | | | <0.0010 | | <0.00020 | 99.9 | | <0.0050 | | 0.0227 | | 0.110 |
| | | Geometric Mean | 0.0953 | | | 0.0015 | 173 | | 0.0000025 | | 0.000100 | | 0.604 | | 0.081 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 86.7 | | 0.00250 | | 0.0140 | | 0.110 |
| | | Count <DL | 0 | | | 3 | 0 | | 3 | | 3 | | 0 | | 0 | | 3 | | | 3 | | 3 | 0 | | 3 | | 0 | | 0 |
| | | Standard Deviation | 0.007 | | | 0 | 13.9 | | 0.0000000 | | 0.000000 | | 0.161 | | 0.0251 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 11.1 | | 0.00000 | | 0.0068 | | 0.000 |
| | | 1st Quartile | 0.0927 | | | <0.0030 | 167.5 | | <0.0000050 | | <0.00020 | | 0.568 | | 0.0696 | | <0.0000020 | | | <0.0010 | | <0.00020 | 80.8 | | <0.0050 | | 0.011 | | 0.110 |
| | | Median | 0.097 | | | <0.0030 | 177 | | <0.0000050 | | <0.00020 | | 0.701 | | 0.0774 | | <0.0000020 | | | <0.0010 | | <0.00020 | 81.4 | | <0.0050 | | 0.012 | | 0.110 |
| | | 3rd Quartile | 0.099 | | | <0.0030 | 181 | | <0.0000050 | | <0.00020 | | 0.712 | | 0.0942 | | <0.0000020 | | | <0.0010 | | <0.00020 | 90.6 | | <0.0050 | | 0.0174 | | 0.110 |
| **QU1009S** | Ex-situ 4-South shallow groundwater well. Fracture zone 10 m below till. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | 0.0758 | | | 0.00150 | 143.5 | | 0.0000025 | | 0.000200 | | 4.67 | | 0.36 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 116.5 | | 0.00250 | | 0.0151 | | |
| | | Count | 2 | | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | 0.073 | | | <0.0030 | 130 | | <0.0000050 | | <0.00020 | | 4.57 | | 0.353 | | <0.0000020 | | | <0.0010 | | <0.00020 | 109 | | <0.0050 | | 0.0089 | | |
| | | Maximum | 0.0787 | | | <0.0030 | 157 | | <0.0000050 | | 0.0003 | | 4.77 | | 0.368 | | <0.0000020 | | | <0.0010 | | <0.00020 | 124 | | <0.0050 | | 0.0213 | | |
| | | Geometric Mean | 0.0758 | | | 0.0015 | 142.9 | | 0.0000025 | | 0.000173 | | 4.67 | | 0.36 | | 0.0000010 | | | 0.0005 | | 0.0001000 | 116.3 | | 0.00250 | | 0.0138 | | |
| | | Count <DL | 0 | | | 2 | 0 | | 2 | | 1 | | 0 | | 0 | | 2 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | 0.004 | | | 0 | 19.1 | | 0.0000000 | | 0.000141 | | 0.14 | | 0.011 | | 0.0000000 | | | 0 | | 0.0000000 | 10.6 | | 0.00000 | | 0.0088 | | |
| | | 1st Quartile | 0.0744 | | | <0.0030 | 136.8 | | <0.0000050 | | 0.00015 | | 4.62 | | 0.357 | | <0.0000020 | | | <0.0010 | | <0.00020 | 112.8 | | <0.0050 | | 0.012 | | |
| | | Median | 0.0758 | | | <0.0030 | 143.5 | | <0.0000050 | | 0.0002 | | 4.67 | | 0.36 | | <0.0000020 | | | <0.0010 | | <0.00020 | 116.5 | | <0.0050 | | 0.0151 | | |
| | | 3rd Quartile | 0.0773 | | | <0.0030 | 150.2 | | <0.0000050 | | 0.00025 | | 4.72 | | 0.364 | | <0.0000020 | | | <0.0010 | | <0.00020 | 120.2 | | <0.0050 | | 0.0182 | | |
| **SPD** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **E218582** | Settling Pond # 1 | Average | 0.00096 | 0.00129 | 0.0564 | 0.01979 | 67.70 | 0.0000079 | 0.00000609 | 0.001126 | 0.00067 | 0.398 | 0.1153 | 0.0922 | 0.07257 | 0.00000129 | 0.00000151 | 316 | 0.00177 | 0.00166 | 0.000114 | 0.000100 | 196.8 | 0.00320 | 0.0031 | 0.0059 | 0.0015 | 0.0100 | 0.022 |
| | | Count | 7 | 7 | 7 | 7 | 11 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 37 | 7 | 7 | 3 | 1 | 2 | 2 |
| | | Minimum | 0.00032 | 0.00041 | 0.008 | <0.0030 | 38.30 | <0.000010 | <0.0000050 | <0.00050 | 0.00045 | 0.115 | 0.0082 | 0.0183 | <0.0010 | <0.0000020 | <0.0000020 | 152 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25.1 | <0.0050 | <0.0050 | <0.0030 | <0.0030 | <0.020 | <0.020 |
| | | Maximum | 0.00333 | 0.00357 | 0.138 | 0.0556 | 99.5 | 0.000025 | 0.000020 | 0.00255 | 0.00105 | 0.962 | 0.238 | 0.349 | 0.31 | 0.000003 | 0.0000032 | 401 | 0.007 | 0.0067 | 0.0002 | <0.00020 | 368 | 0.0074 | 0.0067 | 0.0138 | <0.0030 | <0.020 | 0.034 |
| | | Geometric Mean | 0.00068 | 0.00096 | 0.0377 | 0.01152 | 64.1 | 0.0000063 | 0.0000041 | 0.000868 | 0.00064 | 0.314 | 0.0715 | 0.0574 | 0.02425 | 0.0000012 | 0.0000013 | 302 | 0.00103 | 0.00091 | 0.00011 | 0.000100 | 158.20 | 0.00292 | 0.00288 | 0.00368 | 0.00150 | 0.0100 | 0.0184 |
| | | Count <DL | 0 | 0 | 0 | 1 | 0 | 6 | 5 | 1 | 0 | 0 | 0 | 0 | 1 | 6 | 5 | 0 | 4 | 5 | 6 | 7 | 0 | 6 | 6 | 1 | 1 | 2 | 1 |
| | | Standard Deviation | 0.00107 | 0.00114 | 0.0449 | 0.01951 | 22.4 | 0.0000076 | 0.00000681 | 0.000846 | 0.00021 | 0.294 | 0.0913 | 0.1162 | 0.1082 | 0.0000008 | 0.00000091 | 92.0 | 0.00239 | 0.00233 | 0.000038 | 0.000000 | 109.9 | 0.00185 | 0.00159 | 0.00686 | 0 | 0 | 0.017 |
| | | 1st Quartile | 0.00043 | 0.00052 | 0.0243 | 0.00585 | 48.6 | <0.000010 | <0.0000050 | 0.0006 | 0.00052 | 0.194 | 0.0414 | 0.0313 | 0.01525 | <0.0000020 | <0.0000020 | 283 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 92.4 | <0.0050 | <0.0050 | 0.00195 | <0.0030 | <0.020 | 0.016 |
| | | Median | 0.00055 | 0.00081 | 0.055 | 0.0128 | 74.4 | <0.000010 | <0.0000050 | 0.00065 | 0.00065 | 0.347 | 0.127 | 0.0481 | 0.035 | <0.0000020 | <0.0000020 | 345 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 217.00 | <0.0050 | <0.0050 | 0.0024 | <0.0030 | <0.020 | 0.02200 |
| | | 3rd Quartile | 0.00082 | 0.0016 | 0.0725 | 0.02845 | 85.6 | <0.000010 | 0.00000620 | 0.001615 | 0.00074 | 0.485 | 0.1755 | 0.0838 | 0.066 | <0.0000020 | 0.0000017 | 376 | 0.0017 | 0.00145 | <0.00020 | <0.00020 | 293 | <0.0050 | <0.0050 | 0.00810 | <0.0030 | <0.020 | 0.02800 |
| **LLE** | Long Lake Entrance (LLE) | Average | 0.00085 | 0.00103 | 0.1098 | 0.03650 | 50.97 | 0.00000700 | 0.00000400 | 0.000835 | 0.00054 | 0.576 | 0.339 | 0.127 | 0.1314 | 0.00000172 | 0.0000019 | 215.6 | 0.00070 | 0.0005 | 0.00014 | 0.000116 | 204.2 | 0.0035 | 0.00250 | 0.0086 | 0.0015 | 0.0484 | 0.02190 |
| **E292130** | | Count | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 44 | 10 | 10 | 10 | 1 | 10 | 10 |
| | | Minimum | 0.00046 | 0.00051 | <0.015 | <0.0030 | <1.0 | <0.000010 | <0.0000050 | <0.00050 | 0.00035 | 0.159 | 0.0665 | 0.0075 | 0.0073 | <0.0000020 | <0.0000020 | 87.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 44.3 | <0.0050 | <0.0050 | 0.0036 | <0.0030 | <0.020 | <0.015 |
| | | Maximum | 0.0013 | 0.00172 | 0.336 | 0.0682 | 110 | <0.000050 | 0.0000084 | 0.00209 | 0.00117 | 1.93 | 0.869 | 0.501 | 0.488 | 0.0000049 | 0.0000044 | 601 | <0.0050 | <0.0010 | <0.0010 | 0.00026 | 631 | <0.025 | <0.0050 | 0.0207 | <0.0030 | 0.129 | 0.0550 |
| | | Geometric Mean | 0.0008 | 0.00094 | 0.0802 | 0.02126 | 30.86 | 0.0000059 | 0.00000358 | 0.000694 | 0.0005 | 0.405 | 0.2520 | 0.0653 | 0.0671 | 0.00000142 | 0.00000156 | 168.7 | 0.00059 | 0.0005 | 0.000117 | 0.000110 | 157.9 | 0.00294 | 0.00250 | 0.0075 | 0.0015 | 0.0299 | 0.0171 |
| | | Count <DL | 0 | 0 | 1 | 1 | 1 | 10 | 6 | 3 | 0 | 0 | 0 | 0 | 0 | 7 | 6 | 0 | 10 | 10 | 10 | 9 | 0 | 10 | 10 | 0 | 1 | 4 | 5 |
| | | Standard Deviation | 0.00031 | 0.00045 | 0.0873 | 0.02538 | 36.3 | 0.0000063 | 0.00000212 | 0.000538 | 0.00026 | 0.568 | 0.2796 | 0.1608 | 0.1624 | 0.00000132 | 0.00000136 | 177.2 | 0.00063 | 0 | 0.000126 | 0.000051 | 164 | 0.00316 | 0.00000 | 0.0053 | 0 | 0.0453 | 0.0164 |
| | | 1st Quartile | 0.00064 | 0.00064 | 0.0695 | 0.01165 | 29.1 | <0.000010 | <0.0000050 | 0.000572 | 0.00038 | 0.222 | 0.134 | 0.0364 | 0.0369 | <0.0000020 | <0.0000020 | 100.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 97.1 | <0.0050 | <0.0050 | 0.0051 | <0.0030 | <0.020 | <0.020 |
| | | Median | 0.00076 | 0.00092 | 0.103 | 0.04255 | 39.6 | <0.000010 | <0.0000050 | 0.00076 | 0.00045 | 0.312 | 0.270 | 0.0634 | 0.0699 | <0.0000020 | <0.0000020 | 132 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 134.5 | <0.0050 | <0.0050 | 0.0076 | <0.0030 | 0.027 | 0.016 |
| | | 3rd Quartile | 0.00113 | 0.00142 | 0.1118 | 0.05198 | 78.65 | <0.000010 | 0.00000545 | 0.000942 | 0.0006 | 0.84 | 0.3675 | 0.119 | 0.1256 | 0.00000205 | 0.00000218 | 279.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 269.5 | <0.0050 | <0.0050 | 0.00970 | <0.0030 | 0.0870 | 0.02920 |
| **LLM1** | Long Lake Middle 1 metre below Surface | Average | 0.000481 | 0.00053 | 0.021 | 0.0175 | 33.6 | 0.00000500 | 0.00000317 | 0.000658 | 0.00050 | 0.05 | 0.0318 | 0.0089 | 0.00505 | 0.00000177 | 0.00000183 | 79.7 | 0.00050 | 0.00063 | 0.000100 | 0.000127 | 64.1 | 0.00250 | 0.00317 | 0.00384 | 0.00491 | 0.0113 | 0.0177 |
| **E206619** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 15 | 15 | 15 |
| | | Minimum | <0.00050 | 0.00039 | 0.0083 | 0.0081 | 20.7 | <0.000010 | <0.0000050 | <0.00050 | 0.00027 | 0.012 | 0.0118 | 0.0036 | <0.0010 | <0.0000020 | <0.0000020 | 41.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25.8 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.020 | <0.020 |
| | | Maximum | 0.00064 | 0.00066 | 0.0449 | 0.037 | 44 | <0.000010 | <0.000025 | 0.00164 | 0.00088 | 0.119 | 0.0703 | 0.0150 | 0.0127 | 0.0000048 | 0.0000046 | 112 | <0.0010 | <0.0050 | <0.00020 | <0.0010 | 99.7 | <0.0050 | <0.025 | 0.0067 | <0.050 | 0.029 | 0.056 |
| | | Geometric Mean | 0.00047 | 0.00052 | 0.0188 | 0.0156 | 32.6 | 0.000005 | 0.00000278 | 0.00056 | 0.00048 | 0.04 | 0.0271 | 0.0082 | 0.0033 | 0.00000142 | 0.00000149 | 76.3 | 0.00050 | 0.00056 | 0.0001000 | 0.0001111 | 59 | 0.0025 | 0.00278 | 0.00341 | 0.00358 | 0.0107 | 0.0141 |
| | | Count <DL | 1 | 0 | 0 | 0 | 0 | 15 | 15 | 4 | 1 | 0 | 0 | 0 | 2 | 11 | 10 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 1 | 7 | 14 | 11 |
| | | Standard Deviation | 0.000102 | 0.00008 | 0.0102 | 0.0091 | 8.2 | 0.00000000 | 0.00000258 | 0.000398 | 0.00017 | 0.032 | 0.0182 | 0.0035 | 0.00405 | 0.00000144 | 0.00000138 | 23.3 | 0.00000 | 0.00052 | 0.000000 | 0.0001003 | 25.9 | 0 | 0.00258 | 0.00183 | 0.00572 | 0.0049 | 0.0152 |
| | | 1st Quartile | 0.00042 | 0.00049 | 0.0144 | 0.0099 | 27 | <0.000010 | <0.0000050 | 0.00039 | 0.00039 | 0.023 | 0.0168 | 0.0064 | 0.00135 | <0.0000020 | <0.0000020 | 65 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 41.6 | <0.0050 | <0.0050 | 0.0025 | 0.0029 | <0.020 | <0.020 |
| | | Median | 0.00046 | 0.0005 | 0.0188 | 0.0155 | 34.1 | <0.000010 | <0.0000050 | 0.00056 | 0.00048 | 0.047 | 0.0311 | 0.0085 | 0.004 | <0.0000020 | <0.0000020 | 76.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 56.4 | <0.0050 | <0.0050 | 0.0035 | 0.0034 | <0.020 | <0.020 |
| | | 3rd Quartile | 0.000545 | 0.00059 | 0.0253 | 0.0206 | 42 | <0.000010 | <0.0000050 | 0.0008 | 0.00059 | 0.0600 | 0.035 | 0.0116 | 0.00755 | 0.00000155 | 0.00000215 | 104.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 92.2 | <0.0050 | <0.0050 | 0.0048 | <0.010 | <0.020 | 0.015 |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 62
# 2019-2020 Annual Report

| 2018 -19 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **LLMB** | | Average | 0.0002 | 0.00024 | 0.0136 | 0.0094 | 56.8 | 0.00000500 | 0.0000025 | 0.000405 | 0.00047 | 0.037 | 0.01153 | 0.1771 | 0.11405 | 0.0000019 | 0.00000174 | 148.9 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 139.1 | 0.00250 | 0.00250 | 0.00384 | 0.00333 | 0.082 | 0.0147 |
| **E206619** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 15 | 15 | 15 |
| | | Minimum | 0.00016 | 0.0002 | 0.0064 | 0.0048 | 54 | <0.000010 | <0.0000050 | <0.00050 | 0.00032 | 0.012 | <0.0050 | 0.0387 | <0.0010 | <0.0000020 | <0.0000020 | 138 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 129 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | 0.049 | <0.020 |
| | | Maximum | 0.00023 | 0.0003 | 0.0291 | 0.0144 | 58.7 | <0.000010 | <0.0000050 | 0.00103 | 0.00136 | 0.053 | 0.0214 | 0.391 | 0.391 | 0.0000059 | 0.000006 | 166 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 147 | <0.0050 | <0.0050 | 0.0085 | <0.010 | 0.121 | 0.039 |
| | Long Lake Middle 1 metre From Bottom | Geometric Mean | 0.0002 | 0.00024 | 0.0121 | 0.0088 | 56.7 | 0.000005 | 0.0000025 | 0.000359 | 0.00044 | 0.035 | 0.00915 | 0.1478 | 0.02769 | 0.00000146 | 0.00000134 | 148.7 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 139 | 0.00250 | 0.00250 | 0.00331 | 0.00298 | 0.078 | 0.0127 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 15 | 9 | 0 | 0 | 3 | 0 | 3 | 11 | 12 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 2 | 7 | 0 | 12 |
| | | Standard Deviation | 0.00002 | 0.00002 | 0.0069 | 0.0032 | 1.6 | 0 | 0 | 0.000229 | 0.00026 | 0.01 | 0.00657 | 0.106 | 0.1238 | 0.00000172 | 0.00000172 | 7 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 5.6 | 0 | 0.00000 | 0.00201 | 0.00144 | 0.025 | 0.01 |
| | | 1st Quartile | 0.00019 | 0.00023 | 0.0078 | 0.0066 | 55.6 | <0.000010 | <0.0000050 | <0.00050 | 0.00035 | 0.034 | 0.00515 | 0.0915 | 0.0056 | <0.0000020 | <0.0000020 | 145 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 135 | <0.0050 | <0.0050 | 0.0026 | 0.0026 | 0.058 | <0.020 |
| | | Median | 0.0002 | 0.00024 | 0.0121 | 0.0093 | 57.1 | <0.000010 | <0.0000050 | <0.00050 | 0.0004 | 0.037 | 0.01260 | 0.129 | 0.0673 | <0.0000020 | <0.0000020 | 148 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 140.0 | <0.0050 | <0.0050 | 0.00365 | 0.0029 | 0.083 | <0.020 |
| | | 3rd Quartile | 0.00021 | 0.00026 | 0.0176 | 0.0121 | 58 | <0.000010 | <0.0000050 | 0.00055 | 0.00047 | 0.044 | 0.01540 | 0.242 | 0.207 | 0.00000155 | <0.0000020 | 152.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 143 | <0.0050 | <0.0050 | 0.00492 | <0.010 | 0.106 | <0.020 |
| **LLO** | | Average | 0.00048 | 0.00051 | 0.026 | 0.0179 | 32.5 | 0.000005 | 0.00000333 | 0.001834 | 0.00055 | 0.0550 | 0.0307 | 0.0126 | 0.004 | 0.00000171 | 0.00000177 | 73.7 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 54.9 | 0.00250 | 0.00316 | | | | |
| **E219412** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 51 | 15 | 15 | | | | |
| | | Minimum | 0.00036 | 0.00035 | 0.0109 | 0.0054 | 15.9 | <0.000010 | <0.0000050 | <0.00050 | 0.00033 | 0.012 | 0.0065 | 0.0048 | 0.0015 | <0.0000020 | <0.0000020 | 39.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 12.7 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00064 | 0.00066 | 0.0705 | 0.0403 | 43.9 | <0.000010 | 0.000008 | 0.0204 | 0.00094 | 0.132 | 0.052 | 0.035 | 0.0085 | 0.0000067 | 0.0000076 | 105 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 110 | <0.0050 | 0.0124 | | | | |
| | Long Lake Outlet | Geometric Mean | 0.00048 | 0.0005 | 0.0221 | 0.0151 | 31.2 | 0.000005 | 0.00000303 | 0.000564 | 0.00052 | 0.049 | 0.0278 | 0.0106 | 0.0036 | 0.0000013 | 0.0000014 | 69.5 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 47.8 | 0.00250 | 0.00278 | | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 12 | 6 | 0 | 0 | 0 | 0 | 0 | 12 | 11 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 14 | | | | |
| | | Standard Deviation | 0.00009 | 0.00009 | 0.0167 | 0.0104 | 9.2 | 0 | 0.00000182 | 0.005145 | 0.00018 | 0.027 | 0.0118 | 0.0085 | 0.0019 | 0.00000164 | 0.00000176 | 24.7 | 0 | 0.00000 | 0.000000 | 0.000000 | 27.1 | 0 | 0.00256 | | | | |
| | | 1st Quartile | 0.0004 | 0.00046 | 0.0143 | 0.0094 | 23.9 | <0.000010 | <0.0000050 | <0.00050 | 0.00038 | 0.046 | 0.0246 | 0.0068 | 0.0028 | <0.0000020 | <0.0000020 | 50.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 30.8 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00049 | 0.00049 | 0.0181 | 0.0154 | 34.2 | <0.000010 | <0.0000050 | 0.00052 | 0.00053 | 0.052 | 0.031 | 0.009 | 0.0035 | <0.0000020 | <0.0000020 | 74.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 54.6 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00054 | 0.00057 | 0.0343 | 0.0246 | 41.8 | <0.000010 | <0.0000050 | 0.00062 | 0.00065 | 0.062 | 0.0387 | 0.0150 | 0.0044 | <0.0000020 | 0.00000165 | 101 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 81.8 | <0.0050 | <0.0050 | | | | |
| **WB** | | Average | 0.00019 | 0.0002 | 0.0450 | 0.0161 | 35.3 | 0.000005 | 0.0000028 | 0.00083 | 0.0006 | 0.059 | 0.0262 | 0.0077 | 0.0028 | 0.0000020 | 0.0000015 | 36.5 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 29.1 | 0.00250 | 0.00250 | | | | |
| **E0900504** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 17 | 15 | 15 | | | | |
| | | Minimum | 0.00015 | 0.00014 | 0.0134 | 0.0101 | 31 | <0.000010 | <0.0000050 | 0.00053 | 0.00047 | 0.028 | 0.0214 | 0.0048 | 0.0013 | <0.0000020 | <0.0000020 | 29.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 20.5 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00024 | 0.00033 | 0.2870 | 0.025 | 41 | <0.000010 | 0.000007 | 0.00141 | 0.00084 | 0.337 | 0.0318 | 0.0126 | 0.006 | 0.0000075 | 0.0000031 | 48.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 38.5 | <0.0050 | <0.0050 | | | | |
| | Middle Quinsam Lake Outlet | Geometric Mean | 0.00019 | 0.000200 | 0.0278 | 0.0156 | 35.2 | 0.000005 | 0.00000268 | 0.0008 | 0.00059 | 0.044 | 0.0260 | 0.0074 | 0.0026 | 0.00000141 | 0.00000135 | 36.2 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 28.8 | 0.00250 | 0.00250 | | | | |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 15 | 14 | 0 | 0 | 0 | 0 | 0 | 0 | 12 | 10 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | | | | |
| | | Standard Deviation | 0.00003 | 0.00005 | 0.0694 | 0.0039 | 2.3 | 0 | 0.00000116 | 0.00025 | 0.0001 | 0.0770 | 0.0033 | 0.0024 | 0.0012 | 0.00000207 | 0.00000077 | 5 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 4.4 | 0 | 0 | | | | |
| | | 1st Quartile | 0.00017 | 0.00018 | 0.0173 | 0.0134 | 34 | <0.000010 | <0.0000050 | 0.00066 | 0.00052 | 0.034 | 0.0246 | 0.0055 | 0.002 | <0.0000020 | <0.0000020 | 33.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 26.9 | <0.0050 | <0.0050 | | | | |
| | | Median | 0.00019 | 0.000190 | 0.0195 | 0.0164 | 35 | <0.000010 | <0.0000050 | 0.00079 | 0.0006 | 0.039 | 0.0256 | 0.0079 | 0.0028 | <0.0000020 | <0.0000020 | 35.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 27.8 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.0002 | 0.000220 | 0.0394 | 0.0178 | 36.3 | <0.000010 | <0.0000050 | 0.00095 | 0.00061 | 0.044 | 0.0285 | 0.0088 | 0.0031 | <0.0000020 | 0.00000215 | 38 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 30.5 | <0.0050 | <0.0050 | | | | |
| **7SSD** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| **E292069** | | Average | 0.00377 | 0.00397 | 0.1122 | 0.00906 | 110.4 | 0.000005 | 0.00000341 | 0.00173 | 0.00137 | 0.149 | 0.022 | 0.0496 | 0.0192 | 0.000001 | 0.00000117 | 131.3 | 0.0005 | 0.00068 | 0.0001 | 0.000136 | 35.5 | 0.0025 | 0.00341 | 0.0278 | | 0.01 | 0.0092 |
| | | Count | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 11 | 2 | | 2 | 3 |
| | | Minimum | <0.00050 | 0.00098 | 0.011 | <0.0030 | 51.7 | <0.000010 | <0.0000050 | 0.00071 | 0.00048 | 0.024 | 0.0062 | 0.019 | 0.0017 | <0.0000020 | <0.0000020 | 56.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 10.9 | <0.0050 | <0.0050 | 0.0238 | | <0.020 | <0.015 |
| | | Maximum | 0.0124 | 0.013 | 0.954 | 0.03 | 151 | <0.000010 | <0.000025 | 0.00274 | 0.00235 | 0.886 | 0.0462 | 0.104 | 0.0533 | <0.0000020 | 0.0000029 | 228 | <0.0010 | <0.0050 | <0.00020 | <0.0010 | 115 | <0.0050 | <0.025 | 0.0319 | | <0.020 | <0.020 |
| | Settling Pond at 7S- Discharge to Stream 1 -7S | Geometric Mean | 0.002302 | 0.00275 | 0.0291 | 0.00684 | 106.1 | 0.00000500 | 0.00000289 | 0.00157 | 0.00123 | 0.074 | 0.017 | 0.0441 | 0.0131 | 0.000001 | 0.0000011 | 123.7 | 0.0005 | 0.00058 | 0.000100 | 0.000116 | 27.3 | 0.0025 | 0.00289 | 0.0276 | | 0.01 | 0.0091 |
| | | Count <DL | 1 | 0 | 0 | 1 | 0 | 11 | 11 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 10 | 0 | 11 | 11 | 11 | 11 | 0 | 11 | 11 | 0 | | 2 | 3 |
| | | Standard Deviation | 0.003742 | 0.00383 | 0.2808 | 0.00791 | 30.5 | 0 | 0.00000302 | 0.00075 | 0.00062 | 0.252 | 0.0156 | 0.026 | 0.0166 | 0 | 0.00000057 | 46.3 | 0 | 0.0006 | 0 | 0.000121 | 30.9 | 0 | 0.00302 | 0.0057 | | 0 | 0.0014 |
| | | 1st Quartile | 0.0011 | 0.00125 | 0.014 | 0.0044 | 93 | <0.000010 | <0.0000050 | 0.00113 | 0.00087 | 0.032 | 0.0085 | 0.031 | 0.0086 | <0.0000020 | <0.0000020 | 103.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 14 | <0.0050 | <0.0050 | 0.0258 | | <0.020 | 0.0088 |
| | | Median | 0.00315 | 0.00313 | 0.0159 | 0.0067 | 108 | <0.000010 | <0.0000050 | 0.00167 | 0.00119 | 0.075 | 0.016 | 0.0416 | 0.012 | <0.0000020 | <0.0000020 | 132 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 27.7 | <0.0050 | <0.0050 | 0.0278 | | <0.020 | <0.020 |
| | | 3rd Quartile | 0.0044 | 0.00435 | 0.032 | 0.0099 | 135.5 | <0.000010 | <0.0000050 | 0.00233 | 0.00181 | 0.103 | 0.037 | 0.0624 | 0.0264 | <0.0000020 | <0.0000020 | 154.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 34.2 | <0.0050 | <0.0050 | 0.0299 | | <0.020 | <0.020 |
| **7S** | | Average | 0.000075 | 0.000116 | 0.0892 | 0.0262 | 25.1 | 0.000005 | 0.00000356 | 0.000486 | 0.00044 | 0.0558 | 0.00549 | 0.00244 | 0.0005 | 0.00000114 | 0.00000196 | 16.5 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 4.000 | 0.00250 | 0.00250 | | | | |
| **E292109** | | Count | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | | | | |
| | | Minimum | <0.00010 | <0.00010 | 0.0195 | 0.0159 | 10.4 | <0.000010 | <0.0000050 | <0.00050 | <0.00020 | <0.010 | <0.0050 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 13.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 0.00013 | 0.0004 | 0.514 | 0.033 | 93.1 | <0.000010 | 0.000011 | 0.00137 | 0.00059 | 0.411 | 0.008 | 0.016 | <0.0010 | 0.0000021 | 0.0000046 | 23.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.80 | <0.0050 | <0.0050 | | | | |
| | Stream 1-7S discharge to LWO | Geometric Mean | 0.000069 | 0.000087 | 0.0404 | 0.0254 | 18.4 | 0.000005 | 0.00000301 | 0.000389 | 0.000392 | 0.0087 | 0.00504 | 0.00077 | 0.0005 | 0.0000011 | 0.0000016 | 16.2 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 3.9 | 0.00250 | 0.00250 | | | | |
| | | Count <DL | 5 | 4 | 0 | 0 | 0 | 8 | 7 | 5 | 1 | 7 | 2 | 7 | 8 | 7 | 5 | 0 | 8 | 8 | 8 | 8 | 0 | 8 | 8 | | | | |
| | | Standard Deviation | 0.000035 | 0.000118 | 0.1717 | 0.0065 | 28 | 0 | 0.00000301 | 0.000401 | 0.000167 | 0.1435 | 0.00215 | 0.00548 | 0 | 0.00000039 | 0.00000142 | 3.8 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 0.6 | 0 | 0 | | | | |
| | | 1st Quartile | <0.00010 | <0.00010 | 0.0263 | 0.0233 | 11.2 | <0.000010 | <0.0000050 | <0.00050 | 0.00038 | <0.010 | 0.00438 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 14 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.6 | <0.0050 | <0.0050 | | | | |
| | | Median | <0.00010 | 0.00008 | 0.0292 | 0.0284 | 14.2 | <0.000010 | <0.0000050 | <0.00050 | 0.00049 | <0.010 | 0.00565 | <0.0010 | <0.0010 | <0.0000020 | <0.0000020 | 14.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 0.00011 | 0.00011 | 0.0348 | 0.0305 | 23 | <0.000010 | <0.0000050 | 0.000582 | 0.000562 | <0.010 | 0.007 | <0.0010 | <0.0010 | <0.0000020 | 0.00000288 | 17.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.3 | <0.0050 | <0.0050 | | | | |
| **QU0813A** | | Average | 0.398 | | | 0.0015 | 180.5 | | 0.0000025 | | 0.000100 | | 0.198 | | 0.0451 | | 0.0000014 | | | 0.000500 | | 0.0001000 | 31.7 | | 0.00250 | | 0.0712 | | |
| | | Count | 4 | | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | 0.368 | | | <0.0030 | 178 | | <0.0000050 | | <0.00020 | | 0.171 | | 0.0387 | | <0.0000020 | | | <0.0010 | | <0.00020 | 27.5 | | <0.0050 | | 0.044 | | |
| | | Maximum | 0.42 | | | <0.0030 | 182 | | <0.0000050 | | <0.00020 | | 0.217 | | 0.0513 | | 0.0000027 | | | <0.0010 | | <0.00020 | 37 | | <0.0050 | | 0.0826 | | |
| | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (No. 4 Seam) | Geometric Mean | 0.398 | | | 0.0015 | 180.5 | | 0.0000025 | | 0.000100 | | 0.198 | | 0.0448 | | 0.0000013 | | | 0.000500 | | 0.0001000 | 31.5 | | 0.00250 | | 0.0690 | | |
| | | Count <DL | 0 | | | 4 | 0 | | 4 | | 4 | | 0 | | 0 | | 3 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | 0.023 | | | 0 | 1.7 | | 0 | | 0.000000 | | 0.020 | | 0.0055 | | 0.0000009 | | | 0.000000 | | 0.0000000 | 4 | | 0.00000 | | 0.0182 | | |
| | | 1st Quartile | 0.388 | | | <0.0030 | 180.2 | | <0.0000050 | | <0.00020 | | 0.19 | | 0.0418 | | <0.0000020 | | | <0.0010 | | <0.00020 | 29.4 | | <0.0050 | | 0.0691 | | |
| | | Median | 0.402 | | | <0.0030 | 181 | | <0.0000050 | | <0.00020 | | 0.203 | | 0.0451 | | <0.0000020 | | | <0.0010 | | <0.00020 | 31.2 | | <0.0050 | | 0.079 | | |
| | | 3rd Quartile | 0.413 | | | <0.0030 | 181.2 | | <0.0000050 | | <0.00020 | | 0.211 | | 0.0484 | | 0.00000142 | | | <0.0010 | | <0.00020 | 33.5 | | <0.0050 | | 0.081 | | |
| **QU0813B** | | Average | 0.33622 | | | 0.0039 | 123.7 | | 0.0000033 | | 0.000300 | | 0.13383 | | 0.0874 | | 0.0000010 | | | 0.000700 | | 0.0001000 | 58.9 | | 0.00250 | | 0.0763 | | |
| | | Count | 3 | | | 3 | 3 | | 3 | | 3 | | 3 | | 3 | | 3 | | | 3 | | 3 | 3 | | 3 | | 3 | | |
| | | Minimum | 0.00067 | | | 0.003 | 122 | | <0.0000050 | | <0.00020 | | <0.0050 | | 0.0773 | | <0.0000020 | | | <0.0010 | | <0.00020 | 42.3 | | <0.0050 | | 0.022 | | |
| | | Maximum | 0.509 | | | 0.0049 | 125 | | 0.000005 | | 0.0007 | | 0.272 | | 0.0956 | | <0.0000020 | | | 0.0011 | | <0.00020 | 91.9 | | <0.0050 | | 0.141 | | |
| | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (Till & SST contact) | Geometric Mean | 0.05542 | | | 0.0039 | 123.7 | | 0.0000032 | | 0.000191 | | 0.0442 | | 0.0871 | | 0.0000010 | | | 0.000650 | | 0.0001000 | 54.9 | | 0.00250 | | 0.0589 | | |
| | | Count <DL | 0 | | | 0 | 0 | | 2 | | 2 | | 1 | | 0 | | 3 | | | 2 | | 3 | 0 | | 3 | | 0 | | |
| | | Standard Deviation | 0.291 | | | 0.0010 | 1.5 | | 0.0000014 | | 0.000346 | | 0.135 | | 0.0093 | | 0.0000000 | | | 0.000350 | | 0.0000000 | 28.6 | | 0.00000 | | 0.0602 | | |
| | | 1st Quartile | 0.24984 | | | 0.0034 | 123 | | <0.0000050 | | <0.00020 | | 0.06475 | | 0.0833 | | <0.0000020 | | | <0.0010 | | <0.00020 | 42.4 | | <0.0050 | | 0.044 | | |
| | | Median | 0.499 | | | 0.0039 | 124 | | <0.0000050 | | <0.00020 | | 0.127 | | 0.0894 | | <0.0000020 | | | <0.0010 | | <0.00020 | 42.5 | | <0.0050 | | 0.066 | | |
| | | 3rd Quartile | 0.504 | | | 0.0044 | 124.5 | | 0.00000375 | | 0.0004 | | 0.1995 | | 0.0925 | | <0.0000020 | | | 0.0008 | | <0.00020 | 67.2 | | <0.0050 | | 0.1035 | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 63
# 2019-2020 Annual Report

| 2018 -19 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| QU0821GD | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 4 Seam) | Average | 0.184 | | | 0.0113 | 196.8 | | 0.00001 | | 0.0004 | | 0.882 | | 0.1043 | | 0.0000013 | | | 0.002 | | 0.0004 | 0.62 | | 0.01 | | 0.0801 | | |
| | | Count | 4 | | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | 0.155 | | | 0.0041 | 186 | | <0.0000050 | | <0.00020 | | 0.555 | | 0.0798 | | <0.0000020 | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.0374 | | |
| | | Maximum | 0.221 | | | 0.026 | 213 | | <0.000025 | | <0.0010 | | 1.4 | | 0.119 | | 0.0000022 | | | <0.0050 | | <0.0010 | 1 | | <0.025 | | 0.163 | | |
| | | Geometric Mean | 0.182 | | | 0.0088 | 196.5 | | 0.00000836 | | 0.000334 | | 0.823 | | 0.1029 | | 0.0000012 | | | 0.00167 | | 0.000334 | 0.59 | | 0.00836 | | 0.066 | | |
| | | Count <DL | 0 | | | 2 | 0 | | 4 | | 4 | | 0 | | 0 | | 3 | | | 4 | | 4 | 3 | | 4 | | 0 | | |
| | | Standard Deviation | 0.028 | | | 0.00990 | 11.6 | | 0.000005 | | 0.0002 | | 0.386 | | 0.0188 | | 0.0000006 | | | 0.001 | | 0.0002 | 0.25 | | 0.00500 | | 0.0591 | | |
| | | 1st Quartile | 0.168 | | | 0.0066 | 190.5 | | 0.00001 | | 0.0004 | | 0.604 | | 0.095 | | <0.0000020 | | | 0.002 | | 0.0004 | <1.0 | | 0.01 | | 0.0378 | | |
| | | Median | 0.18 | | | <0.015 | 194 | | <0.000025 | | <0.0010 | | 0.786 | | 0.1092 | | <0.0000020 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.06 | | |
| | | 3rd Quartile | 0.196 | | | 0.0121 | 200.2 | | <0.000025 | | <0.0010 | | 1.063 | | 0.119 | | 0.0000013 | | | <0.0050 | | <0.0010 | 0.62 | | <0.025 | | 0.1023 | | |
| QU0821GS | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 1 Seam) | Average | 0.199 | | | 0.0064 | 205.5 | | 0.0000098 | | 0.0003 | | 1.524 | | 0.1839 | | 0.0000010 | | | 0.001500 | | 0.0003000 | 0.5 | | 0.00750 | 0.0703 | 0.1526 | | |
| | | Count | 4 | | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | 1 | 3 | | |
| | | Minimum | 0.137 | | | 0.0037 | 197 | | <0.0000050 | | <0.00020 | | 0.423 | | 0.0625 | | <0.0000020 | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | 0.0703 | 0.0958 | | |
| | | Maximum | 0.289 | | | <0.015 | 213 | | <0.000025 | | <0.0010 | | 3.31 | | 0.461 | | <0.0000020 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | 0.0703 | 0.207 | | |
| | | Geometric Mean | 0.191 | | | 0.0061 | 205.4 | | 0.0000082 | | 0.000224 | | 1.163 | | 0.134 | | 0.0000010 | | | 0.001120 | | 0.0002240 | 0.5 | | 0.00559 | 0.0703 | 0.1454 | | |
| | | Count <DL | 0 | | | 2 | 0 | | 3 | | 4 | | 0 | | 0 | | 4 | | | 4 | | 4 | 4 | | 4 | 0 | 0 | | |
| | | Standard Deviation | 0.068 | | | 0.0018 | 6.6 | | 0.0000049 | | 0.000231 | | 1.267 | | 0.186 | | 0.0000000 | | | 0.001150 | | 0.0002310 | 0 | | 0.00577 | 0 | 0.0556 | | |
| | | 1st Quartile | 0.154 | | | 0.006 | 203 | | 0.00000948 | | <0.00020 | | 0.769 | | 0.0885 | | <0.0000020 | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | 0.0703 | 0.1254 | | |
| | | Median | 0.185 | | | 0.0071 | 206 | | 0.00001215 | | 0.0003 | | 1.182 | | 0.1061 | | <0.0000020 | | | 0.0015 | | 0.0003 | <1.0 | | 0.00750 | 0.0703 | 0.155 | | |
| | | 3rd Quartile | 0.23 | | | <0.015 | 208.5 | | <0.000025 | | <0.0010 | | 1.938 | | 0.2015 | | <0.0000020 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | 0.0703 | 0.181 | | |
| QU1010D | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | Average | 0.0138 | | | 0.1135 | 89.3 | | 0.000019 | | 0.00075 | | 8.82 | | 0.347 | | 0.0000010 | | | 0.00375 | | 0.000750 | 0.5 | | 0.0188 | | 0.07580 | | |
| | | Count | 2 | | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | 0.0135 | | | <0.030 | 86.3 | | <0.000025 | | <0.0010 | | 8.82 | | 0.346 | | <0.0000020 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.0521 | | |
| | | Maximum | 0.0142 | | | 0.212 | 92.3 | | <0.000050 | | <0.0020 | | 8.82 | | 0.348 | | <0.0000020 | | | <0.010 | | <0.0020 | <1.0 | | <0.050 | | 0.0994 | | |
| | | Geometric Mean | 0.0138 | | | 0.0564 | 89.2 | | 0.000018 | | 0.00071 | | 8.82 | | 0.347 | | 0.0000010 | | | 0.00354 | | 0.000710 | 0.5 | | 0.0177 | | 0.07200 | | |
| | | Count <DL | 0 | | | 1 | 0 | | 2 | | 2 | | 0 | | 0 | | 2 | | | 2 | | 2 | 2 | | 2 | | 0 | | |
| | | Standard Deviation | 0.0005 | | | 0.1393 | 4.2 | | 0.000009 | | 0.00035 | | 0.0 | | 0.00 | | 0.0000000 | | | 0.00177 | | 0.000350 | 0.0 | | 0.0088 | | 0.03340 | | |
| | | 1st Quartile | 0.0137 | | | 0.0642 | 87.8 | | 0.0000156 | | 0.00062 | | 8.82 | | 0.346 | | <0.0000020 | | | 0.00312 | | 0.00062 | <1.0 | | 0.0156 | | 0.0639 | | |
| | | Median | 0.0138 | | | 0.1135 | 89.3 | | 0.0000188 | | 0.00075 | | 8.82 | | 0.347 | | <0.0000020 | | | 0.00375 | | 0.00075 | <1.0 | | 0.0188 | | 0.0758 | | |
| | | 3rd Quartile | 0.014 | | | 0.1628 | 90.8 | | 0.0000219 | | 0.00088 | | 8.82 | | 0.348 | | <0.0000020 | | | 0.00438 | | 0.00088 | <1.0 | | 0.0219 | | 0.0876 | | |
| QU1010S | Ex-situ 2-North shallow groundwater well. Down gradient of u/g tailings disposal, measures water quality & hydraulic head downstream of 2-North workings. (No. 1 Seam / Sandstone). | Average | 0.107 | | | 0.0027 | 152.0 | | 0.0000025 | | 0.0001 | | 0.192 | | 0.042 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 12.4 | | 0.00250 | | 0.0479 | | |
| | | Count | 2 | | | 2 | 2 | | 2 | | 2 | | 2 | | 2 | | 2 | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | 0.101 | | | <0.0030 | 151 | | <0.0000050 | | <0.00020 | | 0.175 | | 0.0417 | | <0.0000020 | | | <0.0010 | | <0.00020 | 11.4 | | <0.0050 | | 0.0475 | | |
| | | Maximum | 0.113 | | | 0.0039 | 153 | | <0.0000050 | | <0.00020 | | 0.21 | | 0.0422 | | <0.0000020 | | | <0.0010 | | <0.00020 | 13.5 | | <0.0050 | | 0.0482 | | |
| | | Geometric Mean | 0.107 | | | 0.00242 | 152.0 | | 0.0000025 | | 0.0001 | | 0.192 | | 0.0419 | | 0.0000010 | | | 0.000500 | | 0.0001000 | 12.4 | | 0.0025 | | 0.0478 | | |
| | | Count <DL | 0 | | | 1 | 0 | | 2 | | 2 | | 0 | | 0 | | 2 | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | 0.008 | | | 0.0017 | 1.4 | | 0.0000000 | | 0 | | 0.025 | | 0.0004 | | 0.0000000 | | | 0.000000 | | 0.0000000 | 1.5 | | 0 | | 0.0005 | | |
| | | 1st Quartile | 0.104 | | | 0.0021 | 151.5 | | <0.0000050 | | <0.00020 | | 0.184 | | 0.0418 | | <0.0000020 | | | <0.0010 | | <0.00020 | 11.9 | | <0.0050 | | 0.0477 | | |
| | | Median | 0.107 | | | 0.0027 | 152 | | <0.0000050 | | <0.00020 | | 0.192 | | 0.042 | | <0.0000020 | | | <0.0010 | | <0.00020 | 12.4 | | <0.0050 | | 0.0479 | | |
| | | 3rd Quartile | 0.11 | | | 0.0033 | 152.5 | | <0.0000050 | | <0.00020 | | 0.201 | | 0.0421 | | <0.0000020 | | | <0.0010 | | <0.00020 | 13 | | <0.0050 | | 0.048 | | |
| QU1011D | Ex-situ 2-North deep groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | 0.00712 | | | 0.0075 | 350 | | 0.0000125 | | 0.0011 | | 3.24 | | 0.36 | | 0.0000061 | | | 0.0025 | | 0.0005 | 0.5 | | 0.0125 | | 0.068 | | |
| | | Count | 1 | | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | 0.00712 | | | <0.015 | 350 | | <0.000025 | | 0.0011 | | 3.24 | | 0.36 | | 0.0000061 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.0684 | | |
| | | Maximum | 0.00712 | | | <0.015 | 350 | | <0.000025 | | 0.0011 | | 3.24 | | 0.36 | | 0.0000061 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.0684 | | |
| | | Geometric Mean | 0.00712 | | | 0.0075 | 350 | | 0.0000125 | | 0.0011 | | 3.24 | | 0.36 | | 0.0000061 | | | 0.0025 | | 0.0005 | 0.5 | | 0.0125 | | 0.068 | | |
| | | Count <DL | 0 | | | 1 | 0 | | 1 | | 0 | | 0 | | 0 | | 0 | | | 1 | | 1 | 1 | | 1 | | 0 | | |
| | | Standard Deviation | 0.00000 | | | 0.0000 | 0 | | 0.0000000 | | 0.00000 | | 0.00 | | 0.000 | | 0.0000000 | | | 0.00000 | | 0.0000000 | 0.0 | | 0.0000 | | 0.000 | | |
| | | 1st Quartile | 0.00712 | | | <0.015 | 350 | | <0.000025 | | 0.0011 | | 3.24 | | 0.36 | | 0.0000061 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.0684 | | |
| | | Median | 0.00712 | | | <0.015 | 350 | | <0.000025 | | 0.0011 | | 3.24 | | 0.36 | | 0.0000061 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.0684 | | |
| | | 3rd Quartile | 0.00712 | | | <0.015 | 350 | | <0.000025 | | 0.0011 | | 3.24 | | 0.36 | | 0.0000061 | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.0684 | | |
| QU1011S | Ex-situ 2-North shallow groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | 0.00156 | | | 0.0035 | 81.2 | | 0.0000025 | | 0.0001 | | 0.378 | | 0.0521 | | 0.0000028 | | | 0.0005 | | 0.0001000 | 6.5 | | 0.00250 | | 0.0112 | | |
| | | Count | 1 | | | 1 | 1 | | 1 | | 1 | | 1 | | 1 | | 1 | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | 0.00156 | | | 0.0035 | 81.2 | | <0.0000050 | | <0.00020 | | 0.378 | | 0.0521 | | 0.0000028 | | | <0.0010 | | <0.00020 | 6.5 | | <0.0050 | | 0.0112 | | |
| | | Maximum | 0.00156 | | | 0.0035 | 81.2 | | <0.0000050 | | <0.00020 | | 0.378 | | 0.0521 | | 0.0000028 | | | <0.0010 | | <0.00020 | 6.5 | | <0.0050 | | 0.0112 | | |
| | | Geometric Mean | 0.00156 | | | 0.0035 | 81.2 | | 0.0000025 | | 0.0001 | | 0.378 | | 0.0521 | | 0.0000028 | | | 0.0005 | | 0.0001000 | 6.5 | | 0.0025 | | 0.0112 | | |
| | | Count <DL | 0 | | | 0 | 0 | | 1 | | 1 | | 0 | | 0 | | 0 | | | 1 | | 1 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | 0 | | | 0 | 0 | | 0.0000000 | | 0 | | 0 | | 0 | | 0.0000000 | | | 0 | | 0.0000000 | 0 | | 0 | | 0 | | |
| | | 1st Quartile | 0.00156 | | | 0.0035 | 81.2 | | <0.0000050 | | <0.00020 | | 0.378 | | 0.0521 | | 0.0000028 | | | <0.0010 | | <0.00020 | 6.5 | | <0.0050 | | 0.0112 | | |
| | | Median | 0.00156 | | | 0.0035 | 81.2 | | <0.0000050 | | <0.00020 | | 0.378 | | 0.0521 | | 0.0000028 | | | <0.0010 | | <0.00020 | 6.5 | | <0.0050 | | 0.0112 | | |
| | | 3rd Quartile | 0.00156 | | | 0.0035 | 81.2 | | <0.0000050 | | <0.00020 | | 0.378 | | 0.0521 | | 0.0000028 | | | <0.0010 | | <0.00020 | 6.5 | | <0.0050 | | 0.0112 | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 64
# 2019-2020 Annual Report

| 2018 -19 Statistics Stn.Code EMS. ID | Site Name & Description | Statistics | As-T | As-D | Al-T | Al-D | Alk-T | Cd-T | Cd-D | Cu-T | Cu-D | Fe-T | Fe-D | Mn-T | Mn-D | Hg-T | Hg-D | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **QU1105S** | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | 0.04295 | | | 0.00402 | 191.3 | | 0.0000050 | | 0.000200 | | 0.6426 | | 0.116 | | 0.0000010 | | | 0.001000 | | 0.0002000 | 118.8 | | 0.00500 | | 0.081 | | |
| | | Count | 4 | | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | 0.00609 | | | <0.0030 | 96.3 | | <0.0000050 | | <0.00020 | | <0.025 | | 0.0795 | | <0.0000020 | | | <0.0010 | | <0.00020 | 56.5 | | <0.0050 | | 0.011 | | |
| | | Maximum | 0.0606 | | | <0.015 | 314 | | <0.000025 | | <0.0010 | | 1.16 | | 0.183 | | <0.0000020 | | | <0.0050 | | <0.0010 | 214 | | <0.025 | | 0.259 | | |
| | | Geometric Mean | 0.03177 | | | 0.00345 | 169.6 | | 0.0000037 | | 0.000150 | | 0.2896 | | 0.1102 | | 0.0000010 | | | 0.000750 | | 0.0001500 | 103.9 | | 0.00374 | | 0.037 | | |
| | | Count <DL | 0 | | | 2 | 0 | | 4 | | 4 | | 1 | | 0 | | 4 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | 0.0249 | | | 0.00251 | 104.5 | | 0.0000050 | | 0.000200 | | 0.475 | | 0.0458 | | 0.0000000 | | | 0.001000 | | 0.0002000 | 71.0 | | 0.00500 | | 0.119 | | |
| | | 1st Quartile | 0.03992 | | | 0.00292 | 108.8 | | <0.0000050 | | <0.00020 | | 0.4846 | | 0.0945 | | <0.0000020 | | | <0.0010 | | <0.00020 | 69.4 | | <0.0050 | | 0.0205 | | |
| | | Median | 0.05255 | | | 0.00355 | 177.5 | | <0.0000050 | | <0.00020 | | 0.699 | | 0.1008 | | <0.0000020 | | | <0.0010 | | <0.00020 | 102.4 | | <0.0050 | | 0.0262 | | |
| | | 3rd Quartile | 0.05558 | | | 0.00465 | 260 | | 0.000005 | | 0.0002 | | 0.857 | | 0.1222 | | <0.0000020 | | | 0.001 | | 0.0002 | 151.8 | | 0.005 | | 0.0863 | | |
| **QU1109S** | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | 0.08961 | | | 0.00582 | 441.8 | | 0.0000081 | | 0.000325 | | 2.7040 | | 0.1053 | | 0.0000033 | | | 0.00163 | | 0.000325 | 423 | | 0.00812 | | 0.056 | | |
| | | Count | 4 | | | 4 | 4 | | 4 | | 4 | | 4 | | 4 | | 4 | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | 0.00344 | | | <0.0030 | 427 | | <0.0000050 | | <0.00020 | | 0.161 | | 0.0317 | | <0.0000020 | | | <0.0010 | | <0.00020 | 273 | | <0.0050 | | 0.0058 | | |
| | | Maximum | 0.123 | | | <0.015 | 462 | | <0.000025 | | <0.0010 | | 10 | | 0.309 | | <0.000020 | | | <0.0050 | | <0.0010 | 712 | | <0.025 | | 0.0834 | | |
| | | Geometric Mean | 0.04885 | | | 0.00489 | 441.6 | | 0.0000067 | | 0.000266 | | 0.6450 | | 0.0631 | | 0.0000018 | | | 0.00133 | | 0.000266 | 395 | | 0.00665 | | 0.038 | | |
| | | Count <DL | 0 | | | 3 | 0 | | 4 | | 4 | | 0 | | 0 | | 4 | | | 4 | | 4 | 0 | | 4 | | 0 | | |
| | | Standard Deviation | 0.058 | | | 0.0029 | 14.7 | | 0.0000052 | | 0.00021 | | 4.8650 | | 0.13590 | | 0.0000045 | | | 0.00103 | | 0.000206 | 196.0 | | 0.0052 | | 0.035 | | |
| | | 1st Quartile | 0.08711 | | | 0.00547 | 435.2 | | 0.00000438 | | 0.000175 | | 0.284 | | 0.0376 | | <0.0000020 | | | 0.00088 | | 0.000175 | 333 | | 0.00438 | | 0.048 | | |
| | | Median | 0.116 | | | 0.00715 | 439 | | 0.00000875 | | 0.00035 | | 0.328 | | 0.0402 | | <0.0000020 | | | 0.00175 | | 0.00035 | 355 | | 0.00875 | | 0.0674 | | |
| | | 3rd Quartile | 0.1185 | | | <0.015 | 445.5 | | <0.000025 | | <0.0010 | | 2.748 | | 0.108 | | 0.00000325 | | | <0.0050 | | <0.0010 | 445 | | <0.025 | | 0.0754 | | |
| **7SQR** | 7-South Quinsam River downstream of 7-South Mining Operation | Average | 0.00036 | 0.00039 | 0.0329 | 0.0183 | 34.3 | 0.000005 | 0.00000341 | 0.00073 | 0.00264 | 0.09 | 0.0570 | 0.0063 | 0.0049 | 0.0000018 | 0.00000139 | 36.1 | 0.00050 | 0.00050 | 0.000109 | 0.000100 | 26.5 | 0.0025 | 0.0025 | 0.00185 | | 0.0215 | 0.0088 |
| **E292113** | | Count | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 20 | 19 | 20 | 20 | 2 | | 2 | 2 |
| | | Minimum | 0.00022 | 0.00025 | 0.0126 | 0.0088 | 26.6 | <0.000010 | <0.0000050 | 0.00053 | 0.00046 | 0.065 | 0.035 | 0.0044 | 0.0025 | <0.0000020 | <0.0000020 | 28.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 14.1 | <0.0050 | <0.0050 | <0.0020 | | <0.020 | <0.015 |
| | | Maximum | 0.00052 | 0.00056 | 0.0603 | 0.0356 | 41.8 | <0.000010 | 0.0000093 | 0.00115 | 0.0383 | 0.127 | 0.0836 | 0.0097 | 0.0082 | 0.0000085 | 0.0000049 | 48.8 | <0.0010 | <0.0010 | 0.00027 | <0.00020 | 37.3 | <0.0050 | <0.0050 | 0.0027 | | 0.033 | <0.020 |
| | | Geometric Mean | 0.00035 | 0.00038 | 0.0303 | 0.0168 | 34.1 | 0.000005 | 0.00000305 | 0.00071 | 0.00078 | 0.088 | 0.0555 | 0.0062 | 0.0047 | 0.00000131 | 0.0000012 | 35.8 | 0.00050 | 0.00050 | 0.000105 | 0.000100 | 25.9 | 0.0025 | 0.0025 | 0.00164 | | 0.0182 | 0.0087 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 20 | 16 | 0 | 0 | 0 | 0 | 0 | 0 | 17 | 17 | 0 | 20 | 20 | 19 | 20 | 0 | 20 | 20 | 1 | | 1 | 2 |
| | | Standard Deviation | 0.00008 | 0.00008 | 0.0135 | 0.0079 | 4.1 | 0.00000000 | 0.00000206 | 0.00017 | 0.00843 | 0.018 | 0.0137 | 0.0015 | 0.0013 | 0.00000214 | 0.00000106 | 4.9 | 0.00000 | 0.00000 | 0.000038 | 0.000000 | 5.4 | 0 | 0 | 0.0012 | | 0.0163 | 0.0018 |
| | | 1st Quartile | 0.00032 | 0.00034 | 0.0246 | 0.0122 | 31.2 | <0.000010 | <0.0000050 | 0.00058 | 0.00052 | 0.079 | 0.0484 | 0.0053 | 0.004 | <0.0000020 | <0.0000020 | 33.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25 | <0.0050 | <0.0050 | 0.00142 | | 0.0158 | 0.0081 |
| | | Median | 0.00036 | 0.00038 | 0.0284 | 0.015 | 34.6 | <0.000010 | <0.0000050 | 0.00069 | 0.00058 | 0.086 | 0.0518 | 0.006 | 0.0048 | <0.0000020 | <0.0000020 | 35.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 27.6 | <0.0050 | <0.0050 | 0.00185 | | 0.0215 | 0.0088 |
| | | 3rd Quartile | 0.00042 | 0.00043 | 0.0438 | 0.0242 | 37.9 | <0.000010 | <0.0000050 | 0.00081 | 0.00067 | 0.096 | 0.0649 | 0.0075 | 0.0056 | <0.0000020 | <0.0000020 | 38.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 29.30 | <0.0050 | <0.0050 | 0.00228 | | 0.0273 | 0.0094 |
| **LQL1** | Lower Quinsam Lake 1 metre below surface | Average | 0.00057 | 0.00063 | 0.03 | 0.0216 | 29.58 | 0.000005 | 0.00000387 | 0.00079 | 0.00072 | 0.101 | 0.0683 | 0.012 | 0.00781 | 0.00000151 | 0.00000141 | 33.4 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 18.5 | 0.00250 | 0.00250 | 0.00544 | 0.0047 | 0.104 | 0.01 |
| **E292118** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 15 |
| | | Minimum | 0.00047 | 0.00044 | 0.0103 | 0.0079 | <1.0 | <0.000010 | <0.0000050 | 0.00058 | 0.0005 | 0.052 | 0.0287 | 0.0046 | <0.0010 | <0.0000020 | <0.0000020 | 30.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 13.2 | <0.0050 | <0.0050 | <0.0020 | <0.0020 | <0.020 | <0.020 |
| | | Maximum | 0.00063 | 0.00071 | 0.0535 | 0.0355 | 38.7 | <0.000010 | 0.0000070 | 0.00125 | 0.00108 | 0.229 | 0.142 | 0.0311 | 0.0264 | 0.0000058 | 0.0000047 | 36.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 24.6 | <0.0050 | <0.0050 | 0.0106 | 0.017 | 1.42 | <0.020 |
| | | Geometric Mean | 0.00057 | 0.00062 | 0.0264 | 0.0188 | 23.79 | 0.000005 | 0.00000352 | 0.00077 | 0.0007 | 0.089 | 0.0608 | 0.0095 | 0.0036 | 0.00000123 | 0.00000121 | 33.3 | 0.0005 | 0.00050 | 0.000100 | 0.000100 | 18 | 0.00250 | 0.00250 | 0.00482 | 0.0038 | 0.0139 | 0.01 |
| | | Count <DL | 0 | 0 | 0 | 0 | 1 | 15 | 9 | 0 | 0 | 0 | 0 | 0 | 3 | 13 | 13 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 1 | 5 | 14 | 15 |
| | | Standard Deviation | 0.00005 | 0.00008 | 0.0138 | 0.0105 | 9.19 | 0 | 0.00000181 | 0.00017 | 0.00016 | 0.055 | 0.0353 | 0.0090 | 0.0088 | 0.0000014 | 0.00000111 | 1.9 | 0 | 0.00000 | 0.000000 | 0.000000 | 4.1 | 0 | 0 | 0.00245 | 0.00386 | 0.3641 | 0 |
| | | 1st Quartile | 0.00054 | 0.00059 | 0.0175 | 0.0105 | 28.05 | <0.000010 | <0.0000050 | 0.0007 | 0.00062 | 0.056 | 0.0448 | 0.0062 | 0.00145 | <0.0000020 | <0.0000020 | 31.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 15.2 | <0.0050 | <0.0050 | 0.00407 | 0.00265 | <0.020 | <0.020 |
| | | Median | 0.00059 | 0.00065 | 0.0311 | 0.0203 | 30.5 | <0.000010 | <0.0000050 | 0.000750 | 0.00073 | 0.080 | 0.0542 | 0.0072 | 0.00310 | <0.0000020 | <0.0000020 | 33.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 17 | <0.0050 | <0.0050 | 0.005 | 0.00405 | <0.020 | <0.020 |
| | | 3rd Quartile | 0.0006 | 0.0007 | 0.0405 | 0.0305 | 35.5 | <0.000010 | 0.0000053 | 0.000860 | 0.00078 | 0.134 | 0.0952 | 0.018 | 0.01455 | <0.0000020 | <0.0000020 | 34.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 21.9 | <0.0050 | <0.0050 | 0.00652 | <0.010 | <0.020 | <0.020 |
| **LQLB** | LQLB 1 metre from Bottom | Average | 0.00073 | 0.00105 | 0.0374 | 0.0232 | 30.6 | 0.0000071 | 0.00000666 | 0.00089 | 0.00071 | 0.485 | 0.2679 | 0.1767 | 0.1636 | 0.00000122 | 0.00000163 | 32 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 15.1 | 0.0025 | 0.00250 | 0.0054 | 0.00442 | 0.0387 | 0.0452 |
| **E292118** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 14 | 14 | 15 | 15 |
| | | Minimum | 0.00046 | 0.00049 | 0.0225 | 0.0123 | 25.9 | <0.000010 | <0.0000050 | 0.00063 | 0.0006 | 0.102 | 0.0585 | 0.0108 | 0.0075 | <0.0000020 | <0.0000020 | 29.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 12.5 | <0.0050 | <0.0050 | 0.0027 | <0.0020 | <0.020 | <0.020 |
| | | Maximum | 0.00127 | 0.00218 | 0.0696 | 0.0326 | 34.8 | 0.000015 | 0.0000110 | 0.00193 | 0.00088 | 1.35 | 0.746 | 0.532 | 0.511 | 0.0000028 | 0.0000043 | 35.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 17.2 | <0.0050 | <0.0050 | 0.0086 | 0.0064 | 0.124 | 0.17 |
| | | Geometric Mean | 0.00069 | 0.00095 | 0.0356 | 0.0226 | 30.5 | 0.0000064 | 0.00000582 | 0.00085 | 0.0007 | 0.35 | 0.1965 | 0.0945 | 0.0786 | 0.00000114 | 0.0000014 | 31.9 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 15 | 0.0025 | 0.00250 | 0.0051 | 0.00407 | 0.0274 | 0.0282 |
| | | Count <DL | 0 | 0 | 0 | 0 | 0 | 11 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 13 | 10 | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 15 | 0 | 5 | 5 | 6 |
| | | Standard Deviation | 0.00025 | 0.00052 | 0.0125 | 0.0054 | 2.9 | 0.0000036 | 0.00000317 | 0.00032 | 0.00009 | 0.398 | 0.2167 | 0.1701 | 0.1621 | 0.00000058 | 0.00000106 | 1.7 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 1.3 | 0 | 0 | 0.0018 | 0.00149 | 0.0338 | 0.0462 |
| | | 1st Quartile | 0.00054 | 0.00066 | 0.0300 | 0.0199 | 28.2 | <0.000010 | 0.0000041 | 0.00076 | 0.00063 | 0.186 | 0.1065 | 0.03 | 0.0241 | <0.0000020 | <0.0000020 | 30.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 14.5 | <0.0050 | <0.0050 | 0.0037 | 0.00328 | <0.020 | <0.020 |
| | | Median | 0.00062 | 0.00082 | 0.0351 | 0.0238 | 31.4 | <0.000010 | 0.00000600 | 0.00079 | 0.00069 | 0.234 | 0.133 | 0.16 | 0.1510 | <0.0000020 | <0.0000020 | 31.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 14.8 | <0.0050 | <0.0050 | 0.0053 | <0.010 | 0.027 | 0.029 |
| | | 3rd Quartile | 0.00091 | 0.00129 | 0.0451 | 0.026 | 32.7 | 0.0000085 | 0.00000980 | 0.00090 | 0.00076 | 0.694 | 0.3985 | 0.272 | 0.2595 | <0.0000020 | 0.0000021 | 33.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 16 | <0.0050 | <0.0050 | 0.007 | <0.010 | 0.0495 | 0.07 |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 65
# 2019-2020 Annual Report

| 2019 -20 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistic | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **WA** | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E0126402** | Quinsam River at Argonaut Road Upstream of Mining Operation. | Average | 19.4 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 1.28 | 0.00250 | 0.00250 | | | 0.0100 | |
| | | Count | 14 | 14 | 14 | 14 | 14 | 13 | 14 | 14 | | | 1 | |
| | | Minimum | 16.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <1.0 | <0.0050 | <0.0050 | | | <0.020 | |
| | | Maximum | 20.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.5 | <0.0050 | <0.0050 | | | <0.020 | |
| | | Geometric Mean | 19.4 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 1.11 | 0.00250 | 0.00250 | | | 0.0100 | |
| | | Count <DL | 0 | 14 | 14 | 14 | 14 | 4 | 14 | 14 | | | 1 | |
| | | Standard Deviation | 1.1 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 0.66 | 0.00000 | 0.00000 | | | 0.0000 | |
| | | 1st Quartile | 19.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <1.0 | <0.0050 | <0.0050 | | | <0.020 | |
| | | Median | 19.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.3 | <0.0050 | <0.0050 | | | <0.020 | |
| | | 3rd Quartile | 20.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.7 | <0.0050 | <0.0050 | | | <0.020 | |
| **WD** | Settling Pond #4 | Average | 447 | 0.00094 | 0.00083 | 0.000100 | 0.000100 | 549 | 0.00290 | 0.00250 | 0.0037 | 0.00200 | 0.0155 | 0.055 |
| **E207409** | | Count | 8 | 8 | 12 | 8 | 12 | 47 | 8 | 12 | 3 | 2 | 4 | 4 |
| | | Minimum | 281 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 160 | <0.0050 | <0.0050 | 0.0034 | <0.0030 | <0.020 | 0.020 |
| | | Maximum | 637 | 0.0020 | 0.0019 | <0.00020 | <0.00020 | 1000 | 0.0057 | <0.0050 | 0.0042 | 0.0025 | 0.032 | 0.14 |
| | | Geometric Mean | 428 | 0.00082 | 0.00073 | 0.000100 | 0.000100 | 507 | 0.00277 | 0.00250 | 0.0037 | 0.00194 | 0.0134 | 0.039 |
| | | Count <DL | 0 | 4 | 7 | 8 | 12 | 0 | 7 | 12 | 0 | 1 | 3 | 0 |
| | | Standard Deviation | 139 | 0.00054 | 0.00046 | 0.000000 | 0.000000 | 217 | 0.00113 | 0.00000 | 0.0004 | 0.00071 | 0.0110 | 0.057 |
| | | 1st Quartile | 343 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 395 | <0.0050 | <0.0050 | 0.0035 | 0.00175 | <0.020 | 0.024 |
| | | Median | 410 | 0.00080 | <0.0010 | <0.00020 | <0.00020 | 486 | <0.0050 | <0.0050 | 0.0036 | 0.00200 | <0.020 | 0.030 |
| | | 3rd Quartile | 576 | 0.0012 | 0.00113 | <0.00020 | <0.00020 | 755 | <0.0050 | <0.0050 | 0.0039 | 0.00225 | 0.0155 | 0.061 |
| **MW001D** | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | | | 0.00263 | | 0.000100 | 132 | | 0.00250 | | 0.102 | | |
| | | Count | | | 3 | | 3 | 3 | | 3 | | 3 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 11 | | <0.0050 | | 0.027 | | |
| | | Maximum | | | 0.0069 | | <0.00020 | 360 | | <0.0050 | | 0.15 | | |
| | | Geometric Mean | | | 0.00120 | | 0.000100 | 46 | | 0.00250 | | 0.081 | | |
| | | Count <DL | | | 2 | | 3 | 0 | | 3 | | 0 | | |
| | | Standard Deviation | | | 0.00370 | | 0.000000 | 197 | | 0.00000 | | 0.066 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 18 | | <0.0050 | | 0.079 | | |
| | | Median | | | <0.0010 | | <0.00020 | 26 | | <0.0050 | | 0.13 | | |
| | | 3rd Quartile | | | 0.00370 | | <0.00020 | 193 | | <0.0050 | | 0.140 | | |
| **MW001S** | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | | | 0.0012 | | 0.000100 | 400.0 | | 0.00250 | | 0.0026 | | |
| | | Count | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | | 0.0012 | | <0.00020 | 400 | | <0.0050 | | 0.0026 | | |
| | | Maximum | | | 0.0012 | | <0.00020 | 400 | | <0.0050 | | 0.0026 | | |
| | | Geometric Mean | | | 0.0012 | | 0.000100 | 400.0 | | 0.00250 | | 0.0026 | | |
| | | Count <DL | | | 0 | | 1 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | | | 0.0000 | | 0.000000 | 0.0 | | 0.00000 | | 0.0000 | | |
| | | 1st Quartile | | | 0.0012 | | <0.00020 | 400 | | <0.0050 | | 0.0026 | | |
| | | Median | | | 0.0012 | | <0.00020 | 400 | | <0.0050 | | 0.0026 | | |
| | | 3rd Quartile | | | 0.0012 | | <0.00020 | 400 | | <0.0050 | | 0.0026 | | |
| **MW006D** | Ex-situ 2-North deep groundwater well below the coal wash plant (Till) | Average | | | 0.00050 | | 0.000100 | 12.0 | | 0.00250 | | 0.12 | | |
| | | Count | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 12 | | <0.0050 | | 0.12 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | 12 | | <0.0050 | | 0.12 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 12.0 | | 0.00250 | | 0.12 | | |
| | | Count <DL | | | 1 | | 1 | 0 | | 1 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 0.0 | | 0.00000 | | 0.00 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 12 | | <0.0050 | | 0.12 | | |
| | | Median | | | <0.0010 | | <0.00020 | 12 | | <0.0050 | | 0.12 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | 12 | | <0.0050 | | 0.12 | | |
| **MW006S** | Ex-situ 2-North shallow groundwater well below the coal wash plant (Till) | Average | | | 0.00050 | | 0.000100 | 475 | | 0.00250 | | 0.043 | | |
| | | Count | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 400 | | <0.0050 | | 0.039 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | 550 | | <0.0050 | | 0.048 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 469 | | 0.00250 | | 0.043 | | |
| | | Count <DL | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 106 | | 0.00000 | | 0.006 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 437 | | <0.0050 | | 0.041 | | |
| | | Median | | | <0.0010 | | <0.00020 | 475 | | <0.0050 | | 0.043 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | 512 | | <0.0050 | | 0.046 | | |
| **WC** | | Average | 344 | 0.00082 | 0.00077 | 0.000100 | 0.000100 | 530 | 0.00250 | 0.00250 | | | | |
| **E207411** | 2-North Pit Culvert discharge into Middle Quinsam Lake | Count | 6 | 6 | 7 | 6 | 7 | 12 | 6 | 7 | | | | |
| | | Minimum | 253 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 300 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 436 | 0.0012 | 0.0012 | <0.00020 | <0.00020 | 726 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 338 | 0.00075 | 0.00071 | 0.000100 | 0.000100 | 510 | 0.00250 | 0.00250 | | | | |
| | | Count <DL | 0 | 3 | 4 | 6 | 7 | 0 | 6 | 7 | | | | |
| | | Standard Deviation | 65 | 0.00035 | 0.00034 | 0.000000 | 0.000000 | 148 | 0.00000 | 0.00000 | | | | |
| | | 1st Quartile | 300 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 387 | <0.0050 | <0.0050 | | | | |
| | | Median | 354 | 0.00080 | <0.0010 | <0.00020 | <0.00020 | 530 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 376 | 0.0011 | 0.0011 | <0.00020 | <0.00020 | 665 | <0.0050 | <0.0050 | | | | |
| **MQL1** | Middle Quinsam Lake 1 metre below surface | Average | 35.7 | 0.00064 | 0.00050 | 0.000100 | 0.000100 | 30.1 | 0.00250 | 0.00292 | 0.00310 | 0.00419 | 0.0134 | |
| **E206618** | | Count | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 6 | 14 | 5 | |
| | | Minimum | 23.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 5.8 | <0.0050 | <0.0050 | <0.0030 | <0.0030 | <0.020 | |
| | | Maximum | 45.4 | 0.0025 | <0.0010 | <0.00020 | <0.00020 | 57.1 | <0.0050 | 0.0084 | 0.0076 | <0.010 | 0.027 | |
| | | Geometric Mean | 34.7 | 0.00056 | 0.00050 | 0.000100 | 0.000100 | 23.8 | 0.00250 | 0.00273 | 0.00240 | 0.00391 | 0.0122 | |
| | | Count <DL | 0 | 13 | 14 | 14 | 14 | 0 | 14 | 13 | 4 | 11 | 4 | |
| | | Standard Deviation | 8.2 | 0.00053 | 0.00000 | 0.000000 | 0.000000 | 16.5 | 0.00000 | 0.00158 | 0.00261 | 0.00131 | 0.0076 | |
| | | 1st Quartile | 27.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 13.2 | <0.0050 | <0.0050 | <0.0030 | 0.00367 | <0.020 | |
| | | Median | 37.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 34.0 | <0.0050 | <0.0050 | <0.0030 | <0.010 | <0.020 | |
| | | 3rd Quartile | 41.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 40.7 | <0.0050 | <0.0050 | 0.00413 | <0.010 | <0.020 | |
| **MQLB** | Middle Quinsam Lake 1 metre from bottom | Average | 47.3 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 52.6 | 0.00250 | 0.00250 | 0.00292 | 0.00482 | 0.0100 | |
| **E206618** | | Count | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 6 | 14 | 5 | |
| | | Minimum | 36.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 34 | <0.0050 | <0.0050 | <0.0030 | <0.0030 | <0.020 | |
| | | Maximum | 53.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 68.1 | <0.0050 | <0.0050 | 0.0043 | 0.011 | <0.020 | |
| | | Geometric Mean | 46.8 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 51.0 | 0.00250 | 0.00250 | 0.00268 | 0.00446 | 0.0100 | |
| | | Count <DL | 0 | 14 | 14 | 14 | 14 | 0 | 14 | 14 | 2 | 9 | 5 | |
| | | Standard Deviation | 6.7 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 12.8 | 0.00000 | 0.00000 | 0.00118 | 0.00205 | 0.0000 | |
| | | 1st Quartile | 40.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 38.2 | <0.0050 | <0.0050 | 0.00190 | 0.00405 | <0.020 | |
| | | Median | 51.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 59.5 | <0.0050 | <0.0050 | 0.00315 | <0.010 | <0.020 | |
| | | 3rd Quartile | 52.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 61.8 | <0.0050 | <0.0050 | 0.00373 | <0.010 | <0.020 | |

**Notes:**
Factor applied to less-than results when calculating statistics: 0.5
Factor applied to greater-than results when calculating statistics: 1.0

# Table 66
# 2019-2020 Annual Report

| 2019 -20 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistic | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **NNL1** | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **E217018** | No Name Lake 1 metre below surface | Average | 13.8 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 1.8 | 0.00250 | 0.00250 | 0.00290 | 0.00348 | 0.0224 | |
| | | Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 5 | 8 | 5 | |
| | | Minimum | 11.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.2 | <0.0050 | <0.0050 | <0.0030 | <0.0030 | <0.020 | |
| | | Maximum | 16.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.4 | <0.0050 | <0.0050 | 0.0048 | <0.010 | 0.045 | |
| | | Geometric Mean | 13.6 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 1.7 | 0.00250 | 0.00250 | 0.00260 | 0.00315 | 0.0176 | |
| | | Count <DL | 0 | 9 | 9 | 9 | 9 | 0 | 9 | 9 | 2 | 5 | 3 | |
| | | Standard Deviation | 2.1 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 0.4 | 0.00000 | 0.00000 | 0.00144 | 0.00146 | 0.0172 | |
| | | 1st Quartile | 11.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.5 | <0.0050 | <0.0050 | <0.0030 | 0.00278 | <0.020 | |
| | | Median | 13.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.9 | <0.0050 | <0.0050 | 0.0029 | 0.00330 | <0.020 | |
| | | 3rd Quartile | 15.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.0 | <0.0050 | <0.0050 | 0.0038 | <0.010 | 0.037 | |
| **NNLB** | No Name Lake 1 metre from bottom | Average | 17.0 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 4.4 | 0.00250 | 0.00250 | 0.00362 | 0.00433 | 0.028 | |
| **E217018** | | Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 5 | 8 | 5 | |
| | | Minimum | 14.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.5 | <0.0050 | <0.0050 | <0.0030 | <0.0030 | 0.024 | |
| | | Maximum | 33.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 5.7 | <0.0050 | <0.0050 | 0.0066 | 0.0067 | 0.031 | |
| | | Geometric Mean | 16.3 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 4.3 | 0.00250 | 0.00250 | 0.00326 | 0.00399 | 0.028 | |
| | | Count <DL | 0 | 9 | 9 | 9 | 9 | 0 | 9 | 9 | 1 | 4 | 0 | |
| | | Standard Deviation | 6.2 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 0.9 | 0.00000 | 0.00000 | 0.00185 | 0.00161 | 0.003 | |
| | | 1st Quartile | 15.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.1 | <0.0050 | <0.0050 | 0.0032 | 0.00335 | 0.027 | |
| | | Median | 15.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.7 | <0.0050 | <0.0050 | 0.0034 | <0.010 | 0.028 | |
| | | 3rd Quartile | 15.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.8 | <0.0050 | <0.0050 | 0.0034 | <0.010 | 0.029 | |
| **NNO** | No Name Lake Outlet | Average | 14.5 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 1.89 | 0.00250 | 0.00250 | 0.00260 | 0.00356 | 0.0122 | 0.0075 |
| **E217017** | | Count | 15 | 15 | 15 | 15 | 15 | 14 | 15 | 15 | 6 | 5 | 6 | 1 |
| | | Minimum | 10.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <1.0 | <0.0050 | <0.0050 | <0.0030 | <0.0030 | <0.020 | <0.015 |
| | | Maximum | 17.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.9 | <0.0050 | <0.0050 | 0.0048 | 0.0054 | 0.023 | <0.015 |
| | | Geometric Mean | 14.3 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 1.64 | 0.00250 | 0.00250 | 0.00231 | 0.00328 | 0.0115 | 0.0075 |
| | | Count <DL | 0 | 15 | 15 | 15 | 15 | 1 | 15 | 15 | 3 | 1 | 5 | 1 |
| | | Standard Deviation | 2.2 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 1.17 | 0.00000 | 0.00000 | 0.00143 | 0.00142 | 0.0053 | 0.0000 |
| | | 1st Quartile | 12.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.4 | <0.0050 | <0.0050 | <0.0030 | 0.0031 | <0.020 | <0.015 |
| | | Median | 15.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.55 | <0.0050 | <0.0050 | 0.00195 | 0.0038 | <0.020 | <0.015 |
| | | 3rd Quartile | 15.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 1.8 | <0.0050 | <0.0050 | 0.00352 | 0.0040 | <0.020 | <0.015 |
| **LLS** | Small Seep into Long Lake | Average | 571 | 0.0032 | 0.0033 | 0.000100 | 0.000100 | 499 | 0.00250 | 0.00250 | | | | |
| **E292131** | | Count | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | | | | |
| | | Minimum | 473 | 0.0020 | 0.0020 | <0.00020 | <0.00020 | 360 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 696 | 0.0056 | 0.0058 | <0.00020 | <0.00020 | 750 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 567 | 0.0030 | 0.0031 | 0.000100 | 0.000100 | 490 | 0.00250 | 0.00250 | | | | |
| | | Count <DL | 0 | 0 | 0 | 10 | 10 | 0 | 10 | 10 | | | | |
| | | Standard Deviation | 67 | 0.0013 | 0.0014 | 0.000000 | 0.000000 | 106 | 0.00000 | 0.00000 | | | | |
| | | 1st Quartile | 530 | 0.0022 | 0.0022 | <0.00020 | <0.00020 | 440 | <0.0050 | <0.0050 | | | | |
| | | Median | 575 | 0.0029 | 0.0029 | <0.00020 | <0.00020 | 483 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 604 | 0.0040 | 0.0046 | <0.00020 | <0.00020 | 531 | <0.0050 | <0.0050 | | | | |
| **LLSM** | Long Lake Middle Seep | Average | 481 | 0.0034 | 0.0032 | 0.000251 | 0.000100 | 410 | 0.00284 | 0.00250 | | | | |
| **E292131** | | Count | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | | | | |
| | | Minimum | 372 | 0.0020 | 0.0019 | <0.00020 | <0.00020 | 280 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 615 | 0.0051 | 0.0047 | 0.00131 | <0.00020 | 580 | 0.0052 | <0.0050 | | | | |
| | | Geometric Mean | 474 | 0.0032 | 0.0031 | 0.000138 | 0.000100 | 400 | 0.00274 | 0.00250 | | | | |
| | | Count <DL | 0 | 0 | 0 | 7 | 8 | 0 | 7 | 8 | | | | |
| | | Standard Deviation | 84 | 0.0012 | 0.0010 | 0.000428 | 0.000000 | 94 | 0.00095 | 0.00000 | | | | |
| | | 1st Quartile | 404 | 0.0024 | 0.0024 | <0.00020 | <0.00020 | 345 | <0.0050 | <0.0050 | | | | |
| | | Median | 495 | 0.0033 | 0.0033 | <0.00020 | <0.00020 | 405 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 530 | 0.0042 | 0.0037 | <0.00020 | <0.00020 | 464 | <0.0050 | <0.0050 | | | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 67
# 2019-2020 Annual Report

| 2019 -20 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistic | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| MW002 | Ex-situ 2-3 South shallow groundwater well beside 3-South Pit (1 Seam) | Average | | | 0.00262 | | 0.000275 | 1300 | | 0.0069 | | 0.00147 | | 0.16 |
| | | Count | | | 4 | | 4 | 4 | | 4 | | 3 | | 1 |
| | | Minimum | | | 0.0024 | | <0.00040 | 1200 | | <0.010 | | 0.0014 | | 0.16 |
| | | Maximum | | | 0.0029 | | <0.0010 | 1400 | | <0.025 | | <0.0030 | | 0.16 |
| | | Geometric Mean | | | 0.00262 | | 0.000251 | 1298 | | 0.0063 | | 0.00147 | | 0.16 |
| | | Count <DL | | | 1 | | 4 | 0 | | 4 | | 2 | | 0 |
| | | Standard Deviation | | | 0.00022 | | 0.000150 | 81 | | 0.0038 | | 0.00006 | | 0.00 |
| | | 1st Quartile | | | 0.00247 | | <0.00040 | 1275 | | <0.010 | | 0.00145 | | 0.16 |
| | | Median | | | 0.00260 | | <0.00040 | 1300 | | <0.010 | | <0.0030 | | 0.16 |
| | | 3rd Quartile | | | 0.00275 | | 0.000275 | 1325 | | 0.0069 | | <0.0030 | | 0.16 |
| QU1009D | Ex-situ 4-South deep groundwater well. Down gradient of 4-South Mine. Base of Dunsmuir Member. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | | | 0.00050 | | 0.000100 | 72.5 | | 0.00250 | | 0.017 | | |
| | | Count | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 69 | | <0.0050 | | 0.013 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | 76 | | <0.0050 | | 0.020 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 72.4 | | 0.00250 | | 0.016 | | |
| | | Count <DL | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 4.9 | | 0.00000 | | 0.005 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 70.8 | | <0.0050 | | 0.015 | | |
| | | Median | | | <0.0010 | | <0.00020 | 72.5 | | <0.0050 | | 0.017 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | 74.2 | | <0.0050 | | 0.018 | | |
| QU1009S | Ex-situ 4-South shallow groundwater well. Fracture zone 10 m below till. Assesses vertical gradients & water quality down gradient of the 4-South Mine workings. Just outside of mine pool. (Below 3 Seam) | Average | | | 0.00050 | | 0.000100 | 110.0 | | 0.00250 | | 0.0097 | | |
| | | Count | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 100 | | <0.0050 | | 0.0055 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | 120 | | <0.0050 | | 0.014 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 109.5 | | 0.00250 | | 0.0088 | | |
| | | Count <DL | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 14.1 | | 0.00000 | | 0.0060 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 105.0 | | <0.0050 | | 0.0076 | | |
| | | Median | | | <0.0010 | | <0.00020 | 110.0 | | <0.0050 | | 0.0097 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | 115.0 | | <0.0050 | | 0.0119 | | |
| SPD | Settling Pond # 1 | | | | | | | | | | | | | |
| E218582 | | Average | 289 | 0.00147 | 0.00102 | 0.000100 | 0.000100 | 254 | 0.00296 | 0.00250 | 0.0077 | 0.00215 | 0.0152 | 0.0290 |
| | | Count | 7 | 7 | 10 | 7 | 10 | 45 | 7 | 10 | 5 | 4 | 5 | 5 |
| | | Minimum | 117 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 47 | <0.0050 | <0.0050 | 0.0043 | <0.0030 | <0.020 | <0.015 |
| | | Maximum | 407 | 0.0030 | 0.0021 | <0.00020 | <0.00020 | 390 | 0.0057 | <0.0050 | 0.013 | 0.0032 | 0.036 | 0.055 |
| | | Geometric Mean | 262 | 0.00127 | 0.00090 | 0.000100 | 0.000100 | 235 | 0.00281 | 0.00250 | 0.0072 | 0.00204 | 0.0129 | 0.0210 |
| | | Count <DL | 0 | 1 | 4 | 7 | 10 | 0 | 6 | 10 | 0 | 2 | 4 | 2 |
| | | Standard Deviation | 119 | 0.00088 | 0.00055 | 0.000000 | 0.000000 | 81 | 0.00121 | 0.00000 | 0.0033 | 0.00082 | 0.0116 | 0.0219 |
| | | 1st Quartile | 203 | 0.0011 | <0.0010 | <0.00020 | <0.00020 | 220 | <0.0050 | <0.0050 | 0.0063 | <0.0030 | <0.020 | <0.015 |
| | | Median | 336 | 0.0011 | 0.00105 | <0.00020 | <0.00020 | 269 | <0.0050 | <0.0050 | 0.0067 | 0.00195 | <0.020 | 0.028 |
| | | 3rd Quartile | 381 | 0.00175 | 0.00125 | <0.00020 | <0.00020 | 310 | <0.0050 | <0.0050 | 0.0082 | 0.00260 | <0.020 | 0.047 |
| LLE | Long Lake Entrance (LLE) | Average | 219.1 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 196.0 | 0.00320 | 0.00292 | 0.00301 | | 0.0349 | 0.0264 |
| E292130 | | Count | 11 | 11 | 11 | 11 | 11 | 45 | 11 | 11 | 11 | | 11 | 11 |
| | | Minimum | 92.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 57 | <0.0050 | <0.0050 | <0.0030 | | <0.020 | <0.015 |
| | | Maximum | 547 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 620 | 0.0102 | 0.0071 | 0.0079 | | 0.141 | 0.052 |
| | | Geometric Mean | 182.3 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 157.1 | 0.00284 | 0.00275 | 0.00255 | | 0.0228 | 0.0185 |
| | | Count <DL | 0 | 11 | 11 | 11 | 11 | 0 | 10 | 10 | 5 | | 5 | 5 |
| | | Standard Deviation | 156.9 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 153.3 | 0.00232 | 0.00139 | 0.00200 | | 0.0395 | 0.0204 |
| | | 1st Quartile | 126.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 110 | <0.0050 | <0.0050 | <0.0030 | | <0.020 | <0.015 |
| | | Median | 142 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 140 | <0.0050 | <0.0050 | 0.0027 | | 0.024 | 0.016 |
| | | 3rd Quartile | 246.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 180 | <0.0050 | <0.0050 | 0.00360 | | 0.039 | 0.0460 |
| LLM1 | Long Lake Middle 1 metre below Surface | Average | 65.4 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 50.9 | 0.00250 | 0.00250 | 0.00377 | 0.00392 | 0.0158 | |
| E206619 | | Count | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 6 | 12 | 5 | |
| | | Minimum | 23.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 10 | <0.0050 | <0.0050 | <0.0030 | <0.0020 | <0.020 | |
| | | Maximum | 103 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 85 | <0.0050 | <0.0050 | 0.0070 | <0.010 | 0.039 | |
| | | Geometric Mean | 61.1 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 45.1 | 0.00250 | 0.00250 | 0.00323 | 0.00343 | 0.0131 | |
| | | Count <DL | 0 | 14 | 14 | 14 | 14 | 0 | 14 | 14 | 2 | 11 | 4 | |
| | | Standard Deviation | 23.9 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 23.3 | 0.00000 | 0.00000 | 0.00211 | 0.00166 | 0.0130 | |
| | | 1st Quartile | 50.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 36.5 | <0.0050 | <0.0050 | 0.00198 | 0.00263 | <0.020 | |
| | | Median | 57.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 43.8 | <0.0050 | <0.0050 | 0.00395 | <0.010 | <0.020 | |
| | | 3rd Quartile | 88.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 73.5 | <0.0050 | <0.0050 | 0.00465 | <0.010 | <0.020 | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 68
# 2019-2020 Annual Report

| 2019-20 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistic | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **LLMB** | Long Lake Middle 1 metre From Bottom | Average | 145.4 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 132.9 | 0.00250 | 0.00269 | 0.00205 | 0.00396 | 0.052 | |
| **E206619** | | Count | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 14 | 6 | 12 | 5 | |
| | | Minimum | 126 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 102 | <0.0050 | <0.0050 | <0.0030 | <0.0030 | 0.039 | |
| | | Maximum | 158 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 150 | <0.0050 | 0.0051 | 0.0040 | <0.010 | 0.057 | |
| | | Geometric Mean | 145.1 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 132.3 | 0.00250 | 0.00263 | 0.00190 | 0.00355 | 0.052 | |
| | | Count <DL | 0 | 14 | 14 | 14 | 14 | 0 | 14 | 13 | 4 | 11 | 0 | |
| | | Standard Deviation | 9.6 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 11.6 | 0.00000 | 0.00069 | 0.00101 | 0.00159 | 0.007 | |
| | | 1st Quartile | 143.2 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 130 | <0.0050 | <0.0050 | <0.0030 | 0.00263 | 0.054 | |
| | | Median | 146 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 132.5 | <0.0050 | <0.0050 | <0.0030 | <0.010 | 0.055 | |
| | | 3rd Quartile | 153.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 140 | <0.0050 | <0.0050 | 0.00210 | <0.010 | 0.056 | |
| **LLO** | Long Lake Outlet | Average | 73.0 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 64.8 | 0.00250 | 0.00282 | | | 0.023 | |
| **E219412** | | Count | 14 | 14 | 14 | 14 | 14 | 26 | 14 | 14 | | | 1 | |
| | | Minimum | 48.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 2.9 | <0.0050 | <0.0050 | | | 0.023 | |
| | | Maximum | 99.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 97 | <0.0050 | 0.0070 | | | 0.023 | |
| | | Geometric Mean | 70.5 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 56.8 | 0.00250 | 0.00269 | | | 0.023 | |
| | | Count <DL | 0 | 14 | 14 | 14 | 14 | 0 | 14 | 13 | | | 0 | |
| | | Standard Deviation | 19.7 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 23.4 | 0.00000 | 0.00120 | | | 0.000 | |
| | | 1st Quartile | 54.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 46.4 | <0.0050 | <0.0050 | | | 0.023 | |
| | | Median | 68.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 67.3 | <0.0050 | <0.0050 | | | 0.023 | |
| | | 3rd Quartile | 93.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 81.2 | <0.0050 | <0.0050 | | | 0.023 | |
| **WB** | Middle Quinsam Lake Outlet | Average | 39.2 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 31.4 | 0.00250 | 0.00250 | | | 0.0100 | |
| **E0900504** | | Count | 14 | 14 | 14 | 14 | 14 | 13 | 14 | 14 | | | 1 | |
| | | Minimum | 24.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 9.0 | <0.0050 | <0.0050 | | | <0.020 | |
| | | Maximum | 51.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 57.9 | <0.0050 | <0.0050 | | | <0.020 | |
| | | Geometric Mean | 38.0 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 25.7 | 0.00250 | 0.00250 | | | 0.0100 | |
| | | Count <DL | 0 | 14 | 14 | 14 | 14 | 0 | 14 | 14 | | | 1 | |
| | | Standard Deviation | 9.2 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 16.9 | 0.00000 | 0.00000 | | | 0.0000 | |
| | | 1st Quartile | 30.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 9.4 | <0.0050 | <0.0050 | | | <0.020 | |
| | | Median | 41.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 38 | <0.0050 | <0.0050 | | | <0.020 | |
| | | 3rd Quartile | 45.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 42.2 | <0.0050 | <0.0050 | | | <0.020 | |
| **7SSD** | Settling Pond at 7S- Discharge to Stream 1 -7S | | | | | | | | | | | | | |
| **E292069** | | Average | 147.5 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 34.7 | 0.00250 | 0.00250 | 0.021 | | 0.0100 | 0.041 |
| | | Count | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 1 | | 1 | 1 |
| | | Minimum | 87.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 21 | <0.0050 | <0.0050 | 0.021 | | <0.020 | 0.041 |
| | | Maximum | 225 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 97.3 | <0.0050 | <0.0050 | 0.021 | | <0.020 | 0.041 |
| | | Geometric Mean | 138.4 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 29.3 | 0.00250 | 0.00250 | 0.021 | | 0.0100 | 0.041 |
| | | Count <DL | 0 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | 0 | | 1 | 0 |
| | | Standard Deviation | 56.8 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 27.8 | 0.00000 | 0.00000 | 0.000 | | 0.0000 | 0.000 |
| | | 1st Quartile | 101.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 21.5 | <0.0050 | <0.0050 | 0.021 | | <0.020 | 0.041 |
| | | Median | 127 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 23 | <0.0050 | <0.0050 | 0.021 | | <0.020 | 0.041 |
| | | 3rd Quartile | 195.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 29.3 | <0.0050 | <0.0050 | 0.021 | | <0.020 | 0.041 |
| **7S** | Stream 1-7S discharge to LWO | Average | 17.0 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 5.1 | 0.00250 | 0.00250 | | | | |
| **E292109** | | Count | 7 | 7 | 7 | 7 | 7 | 7 | 7 | 7 | | | | |
| | | Minimum | 12.9 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 3.9 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 22.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 7.3 | <0.0050 | <0.0050 | | | | |
| | | Geometric Mean | 16.6 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 5.0 | 0.00250 | 0.00250 | | | | |
| | | Count <DL | 0 | 7 | 7 | 7 | 7 | 0 | 7 | 7 | | | | |
| | | Standard Deviation | 3.7 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 1.2 | 0.00000 | 0.00000 | | | | |
| | | 1st Quartile | 13.7 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.2 | <0.0050 | <0.0050 | | | | |
| | | Median | 16.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 4.7 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 19.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 5.8 | <0.0050 | <0.0050 | | | | |
| **QU0813A** | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (No. 4 Seam) | Average | | | 0.00050 | | 0.000100 | 33.3 | | 0.00250 | | 0.034 | | |
| | | Count | | | 3 | | 3 | 3 | | 3 | | 3 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 28 | | <0.0050 | | 0.020 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | 36 | | <0.0050 | | 0.055 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 33.1 | | 0.00250 | | 0.031 | | |
| | | Count <DL | | | 3 | | 3 | 0 | | 3 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 4.6 | | 0.00000 | | 0.019 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 32.0 | | <0.0050 | | 0.024 | | |
| | | Median | | | <0.0010 | | <0.00020 | 36 | | <0.0050 | | 0.027 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | 36 | | <0.0050 | | 0.041 | | |
| **QU0813B** | Ex-situ 7-South groundwater well down gradient of the CCR backfill towards QR (Till & SST contact) | Average | | | 0.00050 | | 0.000100 | 34.5 | | 0.00250 | | 0.053 | | |
| | | Count | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 32 | | <0.0050 | | 0.039 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | 37 | | <0.0050 | | 0.067 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 34.4 | | 0.00250 | | 0.051 | | |
| | | Count <DL | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 3.5 | | 0.00000 | | 0.020 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 33.2 | | <0.0050 | | 0.046 | | |
| | | Median | | | <0.0010 | | <0.00020 | 34.5 | | <0.0050 | | 0.053 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | 35.8 | | <0.0050 | | 0.060 | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 69
# 2019-2020 Annual Report

| 2019-20 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistic | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| QU0821GD | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 4 Seam) | Average | | | 0.00175 | | 0.000350 | 0.90 | | 0.0088 | | 0.080 | | |
| | | Count | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | | <0.0020 | | <0.00040 | <1.0 | | <0.010 | | 0.015 | | |
| | | Maximum | | | <0.0050 | | <0.0010 | 2.1 | | <0.025 | | 0.17 | | |
| | | Geometric Mean | | | 0.00158 | | 0.000316 | 0.72 | | 0.0079 | | 0.055 | | |
| | | Count <DL | | | 4 | | 4 | 3 | | 4 | | 0 | | |
| | | Standard Deviation | | | 0.00087 | | 0.000173 | 0.80 | | 0.0043 | | 0.070 | | |
| | | 1st Quartile | | | <0.0020 | | <0.00040 | <1.0 | | <0.010 | | 0.030 | | |
| | | Median | | | 0.00175 | | 0.000350 | <1.0 | | 0.0088 | | 0.068 | | |
| | | 3rd Quartile | | | <0.0050 | | <0.0010 | 0.90 | | <0.025 | | 0.118 | | |
| QU0821GS | Ex-situ 2-North groundwater well down gradient of u/g tailings disposal, measures water quality & hydraulic gradients downstream of Forjan Fault (No. 1 Seam) | Average | | | 0.00175 | | 0.000350 | 0.50 | | 0.00875 | | 0.095 | | |
| | | Count | | | 4 | | 4 | 4 | | 4 | | 4 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.024 | | |
| | | Maximum | | | <0.010 | | <0.0020 | <1.0 | | <0.050 | | 0.18 | | |
| | | Geometric Mean | | | 0.00106 | | 0.000211 | 0.50 | | 0.00529 | | 0.074 | | |
| | | Count <DL | | | 4 | | 4 | 4 | | 4 | | 0 | | |
| | | Standard Deviation | | | 0.00218 | | 0.000436 | 0.00 | | 0.01090 | | 0.069 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.049 | | |
| | | Median | | | 0.00075 | | 0.000150 | <1.0 | | 0.00375 | | 0.088 | | |
| | | 3rd Quartile | | | 0.00200 | | 0.000400 | <1.0 | | 0.01000 | | 0.135 | | |
| QU1010D | | | | | | | | | | | | | | |
| | | Average | | | 0.00250 | | 0.00050 | 0.50 | | 0.0125 | | 0.03325 | | |
| | | Count | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | <0.0030 | | |
| | | Maximum | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.065 | | |
| | | Geometric Mean | | | 0.00250 | | 0.00050 | 0.50 | | 0.0125 | | 0.00987 | | |
| | | Count <DL | | | 2 | | 2 | 2 | | 2 | | 1 | | |
| | | Standard Deviation | | | 0.00000 | | 0.00000 | 0.00 | | 0.0000 | | 0.04490 | | |
| | | 1st Quartile | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.01738 | | |
| | | Median | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.03325 | | |
| | | 3rd Quartile | | | <0.0050 | | <0.0010 | <1.0 | | <0.025 | | 0.04913 | | |
| QU1010S | Ex-situ 2-North shallow groundwater well. Down gradient of u/g tailings disposal, measures water quality & hydraulic head downstream of 2-North workings. (No. 1 Seam / Sandstone). | Average | | | 0.00050 | | 0.000100 | 4.6 | | 0.00250 | | 0.025 | | |
| | | Count | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 3.4 | | <0.0050 | | 0.021 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | 5.8 | | <0.0050 | | 0.028 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 4.4 | | 0.00250 | | 0.024 | | |
| | | Count <DL | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 1.7 | | 0.00000 | | 0.005 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 4.0 | | <0.0050 | | 0.023 | | |
| | | Median | | | <0.0010 | | <0.00020 | 4.6 | | <0.0050 | | 0.025 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | 5.2 | | <0.0050 | | 0.026 | | |
| QU1011D | Ex-situ 2-North deep groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | | | 0.00050 | | 0.000100 | 0.50 | | 0.00250 | | 0.072 | | |
| | | Count | | | 1 | | 1 | 1 | | 1 | | 1 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.072 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.072 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 0.50 | | 0.00250 | | 0.072 | | |
| | | Count <DL | | | 1 | | 1 | 1 | | 1 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 0.00 | | 0.00000 | | 0.000 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.072 | | |
| | | Median | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.072 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | <1.0 | | <0.0050 | | 0.072 | | |
| QU1011S | Ex-situ 2-North shallow groundwater well. Measures water quality & hydraulic gradient in Forjian Fault (Fractured sandstone). | Average | | | | | | | | | | | | |
| | | Count | | | | | | | | | | | | |
| | | Minimum | | | | | | | | | | | | |
| | | Maximum | | | | | | | | | | | | |
| | | Geometric Mean | | | | | | | | | | | | |
| | | Count <DL | | | | | | | | | | | | |
| | | Standard Deviation | | | | | | | | | | | | |
| | | 1st Quartile | | | | | | | | | | | | |
| | | Median | | | | | | | | | | | | |
| | | 3rd Quartile | | | | | | | | | | | | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 70
# 2019-2020 Annual Report

| 2019 -20 Statistics<br>Stn.Code<br>EMS. ID | Site Name & Description | Statistic | Hard-T | Ni-T | Ni-D | Pb-T | Pb-D | SO4-D | Zn-T | Zn-D | P-T | P-D | N-NO23 | N-NH3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L | mg/L |
| **QU1105S** | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | | | 0.00050 | | 0.000100 | 125.0 | | 0.00250 | | 0.0086 | | |
| | | Count | | | 2 | | 2 | 2 | | 2 | | 2 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 100 | | <0.0050 | | 0.0079 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | 150 | | <0.0050 | | 0.0093 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 122.5 | | 0.00250 | | 0.0086 | | |
| | | Count <DL | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 35.4 | | 0.00000 | | 0.0010 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 112.5 | | <0.0050 | | 0.0083 | | |
| | | Median | | | <0.0010 | | <0.00020 | 125.0 | | <0.0050 | | 0.0086 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | 137.5 | | <0.0050 | | 0.0089 | | |
| **QU1109S** | Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone) | Average | | | 0.00050 | | 0.000100 | 210.0 | | 0.00250 | | 0.033 | | |
| | | Count | | | 2 | | 2 | 2 | | 2 | | 1 | | |
| | | Minimum | | | <0.0010 | | <0.00020 | 200 | | <0.0050 | | 0.033 | | |
| | | Maximum | | | <0.0010 | | <0.00020 | 220 | | <0.0050 | | 0.033 | | |
| | | Geometric Mean | | | 0.00050 | | 0.000100 | 209.8 | | 0.00250 | | 0.033 | | |
| | | Count <DL | | | 2 | | 2 | 0 | | 2 | | 0 | | |
| | | Standard Deviation | | | 0.00000 | | 0.000000 | 14.1 | | 0.00000 | | 0.000 | | |
| | | 1st Quartile | | | <0.0010 | | <0.00020 | 205.0 | | <0.0050 | | 0.033 | | |
| | | Median | | | <0.0010 | | <0.00020 | 210.0 | | <0.0050 | | 0.033 | | |
| | | 3rd Quartile | | | <0.0010 | | <0.00020 | 215.0 | | <0.0050 | | 0.033 | | |
| **7SQR** | 7-South Quinsam River downstream of 7-South Mining Operation | Average | 36.7 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 29.1 | 0.00250 | 0.00269 | | | | |
| **E292113** | | Count | 15 | 15 | 15 | 15 | 15 | 15 | 15 | 15 | | | | |
| | | Minimum | 25.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 7.9 | <0.0050 | <0.0050 | | | | |
| | | Maximum | 44.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 49.0 | <0.0050 | 0.0053 | | | | |
| | | Geometric Mean | 36.0 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 24.5 | 0.00250 | 0.00263 | | | | |
| | | Count <DL | 0 | 15 | 15 | 15 | 15 | 0 | 15 | 14 | | | | |
| | | Standard Deviation | 7.1 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 14.3 | 0.00000 | 0.00072 | | | | |
| | | 1st Quartile | 29.8 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 16.2 | <0.0050 | <0.0050 | | | | |
| | | Median | 40.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 33 | <0.0050 | <0.0050 | | | | |
| | | 3rd Quartile | 41.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 40.2 | <0.0050 | <0.0050 | | | | |
| **LQL1** | Lower Quinsam Lake 1 metre below surface | Average | 34.0 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 20.8 | 0.00250 | 0.00250 | 0.00282 | 0.0040 | 0.0820 | |
| **E292118** | | Count | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 8 | 4 | 7 | 4 | |
| | | Minimum | 33.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 13 | <0.0050 | <0.0050 | <0.0030 | 0.0025 | <0.020 | |
| | | Maximum | 36.0 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 29.7 | <0.0050 | <0.0050 | 0.0047 | <0.010 | 0.164 | |
| | | Geometric Mean | 34.0 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 20.0 | 0.00250 | 0.00250 | 0.00248 | 0.0039 | 0.0392 | |
| | | Count <DL | 0 | 8 | 8 | 8 | 8 | 0 | 8 | 8 | 2 | 3 | 2 | |
| | | Standard Deviation | 1.0 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 6.0 | 0.00000 | 0.00000 | 0.00159 | 0.0010 | 0.0835 | |
| | | 1st Quartile | 33.5 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 16 | <0.0050 | <0.0050 | <0.0030 | 0.0034 | <0.020 | |
| | | Median | 33.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 20.6 | <0.0050 | <0.0050 | 0.00255 | 0.0038 | 0.0770 | |
| | | 3rd Quartile | 34.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25.1 | <0.0050 | <0.0050 | 0.00387 | <0.010 | 0.1490 | |
| **LQLB** | LQLB 1 metre from Bottom | Average | 35.8 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 24.7 | 0.00250 | 0.00318 | 0.00398 | 0.00441 | 0.0152 | |
| **E292118** | | Count | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 9 | 5 | 8 | 5 | |
| | | Minimum | 34.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 21 | <0.0050 | <0.0050 | <0.0030 | <0.0020 | <0.020 | |
| | | Maximum | 37.3 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 29.6 | <0.0050 | 0.0086 | 0.0055 | 0.0075 | 0.024 | |
| | | Geometric Mean | 35.8 | 0.00050 | 0.00050 | 0.000100 | 0.000100 | 24.6 | 0.00250 | 0.00287 | 0.00364 | 0.00371 | 0.0139 | |
| | | Count <DL | 0 | 9 | 9 | 9 | 9 | 0 | 9 | 8 | 1 | 5 | 3 | |
| | | Standard Deviation | 1.0 | 0.00000 | 0.00000 | 0.000000 | 0.000000 | 2.8 | 0.00000 | 0.00203 | 0.00158 | 0.00220 | 0.0072 | |
| | | 1st Quartile | 35.1 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 23 | <0.0050 | <0.0050 | 0.0038 | 0.00345 | <0.020 | |
| | | Median | 35.6 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25.0 | <0.0050 | <0.0050 | 0.0039 | <0.010 | <0.020 | |
| | | 3rd Quartile | 36.4 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | 25.8 | <0.0050 | <0.0050 | 0.0052 | 0.00530 | 0.022 | |

**Notes:**

Factor applied to less-than results when calculating statistics: 0.5

Factor applied to greater-than results when calculating statistics: 1.0

# Table 71
# 2019-2020 Annual Report

**EMS ID: E217018**
**Site NAME: NO NAME LAKE (NNL)**

**NO NAME LAKE DEPTH PROFILING SPRING**

| Sample Date | 09-Apr | | | | | | 18-Apr | | | | | | 24-Apr | | | | | | 01-May | | | | | | 08-May | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP |
| Sample Depth (m) | °C | | µS/cm | | mg/L | mV | °C | | µS/cm | | mg/L | mV | °C | | µS/cm | | mg/L | mV | °C | | µS/cm | | mg/L | mV | °C | | µS/cm | | mg/L | mV |
| 1 | 7.90 | 7.10 | 31.30 | 92.60 | 110.50 | 10.99 | 9.02 | 6.84 | 31.00 | 94.70 | 10.94 | 217.80 | 10.28 | 7.50 | 30.80 | 93.20 | 10.48 | 200.80 | 12.21 | 6.98 | 26.60 | 2.00 | 0.20 | 197.50 | 15.00 | 7.62 | 32.60 | 98.80 | 8.81 | 221.00 |
| 2 | 7.10 | 7.05 | 31.90 | 90.60 | 114.80 | 10.96 | 8.38 | 6.72 | 31.00 | 92.70 | 10.91 | 221.20 | 9.55 | 7.11 | 30.80 | 91.20 | 10.44 | 194.20 | 11.03 | 6.98 | 26.60 | 2.50 | 0.29 | 206.60 | 14.00 | 7.33 | 33.10 | 97.30 | 10.32 | 221.90 |
| 3 | 6.60 | 7.04 | 31.20 | 88.70 | 115.30 | 10.87 | 7.94 | 6.70 | 31.00 | 91.30 | 10.84 | 220.20 | 8.91 | 7.01 | 31.50 | 90.30 | 10.45 | 192.50 | 9.57 | 6.93 | 26.20 | 3.30 | 0.37 | 206.70 | 11.00 | 7.17 | 32.20 | 98.00 | 10.78 | 222.80 |
| 4 | 6.50 | 7.00 | 33.00 | 85.30 | 116.00 | 10.58 | 7.58 | 6.66 | 31.00 | 90.60 | 10.85 | 220.40 | 7.47 | 6.83 | 31.70 | 86.40 | 10.43 | 193.20 | 8.68 | 6.92 | 26.80 | 4.00 | 0.47 | 209.70 | 9.50 | 7.04 | 31.70 | 95.00 | 10.93 | 224.00 |
| 5 | 5.86 | 6.91 | 34.60 | 82.10 | 121.30 | 10.25 | 7.66 | 6.69 | 31.00 | 90.80 | 10.84 | 220.00 | 6.75 | 6.73 | 35.50 | 82.70 | 10.17 | 195.00 | 7.37 | 6.90 | 28.10 | 5.00 | 0.60 | 211.30 | 7.10 | 6.74 | 34.40 | 86.30 | 10.43 | 228.30 |
| 6 | 5.32 | 6.80 | 37.20 | 78.60 | 126.30 | 9.97 | 6.26 | *6.46* | 34.00 | 83.90 | 10.57 | 222.90 | 5.78 | 6.61 | 36.70 | 77.50 | 9.20 | 194.10 | 6.23 | 6.86 | 30.30 | 6.40 | 0.79 | 213.00 | 6.20 | 6.63 | 36.80 | 80.80 | 10.01 | 230.70 |
| 7 | 5.00 | 6.77 | 38.20 | 77.20 | 129.70 | 9.83 | 5.27 | *6.44* | 38.00 | 77.30 | 10.13 | 226.80 | 5.10 | 6.52 | 38.00 | 74.50 | 9.44 | 194.90 | 6.23 | 6.84 | 30.50 | 6.40 | 0.80 | 212.50 | 5.80 | 6.53 | 37.30 | 77.40 | 9.86 | 231.90 |
| 8 | 4.83 | 6.71 | 39.70 | 74.50 | 131.90 | 9.57 | 5.22 | *6.36* | 38.00 | 76.20 | 9.71 | 227.10 | 5.30 | *6.46* | 38.50 | 73.30 | 9.29 | 195.50 | 5.60 | 6.80 | 31.70 | 7.40 | 0.93 | 213.90 | 5.40 | *6.45* | 37.90 | 74.20 | 9.33 | 233.30 |
| 9 | 4.80 | 6.67 | 40.10 | 74.00 | 135.40 | 9.50 | 5.21 | *6.39* | 38.00 | 75.90 | 9.65 | 225.70 | 5.20 | *6.42* | 38.70 | 72.70 | 9.24 | 196.40 | 5.39 | 6.75 | 32.20 | 7.80 | 0.98 | 214.80 | 5.30 | *6.38* | 38.30 | 72.80 | 9.21 | 235.30 |
| 10 | 4.67 | 6.64 | 41.10 | 75.00 | 136.60 | 9.42 | 5.17 | *6.33* | 39.00 | 75.70 | 9.61 | 227.50 | 5.00 | *6.40* | 39.70 | 71.10 | 9.09 | 195.80 | 5.24 | 6.73 | 32.60 | 8.00 | 1.02 | 215.40 | 5.30 | *6.37* | 38.40 | 71.90 | 9.10 | 235.30 |
| 11 | 4.59 | 6.57 | 41.90 | 71.90 | 152.00 | 9.28 | 4.97 | *6.36* | 39.06 | 74.50 | 9.50 | 226.70 | 5.00 | *6.40* | 39.76 | 70.73 | 9.00 | 196.00 | 5.15 | 6.70 | 33.00 | 8.20 | 1.04 | 216.10 | 5.35 | *6.34* | 38.45 | 71.50 | 9.08 | 235.00 |
| 12 | 4.46 | 6.51 | 44.30 | 70.00 | 153.20 | 9.08 | 4.94 | *6.35* | 40.00 | 74.10 | 9.46 | 227.60 | 5.00 | *6.39* | 39.70 | 70.70 | 9.03 | 196.20 | 5.05 | 6.65 | 33.40 | 8.30 | 1.06 | 216.80 | 5.20 | *6.30* | 38.50 | 71.40 | 9.06 | 236.80 |
| 1m from Bottom (BS) | BS=12.0m | | | | | | BS=12.0M | | | | | | BS=12.0m | | | | | | BS=12.0m | | | | | | ` | | | | | |

**NO NAME LAKE DEPTH PROFILING SUMMER**

| Sample Date | 29-Jul | | | | | | 07-Aug | | | | | | 14-Aug | | | | | | 21-Aug | | | | | | 28-Aug | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP |
| Sample Depth (m) | Celcius | | | | mg/L | | Celcius | | | | mg/L | | Celcius | | | | mg/L | | Celcius | | | | mg/L | | Celcius | | | | mg/L | |
| 1 | 22.51 | 7.31 | 42 | 99.2 | 9.01 | 224.3 | 22.10 | 7.18 | 46 | 90.4 | 8.19 | 171.0 | 22.20 | 6.78 | 38 | 83.1 | 7.43 | 157.3 | 21.50 | 6.70 | 38 | 90.5 | 8.13 | 178.5 | 22.30 | 6.88 | 39 | 75.5 | 6.75 | 123.6 |
| 2 | 23.83 | 7.25 | 43 | 98.0 | 8.94 | 225.2 | 22.00 | 7.32 | 46 | 93.5 | 8.32 | 168.30 | 22.20 | 6.81 | 38.2 | 76.5 | 7.03 | 157.8 | 21.50 | 6.63 | 38 | 87.5 | 7.95 | 181.8 | 22.30 | 6.74 | 39 | 76.8 | 6.83 | 127.6 |
| 3 | 22.27 | 7.13 | 41 | 98.7 | 8.94 | 230.7 | 22.00 | 7.08 | 46 | 88.8 | 8.08 | 171.70 | 22.10 | 6.68 | 38 | 82.3 | 7.39 | 163.3 | 21.50 | 6.62 | 38 | 85.6 | 7.75 | 177.6 | 22.20 | 6.64 | 39 | 70.3 | 6.31 | 126.8 |
| 4 | 19.18 | 6.91 | 35 | 115.7 | 11.27 | 239.8 | 21.90 | 7.02 | 46 | 87.9 | 7.86 | 167.20 | 21.90 | 6.68 | 38 | 77.5 | 7.01 | 163.6 | 21.30 | 6.62 | 38 | 84.6 | 7.66 | 178.4 | 22.10 | 6.62 | 39 | 73.2 | 6.57 | 127.2 |
| 5 | 16.21 | 6.85 | 31 | 109.3 | 11.46 | 247.9 | 16.70 | 6.74 | 36 | 120.4 | 12.11 | 196.60 | 18.20 | 6.72 | 32 | 104.8 | 10.31 | 172.1 | 19.10 | 6.52 | 33 | 109.2 | 10.30 | 195.3 | 19.60 | 6.61 | 34 | 93.1 | 8.77 | 132.6 |
| 6 | 10.85 | 6.79 | 30 | 91.0 | 10.63 | 251.0 | 12.20 | 6.63 | 34 | 97.6 | 10.77 | 209.90 | 12.90 | *6.39* | 29 | 94.0 | 10.13 | 198.4 | 13.70 | *6.32* | 30 | 99.2 | 10.52 | 208.7 | 15.60 | 6.52 | 31 | 97.2 | 10.00 | 141.5 |
| 7 | 8.95 | 6.71 | 29 | 75.9 | 9.31 | 254.3 | 9.50 | 6.52 | 34 | 82.0 | 9.56 | 212.10 | 12.80 | *6.18* | 29 | 89.6 | 9.71 | 217.0 | 10.20 | *6.15* | 29 | 77.1 | 8.90 | 224.9 | 11.20 | *6.41* | 29 | 78.0 | 8.53 | 150.2 |
| 8 | 8.01 | 6.61 | 29 | 66.3 | 8.43 | 256.9 | 8.00 | *6.45* | 34 | 62.6 | 7.59 | 213.50 | 10.60 | *6.14* | 28 | 81.4 | 9.20 | 214.8 | 8.70 | *5.86* | 28 | 63.6 | 7.64 | 230.8 | 8.90 | *6.32* | 29 | 50.9 | 6.17 | 155.6 |
| 9 | 7.21 | *6.32* | 29 | 56.0 | 7.28 | 258.8 | 7.40 | *6.45* | 33 | 51.5 | 6.42 | 215.10 | 10.10 | *5.93* | 28 | 71.9 | 8.33 | 220.9 | 7.40 | *5.80* | 28 | 45.5 | 5.68 | 228.8 | 7.70 | *6.21* | 28 | 34.9 | 4.32 | 159.4 |
| 10 | 6.93 | *6.28* | 29 | 53.7 | 7.07 | 260.7 | 7.00 | *6.43* | 34 | 45.2 | 5.66 | 211.60 | 8.60 | *5.92* | 28 | 65.6 | 6.69 | 223.5 | 7.00 | *5.76* | 28 | 43.2 | 5.45 | 230.1 | 7.10 | *6.02* | 28 | 32.8 | 4.12 | 163.5 |
| 11 | 6.54 | *6.24* | 29 | 52.9 | 6.99 | 199.1 | 6.80 | *6.47* | 34 | 44.6 | 5.65 | 206.80 | 7.40 | *5.87* | 28 | 65.6 | 5.22 | 223.0 | 6.70 | *5.76* | 28 | 41.2 | 5.26 | 228.5 | 6.80 | *6.04* | 28 | 31.8 | 3.96 | 161.0 |
| 1m from Bottom (BS) | BS=11.5m | | | | | | BS=11.0m | | | | | | BS=11.0m | | | | | | BS=10.9m | | | | | | BS=11.0m | | | | | |
| WQG-Max | Max. 6.5 -9.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Table 72
# 2019-2020 Annual Report

**EMS ID: E206619**
**Site NAME: LONG LAKE (LLM)**

## LONG LAKE DEPTH PROFILING SPRING

| Sample Date | 09-Apr | | | | | | 18-Apr | | | | | | 24-Apr | | | | | | 01-May | | | | | | 08-May | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP |
| Sample Depth (m) | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV |
| 1 | 8.59 | 7.48 | 215.30 | 93.30 | 10.90 | 145.00 | 9.60 | 7.39 | 174.40 | 93.60 | 10.65 | 133.50 | 10.00 | 7.57 | 130.30 | 93.30 | 10.25 | 214.00 | 12.39 | 7.15 | 119.10 | 93.30 | 10.25 | 187.40 | 14.40 | 7.68 | 159.60 | 99.70 | 9.96 | 22.60 |
| 2 | 5.93 | 7.18 | 404.40 | 75.10 | 9.44 | 157.60 | 9.50 | 7.30 | 174.00 | 93.60 | 10.67 | 133.70 | 10.00 | 7.27 | 184.00 | 91.50 | 10.32 | 212.60 | 11.41 | 7.15 | 130.70 | 91.50 | 10.32 | 189.20 | 14.40 | 7.40 | 180.80 | 99.30 | 10.13 | 223.30 |
| 3 | 7.28 | 7.14 | 361.80 | 82.70 | 9.65 | 157.30 | 8.00 | 7.13 | 314.50 | 87.10 | 10.37 | 139.00 | 8.60 | 7.17 | 298.80 | 87.00 | 10.14 | 212.00 | 9.80 | 7.04 | 236.80 | 87.00 | 10.14 | 198.50 | 11.36 | 7.27 | 228.30 | 96.30 | 10.55 | 224.30 |
| 4 | 8.37 | 7.29 | 214.00 | 91.40 | 10.64 | 151.80 | 5.90 | 7.08 | 408.70 | 76.30 | 9.77 | 143.10 | 6.60 | 7.16 | 399.20 | 79.00 | 9.96 | 214.90 | 7.33 | 6.97 | 316.20 | 79.00 | 9.96 | 203.80 | 8.19 | 7.10 | 369.30 | 87.30 | 10.24 | 227.40 |
| 5 | 5.50 | 7.14 | 419.00 | 73.00 | 9.38 | 160.00 | 5.20 | 6.98 | 420.80 | 71.00 | 9.14 | 144.40 | 5.90 | 7.08 | 415.70 | 72.80 | 9.20 | 215.60 | 6.06 | 6.92 | 337.90 | 72.80 | 9.20 | 205.40 | 5.98 | 7.00 | 410.80 | 74.70 | 9.23 | 220.00 |
| 6 | 4.90 | 7.06 | 432.00 | 68.20 | 8.85 | 162.40 | 5.00 | 6.93 | 427.90 | 68.30 | 8.87 | 145.20 | 5.20 | 7.04 | 425.70 | 67.00 | 8.56 | 215.80 | 5.31 | 6.89 | 343.90 | 67.00 | 8.56 | 206.20 | 5.40 | 6.92 | 415.00 | 68.80 | 8.68 | 229.80 |
| 7 | 4.70 | 7.05 | 437.80 | 65.40 | 8.42 | 163.40 | 4.80 | 6.88 | 435.50 | 65.20 | 8.42 | 146.60 | 5.00 | 7.02 | 428.10 | 65.30 | 8.39 | 216.50 | 5.22 | 6.88 | 347.40 | 65.30 | 8.39 | 206.90 | 5.07 | 6.86 | 420.20 | 64.40 | 8.16 | 230.00 |
| 8 | 4.60 | 7.02 | 440.60 | 64.00 | 8.27 | 164.90 | 4.70 | 6.86 | 438.40 | 62.60 | 8.09 | 147.00 | 4.80 | 7.00 | 433.40 | 62.80 | 8.10 | 216.40 | 4.97 | 6.85 | 350.60 | 62.80 | 8.10 | 207.60 | 4.19 | 6.85 | 423.40 | 61.60 | 7.87 | 230.00 |
| 9 | 4.60 | 7.01 | 444.10 | 62.00 | 8.03 | 165.80 | 4.60 | 6.85 | 440.50 | 60.70 | 7.82 | 147.90 | 4.70 | 6.98 | 437.50 | 60.40 | 7.83 | 216.70 | 4.85 | 6.84 | 352.60 | 60.40 | 7.83 | 207.60 | 4.80 | 6.83 | 424.80 | 59.50 | 7.71 | 229.90 |
| 10 | 4.50 | 7.00 | 445.50 | 60.70 | 7.86 | 166.80 | 4.60 | 6.83 | 441.60 | 59.80 | 7.77 | 149.40 | 4.60 | 6.96 | 439.60 | 59.30 | 7.66 | 217.00 | 4.75 | 6.84 | 353.90 | 59.30 | 7.66 | 216.70 | 4.76 | 6.83 | 425.50 | 58.30 | 7.63 | 230.10 |
| 11 | 4.50 | 6.98 | 449.80 | 58.90 | 7.57 | 168.10 | 4.50 | 6.81 | 445.20 | 58.00 | 7.51 | 149.80 | 4.60 | 6.94 | 441.30 | 57.70 | 7.50 | 217.10 | 4.72 | 6.83 | 355.10 | 57.70 | 7.50 | 208.60 | 4.76 | 6.84 | 426.60 | 57.30 | 7.47 | 230.00 |
| 12 | 4.50 | 7.97 | 451.30 | 57.00 | 7.38 | 168.40 | 4.50 | 6.81 | 445.60 | 57.10 | 7.42 | 150.20 | 4.50 | 6.93 | 443.00 | 56.60 | 7.33 | 217.00 | 4.66 | 6.82 | 356.90 | 56.60 | 7.33 | 209.20 | 4.74 | 6.81 | 427.70 | 56.80 | 7.36 | 230.00 |
| 13 | 4.50 | 6.96 | 451.80 | 56.10 | 7.27 | 169.30 | 4.50 | 6.80 | 446.00 | 56.30 | 7.29 | 150.70 | 4.50 | 6.92 | 443.10 | 56.00 | 7.26 | 216.70 | 4.64 | 6.81 | 357.70 | 56.00 | 7.26 | 209.70 | 4.74 | 6.80 | 425.80 | 56.20 | 7.36 | 230.10 |
| 14 | 4.40 | 6.95 | 452.50 | 55.80 | 7.23 | 169.90 | 4.50 | 6.80 | 446.70 | 56.00 | 7.24 | 150.70 | 4.50 | 6.91 | 444.40 | 54.80 | 7.14 | 216.90 | 4.63 | 6.81 | 358.20 | 54.80 | 7.14 | 210.00 | 4.70 | 6.79 | 427.80 | 55.70 | 7.29 | 230.20 |
| 15 | 4.40 | 6.95 | 452.90 | 55.60 | 7.20 | 170.40 | 4.50 | 6.79 | 446.70 | 55.30 | 7.18 | 151.30 | 4.50 | 6.91 | 444.70 | 53.90 | 6.99 | 216.80 | 4.61 | 6.80 | 358.40 | 53.90 | 6.99 | 210.30 | 4.69 | 6.79 | 428.90 | 55.20 | 7.21 | 230.20 |
| 16 | 4.40 | 6.95 | 453.60 | 55.10 | 7.14 | 170.60 | 4.50 | 6.78 | 447.00 | 54.70 | 7.08 | 151.40 | 4.50 | 6.89 | 444.80 | 53.60 | 6.92 | 216.90 | 4.60 | 6.80 | 358.20 | 53.60 | 6.92 | 210.40 | 4.68 | 6.78 | 428.70 | 54.40 | 7.19 | 230.20 |
| 17 | 4.40 | 6.95 | 454.00 | 54.60 | 7.09 | 171.00 | 4.50 | 6.78 | 448.00 | 54.00 | 7.00 | 151.70 | 4.50 | 6.90 | 445.60 | 53.00 | 6.87 | 216.90 | 4.59 | 6.79 | 358.40 | 53.00 | 6.87 | 218.80 | 4.68 | 6.77 | 429.30 | 53.20 | 7.09 | 230.60 |
| 18 | 4.40 | 6.94 | 454.10 | 54.00 | 7.01 | 171.80 | 4.50 | 6.79 | 447.70 | 53.80 | 6.96 | 152.20 | 4.50 | 6.88 | 445.10 | 52.10 | 6.79 | 216.00 | 4.59 | 6.79 | 358.50 | 52.10 | 6.79 | 218.70 | 4.62 | 6.77 | 429.50 | 53.10 | 6.97 | 230.40 |
| 1m from Bottom (BS) | 4.40 | 6.94 | 454.40 | 53.90 | 7.00 | 17.10 | 4.50 | 6.78 | 448.60 | 53.30 | 6.91 | 152.80 | 4.50 | 6.88 | 445.80 | 51.50 | 6.66 | 216.00 | 4.58 | 6.78 | 358.40 | 51.50 | 6.66 | 218.20 | 4.61 | 6.76 | 430.40 | 53.10 | 6.85 | 230.50 |
| | BS=19.0m | | | | | | BS=19.0m | | | | | | BS=19.0m | | | | | | BS=19.0m | | | | | | BS=19.0m | | | | | |

## LONG LAKE DEPTH PROFILING SUMMER

| Sample Date | 29-Jul | | | | | | 07-Aug | | | | | | 14-Aug | | | | | | 21-Aug | | | | | | 28-Aug | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP |
| Sample Depth (m) | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV |
| 1 | 22.93 | 7.80 | 336 | 85.0 | 7.54 | 137.9 | 22.53 | 7.32 | 379 | 93.1 | 8.52 | 169.0 | 23.53 | 7.63 | 335 | 88.2 | 8.03 | 123.4 | 23.23 | 7.29 | 320 | 88.9 | 8.14 | 215.6 | 23.53 | 7.48 | 329 | 80.4 | 7.33 | 129.6 |
| 2 | 22.64 | 7.81 | 334 | 85.0 | 7.56 | 146.0 | 22.44 | 7.38 | 378 | 86.3 | 7.88 | 168.5 | 23.04 | 7.63 | 344 | 84.8 | 77.84 | 130.9 | 23.94 | 7.33 | 318 | 87.0 | 8.02 | 213.3 | 23.54 | 7.50 | 329 | 74.4 | 6.81 | 127.4 |
| 3 | 22.32 | 7.77 | 337 | 88.7 | 7.84 | 148.9 | 21.32 | 7.46 | 378 | 84.2 | 7.69 | 166.8 | 22.52 | 7.59 | 344 | 84.2 | 7.69 | 131.2 | 22.92 | 7.35 | 318 | 90.2 | 8.29 | 210.8 | 22.52 | 7.50 | 329 | 76.7 | 7.02 | 126.9 |
| 4 | 22.50 | 7.56 | 372 | 77.9 | 7.14 | 152.0 | 21.20 | 7.36 | 377 | 89.9 | 8.13 | 166.6 | 21.40 | 7.46 | 345 | 84.6 | 7.61 | 132.7 | 21.50 | 7.27 | 317 | 84.9 | 7.73 | 208.4 | 21.10 | 7.39 | 330 | 78.4 | 7.06 | 127.1 |
| 5 | 17.72 | 7.42 | 339 | 94.1 | 9.21 | 164.0 | 17.82 | 7.26 | 387 | 107.7 | 10.34 | 178.8 | 18.87 | 7.47 | 344 | 86.1 | 7.69 | 152.0 | 19.42 | 7.27 | 330 | 85.9 | 8.03 | 209.7 | 20.12 | 7.39 | 336 | 83.5 | 7.72 | 130.2 |
| 6 | 12.22 | 7.58 | 324 | 86.1 | 9.53 | 176.8 | 12.62 | 7.48 | 364 | 94.7 | 10.54 | 182.9 | 13.98 | 7.76 | 327 | 89.4 | 8.51 | 159.1 | 14.22 | 7.48 | 313 | 97.4 | 10.44 | 215.0 | 15.72 | 7.60 | 326 | 91.4 | 9.64 | 135.1 |
| 7 | 8.91 | 7.42 | 302 | 71.5 | 8.43 | 180.4 | 9.11 | 7.26 | 340 | 68.9 | 8.23 | 186.2 | 11.81 | 7.56 | 318 | 93.7 | 10.04 | 167.0 | 11.21 | 7.27 | 289 | 78.0 | 9.15 | 217.4 | 10.91 | 7.45 | 297 | 72.6 | 8.33 | 136.5 |
| 8 | 7.32 | 7.34 | 288 | 57.3 | 7.10 | 180.3 | 7.32 | 7.18 | 327 | 53.8 | 6.72 | 184.6 | 10.22 | 7.38 | 297 | 79.1 | 8.99 | 176.7 | 9.72 | 7.13 | 274 | 59.0 | 7.30 | 218.1 | 9.32 | 7.32 | 282 | 48.2 | 6.00 | 137.9 |
| 9 | 6.21 | 7.33 | 229 | 42.6 | 5.47 | 178.7 | 6.21 | 7.18 | 319 | 43.9 | 5.65 | 182.0 | 8.11 | 7.31 | 275 | 53.7 | 6.66 | 177.5 | 8.31 | 7.10 | 263 | 45.8 | 5.87 | 216.5 | 8.61 | 7.28 | 269 | 38.5 | 4.94 | 138.1 |
| 10 | 6.70 | 7.31 | 279 | 34.9 | 4.57 | 178.5 | 5.80 | 7.16 | 316 | 38.7 | 5.05 | 180.6 | 7.15 | 7.30 | 267 | 45.7 | 5.82 | 176.2 | 7.90 | 7.08 | 260 | 39.2 | 5.07 | 215.0 | 7.20 | 7.25 | 265 | 33.2 | 4.40 | 137.5 |
| 11 | 5.41 | 7.21 | 278 | 31.2 | 4.02 | 178.6 | 5.51 | 7.06 | 315 | 34.7 | 4.47 | 179.7 | 6.18 | 7.19 | 264 | 33.5 | 4.26 | 173.7 | 6.61 | 6.99 | 259 | 33.1 | 4.27 | 213.1 | 6.81 | 7.15 | 263 | 26.6 | 3.43 | 137.0 |
| 12 | 5.21 | 7.19 | 276 | 27.6 | 3.64 | 176.6 | 5.31 | 7.06 | 313 | 31.5 | 4.10 | 179.5 | 5.99 | 7.18 | 224 | 33.2 | 4.25 | 172.3 | 6.31 | 6.98 | 257 | 29.8 | 3.82 | 212.0 | 6.61 | 7.14 | 261 | 24.6 | 3.20 | 137.9 |
| 13 | 5.11 | 7.18 | 275 | 26.3 | 3.43 | 179.1 | 5.11 | 7.05 | 311 | 26.6 | 3.41 | 179.3 | 5.71 | 7.17 | 224 | 25.7 | 3.52 | 173.1 | 5.34 | 6.98 | 255 | 19.9 | ***2.61*** | 210.3 | 5.31 | 7.07 | 259 | 19.2 | ***2.52*** | 139.0 |
| 14 | 5.01 | 7.17 | 275 | 22.6 | ***2.96*** | 177.8 | 4.91 | 7.05 | 311 | 17.5 | ***2.34*** | 178.9 | 5.67 | 7.16 | 224 | 19.1 | 2.45 | 173.6 | 5.31 | 6.97 | 255 | 16.7 | ***2.24*** | 208.8 | 5.28 | 6.99 | 259 | 15.5 | ***2.07*** | 141.6 |
| 15 | 4.57 | 7.14 | 275 | 18.1 | ***2.44*** | 179.6 | 4.90 | 7.02 | 310 | 13.2 | ***1.79*** | 177.0 | 5.66 | 7.15 | 224 | 13.1 | 1.75 | 174.0 | 5.30 | 6.94 | 255 | 14.1 | ***1.93*** | 208.0 | 5.28 | 6.94 | 258 | 12.1 | ***1.65*** | 142.1 |
| 16 | 4.57 | 7.14 | 274 | 15.0 | ***2.01*** | 179.6 | 4.90 | 7.01 | 311 | 11.6 | ***1.55*** | 153.9 | 5.60 | 7.15 | 225 | 11.7 | 1.59 | 173.1 | 5.28 | 6.93 | 255 | 12.6 | ***1.71*** | 207.1 | 5.25 | 6.93 | 258 | 9.1 | ***1.22*** | 141.6 |
| 17 | 4.57 | 7.05 | 274 | 12.1 | ***1.64*** | 179.7 | 4.90 | 6.99 | 311 | 9.6 | ***1.29*** | 141.6 | 5.50 | 7.14 | 225 | 10.1 | 1.35 | 169.3 | 5.27 | 6.90 | 255 | 10.7 | ***1.45*** | 206.9 | 5.25 | 6.92 | 258 | 6.1 | ***0.86*** | 141.2 |
| 18 | 4.57 | 7.02 | 274 | 9.7 | ***1.33*** | 179.9 | 4.91 | 7.00 | 311 | 8.8 | ***1.22*** | 133.1 | 5.51 | 7.13 | 224 | 8.8 | 1.25 | 165.1 | 5.26 | 6.89 | 255 | 9.8 | ***1.37*** | 206.4 | 5.24 | 6.93 | 258 | 4.8 | ***0.71*** | 139.9 |
| 1m from Bottom (BS) | 4.57 | 6.98 | 274 | 6.8 | ***0.95*** | 181.3 | 4.91 | 6.99 | 311 | 7.3 | ***1.11*** | 124.9 | 5.23 | 7.11 | 226 | 6.6 | 1.06 | 134.1 | 5.30 | 6.86 | 257 | 5.5 | ***0.80*** | 165.1 | 5.22 | 6.92 | 258 | 3.6 | ***0.55*** | 138.6 |
| | BS=19.0m | | | | | | BS=19.0m | | | | | | BS=19.0m | | | | | | BS=19.0m | | | | | | BS=19.0m | | | | | |

## LONG LAKE DEPTH PROFILING FALL

| Sample Date | 24-Oct | | | | | | 30-Oct | | | | | | 06-Nov | | | | | | 14-Nov | | | | | | 18-Nov | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP |
| Sample Depth (m) | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV |
| 1 | 7.69 | 7.50 | 131.90 | 91.90 | 10.48 | 152.60 | 7.20 | 7.00 | 62.50 | 91.70 | 11.07 | 211.70 | 7.64 | 7.56 | 159.90 | 90.00 | 10.75 | 178.60 | 7.47 | 7.52 | 151.50 | 90.20 | 10.82 | 112.50 | 7.20 | 7.00 | 62.50 | 91.70 | 11.07 | 211.70 |
| 2 | 9.50 | 7.39 | 131.50 | 91.40 | 10.43 | 160.30 | 7.17 | 6.97 | 63.70 | 91.30 | 11.02 | 211.30 | 7.53 | 7.44 | 163.10 | 89.20 | 10.68 | 181.90 | 7.42 | 7.31 | 154.60 | 89.60 | 10.76 | 117.80 | 7.17 | 6.97 | 63.70 | 91.30 | 11.02 | 211.30 |
| 3 | 9.51 | 7.36 | 131.80 | 91.30 | 10.43 | 165.10 | 7.26 | 6.91 | 90.50 | 91.00 | 10.98 | 213.00 | 7.51 | 7.38 | 164.30 | 88.80 | 10.64 | 181.90 | 7.39 | 7.27 | 159.20 | 89.00 | 10.69 | 120.30 | 7.26 | 6.91 | 90.50 | 91.00 | 10.98 | 213.00 |
| 4 | 9.68 | 7.35 | 152.80 | 90.80 | 10.29 | 169.70 | 7.44 | 6.87 | 141.20 | 90.40 | 10.83 | 217.40 | 7.50 | 7.34 | 164.50 | 88.60 | 10.62 | 181.70 | 7.37 | 7.24 | 166.30 | 88.30 | 10.61 | 121.90 | 7.44 | 6.87 | 141.20 | 90.40 | 10.83 | 217.40 |
| 5 | 9.79 | 7.37 | 180.00 | 89.90 | 10.19 | 173.90 | 7.55 | 6.92 | 194.30 | 89.60 | 10.72 | 218.40 | 7.49 | 7.31 | 166.40 | 88.40 | 10.59 | 181.70 | 7.41 | 7.19 | 122.60 | 87.00 | 10.44 | 1249.00 | 7.55 | 6.92 | 194.30 | 89.60 | 10.72 | 218.40 |
| 6 | 9.73 | 7.36 | 193.70 | 89.40 | 10.15 | 177.20 | 7.50 | 6.92 | 210.50 | 86.30 | 10.31 | 218.20 | 7.51 | 7.27 | 177.00 | 87.60 | 10.50 | 182.30 | 7.43 | 7.17 | 199.70 | 86.00 | 10.32 | 126.70 | 7.50 | 6.92 | 210.50 | 86.30 | 10.31 | 218.20 |
| 7 | 9.53 | 7.29 | 208.90 | 87.40 | 9.90 | 181.40 | 7.50 | 6.90 | 225.60 | 84.40 | 10.06 | 219.00 | 7.57 | 7.23 | 202.00 | 86.40 | 10.33 | 183.50 | 7.48 | 7.13 | 218.30 | 84.90 | 10.17 | 128.60 | 7.50 | 6.90 | 225.60 | 84.40 | 10.06 | 219.00 |
| 8 | 9.37 | 7.04 | 289.50 | 72.40 | 8.26 | 188.80 | 7.53 | 6.87 | 249.00 | 81.90 | 9.78 | 219.30 | 7.64 | 7.15 | 244.50 | 82.40 | 9.81 | 185.60 | 7.51 | 7.06 | 259.10 | 80.80 | 9.63 | 131.20 | 7.53 | 6.87 | 249.00 | 81.90 | 9.78 | 219.30 |
| 9 | 8.20 | 6.92 | 358.80 | 55.30 | 6.35 | 191.40 | 7.59 | 6.75 | 328.50 | 64.00 | 7.56 | 221.60 | 7.96 | 6.93 | 406.00 | 60.20 | 6.80 | 192.40 | 7.74 | 6.88 | 426.40 | 57.80 | 6.77 | 137.90 | 7.59 | 6.75 | 328.50 | 64.00 | 7.56 | 221.60 |
| 10 | 6.79 | 6.88 | 359.10 | 46.00 | 5.66 | 192.70 | 7.27 | 6.66 | 434.00 | 48.10 | 5.75 | 224.20 | 6.76 | 6.89 | 437.70 | 44.40 | 5.38 | 192.40 | 7.14 | 6.81 | 454.80 | 44.10 | 5.30 | 137.50 | 7.27 | 6.66 | 434.00 | 48.10 | 5.75 | 224.20 |
| 11 | 6.41 | 6.86 | 358.80 | 42.20 | 5.19 | 192.90 | 6.73 | 6.63 | 434.80 | 41.30 | 5.01 | 224.30 | 6.48 | 6.87 | 438.30 | 41.10 | 5.04 | 192.30 | 6.83 | 6.80 | 455.00 | 42.10 | 5.13 | 140.00 | 6.73 | 6.63 | 434.80 | 41.30 | 5.01 | 224.30 |
| 12 | 6.22 | 6.86 | 359.30 | 41.30 | 5.10 | 193.70 | 6.32 | 6.61 | 435.90 | 37.10 | 4.58 | 223.90 | 6.07 | 6.85 | 438.20 | 37.90 | 4.68 | 192.20 | 6.28 | 6.78 | 455.20 | 39.10 | 4.81 | 140.50 | 6.32 | 6.61 | 435.90 | 37.10 | 4.58 | 223.90 |
| 13 | 6.00 | 6.85 | 359.50 | 38.70 | 4.77 | 194.40 | 6.02 | 6.61 | 435.70 | 35.10 | 4.33 | 223.90 | 5.84 | 6.84 | 438.90 | 34.80 | 4.33 | 192.10 | 5.84 | 6.76 | 455.60 | 35.10 | 4.28 | 140.50 | 6.02 | 6.61 | 435.70 | 35.10 | 4.33 | 223.90 |
| 14 | 5.68 | 6.83 | 359.60 | 31.90 | 3.99 | 194.30 | 5.72 | 6.59 | 435.90 | 31.10 | 3.86 | 224.00 | 5.57 | 6.83 | 438.30 | 29.50 | 3.71 | 192.00 | 5.62 | 6.74 | 455.50 | 31.20 | 3.90 | 140.50 | 5.72 | 6.59 | 435.90 | 31.10 | 3.86 | 224.00 |
| 15 | 5.46 | 6.82 | 359.90 | 27.30 | 3.41 | 194.30 | 5.45 | 6.58 | 436.10 | 24.60 | 3.07 | 224.20 | 5.41 | 6.81 | 438.80 | 24.30 | 3.06 | 192.00 | 5.47 | 6.72 | 455.40 | 26.30 | 3.30 | 141.00 | 5.45 | 6.58 | 436.10 | 24.60 | 3.07 | 224.20 |
| 16 | 5.30 | 6.81 | 359.60 | 24.10 | 3.01 | 193.90 | 5.26 | 6.55 | 436.70 | 14.60 | 1.82 | 225.60 | 5.26 | 6.79 | 439.10 | 18.30 | 2.29 | 192.60 | 5.30 | 6.70 | 456.10 | 20.60 | 2.56 | 141.70 | 5.26 | 6.55 | 436.70 | 14.60 | 1.82 | 225.60 |
| 17 | 5.23 | 6.80 | 360.00 | 17.10 | 2.16 | 191.20 | 5.21 | 6.56 | 439.20 | 9.50 | 1.21 | 226.70 | 5.20 | 6.79 | 440.80 | 11.80 | 1.49 | 193.30 | 5.23 | 6.69 | 457.20 | 16.50 | 2.07 | 143.50 | 5.21 | 6.56 | 439.20 | 9.50 | 1.21 | 226.70 |
| 18 | 6.80 | 6.79 | 362.80 | 9.20 | 1.14 | 175.00 | 5.21 | 6.58 | 440.00 | 8.10 | 1.03 | 226.20 | 5.19 | 6.79 | 441.10 | 10.40 | 1.32 | 192.90 | 5.20 | 6.69 | 458.60 | 11.70 | 1.47 | 144.10 | 5.21 | 6.58 | 440.00 | 8.10 | 1.03 | 226.20 |
| 1m from Bottom (BS) | | | | | | | 5.20 | 6.58 | 441.10 | 7.20 | 0.91 | 226.10 | 5.19 | 6.80 | 441.60 | 9.30 | 1.18 | 192.00 | | | | | | | 5.20 | 6.58 | 441.10 | 7.20 | 0.91 | 226.10 |
| | BS= 18.5m | | | | | | BS=19.0m | | | | | | BS=19.0m | | | | | | BS=18.5m | | | | | | BS=19.0m | | | | | |

WQG-Max pH Max. 6.5 -9.0 Hypolimnetic DO minimum 3 mg/L June -August

# Table 73
# 2019-2020 Annual Report

**EMS ID E206618**

**Site NAME: MIDDLE QUINSAM LAKE (MQL)**

## MIDDLE QUINSAM LAKE DEPTH PROFILING SPRING

| Sample Date | 10-Apr | | | | | | 18-Apr | | | | | | 24-Apr | | | | | | 02-May | | | | | | 08-May | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP |
| Sample Depth (m) | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV |
| 1 | 9.24 | 7.60 | 205.6 | 99.1 | 11.38 | 156.6 | 10.0 | 7.53 | 219 | 97.6 | 10.99 | 236.8 | 12.1 | 7.83 | 212.70 | 97.7 | 10.49 | 230.3 | 13.49 | 7.69 | 198 | 102.1 | 10.62 | 218.4 | 15.40 | 7.88 | 212 | 102.1 | 10.20 | 2.1 |
| 2 | 9.24 | 7.60 | 156.4 | 99.1 | 11.39 | 156.4 | 9.96 | 7.55 | 219 | 97.6 | 11.02 | 235.4 | 11.87 | 7.75 | 212.20 | 97.4 | 10.52 | 221.6 | 12.43 | 7.57 | 201 | 102.0 | 10.85 | 212.9 | 15.30 | 7.79 | 213 | 102.0 | 10.19 | 211.7 |
| 3 | 9.00 | 7.60 | 208.5 | 98.6 | 11.40 | 156.8 | 9.42 | 7.6 | 220 | 96.6 | 11.01 | 234.8 | 11.21 | 7.74 | 212.60 | 96.2 | 10.54 | 219.6 | 11.82 | 7.58 | 201 | 102.2 | 11.02 | 209.6 | 14.00 | 7.76 | 213 | 101.5 | 10.15 | 206.7 |
| 4 | 8.40 | 7.60 | 210 | 98.5 | 11.52 | 157.4 | 8.78 | 7.56 | 209 | 96.5 | 11.11 | 235.2 | 10.98 | 7.73 | 212.60 | 95.9 | 10.57 | 217.4 | 11.61 | 7.57 | 201 | 101.7 | 11.06 | 209.4 | 12.11 | 7.74 | 213 | 101.6 | 10.50 | 206.3 |
| 5 | 7.80 | 7.60 | 213 | 98.3 | 11.67 | 158.4 | 8.49 | 7.57 | 241 | 97.3 | 11.35 | 234.9 | 9.27 | 7.72 | 227.90 | 95.6 | 10.88 | 216.2 | 11.02 | 7.55 | 202 | 100.8 | 11.09 | 208.3 | 10.70 | 7.71 | 204 | 102.4 | 11.17 | 206.7 |
| 6 | 7.50 | 7.60 | 214 | 97.4 | 11.73 | 159.3 | 7.85 | 7.55 | 247 | 97.9 | 11.60 | 235.7 | 8.51 | 7.7 | 244.60 | 95.8 | 11.08 | 217.9 | 10.95 | 7.58 | 203 | 100.8 | 11.11 | 206.3 | 9.47 | 7.68 | 213 | 101.9 | 11.47 | 208.1 |
| 7 | 6.80 | 7.60 | 216 | 97.8 | 11.97 | 159.9 | 6.72 | 7.55 | 253 | 96.6 | 11.75 | 236.6 | 7.55 | 7.67 | 258.00 | 96 | 11.44 | 217.4 | 7.83 | 7.51 | 250 | 102.2 | 12.07 | 208.4 | 7.49 | 7.64 | 240 | 102.8 | 10.02 | 210.1 |
| 8 | 6.40 | 7.50 | 218 | 96.7 | 11.94 | 161.2 | 6.37 | 7.51 | 254 | 95.9 | 11.82 | 237.5 | 7.01 | 7.67 | 260.30 | 95.3 | 11.51 | 218.6 | 7.22 | 7.46 | 252 | 101.0 | 12.16 | 209.7 | 6.90 | 7.59 | 251 | 102.4 | 12.33 | 212.8 |
| 9 | 5.90 | 7.50 | 219 | 96.3 | 12.00 | 161.1 | 6.12 | 7.48 | 255 | 95.2 | 11.80 | 238 | 6.43 | 7.63 | 261.50 | 93.7 | 11.52 | 218.9 | 6.66 | 7.42 | 255 | 98.4 | 12.10 | 209.5 | 6.74 | 7.53 | 254 | 100.2 | 12.20 | 215.9 |
| 10 | 5.70 | 7.50 | 219 | 95.8 | 12.00 | 163.1 | 5.83 | 7.45 | 256 | 94 | 11.75 | 238.3 | 6.02 | 7.6 | 263.10 | 91.6 | 11.46 | 219.8 | 6.32 | 7.35 | 258 | 96.4 | 11.93 | 210.5 | 6.42 | 7.48 | 254 | 98.5 | 12.06 | 216.7 |
| 11 | 5.60 | 7.50 | 219 | 95.1 | 12.00 | 164 | 5.75 | 7.41 | 257 | 92.9 | 11.61 | 238.5 | 5.99 | 7.54 | 264.30 | 90.6 | 11.30 | 220.1 | 6.22 | 7.29 | 258 | 94.8 | 11.74 | 210.9 | 6.27 | 7.41 | 251 | 95.7 | 11.79 | 218.9 |
| 12 | 5.30 | 7.48 | 222 | 94.2 | 11.96 | 165.3 | 5.71 | 7.38 | 258 | 92.2 | 11.57 | 238.5 | 5.88 | 7.50 | 265.90 | 89.1 | 11.19 | 220.7 | 6.12 | 7.25 | 259 | 93.2 | 11.59 | 211.5 | 6.26 | 7.53 | 256 | 93.4 | 11.57 | 221.8 |
| 13 | 5.10 | 7.40 | 224 | 92 | 11.79 | 165.7 | 5.64 | 7.38 | 258 | 91.4 | 11.51 | 238.6 | 5.88 | 7.48 | 265.80 | 88.5 | 11.06 | 220.3 | 6.06 | 7.22 | 259 | 92.3 | 11.48 | 212.0 | 6.23 | 7.34 | 257 | 92.5 | 11.54 | 220.0 |
| 1m from Bottom (BS) | BS=13.50m | | | | | | BS=13.50m | | | | | | BS=13.50m | | | | | | BS=13.50m | | | | | | BS=13.50m | | | | | |

## MIDDLE QUINSAM LAKE DEPTH PROFILING SUMMER

| Sample Date | 29-Jul | | | | | | 07-Aug | | | | | | 14-Aug | | | | | | 21-Aug | | | | | | 28-Aug | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP |
| Sample Depth (m) | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV |
| 1 | 23.21 | 7.90 | 178 | 95.3 | 9.90 | 154.2 | 22.39 | 7.69 | 198 | 97.4 | 8.54 | 142.5 | 22.39 | 7.94 | 168 | 84.7 | 7.42 | 132.2 | 21.99 | 7.72 | 214 | 84.4 | 7.47 | 106.9 | 22.49 | 7.74 | 167 | 103.2 | 9.06 | 101.0 |
| 2 | 23.19 | 7.78 | 177 | 87.5 | 9.58 | 152.1 | 22.19 | 7.79 | 196 | 94.4 | 8.29 | 141.9 | 22.29 | 7.91 | 168 | 88.6 | 7.79 | 134.5 | 21.89 | 7.72 | 213 | 83.0 | 7.36 | 105.9 | 22.49 | 7.74 | 167 | 101.8 | 8.86 | 100.4 |
| 3 | 22.79 | 7.75 | 178 | 81.0 | 8.80 | 152.2 | 22.05 | 7.78 | 195 | 94.7 | 8.35 | 143.3 | 22.15 | 7.87 | 168 | 87.7 | 7.72 | 135.1 | 21.85 | 7.72 | 213 | 82.5 | 7.29 | 105.6 | 22.45 | 7.74 | 167 | 101.5 | 8.85 | 100.5 |
| 4 | 22.59 | 7.74 | 176 | 70.3 | 7.74 | 154.7 | 22.04 | 7.76 | 195 | 96.1 | 8.44 | 143.0 | 22.04 | 7.85 | 167 | 80.1 | 7.04 | 135.5 | 21.74 | 7.72 | 212 | 82.1 | 8.02 | 104.7 | 22.34 | 7.74 | 166 | 99.9 | 8.73 | 101.0 |
| 5 | 22.39 | 7.73 | 178 | 71.0 | 7.85 | 157.1 | 21.77 | 7.71 | 195 | 96.1 | 8.40 | 145.2 | 21.77 | 7.75 | 167 | 84.4 | 7.39 | 138.2 | 21.47 | 7.72 | 212 | 82.4 | 7.26 | 103.4 | 22.17 | 7.74 | 165 | 100.4 | 8.72 | 101.8 |
| 6 | 20.99 | 7.72 | 178 | 77.4 | 7.88 | 158.3 | 20.89 | 7.70 | 191 | 96.5 | 8.42 | 147.0 | 20.39 | 7.56 | 165 | 84.2 | 7.20 | 137.5 | 20.79 | 7.72 | 210 | 80.6 | 6.96 | 104.7 | 21.49 | 7.74 | 164 | 99.8 | 8.53 | 102.4 |
| 7 | 17.19 | 7.70 | 179 | 76.9 | 7.78 | 166.3 | 17.88 | 7.68 | 191 | 95.1 | 9.07 | 154.4 | 17.28 | 7.56 | 156 | 100.2 | 9.61 | 144.1 | 19.48 | 7.72 | 202 | 99.3 | 9.39 | 106.4 | 19.88 | 7.74 | 160 | 111.2 | 10.46 | 107.4 |
| 8 | 13.41 | 7.68 | 178 | 75.9 | 7.63 | 176.1 | 14.45 | 7.68 | 190 | 95.1 | 9.07 | 161.7 | 15.45 | 7.56 | 161 | 112.6 | 9.57 | 151.8 | 15.45 | 7.72 | 209 | 113 | 11.54 | 109.4 | 16.65 | 7.74 | 165 | 144.6 | 14.60 | 111.8 |
| 9 | 10.19 | 7.65 | 176 | 74.9 | 7.60 | 181.2 | 9.00 | 7.68 | 190 | 95.3 | 9.64 | 169.9 | 10.30 | 7.56 | 167 | 100.4 | 9.79 | 160.5 | 10.00 | 7.72 | 214 | 95.0 | 9.26 | 114.4 | 10.10 | 7.74 | 170 | 116.7 | 11.57 | 114.7 |
| 10 | 7.90 | 7.65 | 179 | 75.9 | 7.52 | 182.9 | 7.74 | 7.68 | 203 | 86.8 | 8.68 | 172.6 | 8.14 | 7.56 | 170 | 71.0 | 6.78 | 167.2 | 8.14 | 7.72 | 219 | 64.8 | 6.34 | 117.0 | 8.34 | 7.74 | 171 | 81.7 | 8.13 | 119.8 |
| 11 | 7.30 | 7.65 | 179 | 75.9 | 7.49 | 182.8 | 7.20 | 7.68 | 202 | 71.9 | 7.11 | 172.9 | 7.60 | 7.56 | 170 | 60.7 | 5.85 | 167.6 | 7.40 | 7.71 | 218 | 51.6 | 4.84 | 119.7 | 7.70 | 7.74 | 171 | 63.8 | 6.24 | 120.5 |
| 12 | 7.20 | 7.65 | 179 | 73.9 | 7.30 | 182.9 | 6.93 | 7.68 | 203 | 53.8 | 5.18 | 173.2 | 7.23 | 7.56 | 169 | 51.9 | 4.90 | 167.8 | 7.33 | 7.71 | 218 | 43.9 | 4.00 | 122.4 | 7.43 | 7.73 | 171 | 50.8 | 4.72 | 120.9 |
| 13 | 7.10 | 7.65 | 182 | 70.9 | 7.13 | 183.8 | 6.90 | 7.68 | 209 | 51.3 | 5.29 | 173.6 | 7.20 | 7.56 | 168 | 51.9 | 4.90 | 167.7 | 7.21 | 7.70 | 226 | 37.8 | 3.23 | 122.0 | 7.21 | 7.72 | 174 | 46.2 | 4.25 | 120.6 |
| 1m from Bottom (BS) | BS=13.50m | | | | | | BS=13.0m | | | | | | BS=13.0m | | | | | | BS=13.0m | | | | | | BS=13.0m | | | | | |

## MIDDLE QUINSAM LAKE DEPTH PROFILING FALL

| Sample Date | 24-Oct | | | | | | 30-Oct | | | | | | 06-Nov | | | | | | 14-Nov | | | | | | 18-Nov | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP |
| Sample Depth (m) | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV | ºC | | µS/cm | | mg/L | mV |
| 1 | 10.28 | 7.70 | 160.90 | 91.60 | 10.27 | 155.20 | 9.06 | 7.48 | 192.70 | 89.90 | 10.37 | 214.00 | 8.85 | 7.98 | 186.30 | 93.60 | 10.85 | 130.20 | 8.46 | 7.77 | 185.40 | 89.80 | 10.51 | 108.40 | 8.41 | 8.00 | 177.40 | 90.60 | 10.63 | 155.30 |
| 2 | 10.28 | 7.70 | 160.80 | 91.50 | 10.26 | 160.50 | 8.99 | 7.50 | 192.90 | 89.40 | 10.32 | 211.60 | 8.79 | 7.72 | 185.20 | 92.00 | 10.68 | 143.70 | 8.45 | 7.65 | 185.70 | 90.30 | 10.56 | 119.50 | 8.32 | 7.64 | 176.20 | 90.80 | 10.67 | 162.70 |
| 3 | 10.27 | 7.69 | 160.90 | 91.40 | 10.24 | 166.80 | 8.97 | 7.50 | 192.70 | 89.20 | 10.31 | 210.60 | 8.76 | 7.68 | 184.00 | 91.50 | 10.63 | 146.70 | 8.45 | 7.60 | 185.60 | 89.60 | 10.49 | 122.60 | 8.30 | 7.47 | 176.40 | 90.50 | 10.64 | 174.70 |
| 4 | 10.27 | 7.68 | 160.70 | 91.20 | 10.23 | 180.10 | 8.96 | 7.50 | 192.70 | 89.00 | 10.31 | 210.40 | 8.70 | 7.66 | 181.30 | 91.10 | 10.61 | 148.30 | 8.45 | 7.56 | 185.70 | 89.30 | 10.45 | 125.50 | 8.29 | 7.39 | 176.50 | 90.30 | 10.61 | 179.70 |
| 5 | 10.27 | 7.68 | 160.80 | 91.30 | 10.23 | 182.00 | 8.95 | 7.48 | 192.80 | 89.00 | 10.30 | 210.90 | 8.67 | 7.61 | 180.30 | 90.70 | 10.57 | 151.40 | 8.45 | 7.54 | 185.70 | 89.20 | 10.44 | 127.80 | 8.29 | 7.34 | 176.10 | 90.10 | 10.59 | 183.90 |
| 6 | 10.27 | 7.68 | 160.80 | 91.20 | 10.22 | 184.30 | 8.95 | 7.48 | 192.90 | 89.00 | 10.29 | 211.00 | 8.71 | 7.60 | 187.30 | 90.20 | 10.49 | 153.70 | 8.45 | 7.52 | 186.00 | 88.90 | 10.41 | 129.60 | 8.29 | 7.31 | 176.40 | 90.10 | 10.59 | 186.20 |
| 7 | 10.27 | 7.64 | 160.80 | 91.20 | 10.22 | 187.80 | 8.94 | 7.47 | 192.80 | 88.90 | 10.29 | 210.80 | 8.69 | 7.59 | 188.30 | 89.90 | 10.46 | 155.40 | 8.45 | 7.51 | 186.00 | 88.80 | 10.39 | 130.90 | 8.29 | 7.29 | 176.50 | 90.00 | 10.58 | 188.40 |
| 8 | 10.26 | 7.64 | 160.80 | 91.10 | 10.22 | 186.60 | 8.92 | 7.46 | 193.10 | 88.80 | 10.28 | 211.00 | 8.65 | 7.58 | 186.60 | 89.50 | 10.43 | 157.10 | 8.45 | 7.49 | 185.90 | 88.60 | 10.38 | 132.40 | 8.29 | 7.27 | 176.50 | 89.90 | 10.57 | 189.80 |
| 9 | 10.26 | 7.63 | 160.90 | 90.80 | 10.18 | 186.30 | 8.88 | 7.46 | 194.20 | 88.70 | 10.28 | 210.70 | 8.65 | 7.58 | 187.50 | 89.20 | 10.38 | 156.50 | 8.45 | 7.47 | 186.10 | 88.40 | 10.35 | 133.90 | 8.28 | 7.26 | 176.80 | 90.00 | 10.58 | 191.50 |
| 10 | 10.21 | 7.60 | 161.20 | 89.90 | 10.09 | 185.30 | 8.78 | 7.46 | 193.30 | 88.70 | 10.30 | 207.30 | 8.64 | 7.58 | 187.90 | 88.90 | 10.36 | 156.30 | 8.45 | 7.46 | 186.30 | 88.30 | 10.34 | 134.80 | 8.27 | 7.23 | 176.90 | 89.90 | 10.57 | 192.40 |
| 11 | 10.21 | 7.58 | 160.80 | 89.90 | 10.09 | 184.50 | 8.78 | 7.45 | 193.70 | 88.80 | 10.32 | 207.60 | 8.64 | 7.58 | 188.90 | 89.00 | 10.37 | 157.40 | 8.45 | 7.44 | 186.20 | 88.20 | 10.33 | 135.10 | 8.26 | 7.21 | 178.30 | 89.70 | 10.55 | 193.10 |
| 12 | 10.21 | 7.58 | 161.60 | 89.90 | 10.09 | 184.80 | 8.68 | 7.43 | 192.10 | 88.10 | 10.26 | 207.30 | 8.63 | 7.58 | 189.40 | 89.00 | 10.38 | 158.40 | 8.45 | 7.43 | 186.30 | 88.10 | 10.32 | 135.30 | 8.33 | 7.17 | 190.90 | 88.10 | 10.33 | 195.30 |
| 13 | 10.19 | 7.58 | 161.50 | 89.60 | 10.07 | 185.30 | 8.68 | 7.42 | 195.20 | 88.20 | 10.27 | 206.80 | 8.62 | 7.50 | 189.70 | 88.10 | 10.27 | 159.80 | 8.44 | 7.42 | 186.40 | 88.00 | 10.31 | 134.80 | 8.33 | 7.11 | 213.30 | 85.20 | 10.00 | 197.80 |
| 1m from Bottom (BS) | 10.12 | 7.49 | 166.70 | 81.80 | 9.24 | 177.10 | 8.56 | 7.43 | 196.60 | 88.10 | 10.29 | 206.20 | 8.62 | 7.53 | 189.90 | 87.20 | 10.15 | 162.00 | 8.50 | 7.42 | 186.40 | 88.00 | 10.31 | 133.20 | 8.43 | 6.91 | 210.20 | 72.20 | 8.44 | 205.60 |
| | BS=13.50m | | | | | | BS=13.50m | | | | | | BS=13.50m | | | | | | BS=13.50m | | | | | | BS=13.50m | | | | | |

WQG-Max pH Max. 6.5 -9.0 Hypolimnetic DO minimum 3 mg/L June -August

# Table 74
# 2019-2020 Annual Report

**EMS ID E292118** — **LOWER QUINSAM LAKE DEPTH PROFILING SPRING**

**Site NAME: LOWER QUINSAM LAKE (LQL)**

| Sample Date | 09-Apr | | | | | | 18-Apr | | | | | | 24-Apr | | | | | | 02-May | | | | | | 09-May | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | C | % Sat. | D.O. | ORP | TEMP. | pH | C | % Sat. | D.O. | ORP | TEMP. | pH | C | % Sat. | D.O. | ORP | TEMP. | pH | C | % Sat. | D.O. | ORP | TEMP. | pH | C | % Sat. | D.O. | ORP |
| Sample Depth (m) | °C | | µS/cm | | mg/L | mV | °C | | µS/cm | | mg/L | mV | 9.11 | 7.44 | 136 | 96.7 | 11.15 | 168.2 | °C | | µS/cm | | mg/L | mV | °C | | µS/cm | | mg/L | mV |
| 1 | 7.04 | 7.52 | 140.10 | 93.90 | 11.37 | 148.70 | 8.30 | 7.66 | 142.00 | 96.20 | 11.32 | 218.30 | 8.98 | 7.44 | 135.00 | 96.40 | 11.14 | 170.80 | 11.68 | 7.36 | 137.00 | 100.70 | 10.94 | 172.50 | 13.00 | 8.16 | 133.40 | 104.50 | 10.71 | 197.50 |
| 2 | 7.03 | 7.51 | 140.10 | 93.70 | 11.36 | 150.10 | 8.29 | 7.51 | 141.70 | 96.20 | 11.30 | 212.50 | 8.80 | 7.42 | 135.00 | 96.10 | 11.15 | 174.70 | 10.93 | 7.33 | 140.00 | 98.20 | 10.91 | 174.00 | 12.70 | 7.81 | 129.00 | 190.30 | 10.94 | 192.30 |
| 3 | 6.96 | 7.48 | 139.90 | 93.60 | 11.36 | 151.30 | 8.30 | 7.48 | 141.90 | 96.10 | 11.30 | 209.70 | 8.75 | 7.42 | 135.00 | 95.90 | 11.15 | 177.40 | 10.87 | 7.30 | 140.00 | 98.00 | 10.99 | 173.10 | 12.20 | 7.63 | 132.60 | 102.40 | 10.98 | 186.70 |
| 4 | 6.97 | 7.48 | 140.10 | 93.00 | 11.36 | 153.10 | 8.25 | 7.43 | 142.90 | 95.90 | 11.28 | 207.20 | 8.71 | 7.42 | 134.00 | 95.60 | 11.13 | 179.60 | 10.27 | 7.30 | 141.00 | 97.30 | 10.99 | 173.60 | 11.70 | 7.56 | 125.00 | 101.40 | 10.96 | 183.40 |
| 5 | 6.88 | 7.51 | 140.60 | 93.40 | 11.36 | 152.60 | 8.23 | 7.42 | 143.00 | 95.80 | 11.27 | 206.40 | 8.63 | 7.42 | 135.00 | 95.20 | 11.11 | 181.50 | 9.55 | 7.28 | 139.00 | 97.00 | 11.01 | 172.70 | 11.30 | 7.55 | 125.70 | 100.60 | 11.03 | 181.80 |
| 6 | 6.84 | 7.49 | 140.70 | 93.30 | 11.36 | 154.10 | 8.14 | 7.41 | 143.00 | 95.40 | 11.26 | 206.10 | 8.40 | 7.41 | 134.00 | 94.70 | 11.10 | 184.00 | 9.14 | 7.26 | 139.00 | 95.90 | 11.08 | 173.60 | 11.00 | 7.55 | 126.60 | 100.50 | 11.07 | 179.50 |
| 7 | 6.80 | 7.49 | 141.00 | 93.20 | 11.36 | 154.90 | 7.75 | 7.38 | 143.10 | 94.40 | 11.25 | 205.30 | 8.36 | 7.40 | 135.00 | 94.50 | 11.09 | 186.70 | 8.80 | 7.24 | 137.00 | 95.20 | 11.04 | 173.80 | 10.70 | 7.51 | 125.60 | 99.80 | 11.08 | 187.70 |
| 8 | 6.82 | 7.47 | 141.10 | 93.20 | 11.36 | 155.90 | 7.65 | 7.37 | 142.10 | 94.20 | 11.25 | 205.70 | 8.34 | 7.41 | 135.00 | 94.30 | 11.08 | 189.10 | 8.67 | 7.22 | 136.00 | 94.80 | 11.04 | 174.00 | 11.12 | 7.48 | 128.10 | 97.40 | 11.05 | 179.00 |
| 9 | 6.78 | 7.47 | 140.00 | 93.20 | 11.37 | 155.90 | 7.45 | 7.34 | 143.00 | 93.70 | 11.25 | 205.70 | 8.08 | 7.41 | 136.00 | 93.80 | 11.09 | 190.60 | 8.62 | 7.20 | 136.00 | 94.50 | 11.03 | 174.60 | 11.05 | 7.45 | 131.00 | 96.50 | 11.05 | 178.90 |
| 10 | 6.77 | 7.47 | 141.60 | 93.20 | 11.38 | 156.50 | 7.37 | 7.32 | 142.20 | 93.70 | 11.26 | 205.70 | 7.93 | 7.39 | 137.00 | 93.40 | 11.08 | 192.70 | 8.58 | 7.18 | 136.00 | 94.40 | 11.01 | 174.70 | 11.02 | 7.41 | 132.60 | 95.60 | 11.02 | 179.00 |
| 11 | 6.74 | 7.47 | 142.90 | 93.20 | 11.38 | 156.80 | 7.34 | 7.31 | 141.90 | 93.70 | 11.27 | 205.50 | 7.92 | 7.39 | 138.00 | 93.20 | 11.07 | 194.20 | 8.52 | 7.18 | 136.00 | 94.40 | 11.01 | 174.00 | 10.93 | 7.37 | 133.90 | 93.90 | 8.70 | 179.00 |
| 12 | 6.73 | 7.47 | 143.30 | 93.20 | 11.38 | 158.00 | 7.04 | 7.30 | 142.10 | 93.00 | 11.28 | 206.10 | 7.82 | 7.39 | 138.00 | 92.90 | 11.05 | 195.80 | 8.42 | 7.17 | 137.00 | 93.80 | 11.00 | 175.00 | 10.87 | 7.34 | 134.20 | 93.10 | 8.60 | 178.50 |
| 13 | 6.70 | 7.46 | 143.20 | 93.10 | 11.38 | 158.90 | 6.91 | 7.27 | 142.40 | 92.40 | 11.24 | 206.20 | 7.74 | 7.37 | 139.00 | 92.50 | 11.04 | 197.30 | 8.31 | 7.15 | 137.00 | 92.90 | 10.96 | 175.30 | 10.79 | 7.32 | 134.40 | 92.20 | 8.40 | 179.30 |
| 14 | 6.61 | 7.45 | 146.50 | 92.80 | 11.36 | 159.30 | 6.80 | 7.26 | 142.70 | 92.10 | 11.21 | 206.50 | 7.51 | 7.36 | 143.00 | 90.80 | 10.89 | 199.50 | 8.15 | 7.14 | 137.00 | 91.50 | 10.84 | 175.90 | 10.67 | 7.29 | 134.60 | 90.90 | 8.30 | 179.10 |
| 15 | 6.32 | 7.45 | 148.10 | 91.90 | 11.35 | 159.70 | 6.76 | 7.24 | 143.00 | 91.00 | 11.14 | 206.90 | 7.42 | 7.35 | 143.00 | 90.00 | 10.84 | 201.70 | 7.99 | 7.11 | 137.00 | 89.70 | 10.70 | 176.80 | 10.60 | 7.26 | 135.00 | 90.10 | 8.30 | 179.30 |
| 16 | 6.11 | 7.42 | 156.20 | 91.10 | 11.32 | 161.20 | 6.60 | 7.20 | 143.50 | 90.00 | 11.01 | 207.40 | 7.29 | 7.31 | 144.00 | 88.10 | 10.63 | 204.40 | 7.87 | 7.08 | 138.00 | 88.00 | 10.52 | 177.20 | 10.47 | 7.23 | 135.30 | 88.50 | 8.20 | 179.80 |
| 1m from Bottom (BS) | BS=16.0m | | | | | | BS=16.0m | | | | | | BS=16.0m | | | | | | BS=16.0m | | | | | | BS=16.0m | | | | | |

**LOWER QUINSAM LAKE DEPTH PROFILING SUMMER**

| Sample Date | 29-Jul | | | | | | 07-Aug | | | | | | 14-Aug | | | | | | 21-Aug | | | | | | 28-Aug | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP | TEMP. | pH | COND. | % Sat. | D.O. | ORP |
| Sample Depth (m) | Celcius | | µS/cm | | mg/L | mV | Celcius. | | µS/cm | 101.1 | 8.64 | mV | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV | Celcius | | µS/cm | | mg/L | mV |
| 1 | 22.10 | 7.76 | 176 | 98.8 | 9.02 | 149.0 | 21.80 | 8.23 | 147 | 83.7 | 7.68 | 117.1 | 22.10 | 8.06 | 192 | 84.5 | 7.71 | 119.6 | 22.50 | 8.17 | 153 | 104.6 | 9.39 | 96.3 | 18.80 | 8.35 | 151 | 78.2 | 7.61 | 67.4 |
| 2 | 22.10 | 7.78 | 176 | 98.6 | 8.94 | 148.1 | 21.80 | 8.23 | 148 | 80.7 | 7.40 | 120.4 | 21.80 | 8.07 | 191 | 82.3 | 7.65 | 117.9 | 22.50 | 8.20 | 153 | 107.5 | 9.64 | 96.5 | 18.70 | 8.33 | 150 | 77.1 | 7.51 | 69.4 |
| 3 | 21.60 | 7.77 | 174 | 99.7 | 9.08 | 149.3 | 21.50 | 8.21 | 146 | 85.3 | 7.91 | 122.6 | 21.70 | 8.06 | 190 | 80.8 | 7.42 | 117.6 | 22.50 | 8.17 | 153 | 106.2 | 9.52 | 98.2 | 18.60 | 8.31 | 151 | 75.6 | 7.43 | 70.7 |
| 4 | 21.30 | 7.80 | 172 | 97.9 | 9.01 | 149.0 | 21.30 | 8.19 | 147 | 78.9 | 7.27 | 122.8 | 21.40 | 8.05 | 189 | 81.7 | 7.58 | 117.5 | 21.90 | 8.20 | 153 | 100.3 | 8.90 | 98.3 | 18.60 | 8.30 | 150 | 75.1 | 7.34 | 72.8 |
| 5 | 20.70 | 7.76 | 171 | 92.1 | 8.57 | 153.6 | 21.00 | 8.15 | 146 | 79.5 | 7.42 | 124.9 | 20.70 | 8.02 | 190 | 80.7 | 7.62 | 117.9 | 21.30 | 8.16 | 153 | 103.2 | 9.41 | 100.7 | 18.60 | 8.27 | 151 | 73.4 | 7.16 | 77.4 |
| 6 | 19.40 | 7.70 | 160 | 90.1 | 8.66 | 159.3 | 20.10 | 8.11 | 143 | 76.8 | 7.24 | 129.2 | 20.00 | 7.97 | 184 | 79.8 | 7.60 | 119.5 | 19.90 | 8.12 | 140 | 88.3 | 8.34 | 103.3 | 18.20 | 8.18 | 149 | 74.0 | 7.35 | 84.4 |
| 7 | 17.50 | 7.68 | 131 | 90.9 | 9.00 | 165.1 | 17.70 | 8.10 | 134 | 73.8 | 7.30 | 135.0 | 18.80 | 7.96 | 169 | 75.8 | 7.37 | 120.6 | 19.30 | 8.07 | 132 | 92.3 | 8.78 | 106.0 | 16.40 | 8.16 | 133 | 65.9 | 6.76 | 90.7 |
| 8 | 14.50 | 7.60 | 102 | 82.6 | 8.89 | 179.6 | 14.60 | 8.00 | 88 | 73.1 | 7.75 | 152.4 | 14.70 | 8.02 | 113 | 68.8 | 7.36 | 126.8 | 15.50 | 8.11 | 92 | 85.4 | 8.85 | 110.3 | 14.00 | 8.18 | 93 | 56.9 | 6.22 | 98.0 |
| 9 | 11.50 | 7.29 | 95 | 70.7 | 7.40 | 181.4 | 11.70 | 7.15 | 80 | 64.3 | 6.68 | 158.2 | 12.00 | 7.28 | 103 | 55.4 | 5.65 | 129.4 | 12.50 | 7.40 | 82 | 72.3 | 7.34 | 113.7 | 11.00 | 7.52 | 84 | 45.0 | 4.68 | 100.2 |
| 10 | 10.60 | 7.25 | 91 | 60.6 | 6.59 | 180.4 | 11.00 | 7.14 | 77 | 53.9 | 6.62 | 166.4 | 11.20 | 7.42 | 99 | 53.6 | 5.78 | 130.6 | 10.90 | 7.51 | 77 | 54.9 | 5.62 | 117.4 | 9.90 | 7.62 | 82 | 36.4 | 3.82 | 104.1 |
| 11 | 9.90 | 7.22 | 90 | 56.3 | 5.12 | 179.1 | 9.90 | 7.08 | 75 | 43.6 | 4.09 | 166.4 | 11.10 | 7.41 | 99 | 51.2 | 5.52 | 131.2 | 10.20 | 7.43 | 76 | 30.1 | 3.30 | 119.0 | 9.40 | 7.55 | 82 | 12.5 | *2.85* | 105.4 |
| 12 | 9.10 | 7.16 | 89 | 40.2 | 4.00 | 179.5 | 9.20 | 7.04 | 75 | 30.9 | 3.21 | 166.4 | 10.30 | 7.31 | 97 | 40.9 | 4.47 | 135.0 | 9.40 | 7.32 | 75 | 10.5 | *1.12* | 120.9 | 8.90 | 7.48 | 83 | 10.7 | *1.98* | 106.0 |
| 13 | 8.70 | 7.10 | 90 | 30.3 | 3.01 | 180.2 | 8.80 | 7.03 | 75 | 30.1 | 3.13 | 166.4 | 9.40 | 7.23 | 96 | 20.0 | *2.20* | 138.3 | 8.90 | 7.25 | 76 | 10.0 | *1.10* | 121.3 | 8.60 | 7.43 | 84 | 8.0 | *0.92* | 112.5 |
| 14 | 8.50 | 7.07 | 91 | 18.1 | *1.90* | 179.5 | 8.70 | 7.00 | 76 | 20.1 | *2.91* | 167.4 | 9.00 | 7.13 | 97 | 3.7 | *0.33* | 141.0 | 8.50 | 7.18 | 77 | 8.0 | *0.99* | 121.4 | 8.50 | 7.34 | 92 | 7.0 | *0.74* | 113.7 |
| 15 | 7.90 | 7.01 | 93 | 1.1 | *0.94* | 173.8 | 8.60 | 6.97 | 76 | 19.9 | *2.32* | 167.5 | 8.80 | 7.07 | 98 | 1.0 | *-0.10* | 142.7 | 8.50 | 7.11 | 78 | 7.0 | *0.70* | 121.5 | 8.40 | 7.25 | 97 | 7.1 | *0.78* | 114.8 |
| 16 | 7.84 | 7.01 | 94 | 1.0 | *0.90* | 172.1 | 8.60 | 6.94 | 77 | 10.2 | *1.69* | 168.5 | 8.70 | 7.04 | 98 | 1.0 | *-0.10* | 143.1 | 8.50 | 7.08 | 79 | 7.1 | *0.78* | 121.6 | 8.40 | 7.25 | 97 | 6.8 | *0.62* | 114.2 |
| 1m from Bottom (BS) | BS=16.0m | | | | | | BS=16.0m | | | | | | BS=16.0m | | | | | | BS=16.0m | | | | | | BS=16.0m | | | | | |
| WQG-Max | pH Max. 6.5 -9.0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

# Table 75
# 2019-2020 Annual Report

| EMS ID | E217018 | No Name Lake 1 Metre Depth | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | NNL1 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 9-Apr-19 | 18-Apr-19 | 24-Apr-19 | 1-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | 1.8 | 1.2 | 1.2 | 2 | 2 | 1.6 | **128** | - |
| Chloro-a | ug/L | | | | 0.92 | | 0.92 | - | - |
| Turb | NTU | 0.37 | 0.48 | 0.39 | 0.38 | 0.31 | 0.39 | - | - |
| Alk-T | mg/L | 10.2 | 12 | 11 | 10.3 | 9 | 10.5 | - | - |
| P-T | mg/L | 0.0029 | 0.0015 | 0.0048 | 0.0038 | 0.0015 | 0.0029 | - | - |
| Al-T | mg/L | 0.0463 | 0.0408 | 0.0443 | 0.0348 | 0.0335 | 0.0399 | - | - |
| As-T | mg/L | 0.00019 | 0.00028 | 0.0002 | 0.00022 | 0.00024 | 0.00023 | - | **0.005** |
| Ba-T | mg/L | 0.0012 | 0.001 | 0.0013 | 0.0011 | 0.0011 | 0.0011 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 3.53 | 3.41 | 3.67 | 3.4 | 3.86 | 3.57 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.004** | **0.11** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 11.8 | 11.6 | 12.5 | 11.5 | 13.1 | 12.1 | - | - |
| Fe-T | mg/L | 0.068 | 0.049 | 0.062 | 0.049 | 0.055 | 0.057 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 0.716 | 0.76 | 0.799 | 0.727 | 0.831 | 0.767 | - | - |
| Mn-T | mg/L | 0.0065 | 0.0045 | 0.0042 | 0.0037 | 0.0044 | 0.0047 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.07 | 0.067 | 0.068 | 0.06 | 0.074 | 0.068 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 0.979 | 1.02 | 1.05 | 0.974 | 1.10 | 1.025 | - | - |
| Sr-T | mg/L | 0.0107 | 0.0106 | 0.0107 | 0.0106 | 0.0121 | 0.0109 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0343 | 0.0277 | 0.033 | 0.0306 | 0.0294 | 0.031 | **0.05** | **0.1** |
| As-D | mg/L | 0.00018 | 0.00019 | 0.00018 | 0.00018 | 0.00021 | 0.00019 | - | - |
| Ba-D | mg/L | 0.0011 | 0.0005 | 0.0011 | 0.001 | 0.0011 | 0.00096 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.000008 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000360 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 3.39 | 3.21 | 3.6 | 3.64 | 3.87 | 3.54 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00032 | 0.00041 | 0.00040 | 0.00041 | 0.00041 | 0.00039 | - | - |
| Hard-D | mg/L | 11.3 | 10.8 | 12.2 | 12.4 | 13 | 11.9 | - | - |
| Fe-D | mg/L | 0.0374 | 0.0313 | 0.0369 | 0.0397 | 0.0419 | 0.0374 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 0.695 | 0.669 | 0.77 | 0.802 | 0.801 | 0.747 | - | - |
| Mn-D | mg/L | 0.0057 | 0.0036 | 0.0037 | 0.0037 | 0.0042 | 0.0042 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.064 | 0.056 | 0.069 | 0.065 | 0.07 | 0.065 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 0.952 | 0.896 | 1.08 | 1.11 | 1.1 | 1.028 | - | - |
| Sr-D | mg/L | 0.0106 | 0.0097 | 0.0107 | 0.0112 | 0.0118 | 0.0108 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 76
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| EMS ID | E217018 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | No Name Lake 1 Metre Depth | | | | | | | |
| Site Name | NNL1 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Week 1 | 2.4 | 2.1 | 1.5 | 1.9 | 2.0 | **128** | - |
| Chloro-a | ug/L | No Results | | | | | | - | - |
| Turb | NTU | | 0.27 | 0.26 | 0.31 | 0.28 | 0.28 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | 0.0145 | 0.0120 | 0.0133 | 0.0134 | 0.0133 | - | - |
| As-T | mg/L | | 0.00036 | 0.00041 | 0.00039 | 0.0004 | 0.00039 | - | **0.005** |
| Ba-T | mg/L | | 0.0005 | 0.0011 | 0.0011 | 0.0011 | 0.00095 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 4.52 | 4.70 | 4.56 | 4.89 | 4.67 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | | 15.5 | 16.1 | 15.5 | 16.5 | 15.9 | - | - |
| Fe-T | mg/L | | 0.066 | 0.06 | 0.087 | 0.086 | 0.075 | - | **1** |
| Pb-T | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 1.03 | 1.05 | 0.995 | 1.05 | 1.031 | - | - |
| Mn-T | mg/L | | 0.0039 | 0.0028 | 0.0047 | 0.0041 | 0.0039 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.0001** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.062 | 0.063 | 0.061 | 0.064 | 0.062 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 1.23 | 1.3 | 1.23 | 1.31 | 1.27 | - | - |
| Sr-T | mg/L | | 0.0141 | 0.0142 | 0.0138 | 0.015 | 0.0143 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0126 | 0.0146 | 0.0116 | 0.0122 | 0.0128 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00039 | 0.00037 | 0.00037 | 0.00041 | 0.00038 | - | - |
| Ba-D | mg/L | | 0.0005 | 0.0011 | 0.0011 | 0.0011 | 0.00095 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 4.52 | 4.7 | 4.67 | 4.88 | 4.69 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00039 | 0.00086 | 0.00033 | 0.00035 | 0.00048 | - | - |
| Hard-D | mg/L | | 15.3 | 16.1 | 15.9 | 16.6 | 16 | - | - |
| Fe-D | mg/L | | 0.046 | 0.0758 | 0.0644 | 0.0655 | 0.0629 | - | **0.35** |
| Pb-D | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | | 0.978 | 1.06 | 1.03 | 1.07 | 1.035 | - | - |
| Mn-D | mg/L | | 0.0024 | 0.0045 | 0.0026 | 0.002 | 0.0029 | - | - |
| Hg-D | mg/L | | 0.000001 | 0.000001 | 0.000001 | 0.0000031 | 0.00000152 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.061 | 0.062 | 0.063 | 0.062 | 0.062 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 1.27 | 1.37 | 1.23 | 1.32 | 1.3 | - | - |
| Sr-D | mg/L | | 0.0143 | 0.0144 | 0.0146 | 0.0151 | 0.0146 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 77
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| EMS ID | E217018 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | No Name Lake 1 Metre Depth | | | | | | | |
| Site Name | NNL1 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | | | | | 128 | - |
| Chloro-a | ug/L | | | | | | | - | - |
| Turb | NTU | | | | | | | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | | | | | | - | - |
| As-T | mg/L | | | | | | | - | 0.005 |
| Ba-T | mg/L | | | | | | | - | - |
| B-T | mg/L | | | | | | | - | - |
| Cd-T | mg/L | | | | | | | - | - |
| Ca-T | mg/L | | | | | | | - | - |
| Cr-T | mg/L | | | | | | | - | - |
| Co-T | mg/L | | | | | | | - | 0.05 |
| Cu-T | mg/L | | | | | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | | | | | - | - |
| Fe-T | mg/L | | | | | | | - | 1 |
| Pb-T | mg/L | | | | | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | | | | | - | - |
| Mn-T | mg/L | | | | | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | | | | | - | 0.0001 |
| Mo-T | mg/L | | | | | | | - | - |
| Ni-T | mg/L | | | | | | | - | 0.025 |
| K-T | mg/L | | | | | | | - | - |
| S-T | mg/L | | | | | | | - | - |
| Se-T | mg/L | | | | | | | - | - |
| Ag-T | mg/L | | | | | | | - | 0.0001 |
| Na-T | mg/L | | | | | | | - | - |
| Sr-T | mg/L | | | | | | | - | - |
| Zn-T | mg/L | | | | | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | | | | | 0.05 | 0.1 |
| As-D | mg/L | | | | | | | - | - |
| Ba-D | mg/L | | | | | | | - | - |
| B-D | mg/L | | | | | | | - | - |
| Cd-D | mg/L | | | | | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | | | | | - | - |
| Cr-D | mg/L | | | | | | | - | - |
| Co-D | mg/L | | | | | | | - | - |
| Cu-D | mg/L | | | | | | | - | - |
| Hard-D | mg/L | | | | | | | - | - |
| Fe-D | mg/L | | | | | | | - | 0.35 |
| Pb-D | mg/L | | | | | | | - | - |
| Mg-D | mg/L | | | | | | | - | - |
| Mn-D | mg/L | | | | | | | - | - |
| Hg-D | mg/L | | | | | | | - | - |
| Mo-D | mg/L | | | | | | | - | - |
| Ni-D | mg/L | | | | | | | - | - |
| K-D | mg/L | | | | | | | - | - |
| S-D | mg/L | | | | | | | - | - |
| Se-D | mg/L | | | | | | | - | - |
| Na-D | mg/L | | | | | | | - | - |
| Sr-D | mg/L | | | | | | | - | - |
| Zn-D | mg/L | | | | | | | - | - |

# Table 78
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| EMS ID | E217018 | No Name Lake 4 Metre Depth | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | NNL4 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 9-Apr-19 | 18-Apr-19 | 24-Apr-19 | 1-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | 1.8 | 1.5 | 0.5 | 2.1 | 2.1 | 1.6 | **128** | - |
| Turb | NTU | 0.41 | 0.57 | 0.52 | 0.31 | 0.39 | 0.44 | - | - |
| Alk-T | mg/L | 10.7 | 11.8 | 10.4 | 9.9 | 11.5 | 10.9 | - | - |
| P-T | mg/L | 0.004 | 0.0031 | 0.0071 | 0.0069 | 0.0031 | 0.0048 | - | - |
| Al-T | mg/L | 0.0506 | 0.0439 | 0.0436 | 0.0371 | 0.0356 | 0.0422 | - | - |
| As-T | mg/L | 0.00019 | 0.00027 | 0.00020 | 0.00022 | 0.00022 | 0.00022 | - | **0.005** |
| Ba-T | mg/L | 0.0012 | 0.0011 | 0.0012 | 0.0011 | 0.0011 | 0.0011 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 3.52 | 3.59 | 4.12 | 3.52 | 3.76 | 3.7 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 11.8 | 12.2 | 13.7 | 11.8 | 12.7 | 12.4 | - | - |
| Fe-T | mg/L | 0.077 | 0.067 | 0.08 | 0.053 | 0.054 | 0.066 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 0.726 | 0.776 | 0.823 | 0.73 | 0.792 | 0.769 | - | - |
| Mn-T | mg/L | 0.0073 | 0.0055 | 0.0088 | 0.0035 | 0.0037 | 0.0058 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.073 | 0.064 | 0.073 | 0.063 | 0.058 | 0.066 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 0.96 | 1.01 | 1.06 | 0.921 | 1.03 | 0.996 | - | - |
| Sr-T | mg/L | 0.0109 | 0.0109 | 0.0128 | 0.0106 | 0.0116 | 0.0114 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0352 | 0.0277 | 0.0346 | 0.0321 | 0.0304 | 0.032 | **0.05** | **0.1** |
| As-D | mg/L | 0.00019 | 0.00018 | 0.00018 | 0.00019 | 0.00021 | 0.00019 | - | - |
| Ba-D | mg/L | 0.001 | 0.0005 | 0.0011 | 0.0011 | 0.0011 | 0.00096 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.000007 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000340 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 3.44 | 3.21 | 3.58 | 3.61 | 3.74 | 3.52 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.0003 | 0.00037 | 0.00041 | 0.00042 | 0.0004 | 0.00038 | - | - |
| Hard-D | mg/L | 11.5 | 10.8 | 12.2 | 12.3 | 12.6 | 11.9 | - | - |
| Fe-D | mg/L | 0.0436 | 0.0359 | 0.0362 | 0.037 | 0.0399 | 0.0385 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 0.702 | 0.679 | 0.782 | 0.792 | 0.785 | 0.748 | - | - |
| Mn-D | mg/L | 0.0057 | 0.0035 | 0.003 | 0.0029 | 0.0034 | 0.0037 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.068 | 0.055 | 0.071 | 0.066 | 0.065 | 0.065 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 0.985 | 0.897 | 1.03 | 1.08 | 1.07 | 1.012 | - | - |
| Sr-D | mg/L | 0.0107 | 0.01 | 0.0111 | 0.0114 | 0.0116 | 0.011 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0475 | 0.01150 | - | - |

# Table 79
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| EMS ID | E217018 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | No Name Lake 4 Metre Depth | | | | | | | |
| Site Name | NNL4 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Week 1 | 2.40 | 0.5 | 1.60 | 1.8 | 1.58 | **128** | - |
| Turb | NTU | No Results | 0.49 | 0.37 | 0.31 | 0.27 | 0.36 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | 0.0189 | 0.0156 | 0.0153 | 0.0131 | 0.0157 | - | - |
| As-T | mg/L | | 0.00043 | 0.00042 | 0.00039 | 0.0004 | 0.00041 | - | **0.005** |
| Ba-T | mg/L | | 0.0013 | 0.0012 | 0.0012 | 0.0011 | 0.0012 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 4.7 | 4.89 | 4.81 | 4.88 | 4.82 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | | 16.1 | 16.8 | 16.3 | 16.6 | 16.5 | - | - |
| Fe-T | mg/L | | 0.124 | 0.091 | 0.102 | 0.09 | 0.102 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 1.06 | 1.1 | 1.05 | 1.06 | 1.07 | - | - |
| Mn-T | mg/L | | 0.0065 | 0.0044 | 0.0054 | 0.0043 | 0.0052 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | | 0.066 | 0.069 | 0.064 | 0.059 | 0.064 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 1.24 | 1.29 | 1.25 | 1.29 | 1.27 | - | - |
| Sr-T | mg/L | | 0.0147 | 0.0150 | 0.0144 | 0.0151 | 0.0148 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0159 | 0.0196 | 0.015 | 0.0111 | 0.0154 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00043 | 0.00041 | 0.00035 | 0.00037 | 0.00039 | - | - |
| Ba-D | mg/L | | 0.0012 | 0.0013 | 0.0012 | 0.0011 | 0.0012 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 4.74 | 4.91 | 4.76 | 4.78 | 4.80 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00037 | 0.0004 | 0.00046 | 0.00035 | 0.0004 | - | - |
| Hard-D | mg/L | | 16.1 | 16.8 | 16.1 | 16.2 | 16.3 | - | - |
| Fe-D | mg/L | | 0.0924 | 0.119 | 0.0765 | 0.0702 | 0.0895 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 1.04 | 1.1 | 1.03 | 1.03 | 1.05 | - | - |
| Mn-D | mg/L | | 0.0036 | 0.0065 | 0.0038 | 0.002 | 0.004 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0025 | 0.00100 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.065 | 0.074 | 0.065 | 0.063 | 0.067 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 1.26 | 1.29 | 1.21 | 1.27 | 1.26 | - | - |
| Sr-D | mg/L | | 0.0152 | 0.0149 | 0.0148 | 0.0153 | 0.015 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 80
# 2019-2020 Annual Report

| EMS ID | E217018 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | No Name Lake 4 Metre Depth | | | | | | | |
| Site Name | NNL4 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | | | | | 128 | - |
| Turb | NTU | | | | | | | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | | | | | | - | - |
| As-T | mg/L | | | | | | | - | 0.005 |
| Ba-T | mg/L | | | | | | | - | - |
| B-T | mg/L | | | | | | | - | - |
| Cd-T | mg/L | | | | | | | - | - |
| Ca-T | mg/L | | | | | | | - | - |
| Cr-T | mg/L | | | | | | | - | - |
| Co-T | mg/L | | | | | | | - | 0.05 |
| Cu-T | mg/L | | | | | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | | | | | - | - |
| Fe-T | mg/L | | | | | | | - | 1 |
| Pb-T | mg/L | | | | | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | | | | | - | - |
| Mn-T | mg/L | | | | | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | | | | | - | 0.00010 |
| Mo-T | mg/L | | | | | | | - | - |
| Ni-T | mg/L | | | | | | | - | 0.025 |
| K-T | mg/L | | | | | | | - | - |
| S-T | mg/L | | | | | | | - | - |
| Se-T | mg/L | | | | | | | - | - |
| Ag-T | mg/L | | | | | | | - | 0.0001 |
| Na-T | mg/L | | | | | | | - | - |
| Sr-T | mg/L | | | | | | | - | - |
| Zn-T | mg/L | | | | | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | | | | | 0.05 | 0.1 |
| As-D | mg/L | | | | | | | - | - |
| Ba-D | mg/L | | | | | | | - | - |
| B-D | mg/L | | | | | | | - | - |
| Cd-D | mg/L | | | | | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | | | | | - | - |
| Cr-D | mg/L | | | | | | | - | - |
| Co-D | mg/L | | | | | | | - | - |
| Cu-D | mg/L | | | | | | | - | - |
| Hard-D | mg/L | | | | | | | - | - |
| Fe-D | mg/L | | | | | | | - | 0.35 |
| Pb-D | mg/L | | | | | | | - | - |
| Mg-D | mg/L | | | | | | | - | - |
| Mn-D | mg/L | | | | | | | - | - |
| Hg-D | mg/L | | | | | | | - | - |
| Mo-D | mg/L | | | | | | | - | - |
| Ni-D | mg/L | | | | | | | - | - |
| K-D | mg/L | | | | | | | - | - |
| S-D | mg/L | | | | | | | - | - |
| Se-D | mg/L | | | | | | | - | - |
| Na-D | mg/L | | | | | | | - | - |
| Sr-D | mg/L | | | | | | | - | - |
| Zn-D | mg/L | | | | | | | - | - |

# Table 81
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| EMS ID | E217018 | No Name Lake 9 Metre Depth | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | NNL9 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 9-Apr-19 | 18-Apr-19 | 24-Apr-19 | 1-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 4.7 | 3.7 | 3.4 | 3.9 | 4.8 | 4.1 | **128** | - |
| Turb | NTU | 0.5 | 0.47 | 0.37 | 0.48 | 0.35 | 0.43 | - | - |
| Alk-T | mg/L | 11.1 | 11.3 | 10.7 | 11.7 | 10.9 | 11.1 | - | - |
| P-T | mg/L | 0.001 | 0.0015 | 0.0059 | 0.0037 | 0.0032 | 0.00306 | - | - |
| Al-T | mg/L | 0.05 | 0.152 | 0.0439 | 0.042 | 0.0375 | 0.0651 | - | - |
| As-T | mg/L | 0.0002 | 0.00025 | 0.00019 | 0.00023 | 0.0002 | 0.00021 | - | **0.005** |
| Ba-T | mg/L | 0.0014 | 0.0013 | 0.0013 | 0.0014 | 0.0014 | 0.0014 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 4.48 | 4.28 | 4.34 | 4.29 | 4.46 | 4.37 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 14.7 | 14.3 | 14.5 | 14.2 | 14.5 | 14.4 | - | - |
| Fe-T | mg/L | 0.105 | 0.099 | 0.1 | 0.1 | 0.093 | 0.099 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 0.857 | 0.883 | 0.886 | 0.851 | 0.827 | 0.861 | - | - |
| Mn-T | mg/L | 0.0146 | 0.013 | 0.0117 | 0.011 | 0.0099 | 0.012 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.084 | 0.077 | 0.075 | 0.078 | 0.082 | 0.079 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 1.06 | 1.06 | 1.06 | 1.02 | 1.01 | 1.04 | - | - |
| Sr-T | mg/L | 0.0161 | 0.015 | 0.0144 | 0.0147 | 0.0152 | 0.0151 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0377 | 0.031 | 0.0356 | 0.0337 | 0.0346 | 0.0345 | **0.05** | **0.1** |
| As-D | mg/L | 0.00019 | 0.00017 | 0.00017 | 0.00018 | 0.00017 | 0.00018 | - | - |
| Ba-D | mg/L | 0.0013 | 0.0012 | 0.0012 | 0.0013 | 0.0013 | 0.0013 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.000008 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000036 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 4.32 | 3.74 | 4.24 | 4.17 | 4.39 | 4.17 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00031 | 0.00041 | 0.00042 | 0.0004 | 0.00039 | 0.00039 | - | - |
| Hard-D | mg/L | 14.2 | 12.5 | 14 | 13.9 | 14.5 | 13.8 | - | - |
| Fe-D | mg/L | 0.0604 | 0.0491 | 0.0494 | 0.0541 | 0.0479 | 0.0522 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 0.817 | 0.759 | 0.831 | 0.846 | 0.860 | 0.823 | - | - |
| Mn-D | mg/L | 0.0114 | 0.0078 | 0.0057 | 0.0063 | 0.0055 | 0.0073 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.073 | 0.072 | 0.078 | 0.074 | 0.081 | 0.076 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 1.02 | 0.946 | 1.11 | 1.06 | 1.06 | 1.039 | - | - |
| Sr-D | mg/L | 0.0151 | 0.0137 | 0.0143 | 0.0144 | 0.015 | 0.0145 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 82
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| EMS ID | E217018 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | No Name Lake 9 Metre Depth | | | | | | | |
| Site Name | NNL9 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Week 1 | 2.4 | 3.9 | 4.2 | 4.2 | 3.7 | **128** | - |
| Turb | NTU | No Results | 0.73 | 0.36 | 0.44 | 0.47 | 0.5 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | 0.0334 | 0.0357 | 0.0304 | 0.0348 | 0.0336 | - | - |
| As-T | mg/L | | 0.00019 | 0.00018 | 0.00017 | 0.00015 | 0.00017 | - | **0.005** |
| Ba-T | mg/L | | 0.0014 | 0.0014 | 0.0014 | 0.0014 | 0.0014 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 4.4 | 4.44 | 4.2 | 4.57 | 4.4 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | | 14.6 | 14.8 | 14 | 15.1 | 14.6 | - | - |
| Fe-T | mg/L | | 0.104 | 0.098 | 0.083 | 0.102 | 0.097 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 0.883 | 0.909 | 0.854 | 0.89 | 0.884 | - | - |
| Mn-T | mg/L | | 0.0111 | 0.0111 | 0.01 | 0.0125 | 0.0112 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.072 | 0.077 | 0.072 | 0.076 | 0.074 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 1.06 | 1.16 | 1.040 | 1.08 | 1.08 | - | - |
| Sr-T | mg/L | | 0.0156 | 0.0154 | 0.0142 | 0.0162 | 0.0154 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0309 | 0.0308 | 0.0263 | 0.0292 | 0.0293 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00013 | 0.00015 | 0.00017 | 0.00012 | 0.00014 | - | - |
| Ba-D | mg/L | | 0.0013 | 0.0014 | 0.0013 | 0.0014 | 0.0014 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 4.41 | 4.44 | 4.32 | 4.57 | 4.44 | - | - |
| Cr-D | mg/L | | 0.0011 | 0.0005 | 0.0005 | 0.0005 | 0.00065 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00035 | 0.00034 | 0.00033 | 0.00033 | 0.00034 | - | - |
| Hard-D | mg/L | | 14.6 | 15.0 | 14.3 | 15 | 14.7 | - | - |
| Fe-D | mg/L | | 0.0493 | 0.0449 | 0.0409 | 0.0489 | 0.046 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 0.87 | 0.939 | 0.863 | 0.865 | 0.884 | - | - |
| Mn-D | mg/L | | 0.0083 | 0.0072 | 0.006 | 0.0087 | 0.0076 | - | - |
| Hg-D | mg/L | | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0016 | 0.0085 | 0.0005 | 0.00278 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.075 | 0.078 | 0.077 | 0.073 | 0.076 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 1.06 | 1.140 | 1.05 | 1.08 | 1.08 | - | - |
| Sr-D | mg/L | | 0.0161 | 0.0154 | 0.015 | 0.0159 | 0.0156 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 83
# 2019-2020 Annual Report

| EMS ID | E217018 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | No Name Lake 9 Metre Depth | | | | | | | |
| Site Name | NNL9 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | | | | | 128 | - |
| Turb | NTU | | | | | | | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | | | | | | - | - |
| As-T | mg/L | | | | | | | - | 0.005 |
| Ba-T | mg/L | | | | | | | - | - |
| B-T | mg/L | | | | | | | - | - |
| Cd-T | mg/L | | | | | | | - | - |
| Ca-T | mg/L | | | | | | | - | - |
| Cr-T | mg/L | | | | | | | - | - |
| Co-T | mg/L | | | | | | | - | 0.05 |
| Cu-T | mg/L | | | | | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | | | | | - | - |
| Fe-T | mg/L | | | | | | | - | 1 |
| Pb-T | mg/L | | | | | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | | | | | - | - |
| Mn-T | mg/L | | | | | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | | | | | - | 0.00010 |
| Mo-T | mg/L | | | | | | | - | - |
| Ni-T | mg/L | | | | | | | - | 0.025 |
| K-T | mg/L | | | | | | | - | - |
| S-T | mg/L | | | | | | | - | - |
| Se-T | mg/L | | | | | | | - | - |
| Ag-T | mg/L | | | | | | | - | 0.0001 |
| Na-T | mg/L | | | | | | | - | - |
| Sr-T | mg/L | | | | | | | - | - |
| Zn-T | mg/L | | | | | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | | | | | 0.05 | 0.1 |
| As-D | mg/L | | | | | | | - | - |
| Ba-D | mg/L | | | | | | | - | - |
| B-D | mg/L | | | | | | | - | - |
| Cd-D | mg/L | | | | | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | | | | | - | - |
| Cr-D | mg/L | | | | | | | - | - |
| Co-D | mg/L | | | | | | | - | - |
| Cu-D | mg/L | | | | | | | - | - |
| Hard-D | mg/L | | | | | | | - | - |
| Fe-D | mg/L | | | | | | | - | 0.35 |
| Pb-D | mg/L | | | | | | | - | - |
| Mg-D | mg/L | | | | | | | - | - |
| Mn-D | mg/L | | | | | | | - | - |
| Hg-D | mg/L | | | | | | | - | - |
| Mo-D | mg/L | | | | | | | - | - |
| Ni-D | mg/L | | | | | | | - | - |
| K-D | mg/L | | | | | | | - | - |
| S-D | mg/L | | | | | | | - | - |
| Se-D | mg/L | | | | | | | - | - |
| Na-D | mg/L | | | | | | | - | - |
| Sr-D | mg/L | | | | | | | - | - |
| Zn-D | mg/L | | | | | | | - | - |

# Table 84
# 2019-2020 Annual Report

| EMS ID | E217018 | No Name Lake 1 Metre From Bottom Depth | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | NNLB | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 9-Apr-19 | 18-Apr-19 | 24-Apr-19 | 1-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | 5.1 | 4.8 | 4.9 | 5.4 | 4.4 | 4.9 | **128** | - |
| Turb | NTU | 0.50 | 0.58 | 0.47 | 0.49 | 0.49 | 0.51 | - | - |
| Alk-T | mg/L | 11.2 | 9.4 | 9.6 | 9.5 | 11.5 | 10.2 | - | - |
| P-T | mg/L | 0.0036 | 0.0038 | 0.0047 | 0.0051 | 0.0034 | 0.0041 | - | - |
| Al-T | mg/L | 0.0463 | 0.0478 | 0.0415 | 0.0418 | 0.0416 | 0.0438 | - | - |
| As-T | mg/L | 0.00027 | 0.00022 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | - | **0.005** |
| Ba-T | mg/L | 0.0014 | 0.0014 | 0.0016 | 0.0014 | 0.0016 | 0.0015 | - | - |
| B-T | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | 0.0250 | - | - |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.0000050 | - | - |
| Ca-T | mg/L | 4.68 | 4.98 | 4.65 | 4.63 | 4.81 | 4.75 | - | - |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.00050 | - | - |
| Co-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.000100 | - | **0.050** |
| Cu-T | mg/L | 0.00068 | 0.00060 | 0.00056 | 0.00054 | 0.00093 | 0.00066 | **0.0020** | **0.0070** |
| Hard-T | mg/L | 15.6 | 16.3 | 15.3 | 15.1 | 15.8 | 15.6 | - | - |
| Fe-T | mg/L | 0.124 | 0.135 | 0.118 | 0.114 | 0.123 | 0.123 | - | **1.0** |
| Pb-T | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 0.951 | 0.938 | 0.904 | 0.863 | 0.909 | 0.913 | - | - |
| Mn-T | mg/L | 0.0198 | 0.0186 | 0.0189 | 0.0191 | 0.0190 | 0.0191 | **0.70** | **0.80** |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.00050 | - | - |
| Ni-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.094 | 0.096 | 0.094 | 0.083 | 0.086 | 0.091 | - | - |
| S-T | mg/L | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 | 1.50 | - | - |
| Se-T | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.000050 | - | - |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 1.13 | 1.15 | 1.14 | 1.05 | 1.19 | 1.13 | - | - |
| Sr-T | mg/L | 0.0161 | 0.0165 | 0.0171 | 0.0171 | 0.0183 | 0.0170 | - | - |
| Zn-T | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0356 | 0.0420 | 0.0382 | 0.0343 | 0.0349 | 0.0370 | **0.05** | **0.1** |
| As-D | mg/L | 0.00021 | 0.00022 | 0.00019 | 0.00020 | 0.00020 | 0.00020 | - | - |
| Ba-D | mg/L | 0.0014 | 0.0015 | 0.0015 | 0.0013 | 0.0013 | 0.0014 | - | - |
| B-D | mg/L | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 | 0.0250 | - | - |
| Cd-D | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | <0.0000050 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 4.43 | 4.93 | 4.74 | 4.46 | 4.74 | 4.66 | - | - |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.00050 | - | - |
| Co-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00059 | 0.00049 | 0.00092 | 0.00043 | 0.00061 | - | - |
| Hard-D | mg/L | 14.6 | 16.1 | 15.4 | 14.9 | 15.6 | 15.3 | - | - |
| Fe-D | mg/L | 0.0668 | 0.0809 | 0.0717 | 0.0762 | 0.0764 | 0.0744 | - | **0.35** |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.000100 | - | - |
| Mg-D | mg/L | 0.867 | 0.927 | 0.853 | 0.900 | 0.902 | 0.890 | - | - |
| Mn-D | mg/L | 0.0164 | 0.0176 | 0.0162 | 0.0158 | 0.0152 | 0.0162 | - | - |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000025 | 0.00000130 | - | - |
| Mo-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.00050 | - | - |
| Ni-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.00050 | - | - |
| K-D | mg/L | 0.082 | 0.094 | 0.091 | 0.083 | 0.078 | 0.086 | - | - |
| S-D | mg/L | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 | 1.50 | - | - |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.000050 | - | - |
| Na-D | mg/L | 1.11 | 1.18 | 1.15 | 1.11 | 1.18 | 1.15 | - | - |
| Sr-D | mg/L | 0.0160 | 0.0182 | 0.0170 | 0.0156 | 0.0161 | 0.0166 | - | - |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.00250 | - | - |

# Table 85
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| EMS ID | E217018 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | NNLB | | | | | | | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Week 1 | 2.50 | 4.8 | 4.70 | 4.7 | 4.2 | **128** | - |
| Turb | NTU | No Results | 0.52 | 0.51 | 0.53 | 0.38 | 0.48 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | 0.0239 | 0.0323 | 0.0356 | 0.0349 | 0.0317 | - | - |
| As-T | mg/L | | 0.0003 | 0.00021 | 0.00018 | 0.00018 | 0.00022 | - | **0.005** |
| Ba-T | mg/L | | 0.0012 | 0.0016 | 0.0015 | 0.0016 | 0.0015 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 4.41 | 4.59 | 4.34 | 4.59 | 4.48 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.050** |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.0020** | **0.0070** |
| Hard-T | mg/L | | 15.1 | 15.4 | 14.3 | 15.2 | 15 | - | - |
| Fe-T | mg/L | | 0.088 | 0.128 | 0.134 | 0.135 | 0.121 | - | **1.0** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 0.99 | 0.946 | 0.847 | 0.905 | 0.922 | - | - |
| Mn-T | mg/L | | 0.0073 | 0.0136 | 0.0147 | 0.0152 | 0.0127 | **0.70** | **0.80** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.067 | 0.082 | 0.076 | 0.081 | 0.077 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 1.19 | 1.11 | 1.04 | 1.12 | 1.12 | - | - |
| Sr-T | mg/L | | 0.0146 | 0.0165 | 0.0149 | 0.0163 | 0.0156 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0185 | 0.0374 | 0.0304 | 0.0294 | 0.0289 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00030 | 0.00026 | 0.00014 | 0.00013 | 0.00021 | - | - |
| Ba-D | mg/L | | 0.0011 | 0.0016 | 0.0014 | 0.0015 | 0.0014 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 4.43 | 4.68 | 4.42 | 4.49 | 4.5 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00046 | 0.00039 | 0.00032 | 0.00035 | 0.00038 | - | - |
| Hard-D | mg/L | | 14.9 | 15.5 | 14.6 | 14.8 | 15 | - | - |
| Fe-D | mg/L | | 0.0473 | 0.19 | 0.0665 | 0.0607 | 0.0911 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 0.932 | 0.927 | 0.867 | 0.878 | 0.901 | - | - |
| Mn-D | mg/L | | 0.004 | 0.0159 | 0.0114 | 0.0111 | 0.0106 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.00000100 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.065 | 0.081 | 0.079 | 0.079 | 0.076 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.50 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 1.21 | 1.14 | 1.04 | 1.09 | 1.12 | - | - |
| Sr-D | mg/L | | 0.0152 | 0.0167 | 0.0159 | 0.0162 | 0.016 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 86
# 2019-2020 Annual Report

| EMS ID | E217018 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | No Name Lake 1 Metre From Bottom Depth | | | | | | | |
| Site Name | NNLB | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | | | | | 128 | - |
| Turb | NTU | | | | | | | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | | | | | | - | - |
| As-T | mg/L | | | | | | | - | 0.005 |
| Ba-T | mg/L | | | | | | | - | - |
| B-T | mg/L | | | | | | | - | - |
| Cd-T | mg/L | | | | | | | - | - |
| Ca-T | mg/L | | | | | | | - | - |
| Cr-T | mg/L | | | | | | | - | - |
| Co-T | mg/L | | | | | | | - | 0.050 |
| Cu-T | mg/L | | | | | | | 0.0020 | 0.0070 |
| Hard-T | mg/L | | | | | | | - | - |
| Fe-T | mg/L | | | | | | | - | 1.0 |
| Pb-T | mg/L | | | | | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | | | | | - | - |
| Mn-T | mg/L | | | | | | | 0.70 | 0.80 |
| Hg-T | mg/L | | | | | | | - | 0.00010 |
| Mo-T | mg/L | | | | | | | - | - |
| Ni-T | mg/L | | | | | | | - | 0.025 |
| K-T | mg/L | | | | | | | - | - |
| S-T | mg/L | | | | | | | - | - |
| Se-T | mg/L | | | | | | | - | - |
| Ag-T | mg/L | | | | | | | - | 0.0001 |
| Na-T | mg/L | | | | | | | - | - |
| Sr-T | mg/L | | | | | | | - | - |
| Zn-T | mg/L | | | | | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | | | | | 0.05 | 0.1 |
| As-D | mg/L | | | | | | | - | - |
| Ba-D | mg/L | | | | | | | - | - |
| B-D | mg/L | | | | | | | - | - |
| Cd-D | mg/L | | | | | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | | | | | - | - |
| Cr-D | mg/L | | | | | | | - | - |
| Co-D | mg/L | | | | | | | - | - |
| Cu-D | mg/L | | | | | | | - | - |
| Hard-D | mg/L | | | | | | | - | - |
| Fe-D | mg/L | | | | | | | - | 0.35 |
| Pb-D | mg/L | | | | | | | - | - |
| Mg-D | mg/L | | | | | | | - | - |
| Mn-D | mg/L | | | | | | | - | - |
| Hg-D | mg/L | | | | | | | - | - |
| Mo-D | mg/L | | | | | | | - | - |
| Ni-D | mg/L | | | | | | | - | - |
| K-D | mg/L | | | | | | | - | - |
| S-D | mg/L | | | | | | | - | - |
| Se-D | mg/L | | | | | | | - | - |
| Na-D | mg/L | | | | | | | - | - |
| Sr-D | mg/L | | | | | | | - | - |
| Zn-D | mg/L | | | | | | | - | - |

# Table 87
# 2019-2020 Annual Report

| EMS ID | E206619 | Long Lake Middle 1 Metre Depth<br>5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLM1 | | | | | | | | |
| Date | | 9-Apr-19 | 17-Apr-19 | 24-Apr-19 | 1-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 56.9 | 46.5 | 32.2 | 36.4 | 40.1 | 42.4 | **128** | - |
| Chloro-a | ug/L | | | | 1.03 | | 1.030 | - | - |
| Turb | NTU | 0.36 | 0.43 | 0.62 | 0.3 | 0.3 | 0.40 | - | - |
| Alk-T | mg/L | 30.2 | 23.3 | 22.2 | 25 | 24.4 | 25.0 | - | - |
| P-T | mg/L | 0.0034 | 0.0015 | 0.0047 | 0.007 | 0.0045 | 0.0042 | - | - |
| Al-T | mg/L | 0.0349 | 0.0347 | 0.0314 | 0.0299 | 0.025 | 0.0312 | - | - |
| As-T | mg/L | 0.00029 | 0.00030 | 0.00031 | 0.00032 | 0.00035 | 0.00031 | - | **0.005** |
| Ba-T | mg/L | 0.0047 | 0.0041 | 0.0033 | 0.0035 | 0.004 | 0.0039 | - | - |
| B-T | mg/L | 0.059 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0318 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 24.6 | 19.7 | 14.1 | 15.9 | 18.8 | 18.6 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 73.3 | 58.5 | 42.9 | 47.8 | 57.2 | 55.9 | - | - |
| Fe-T | mg/L | 0.07 | 0.07 | 0.062 | 0.062 | 0.058 | 0.064 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 2.86 | 2.24 | 1.86 | 1.99 | 2.46 | 2.28 | - | - |
| Mn-T | mg/L | 0.0148 | 0.0119 | 0.0076 | 0.0077 | 0.0086 | 0.0101 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.307 | 0.245 | 0.177 | 0.2 | 0.217 | 0.229 | - | - |
| S-T | mg/L | 21.5 | 16.4 | 11.2 | 12.4 | 15.4 | 15.4 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 8.72 | 6.12 | 4.21 | 4.86 | 5.89 | 5.96 | - | - |
| Sr-T | mg/L | 0.167 | 0.131 | 0.0844 | 0.098 | 0.118 | 0.120 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0223 | 0.0236 | 0.0252 | 0.0238 | 0.0211 | 0.0232 | **0.05** | **0.1** |
| As-D | mg/L | 0.00026 | 0.00029 | 0.00029 | 0.00029 | 0.00034 | 0.00029 | - | - |
| Ba-D | mg/L | 0.0042 | 0.004 | 0.0033 | 0.0035 | 0.0041 | 0.0038 | - | - |
| B-D | mg/L | 0.052 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0304 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 23.6 | 19.9 | 14.9 | 15.9 | 18.4 | 18.5 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.0003 | 0.00032 | 0.00037 | 0.00041 | 0.00035 | 0.000350 | - | - |
| Hard-D | mg/L | 70.1 | 58.9 | 44.8 | 48.4 | 55.2 | 55.5 | - | - |
| Fe-D | mg/L | 0.0447 | 0.0467 | 0.0409 | 0.0424 | 0.0401 | 0.043 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 2.73 | 2.25 | 1.86 | 2.14 | 2.22 | 2.24 | - | - |
| Mn-D | mg/L | 0.0121 | 0.0093 | 0.006 | 0.0064 | 0.0069 | 0.0081 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.274 | 0.225 | 0.181 | 0.211 | 0.222 | 0.223 | - | - |
| S-D | mg/L | 19.6 | 14.6 | 11.8 | 13 | 14.2 | 14.6 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 8.2 | 5.99 | 4.48 | 5.29 | 5.88 | 5.97 | - | - |
| Sr-D | mg/L | 0.161 | 0.128 | 0.0904 | 0.102 | 0.116 | 0.1195 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 88
# 2019-2020 Annual Report

| EMS ID | E206619 | Long Lake Middle 1 Metre Depth<br>5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLM1 | | | | | | | | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 79 | 84 | 85 | 83 | 82.8 | **128** | - |
| Chloro-a | ug/L | No Results | | | | | | - | - |
| Turb | NTU | | 0.26 | 0.19 | 0.55 | 0.28 | 0.32 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | **0.007** | - |
| Al-T | mg/L | | 0.008 | 0.008 | 0.0082 | 0.0084 | 0.0081 | - | - |
| As-T | mg/L | | 0.00052 | 0.00054 | 0.00052 | 0.00053 | 0.00053 | - | **0.005** |
| Ba-T | mg/L | | 0.0063 | 0.0064 | 0.0062 | 0.0064 | 0.0063 | - | - |
| B-T | mg/L | | 0.073 | 0.072 | 0.07 | 0.079 | 0.074 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 32.8 | 31.9 | 31.3 | 34.3 | 32.6 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00025 | 0.00071 | 0.00025 | 0.00025 | 0.000365 | **0.002** | **0.007** |
| Hard-T | mg/L | | 97.6 | 95.8 | 93.6 | 103 | 97.5 | - | - |
| Fe-T | mg/L | | 0.022 | 0.014 | 0.022 | 0.02 | 0.02 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.0001 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 3.78 | 3.94 | 3.76 | 4.19 | 3.92 | - | - |
| Mn-T | mg/L | | 0.0039 | 0.0005 | 0.005 | 0.005 | 0.0036 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.342 | 0.347 | 0.336 | 0.355 | 0.345 | - | - |
| S-T | mg/L | | 29.1 | 27.7 | 26.7 | 29 | 28.1 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 9.97 | 10.6 | 10 | 11.3 | 10.47 | - | - |
| Sr-T | mg/L | | 0.217 | 0.22 | 0.209 | 0.24 | 0.222 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0078 | 0.0123 | 0.0072 | 0.0067 | 0.0085 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00053 | 0.00051 | 0.00053 | 0.00051 | 0.00052 | - | - |
| Ba-D | mg/L | | 0.0062 | 0.0064 | 0.0063 | 0.0065 | 0.0064 | - | - |
| B-D | mg/L | | 0.076 | 0.074 | 0.07 | 0.086 | 0.076 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 32.7 | 31.1 | 32.1 | 34.5 | 32.6 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00027 | 0.00035 | 0.00026 | 0.00031 | 0.000300 | - | - |
| Hard-D | mg/L | | 97.8 | 93.2 | 96.1 | 103 | 97.5 | - | - |
| Fe-D | mg/L | | 0.0138 | 0.0266 | 0.0137 | 0.014 | 0.017 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 3.93 | 3.78 | 3.85 | 4.16 | 3.93 | - | - |
| Mn-D | mg/L | | 0.0005 | 0.0047 | 0.0011 | 0.0017 | 0.002 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.351 | 0.348 | 0.347 | 0.362 | 0.352 | - | - |
| S-D | mg/L | | 27.8 | 27.1 | 27.7 | 29.6 | 28.1 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 10.6 | 10.2 | 10 | 11.2 | 10.5 | - | - |
| Sr-D | mg/L | | 0.232 | 0.216 | 0.219 | 0.24 | 0.227 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 89
# 2019-2020 Annual Report

| EMS ID | E206619 | Long Lake Middle 1 Metre Depth<br>5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLM1 | | | | | | | | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 41 | 47 | 37 | 35 | 10 | 34 | **128** | - |
| Chloro-a | ug/L | 1.37 | | | | | 1.370 | - | - |
| Turb | NTU | 0.4 | 0.6 | 0.4 | 0.3 | 0.7 | 0.49 | - | - |
| Alk-T | mg/L | 23 | 23 | 24 | 24 | 14 | 21.6 | - | - |
| P-T | mg/L | 0.0015 | | | | | 0.0015 | - | - |
| Al-T | mg/L | 0.0201 | 0.0262 | 0.0240 | 0.0236 | 0.0578 | 0.0303 | - | - |
| As-T | mg/L | 0.00044 | 0.00051 | 0.00046 | 0.00044 | 0.00041 | 0.00045 | - | **0.005** |
| Ba-T | mg/L | 0.0041 | 0.0050 | 0.0041 | 0.0041 | 0.0025 | 0.004 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000005 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000050 | - | - |
| Ca-T | mg/L | 17.50 | 21.40 | 17.60 | 16.20 | 7.29 | 16 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00053 | 0.000306 | **0.002** | **0.007** |
| Hard-T | mg/L | 53.6 | 65.0 | 54.2 | 50.0 | 23.4 | 49.2 | - | - |
| Fe-T | mg/L | 0.081 | 0.109 | 0.099 | 0.092 | 0.133 | 0.103 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 2.37 | 2.78 | 2.50 | 2.31 | 1.27 | 2.25 | - | - |
| Mn-T | mg/L | 0.006 | 0.0084 | 0.0075 | 0.0069 | 0.0062 | 0.007 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.23 | 0.28 | 0.26 | 0.23 | 0.20 | 0.24 | - | - |
| S-T | mg/L | 13.0 | 16.5 | 13.2 | 11.5 | 3.6 | 11.6 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.0000 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 5.5 | 6.4 | 5.6 | 4.9 | 2.2 | 4.89 | - | - |
| Sr-T | mg/L | 0.11 | 0.14 | 0.11 | 0.10 | 0.03 | 0.096 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0145 | 0.0160 | 0.0197 | 0.0184 | 0.0450 | 0.0227 | **0.05** | **0.1** |
| As-D | mg/L | 0.0004 | 0.0004 | 0.0004 | 0.0004 | 0.0004 | 0.00041 | - | - |
| Ba-D | mg/L | 0.00400 | 0.00480 | 0.00430 | 0.00400 | 0.00240 | 0.0039 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.03 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 17.9 | 20.8 | 18.0 | 16.4 | 7.0 | 16.0 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.00050 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00034 | 0.00041 | 0.00034 | 0.00038 | 0.00051 | 0.000400 | - | - |
| Hard-D | mg/L | 55 | 64 | 55 | 50 | 23 | 49.2 | - | - |
| Fe-D | mg/L | 0.053 | 0.061 | 0.058 | 0.064 | 0.083 | 0.0637 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 2.43 | 2.84 | 2.48 | 2.29 | 1.21 | 2.25 | - | - |
| Mn-D | mg/L | 0.0022 | 0.0049 | 0.0050 | 0.0047 | 0.0039 | 0.0041 | - | - |
| Hg-D | mg/L | 0.000001 | 0.0000 | 0.000001 | 0.0000 | 0.0000 | 0.00000174 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.001 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | 0.00050 | - | - |
| K-D | mg/L | 0.227 | 0.268 | 0.249 | 0.233 | 0.191 | 0.234 | - | - |
| S-D | mg/L | 14.0 | 14.9 | 12.9 | 10.8 | 3.1 | 11.1 | - | - |
| Se-D | mg/L | 0.00005 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000050 | - | - |
| Na-D | mg/L | 5.53 | 6.54 | 5.52 | 4.89 | 2.09 | 4.91 | - | - |
| Sr-D | mg/L | 0.114 | 0.118 | 0.110 | 0.096 | 0.032 | 0.094 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 90
# 2019-2020 Annual Report

| EMS ID | E206619 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLM4 | Long Lake Middle 4 Metre Depth<br>5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 9-Apr-19 | 17-Apr-19 | 24-Apr-19 | 1-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | 107 | 74.8 | 106 | 82.1 | 95 | 93 | **128** | - |
| Turb | NTU | 0.71 | 0.5 | 0.71 | 0.33 | 0.24 | 0.5 | - | - |
| Alk-T | mg/L | 46.9 | 35.3 | 44.7 | 38.5 | 39.4 | 41 | - | - |
| P-T | mg/L | 0.001 | 0.0015 | 0.0034 | 0.0064 | 0.0034 | 0.00314 | - | - |
| Al-T | mg/L | 0.0467 | 0.0406 | 0.0262 | 0.0267 | 0.0213 | 0.0323 | - | - |
| As-T | mg/L | 0.00031 | 0.0003 | 0.00029 | 0.00032 | 0.00031 | 0.00031 | - | **0.005** |
| Ba-T | mg/L | 0.0069 | 0.005 | 0.0064 | 0.0058 | 0.0061 | 0.006 | - | - |
| B-T | mg/L | 0.102 | 0.064 | 0.101 | 0.077 | 0.089 | 0.087 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 40 | 28.2 | 38.2 | 32.4 | 38.3 | 35.4 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00105 | 0.00025 | 0.00025 | 0.00025 | 0.00041 | **0.002** | **0.007** |
| Hard-T | mg/L | 118 | 83.4 | 112 | 95.7 | 112 | 104.2 | - | - |
| Fe-T | mg/L | 0.118 | 0.076 | 0.065 | 0.057 | 0.050 | 0.073 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 4.37 | 3.14 | 4.13 | 3.6 | 4.00 | 3.85 | - | - |
| Mn-T | mg/L | 0.0258 | 0.0164 | 0.0191 | 0.0128 | 0.0103 | 0.0169 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.478 | 0.351 | 0.461 | 0.389 | 0.433 | 0.422 | - | - |
| S-T | mg/L | 36.7 | 25.5 | 35.9 | 30.6 | 31.7 | 32.1 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 14.3 | 10.1 | 13.6 | 11 | 13.2 | 12.4 | - | - |
| Sr-T | mg/L | 0.288 | 0.206 | 0.284 | 0.225 | 0.264 | 0.253 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0195 | 0.017 | 0.0176 | 0.0184 | 0.0148 | 0.0175 | **0.05** | **0.1** |
| As-D | mg/L | 0.00027 | 0.00026 | 0.00026 | 0.00029 | 0.00028 | 0.00027 | - | - |
| Ba-D | mg/L | 0.0067 | 0.0051 | 0.0065 | 0.0056 | 0.0063 | 0.006 | - | - |
| B-D | mg/L | 0.086 | 0.074 | 0.102 | 0.079 | 0.079 | 0.084 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 40 | 30.7 | 41.9 | 34 | 38.3 | 37 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00026 | 0.00035 | 0.00034 | 0.00034 | 0.00031 | 0.00032 | - | - |
| Hard-D | mg/L | 117 | 90.6 | 123 | 101 | 112 | 108.7 | - | - |
| Fe-D | mg/L | 0.062 | 0.0274 | 0.0359 | 0.0368 | 0.0293 | 0.0383 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 4.1 | 3.37 | 4.57 | 3.87 | 3.93 | 3.97 | - | - |
| Mn-D | mg/L | 0.0227 | 0.0005 | 0.012 | 0.0073 | 0.0033 | 0.00916 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.459 | 0.373 | 0.511 | 0.4 | 0.441 | 0.437 | - | - |
| S-D | mg/L | 36.2 | 26.8 | 39.3 | 30.4 | 33.6 | 33.3 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 14.2 | 11 | 16.2 | 11.8 | 12.7 | 13.2 | - | - |
| Sr-D | mg/L | 0.295 | 0.213 | 0.312 | 0.243 | 0.266 | 0.266 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 91
# 2019-2020 Annual Report

| EMS ID | E206619 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLM4 | Long Lake Middle 4 Metre Depth 5 in 30 Weekly Samples | | | | | 4x30 Average | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Week 1 | 74 | 81 | 87 | 82 | 81 | **128** | - |
| Turb | NTU | No Results | 0.22 | 0.22 | 0.17 | 0.2 | 0.2 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | **0.007** | - |
| Al-T | mg/L | | 0.0087 | 0.0085 | 0.007 | 0.0087 | 0.0082 | - | - |
| As-T | mg/L | | 0.00053 | 0.00056 | 0.00054 | 0.00054 | 0.00054 | - | **0.005** |
| Ba-T | mg/L | | 0.0062 | 0.0064 | 0.0062 | 0.0066 | 0.0064 | - | - |
| B-T | mg/L | | 0.076 | 0.073 | 0.072 | 0.08 | 0.075 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 32.3 | 32.2 | 31.6 | 33.8 | 32.5 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | | 96.4 | 96.6 | 94.7 | 102 | 97.4 | - | - |
| Fe-T | mg/L | | 0.028 | 0.023 | 0.015 | 0.023 | 0.022 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 3.86 | 3.94 | 3.82 | 4.13 | 3.94 | - | - |
| Mn-T | mg/L | | 0.0044 | 0.0046 | 0.0011 | 0.0059 | 0.004 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.000001 | 0.0000010 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.356 | 0.345 | 0.343 | 0.359 | 0.351 | - | - |
| S-T | mg/L | | 28 | 27.7 | 27.5 | 29.9 | 28.3 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 10.1 | 10.5 | 10.3 | 11.3 | 10.6 | - | - |
| Sr-T | mg/L | | 0.221 | 0.216 | 0.206 | 0.243 | 0.222 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0074 | 0.0074 | 0.0076 | 0.0066 | 0.0072 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00051 | 0.00054 | 0.00052 | 0.00053 | 0.00053 | - | - |
| Ba-D | mg/L | | 0.0059 | 0.0064 | 0.0063 | 0.0064 | 0.0062 | - | - |
| B-D | mg/L | | 0.075 | 0.073 | 0.071 | 0.082 | 0.075 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 31.8 | 30.9 | 32.2 | 34.4 | 32.3 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00027 | 0.00028 | 0.00027 | 0.00028 | 0.00027 | - | - |
| Hard-D | mg/L | | 95.3 | 92.9 | 96 | 103 | 96.8 | - | - |
| Fe-D | mg/L | | 0.0163 | 0.0125 | 0.0141 | 0.0136 | 0.0141 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 3.84 | 3.8 | 3.79 | 4.08 | 3.88 | - | - |
| Mn-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.338 | 0.342 | 0.35 | 0.358 | 0.347 | - | - |
| S-D | mg/L | | 27 | 27.2 | 27.7 | 28.9 | 27.7 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 10.2 | 10.1 | 10.1 | 10.9 | 10.3 | - | - |
| Sr-D | mg/L | | 0.224 | 0.219 | 0.223 | 0.24 | 0.226 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 92
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| EMS ID | E206619 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLM4 | Long Lake Middle 4 Metre Depth 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | 42.0 | 46.0 | 25.0 | 36.0 | 22.0 | 34.2 | **128** | - |
| Turb | NTU | 0.39 | 0.59 | 0.42 | 0.36 | 0.63 | 0.48 | - | - |
| Alk-T | mg/L | 25 | 25 | 25 | 25 | 18 | 23.6 | - | - |
| P-T | mg/L | 0.003 | | | | | 0.003 | - | - |
| Al-T | mg/L | 0.0204 | 0.0267 | 0.0245 | 0.024 | 0.0376 | 0.0266 | - | - |
| As-T | mg/L | 0.00042 | 0.00048 | 0.00047 | 0.00044 | 0.00041 | 0.00044 | - | **0.005** |
| Ba-T | mg/L | 0.0039 | 0.0051 | 0.0042 | 0.0043 | 0.0033 | 0.0042 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 17.5 | 21.3 | 17.8 | 17.5 | 11.8 | 17.2 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 54 | 65 | 55 | 54 | 37 | 52.9 | - | - |
| Fe-T | mg/L | 0.080 | 0.132 | 0.099 | 0.099 | 0.105 | 0.103 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 2.37 | 2.81 | 2.57 | 2.47 | 1.80 | 2.4 | - | - |
| Mn-T | mg/L | 0.006 | 0.009 | 0.008 | 0.007 | 0.006 | 0.0071 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.229 | 0.28 | 0.26 | 0.245 | 0.206 | 0.244 | - | - |
| S-T | mg/L | 12.6 | 16.5 | 13.4 | 12.9 | 8.0 | 12.7 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 5.4 | 6.5 | 5.6 | 5.3 | 3.6 | 5.27 | - | - |
| Sr-T | mg/L | 0.111 | 0.138 | 0.11 | 0.1040 | 0.0636 | 0.1053 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.003 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.015 | 0.0152 | 0.0184 | 0.0174 | 0.0286 | 0.0189 | **0.05** | **0.1** |
| As-D | mg/L | 0.0004 | 0.00043 | 0.00042 | 0.00042 | 0.00039 | 0.00041 | - | - |
| Ba-D | mg/L | 0.0042 | 0.0045 | 0.0044 | 0.0042 | 0.0032 | 0.0041 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 18.5 | 20.20 | 18.3 | 17.30 | 12 | 17.3 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00031 | 0.00039 | 0.00033 | 0.00036 | 0.00044 | 0.00037 | - | - |
| Hard-D | mg/L | 56 | 62 | 56 | 53 | 37 | 53 | - | - |
| Fe-D | mg/L | 0.053 | 0.061 | 0.058 | 0.061 | 0.073 | 0.0611 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | 2.46 | 2.84 | 2.53 | 2.39 | 1.82 | 2.41 | - | - |
| Mn-D | mg/L | 0.0021 | 0.0049 | 0.0047 | 0.0043 | 0.0041 | 0.004 | - | - |
| Hg-D | mg/L | 0.000001 | 0.0000022 | 0.000001 | 0.0000010 | 0.0000010 | 0.00000124 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.231 | 0.263 | 0.252 | 0.243 | 0.211 | 0.24 | - | - |
| S-D | mg/L | 13.30 | 14.50 | 14.10 | 12.30 | 7.50 | 12.3 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00 | 0.000050 | - | - |
| Na-D | mg/L | 5.7 | 6.6 | 5.6 | 5.3 | 3.6 | 5.36 | - | - |
| Sr-D | mg/L | 0.118 | 0.120 | 0.112 | 0.107 | 0.063 | 0.104 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 93
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| EMS ID | E206619 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLM9 | Long Lake Middle 9 Metre Depth<br>5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 9-Apr-19 | 17-Apr-19 | 24-Apr-19 | 1-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 135 | 56 | 135 | 122 | 129 | 115.4 | **128** | - |
| Turb | NTU | 0.33 | 0.39 | 0.31 | 0.34 | 0.30 | 0.33 | - | - |
| Alk-T | mg/L | 54.1 | 31.4 | 53.3 | 49 | 49.9 | 47.5 | - | - |
| P-T | mg/L | 0.0021 | 0.0015 | 0.0032 | 0.0035 | 0.0033 | 0.00272 | - | - |
| Al-T | mg/L | 0.025 | 0.0325 | 0.018 | 0.0233 | 0.0197 | 0.0237 | - | - |
| As-T | mg/L | 0.00028 | 0.00028 | 0.00025 | 0.00028 | 0.00023 | 0.00026 | - | **0.005** |
| Ba-T | mg/L | 0.0076 | 0.0047 | 0.0072 | 0.0069 | 0.0073 | 0.0067 | - | - |
| B-T | mg/L | 0.128 | 0.052 | 0.138 | 0.115 | 0.12 | 0.111 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 50.9 | 22.0 | 47.3 | 44.3 | 49.6 | 42.8 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 148 | 65.2 | 139 | 130 | 145 | 125.4 | - | - |
| Fe-T | mg/L | 0.073 | 0.07 | 0.034 | 0.063 | 0.064 | 0.061 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 5.16 | 2.49 | 5.08 | 4.76 | 5 | 4.5 | - | - |
| Mn-T | mg/L | 0.0555 | 0.0142 | 0.0363 | 0.0435 | 0.0541 | 0.0407 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.576 | 0.283 | 0.581 | 0.541 | 0.59 | 0.514 | - | - |
| S-T | mg/L | 48.6 | 17.8 | 45.7 | 43.2 | 43.6 | 39.8 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 19.1 | 7.23 | 17.7 | 16 | 17.8 | 15.57 | - | - |
| Sr-T | mg/L | 0.376 | 0.152 | 0.356 | 0.323 | 0.358 | 0.313 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0165 | 0.0226 | 0.0215 | 0.0157 | 0.0161 | 0.0185 | **0.05** | **0.1** |
| As-D | mg/L | 0.00026 | 0.00027 | 0.00027 | 0.00025 | 0.00024 | 0.00026 | - | - |
| Ba-D | mg/L | 0.0075 | 0.0043 | 0.0075 | 0.0068 | 0.0072 | 0.0067 | - | - |
| B-D | mg/L | 0.13 | 0.057 | 0.121 | 0.106 | 0.106 | 0.104 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 49.7 | 23.3 | 51.3 | 44.7 | 47.7 | 43.3 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00025 | 0.00031 | 0.00034 | 0.00032 | 0.00033 | 0.00031 | - | - |
| Hard-D | mg/L | 145 | 68.8 | 151 | 131 | 139 | 127 | - | - |
| Fe-D | mg/L | 0.0399 | 0.0441 | 0.0681 | 0.0308 | 0.0286 | 0.0423 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 5.2 | 2.55 | 5.61 | 4.82 | 4.85 | 4.61 | - | - |
| Mn-D | mg/L | 0.0486 | 0.012 | 0.0528 | 0.0289 | 0.0362 | 0.0357 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.563 | 0.289 | 0.607 | 0.542 | 0.566 | 0.513 | - | - |
| S-D | mg/L | 45.6 | 18.1 | 46.6 | 42.2 | 45.2 | 39.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 18.5 | 7.24 | 19.5 | 17.5 | 17.9 | 16.13 | - | - |
| Sr-D | mg/L | 0.381 | 0.155 | 0.379 | 0.338 | 0.352 | 0.321 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 94
# 2019-2020 Annual Report

| EMS ID | E206619 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLM9 | Long Lake Middle 9 Metre Depth 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 130 | 130 | 140 | 130 | 132.5 | **128** | - |
| Turb | NTU | No Results | 0.23 | 0.16 | 0.18 | 0.22 | 0.2 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | **0.007** | - |
| Al-T | mg/L | | 0.0088 | 0.0077 | 0.0082 | 0.0086 | 0.0083 | - | - |
| As-T | mg/L | | 0.00023 | 0.00022 | 0.00023 | 0.00019 | 0.00022 | - | **0.005** |
| Ba-T | mg/L | | 0.0072 | 0.0074 | 0.0073 | 0.0076 | 0.0074 | - | - |
| B-T | mg/L | | 0.112 | 0.116 | 0.114 | 0.124 | 0.116 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 48.1 | 49.7 | 47.8 | 51.3 | 49.2 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | | 141 | 146 | 140 | 151 | 144.5 | - | - |
| Fe-T | mg/L | | 0.017 | 0.005 | 0.014 | 0.015 | 0.0128 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 5.1 | 5.36 | 5.12 | 5.51 | 5.27 | - | - |
| Mn-T | mg/L | | 0.009 | 0.0041 | 0.0159 | 0.0163 | 0.0113 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.000001 | 0.0000010 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.549 | 0.578 | 0.56 | 0.585 | 0.568 | - | - |
| S-T | mg/L | | 46.3 | 46.2 | 43.9 | 46.3 | 45.7 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 17.9 | 19.6 | 18.5 | 19.8 | 19 | - | - |
| Sr-T | mg/L | | 0.368 | 0.383 | 0.363 | 0.402 | 0.379 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0086 | 0.0092 | 0.0072 | 0.0073 | 0.0081 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00025 | 0.00023 | 0.00022 | 0.0002 | 0.00022 | - | - |
| Ba-D | mg/L | | 0.0071 | 0.0075 | 0.0075 | 0.0075 | 0.0074 | - | - |
| B-D | mg/L | | 0.115 | 0.119 | 0.114 | 0.124 | 0.118 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 47.9 | 49.4 | 48.8 | 51.5 | 49.4 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00027 | 0.0003 | 0.00024 | 0.00028 | 0.00027 | - | - |
| Hard-D | mg/L | | 141 | 145 | 143 | 151 | 145 | - | - |
| Fe-D | mg/L | | 0.0102 | 0.0123 | 0.0087 | 0.0089 | 0.01 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 5.18 | 5.18 | 5.21 | 5.48 | 5.26 | - | - |
| Mn-D | mg/L | | 0.0048 | 0.0077 | 0.0128 | 0.0132 | 0.0096 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.545 | 0.571 | 0.577 | 0.595 | 0.572 | - | - |
| S-D | mg/L | | 42.4 | 45.2 | 45.4 | 45.6 | 44.6 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 18.2 | 18.7 | 18.5 | 19.8 | 18.8 | - | - |
| Sr-D | mg/L | | 0.378 | 0.381 | 0.376 | 0.398 | 0.383 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 95
# 2019-2020 Annual Report

| EMS ID | E206619 | Long Lake Middle 9 Metre Depth 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLM9 | | | | | | | | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 120 | 120 | 110 | 120 | 77 | 109.4 | **128** | - |
| Turb | NTU | 0.35 | 0.56 | 0.38 | 0.28 | 0.66 | 0.45 | - | - |
| Alk-T | mg/L | 47 | 47 | 43 | 49 | 35 | 44.2 | - | - |
| P-T | mg/L | 0.0015 | | | | | 0.0015 | - | - |
| Al-T | mg/L | 0.0141 | 0.0158 | 0.0164 | 0.0118 | 0.0295 | 0.0175 | - | - |
| As-T | mg/L | 0.00028 | 0.00034 | 0.00034 | 0.00028 | 0.00044 | 0.00034 | - | **0.005** |
| Ba-T | mg/L | 0.0073 | 0.0082 | 0.0071 | 0.0076 | 0.0068 | 0.0074 | - | - |
| B-T | mg/L | 0.11 | 0.112 | 0.096 | 0.106 | 0.072 | 0.099 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 44.2 | 46.2 | 39.8 | 44.5 | 32.1 | 41.4 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 130 | 136 | 119 | 132 | 97 | 122.7 | - | - |
| Fe-T | mg/L | 0.061 | 0.073 | 0.076 | 0.055 | 0.162 | 0.085 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 4.72 | 5.04 | 4.63 | 5.11 | 3.99 | 4.7 | - | - |
| Mn-T | mg/L | 0.018 | 0.015 | 0.022 | 0.024 | 0.023 | 0.0204 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.495 | 0.550 | 0.497 | 0.512 | 0.410 | 0.493 | - | - |
| S-T | mg/L | 38 | 42 | 37 | 40.4 | 27.7 | 37 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 15.9 | 16.5 | 14.8 | 16.5 | 10.1 | 14.8 | - | - |
| Sr-T | mg/L | 0.322 | 0.347 | 0.315 | 0.348 | 0.207 | 0.308 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0091 | 0.008 | 0.0107 | 0.008 | 0.0176 | 0.0107 | **0.05** | **0.1** |
| As-D | mg/L | 0.0003 | 0.00026 | 0.0003 | 0.00024 | 0.00041 | 0.0003 | - | - |
| Ba-D | mg/L | 0.0075 | 0.0074 | 0.0072 | 0.0076 | 0.0068 | 0.0073 | - | - |
| B-D | mg/L | 0.103 | 0.101 | 0.095 | 0.106 | 0.071 | 0.095 | - | - |
| Cd-D | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 43.5 | 44.8 | 41.4 | 47.2 | 31.1 | 41.6 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00028 | 0.00033 | 0.00028 | 0.00029 | 0.00038 | 0.00031 | - | - |
| Hard-D | mg/L | 128 | 133 | 122 | 139 | 94.5 | 123.3 | - | - |
| Fe-D | mg/L | 0.0295 | 0.0286 | 0.0395 | 0.0231 | 0.0968 | 0.0435 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | 4.77 | 5.19 | 4.58 | 5.11 | 4.12 | 4.75 | - | - |
| Mn-D | mg/L | 0.0093 | 0.0105 | 0.0176 | 0.0201 | 0.0196 | 0.0154 | - | - |
| Hg-D | mg/L | 0.000001 | 0.0000010 | 0.000001 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.4780 | 0.4940 | 0.4730 | 0.5630 | 0.4140 | 0.484 | - | - |
| S-D | mg/L | 37.40 | 38.00 | 36.20 | 40.70 | 27.10 | 35.9 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00 | 0.000050 | - | - |
| Na-D | mg/L | 15.60 | 17.30 | 14.50 | 17.00 | 10.10 | 14.9 | - | - |
| Sr-D | mg/L | 0.3220 | 0.3280 | 0.2880 | 0.3470 | 0.2080 | 0.299 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 96
# 2019-2020 Annual Report

| EMS ID | E206619 | Long Lake Middle 1 Metre From Bottom Depth 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLMB | | | | | | 5x30 Average | Average | Max |
| Date | | 9-Apr-19 | 17-Apr-19 | 24-Apr-19 | 1-May-19 | 8-May-19 | | | |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 102 | 131 | 142 | 141 | 134 | 130 | **128** | - |
| Turb | NTU | 0.41 | 0.52 | 0.52 | 0.54 | 0.29 | 0.46 | - | - |
| Alk-T | mg/L | 44.5 | 53.5 | 52.2 | 55.1 | 54.5 | 52 | - | - |
| P-T | mg/L | 0.0023 | 0.0015 | 0.0015 | 0.004 | 0.0015 | 0.00216 | - | - |
| Al-T | mg/L | 0.0274 | 0.0216 | 0.0204 | 0.0237 | 0.0189 | 0.0224 | - | - |
| As-T | mg/L | 0.00029 | 0.00027 | 0.00028 | 0.00029 | 0.00027 | 0.00028 | - | **0.005** |
| Ba-T | mg/L | 0.0073 | 0.0092 | 0.0083 | 0.0077 | 0.0079 | 0.0081 | - | - |
| B-T | mg/L | 0.106 | 0.129 | 0.131 | 0.127 | 0.123 | 0.123 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 42.9 | 54.5 | 47.5 | 48.6 | 52.6 | 49.2 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 126 | 158 | 140 | 143 | 154 | 144.2 | - | - |
| Fe-T | mg/L | 0.075 | 0.085 | 0.069 | 0.071 | 0.071 | 0.074 | - | **1.0** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 4.63 | 5.24 | 5.24 | 5.32 | 5.59 | 5.2 | - | - |
| Mn-T | mg/L | 0.0834 | 0.1220 | 0.102 | 0.0897 | 0.0867 | 0.0968 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.5 | 0.607 | 0.59 | 0.608 | 0.625 | 0.586 | - | - |
| S-T | mg/L | 41 | 46.9 | 46.8 | 49 | 49.9 | 46.7 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 15.9 | 17.2 | 18.1 | 18.2 | 20.0 | 17.9 | - | - |
| Sr-T | mg/L | 0.318 | 0.38 | 0.363 | 0.361 | 0.374 | 0.359 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0183 | 0.0141 | 0.0141 | 0.0136 | 0.0123 | 0.0145 | **0.05** | **0.1** |
| As-D | mg/L | 0.00025 | 0.00023 | 0.00023 | 0.00023 | 0.00022 | 0.00023 | - | - |
| Ba-D | mg/L | 0.0062 | 0.0083 | 0.0081 | 0.0078 | 0.0079 | 0.0077 | - | - |
| B-D | mg/L | 0.084 | 0.119 | 0.119 | 0.114 | 0.115 | 0.11 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 37.4 | 53.8 | 51.8 | 52 | 52.8 | 49.6 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00026 | 0.00029 | 0.00036 | 0.00031 | 0.00033 | 0.00031 | - | - |
| Hard-D | mg/L | 110 | 156 | 152 | 153 | 153 | 144.8 | - | - |
| Fe-D | mg/L | 0.0412 | 0.0366 | 0.0313 | 0.0309 | 0.0276 | 0.0335 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 4.03 | 5.3 | 5.51 | 5.53 | 5.19 | 5.11 | - | - |
| Mn-D | mg/L | 0.0547 | 0.104 | 0.0882 | 0.0755 | 0.0677 | 0.078 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.435 | 0.63 | 0.615 | 0.603 | 0.609 | 0.578 | - | - |
| S-D | mg/L | 34 | 47.5 | 49.6 | 47.5 | 47.4 | 45.2 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 13.4 | 18.5 | 19.2 | 19.7 | 18.6 | 17.9 | - | - |
| Sr-D | mg/L | 0.276 | 0.381 | 0.383 | 0.386 | 0.384 | 0.362 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0051 | 0.0025 | 0.0025 | 0.00302 | - | - |

# Table 97
# 2019-2020 Annual Report

| EMS ID | E206619 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLMB | Long Lake Middle 1 Metre From Bottom Depth 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | - | | |
| SO4-D | mg/L | Week 1 | 130 | 120 | 140 | 130 | 130 | **128** | - |
| Turb | NTU | No Results | 1 | 0.77 | 1.00 | 2.2 | 1.24 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | **0.007** | - |
| Al-T | mg/L | | 0.0095 | 0.01 | 0.0131 | 0.0088 | 0.0104 | - | - |
| As-T | mg/L | | 0.00025 | 0.00034 | 0.00026 | 0.00024 | 0.00027 | - | **0.005** |
| Ba-T | mg/L | | 0.0111 | 0.0088 | 0.01 | 0.0113 | 0.0103 | - | - |
| B-T | mg/L | | 0.112 | 0.103 | 0.116 | 0.121 | 0.113 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 49.8 | 42.9 | 49.5 | 51.7 | 48.5 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | | 146 | 127 | 145 | 152 | 142.5 | - | - |
| Fe-T | mg/L | | 0.050 | 0.037 | 0.037 | 0.041 | 0.041 | - | **1.0** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 5.28 | 4.89 | 5.21 | 5.48 | 5.22 | - | - |
| Mn-T | mg/L | | 0.306 | 0.176 | 0.2140 | 0.247 | 0.236 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.000001 | 0.0000010 | 0.000001 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.605 | 0.496 | 0.583 | 0.591 | 0.569 | - | - |
| S-T | mg/L | | 47.3 | 39.3 | 45 | 46.8 | 44.6 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 18.6 | 16.3 | 18.9 | 19.8 | 18.4 | - | - |
| Sr-T | mg/L | | 0.384 | 0.323 | 0.374 | 0.411 | 0.373 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0071 | 0.0087 | 0.0067 | 0.0063 | 0.0072 | **0.05** | **0.1** |
| As-D | mg/L | | 0.0002 | 0.00034 | 0.0002 | 0.00016 | 0.00022 | - | - |
| Ba-D | mg/L | | 0.0109 | 0.0087 | 0.0095 | 0.0101 | 0.0098 | - | - |
| B-D | mg/L | | 0.122 | 0.104 | 0.117 | 0.124 | 0.117 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 51.3 | 42.8 | 49.6 | 51.5 | 48.8 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00026 | 0.00031 | 0.00028 | 0.0003 | 0.00029 | - | - |
| Hard-D | mg/L | | 151 | 126 | 145 | 151 | 143.2 | - | - |
| Fe-D | mg/L | | 0.0093 | 0.0125 | 0.0074 | 0.0073 | 0.0091 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 5.46 | 4.73 | 5.26 | 5.44 | 5.22 | - | - |
| Mn-D | mg/L | | 0.2340 | 0.1200 | 0.0925 | 0.0323 | 0.1197 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0017 | 0.0005 | 0.0005 | 0.00080 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.593 | 0.504 | 0.589 | 0.592 | 0.57 | - | - |
| S-D | mg/L | | 46.9 | 39.2 | 45.6 | 47.0 | 44.7 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 19.4 | 15.9 | 18.8 | 19.9 | 18.5 | - | - |
| Sr-D | mg/L | | 0.408 | 0.333 | 0.381 | 0.41 | 0.383 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 98
# 2019-2020 Annual Report

| EMS ID | E206619 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Name | LLMB | Long Lake Middle 1 Metre From Bottom Depth 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | - | | |
| SO4-D | mg/L | 130 | 140 | 150 | 130 | 140 | 138 | **128** | - |
| Turb | NTU | 1.50 | 2.50 | 1.20 | 1.10 | 0.86 | 1.43 | - | - |
| Alk-T | mg/L | 55 | 53.00 | 56 | 57 | 54 | 55 | - | - |
| P-T | mg/L | 0.0015 | | | | | 0.0015 | - | - |
| Al-T | mg/L | 0.0071 | 0.0077 | 0.0059 | 0.0054 | 0.0066 | 0.0065 | - | - |
| As-T | mg/L | 0.00021 | 0.00023 | 0.00022 | 0.00024 | 0.00023 | 0.00023 | - | **0.005** |
| Ba-T | mg/L | 0.0118 | 0.0129 | 0.0122 | 0.0116 | 0.0107 | 0.0118 | - | - |
| B-T | mg/L | 0.123 | 0.127 | 0.123 | 0.120 | 0.128 | 0.124 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 49.7 | 52.6 | 49.3 | 48.7 | 52.8 | 50.6 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 146 | 154 | 146 | 144 | 155 | 149 | - | - |
| Fe-T | mg/L | 0.048 | 0.054 | 0.055 | 0.039 | 0.034 | 0.046 | - | **1.0** |
| Pb-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 5.3 | 5.47 | 5.46 | 5.42 | 5.61 | 5.45 | - | - |
| Mn-T | mg/L | 0.993 | 1.08 | 1.24 | 1.07 | 0.769 | 1.03 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.562 | 0.629 | 0.604 | 0.582 | 0.599 | 0.595 | - | - |
| S-T | mg/L | 43.6 | 48.1 | 46 | 45.2 | 46.5 | 45.9 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 18.90 | 19.70 | 19.80 | 19.40 | 20.00 | 19.6 | - | - |
| Sr-T | mg/L | 0.377 | 0.411 | 0.415 | 0.4000 | 0.401 | 0.401 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.008 | 0.0034 | 0.0015 | 0.0036 | 0.0041 | 0.00412 | **0.05** | **0.1** |
| As-D | mg/L | 0.00018 | 0.00016 | 0.00016 | 0.00016 | 0.00019 | 0.00017 | - | - |
| Ba-D | mg/L | 0.0112 | 0.0103 | 0.0115 | 0.0111 | 0.0101 | 0.0108 | - | - |
| B-D | mg/L | 0.125 | 0.112 | 0.124 | 0.119 | 0.120 | 0.12 | - | - |
| Cd-D | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 51.1 | 49.1 | 51.6 | 51.7 | 49.2 | 50.5 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00025 | 0.00029 | 0.00024 | 0.00030 | 0.00032 | 0.00028 | - | - |
| Hard-D | mg/L | 149 | 146 | 151 | 151 | 146 | 148.6 | - | - |
| Fe-D | mg/L | 0.0066 | 0.0068 | 0.0057 | 0.0058 | 0.0054 | 0.0061 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | 5.26 | 5.66 | 5.33 | 5.45 | 5.63 | 5.47 | - | - |
| Mn-D | mg/L | 0.8450 | 0.91 | 1.08 | 0.98 | 0.7010 | 0.902 | - | - |
| Hg-D | mg/L | 0.000001 | 0.0000010 | 0.000001 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.555 | 0.557 | 0.580 | 0.621 | 0.602 | 0.583 | - | - |
| S-D | mg/L | 45.30 | 43.20 | 45.60 | 44.30 | 47.00 | 45.1 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00 | 0.000050 | - | - |
| Na-D | mg/L | 19.0 | 20.3 | 19.3 | 19.7 | 19.8 | 19.6 | - | - |
| Sr-D | mg/L | 0.393 | 0.385 | 0.387 | 0.392 | 0.393 | 0.39 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 99
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| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 1 Metre Depth | | | | | | | |
| Site Name | MQL1 | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 10-Apr-19 | 18-Apr-19 | 24-Apr-19 | 2-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 57.1 | 40.9 | 45.8 | 40 | 43.4 | 45.4 | **128** | - |
| Chloro-a | ug/L | No Results | | | | | | - | - |
| Turb | NTU | 0.31 | 0.3 | 0.36 | 0.26 | 0.28 | 0.3 | - | - |
| Alk-T | mg/L | 48.6 | 45.1 | 45 | 46.3 | 46 | 46.2 | - | - |
| P-T | mg/L | 0.005 | 0.0015 | 0.0015 | 0.0076 | 0.0015 | 0.00342 | - | - |
| Al-T | mg/L | 0.0232 | 0.021 | 0.0197 | 0.0192 | 0.0183 | 0.0203 | - | - |
| As-T | mg/L | 0.00013 | 0.00013 | 0.00013 | 0.00014 | 0.00014 | 0.00013 | - | **0.005** |
| Ba-T | mg/L | 0.0024 | 0.0024 | 0.0022 | 0.0021 | 0.0023 | 0.0023 | - | - |
| B-T | mg/L | 0.078 | 0.079 | 0.075 | 0.07 | 0.086 | 0.078 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 15.2 | 15 | 14.2 | 13.7 | 14.6 | 14.5 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00677 | 0.00025 | 0.00054 | 0.00054 | 0.00069 | 0.001758 | **0.002** | **0.007** |
| Hard-T | mg/L | 45.4 | 44.5 | 42.1 | 40.8 | 43.4 | 43.2 | - | - |
| Fe-T | mg/L | 0.050 | 0.035 | 0.033 | 0.031 | 0.035 | 0.037 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.78 | 1.69 | 1.63 | 1.62 | 1.69 | 1.68 | - | - |
| Mn-T | mg/L | 0.005 | 0.0049 | 0.0044 | 0.0043 | 0.0058 | 0.0049 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0025 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00090 | - | **0.025** |
| K-T | mg/L | 0.375 | 0.377 | 0.339 | 0.321 | 0.366 | 0.356 | - | - |
| S-T | mg/L | 18.6 | 19 | 15.9 | 12.5 | 16.7 | 16.5 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 25.6 | 22 | 21.4 | 22.4 | 25.5 | 23.4 | - | - |
| Sr-T | mg/L | 0.1000 | 0.0954 | 0.084 | 0.0813 | 0.0874 | 0.0896 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0176 | 0.0192 | 0.0173 | 0.0176 | 0.017 | 0.0177 | **0.05** | **0.1** |
| As-D | mg/L | 0.00015 | 0.00013 | 0.00014 | 0.00013 | 0.00013 | 0.00014 | - | - |
| Ba-D | mg/L | 0.0026 | 0.0029 | 0.0023 | 0.0022 | 0.0021 | 0.0024 | - | - |
| B-D | mg/L | 0.078 | 0.074 | 0.069 | 0.064 | 0.085 | 0.074 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 15.8 | 14.6 | 13.8 | 13.3 | 13.9 | 14.3 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00054 | 0.00051 | 0.00049 | 0.00052 | 0.00057 | 0.00053 | - | - |
| Hard-D | mg/L | 47.2 | 43.5 | 41.5 | 39.4 | 41.3 | 42.6 | - | - |
| Fe-D | mg/L | 0.0229 | 0.0199 | 0.0214 | 0.021 | 0.0213 | 0.0213 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 1.87 | 1.7 | 1.69 | 1.50 | 1.6 | 1.67 | - | - |
| Mn-D | mg/L | 0.004 | 0.0033 | 0.0037 | 0.0032 | 0.0042 | 0.0037 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.419 | 0.367 | 0.353 | 0.321 | 0.385 | 0.369 | - | - |
| S-D | mg/L | 20.3 | 16.1 | 15.6 | 14.8 | 15.5 | 16.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 27 | 22 | 23.3 | 20 | 23.4 | 23.1 | - | - |
| Sr-D | mg/L | 0.108 | 0.0939 | 0.0885 | 0.0797 | 0.0853 | 0.0911 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0084 | 0.0025 | 0.00368 | - | - |

# Table 100
# 2019-2020 Annual Report

| EMS ID | E206618 | | Middle Quinsam Lake 1 Metre Depth 5 in 30 Weekly Samples | | | | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description Site Name | MQL1 | | | | | | | | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | Week 1 | 7.6 | 7.6 | 5.8 | 7.9 | 7.2 | **128** | - |
| Chloro-a | ug/L | No Results | | | | | | - | - |
| Turb | NTU | | 0.26 | 0.37 | 0.19 | 0.21 | 0.26 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | **0.006** | - |
| Al-T | mg/L | | 0.0147 | 0.0141 | 0.0133 | 0.0136 | 0.0139 | - | - |
| As-T | mg/L | | 0.00016 | 0.00017 | 0.00014 | 0.00018 | 0.00016 | - | **0.005** |
| Ba-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 8.14 | 7.99 | 7.91 | 8.07 | 8.03 | - | - |
| Cr-T | mg/L | | 0.0010 | 0.0005 | 0.0005 | 0.0005 | 0.00062 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00051 | 0.0005 | 0.00025 | 0.00057 | 0.000458 | **0.002** | **0.007** |
| Hard-T | mg/L | | 24.3 | 23.8 | 23.5 | 24.1 | 23.9 | - | - |
| Fe-T | mg/L | | 0.034 | 0.038 | 0.037 | 0.041 | 0.038 | - | **1** |
| Pb-T | mg/L | | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 0.961 | 0.923 | 0.914 | 0.968 | 0.942 | - | - |
| Mn-T | mg/L | | 0.0048 | 0.0054 | 0.0045 | 0.0044 | 0.0048 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.00000100 | - | **0.0001** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.101 | 0.096 | 0.093 | 0.095 | 0.096 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 3.98 | 3.44 | 3.27 | 3.4 | 3.52 | - | - |
| Sr-T | mg/L | | 0.026 | 0.025 | 0.0232 | 0.0244 | 0.0247 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0137 | 0.0125 | 0.0124 | 0.0117 | 0.0126 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00015 | 0.00013 | 0.00016 | 0.00014 | 0.00014 | - | - |
| Ba-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 8.31 | 8.3 | 8.29 | 8.13 | 8.26 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00046 | 0.00049 | 0.00038 | 0.00044 | 0.00044 | - | - |
| Hard-D | mg/L | | 24.6 | 24.7 | 24.7 | 24 | 24.5 | - | - |
| Fe-D | mg/L | | 0.0232 | 0.0259 | 0.0272 | 0.0261 | 0.0256 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 0.94 | 0.97 | 0.974 | 0.91 | 0.948 | - | - |
| Mn-D | mg/L | | 0.0011 | 0.0005 | 0.0005 | 0.0012 | 0.00082 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.00000100 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.098 | 0.098 | 0.092 | 0.094 | 0.096 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 4.07 | 3.64 | 3.47 | 3.25 | 3.61 | - | - |
| Sr-D | mg/L | | 0.0268 | 0.0247 | 0.0238 | 0.023 | 0.0246 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 101
# 2019-2020 Annual Report

| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 1 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | MQL1 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Units | | | | | | | | |
| SO4-D | mg/L | 38.00 | 35.00 | 29.00 | 33.00 | 30.00 | 33 | **128** | - |
| Chloro-a | ug/L | 1.26 | | | | | 1.260 | - | - |
| Turb | NTU | 0.22 | 0.27 | 0.35 | 0.27 | 0.33 | 0.29 | - | - |
| Alk-T | mg/L | 45 | 45 | 41 | 41 | 41 | 42.6 | - | - |
| P-T | mg/L | 0.0015 | | | | | 0.00150 | - | - |
| Al-T | mg/L | 0.0122 | 0.0125 | 0.012 | 0.0126 | 0.017 | 0.0133 | - | - |
| As-T | mg/L | 0.00014 | 0.00018 | 0.00016 | 0.00018 | 0.00015 | 0.00016 | - | **0.005** |
| Ba-T | mg/L | 0.0023 | 0.0024 | 0.0023 | 0.0023 | 0.0024 | 0.0023 | - | - |
| B-T | mg/L | 0.073 | 0.058 | 0.066 | 0.063 | 0.073 | 0.067 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 12.7 | 12.9 | 12.4 | 12.1 | 12.1 | 12.4 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00053 | 0.00025 | 0.00025 | 0.00053 | 0.000362 | **0.002** | **0.007** |
| Hard-T | mg/L | 38.1 | 39.0 | 37.6 | 36.4 | 36.6 | 37.5 | - | - |
| Fe-T | mg/L | 0.048 | 0.052 | 0.048 | 0.046 | 0.047 | 0.048 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.56 | 1.63 | 1.62 | 1.51 | 1.58 | 1.58 | - | - |
| Mn-T | mg/L | 0.0078 | 0.0082 | 0.0066 | 0.0063 | 0.0061 | 0.0070 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.0000025 | 0.000001 | 0.000001 | 0.000001 | 0.00000130 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.300 | 0.320 | 0.312 | 0.283 | 0.289 | 0.301 | - | - |
| S-T | mg/L | 11.2 | 11.4 | 11 | 10.2 | 10.9 | 10.9 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 20.3 | 19.90 | 19.5 | 18.1 | 18.3 | 19.2 | - | - |
| Sr-T | mg/L | 0.0709 | 0.0689 | 0.0713 | 0.0673 | 0.0675 | 0.0692 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.008 | 0.011 | 0.010 | 0.011 | 0.014 | 0.0108 | **0.05** | **0.1** |
| As-D | mg/L | 0.00016 | 0.00015 | 0.00014 | 0.00016 | 0.00014 | 0.00015 | - | - |
| Ba-D | mg/L | 0.0024 | 0.0023 | 0.0024 | 0.0041 | 0.0024 | 0.0027 | - | - |
| B-D | mg/L | 0.068 | 0.067 | 0.068 | 0.061 | 0.067 | 0.066 | - | - |
| Cd-D | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 13.0 | 12.6 | 12.5 | 12.3 | 12.4 | 12.6 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00048 | 0.00046 | 0.0004 | 0.00055 | 0.00048 | 0.00047 | - | - |
| Hard-D | mg/L | 39 | 38 | 38 | 37 | 38 | 38 | - | - |
| Fe-D | mg/L | 0.0280 | 0.0302 | 0.0267 | 0.0304 | 0.0298 | 0.029 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | 1.64 | 1.55 | 1.57 | 1.57 | 1.64 | 1.59 | - | - |
| Mn-D | mg/L | 0.0005 | 0.0014 | 0.0011 | 0.0005 | 0.0005 | 0.0008 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.0000033 | 0.00000146 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.331 | 0.296 | 0.305 | 0.291 | 0.302 | 0.305 | - | - |
| S-D | mg/L | 12.1 | 11.1 | 10.8 | 10.4 | 11 | 11.1 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 20.8 | 21.3 | 19.5 | 18.5 | 18.9 | 19.8 | - | - |
| Sr-D | mg/L | 0.0763 | 0.0679 | 0.0677 | 0.0691 | 0.0669 | 0.0696 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 102
# 2019-2020 Annual Report

| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 4 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | MQL4 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 10-Apr-19 | 18-Apr-19 | 24-Apr-19 | 2-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 57.4 | 49.2 | 43.7 | 41.9 | 42.8 | 47 | **128** | - |
| Turb | NTU | 0.26 | 0.32 | 0.38 | 0.38 | 0.25 | 0.32 | - | - |
| Alk-T | mg/L | 46.3 | 45.2 | 44.6 | 46.1 | 47.6 | 46 | - | - |
| P-T | mg/L | 0.004 | 0.0015 | 0.0015 | 0.0034 | 0.0034 | 0.00276 | - | - |
| Al-T | mg/L | 0.0219 | 0.0187 | 0.0159 | 0.0204 | 0.0183 | 0.019 | - | - |
| As-T | mg/L | 0.00014 | 0.00014 | 0.00013 | 0.00015 | 0.00016 | 0.00014 | - | **0.005** |
| Ba-T | mg/L | 0.0026 | 0.0024 | 0.0026 | 0.0021 | 0.0023 | 0.0024 | - | - |
| B-T | mg/L | 0.079 | 0.072 | 0.084 | 0.075 | 0.085 | 0.0790 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 15.8 | 14.3 | 16.3 | 13.5 | 14 | 14.8 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00333 | 0.00025 | 0.00053 | 0.00059 | 0.00058 | 0.001056 | **0.002** | **0.007** |
| Hard-T | mg/L | 47.3 | 42 | 48.6 | 40.6 | 41.9 | 44.1 | - | - |
| Fe-T | mg/L | 0.034 | 0.03 | 0.025 | 0.032 | 0.033 | 0.031 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.92 | 1.53 | 1.93 | 1.65 | 1.67 | 1.74 | - | - |
| Mn-T | mg/L | 0.0052 | 0.0044 | 0.0048 | 0.0042 | 0.0055 | 0.0048 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0015 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00070 | - | **0.025** |
| K-T | mg/L | 0.396 | 0.341 | 0.403 | 0.338 | 0.391 | 0.374 | - | - |
| S-T | mg/L | 20.1 | 15.6 | 21.3 | 14.2 | 15.8 | 17.4 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 28.1 | 20.1 | 27.2 | 23.6 | 24.6 | 24.7 | - | - |
| Sr-T | mg/L | 0.105 | 0.0896 | 0.106 | 0.0826 | 0.0847 | 0.0936 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0175 | 0.019 | 0.0179 | 0.0174 | 0.0162 | 0.0176 | **0.05** | **0.1** |
| As-D | mg/L | 0.00014 | 0.00011 | 0.00013 | 0.00013 | 0.00015 | 0.00013 | - | - |
| Ba-D | mg/L | 0.0026 | 0.0024 | 0.0023 | 0.0022 | 0.0022 | 0.0023 | - | - |
| B-D | mg/L | 0.081 | 0.074 | 0.075 | 0.07 | 0.085 | 0.077 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 16.7 | 15.3 | 14 | 15.2 | 14.2 | 15.1 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00052 | 0.00047 | 0.00049 | 0.00051 | 0.00054 | 0.00051 | - | - |
| Hard-D | mg/L | 49.6 | 45 | 41.8 | 44.2 | 42.3 | 44.6 | - | - |
| Fe-D | mg/L | 0.0225 | 0.0213 | 0.0209 | 0.0226 | 0.0221 | 0.0219 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 1.9 | 1.65 | 1.68 | 1.53 | 1.67 | 1.69 | - | - |
| Mn-D | mg/L | 0.0034 | 0.0033 | 0.0037 | 0.0021 | 0.0032 | 0.0031 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.42 | 0.356 | 0.344 | 0.337 | 0.373 | 0.366 | - | - |
| S-D | mg/L | 19.4 | 16.3 | 15.3 | 14.6 | 15.7 | 16.3 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 27.3 | 23 | 23.3 | 20.2 | 24.2 | 23.6 | - | - |
| Sr-D | mg/L | 0.1080 | 0.0905 | 0.0921 | 0.0804 | 0.0865 | 0.0915 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 103
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| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 4 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | MQL4 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 9.3 | 7.3 | 5.3 | 6.8 | 7.2 | **128** | - |
| Turb | NTU | No Results | 1.3 | 0.29 | 0.22 | 0.23 | 0.51 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | **0.006** | - |
| Al-T | mg/L | | 0.0147 | 0.0145 | 0.0131 | 0.0141 | 0.0141 | - | - |
| As-T | mg/L | | 0.00017 | 0.00017 | 0.00017 | 0.00017 | 0.00017 | - | **0.005** |
| Ba-T | mg/L | | 0.001 | 0.0005 | 0.0005 | 0.0005 | 0.00062 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 8.57 | 8.14 | 8.11 | 8.37 | 8.3 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00053 | 0.00051 | 0.00025 | 0.00025 | 0.000385 | **0.002** | **0.007** |
| Hard-T | mg/L | | 25.6 | 24.2 | 24.1 | 24.9 | 24.7 | - | - |
| Fe-T | mg/L | | 0.035 | 0.042 | 0.04 | 0.046 | 0.041 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 1.02 | 0.939 | 0.925 | 0.983 | 0.967 | - | - |
| Mn-T | mg/L | | 0.0052 | 0.0057 | 0.0046 | 0.0046 | 0.005 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.00000100 | - | **0.0001** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.101 | 0.095 | 0.093 | 0.093 | 0.096 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 4.43 | 3.48 | 3.31 | 3.3 | 3.63 | - | - |
| Sr-T | mg/L | | 0.0275 | 0.0239 | 0.0232 | 0.0241 | 0.0247 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0136 | 0.0128 | 0.0121 | 0.0112 | 0.0124 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00016 | 0.00014 | 0.00016 | 0.00015 | 0.00015 | - | - |
| Ba-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 8.54 | 8.3 | 8.26 | 8.12 | 8.31 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00049 | 0.00047 | 0.00038 | 0.00044 | 0.00044 | - | - |
| Hard-D | mg/L | | 25.3 | 24.8 | 24.6 | 24 | 24.7 | - | - |
| Fe-D | mg/L | | 0.0211 | 0.0277 | 0.0276 | 0.0273 | 0.0259 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 0.977 | 0.977 | 0.972 | 0.904 | 0.958 | - | - |
| Mn-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.104 | 0.095 | 0.094 | 0.09 | 0.096 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 4.44 | 3.51 | 3.43 | 3.1 | 3.62 | - | - |
| Sr-D | mg/L | | 0.0291 | 0.0244 | 0.0243 | 0.0227 | 0.0251 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 104
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| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 4 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | MQL4 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 37.00 | 36.00 | 30.00 | 30.00 | 30.00 | 32.6 | **128** | - |
| Turb | NTU | 0.280 | 0.280 | 0.250 | 0.270 | 0.330 | 0.28 | - | - |
| Alk-T | mg/L | 45 | 45 | 43 | 43 | 43 | 43.8 | - | - |
| P-T | mg/L | 0.0015 | | | | | 0.0015 | - | - |
| Al-T | mg/L | 0.0135 | 0.0124 | 0.0168 | 0.0115 | 0.016 | 0.014 | - | - |
| As-T | mg/L | 0.00019 | 0.00017 | 0.00017 | 0.00017 | 0.00015 | 0.00017 | - | **0.005** |
| Ba-T | mg/L | 0.0024 | 0.0025 | 0.0024 | 0.0023 | 0.0024 | 0.0024 | - | - |
| B-T | mg/L | 0.073 | 0.059 | 0.068 | 0.063 | 0.069 | 0.0660 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 13.1 | 12.9 | 12.3 | 13.4 | 12.2 | 12.8 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00056 | 0.00135 | 0.00025 | 0.00025 | 0.000532 | **0.002** | **0.007** |
| Hard-T | mg/L | 39.7 | 38.4 | 37.5 | 39.6 | 36.9 | 38.4 | - | - |
| Fe-T | mg/L | 0.045 | 0.056 | 0.054 | 0.05 | 0.046 | 0.05 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.69 | 1.53 | 1.63 | 1.52 | 1.57 | 1.59 | - | - |
| Mn-T | mg/L | 0.008 | 0.008 | 0.007 | 0.006 | 0.006 | 0.0069 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.337 | 0.302 | 0.310 | 0.285 | 0.292 | 0.305 | - | - |
| S-T | mg/L | 12.2 | 10.9 | 10.9 | 10.4 | 11.0 | 11.1 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 21.3 | 18.6 | 19.4 | 18.2 | 18.4 | 19.2 | - | - |
| Sr-T | mg/L | 0.0776 | 0.0685 | 0.0695 | 0.0671 | 0.0697 | 0.0705 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0083 | 0.0083 | 0.0095 | 0.0083 | 0.0121 | 0.0093 | **0.05** | **0.1** |
| As-D | mg/L | 0.00017 | 0.00017 | 0.00015 | 0.00015 | 0.00014 | 0.00016 | - | - |
| Ba-D | mg/L | 0.0023 | 0.0022 | 0.0023 | 0.0024 | 0.0023 | 0.0023 | - | - |
| B-D | mg/L | 0.069 | 0.067 | 0.068 | 0.063 | 0.065 | 0.066 | - | - |
| Cd-D | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 13.1 | 12.4 | 12.3 | 12.3 | 12.3 | 12.5 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00043 | 0.00045 | 0.00040 | 0.00044 | 0.00047 | 0.00044 | - | - |
| Hard-D | mg/L | 39.4 | 37.2 | 37.0 | 37.2 | 37.4 | 37.6 | - | - |
| Fe-D | mg/L | 0.0280 | 0.0292 | 0.0277 | 0.0259 | 0.0288 | 0.0279 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | 1.63 | 1.5 | 1.55 | 1.59 | 1.63 | 1.58 | - | - |
| Mn-D | mg/L | 0.0005 | 0.0013 | 0.0005 | 0.0005 | 0.0005 | 0.00066 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.0000028 | 0.00000136 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.329 | 0.291 | 0.296 | 0.292 | 0.298 | 0.301 | - | - |
| S-D | mg/L | 12.0 | 10.8 | 11.0 | 10.4 | 10.9 | 11 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 21.0 | 21.0 | 19.3 | 18.4 | 18.6 | 19.7 | - | - |
| Sr-D | mg/L | 0.077 | 0.067 | 0.067 | 0.069 | 0.067 | 0.0692 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 105
# 2019-2020 Annual Report

| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 9 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | MQL9 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 10-Apr-19 | 18-Apr-19 | 24-Apr-19 | 2-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 64.9 | 60.1 | 62.5 | 57.3 | 55.8 | 60.1 | **128** | - |
| Turb | NTU | 0.26 | 0.27 | 0.37 | 0.27 | 0.23 | 0.28 | - | - |
| Alk-T | mg/L | 47.1 | 47.9 | 48.6 | 48.9 | 46.4 | 47.8 | - | - |
| P-T | mg/L | 0.0041 | 0.0015 | 0.0015 | 0.0033 | 0.0015 | 0.00238 | - | - |
| Al-T | mg/L | 0.0193 | 0.0178 | 0.0158 | 0.0172 | 0.0138 | 0.0168 | - | - |
| As-T | mg/L | 0.00012 | 0.00014 | 0.00012 | 0.00012 | 0.00013 | 0.00013 | - | **0.005** |
| Ba-T | mg/L | 0.0025 | 0.0025 | 0.0026 | 0.0024 | 0.0025 | 0.0025 | - | - |
| B-T | mg/L | 0.081 | 0.079 | 0.08 | 0.08 | 0.078 | 0.08 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 16.5 | 17 | 16.5 | 16.5 | 17.3 | 16.8 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00054 | 0.00025 | 0.00054 | 0.00055 | 0.00055 | 0.000486 | **0.002** | **0.007** |
| Hard-T | mg/L | 49.3 | 50.7 | 49.9 | 49.3 | 51.6 | 50.2 | - | - |
| Fe-T | mg/L | 0.029 | 0.027 | 0.029 | 0.024 | 0.024 | 0.027 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.94 | 2.03 | 2.11 | 1.98 | 2.03 | 2.02 | - | - |
| Mn-T | mg/L | 0.0064 | 0.006 | 0.0079 | 0.0046 | 0.0044 | 0.0059 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.355 | 0.403 | 0.388 | 0.402 | 0.403 | 0.39 | - | - |
| S-T | mg/L | 21.2 | 21.2 | 21.7 | 21.5 | 20.9 | 21.3 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 26.7 | 27 | 26.2 | 28.8 | 27.6 | 27.3 | - | - |
| Sr-T | mg/L | 0.105 | 0.109 | 0.104 | 0.1080 | 0.102 | 0.106 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0161 | 0.0162 | 0.015 | 0.0138 | 0.0128 | 0.0148 | **0.05** | **0.1** |
| As-D | mg/L | 0.00012 | 0.00012 | 0.00011 | 0.00015 | 0.00013 | 0.00013 | - | - |
| Ba-D | mg/L | 0.0029 | 0.0027 | 0.0026 | 0.0025 | 0.0025 | 0.0026 | - | - |
| B-D | mg/L | 0.079 | 0.08 | 0.082 | 0.077 | 0.09 | 0.082 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 17.6 | 17.1 | 17.2 | 15.7 | 17.2 | 17 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00051 | 0.00052 | 0.0005 | 0.00051 | 0.00124 | 0.00066 | - | - |
| Hard-D | mg/L | 52.1 | 50.6 | 51.3 | 46.8 | 51.1 | 50.4 | - | - |
| Fe-D | mg/L | 0.0177 | 0.0152 | 0.0148 | 0.0134 | 0.0128 | 0.0148 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 1.97 | 1.94 | 2.01 | 1.81 | 1.98 | 1.94 | - | - |
| Mn-D | mg/L | 0.0037 | 0.0025 | 0.0021 | 0.0015 | 0.0015 | 0.00230 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.427 | 0.409 | 0.405 | 0.396 | 0.42 | 0.411 | - | - |
| S-D | mg/L | 23.2 | 21.9 | 21.8 | 20.6 | 23.2 | 22.1 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 27.2 | 26 | 28.5 | 24.6 | 27.5 | 26.8 | - | - |
| Sr-D | mg/L | 0.111 | 0.109 | 0.1110 | 0.104 | 0.104 | 0.108 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 106
# 2019-2020 Annual Report

| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 9 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | MQL9 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 58 | 60 | 49 | 51 | 54.5 | **128** | - |
| Turb | NTU | No Results | 0.36 | 0.31 | 0.29 | 0.27 | 0.31 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | **0.006** | - |
| Al-T | mg/L | | 0.0106 | 0.0091 | 0.011 | 0.0101 | 0.0102 | - | - |
| As-T | mg/L | | 0.00013 | 0.00015 | 0.00016 | 0.00015 | 0.00015 | - | **0.005** |
| Ba-T | mg/L | | 0.0024 | 0.0023 | 0.002 | 0.0023 | 0.0022 | - | - |
| B-T | mg/L | | 0.083 | 0.077 | 0.068 | 0.078 | 0.076 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 16.5 | 16.6 | 14.8 | 15.9 | 16 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00059 | 0.00055 | 0.00058 | 0.00056 | 0.00057 | **0.002** | **0.007** |
| Hard-T | mg/L | | 49.6 | 49.6 | 44 | 47.9 | 47.8 | - | - |
| Fe-T | mg/L | | 0.028 | 0.005 | 0.019 | 0.019 | 0.0178 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 2.01 | 2.01 | 1.74 | 2 | 1.94 | - | - |
| Mn-T | mg/L | | 0.0088 | 0.0005 | 0.0047 | 0.0045 | 0.00463 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000039 | 0.0000010 | 0.0000010 | 0.000001 | 0.00000172 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0011 | 0.0005 | 0.0005 | 0.00065 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.342 | 0.356 | 0.309 | 0.352 | 0.34 | - | - |
| S-T | mg/L | | 20 | 20.3 | 16.5 | 20.2 | 19.2 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 27.3 | 27.6 | 23.0 | 26.3 | 26 | - | - |
| Sr-T | mg/L | | 0.107 | 0.108 | 0.0898 | 0.107 | 0.103 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0101 | 0.0107 | 0.0089 | 0.0075 | 0.0093 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00012 | 0.00005 | 0.00015 | 0.00015 | 0.000117 | - | - |
| Ba-D | mg/L | | 0.0022 | 0.0024 | 0.0021 | 0.0022 | 0.0022 | - | - |
| B-D | mg/L | | 0.083 | 0.079 | 0.07 | 0.073 | 0.076 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 16.9 | 16.3 | 15.7 | 15.4 | 16.1 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00048 | 0.00056 | 0.00041 | 0.00046 | 0.00048 | - | - |
| Hard-D | mg/L | | 50.6 | 49.1 | 46.9 | 45.9 | 48.1 | - | - |
| Fe-D | mg/L | | 0.0076 | 0.0195 | 0.0104 | 0.0080 | 0.0114 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 2.04 | 2.02 | 1.88 | 1.81 | 1.94 | - | - |
| Mn-D | mg/L | | 0.0005 | 0.0071 | 0.0005 | 0.0005 | 0.00215 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.351 | 0.36 | 0.324 | 0.318 | 0.338 | - | - |
| S-D | mg/L | | 20.8 | 21 | 17.9 | 17.6 | 19.3 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 27.9 | 28 | 24.5 | 23.9 | 26.1 | - | - |
| Sr-D | mg/L | | 0.109 | 0.111 | 0.0957 | 0.0989 | 0.1036 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 107
# 2019-2020 Annual Report

| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 9 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | MQL9 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 36.00 | 33.00 | 25.00 | 21.00 | 30.00 | 29 | **128** | - |
| Turb | NTU | 0.250 | 0.490 | 0.270 | 0.250 | 0.260 | 0.3 | - | - |
| Alk-T | mg/L | 46 | 45 | 44 | 43 | 43 | 44.2 | - | - |
| P-T | mg/L | 0.0015 | | | | | 0.0015 | - | - |
| Al-T | mg/L | 0.0123 | 0.0118 | 0.0123 | 0.0115 | 0.0149 | 0.0126 | - | - |
| As-T | mg/L | 0.00017 | 0.00017 | 0.00016 | 0.00017 | 0.00014 | 0.00016 | - | **0.005** |
| Ba-T | mg/L | 0.0025 | 0.0024 | 0.0023 | 0.0023 | 0.0024 | 0.0024 | - | - |
| B-T | mg/L | 0.074 | 0.060 | 0.068 | 0.064 | 0.067 | 0.067 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 13.2 | 12.5 | 12.2 | 12.2 | 12.2 | 12.5 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.0005 | 0.00025 | 0.00025 | 0.00025 | 0.0003 | **0.002** | **0.007** |
| Hard-T | mg/L | 39.9 | 37.8 | 37.4 | 36.8 | 37 | 37.8 | - | - |
| Fe-T | mg/L | 0.057 | 0.05 | 0.049 | 0.05 | 0.046 | 0.05 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.66 | 1.57 | 1.65 | 1.51 | 1.57 | 1.59 | - | - |
| Mn-T | mg/L | 0.0082 | 0.0080 | 0.0072 | 0.0062 | 0.0058 | 0.0071 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.0000023 | 0.0000010 | 0.0000010 | 0.0000010 | 0.00000126 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.337 | 0.304 | 0.315 | 0.286 | 0.291 | 0.307 | - | - |
| S-T | mg/L | 12.1 | 11.0 | 11.1 | 10.5 | 10.6 | 11.1 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 21.3 | 19.1 | 20 | 18.1 | 18.3 | 19.4 | - | - |
| Sr-T | mg/L | 0.0788 | 0.0685 | 0.0717 | 0.0669 | 0.0691 | 0.071 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0093 | 0.0084 | 0.0099 | 0.0094 | 0.0111 | 0.0096 | **0.05** | **0.1** |
| As-D | mg/L | 0.00018 | 0.00015 | 0.00015 | 0.00015 | 0.00014 | 0.00015 | - | - |
| Ba-D | mg/L | 0.0023 | 0.0022 | 0.0024 | 0.0024 | 0.0023 | 0.0023 | - | - |
| B-D | mg/L | 0.071 | 0.067 | 0.069 | 0.062 | 0.066 | 0.067 | - | - |
| Cd-D | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 13.00 | 12.50 | 12.60 | 12.40 | 12.20 | 12.5 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00046 | 0.00046 | 0.00038 | 0.00089 | 0.00045 | 0.00053 | - | - |
| Hard-D | mg/L | 39.3 | 37.5 | 38.1 | 37.4 | 37.3 | 37.9 | - | - |
| Fe-D | mg/L | 0.0309 | 0.029 | 0.027 | 0.028 | 0.029 | 0.0287 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | 1.66 | 1.52 | 1.60 | 1.56 | 1.65 | 1.6 | - | - |
| Mn-D | mg/L | 0.0012 | 0.0012 | 0.0005 | 0.0005 | 0.0005 | 0.00078 | - | - |
| Hg-D | mg/L | 0.000001 | 0.0000010 | 0.000001 | 0.0000010 | 0.0000036 | 0.00000152 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.334 | 0.288 | 0.305 | 0.285 | 0.296 | 0.302 | - | - |
| S-D | mg/L | 11.90 | 11.00 | 11.80 | 10.10 | 10.90 | 11.1 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00 | 0.000050 | - | - |
| Na-D | mg/L | 21.1 | 21.1 | 19.7 | 18.4 | 18.8 | 19.8 | - | - |
| Sr-D | mg/L | 0.076 | 0.067 | 0.068 | 0.069 | 0.066 | 0.0693 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 108
# 2019-2020 Annual Report

| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 1 Metre from Bottom Depth | | | | | | | |
| Site Name | MQLB | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 10-Apr-19 | 18-Apr-19 | 24-Apr-19 | 2-May-19 | 8-May-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 68.1 | 62.1 | 63.5 | 60.1 | 59.1 | 62.6 | **128** | - |
| Turb | NTU | 0.3 | 0.32 | 0.41 | 0.39 | 0.3 | 0.34 | - | - |
| Alk-T | mg/L | 47.2 | 47.1 | 48.8 | 50.7 | 46.4 | 48 | - | - |
| P-T | mg/L | 0.0039 | 0.0015 | 0.0032 | 0.0043 | 0.0031 | 0.0032 | - | - |
| Al-T | mg/L | 0.0191 | 0.018 | 0.0169 | 0.0266 | 0.0139 | 0.0189 | - | - |
| As-T | mg/L | 0.00011 | 0.00014 | 0.00012 | 0.00014 | 0.00012 | 0.00013 | - | **0.005** |
| Ba-T | mg/L | 0.0026 | 0.0026 | 0.0028 | 0.0027 | 0.0027 | 0.0027 | - | - |
| B-T | mg/L | 0.083 | 0.079 | 0.082 | 0.08 | 0.082 | 0.081 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 17.9 | 17.3 | 16.6 | 17.8 | 17.6 | 17.4 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00051 | 0.00025 | 0.00061 | 0.00057 | 0.00055 | 0.000498 | **0.002** | **0.007** |
| Hard-T | mg/L | 53.1 | 51.9 | 49.7 | 53.2 | 52.7 | 52.1 | - | - |
| Fe-T | mg/L | 0.032 | 0.029 | 0.029 | 0.077 | 0.027 | 0.039 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 2.06 | 2.13 | 2 | 2.11 | 2.08 | 2.08 | - | - |
| Mn-T | mg/L | 0.0104 | 0.0086 | 0.0086 | 0.0094 | 0.0064 | 0.0087 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.381 | 0.399 | 0.379 | 0.400 | 0.397 | 0.391 | - | - |
| S-T | mg/L | 22.4 | 21.7 | 21.1 | 21.7 | 21.9 | 21.8 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 27 | 26.9 | 27.2 | 27.9 | 27.3 | 27.3 | - | - |
| Sr-T | mg/L | 0.113 | 0.111 | 0.117 | 0.1060 | 0.105 | 0.11 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.017 | 0.0144 | 0.0152 | 0.0128 | 0.0121 | 0.0143 | **0.05** | **0.1** |
| As-D | mg/L | 0.00013 | 0.00011 | 0.00012 | 0.00011 | 0.00012 | 0.000120 | - | - |
| Ba-D | mg/L | 0.0027 | 0.0027 | 0.0027 | 0.0029 | 0.0025 | 0.0027 | - | - |
| B-D | mg/L | 0.079 | 0.078 | 0.082 | 0.079 | 0.086 | 0.081 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 18.2 | 17.4 | 16.7 | 17.2 | 17.6 | 17.4 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00054 | 0.0005 | 0.0005 | 0.00049 | 0.00046 | 0.0005 | - | - |
| Hard-D | mg/L | 54 | 51.9 | 50.3 | 51.2 | 52.1 | 51.9 | - | - |
| Fe-D | mg/L | 0.0182 | 0.0157 | 0.0146 | 0.015 | 0.0154 | 0.0158 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 2.05 | 2.08 | 2.1 | 1.97 | 1.98 | 2.04 | - | - |
| Mn-D | mg/L | 0.0064 | 0.0041 | 0.0034 | 0.0026 | 0.0021 | 0.0037 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.416 | 0.404 | 0.402 | 0.406 | 0.397 | 0.405 | - | - |
| S-D | mg/L | 21.2 | 21.6 | 22 | 22.6 | 23.1 | 22.1 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | 27.2 | 25.3 | 27.8 | 25.5 | 26.8 | 26.5 | - | - |
| Sr-D | mg/L | 0.113 | 0.109 | 0.115 | 0.109 | 0.106 | 0.11 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 109
# 2019-2020 Annual Report

| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description / Site Name | MQLB | Middle Quinsam Lake 1 Metre from Bottom Depth 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 58 | 60 | 61 | 63.0 | 60.5 | **128** | - |
| Turb | NTU | No Results | 0.3 | 0.27 | 0.32 | 0.54 | 0.36 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | **0.006** | - |
| Al-T | mg/L | | 0.0073 | 0.0111 | 0.0094 | 0.0064 | 0.0086 | - | - |
| As-T | mg/L | | 0.00012 | 0.00012 | 0.00013 | 0.00012 | 0.00012 | - | **0.005** |
| Ba-T | mg/L | | 0.0031 | 0.0031 | 0.003 | 0.0033 | 0.0031 | - | - |
| B-T | mg/L | | 0.082 | 0.082 | 0.078 | 0.083 | 0.081 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 17.2 | 17.2 | 17 | 17.4 | 17.2 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00052 | 0.00055 | 0.00053 | 0.00025 | 0.000462 | **0.002** | **0.007** |
| Hard-T | mg/L | | 52 | 51.7 | 50.9 | 52.6 | 51.8 | - | - |
| Fe-T | mg/L | | 0.046 | 0.043 | 0.035 | 0.033 | 0.039 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 2.20 | 2.11 | 2.03 | 2.18 | 2.13 | - | - |
| Mn-T | mg/L | | 0.0157 | 0.0151 | 0.012 | 0.015 | 0.0144 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.000001 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.359 | 0.362 | 0.363 | 0.361 | 0.361 | - | - |
| S-T | mg/L | | 20.2 | 19.8 | 19.9 | 21.2 | 20.3 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 28.5 | 27.4 | 27.5 | 27.4 | 27.7 | - | - |
| Sr-T | mg/L | | 0.105 | 0.1120 | 0.103 | 0.1120 | 0.108 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0054 | 0.0056 | 0.0046 | 0.0042 | 0.0049 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00011 | 0.00005 | 0.00011 | 0.00011 | 0.000095 | - | - |
| Ba-D | mg/L | | 0.003 | 0.0032 | 0.0029 | 0.0033 | 0.0031 | - | - |
| B-D | mg/L | | 0.085 | 0.079 | 0.08 | 0.081 | 0.081 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 17.1 | 17.1 | 17.6 | 17.3 | 17.3 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00045 | 0.00048 | 0.00041 | 0.00043 | 0.00044 | - | - |
| Hard-D | mg/L | | 51.7 | 51.8 | 52.6 | 51.7 | 52 | - | - |
| Fe-D | mg/L | | 0.0188 | 0.0178 | 0.0157 | 0.0156 | 0.017 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 2.2 | 2.19 | 2.1 | 2.09 | 2.14 | - | - |
| Mn-D | mg/L | | 0.0097 | 0.0094 | 0.006 | 0.0102 | 0.0088 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0014 | 0.0005 | 0.00072 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.355 | 0.366 | 0.368 | 0.362 | 0.363 | - | - |
| S-D | mg/L | | 20.7 | 21.2 | 20.7 | 19.8 | 20.6 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 28.1 | 28.6 | 28 | 27.3 | 28 | - | - |
| Sr-D | mg/L | | 0.106 | 0.1070 | 0.107 | 0.105 | 0.106 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 110
# 2019-2020 Annual Report

| EMS ID | E206618 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake 1 Metre from Bottom Depth | | | | | | | |
| Site Name | MQLB | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 36.00 | 34.00 | 35.00 | 39.00 | 38.00 | 36.4 | **128** | - |
| Turb | NTU | 0.25 | 0.34 | 0.31 | 0.22 | 0.29 | 0.28 | - | - |
| Alk-T | mg/L | 47.0 | 44 | 44 | 44 | 44 | 44.6 | - | - |
| P-T | mg/L | 0.0015 | | | | | 0.0015 | - | - |
| Al-T | mg/L | 0.0129 | 0.0124 | 0.0125 | 0.0116 | 0.0139 | 0.0127 | - | - |
| As-T | mg/L | 0.00018 | 0.00017 | 0.00015 | 0.00017 | 0.00017 | 0.00017 | - | **0.005** |
| Ba-T | mg/L | 0.0025 | 0.0025 | 0.0023 | 0.0023 | 0.0028 | 0.0025 | - | - |
| B-T | mg/L | 0.072 | 0.059 | 0.072 | 0.064 | 0.068 | 0.067 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 12.9 | 12.9 | 12.3 | 11.9 | 14.2 | 12.8 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 39 | 39 | 38 | 36 | 43 | 38.9 | - | - |
| Fe-T | mg/L | 0.053 | 0.055 | 0.050 | 0.044 | 0.050 | 0.05 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.71 | 1.56 | 1.64 | 1.51 | 1.84 | 1.65 | - | - |
| Mn-T | mg/L | 0.009 | 0.008 | 0.007 | 0.006 | 0.007 | 0.0075 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.0000010 | 0.0000030 | 0.0000038 | 0.0000010 | 0.00000196 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.34 | 0.309 | 0.315 | 0.28 | 0.298 | 0.308 | - | - |
| S-T | mg/L | 12.3 | 11.4 | 11.1 | 10.4 | 13.1 | 11.7 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 21.5 | 19.6 | 19.9 | 17.9 | 19.5 | 19.7 | - | - |
| Sr-T | mg/L | 0.0783 | 0.0696 | 0.0719 | 0.0659 | 0.0764 | 0.0724 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0087 | 0.0087 | 0.0094 | 0.0086 | 0.0099 | 0.0091 | **0.05** | **0.1** |
| As-D | mg/L | 0.00016 | 0.00014 | 0.00015 | 0.00015 | 0.00015 | 0.000150 | - | - |
| Ba-D | mg/L | 0.0024 | 0.0023 | 0.0024 | 0.0023 | 0.0026 | 0.0024 | - | - |
| B-D | mg/L | 0.07 | 0.068 | 0.070 | 0.061 | 0.070 | 0.068 | - | - |
| Cd-D | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 13.1 | 12.7 | 12.7 | 12.3 | 13.9 | 12.9 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00045 | 0.00044 | 0.00040 | 0.00044 | 0.00047 | 0.00044 | - | - |
| Hard-D | mg/L | 40 | 38 | 38 | 37 | 43 | 39.1 | - | - |
| Fe-D | mg/L | 0.031 | 0.030 | 0.028 | 0.027 | 0.030 | 0.029 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | 1.68 | 1.55 | 1.59 | 1.55 | 1.93 | 1.66 | - | - |
| Mn-D | mg/L | 0.001 | 0.002 | 0.001 | 0.001 | 0.001 | 0.00088 | - | - |
| Hg-D | mg/L | 0.000001 | 0.0000010 | 0.000001 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.342 | 0.293 | 0.305 | 0.287 | 0.309 | 0.307 | - | - |
| S-D | mg/L | 12.3 | 10.8 | 11.0 | 10.3 | 12.9 | 11.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00 | 0.000050 | - | - |
| Na-D | mg/L | 21.4 | 21.1 | 19.6 | 18.4 | 20.1 | 20.1 | - | - |
| Sr-D | mg/L | 0.0769 | 0.0666 | 0.0686 | 0.0702 | 0.0729 | 0.071 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 111
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Lower Quinsam Lake 1 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | LQL1 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 9-Apr-19 | 18-Apr-19 | 25-Apr-19 | 9-May-19 | 30-May-18 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 25.1 | 29.7 | 25.2 | 24.2 | 26 | 17.4 | **128** | - |
| Chloro-a | ug/L | No Results | | | | | | - | - |
| Turb | NTU | 0.72 | 0.49 | 0.63 | 0.42 | 0.56 | 0.45 | - | - |
| Alk-T | mg/L | 31.1 | 33.1 | 33 | 36.1 | 33.3 | 22.96 | - | - |
| P-T | mg/L | 0.0036 | 0.0015 | 0.0047 | 0.0015 | 0.00282 | 0.0061 | - | - |
| Al-T | mg/L | 0.0646 | 0.0478 | 0.045 | 0.0371 | 0.0486 | 0.0391 | - | - |
| As-T | mg/L | 0.0005 | 0.00052 | 0.00046 | 0.00047 | 0.00049 | 0.00054 | - | **0.0050** |
| Ba-T | mg/L | 0.0037 | 0.0033 | 0.0035 | 0.0033 | 0.0034 | 0.0033 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 11.7 | 12.1 | 11.6 | 11.2 | 11.6 | 10.9 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00062 | 0.00057 | 0.00061 | 0.00062 | 0.0006 | 0.00081 | **0.002** | **0.007** |
| Hard-T | mg/L | 34.6 | 36 | 34.6 | 33.6 | 34.7 | 32.0 | - | - |
| Fe-T | mg/L | 0.1 | 0.077 | 0.084 | 0.07 | 0.083 | 0.079 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.33 | 1.42 | 1.34 | 1.4 | 1.37 | 1.18 | - | - |
| Mn-T | mg/L | 0.0058 | 0.0044 | 0.0048 | 0.0041 | 0.0048 | 0.0058 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.0000044 | 0.00000185 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.254 | 0.255 | 0.248 | 0.278 | 0.259 | 0.229 | - | - |
| S-T | mg/L | 9.7 | 10.1 | 9.2 | 8.3 | 9.3 | 6.1 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000070 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 11.1 | 12.1 | 10.6 | 11.3 | 11.3 | 7.69 | - | - |
| Sr-T | mg/L | 0.0604 | 0.0645 | 0.0597 | 0.056 | 0.0602 | 0.0493 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0358 | 0.0242 | 0.032 | 0.0232 | 0.0288 | 0.0319 | **0.05** | **0.1** |
| As-D | mg/L | 0.00042 | 0.0004 | 0.00043 | 0.00044 | 0.00042 | 0.00051 | - | - |
| Ba-D | mg/L | 0.0032 | 0.0032 | 0.0033 | 0.0032 | 0.0032 | 0.0033 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | 0.0000050 | 0.000013 | 0.0000025 | 0.0000025 | 0.00000575 | 0.00000486 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 11.3 | 10.7 | 11.5 | 11.8 | 11.3 | 10.30 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00049 | 0.00076 | 0.00056 | 0.0006 | 0.0006 | 0.00080 | - | - |
| Hard-D | mg/L | 33.1 | 31.6 | 33.9 | 34.9 | 33.4 | 30.6 | - | - |
| Fe-D | mg/L | 0.0544 | 0.0471 | 0.0488 | 0.045 | 0.0488 | 0.0525 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 1.18 | 1.21 | 1.27 | 1.32 | 1.24 | 1.18 | - | - |
| Mn-D | mg/L | 0.0037 | 0.0029 | 0.0031 | 0.0016 | 0.0028 | 0.0035 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000004 | 0.00000175 | 0.00000100 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.227 | 0.302 | 0.25 | 0.266 | 0.261 | 0.221 | - | - |
| S-D | mg/L | 8.8 | 8.1 | 8.9 | 8.2 | 8.5 | 6.1 | - | - |
| Se-D | mg/L | 0.00011 | 0.00005 | 0.00005 | 0.00005 | 0.000065 | 0.000050 | - | - |
| Na-D | mg/L | 10.40 | 10.30 | 10.7 | 11.1 | 10.6 | 7.85 | - | - |
| Sr-D | mg/L | 0.0617 | 0.0584 | 0.0623 | 0.0589 | 0.0603 | 0.0490 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 112
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Lower Quinsam Lake 1 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | LQL1 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 17 | 16 | 13.0 | 16 | 15.5 | **128.0** | - |
| Chloro-a | ug/L | No Results | | | | | | - | - |
| Turb | NTU | | 0.24 | 0.33 | 0.26 | 0.35 | 0.3 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | **0.006** | - |
| Al-T | mg/L | | 0.0102 | 0.012 | 0.0096 | 0.009 | 0.0102 | - | - |
| As-T | mg/L | | 0.00066 | 0.00069 | 0.00072 | 0.00064 | 0.00068 | - | **0.0050** |
| Ba-T | mg/L | | 0.0031 | 0.003 | 0.0031 | 0.003 | 0.003 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 11.2 | 11.2 | 11.3 | 11.1 | 11.2 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00051 | 0.0005 | 0.00025 | 0.00053 | 0.000448 | **0.002** | **0.007** |
| Hard-T | mg/L | | 33.5 | 33.3 | 33.6 | 33 | 33.4 | - | - |
| Fe-T | mg/L | | 0.05 | 0.041 | 0.056 | 0.044 | 0.048 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 1.35 | 1.3 | 1.3 | 1.28 | 1.31 | - | - |
| Mn-T | mg/L | | 0.0055 | 0.0027 | 0.0062 | 0.0056 | 0.005 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000056 | 0.00000215 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0061 | 0.0012 | 0.0005 | 0.00208 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.202 | 0.203 | 0.192 | 0.195 | 0.198 | - | - |
| S-T | mg/L | | 6.2 | 5.1 | 5.1 | 5.2 | 5.4 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 9.51 | 8.62 | 8.28 | 8.2 | 8.65 | - | - |
| Sr-T | mg/L | | 0.0513 | 0.0515 | 0.0499 | 0.0491 | 0.0504 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0092 | 0.0095 | 0.0077 | 0.007 | 0.0084 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00063 | 0.00068 | 0.00062 | 0.00059 | 0.00063 | - | - |
| Ba-D | mg/L | | 0.0029 | 0.0031 | 0.003 | 0.0029 | 0.003 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 11.3 | 11.3 | 11.3 | 10.9 | 11.20 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00049 | 0.00051 | 0.00037 | 0.00041 | 0.00044 | - | - |
| Hard-D | mg/L | | 33.5 | 33.8 | 33.5 | 32.4 | 33.3 | - | - |
| Fe-D | mg/L | | 0.0327 | 0.0588 | 0.0368 | 0.0285 | 0.0392 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 1.29 | 1.32 | 1.29 | 1.24 | 1.28 | - | - |
| Mn-D | mg/L | | 0.0025 | 0.0059 | 0.0013 | 0.0005 | 0.00255 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.00000100 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0016 | 0.0005 | 0.00078 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.199 | 0.2 | 0.187 | 0.185 | 0.193 | - | - |
| S-D | mg/L | | 6 | 5.5 | 5.6 | 5 | 5.5 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 9.54 | 8.65 | 8.02 | 7.74 | 8.49 | - | - |
| Sr-D | mg/L | | 0.0537 | 0.0506 | 0.0477 | 0.0484 | 0.0501 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 113
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description<br>Site Name | LQL1 | Lower Quinsam Lake 1 Metre Depth<br>5 in 30 Weekly Samples | | | | | 5x30 Average | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | | | | | 128.0 | - |
| Chloro-a | ug/L | | | | | | | - | - |
| Turb | NTU | | | | | | | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | | | | | | - | - |
| As-T | mg/L | | | | | | | - | 0.0050 |
| Ba-T | mg/L | | | | | | | - | - |
| B-T | mg/L | | | | | | | - | - |
| Cd-T | mg/L | | | | | | | - | - |
| Ca-T | mg/L | | | | | | | - | - |
| Cr-T | mg/L | | | | | | | - | - |
| Co-T | mg/L | | | | | | | - | 0.05 |
| Cu-T | mg/L | | | | | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | | | | | - | - |
| Fe-T | mg/L | | | | | | | - | 1 |
| Pb-T | mg/L | | | | | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | | | | | - | - |
| Mn-T | mg/L | | | | | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | | | | | - | 0.00010 |
| Mo-T | mg/L | | | | | | | - | - |
| Ni-T | mg/L | | | | | | | - | 0.025 |
| K-T | mg/L | | | | | | | - | - |
| S-T | mg/L | | | | | | | - | - |
| Se-T | mg/L | | | | | | | - | - |
| Ag-T | mg/L | | | | | | | - | 0.0001 |
| Na-T | mg/L | | | | | | | - | - |
| Sr-T | mg/L | | | | | | | - | - |
| Zn-T | mg/L | | | | | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | | | | | 0.05 | 0.1 |
| As-D | mg/L | | | | | | | - | - |
| Ba-D | mg/L | | | | | | | - | - |
| B-D | mg/L | | | | | | | - | - |
| Cd-D | mg/L | | | | | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | | | | | - | - |
| Cr-D | mg/L | | | | | | | - | - |
| Co-D | mg/L | | | | | | | - | - |
| Cu-D | mg/L | | | | | | | - | - |
| Hard-D | mg/L | | | | | | | - | - |
| Fe-D | mg/L | | | | | | | - | 0.35 |
| Pb-D | mg/L | | | | | | | - | - |
| Mg-D | mg/L | | | | | | | - | - |
| Mn-D | mg/L | | | | | | | - | - |
| Hg-D | mg/L | | | | | | | - | - |
| Mo-D | mg/L | | | | | | | - | - |
| Ni-D | mg/L | | | | | | | - | - |
| K-D | mg/L | | | | | | | - | - |
| S-D | mg/L | | | | | | | - | - |
| Se-D | mg/L | | | | | | | - | - |
| Na-D | mg/L | | | | | | | - | - |
| Sr-D | mg/L | | | | | | | - | - |
| Zn-D | mg/L | | | | | | | - | - |

# Table 114
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Lower Quinsam Lake 4 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | LQL4 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 9-Apr-19 | 18-Apr-19 | 25-Apr-19 | 9-May-19 | 30-May-18 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 25.3 | 28.8 | 25.7 | 25.3 | 22.3 | 25.5 | **128** | - |
| Turb | NTU | 0.71 | 0.67 | 0.74 | 0.45 | 0.58 | 0.63 | - | - |
| Alk-T | mg/L | 30.9 | 34.2 | 32.6 | 36.1 | 32.7 | 33.3 | - | - |
| P-T | mg/L | 0.0057 | 0.0015 | 0.0043 | 0.0074 | 0.0037 | 0.00452 | - | - |
| Al-T | mg/L | 0.0687 | 0.0423 | 0.0433 | 0.0352 | 0.0439 | 0.0467 | - | - |
| As-T | mg/L | 0.00052 | 0.00051 | 0.00046 | 0.00048 | 0.00052 | 0.0005 | - | **0.005** |
| Ba-T | mg/L | 0.0038 | 0.0033 | 0.0033 | 0.0032 | 0.0033 | 0.0034 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 11.8 | 11.9 | 11.6 | 12.1 | 13.4 | 12.2 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.0006 | 0.00052 | 0.00064 | 0.00062 | 0.00057 | 0.00059 | **0.002** | **0.007** |
| Hard-T | mg/L | 35.1 | 35.3 | 34.5 | 35.7 | 38.7 | 35.9 | - | - |
| Fe-T | mg/L | 0.104 | 0.077 | 0.081 | 0.075 | 0.082 | 0.084 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.38 | 1.39 | 1.33 | 1.34 | 1.31 | 1.35 | - | - |
| Mn-T | mg/L | 0.0058 | 0.0043 | 0.0049 | 0.0048 | 0.0044 | 0.0048 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.0000034 | 0.00000148 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.257 | 0.257 | 0.245 | 0.254 | 0.262 | 0.255 | - | - |
| S-T | mg/L | 9.6 | 10 | 8.7 | 8 | 8 | 8.9 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.0001 | 0.000060 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 11.2 | 11.9 | 10.6 | 12.40 | 11.1 | 11.4 | - | - |
| Sr-T | mg/L | 0.0627 | 0.065 | 0.0589 | 0.0596 | 0.0585 | 0.0609 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0364 | 0.025 | 0.0315 | 0.0257 | 0.0262 | 0.029 | **0.05** | **0.1** |
| As-D | mg/L | 0.00044 | 0.00039 | 0.00044 | 0.00046 | 0.00044 | 0.00043 | - | - |
| Ba-D | mg/L | 0.0034 | 0.0031 | 0.0032 | 0.0033 | 0.0033 | 0.0033 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | 0.0000050 | 0.000009 | 0.0000025 | 0.000006 | 0.0000025 | 0.000005 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 11.4 | 10.3 | 11.7 | 11.6 | 11.6 | 11.30 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00051 | 0.00063 | 0.00057 | 0.00057 | 0.00063 | 0.00058 | - | - |
| Hard-D | mg/L | 33.7 | 30.8 | 34.5 | 34.1 | 34.2 | 33.5 | - | - |
| Fe-D | mg/L | 0.0547 | 0.043 | 0.0475 | 0.048 | 0.0463 | 0.0479 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 1.26 | 1.21 | 1.29 | 1.26 | 1.24 | 1.25 | - | - |
| Mn-D | mg/L | 0.0038 | 0.0027 | 0.0031 | 0.0028 | 0.0018 | 0.0028 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.000001 | 0.000001 | 0.000001 | 0.0000051 | 0.00000182 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0038 | 0.0005 | 0.00116 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.237 | 0.268 | 0.251 | 0.249 | 0.249 | 0.251 | - | - |
| S-D | mg/L | 8.4 | 8.2 | 8.9 | 9 | 7.9 | 8.5 | - | - |
| Se-D | mg/L | 0.00011 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000062 | - | - |
| Na-D | mg/L | 10.9 | 10.4 | 10.9 | 11 | 10.5 | 10.7 | - | - |
| Sr-D | mg/L | 0.0612 | 0.0575 | 0.0606 | 0.0612 | 0.0558 | 0.0593 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 115
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Lower Quinsam Lake 4 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | LQL4 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 15 | 15.0 | 14 | 15 | 14.8 | **128** | - |
| Turb | NTU | No Results | 0.3 | 0.32 | 0.25 | 0.23 | 0.28 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | 0.0106 | 0.0085 | 0.0143 | 0.0092 | 0.0106 | - | - |
| As-T | mg/L | | 0.00065 | 0.00068 | 0.00071 | 0.00066 | 0.00068 | - | **0.005** |
| Ba-T | mg/L | | 0.003 | 0.003 | 0.0031 | 0.003 | 0.003 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 11.1 | 11.2 | 11.5 | 11.2 | 11.2 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00053 | 0.00051 | 0.00057 | 0.00053 | 0.00054 | **0.002** | **0.007** |
| Hard-T | mg/L | | 33.0 | 33.2 | 34.3 | 33.4 | 33.5 | - | - |
| Fe-T | mg/L | | 0.063 | 0.038 | 0.058 | 0.049 | 0.052 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | **0.003** | **0.005** |
| Mg-T | mg/L | | 1.28 | 1.29 | 1.33 | 1.29 | 1.3 | - | - |
| Mn-T | mg/L | | 0.0061 | 0.0023 | 0.0064 | 0.0061 | 0.0052 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0030 | 0.0005 | 0.0005 | 0.00113 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.191 | 0.2 | 0.197 | 0.194 | 0.196 | - | - |
| S-T | mg/L | | 5.1 | 5 | 5.5 | 5.3 | 5.2 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 8.3 | 8.02 | 8.32 | 8.2 | 8.21 | - | - |
| Sr-T | mg/L | | 0.0483 | 0.0503 | 0.05 | 0.0485 | 0.0493 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0096 | 0.0094 | 0.0078 | 0.0068 | 0.0084 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00059 | 0.00067 | 0.00064 | 0.00057 | 0.00062 | - | - |
| Ba-D | mg/L | | 0.003 | 0.0031 | 0.0029 | 0.0029 | 0.003 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 11.2 | 11.3 | 11.2 | 10.8 | 11.10 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00051 | 0.00051 | 0.0004 | 0.00043 | 0.00046 | - | - |
| Hard-D | mg/L | | 33.1 | 33.5 | 33.5 | 32.3 | 33.1 | - | - |
| Fe-D | mg/L | | 0.0388 | 0.0568 | 0.0368 | 0.0297 | 0.0405 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 1.26 | 1.3 | 1.33 | 1.27 | 1.29 | - | - |
| Mn-D | mg/L | | 0.0024 | 0.0068 | 0.0013 | 0.0005 | 0.00275 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.192 | 0.2 | 0.187 | 0.186 | 0.191 | - | - |
| S-D | mg/L | | 5.3 | 5.2 | 5.6 | 4.9 | 5.2 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 8.2 | 8.19 | 8.3 | 7.69 | 8.08 | - | - |
| Sr-D | mg/L | | 0.0506 | 0.0492 | 0.0489 | 0.0473 | 0.049 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 116
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description / Site Name | LQL4 | Lower Quinsam Lake 4 Metre Depth 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | | | | | 128 | - |
| Turb | NTU | | | | | | | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | | | | | | - | - |
| As-T | mg/L | | | | | | | - | 0.005 |
| Ba-T | mg/L | | | | | | | - | - |
| B-T | mg/L | | | | | | | - | - |
| Cd-T | mg/L | | | | | | | - | - |
| Ca-T | mg/L | | | | | | | - | - |
| Cr-T | mg/L | | | | | | | - | - |
| Co-T | mg/L | | | | | | | - | 0.05 |
| Cu-T | mg/L | | | | | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | | | | | - | - |
| Fe-T | mg/L | | | | | | | - | 1 |
| Pb-T | mg/L | | | | | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | | | | | - | - |
| Mn-T | mg/L | | | | | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | | | | | - | 0.00010 |
| Mo-T | mg/L | | | | | | | - | - |
| Ni-T | mg/L | | | | | | | - | 0.025 |
| K-T | mg/L | | | | | | | - | - |
| S-T | mg/L | | | | | | | - | - |
| Se-T | mg/L | | | | | | | - | - |
| Ag-T | mg/L | | | | | | | - | 0.0001 |
| Na-T | mg/L | | | | | | | - | - |
| Sr-T | mg/L | | | | | | | - | - |
| Zn-T | mg/L | | | | | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | | | | | 0.05 | 0.1 |
| As-D | mg/L | | | | | | | - | - |
| Ba-D | mg/L | | | | | | | - | - |
| B-D | mg/L | | | | | | | - | - |
| Cd-D | mg/L | | | | | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | | | | | - | - |
| Cr-D | mg/L | | | | | | | - | - |
| Co-D | mg/L | | | | | | | - | - |
| Cu-D | mg/L | | | | | | | - | - |
| Hard-D | mg/L | | | | | | | - | - |
| Fe-D | mg/L | | | | | | | - | 0.35 |
| Pb-D | mg/L | | | | | | | - | - |
| Mg-D | mg/L | | | | | | | - | - |
| Mn-D | mg/L | | | | | | | - | - |
| Hg-D | mg/L | | | | | | | - | - |
| Mo-D | mg/L | | | | | | | - | - |
| Ni-D | mg/L | | | | | | | - | - |
| K-D | mg/L | | | | | | | - | - |
| S-D | mg/L | | | | | | | - | - |
| Se-D | mg/L | | | | | | | - | - |
| Na-D | mg/L | | | | | | | - | - |
| Sr-D | mg/L | | | | | | | - | - |
| Zn-D | mg/L | | | | | | | - | - |

# Table 117
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Lower Quinsam Lake 9 Metre Depth | | | | | | Water Quality Guidelines | |
| Site Name | LQL9 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 9-Apr-19 | 18-Apr-19 | 25-Apr-19 | 2-May-19 | 9-May-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 26 | 29.1 | 25.1 | 24.5 | 23.2 | 25.6 | **128** | - |
| Turb | NTU | 0.7 | 0.34 | 0.65 | 0.51 | 0.47 | 0.53 | - | - |
| Alk-T | mg/L | 32.6 | 32.9 | 31.5 | 35.5 | 32.9 | 33.1 | - | - |
| P-T | mg/L | 0.0041 | 0.0015 | 0.0033 | 0.0057 | 0.0015 | 0.00322 | - | - |
| Al-T | mg/L | 0.0748 | 0.046 | 0.0437 | 0.0439 | 0.0457 | 0.0508 | - | - |
| As-T | mg/L | 0.00048 | 0.00046 | 0.00046 | 0.0005 | 0.00051 | 0.00048 | - | **0.005** |
| Ba-T | mg/L | 0.0038 | 0.0034 | 0.0033 | 0.0034 | 0.0034 | 0.0035 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 12 | 12.1 | 11.3 | 12.2 | 11.9 | 11.9 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00061 | 0.00059 | 0.00077 | 0.00072 | 0.00058 | 0.00065 | **0.002** | **0.007** |
| Hard-T | mg/L | 35.3 | 35.8 | 33.5 | 36.1 | 35.5 | 35.2 | - | - |
| Fe-T | mg/L | 0.111 | 0.079 | 0.123 | 0.084 | 0.076 | 0.095 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.31 | 1.36 | 1.31 | 1.36 | 1.42 | 1.35 | - | - |
| Mn-T | mg/L | 0.0061 | 0.0047 | 0.0048 | 0.0063 | 0.0059 | 0.0056 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.0000042 | 0.00000164 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.254 | 0.259 | 0.239 | 0.252 | 0.267 | 0.254 | - | - |
| S-T | mg/L | 9.6 | 10.1 | 8.9 | 8.7 | 8.4 | 9.1 | - | - |
| Se-T | mg/L | 0.00012 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000064 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 11.10 | 11.8 | 10.4 | 12 | 11.6 | 11.4 | - | - |
| Sr-T | mg/L | 0.0619 | 0.0645 | 0.0595 | 0.0604 | 0.0612 | 0.0615 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0356 | 0.0244 | 0.0318 | 0.0287 | 0.0265 | 0.0294 | **0.05** | **0.1** |
| As-D | mg/L | 0.00041 | 0.00038 | 0.00041 | 0.00046 | 0.00046 | 0.00042 | - | - |
| Ba-D | mg/L | 0.0033 | 0.003 | 0.0033 | 0.0035 | 0.0032 | 0.0033 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | 0.0000050 | 0.000011 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000470 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 11.4 | 10.1 | 11.8 | 12.2 | 11.5 | 11.4 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00049 | 0.00053 | 0.00063 | 0.00057 | 0.00058 | 0.00056 | - | - |
| Hard-D | mg/L | 33.4 | 29.9 | 34.9 | 35.5 | 33.9 | 33.5 | - | - |
| Fe-D | mg/L | 0.0531 | 0.0403 | 0.048 | 0.0489 | 0.0465 | 0.0474 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 1.21 | 1.16 | 1.33 | 1.23 | 1.25 | 1.24 | - | - |
| Mn-D | mg/L | 0.0037 | 0.0024 | 0.003 | 0.0031 | 0.0027 | 0.003 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.0000046 | 0.00000172 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.235 | 0.241 | 0.266 | 0.252 | 0.248 | 0.248 | - | - |
| S-D | mg/L | 8.9 | 7.8 | 9 | 8.6 | 8.9 | 8.6 | - | - |
| Se-D | mg/L | 0.0001 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000060 | - | - |
| Na-D | mg/L | 10.8 | 9.91 | 11 | 10.6 | 10.7 | 10.6 | - | - |
| Sr-D | mg/L | 0.0626 | 0.0563 | 0.0625 | 0.0598 | 0.0568 | 0.0596 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 118
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description / Site Name | LQL9 | Lower Quinsam Lake 9 Metre Depth 5 in 30 Weekly Samples | | | | | 4x30 Average | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 23 | 25.0 | 17 | 24 | 22.2 | **128** | - |
| Turb | NTU | No Results | 0.29 | 0.39 | 0.30 | 0.3 | 0.32 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | 0.0175 | 0.0215 | 0.0109 | 0.014 | 0.016 | - | - |
| As-T | mg/L | | 0.00058 | 0.00053 | 0.00069 | 0.00052 | 0.00058 | - | **0.005** |
| Ba-T | mg/L | | 0.0034 | 0.0033 | 0.0032 | 0.0034 | 0.0033 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | | 11.2 | 11.7 | 11.5 | 11.8 | 11.6 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | | 0.00057 | 0.00059 | 0.00052 | 0.00067 | 0.00059 | **0.002** | **0.007** |
| Hard-T | mg/L | | 33.6 | 34.5 | 34.1 | 35.1 | 34.3 | - | - |
| Fe-T | mg/L | | 0.070 | 0.075 | 0.067 | 0.075 | 0.072 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | | 1.33 | 1.3 | 1.3 | 1.36 | 1.32 | - | - |
| Mn-T | mg/L | | 0.0096 | 0.0094 | 0.0079 | 0.0115 | 0.0096 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.00000100 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.237 | 0.241 | 0.205 | 0.252 | 0.234 | - | - |
| S-T | mg/L | | 7.8 | 7.7 | 5.9 | 8.6 | 7.5 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 11.1 | 11.3 | 9.18 | 11.8 | 10.84 | - | - |
| Sr-T | mg/L | | 0.056 | 0.0603 | 0.0517 | 0.0586 | 0.0567 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0133 | 0.0134 | 0.0094 | 0.0113 | 0.0118 | **0.05** | **0.1** |
| As-D | mg/L | | 0.0005 | 0.00051 | 0.00063 | 0.00048 | 0.00053 | - | - |
| Ba-D | mg/L | | 0.0032 | 0.0034 | 0.0032 | 0.0033 | 0.0033 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000120 | 0.0000068 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 11.3 | 11.5 | 11.5 | 11.5 | 11.4 | - | - |
| Cr-D | mg/L | | 0.0011 | 0.0005 | 0.0005 | 0.0005 | 0.00065 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Cu-D | mg/L | | 0.00052 | 0.00055 | 0.0004 | 0.00047 | 0.00048 | - | - |
| Hard-D | mg/L | | 33.6 | 34.3 | 34.3 | 33.9 | 34 | - | - |
| Fe-D | mg/L | | 0.0473 | 0.0556 | 0.0433 | 0.0507 | 0.0492 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 1.29 | 1.36 | 1.34 | 1.29 | 1.32 | - | - |
| Mn-D | mg/L | | 0.0036 | 0.0043 | 0.0029 | 0.0057 | 0.0041 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.233 | 0.247 | 0.208 | 0.235 | 0.231 | - | - |
| S-D | mg/L | | 8 | 8.4 | 6 | 7.9 | 7.6 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00010 | 0.00005 | 0.00005 | 0.000062 | - | - |
| Na-D | mg/L | | 11.4 | 11.6 | 9.0 | 10.8 | 10.7 | - | - |
| Sr-D | mg/L | | 0.0591 | 0.0582 | 0.0512 | 0.0576 | 0.0565 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 119
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description / Site Name | LQL9 | Lower Quinsam Lake 9 Metre Depth 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | | | | | 128 | - |
| Turb | NTU | | | | | | | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | | | | | | - | - |
| As-T | mg/L | | | | | | | - | 0.005 |
| Ba-T | mg/L | | | | | | | - | - |
| B-T | mg/L | | | | | | | - | - |
| Cd-T | mg/L | | | | | | | - | - |
| Ca-T | mg/L | | | | | | | - | - |
| Cr-T | mg/L | | | | | | | - | - |
| Co-T | mg/L | | | | | | | - | 0.05 |
| Cu-T | mg/L | | | | | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | | | | | - | - |
| Fe-T | mg/L | | | | | | | - | 1 |
| Pb-T | mg/L | | | | | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | | | | | - | - |
| Mn-T | mg/L | | | | | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | | | | | - | 0.00010 |
| Mo-T | mg/L | | | | | | | - | - |
| Ni-T | mg/L | | | | | | | - | 0.025 |
| K-T | mg/L | | | | | | | - | - |
| S-T | mg/L | | | | | | | - | - |
| Se-T | mg/L | | | | | | | - | - |
| Ag-T | mg/L | | | | | | | - | 0.0001 |
| Na-T | mg/L | | | | | | | - | - |
| Sr-T | mg/L | | | | | | | - | - |
| Zn-T | mg/L | | | | | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | | | | | 0.05 | 0.1 |
| As-D | mg/L | | | | | | | - | - |
| Ba-D | mg/L | | | | | | | - | - |
| B-D | mg/L | | | | | | | - | - |
| Cd-D | mg/L | | | | | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | | | | | - | - |
| Cr-D | mg/L | | | | | | | - | - |
| Co-D | mg/L | | | | | | | - | - |
| Cu-D | mg/L | | | | | | | - | - |
| Hard-D | mg/L | | | | | | | - | - |
| Fe-D | mg/L | | | | | | | - | 0.35 |
| Pb-D | mg/L | | | | | | | - | - |
| Mg-D | mg/L | | | | | | | - | - |
| Mn-D | mg/L | | | | | | | - | - |
| Hg-D | mg/L | | | | | | | - | - |
| Mo-D | mg/L | | | | | | | - | - |
| Ni-D | mg/L | | | | | | | - | - |
| K-D | mg/L | | | | | | | - | - |
| S-D | mg/L | | | | | | | - | - |
| Se-D | mg/L | | | | | | | - | - |
| Na-D | mg/L | | | | | | | - | - |
| Sr-D | mg/L | | | | | | | - | - |
| Zn-D | mg/L | | | | | | | - | - |

# Table 120
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Lower Quinsam Lake 1 Metre from Bottom | | | | | | Water Quality Guidelines | |
| Site Name | LQLB | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 9-Apr-19 | 18-Apr-19 | 25-Apr-19 | 2-May-19 | 9-May-19 | 5x30 Average | Average | Max |
| Parameters | Units | | | | | | | | |
| SO4-D | mg/L | 27.8 | 29.6 | 25.8 | 25.2 | 25 | 26.7 | **128** | - |
| Turb | NTU | 0.71 | 0.63 | 0.86 | 0.48 | 0.79 | 0.69 | - | - |
| Alk-T | mg/L | 31.7 | 34.2 | 32.5 | 34.4 | 33.5 | 33.3 | - | - |
| P-T | mg/L | 0.0039 | 0.0015 | 0.0038 | 0.0052 | 0.0055 | 0.00398 | - | - |
| Al-T | mg/L | 0.0601 | 0.0499 | 0.0469 | 0.041 | 0.0427 | 0.0481 | - | - |
| As-T | mg/L | 0.0005 | 0.00049 | 0.00047 | 0.00058 | 0.00053 | 0.00051 | - | **0.005** |
| Ba-T | mg/L | 0.0037 | 0.0034 | 0.0034 | 0.0035 | 0.0036 | 0.0035 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | - | - |
| Ca-T | mg/L | 12.2 | 11.8 | 11.7 | 11.8 | 11.9 | 11.9 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | **0.05** |
| Cu-T | mg/L | 0.00057 | 0.00057 | 0.00066 | 0.00093 | 0.00057 | 0.00066 | **0.002** | **0.007** |
| Hard-T | mg/L | 36.4 | 35.1 | 34.6 | 35.1 | 35.6 | 35.4 | - | - |
| Fe-T | mg/L | 0.107 | 0.095 | 0.092 | 0.134 | 0.126 | 0.111 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.41 | 1.36 | 1.34 | 1.36 | 1.45 | 1.38 | - | - |
| Mn-T | mg/L | 0.0065 | 0.0075 | 0.0068 | 0.0153 | 0.0187 | 0.011 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.0000035 | 0.00000150 | - | **0.00010** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | 0.256 | 0.251 | 0.257 | 0.247 | 0.272 | 0.257 | - | - |
| S-T | mg/L | 10.3 | 10.2 | 10.8 | 8.4 | 8.5 | 9.6 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | 11.8 | 11.6 | 11.2 | 11.5 | 11.9 | 11.6 | - | - |
| Sr-T | mg/L | 0.0641 | 0.0636 | 0.061 | 0.0608 | 0.0626 | 0.0624 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0278 | 0.0292 | 0.0307 | 0.0275 | 0.0236 | 0.0278 | **0.05** | **0.1** |
| As-D | mg/L | 0.00039 | 0.00042 | 0.00043 | 0.00046 | 0.00053 | 0.00045 | - | - |
| Ba-D | mg/L | 0.0034 | 0.0033 | 0.0033 | 0.0035 | 0.0035 | 0.0034 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.000014 | 0.0000025 | 0.000006 | 0.0000050 | 0.00000600 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 12 | 10.7 | 11.9 | 11.4 | 12.2 | 11.6 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Cu-D | mg/L | 0.00052 | 0.00066 | 0.00055 | 0.00101 | 0.00062 | 0.00067 | - | - |
| Hard-D | mg/L | 35.4 | 31.8 | 35.2 | 33.3 | 35.7 | 34.3 | - | - |
| Fe-D | mg/L | 0.0577 | 0.0558 | 0.0552 | 0.082 | 0.0808 | 0.0663 | - | **0.35** |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.000100 | - | - |
| Mg-D | mg/L | 1.29 | 1.22 | 1.33 | 1.2 | 1.29 | 1.27 | - | - |
| Mn-D | mg/L | 0.0041 | 0.0048 | 0.0047 | 0.0129 | 0.0154 | 0.0084 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.000001 | 0.000001 | 0.000001 | 0.0000058 | 0.00000196 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | 0.249 | 0.249 | 0.261 | 0.242 | 0.257 | 0.252 | - | - |
| S-D | mg/L | 9.6 | 8.9 | 8.7 | 8.8 | 8.6 | 8.9 | - | - |
| Se-D | mg/L | 0.0001 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000060 | - | - |
| Na-D | mg/L | 12 | 10.9 | 11.4 | 10.3 | 11 | 11.1 | - | - |
| Sr-D | mg/L | 0.0646 | 0.061 | 0.0608 | 0.06 | 0.0593 | 0.0611 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0086 | 0.0025 | 0.0025 | 0.0025 | 0.00372 | - | - |

# Table 121
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description / Site Name | LQLB | Lower Quinsam Lake 1 Metre from Bottom 5 in 30 Weekly Samples | | | | | 4x30 Average | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 7-Aug-19 | 14-Aug-19 | 21-Aug-19 | 28-Aug-19 | | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 23 | 23.0 | 21 | 22 | 22.2 | **128** | - |
| Turb | NTU | No Results | 3.5 | 4.2 | 5.10 | 5.5 | 4.6 | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | 0.0251 | 0.0266 | 0.0273 | 0.0218 | 0.0252 | - | - |
| As-T | mg/L | | 0.00149 | 0.00165 | 0.00171 | 0.00162 | 0.00162 | - | **0.005** |
| Ba-T | mg/L | | 0.0064 | 0.0069 | 0.0076 | 0.0083 | 0.0073 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-T | mg/L | | 0.000011 | 0.000015 | 0.000011 | 0.000011 | 0.0000120 | - | - |
| Ca-T | mg/L | | 11.8 | 12.1 | 12.5 | 12.6 | 12.2 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-T | mg/L | | 0.00031 | 0.00041 | 0.00046 | 0.00050 | 0.000420 | - | **0.05** |
| Cu-T | mg/L | | 0.00070 | 0.00068 | 0.00065 | 0.00064 | 0.00067 | **0.002** | **0.007** |
| Hard-T | mg/L | | 35.1 | 35.8 | 37.2 | 37.3 | 36.4 | - | - |
| Fe-T | mg/L | | 0.746 | 0.861 | 0.991 | 1.09 | 0.922 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | | 1.39 | 1.36 | 1.44 | 1.4 | 1.4 | - | - |
| Mn-T | mg/L | | 0.346 | 0.437 | 0.465 | 0.532 | 0.445 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000033 | 0.00000158 | - | **0.00010** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | **0.025** |
| K-T | mg/L | | 0.256 | 0.262 | 0.273 | 0.269 | 0.265 | - | - |
| S-T | mg/L | | 8 | 7.3 | 8.6 | 7.8 | 7.9 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.0000100 | - | **0.0001** |
| Na-T | mg/L | | 11.2 | 11 | 11.6 | 11.5 | 11.3 | - | - |
| Sr-T | mg/L | | 0.0599 | 0.0621 | 0.0635 | 0.0642 | 0.0624 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0143 | 0.0213 | 0.0155 | 0.0126 | 0.0159 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00076 | 0.00091 | 0.0009 | 0.00078 | 0.00084 | - | - |
| Ba-D | mg/L | | 0.006 | 0.0072 | 0.0074 | 0.008 | 0.0072 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.0250 | - | - |
| Cd-D | mg/L | | 0.0000100 | 0.0000100 | 0.0000050 | 0.0000050 | 0.0000075 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 12 | 12.4 | 12.1 | 12.1 | 12.2 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Co-D | mg/L | | 0.00025 | 0.00031 | 0.00038 | 0.00039 | 0.000330 | - | - |
| Cu-D | mg/L | | 0.00057 | 0.00068 | 0.00049 | 0.00051 | 0.00056 | - | - |
| Hard-D | mg/L | | 35.4 | 36.9 | 35.9 | 35.7 | 36 | - | - |
| Fe-D | mg/L | | 0.312 | 0.385 | 0.419 | 0.397 | 0.378 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.000100 | - | - |
| Mg-D | mg/L | | 1.32 | 1.43 | 1.37 | 1.33 | 1.36 | - | - |
| Mn-D | mg/L | | 0.3540 | 0.4310 | 0.4370 | 0.4610 | 0.421 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.00050 | - | - |
| K-D | mg/L | | 0.254 | 0.276 | 0.265 | 0.261 | 0.264 | - | - |
| S-D | mg/L | | 7.8 | 7.9 | 8.2 | 7.3 | 7.8 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000050 | - | - |
| Na-D | mg/L | | 11.1 | 11.4 | 11.3 | 10.6 | 11.1 | - | - |
| Sr-D | mg/L | | 0.0626 | 0.0623 | 0.0612 | 0.0612 | 0.0618 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.00250 | - | - |

# Table 122
# 2019-2020 Annual Report

| EMS ID | E292118 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Lower Quinsam Lake 1 Metre from Bottom | | | | | | | |
| Site Name | LQLB | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 24-Oct-19 | 30-Oct-19 | 6-Nov-19 | 13-Nov-19 | 20-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | | | | | 128 | - |
| Turb | NTU | | | | | | | - | - |
| Alk-T | mg/L | | | | | | | - | - |
| P-T | mg/L | | | | | | | - | - |
| Al-T | mg/L | | | | | | | - | - |
| As-T | mg/L | | | | | | | - | 0.005 |
| Ba-T | mg/L | | | | | | | - | - |
| B-T | mg/L | | | | | | | - | - |
| Cd-T | mg/L | | | | | | | - | - |
| Ca-T | mg/L | | | | | | | - | - |
| Cr-T | mg/L | | | | | | | - | - |
| Co-T | mg/L | | | | | | | - | 0.05 |
| Cu-T | mg/L | | | | | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | | | | | - | - |
| Fe-T | mg/L | | | | | | | - | 1 |
| Pb-T | mg/L | | | | | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | | | | | - | - |
| Mn-T | mg/L | | | | | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | | | | | - | 0.00010 |
| Mo-T | mg/L | | | | | | | - | - |
| Ni-T | mg/L | | | | | | | - | 0.025 |
| K-T | mg/L | | | | | | | - | - |
| S-T | mg/L | | | | | | | - | - |
| Se-T | mg/L | | | | | | | - | - |
| Ag-T | mg/L | | | | | | | - | 0.0001 |
| Na-T | mg/L | | | | | | | - | - |
| Sr-T | mg/L | | | | | | | - | - |
| Zn-T | mg/L | | | | | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | | | | | 0.05 | 0.1 |
| As-D | mg/L | | | | | | | - | - |
| Ba-D | mg/L | | | | | | | - | - |
| B-D | mg/L | | | | | | | - | - |
| Cd-D | mg/L | | | | | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | | | | | - | - |
| Cr-D | mg/L | | | | | | | - | - |
| Co-D | mg/L | | | | | | | - | - |
| Cu-D | mg/L | | | | | | | - | - |
| Hard-D | mg/L | | | | | | | - | - |
| Fe-D | mg/L | | | | | | | - | 0.35 |
| Pb-D | mg/L | | | | | | | - | - |
| Mg-D | mg/L | | | | | | | - | - |
| Mn-D | mg/L | | | | | | | - | - |
| Hg-D | mg/L | | | | | | | - | - |
| Mo-D | mg/L | | | | | | | - | - |
| Ni-D | mg/L | | | | | | | - | - |
| K-D | mg/L | | | | | | | - | - |
| S-D | mg/L | | | | | | | - | - |
| Se-D | mg/L | | | | | | | - | - |
| Na-D | mg/L | | | | | | | - | - |
| Sr-D | mg/L | | | | | | | - | - |
| Zn-D | mg/L | | | | | | | - | - |

# Table 123
# 2019-2020 Annual Report

| EMS ID | E0126402 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description / Site Name | WA | Quinsam River at Argonaut Bridge - Upstream of mine influence 5 in 30 Weekly Samples | | | | | 5x30 Average | Water Quality Guidelines | |
| Date | | 4-Apr-19 | 11-Apr-19 | 18-Apr-19 | 23-Apr-19 | 30-Apr-19 | | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 0.5 | No result | 0.5 | 1.1 | 1.4 | 0.9 | **128** | - |
| Alk-T | mg/L | 21.1 | 17.9 | 20.2 | 17.4 | 14 | 18.1 | - | - |
| Acidity 8.3 | mg/L | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2 | **5** | **25** |
| Al-T | mg/L | 0.0253 | 0.0312 | 0.0308 | 0.0253 | 0.0247 | 0.0275 | - | - |
| As-T | mg/L | 0.00005 | 0.00011 | 0.00010 | 0.00005 | 0.00005 | 0.000072 | - | **0.005** |
| Ba-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000005 | 0.0000050 | 0.0000050 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 6.49 | 6.58 | 6.48 | 6.31 | 6.55 | 6.48 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | 0.00058 | 0.00067 | 0.00067 | 0.00075 | 0.0006 | 0.00065 | **0.002** | **0.007** |
| Hard-T | mg/L | 19 | 19.4 | 19.1 | 18.6 | 19.2 | 19.1 | - | - |
| Fe-T | mg/L | 0.013 | 0.018 | 0.022 | 0.015 | 0.013 | 0.016 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 0.667 | 0.71 | 0.703 | 0.687 | 0.695 | 0.692 | - | - |
| Mn-T | mg/L | 0.0005 | 0.0014 | 0.0013 | 0.0010 | 0.0011 | 0.001 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.0000010 | 0.000001 | 0.0000010 | 0.000001 | 0.000001 | 0.000001 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.068 | 0.059 | 0.06 | 0.064 | 0.059 | 0.062 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | 0.00012 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.000064 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | 0.62 | 0.692 | 0.636 | 0.638 | 0.62 | 0.641 | - | - |
| Sr-T | mg/L | 0.0105 | 0.0114 | 0.0111 | 0.0104 | 0.0106 | 0.0108 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0207 | 0.0222 | 0.0204 | 0.0217 | 0.0191 | 0.0208 | **0.05** | **0.1** |
| As-D | mg/L | 0.00005 | 0.00010 | 0.00005 | 0.00010 | 0.00005 | 0.00007 | - | - |
| Ba-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 5.94 | 6.66 | 6.36 | 6.31 | 6.48 | 6.35 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | 0.00052 | 0.00056 | 0.00052 | 0.00056 | 0.0006 | 0.00055 | - | - |
| Hard-D | mg/L | 17.6 | 19.5 | 18.6 | 18.5 | 19.2 | 18.7 | - | - |
| Fe-D | mg/L | 0.0092 | 0.0095 | 0.0098 | 0.0099 | 0.0085 | 0.0094 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | 0.664 | 0.692 | 0.668 | 0.672 | 0.721 | 0.683 | - | - |
| Mn-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.000001 | 0.0000010 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.064 | 0.065 | 0.06 | 0.063 | 0.060 | 0.062 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 0.64 | 0.662 | 0.595 | 0.623 | 0.661 | 0.6 | - | - |
| Sr-D | mg/L | 0.0108 | 0.0111 | 0.0109 | 0.01 | 0.0109 | 0.0107 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 124
# 2019-2020 Annual Report

| EMS ID | E0126402 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Quinsam River at Argonaut Bridge - Upstream of mine influence | | | | | | Water Quality Guidelines | |
| Site Name | WA | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 1.2 | 1.3 | 1.7 | 2.5 | 1.7 | **128** | - |
| Alk-T | mg/L | No Results | 21 | 22 | 20 | 20 | 20.8 | - | - |
| Acidity 8.3 | mg/L | | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | - | - |
| TSS | mg/L | | 2.0 | 0.5 | 1.2 | 0.5 | 1 | **5** | **25** |
| Al-T | mg/L | | 0.0203 | 0.0204 | 0.0214 | 0.0164 | 0.0196 | - | - |
| As-T | mg/L | | 0.00012 | 0.00011 | 0.00012 | 0.00014 | 0.00012 | - | **0.005** |
| Ba-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | | 7.05 | 6.53 | 6.99 | 7 | 6.89 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | | 0.00056 | 0.00055 | 0.00056 | 0.00052 | 0.00055 | **0.002** | **0.007** |
| Hard-T | mg/L | | 20.6 | 19.3 | 20.6 | 20.6 | 20.3 | - | - |
| Fe-T | mg/L | | 0.023 | 0.016 | 0.021 | 0.011 | 0.018 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | | 0.733 | 0.731 | 0.768 | 0.761 | 0.748 | - | - |
| Mn-T | mg/L | | 0.0017 | 0.0013 | 0.0017 | 0.0005 | 0.001 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000037 | 0.00000168 | - | **0.0001** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | | 0.061 | 0.056 | 0.056 | 0.059 | 0.058 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | | 0.626 | 0.614 | 0.634 | 0.621 | 0.624 | - | - |
| Sr-T | mg/L | | 0.0118 | 0.0105 | 0.0111 | 0.0116 | 0.0112 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0170 | 0.0163 | 0.0164 | 0.0196 | 0.0173 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00012 | 0.0001 | 0.00014 | 0.00018 | 0.00014 | - | - |
| Ba-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 6.86 | 6.92 | 7.01 | 6.85 | 6.91 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | | 0.00052 | 0.00056 | 0.00052 | 0.00055 | 0.00054 | - | - |
| Hard-D | mg/L | | 20.3 | 20.4 | 20.6 | 20.2 | 20.4 | - | - |
| Fe-D | mg/L | | 0.0129 | 0.0096 | 0.0132 | 0.0163 | 0.013 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.0001 | 0.0001 | - | - |
| Mg-D | mg/L | | 0.76 | 0.753 | 0.753 | 0.752 | 0.754 | - | - |
| Mn-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0016 | 0.00078 | - | - |
| Hg-D | mg/L | | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.058 | 0.057 | 0.053 | 0.057 | 0.056 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | | 0.666 | 0.647 | 0.62 | 0.613 | 0.6 | - | - |
| Sr-D | mg/L | | 0.0117 | 0.0108 | 0.0111 | 0.0115 | 0.0113 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 125
# 2019-2020 Annual Report

| EMS ID | E0126402 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Quinsam River at Argonaut Bridge - Upstream of mine influence | | | | | | Water Quality Guidelines | |
| Site Name | WA | 5 in 30 Weekly Samples | | | | | 5x30 Average | | |
| Date | | 17-Oct-19 | 22-Oct-19 | 29-Oct-19 | 4-Nov-19 | 12-Nov-19 | | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 0.5 | 0.5 | 2.1 | 1.7 | 1.7 | 1.3 | **128** | - |
| Alk-T | mg/L | 17.0 | 15 | 17 | 17 | 20.0 | 17.2 | - | - |
| Acidity 8.3 | mg/L | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2 | **5** | **25** |
| Al-T | mg/L | 0.106 | 0.0488 | 0.0164 | 0.0161 | 0.0189 | 0.0412 | - | - |
| As-T | mg/L | 0.00021 | 0.00021 | 0.00012 | 0.00005 | 0.00013 | 0.000144 | - | **0.005** |
| Ba-T | mg/L | 0.0015 | 0.002 | 0.001 | 0.0005 | 0.0005 | 0.0011 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 6.98 | 5.47 | 6.37 | 6.86 | 6.5 | 6.44 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | 0.00094 | 0.00069 | 0.00055 | 0.00055 | 0.00058 | 0.00066 | **0.002** | **0.007** |
| Hard-T | mg/L | 20.9 | 16.5 | 19 | 20.2 | 19.3 | 19.2 | - | - |
| Fe-T | mg/L | 0.123 | 0.035 | 0.005 | 0.027 | 0.016 | 0.0412 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 0.834 | 0.685 | 0.747 | 0.742 | 0.746 | 0.751 | - | - |
| Mn-T | mg/L | 0.0052 | 0.0019 | 0.0005 | 0.0012 | 0.0013 | 0.002 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.0000010 | 0.000001 | 0.0000031 | 0.0000010 | 0.0000010 | 0.00000142 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.097 | 0.106 | 0.065 | 0.061 | 0.068 | 0.079 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | 0.866 | 0.842 | 0.712 | 0.703 | 0.706 | 0.766 | - | - |
| Sr-T | mg/L | 0.0117 | 0.0117 | 0.0107 | 0.0113 | 0.0114 | 0.0114 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0223 | 0.038 | 0.0184 | 0.0142 | 0.0164 | 0.0219 | **0.05** | **0.1** |
| As-D | mg/L | 0.00014 | 0.00018 | 0.00011 | 0.00005 | 0.00012 | 0.00012 | - | - |
| Ba-D | mg/L | 0.0012 | 0.0019 | 0.0011 | 0.0005 | 0.0005 | 0.00104 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 6.57 | 5.55 | 6.4 | 6.86 | 6.89 | 6.45 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | 0.00059 | 0.00058 | 0.00055 | 0.0005 | 0.00055 | 0.00055 | - | - |
| Hard-D | mg/L | 19.6 | 16.8 | 19.0 | 20.2 | 20.6 | 19.2 | - | - |
| Fe-D | mg/L | 0.0172 | 0.0202 | 0.0147 | 0.0077 | 0.0098 | 0.0139 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | 0.777 | 0.711 | 0.738 | 0.748 | 0.826 | 0.76 | - | - |
| Mn-D | mg/L | 0.0011 | 0.0005 | 0.0014 | 0.0005 | 0.0005 | 0.0008 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.000001 | 0.000001 | 0.000001 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.086 | 0.109 | 0.065 | 0.06 | 0.069 | 0.078 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 0.805 | 0.866 | 0.71 | 0.698 | 0.772 | 0.8 | - | - |
| Sr-D | mg/L | 0.0116 | 0.0116 | 0.011 | 0.0115 | 0.0113 | 0.0114 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 126
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| EMS ID | E0900504 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Middle Quinsam Lake Outlet | | | | | | Water Quality Guidelines | |
| Site Name | WB | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 4-Apr-19 | 11-Apr-19 | 18-Apr-19 | 23-Apr-19 | 30-Apr-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 57.9 | No result | 50.3 | 42.2 | 39.4 | 47 | **128** | - |
| Alk-T | mg/L | 47.5 | 45.6 | 45.3 | 38.5 | 40.7 | 43.5 | - | - |
| Acidity 8.3 | mg/L | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2 | **5** | **25** |
| Al-T | mg/L | 0.0205 | 0.0224 | 0.0869 | 0.0321 | 0.0231 | 0.037 | - | - |
| As-T | mg/L | 0.00014 | 0.00016 | 0.00018 | 0.0002 | 0.00019 | 0.00017 | - | **0.005** |
| Ba-T | mg/L | 0.0026 | 0.0028 | 0.0029 | 0.0028 | 0.0026 | 0.0027 | - | - |
| B-T | mg/L | 0.082 | 0.081 | 0.071 | 0.063 | 0.065 | 0.072 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.0000050 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 15.1 | 17.2 | 15.8 | 14.8 | 14 | 15.40 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | 0.00054 | 0.00073 | 0.00084 | 0.00051 | 0.0005 | 0.00062 | **0.002** | **0.007** |
| Hard-T | mg/L | 45.5 | 51 | 46.9 | 44.6 | 42.1 | 46 | - | - |
| Fe-T | mg/L | 0.03 | 0.042 | 0.166 | 0.058 | 0.038 | 0.067 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.88 | 1.94 | 1.79 | 1.87 | 1.72 | 1.84 | - | - |
| Mn-T | mg/L | 0.0039 | 0.0054 | 0.01 | 0.0058 | 0.0053 | 0.006 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.0000010 | 0.000001 | 0.0000010 | 0.000001 | 0.000001 | 0.000001 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.395 | 0.371 | 0.366 | 0.306 | 0.312 | 0.35 | - | - |
| S-T | mg/L | 21.2 | 19 | 17.3 | 15.1 | 14.6 | 17.4 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | 26.9 | 25.1 | 24.1 | 16.5 | 17.6 | 22 | - | - |
| Sr-T | mg/L | 0.112 | 0.109 | 0.101 | 0.0902 | 0.0868 | 0.0998 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0178 | 0.018 | 0.0166 | 0.0189 | 0.0185 | 0.0180 | **0.05** | **0.1** |
| As-D | mg/L | 0.00013 | 0.00015 | 0.00013 | 0.00019 | 0.0002 | 0.00016 | - | - |
| Ba-D | mg/L | 0.0024 | 0.0029 | 0.0025 | 0.0026 | 0.0026 | 0.0026 | - | - |
| B-D | mg/L | 0.080 | 0.075 | 0.071 | 0.057 | 0.063 | 0.069 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 15.4 | 17.4 | 15.6 | 14.2 | 13.8 | 15.3 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | 0.00048 | 0.00048 | 0.00046 | 0.00051 | 0.0005 | 0.00049 | - | - |
| Hard-D | mg/L | 46.7 | 51.2 | 46.2 | 42.7 | 41.9 | 45.7 | - | - |
| Fe-D | mg/L | 0.0205 | 0.0242 | 0.022 | 0.0289 | 0.0263 | 0.0244 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | 1.97 | 1.91 | 1.73 | 1.76 | 1.8 | 1.83 | - | - |
| Mn-D | mg/L | 0.0027 | 0.0038 | 0.0035 | 0.0038 | 0.0036 | 0.0035 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.000001 | 0.0000010 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.409 | 0.429 | 0.371 | 0.272 | 0.307 | 0.358 | - | - |
| S-D | mg/L | 20.5 | 20.7 | 16.7 | 14.9 | 14.4 | 17.4 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 27.6 | 25 | 22.1 | 16.2 | 18.6 | 21.9 | - | - |
| Sr-D | mg/L | 0.115 | 0.1040 | 0.0977 | 0.0896 | 0.0917 | 0.0996 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 127
# 2019-2020 Annual Report

| EMS ID | E0900504 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description<br>Site Name | WB | Middle Quinsam Lake Outlet<br>5 in 30 Weekly Samples | | | | | 4x30 Average | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 9 | 9.1 | 9.2 | 9.4 | 9 | **128** | - |
| Alk-T | mg/L | No Results | 27.0 | 28 | 24 | 25 | 26 | - | - |
| Acidity 8.3 | mg/L | | 0.50 | 0.5 | 1.60 | 0.50 | 0.78 | - | - |
| TSS | mg/L | | 2.0 | 0.5 | 0.5 | 0.5 | 1 | **5** | **25** |
| Al-T | mg/L | | 0.0146 | 0.0145 | 0.0146 | 0.0135 | 0.0143 | - | - |
| As-T | mg/L | | 0.00019 | 0.00017 | 0.00018 | 0.00019 | 0.00018 | - | **0.005** |
| Ba-T | mg/L | | 0.0011 | 0.0011 | 0.0013 | 0.0011 | 0.0012 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | | 8.68 | 8.2 | 9.18 | 8.69 | 8.69 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | | 0.00053 | 0.00025 | 0.00025 | 0.00025 | 0.00032 | **0.002** | **0.007** |
| Hard-T | mg/L | | 25.7 | 24.5 | 27.6 | 25.7 | 25.9 | - | - |
| Fe-T | mg/L | | 0.042 | 0.038 | 0.047 | 0.041 | 0.042 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | | 0.981 | 0.972 | 1.14 | 0.977 | 1.018 | - | - |
| Mn-T | mg/L | | 0.0067 | 0.0078 | 0.0083 | 0.0063 | 0.007 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000031 | 0.00000152 | - | **0.0001** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | | 0.106 | 0.106 | 0.104 | 0.104 | 0.105 | - | - |
| S-T | mg/L | | 3.7 | 1.5 | 3.1 | 1.5 | 2.45 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | | 4.24 | 3.72 | 3.7 | 3.63 | 3.83 | - | - |
| Sr-T | mg/L | | 0.0321 | 0.0283 | 0.0309 | 0.0288 | 0.03 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0146 | 0.013 | 0.0117 | 0.0115 | 0.0127 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00017 | 0.00017 | 0.00018 | 0.00021 | 0.00018 | - | - |
| Ba-D | mg/L | | 0.0011 | 0.0011 | 0.0012 | 0.0011 | 0.0011 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 9.04 | 9 | 9.22 | 8.57 | 8.96 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | | 0.00048 | 0.00047 | 0.00044 | 0.00046 | 0.00046 | - | - |
| Hard-D | mg/L | | 26.9 | 26.8 | 27.6 | 25.5 | 26.7 | - | - |
| Fe-D | mg/L | | 0.0288 | 0.0283 | 0.0297 | 0.0275 | 0.0286 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | | 1.04 | 1.05 | 1.10 | 0.994 | 1.046 | - | - |
| Mn-D | mg/L | | 0.0023 | 0.0028 | 0.0022 | 0.0025 | 0.0025 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0013 | 0.0005 | 0.0005 | 0.0005 | 0.0007 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.11 | 0.104 | 0.104 | 0.102 | 0.105 | - | - |
| S-D | mg/L | | 3.8 | 3.3 | 3.4 | 1.5 | 3 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | | 4.41 | 4.06 | 3.67 | 3.67 | 4.0 | - | - |
| Sr-D | mg/L | | 0.0325 | 0.0298 | 0.0316 | 0.0281 | 0.0305 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 128
# 2019-2020 Annual Report

| EMS ID | E0900504 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description<br>Site Name | WB | Middle Quinsam Lake Outlet<br>5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 17-Oct-19 | 22-Oct-19 | 29-Oct-19 | 4-Nov-19 | 12-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 38 | 43 | 38 | 32 | 31 | 36 | **128** | - |
| Alk-T | mg/L | 46.0 | 43 | 39 | 42 | 40 | 42 | - | - |
| Acidity 8.3 | mg/L | 0.50 | 0.50 | 0.50 | 0.50 | 1.50 | 0.70 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2 | **5** | **25** |
| Al-T | mg/L | 0.0103 | 0.0117 | 0.0162 | 0.0137 | 0.0138 | 0.0131 | - | - |
| As-T | mg/L | 0.00015 | 0.00023 | 0.00028 | 0.00017 | 0.00024 | 0.00021 | - | **0.005** |
| Ba-T | mg/L | 0.0028 | 0.0029 | 0.0033 | 0.0028 | 0.0028 | 0.0029 | - | - |
| B-T | mg/L | 0.064 | 0.057 | 0.067 | 0.065 | 0.056 | 0.062 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 13.6 | 15 | 15.6 | 13.7 | 13.1 | 14.20 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | 0.00051 | 0.00053 | 0.00025 | 0.00025 | 0.00025 | 0.00036 | **0.002** | **0.007** |
| Hard-T | mg/L | 41.4 | 45 | 47.2 | 41.6 | 39.8 | 43 | - | - |
| Fe-T | mg/L | 0.045 | 0.05 | 0.061 | 0.049 | 0.055 | 0.052 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.83 | 1.84 | 2.00 | 1.8 | 1.71 | 1.84 | - | - |
| Mn-T | mg/L | 0.0134 | 0.0084 | 0.0075 | 0.0072 | 0.0081 | 0.009 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.0000022 | 0.0000010 | 0.0000010 | 0.0000010 | 0.00000124 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.317 | 0.304 | 0.299 | 0.307 | 0.271 | 0.3 | - | - |
| S-T | mg/L | 15.1 | 12.9 | 13.4 | 12.4 | 10.8 | 12.9 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | 20.2 | 17.3 | 16.4 | 18.2 | 14.3 | 17.3 | - | - |
| Sr-T | mg/L | 0.0813 | 0.0887 | 0.0964 | 0.0761 | 0.075 | 0.0835 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0078 | 0.0076 | 0.0103 | 0.0097 | 0.0102 | 0.0091 | **0.05** | **0.1** |
| As-D | mg/L | 0.00017 | 0.00018 | 0.00024 | 0.00017 | 0.00022 | 0.0002 | - | - |
| Ba-D | mg/L | 0.0026 | 0.0027 | 0.003 | 0.0027 | 0.0029 | 0.0028 | - | - |
| B-D | mg/L | 0.072 | 0.067 | 0.063 | 0.066 | 0.059 | 0.065 | - | - |
| Cd-D | mg/L | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 14.4 | 14.4 | 15.2 | 13.5 | 14 | 14.3 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | 0.00044 | 0.00038 | 0.00042 | 0.0004 | 0.00062 | 0.00045 | - | - |
| Hard-D | mg/L | 43.5 | 43.6 | 46.2 | 40.8 | 42.5 | 43.3 | - | - |
| Fe-D | mg/L | 0.0285 | 0.0277 | 0.0364 | 0.0295 | 0.0378 | 0.032 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | 1.79 | 1.84 | 2.02 | 1.74 | 1.84 | 1.85 | - | - |
| Mn-D | mg/L | 0.0064 | 0.0025 | 0.003 | 0.0024 | 0.0037 | 0.0036 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0011 | 0.0005 | 0.0005 | 0.0005 | 0.00062 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.3 | 0.312 | 0.299 | 0.299 | 0.294 | 0.301 | - | - |
| S-D | mg/L | 12.7 | 13.2 | 13.4 | 12.4 | 11 | 12.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 19.9 | 18.7 | 16.2 | 17.9 | 15.70 | 17.7 | - | - |
| Sr-D | mg/L | 0.0845 | 0.0855 | 0.0882 | 0.0746 | 0.0783 | 0.0822 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 129
# 2019-2020 Annual Report

| EMS ID | E219412 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Long Lake Outlet | | | | | | Water Quality Guidelines | |
| Site Name | LLO | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 4-Apr-19 | 11-Apr-19 | 18-Apr-19 | 23-Apr-19 | 30-Apr-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 65.1 | No Results | 2.9 | 40.6 | 34.4 | 36 | **128** | - |
| Alk-T | mg/L | 33 | 27.3 | 22.2 | 24.1 | 21.3 | 26 | - | - |
| Acidity 8.3 | mg/L | 0.5 | 2.70 | 1.80 | 0.5 | 0.5 | 1.2 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | **5** | **25** |
| Al-T | mg/L | 0.0275 | 0.0395 | 0.0338 | 0.0358 | 0.0315 | 0.034 | - | - |
| As-T | mg/L | 0.00026 | 0.00036 | 0.00029 | 0.00034 | 0.00033 | 0.000316 | - | **0.005** |
| Ba-T | mg/L | 0.0052 | 0.0046 | 0.004 | 0.0042 | 0.0036 | 0.004320 | - | - |
| B-T | mg/L | 0.066 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0332 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 27.4 | 22 | 18.3 | 17.2 | 15.8 | 20.14 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | 81.3 | 65.1 | 55.3 | 52.2 | 48 | 60.38 | - | - |
| Fe-T | mg/L | 0.079 | 0.091 | 0.069 | 0.085 | 0.066 | 0.078 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 3.15 | 2.5 | 2.34 | 2.26 | 2.1 | 2.47 | - | - |
| Mn-T | mg/L | 0.0132 | 0.0121 | 0.0107 | 0.01 | 0.0096 | 0.01112 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.327 | 0.242 | 0.250 | 0.228 | 0.197 | 0.2488 | - | - |
| S-T | mg/L | 22.4 | 17.1 | 16.2 | 13.5 | 12.9 | 16.42 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | - | **0.0001** |
| Na-T | mg/L | 9.6 | 6.62 | 6.51 | 5.1 | 4.93 | 6.542 | - | - |
| Sr-T | mg/L | 0.195 | 0.135 | 0.125 | 0.106 | 0.0999 | 0.13218 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0192 | 0.0274 | 0.0227 | 0.0261 | 0.0233 | 0.0237 | **0.05** | **0.1** |
| As-D | mg/L | 0.00028 | 0.00033 | 0.00025 | 0.00030 | 0.0003 | 0.000292 | - | - |
| Ba-D | mg/L | 0.0046 | 0.0049 | 0.0041 | 0.0038 | 0.0037 | 0.0042 | - | - |
| B-D | mg/L | 0.066 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0332 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 26 | 22.3 | 19.9 | 17.2 | 16.5 | 20.38 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | 0.00031 | 0.00036 | 0.00033 | 0.00040 | 0.00037 | 0.000354 | - | - |
| Hard-D | mg/L | 77.5 | 66.3 | 58.9 | 52.4 | 50.1 | 61.04 | - | - |
| Fe-D | mg/L | 0.0458 | 0.0592 | 0.0496 | 0.0523 | 0.0452 | 0.05042 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | 3.07 | 2.61 | 2.24 | 2.27 | 2.16 | 2.47 | - | - |
| Mn-D | mg/L | 0.0093 | 0.0088 | 0.0066 | 0.0067 | 0.0051 | 0.0073 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.334 | 0.282 | 0.244 | 0.213 | 0.203 | 0.2552 | - | - |
| S-D | mg/L | 23.3 | 17 | 16.2 | 14.6 | 12.5 | 16.72 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 9.77 | 6.8 | 5.88 | 5.22 | 5.25 | 6.59 | - | - |
| Sr-D | mg/L | 0.189 | 0.137 | 0.126 | 0.104 | 0.103 | 0.1318 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 130
# 2019-2020 Annual Report

| EMS ID | E219412 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description / Site Name | LLO | Long Lake Outlet 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 79 | 86 | 78 | 88 | 83 | **128** | - |
| Alk-T | mg/L | No Results | 39 | 39 | 36 | 39 | 38 | - | - |
| Acidity 8.3 | mg/L | | 0.50 | 1 | 1.20 | 1.80 | 1.1 | - | - |
| TSS | mg/L | | 2.0 | 0.5 | 0.5 | 2.0 | 1.3 | **5** | **25** |
| Al-T | mg/L | | 0.0151 | 0.0098 | 0.0088 | 0.0113 | 0.011 | - | - |
| As-T | mg/L | | 0.00054 | 0.00046 | 0.00045 | 0.00047 | 0.000480 | - | **0.005** |
| Ba-T | mg/L | | 0.0077 | 0.006 | 0.0066 | 0.0069 | 0.006800 | - | - |
| B-T | mg/L | | 0.071 | 0.068 | 0.073 | 0.075 | 0.072 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | | 32 | 30.1 | 31.4 | 33.4 | 31.7 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | | 95.4 | 89.9 | 94.4 | 99.3 | 94.8 | - | - |
| Fe-T | mg/L | | 0.031 | 0.021 | 0.021 | 0.018 | 0.023 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | | 3.74 | 3.58 | 3.88 | 3.89 | 3.77 | - | - |
| Mn-T | mg/L | | 0.0085 | 0.0058 | 0.0052 | 0.0041 | 0.0059 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | **0.0001** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | | 0.365 | 0.327 | 0.339 | 0.357 | 0.347 | - | - |
| S-T | mg/L | | 29.7 | 25.8 | 27.6 | 28.2 | 27.8 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | - | **0.0001** |
| Na-T | mg/L | | 10.5 | 9.94 | 10.3 | 10.4 | 10.28 | - | - |
| Sr-T | mg/L | | 0.214 | 0.203 | 0.22 | 0.228 | 0.216 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0066 | 0.0065 | 0.0054 | 0.0045 | 0.0058 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00047 | 0.00047 | 0.00047 | 0.00045 | 0.00046 | - | - |
| Ba-D | mg/L | | 0.0064 | 0.0062 | 0.0064 | 0.0067 | 0.0064 | - | - |
| B-D | mg/L | | 0.075 | 0.072 | 0.075 | 0.073 | 0.074 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 31.7 | 32 | 32.5 | 32.4 | 32.2 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | | 0.00025 | 0.00027 | 0.00026 | 0.00025 | 0.00026 | - | - |
| Hard-D | mg/L | | 95 | 95.5 | 97.5 | 97.1 | 96.3 | - | - |
| Fe-D | mg/L | | 0.012 | 0.011 | 0.0104 | 0.0093 | 0.0107 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | | 3.86 | 3.78 | 3.96 | 3.96 | 3.89 | - | - |
| Mn-D | mg/L | | 0.0016 | 0.0016 | 0.0014 | 0.0013 | 0.0015 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.349 | 0.34 | 0.342 | 0.351 | 0.346 | - | - |
| S-D | mg/L | | 26.9 | 28 | 27.7 | 28.3 | 27.7 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | | 10.5 | 10.3 | 10.5 | 10.2 | 10.4 | - | - |
| Sr-D | mg/L | | 0.23 | 0.213 | 0.228 | 0.226 | 0.224 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 131
# 2019-2020 Annual Report

| EMS ID | E219412 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Long Lake Outlet | | | | | | Water Quality Guidelines | |
| Site Name | LLO | 5 in 30 Weekly Samples | | | | | 5x30 Average | Average | Max |
| Date | | 15-Oct-19 | 22-Oct-19 | 29-Oct-19 | 4-Nov-19 | 12-Nov-19 | | | |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 76 | 62 | 45 | 39 | 34 | 51 | **128** | - |
| Alk-T | mg/L | 36.0 | 30.0 | 26 | 25 | 26 | 29 | - | - |
| Acidity 8.3 | mg/L | 1.8 | 0.50 | 0.50 | 0.50 | 1.50 | 1.0 | - | - |
| TSS | mg/L | 2.0 | 4.0 | 2.0 | 2.0 | 2.0 | 2.4 | **5** | **25** |
| Al-T | mg/L | 0.0866 | 0.0154 | 0.0235 | 0.0244 | 0.0234 | 0.035 | - | - |
| As-T | mg/L | 0.00049 | 0.00047 | 0.00048 | 0.00044 | 0.00046 | 0.000470 | - | **0.005** |
| Ba-T | mg/L | 0.0065 | 0.0053 | 0.0047 | 0.0043 | 0.0041 | 0.005000 | - | - |
| B-T | mg/L | 0.067 | 0.025 | 0.025 | 0.025 | 0.025 | 0.0334 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 33.6 | 24.1 | 20 | 17.8 | 17.2 | 22.5 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | 0.00064 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00033 | **0.002** | **0.007** |
| Hard-T | mg/L | 99.9 | 72.8 | 61.2 | 54.2 | 52.8 | 68.2 | - | - |
| Fe-T | mg/L | 0.214 | 0.072 | 0.099 | 0.084 | 0.093 | 0.112 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 3.87 | 3.09 | 2.71 | 2.4 | 2.39 | 2.89 | - | - |
| Mn-T | mg/L | 0.0227 | 0.0074 | 0.0064 | 0.0059 | 0.0077 | 0.01 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.0000010 | 0.000001 | 0.0000026 | 0.0000010 | 0.0000025 | 0.0000016 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.362 | 0.301 | 0.268 | 0.251 | 0.238 | 0.284 | - | - |
| S-T | mg/L | 24.9 | 19.6 | 15.4 | 13 | 12.1 | 17 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | - | **0.0001** |
| Na-T | mg/L | 9.97 | 7.75 | 6.25 | 5.36 | 5.11 | 6.89 | - | - |
| Sr-T | mg/L | 0.189 | 0.166 | 0.131 | 0.112 | 0.101 | 0.14 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0261 | 0.0095 | 0.0154 | 0.0171 | 0.0179 | 0.0172 | **0.05** | **0.1** |
| As-D | mg/L | 0.00043 | 0.0004 | 0.00044 | 0.00041 | 0.00043 | 0.00042 | - | - |
| Ba-D | mg/L | 0.0062 | 0.0053 | 0.0044 | 0.0042 | 0.0041 | 0.0048 | - | - |
| B-D | mg/L | 0.073 | 0.056 | 0.025 | 0.025 | 0.025 | 0.0408 | - | - |
| Cd-D | mg/L | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 31.1 | 24.8 | 20.2 | 17.6 | 17.7 | 22.3 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | 0.00062 | 0.00029 | 0.00037 | 0.00034 | 0.00039 | 0.0004 | - | - |
| Hard-D | mg/L | 93.1 | 75 | 62 | 54.3 | 54.8 | 67.8 | - | - |
| Fe-D | mg/L | 0.0404 | 0.0363 | 0.0562 | 0.0555 | 0.0583 | 0.0493 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | 3.74 | 3.21 | 2.81 | 2.5 | 2.6 | 2.97 | - | - |
| Mn-D | mg/L | 0.0024 | 0.0016 | 0.0035 | 0.0038 | 0.0039 | 0.003 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.0000027 | 0.000001 | 0.0000010 | 0.000001 | 0.0000013 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.341 | 0.307 | 0.265 | 0.248 | 0.251 | 0.282 | - | - |
| S-D | mg/L | 25.4 | 20.5 | 15.6 | 13.2 | 12.8 | 17.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 9.97 | 8.03 | 6.16 | 5.51 | 5.59 | 7.05 | - | - |
| Sr-D | mg/L | 0.204 | 0.168 | 0.13 | 0.11 | 0.107 | 0.144 | - | - |
| Zn-D | mg/L | 0.0070 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0034 | - | - |

# Table 132
# 2019-2020 Annual Report

| EMS ID | E217017 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | No Name Lake Outlet | | | | | | Water Quality Guidelines | |
| Site Name | NNO | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 4-Apr-19 | 11-Apr-19 | 18-Apr-19 | 25-Apr-19 | 30-Apr-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 1.1 | No Results | 1.4 | 1.8 | 1.5 | 1 | **128** | - |
| Alk-T | mg/L | 11.3 | 10.7 | 11.4 | 11.6 | 9.7 | 10.9 | - | - |
| Acidity 8.3 | mg/L | 0.5 | 0.5 | 0.50 | 0.5 | 0.5 | 0.50 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 4.0 | 2.0 | 2.0 | 2 | **5** | **25** |
| Al-T | mg/L | 0.0389 | 0.0448 | 0.0393 | 0.0386 | 0.039 | 0.0401 | - | - |
| As-T | mg/L | 0.00016 | 0.00019 | 0.0002 | 0.00019 | 0.00019 | 0.00019 | - | **0.005** |
| Ba-T | mg/L | 0.0005 | 0.0011 | 0.0011 | 0.0011 | 0.0012 | 0.0010 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 3.11 | 3.49 | 3.57 | 3.41 | 3.62 | 3.44 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | 0.00025 | 0.00025 | 0.00025 | 0.00079 | 0.00025 | 0.00036 | **0.002** | **0.007** |
| Hard-T | mg/L | 10.5 | 11.6 | 11.9 | 11.7 | 12.3 | 11.6 | - | - |
| Fe-T | mg/L | 0.062 | 0.065 | 0.053 | 0.053 | 0.053 | 0.057 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 0.663 | 0.706 | 0.716 | 0.772 | 0.782 | 0.728 | - | - |
| Mn-T | mg/L | 0.0059 | 0.0062 | 0.0046 | 0.0042 | 0.0041 | 0.005 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.069 | 0.057 | 0.071 | 0.069 | 0.07 | 0.067 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | 0.87 | 0.97 | 1.02 | 1.02 | 1.01 | 0.978 | - | - |
| Sr-T | mg/L | 0.0103 | 0.0109 | 0.0110 | 0.0105 | 0.0109 | 0.0107 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.032 | 0.0345 | 0.033 | 0.033 | 0.0312 | 0.0327 | **0.05** | **0.1** |
| As-D | mg/L | 0.00017 | 0.00019 | 0.00019 | 0.0002 | 0.0002 | 0.00019 | - | - |
| Ba-D | mg/L | 0.0005 | 0.0011 | 0.0011 | 0.0012 | 0.0011 | 0.001 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 3.06 | 3.66 | 3.56 | 3.59 | 3.56 | 3.49 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | 0.00037 | 0.00043 | 0.00041 | 0.00044 | 0.00043 | 0.00042 | - | - |
| Hard-D | mg/L | 10.7 | 12.1 | 12.1 | 12 | 12.3 | 11.8 | - | - |
| Fe-D | mg/L | 0.0371 | 0.0372 | 0.038 | 0.0377 | 0.0384 | 0.0377 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | 0.752 | 0.72 | 0.77 | 0.742 | 0.827 | 0.762 | - | - |
| Mn-D | mg/L | 0.0051 | 0.0049 | 0.0041 | 0.0033 | 0.0034 | 0.0042 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.061 | 0.062 | 0.07 | 0.067 | 0.064 | 0.065 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 1.01 | 1.04 | 1.01 | 1.02 | 1.11 | 1.0 | - | - |
| Sr-D | mg/L | 0.0102 | 0.0109 | 0.0106 | 0.0107 | 0.0113 | 0.0107 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 133
# 2019-2020 Annual Report

| EMS ID | E217017 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | No Name Lake Outlet | | | | | | | |
| Site Name | NNO | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 1.7 | 1.4 | 1.6 | 4 | 2 | **128** | - |
| Alk-T | mg/L | No Results | 15 | 15 | 14 | 14 | 14.5 | - | - |
| Acidity 8.3 | mg/L | | 0.5 | 0.5 | 0.5 | 0.5 | 0.50 | - | - |
| TSS | mg/L | | 2 | 0.5 | 0.5 | 0.5 | 1 | **5** | **25** |
| Al-T | mg/L | | 0.0194 | 0.0151 | 0.0167 | 0.0165 | 0.0169 | - | - |
| As-T | mg/L | | 0.00038 | 0.00035 | 0.00038 | 0.00045 | 0.00039 | - | **0.005** |
| Ba-T | mg/L | | 0.003 | 0.0005 | 0.001 | 0.0012 | 0.0014 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | | 4.45 | 4.4 | 4.49 | 4.7 | 4.51 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | **0.002** | **0.007** |
| Hard-T | mg/L | | 15.1 | 15 | 15.2 | 16 | 15.3 | - | - |
| Fe-T | mg/L | | 0.069 | 0.076 | 0.089 | 0.092 | 0.082 | - | **1** |
| Pb-T | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | | 0.965 | 0.975 | 0.976 | 1.03 | 0.986 | - | - |
| Mn-T | mg/L | | 0.0042 | 0.0066 | 0.0067 | 0.0079 | 0.006 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | **0.0001** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | | 0.084 | 0.06 | 0.064 | 0.071 | 0.07 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | | 1.28 | 1.19 | 1.23 | 1.25 | 1.24 | - | - |
| Sr-T | mg/L | | 0.0144 | 0.0137 | 0.0142 | 0.0154 | 0.0144 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0128 | 0.0114 | 0.0116 | 0.0122 | 0.0120 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00038 | 0.00037 | 0.00038 | 0.00043 | 0.00039 | - | - |
| Ba-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0011 | 0.00065 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 4.42 | 4.53 | 4.68 | 4.65 | 4.57 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | - | - |
| Cu-D | mg/L | | 0.00034 | 0.00035 | 0.00033 | 0.00033 | 0.00034 | - | - |
| Hard-D | mg/L | | 15 | 15.4 | 16 | 15.8 | 15.6 | - | - |
| Fe-D | mg/L | | 0.0486 | 0.0552 | 0.0639 | 0.0704 | 0.0595 | - | **0.35** |
| Pb-D | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | - | - |
| Mg-D | mg/L | | 0.967 | 0.993 | 1.05 | 1.01 | 1.005 | - | - |
| Mn-D | mg/L | | 0.0027 | 0.0051 | 0.0048 | 0.0054 | 0.0045 | - | - |
| Hg-D | mg/L | | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0011 | 0.00065 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.06 | 0.058 | 0.061 | 0.065 | 0.061 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | | 1.24 | 1.25 | 1.28 | 1.25 | 1.3 | - | - |
| Sr-D | mg/L | | 0.0145 | 0.0139 | 0.0146 | 0.0149 | 0.0145 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 134
# 2019-2020 Annual Report

| EMS ID | E217017 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | No Name Lake Outlet | | | | | | | |
| Site Name | NNO | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Date | | 15-Oct-19 | 22-Oct-19 | 29-Oct-19 | 4-Nov-19 | 12-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 1.8 | 1.1 | 2.2 | 4.9 | 0.5 | 2 | **128** | - |
| Alk-T | mg/L | 15 | 13 | 13 | 13.0 | 14 | 13.6 | - | - |
| Acidity 8.3 | mg/L | 0.50 | 0.5 | 0.5 | 0.5 | 0.50 | 0.50 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2 | **5** | **25** |
| Al-T | mg/L | 0.0255 | 0.0283 | 0.0428 | 0.038 | 0.0311 | 0.0331 | - | - |
| As-T | mg/L | 0.00035 | 0.00035 | 0.00036 | 0.00032 | 0.00033 | 0.00034 | - | **0.005** |
| Ba-T | mg/L | 0.0015 | 0.0014 | 0.0015 | 0.0014 | 0.0015 | 0.0015 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 4.78 | 4.63 | 4.78 | 4.64 | 4.66 | 4.70 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | 0.00053 | 0.00025 | 0.00025 | 0.00025 | 0.00025 | 0.00031 | **0.002** | **0.007** |
| Hard-T | mg/L | 16.5 | 15.7 | 16.2 | 15.9 | 15.7 | 16 | - | - |
| Fe-T | mg/L | 0.169 | 0.126 | 0.136 | 0.123 | 0.113 | 0.133 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.12 | 0.996 | 1.03 | 1.05 | 0.996 | 1.038 | - | - |
| Mn-T | mg/L | 0.0055 | 0.0056 | 0.0064 | 0.0071 | 0.0069 | 0.006 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.0000023 | 0.000001 | 0.000001 | 0.000001 | 0.00000126 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.099 | 0.108 | 0.119 | 0.125 | 0.118 | 0.114 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | 1.35 | 1.2 | 1.26 | 1.3 | 1.260 | 1.27 | - | - |
| Sr-T | mg/L | 0.0164 | 0.015 | 0.0155 | 0.0145 | 0.0151 | 0.0153 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0172 | 0.0222 | 0.0277 | 0.0261 | 0.027 | 0.0240 | **0.05** | **0.1** |
| As-D | mg/L | 0.00037 | 0.00034 | 0.00035 | 0.0003 | 0.00030 | 0.00033 | - | - |
| Ba-D | mg/L | 0.0014 | 0.0014 | 0.0013 | 0.0013 | 0.0014 | 0.0014 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.000005 | **0.000088** | **0.00017** |
| Ca-D | mg/L | 5.05 | 4.75 | 4.66 | 4.64 | 4.71 | 4.76 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | 0.00038 | 0.00037 | 0.00043 | 0.0004 | 0.00041 | 0.0004 | - | - |
| Hard-D | mg/L | 17.2 | 16.1 | 15.7 | 15.7 | 16.2 | 16.2 | - | - |
| Fe-D | mg/L | 0.0914 | 0.092 | 0.0905 | 0.0775 | 0.0797 | 0.0862 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | 1.11 | 1.03 | 0.998 | 1 | 1.07 | 1.042 | - | - |
| Mn-D | mg/L | 0.0025 | 0.0028 | 0.0046 | 0.0054 | 0.0051 | 0.0041 | - | - |
| Hg-D | mg/L | 0.0000010 | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.083 | 0.115 | 0.121 | 0.113 | 0.117 | 0.11 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 1.27 | 1.26 | 1.33 | 1.24 | 1.3 | 1.3 | - | - |
| Sr-D | mg/L | 0.0157 | 0.0157 | 0.0146 | 0.0145 | 0.0143 | 0.015 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 135
# 2019-2020 Annual Report

| EMS ID | E286930 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Quinsam River Upstream of 7 South Mining Operation | | | | | | Water Quality Guidelines | |
| Site Name | QRDS1 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 4-Apr-19 | 11-Apr-19 | 18-Apr-19 | 23-Apr-19 | 30-Apr-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 60.3 | No Results | 46.8 | 40.9 | 37 | 46 | **128** | - |
| Alk-T | mg/L | 46.7 | 43.5 | 43 | 38.6 | 44.7 | 43.3 | - | - |
| Acidity 8.3 | mg/L | 0.50 | 0.50 | 1.00 | 0.50 | 0.5 | 0.60 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2 | **5** | **25** |
| Al-T | mg/L | 0.0316 | 0.0293 | 0.0341 | 0.0299 | 0.0271 | 0.0304 | - | - |
| As-T | mg/L | 0.00019 | 0.00024 | 0.00023 | 0.00025 | 0.00028 | 0.00024 | - | **0.005** |
| Ba-T | mg/L | 0.0031 | 0.003 | 0.0029 | 0.0029 | 0.0028 | 0.0029 | - | - |
| B-T | mg/L | 0.078 | 0.074 | 0.069 | 0.066 | 0.072 | 0.072 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 15.4 | 16.3 | 14.7 | 13.7 | 13.4 | 14.70 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | 0.00056 | 0.00025 | 0.00066 | 0.00061 | 0.00056 | 0.00053 | **0.002** | **0.007** |
| Hard-T | mg/L | 46.1 | 48.4 | 44.2 | 41.6 | 40.4 | 44.1 | - | - |
| Fe-T | mg/L | 0.053 | 0.05 | 0.054 | 0.05 | 0.042 | 0.05 | - | **1** |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 1.85 | 1.88 | 1.81 | 1.8 | 1.71 | 1.81 | - | - |
| Mn-T | mg/L | 0.0047 | 0.004 | 0.0049 | 0.0045 | 0.0046 | 0.005 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.38 | 0.323 | 0.347 | 0.333 | 0.337 | 0.344 | - | - |
| S-T | mg/L | 19.5 | 17.8 | 14.6 | 14.5 | 15.3 | 16.3 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | 26.5 | 22.3 | 22.7 | 18.1 | 20.3 | 22 | - | - |
| Sr-T | mg/L | 0.111 | 0.103 | 0.0979 | 0.088 | 0.0844 | 0.0969 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.016 | 0.0196 | 0.0179 | 0.0184 | 0.0184 | 0.0181 | **0.05** | **0.1** |
| As-D | mg/L | 0.0002 | 0.00023 | 0.00019 | 0.00023 | 0.0002 | 0.00021 | - | - |
| Ba-D | mg/L | 0.0028 | 0.0032 | 0.0027 | 0.0025 | 0.0026 | 0.0028 | - | - |
| B-D | mg/L | 0.078 | 0.075 | 0.067 | 0.062 | 0.067 | 0.07 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 15.6 | 16.6 | 15.3 | 13.7 | 13.3 | 14.9 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | 0.00047 | 0.00055 | 0.00043 | 0.00054 | 0.0005 | 0.0005 | - | - |
| Hard-D | mg/L | 47 | 49.4 | 45.2 | 41.2 | 40.4 | 44.6 | - | - |
| Fe-D | mg/L | 0.0215 | 0.0281 | 0.0257 | 0.0267 | 0.0234 | 0.0251 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | 1.99 | 1.95 | 1.69 | 1.69 | 1.73 | 1.81 | - | - |
| Mn-D | mg/L | 0.0015 | 0.0021 | 0.0020 | 0.0019 | 0.0019 | 0.0019 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.391 | 0.405 | 0.351 | 0.331 | 0.339 | 0.363 | - | - |
| S-D | mg/L | 19.6 | 18.6 | 16.4 | 15.5 | 15.5 | 17.1 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 26.4 | 21.7 | 20.2 | 18.7 | 21.4 | 21.7 | - | - |
| Sr-D | mg/L | 0.113 | 0.1090 | 0.096 | 0.0878 | 0.0868 | 0.0985 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 136
# 2019-2020 Annual Report

| EMS ID | E286930 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Quinsam River Upstream of 7 South Mining Operation | | | | | | Water Quality Guidelines | |
| Site Name | QRDS1 | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | Week 1 | 9.3 | 8.6 | 8.5 | 9.8 | 9 | **128** | - |
| Alk-T | mg/L | No Results | 28 | 27 | 25 | 25 | 26.2 | - | - |
| Acidity 8.3 | mg/L | | 0.50 | 1.3 | 0.50 | 0.50 | 0.70 | - | - |
| TSS | mg/L | | 2.0 | 1.2 | 1.2 | 2.0 | 2 | **5** | **25** |
| Al-T | mg/L | | 0.019 | 0.0211 | 0.0186 | 0.0183 | 0.0192 | - | - |
| As-T | mg/L | | 0.00035 | 0.00032 | 0.00034 | 0.00035 | 0.00034 | - | **0.005** |
| Ba-T | mg/L | | 0.0015 | 0.0015 | 0.0014 | 0.0016 | 0.0015 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | | 8.97 | 8.7 | 8.97 | 8.68 | 8.83 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | **0.05** |
| Cu-T | mg/L | | 0.00066 | 0.00062 | 0.00025 | 0.00066 | 0.00055 | **0.002** | **0.007** |
| Hard-T | mg/L | | 26.5 | 25.9 | 26.7 | 25.9 | 26.2 | - | - |
| Fe-T | mg/L | | 0.048 | 0.05 | 0.042 | 0.044 | 0.046 | - | **1** |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | | 0.988 | 1.02 | 1.05 | 1.02 | 1.019 | - | - |
| Mn-T | mg/L | | 0.0051 | 0.0057 | 0.0041 | 0.0039 | 0.005 | **0.7** | **0.8** |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | **0.0001** |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | | 0.145 | 0.131 | 0.113 | 0.126 | 0.129 | - | - |
| S-T | mg/L | | 3.7 | 3 | 3.2 | 3 | 3.2 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | | 4.62 | 4.3 | 3.9 | 4.06 | 4.22 | - | - |
| Sr-T | mg/L | | 0.0357 | 0.0313 | 0.0317 | 0.0316 | 0.0326 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | | 0.0141 | 0.0122 | 0.0112 | 0.0115 | 0.0122 | **0.05** | **0.1** |
| As-D | mg/L | | 0.00031 | 0.00032 | 0.00031 | 0.00034 | 0.00032 | - | - |
| Ba-D | mg/L | | 0.0014 | 0.0014 | 0.0014 | 0.0014 | 0.0014 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | **0.000088** | **0.00017** |
| Ca-D | mg/L | | 8.91 | 9.2 | 9.08 | 8.68 | 8.97 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | | 0.00103 | 0.00068 | 0.00044 | 0.00046 | 0.00065 | - | - |
| Hard-D | mg/L | | 26.5 | 27.5 | 27.2 | 25.9 | 26.8 | - | - |
| Fe-D | mg/L | | 0.025 | 0.0268 | 0.0258 | 0.0252 | 0.0257 | - | **0.35** |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | | 1.04 | 1.11 | 1.1 | 1.02 | 1.07 | - | - |
| Mn-D | mg/L | | 0.0015 | 0.0016 | 0.0013 | 0.0013 | 0.0014 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0015 | 0.0013 | 0.0005 | 0.0012 | 0.00112 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.138 | 0.186 | 0.115 | 0.122 | 0.14 | - | - |
| S-D | mg/L | | 3.5 | 3.2 | 3.1 | 3.1 | 3.2 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | | 4.67 | 4.56 | 4.1 | 4.12 | 4.4 | - | - |
| Sr-D | mg/L | | 0.0354 | 0.0324 | 0.0324 | 0.0311 | 0.0328 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 137
# 2019-2020 Annual Report

| EMS ID | E286930 | Quinsam River Upstream of 7 South Mining Operation<br>5 in 30 Weekly Samples | 5x30 Average | Water Quality Guidelines | |
|---|---|---|---|---|---|
| Site Description<br>Site Name | QRDS1 | | | Average | Max |
| Date | | | | | |
| Parameter | Unit | | | | |
| SO4-D | mg/L | | | 128 | - |
| Alk-T | mg/L | | | - | - |
| Acidity 8.3 | mg/L | | | - | - |
| TSS | mg/L | | | 5 | 25 |
| Al-T | mg/L | | | - | - |
| As-T | mg/L | | | - | 0.005 |
| Ba-T | mg/L | | | - | - |
| B-T | mg/L | | | - | - |
| Cd-T | mg/L | | | - | - |
| Ca-T | mg/L | | | - | - |
| Cr-T | mg/L | | | - | - |
| Co-T | mg/L | | | - | 0.05 |
| Cu-T | mg/L | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | - | - |
| Fe-T | mg/L | | | - | 1 |
| Pb-T | mg/L | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | - | - |
| Mn-T | mg/L | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | - | 0.0001 |
| Mo-T | mg/L | | | - | - |
| Ni-T | mg/L | | | - | 0.025 |
| K-T | mg/L | | | - | - |
| S-T | mg/L | | | - | - |
| Se-T | mg/L | | | - | - |
| Ag-T | mg/L | | | - | 0.0001 |
| Na-T | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | - | - |
| Sr-T | mg/L | | | - | - |
| Zn-T | mg/L | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | 0.05 | 0.1 |
| As-D | mg/L | | | - | - |
| Ba-D | mg/L | | | - | - |
| B-D | mg/L | | | - | - |
| Cd-D | mg/L | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | - | - |
| Cr-D | mg/L | | | - | - |
| Co-D | mg/L | | | - | - |
| Cu-D | mg/L | | | - | - |
| Hard-D | mg/L | | | - | - |
| Fe-D | mg/L | | | - | 0.35 |
| Pb-D | mg/L | | | - | - |
| Mg-D | mg/L | | | - | - |
| Mn-D | mg/L | | | - | - |
| Hg-D | mg/L | | | - | - |
| Mo-D | mg/L | | | - | - |
| Ni-D | mg/L | | | - | - |
| K-D | mg/L | | | - | - |
| S-D | mg/L | | | - | - |
| Se-D | mg/L | | | - | - |
| Na-D | mg/L | | | - | - |
| Sr-D | mg/L | | | - | - |
| Zn-D | mg/L | | | - | - |

# Table 138
# 2019-2020 Annual Report

| EMS ID | E292112 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Lower Wetland Outlet at the Confluence of the Quinsam River | | | | | | Water Quality Guidelines | |
| Site Name | LWO | 5 in 30 Weekly Samples | | | | | | | |
| Date | | 10-Apr-19 | 18-Apr-19 | 25-Apr-19 | 2-May-19 | 7-May-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | | 0.50 | 0.50 | 0.50 | 0.50 | 1 | **128** | - |
| Alk-T | mg/L | 17.8 | 14.3 | 20.5 | 24.9 | 16.3 | 18.8 | - | - |
| Acidity 8.3 | mg/L | 1.5 | 4 | 1.8 | 5.4 | 1.2 | 2.80 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 5.2 | 5.6 | 16.8 | 6 | **5** | **25** |
| Al-T | mg/L | 0.107 | 0.119 | 0.162 | 0.204 | 0.095 | 0.1375 | - | - |
| As-T | mg/L | 0.00034 | 0.00033 | 0.00052 | 0.00074 | 0.00005 | 0.000396 | - | **0.005** |
| Ba-T | mg/L | 0.0015 | 0.0012 | 0.0019 | 0.002 | 0.0005 | 0.0014 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 5.74 | 4.85 | 6.31 | 7.67 | 4.21 | 5.76 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00021 | 0.00034 | 0.00010 | 0.00017 | - | **0.05** |
| Cu-T | mg/L | 0.00165 | 0.00101 | 0.00206 | 0.00198 | 0.00025 | 0.00139 | **0.002** | **0.007** |
| Hard-T | mg/L | 18.2 | 15.2 | 20.1 | 23.9 | 14.5 | 18.4 | - | - |
| Fe-T | mg/L | 0.228 | 0.261 | 0.564 | 0.931 | 0.107 | 0.418 | - | **1** |
| Pb-T | mg/L | 0.0001 | 0.00010 | 0.0001 | 0.00010 | 0.00010 | 0.00010 | **0.003** | **0.005** |
| Mg-T | mg/L | 0.947 | 0.737 | 1.05 | 1.15 | 0.971 | 0.971 | - | - |
| Mn-T | mg/L | 0.0077 | 0.0097 | 0.021 | 0.0289 | 0.002 | 0.014 | **0.7** | **0.8** |
| Hg-T | mg/L | 0.0000010 | 0.000001 | 0.0000010 | 0.0000010 | | 0.000001 | - | **0.0001** |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | **0.025** |
| K-T | mg/L | 0.025 | 0.025 | 0.025 | 0.057 | 0.113 | 0.049 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00011 | 0.00005 | 0.000062 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | 0.00001 | - | **0.0001** |
| Na-T | mg/L | 1.85 | 1.48 | 1.86 | 2.15 | 2.23 | 1.91 | - | - |
| Sr-T | mg/L | 0.0207 | 0.0164 | 0.021 | 0.0251 | 0.0174 | 0.0201 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | **0.0075** | **0.033** |
| Al-D | mg/L | 0.0871 | 0.106 | 0.111 | 0.129 | 0.020 | 0.0907 | **0.05** | **0.1** |
| As-D | mg/L | 0.00029 | 0.00031 | 0.00037 | 0.0006 | 0.00005 | 0.000324 | - | - |
| Ba-D | mg/L | 0.0015 | 0.0011 | 0.0014 | 0.0018 | 0.0005 | 0.00126 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.00000250 | **0.000088** | **0.000170** |
| Ca-D | mg/L | 5.84 | 4.88 | 6.24 | 7.32 | 3.97 | 5.65 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00024 | 0.00010 | 0.000128 | - | - |
| Cu-D | mg/L | 0.00131 | 0.00081 | 0.00126 | 0.00129 | 0.0001 | 0.000954 | - | - |
| Hard-D | mg/L | 18.5 | 15.2 | 19.5 | 22.9 | 13.7 | 18 | - | - |
| Fe-D | mg/L | 0.166 | 0.224 | 0.323 | 0.54 | 0.0287 | 0.2563 | - | **0.35** |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | 0.947 | 0.735 | 0.96 | 1.12 | 0.924 | 0.937 | - | - |
| Mn-D | mg/L | 0.0067 | 0.0099 | 0.0117 | 0.0218 | 0.0013 | 0.0103 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.0000031 | | 0.00000152 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.054 | 0.0308 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 1.83 | 1.42 | 1.86 | 1.88 | 2.03 | 1.8 | - | - |
| Sr-D | mg/L | 0.0215 | 0.0168 | 0.0212 | 0.0255 | 0.0163 | 0.0203 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 139
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| EMS ID | E292112 | Lower Wetland Outlet at the Confluence of the Quinsam River<br>5 in 30 Weekly Samples | 4x30 Average | Water Quality Guidelines | |
|---|---|---|---|---|---|
| Site Description<br>Site Name | LWO | | | Average | Max |
| Date | | | | | |
| Parameter | Unit | | | | |
| SO4-D | mg/L | | | 128 | - |
| Alk-T | mg/L | | | - | - |
| Acidity 8.3 | mg/L | | | - | - |
| TSS | mg/L | | | 5 | 25 |
| Al-T | mg/L | | | - | - |
| As-T | mg/L | | | - | 0.005 |
| Ba-T | mg/L | | | - | - |
| B-T | mg/L | | | - | - |
| Cd-T | mg/L | | | - | - |
| Ca-T | mg/L | | | - | - |
| Cr-T | mg/L | | | - | - |
| Co-T | mg/L | | | - | 0.05 |
| Cu-T | mg/L | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | - | - |
| Fe-T | mg/L | | | - | 1 |
| Pb-T | mg/L | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | - | - |
| Mn-T | mg/L | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | - | 0.0001 |
| Mo-T | mg/L | | | - | - |
| Ni-T | mg/L | | | - | 0.025 |
| K-T | mg/L | | | - | - |
| S-T | mg/L | | | - | - |
| Se-T | mg/L | | | - | - |
| Ag-T | mg/L | | | - | 0.0001 |
| Na-T | mg/L | **Dry No Flow** | | - | - |
| Sr-T | mg/L | | | - | - |
| Zn-T | mg/L | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | 0.05 | 0.1 |
| As-D | mg/L | | | - | - |
| Ba-D | mg/L | | | - | - |
| B-D | mg/L | | | - | - |
| Cd-D | mg/L | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | - | - |
| Cr-D | mg/L | | | - | - |
| Co-D | mg/L | | | - | - |
| Cu-D | mg/L | | | - | - |
| Hard-D | mg/L | | | - | - |
| Fe-D | mg/L | | | - | 0.35 |
| Pb-D | mg/L | | | - | - |
| Mg-D | mg/L | | | - | - |
| Mn-D | mg/L | | | - | - |
| Hg-D | mg/L | | | - | - |
| Mo-D | mg/L | | | - | - |
| Ni-D | mg/L | | | - | - |
| K-D | mg/L | | | - | - |
| S-D | mg/L | | | - | - |
| Se-D | mg/L | | | - | - |
| Na-D | mg/L | | | - | - |
| Sr-D | mg/L | | | - | - |
| Zn-D | mg/L | | | - | - |

# Table 140
# 2019-2020 Annual Report

| EMS ID | E292112 | Lower Wetland Outlet at the Confluence of the Quinsam River<br>5 in 30 Weekly Samples | 5x30 Average | Water Quality Guidelines | |
|---|---|---|---|---|---|
| Site Description<br>Site Name | LWO | | | | |
| Date | | | | Average | Max |
| Parameter | Unit | | | | |
| SO4-D | mg/L | | | 128 | - |
| Alk-T | mg/L | | | - | - |
| Acidity 8.3 | mg/L | | | - | - |
| TSS | mg/L | | | 5 | 25 |
| Al-T | mg/L | | | - | - |
| As-T | mg/L | | | - | 0.005 |
| Ba-T | mg/L | | | - | - |
| B-T | mg/L | | | - | - |
| Cd-T | mg/L | | | - | - |
| Ca-T | mg/L | | | - | - |
| Cr-T | mg/L | | | - | - |
| Co-T | mg/L | | | - | 0.05 |
| Cu-T | mg/L | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | - | - |
| Fe-T | mg/L | | | - | 1 |
| Pb-T | mg/L | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | - | - |
| Mn-T | mg/L | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | - | 0.0001 |
| Mo-T | mg/L | | | - | - |
| Ni-T | mg/L | | | - | 0.025 |
| K-T | mg/L | | | - | - |
| S-T | mg/L | | | - | - |
| Se-T | mg/L | | | - | - |
| Ag-T | mg/L | | | - | 0.0001 |
| Na-T | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | - | - |
| Sr-T | mg/L | | | - | - |
| Zn-T | mg/L | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | 0.05 | 0.1 |
| As-D | mg/L | | | - | - |
| Ba-D | mg/L | | | - | - |
| B-D | mg/L | | | - | - |
| Cd-D | mg/L | | | 0.000088 | 0.00017 |
| Ca-D | mg/L | | | - | - |
| Cr-D | mg/L | | | - | - |
| Co-D | mg/L | | | - | - |
| Cu-D | mg/L | | | - | - |
| Hard-D | mg/L | | | - | - |
| Fe-D | mg/L | | | - | 0.35 |
| Pb-D | mg/L | | | - | - |
| Mg-D | mg/L | | | - | - |
| Mn-D | mg/L | | | - | - |
| Hg-D | mg/L | | | - | - |
| Mo-D | mg/L | | | - | - |
| Ni-D | mg/L | | | - | - |
| K-D | mg/L | | | - | - |
| S-D | mg/L | | | - | - |
| Se-D | mg/L | | | - | - |
| Na-D | mg/L | | | - | - |
| Sr-D | mg/L | | | - | - |
| Zn-D | mg/L | | | - | - |

# Table 141
# 2019-2020 Annual Report

| EMS ID | E292113 | Quinsam River Downstream of 7 South Mine Operation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | Monthly | | Water Quality Guidelines | |
| Site Name | 7SQR | | | | | | | | | |
| Date | | 11-Apr-19 | 18-Apr-19 | 25-Apr-19 | 2-May-19 | 7-May-19 | 20-Jun-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | 49 | 46.3 | 40.8 | 39.6 | 41.1 | 22.8 | 43 | 128 | - |
| Alk-T | mg/L | 42.5 | 41.5 | 37.2 | 43.6 | 45.3 | 39.7 | 42.02 | - | - |
| Acidity 8.3 | mg/L | 0.50 | 1.30 | 0.50 | 0.5 | 0.5 | 0.50 | 0.66 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 7.2 | 2.0 | 3 | 5 | 25 |
| Al-T | mg/L | 0.036 | 0.0314 | 0.0328 | 0.0301 | 0.0454 | 0.0163 | 0.03514 | - | - |
| As-T | mg/L | 0.00024 | 0.00027 | 0.00031 | 0.00031 | 0.00032 | 0.0004 | 0.00029 | - | 0.005 |
| Ba-T | mg/L | 0.0031 | 0.0029 | 0.0029 | 0.0032 | 0.0031 | 0.0023 | 0.0030 | - | - |
| B-T | mg/L | 0.068 | 0.067 | 0.068 | 0.070 | 0.08 | 0.054 | 0.071 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 15 | 14.5 | 13.6 | 13.7 | 14 | 10.9 | 14.16 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | 0.05 |
| Cu-T | mg/L | 0.00077 | 0.00051 | 0.00058 | 0.00056 | 0.00067 | 0.00025 | 0.00062 | 0.002 | 0.007 |
| Hard-T | mg/L | 44.6 | 43.4 | 40.8 | 40.6 | 42.1 | 32.6 | 42.3 | - | - |
| Fe-T | mg/L | 0.087 | 0.082 | 0.087 | 0.093 | 0.092 | 0.076 | 0.0882 | - | 1 |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | 1.73 | 1.78 | 1.7 | 1.58 | 1.72 | 1.34 | 1.702 | - | - |
| Mn-T | mg/L | 0.0052 | 0.0049 | 0.0053 | 0.0068 | 0.0052 | 0.0053 | 0.005 | 0.7 | 0.8 |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | 0.0001 |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | 0.322 | 0.344 | 0.308 | 0.327 | 0.376 | 0.207 | 0.3354 | - | - |
| S-T | mg/L | 15.1 | 16.4 | 13.7 | 14.8 | 16.3 | 8 | 15.26 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | 0.0001 |
| Na-T | mg/L | 20.2 | 21.4 | 18 | 18.7 | 22.5 | 13 | 20.16 | - | - |
| Sr-T | mg/L | 0.0977 | 0.0939 | 0.0826 | 0.0848 | 0.0878 | 0.0552 | 0.08936 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.033 |
| Al-D | mg/L | 0.0205 | 0.0155 | 0.0171 | 0.0167 | 0.0154 | 0.0116 | 0.0170 | 0.05 | 0.1 |
| As-D | mg/L | 0.00027 | 0.00021 | 0.00023 | 0.00024 | 0.00029 | 0.00041 | 0.000248 | - | - |
| Ba-D | mg/L | 0.003 | 0.0026 | 0.0026 | 0.0029 | 0.003 | 0.0021 | 0.00282 | - | - |
| B-D | mg/L | 0.071 | 0.061 | 0.062 | 0.065 | 0.077 | 0.025 | 0.0672 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.0000025 | 0.000003 | 0.000088 | 0.00017 |
| Ca-D | mg/L | 16.5 | 12.4 | 13.2 | 13.2 | 13.7 | 11.2 | 13.8 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | 0.00046 | 0.0004 | 0.00046 | 0.00062 | 0.00055 | 0.00038 | 0.000498 | - | - |
| Hard-D | mg/L | 48.9 | 37.1 | 39.6 | 39.8 | 41.2 | 33.5 | 41.32 | - | - |
| Fe-D | mg/L | 0.0478 | 0.0459 | 0.0461 | 0.0544 | 0.0489 | 0.0471 | 0.04862 | - | 0.35 |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | 1.86 | 1.51 | 1.6 | 1.63 | 1.68 | 1.33 | 1.656 | - | - |
| Mn-D | mg/L | 0.0038 | 0.0033 | 0.0035 | 0.0046 | 0.0044 | 0.0044 | 0.00392 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.355 | 0.289 | 0.268 | 0.353 | 0.371 | 0.235 | 0.3272 | - | - |
| S-D | mg/L | 17.7 | 13.9 | 12.8 | 14.2 | 15 | 8.4 | 14.72 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 21.7 | 17.6 | 17.7 | 18.9 | 21.7 | 12.8 | 19.5 | - | - |
| Sr-D | mg/L | 0.0996 | 0.0847 | 0.0823 | 0.0833 | 0.0869 | 0.0572 | 0.08736 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0053 | 0.0025 | 0.0025 | 0.00306 | - | - |

# Table 142
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| EMS ID | E292113 | Quinsam River Downstream of 7 South Mine Operation | | | | | Monthly | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | | | | |
| Site Name | 7SQR | | | | | | | | | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | 18-Sep-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | Week 1 | 9.6 | 7.9 | 8.3 | 9.6 | 16 | 9 | 128 | - |
| Alk-T | mg/L | No Results | 29 | 29 | 26 | 26 | 28 | 27.5 | - | - |
| Acidity 8.3 | mg/L | | 0.50 | 1.3 | 0.50 | 0.50 | 0.5 | 0.70 | - | - |
| TSS | mg/L | | 2.0 | 0.5 | 0.5 | 0.5 | 2.0 | 1 | 5 | 25 |
| Al-T | mg/L | | 0.0157 | 0.0169 | 0.0145 | 0.0146 | 0.0179 | 0.015425 | - | - |
| As-T | mg/L | | 0.00043 | 0.00039 | 0.00043 | 0.00043 | 0.0004 | 0.00042 | - | 0.005 |
| Ba-T | mg/L | | 0.0018 | 0.0015 | 0.0015 | 0.0016 | 0.0023 | 0.0016 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | | 9.05 | 8.45 | 8.88 | 8.9 | 11.2 | 8.81 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0020 | 0.0005 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | 0.05 |
| Cu-T | mg/L | | 0.00025 | 0.00025 | 0.00052 | 0.00025 | 0.00025 | 0.00032 | 0.002 | 0.007 |
| Hard-T | mg/L | | 26.9 | 25.3 | 26.8 | 26.4 | 33.5 | 26.35 | - | - |
| Fe-T | mg/L | | 0.097 | 0.085 | 0.083 | 0.083 | 0.138 | 0.087 | - | 1 |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | | 1.04 | 1.02 | 1.11 | 1.04 | 1.37 | 1.0525 | - | - |
| Mn-T | mg/L | | 0.0061 | 0.0054 | 0.0052 | 0.0048 | 0.007 | 0.005 | 0.7 | 0.8 |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | 0.0001 |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | | 0.132 | 0.122 | 0.117 | 0.122 | 0.206 | 0.12325 | - | - |
| S-T | mg/L | | 4 | 1.5 | 1.5 | 1.5 | 5.3 | 2.125 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00001 | - | 0.0001 |
| Na-T | mg/L | | 4.99 | 4.23 | 4.12 | 4.11 | 6.64 | 4.3625 | - | - |
| Sr-T | mg/L | | 0.0395 | 0.0314 | 0.0322 | 0.0328 | 0.0508 | 0.033975 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.033 |
| Al-D | mg/L | | 0.0092 | 0.0084 | 0.0085 | 0.0076 | 0.0095 | 0.0084 | 0.05 | 0.1 |
| As-D | mg/L | | 0.00039 | 0.00038 | 0.00041 | 0.00042 | 0.00037 | 0.0004 | - | - |
| Ba-D | mg/L | | 0.0018 | 0.0015 | 0.0015 | 0.0015 | 0.0021 | 0.001575 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.000005 | 0.000088 | 0.00017 |
| Ca-D | mg/L | | 9.1 | 9.03 | 9.27 | 8.87 | 10.8 | 9.0675 | - | - |
| Cr-D | mg/L | | 0.0018 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.000825 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Cu-D | mg/L | | 0.00045 | 0.00050 | 0.00044 | 0.00045 | 0.00045 | 0.00046 | - | - |
| Hard-D | mg/L | | 27.5 | 26.9 | 27.8 | 26.5 | 32.5 | 27.175 | - | - |
| Fe-D | mg/L | | 0.0607 | 0.0581 | 0.0563 | 0.051 | 0.0814 | 0.056525 | - | 0.35 |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.0001 | - | - |
| Mg-D | mg/L | | 1.15 | 1.07 | 1.14 | 1.05 | 1.32 | 1.1025 | - | - |
| Mn-D | mg/L | | 0.0052 | 0.0047 | 0.0044 | 0.004 | 0.0058 | 0.004575 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.000001 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.129 | 0.127 | 0.123 | 0.121 | 0.187 | 0.125 | - | - |
| S-D | mg/L | | 3.4 | 1.5 | 1.5 | 1.5 | 5.6 | 1.975 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | | 5.04 | 4.64 | 4.21 | 4.15 | 6.31 | 4.5 | - | - |
| Sr-D | mg/L | | 0.0377 | 0.0329 | 0.0343 | 0.0327 | 0.0454 | 0.0344 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 143
# 2019-2020 Annual Report

| EMS ID | E292113 | Quinsam River Downstream of 7 South Mine Operation | | | | | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | | | |
| Site Name | 7SQR | | | | | | | | |
| Date | | 17-Oct-19 | 22-Oct-19 | 29-Oct-19 | 4-Nov-19 | 12-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 34 | 36 | 33 | 31 | 27 | 32 | 128 | - |
| Alk-T | mg/L | 42 | 34 | 40 | 41 | 37 | 38.8 | - | - |
| Acidity 8.3 | mg/L | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.50 | - | - |
| TSS | mg/L | 2 | 2 | 2 | 2 | 2 | 2 | 5 | 25 |
| Al-T | mg/L | 0.024 | 0.0689 | 0.0199 | 0.016 | 0.0328 | 0.0323 | - | - |
| As-T | mg/L | 0.00041 | 0.00047 | 0.00036 | 0.00034 | 0.00042 | 0.0004 | - | 0.005 |
| Ba-T | mg/L | 0.0032 | 0.0037 | 0.0032 | 0.0031 | 0.0031 | 0.0033 | - | - |
| B-T | mg/L | 0.066 | 0.025 | 0.064 | 0.066 | 0.055 | 0.055 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 14 | 13.2 | 13.4 | 13.3 | 12 | 13.20 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | - | 0.05 |
| Cu-T | mg/L | 0.00062 | 0.00078 | 0.00063 | 0.00107 | 0.00058 | 0.00074 | 0.002 | 0.007 |
| Hard-T | mg/L | 42.6 | 40.4 | 41 | 40.7 | 36.9 | 40.3 | - | - |
| Fe-T | mg/L | 0.13 | 0.187 | 0.103 | 0.11 | 0.144 | 0.135 | - | 1 |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | 1.85 | 1.82 | 1.83 | 1.8 | 1.69 | 1.8 | - | - |
| Mn-T | mg/L | 0.0071 | 0.0096 | 0.0066 | 0.0069 | 0.0072 | 0.008 | 0.7 | 0.8 |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | - | 0.0001 |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | 0.359 | 0.341 | 0.284 | 0.295 | 0.283 | 0.312 | - | - |
| S-T | mg/L | 12.7 | 10.5 | 11.9 | 10.9 | 9.1 | 11 | - | - |
| Se-T | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | - | 0.0001 |
| Na-T | mg/L | 17.8 | 12.3 | 15.7 | 17.3 | 13.8 | 15.4 | - | - |
| Sr-T | mg/L | 0.0786 | 0.0763 | 0.0836 | 0.0727 | 0.0654 | 0.0753 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.033 |
| Al-D | mg/L | 0.0108 | 0.0343 | 0.016 | 0.0108 | 0.0232 | 0.0190 | 0.05 | 0.1 |
| As-D | mg/L | 0.00034 | 0.00036 | 0.00037 | 0.00031 | 0.00038 | 0.00035 | - | - |
| Ba-D | mg/L | 0.0029 | 0.0035 | 0.003 | 0.003 | 0.003 | 0.0031 | - | - |
| B-D | mg/L | 0.059 | 0.052 | 0.063 | 0.066 | 0.056 | 0.059 | - | - |
| Cd-D | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000088 | 0.00017 |
| Ca-D | mg/L | 16.3 | 13.5 | 13.6 | 13 | 12.1 | 13.7 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | - | - |
| Cu-D | mg/L | 0.0001 | 0.00063 | 0.00048 | 0.0004 | 0.00052 | 0.000426 | - | - |
| Hard-D | mg/L | 48 | 41.6 | 42 | 39.7 | 37.5 | 41.8 | - | - |
| Fe-D | mg/L | 0.0707 | 0.101 | 0.0828 | 0.0706 | 0.106 | 0.0862 | - | 0.35 |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | - | - |
| Mg-D | mg/L | 1.78 | 1.94 | 1.95 | 1.74 | 1.77 | 1.84 | - | - |
| Mn-D | mg/L | 0.0012 | 0.0057 | 0.0061 | 0.0061 | 0.0064 | 0.0051 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.0000022 | 0.000001 | 0.000001 | 0.00000124 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.331 | 0.349 | 0.301 | 0.289 | 0.286 | 0.311 | - | - |
| S-D | mg/L | 10 | 11 | 11.6 | 10.5 | 9.2 | 10.5 | - | - |
| Se-D | mg/L | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | - | - |
| Na-D | mg/L | 17 | 13.1 | 16.2 | 17.5 | 14.4 | 15.6 | - | - |
| Sr-D | mg/L | 0.0763 | 0.0798 | 0.0749 | 0.0712 | 0.0675 | 0.0739 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 144
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| EMS ID | E297230 | Iron River Upstream of Mining Operations | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | Monthly | | Water Quality Guidelines | |
| Site Name | IR1 | | | | | | | | | |
| Date | | 10-Apr-19 | 18-Apr-19 | 25-Apr-19 | 2-May-19 | 7-May-19 | 20-Jun-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | 3.30 | 2.60 | 1.60 | 0.5 | 0.5 | 6.7 | 1.70 | 128 | - |
| Alk-T | mg/L | 29.2 | 32.8 | 28.6 | 29.3 | 23.6 | 60.3 | 28.7 | - | - |
| Acidity 8.3 | mg/L | 0.5 | 0.50 | 0.50 | 0.50 | 0.5 | 0.50 | 0.5 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 5 | 25 |
| Al-T | mg/L | 0.0524 | 0.0513 | 0.0579 | 0.0507 | 0.0785 | 0.0221 | 0.05816 | - | - |
| As-T | mg/L | 0.00034 | 0.00044 | 0.00031 | 0.00039 | 0.00028 | 0.00052 | 0.000352 | - | 0.005 |
| Ba-T | mg/L | 0.002 | 0.0021 | 0.002 | 0.0019 | 0.0015 | 0.0041 | 0.0019 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000018 | 0.000024 | 0.000017 | 0.000024 | 0.000028 | 0.000018 | 0.000022 | - | - |
| Ca-T | mg/L | 10.8 | 12.5 | 10.5 | 10.70 | 8.74 | 22.5 | 10.648 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.004 | 0.11 |
| Cu-T | mg/L | 0.00054 | 0.00025 | 0.00079 | 0.00061 | 0.0008 | 0.00025 | 0.000598 | 0.002 | 0.0070 |
| Hard-T | mg/L | 29.1 | 33.6 | 28.6 | 28.9 | 23.9 | 61 | 28.82 | - | - |
| Fe-T | mg/L | 0.022 | 0.018 | 0.02 | 0.014 | 0.021 | 0.005 | 0.019 | - | 1 |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | 0.005 |
| Mg-T | mg/L | 0.543 | 0.618 | 0.587 | 0.544 | 0.493 | 1.16 | 0.557 | - | - |
| Mn-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.7 | 0.8 |
| Hg-T | mg/L | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | 0.0001 |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | 0.145 | 0.144 | 0.139 | 0.138 | 0.135 | 0.199 | 0.1402 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | 0.00026 | 0.00027 | 0.0002 | 0.00016 | 0.00014 | 0.00042 | 0.00021 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00005 | 0.0001 |
| Na-T | mg/L | 0.721 | 0.716 | 0.695 | 0.642 | 0.563 | 1.29 | 0.6674 | - | - |
| Sr-T | mg/L | 0.0355 | 0.0423 | 0.0335 | 0.034 | 0.0248 | 0.0676 | 0.03402 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.008 | 0.03 |
| Al-D | mg/L | 0.0517 | 0.0361 | 0.0496 | 0.0467 | 0.0690 | 0.0212 | 0.0506 | 0.05 | 0.1 |
| As-D | mg/L | 0.00037 | 0.00036 | 0.0003 | 0.00037 | 0.00026 | 0.00054 | 0.000332 | - | - |
| Ba-D | mg/L | 0.002 | 0.0019 | 0.0018 | 0.002 | 0.0014 | 0.004 | 0.00182 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.0000160 | 0.000021 | 0.000021 | 0.000024 | 0.0000260 | 0.000015 | 0.0000216 | 0.00008 | 0.00017 |
| Ca-D | mg/L | 11.5 | 10.6 | 10.5 | 10.8 | 8.16 | 24.3 | 10.312 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | 0.00047 | 0.00043 | 0.00056 | 0.00059 | 0.00073 | 0.00048 | 0.000556 | - | - |
| Hard-D | mg/L | 31.1 | 28.9 | 28.6 | 29.2 | 22.4 | 65.6 | 28.04 | - | - |
| Fe-D | mg/L | 0.0121 | 0.007 | 0.0106 | 0.0102 | 0.0124 | 0.0055 | 0.01046 | - | 0.35 |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | 0.612 | 0.566 | 0.573 | 0.534 | 0.492 | 1.17 | 0.5554 | - | - |
| Mn-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.000002 | 0.0000010 | 0.0000010 | 0.0000012 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0034 | 0.0005 | 0.0011 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.137 | 0.125 | 0.132 | 0.143 | 0.138 | 0.219 | 0.135 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | 0.00023 | 0.00025 | 0.00022 | 0.00018 | 0.00013 | 0.00035 | 0.00020 | - | - |
| Na-D | mg/L | 0.806 | 0.666 | 0.683 | 0.62 | 0.578 | 1.29 | 0.6706 | - | - |
| Sr-D | mg/L | 0.0374 | 0.0373 | 0.0323 | 0.0346 | 0.0243 | 0.0691 | 0.03318 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 145
# 2019-2020 Annual Report

| EMS ID | E297230 | Quinsam River Downstream of 7 South Mine Operation | | | | | Monthly | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | | | | |
| Site Name | IR1 | | | | | | | | | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | 18-Sep-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | Week 1 | 3.1 | 4.3 | 5.5 | 8.6 | 2.3 | 5.38 | 128 | - |
| Alk-T | mg/L | No Results | 47 | 42 | 52 | 60 | 36 | 50.3 | - | - |
| Acidity 8.3 | mg/L | | 0.50 | 1.5 | 0.50 | 0.50 | 0.50 | 0.75 | - | - |
| TSS | mg/L | | 2.0 | 1.2 | 0.5 | 0.5 | 2.0 | 1.1 | 5 | 25 |
| Al-T | mg/L | | 0.0309 | 0.0312 | 0.021 | 0.0179 | 0.0432 | 0.02525 | - | - |
| As-T | mg/L | | 0.00059 | 0.00054 | 0.00062 | 0.00061 | 0.00056 | 0.00059 | - | 0.005 |
| Ba-T | mg/L | | 0.0031 | 0.0027 | 0.0036 | 0.0042 | 0.0027 | 0.0034 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000021 | 0.000017 | 0.000017 | 0.000017 | 0.000024 | 0.000018 | - | - |
| Ca-T | mg/L | | 16.2 | 15 | 20.6 | 23.4 | 15.5 | 18.8 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.004 | 0.11 |
| Cu-T | mg/L | | 0.00065 | 0.00057 | 0.00025 | 0.00025 | 0.00077 | 0.00043 | 0.002 | 0.007 |
| Hard-T | mg/L | | 43.9 | 40.8 | 55.8 | 63.2 | 41.9 | 50.925 | - | - |
| Fe-T | mg/L | | 0.005 | 0.016 | 0.005 | 0.005 | 0.026 | 0.00775 | - | 1 |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | | 0.825 | 0.789 | 1.05 | 1.13 | 0.781 | 0.9485 | - | - |
| Mn-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.001 | 0.0005 | 0.7 | 0.8 |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000041 | 0.0000028 | 0.0000018 | - | 0.0001 |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | | 0.177 | 0.139 | 0.168 | 0.182 | 0.16 | 0.1665 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | | 0.00027 | 0.00032 | 0.00037 | 0.00045 | 0.00026 | 0.00035 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00005 | 0.0001 |
| Na-T | mg/L | | 1.01 | 0.966 | 1.24 | 1.28 | 0.928 | 1.124 | - | - |
| Sr-T | mg/L | | 0.0556 | 0.0459 | 0.0615 | 0.0759 | 0.0473 | 0.059725 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.03 |
| Al-D | mg/L | | 0.0297 | 0.0271 | 0.0198 | 0.0191 | 0.0353 | 0.0239 | 0.05 | 0.1 |
| As-D | mg/L | | 0.00059 | 0.00053 | 0.00059 | 0.00067 | 0.00052 | 0.000595 | - | - |
| Ba-D | mg/L | | 0.0031 | 0.0027 | 0.0036 | 0.0042 | 0.0025 | 0.0034 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000200 | 0.0000170 | 0.0000160 | 0.000017 | 0.0000220 | 0.0000175 | 0.00008 | 0.00017 |
| Ca-D | mg/L | | 16.3 | 15.5 | 20.8 | 23.4 | 13.9 | 19 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | | 0.00062 | 0.00057 | 0.00044 | 0.00045 | 0.00074 | 0.00052 | - | - |
| Hard-D | mg/L | | 44.2 | 42.2 | 56.3 | 63.1 | 37.7 | 51.45 | - | - |
| Fe-D | mg/L | | 0.0060 | 0.0102 | 0.0025 | 0.0025 | 0.0178 | 0.0053 | - | 0.35 |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | | 0.852 | 0.82 | 1.07 | 1.16 | 0.748 | 0.97525 | - | - |
| Mn-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.178 | 0.145 | 0.17 | 0.184 | 0.156 | 0.16925 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | | 0.0003 | 0.00034 | 0.00041 | 0.00044 | 0.00021 | 0.00037 | - | - |
| Na-D | mg/L | | 1.01 | 1.02 | 1.27 | 1.29 | 0.884 | 1.1475 | - | - |
| Sr-D | mg/L | | 0.053 | 0.0458 | 0.0643 | 0.0743 | 0.0438 | 0.05935 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 146
# 2019-2020 Annual Report

| EMS ID | E297230 | Iron River Upstream of Mining Operations | | | | | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | | | |
| Site Name | IR1 | | | | | | | | |
| Date | | 22-Oct-19 | 29-Oct-19 | 4-Nov-19 | 12-Nov-19 | 18-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | | | | | | | 128 | - |
| Alk-T | mg/L | | | | | | | - | - |
| Acidity 8.3 | mg/L | | | | | | | - | - |
| TSS | mg/L | | | | | | | 5 | 25 |
| Al-T | mg/L | | | | | | | - | - |
| As-T | mg/L | | | | | | | - | 0.005 |
| Ba-T | mg/L | | | | | | | - | - |
| B-T | mg/L | | | | | | | - | - |
| Cd-T | mg/L | | | | | | | - | - |
| Ca-T | mg/L | | | | | | | - | - |
| Cr-T | mg/L | | | | | | | - | - |
| Co-T | mg/L | | | | | | | 0.004 | 0.11 |
| Cu-T | mg/L | | | | | | | 0.002 | 0.007 |
| Hard-T | mg/L | | | | | | | - | - |
| Fe-T | mg/L | | | | | | | - | 1 |
| Pb-T | mg/L | | | | | | | 0.003 | 0.005 |
| Mg-T | mg/L | | | | | | | - | - |
| Mn-T | mg/L | | | | | | | 0.7 | 0.8 |
| Hg-T | mg/L | | | | | | | - | 0.0001 |
| Mo-T | mg/L | | | | | | | - | - |
| Ni-T | mg/L | | | | | | | - | 0.025 |
| K-T | mg/L | | | | | | | - | - |
| S-T | mg/L | | | | | | | - | - |
| Se-T | mg/L | | | | | | | - | - |
| Ag-T | mg/L | | | | | | | 0.00005 | 0.0001 |
| Na-T | mg/L | Authorization was received from ENV to suspend monitoring from this site. | | | | | | - | - |
| Sr-T | mg/L | | | | | | | - | - |
| Zn-T | mg/L | | | | | | | 0.0075 | 0.033 |
| Al-D | mg/L | | | | | | | 0.05 | 0.1 |
| As-D | mg/L | | | | | | | - | - |
| Ba-D | mg/L | | | | | | | - | - |
| B-D | mg/L | | | | | | | - | - |
| Cd-D | mg/L | | | | | | | 0.00008 | 0.00017 |
| Ca-D | mg/L | | | | | | | - | - |
| Cr-D | mg/L | | | | | | | - | - |
| Co-D | mg/L | | | | | | | - | - |
| Cu-D | mg/L | | | | | | | - | - |
| Hard-D | mg/L | | | | | | | - | - |
| Fe-D | mg/L | | | | | | | - | 0.35 |
| Pb-D | mg/L | | | | | | | - | - |
| Mg-D | mg/L | | | | | | | - | - |
| Mn-D | mg/L | | | | | | | - | - |
| Hg-D | mg/L | | | | | | | - | - |
| Mo-D | mg/L | | | | | | | - | - |
| Ni-D | mg/L | | | | | | | - | - |
| K-D | mg/L | | | | | | | - | - |
| S-D | mg/L | | | | | | | - | - |
| Se-D | mg/L | | | | | | | - | - |
| Na-D | mg/L | | | | | | | - | - |
| Sr-D | mg/L | | | | | | | - | - |
| Zn-D | mg/L | | | | | | | - | - |

# Table 147
# 2019-2020 Annual Report

| EMS ID | E297231 | Iron River Upstream of 7SA5 & Upstream of Reclaimed 242 Mine | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | Monthly | | Water Quality Guidelines | |
| Site Name | IR6 | | | | | | | | | |
| Date | | 11-Apr-19 | 18-Apr-19 | 25-Apr-19 | 2-May-19 | 7-May-19 | 20-Jun-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | 1.70 | 1.60 | 1.9 | 1.50 | 0.50 | 6.5 | 1.44 | 128 | - |
| Alk-T | mg/L | 23.1 | 26.7 | 23.5 | 25.0 | 22.6 | 52.8 | 24.2 | - | - |
| Acidity 8.3 | mg/L | 0.5 | 0.50 | 0.50 | 0.50 | 0.5 | 0.50 | 0.5 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 5 | 25 |
| Al-T | mg/L | 0.0722 | 0.0713 | 0.0845 | 0.0579 | 0.0841 | 0.0217 | 0.074 | - | - |
| As-T | mg/L | 0.00053 | 0.00064 | 0.00088 | 0.00061 | 0.00029 | 0.00458 | 0.00059 | - | 0.005 |
| Ba-T | mg/L | 0.0033 | 0.0034 | 0.0039 | 0.0032 | 0.0016 | 0.0085 | 0.00308 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000011 | 0.000014 | 0.000005 | 0.000015 | 0.000029 | 0.000013 | 0.000015 | - | - |
| Ca-T | mg/L | 8.48 | 10.2 | 8.76 | 9.17 | 8.74 | 19.7 | 9.07 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.004 | 0.11 |
| Cu-T | mg/L | 0.00087 | 0.0005 | 0.00066 | 0.00069 | 0.00082 | 0.00066 | 0.000716 | 0.002 | 0.0070 |
| Hard-T | mg/L | 23.8 | 28.3 | 24.6 | 25.4 | 24 | 55.3 | 25.22 | - | - |
| Fe-T | mg/L | 0.046 | 0.031 | 0.095 | 0.021 | 0.036 | 0.005 | 0.0458 | - | 1 |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | 0.005 |
| Mg-T | mg/L | 0.634 | 0.679 | 0.656 | 0.601 | 0.516 | 1.49 | 0.6172 | - | - |
| Mn-T | mg/L | 0.0013 | 0.0005 | 0.0028 | 0.0005 | 0.0005 | 0.0005 | 0.00112 | 0.7 | 0.8 |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | 0.0001 |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | 0.162 | 0.167 | 0.165 | 0.19 | 0.15 | 0.309 | 0.1668 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | 0.00022 | 0.00020 | 0.00016 | 0.00015 | 0.00013 | 0.00022 | 0.00017 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00005 | 0.0001 |
| Na-T | mg/L | 0.853 | 0.835 | 0.786 | 0.718 | 0.58 | 2 | 0.7544 | - | - |
| Sr-T | mg/L | 0.03 | 0.0357 | 0.0288 | 0.0306 | 0.0249 | 0.0629 | 0.03 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.03 |
| Al-D | mg/L | 0.0709 | 0.0514 | 0.0616 | 0.0527 | 0.0719 | 0.0203 | 0.0617 | 0.05 | 0.1 |
| As-D | mg/L | 0.00056 | 0.00052 | 0.0005 | 0.00062 | 0.00027 | 0.00464 | 0.000494 | - | - |
| Ba-D | mg/L | 0.0033 | 0.003 | 0.0029 | 0.0032 | 0.0015 | 0.0084 | 0.00278 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.0000090 | 0.000013 | 0.0000160 | 0.000015 | 0.0000280 | 0.000009 | 0.0000162 | 0.000080 | 0.000170 |
| Ca-D | mg/L | 9.07 | 8.51 | 8.48 | 9.21 | 8.19 | 20.9 | 8.692 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | 0.0006 | 0.00055 | 0.00066 | 0.00062 | 0.0008 | 0.00043 | 0.000646 | - | - |
| Hard-D | mg/L | 25.3 | 23.7 | 23.8 | 25.4 | 22.5 | 58.2 | 24.14 | - | - |
| Fe-D | mg/L | 0.0231 | 0.0154 | 0.019 | 0.0134 | 0.0149 | 0.0025 | 0.01716 | - | 0.35 |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | 0.633 | 0.594 | 0.628 | 0.59 | 0.492 | 1.45 | 0.5874 | - | - |
| Mn-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.159 | 0.143 | 0.162 | 0.157 | 0.151 | 0.282 | 0.1544 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | 0.00019 | 0.00018 | 0.00013 | 0.00016 | 0.00013 | 0.00021 | 0.00016 | - | - |
| Na-D | mg/L | 0.887 | 0.743 | 0.812 | 0.718 | 0.569 | 1.96 | 0.7458 | - | - |
| Sr-D | mg/L | 0.0303 | 0.0317 | 0.0277 | 0.0301 | 0.0246 | 0.0634 | 0.02888 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 148
# 2019-2020 Annual Report

| EMS ID | E297231 | Iron River Upstream of 7SA5 & Upstream of Reclaimed 242 Mine | | | | | Monthly | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | | | | |
| Site Name | IR6 | | | | | | | | | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | 18-Sep-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | Week 1 | 3.4 | 4.5 | 5.6 | 8.2 | 3.7 | 5.43 | 128 | - |
| Alk-T | mg/L | No Results | 42 | 43 | 48.0 | 56 | 36.0 | 47.3 | - | - |
| Acidity 8.3 | mg/L | | 0.50 | 1.40 | 0.50 | 0.50 | 0.50 | 0.725 | - | - |
| TSS | mg/L | | 2.0 | 1.2 | 1.6 | 0.5 | 2.0 | 1.3 | 5 | 25 |
| Al-T | mg/L | | 0.0308 | 0.027 | 0.0196 | 0.0163 | 0.0382 | 0.023425 | - | - |
| As-T | mg/L | | 0.00132 | 0.00114 | 0.00218 | 0.00279 | 0.00081 | 0.0018575 | - | 0.005 |
| Ba-T | mg/L | | 0.006 | 0.0051 | 0.007 | 0.0086 | 0.0048 | 0.006675 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000014 | 0.000011 | 0.000011 | 0.000005 | 0.000014 | 0.000010 | - | - |
| Ca-T | mg/L | | 14.5 | 15 | 19 | 21.1 | 14.3 | 17.4 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.004 | 0.11 |
| Cu-T | mg/L | | 0.00074 | 0.0006 | 0.00053 | 0.00025 | 0.00071 | 0.00053 | 0.002 | 0.0070 |
| Hard-T | mg/L | | 40.2 | 41.1 | 52.7 | 58.5 | 39.2 | 48.125 | - | - |
| Fe-T | mg/L | | 0.015 | 0.015 | 0.005 | 0.005 | 0.028 | 0.01 | - | 1 |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | | 0.947 | 0.903 | 1.25 | 1.4 | 0.88 | 1.125 | - | - |
| Mn-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.7 | 0.8 |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000044 | 0.0000010 | 0.0000019 | - | 0.0001 |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | | 0.256 | 0.189 | 0.218 | 0.244 | 0.199 | 0.22675 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | | 0.00021 | 0.00029 | 0.0003 | 0.00034 | 0.00021 | 0.00029 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00005 | 0.0001 |
| Na-T | mg/L | | 1.31 | 1.16 | 1.64 | 1.81 | 1.17 | 1.48 | - | - |
| Sr-T | mg/L | | 0.0518 | 0.0484 | 0.0585 | 0.0719 | 0.0483 | 0.05765 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.03 |
| Al-D | mg/L | | 0.0282 | 0.0241 | 0.0176 | 0.015 | 0.032 | 0.0212 | 0.05 | 0.1 |
| As-D | mg/L | | 0.00131 | 0.00115 | 0.00205 | 0.00281 | 0.00083 | 0.00183 | - | - |
| Ba-D | mg/L | | 0.0058 | 0.0051 | 0.007 | 0.0085 | 0.0045 | 0.0066 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000110 | 0.0000050 | 0.0000050 | 0.0000050 | 0.000015 | 0.0000065 | 0.000080 | 0.00017 |
| Ca-D | mg/L | | 14.3 | 15.7 | 18.4 | 21 | 13.6 | 17.35 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | | 0.00069 | 0.00063 | 0.00049 | 0.00048 | 0.00074 | 0.0005725 | - | - |
| Hard-D | mg/L | | 39.6 | 43.3 | 51.1 | 58.2 | 37.3 | 48.05 | - | - |
| Fe-D | mg/L | | 0.0085 | 0.0099 | 0.0025 | 0.0025 | 0.0176 | 0.00585 | - | 0.35 |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | | 0.974 | 0.984 | 1.25 | 1.41 | 0.848 | 1.1545 | - | - |
| Mn-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000037 | 0.0000010 | 0.0000017 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.214 | 0.191 | 0.216 | 0.242 | 0.186 | 0.21575 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | | 0.00022 | 0.00034 | 0.00029 | 0.00033 | 0.00021 | 0.00030 | - | - |
| Na-D | mg/L | | 1.32 | 1.24 | 1.64 | 1.83 | 1.11 | 1.5075 | - | - |
| Sr-D | mg/L | | 0.0491 | 0.0486 | 0.0603 | 0.0708 | 0.0444 | 0.0572 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 149
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| EMS ID | E297231 | Iron River Upstream of 7SA5 & Upstream of Reclaimed 242 Mine | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Site Name | IR6 | | | | | | | | |
| Date | | 22-Oct-19 | 29-Oct-19 | 4-Nov-19 | 12-Nov-19 | 18-Nov-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | PNC | 3.8 | 4.2 | 1.9 | 2.5 | 3.10 | 128 | - |
| Alk-T | mg/L | | 31 | 38 | 25 | 23 | 29.2 | - | - |
| Acidity 8.3 | mg/L | | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | - | - |
| TSS | mg/L | | 2 | 2 | 4.4 | 2 | 2.6 | 5 | 25 |
| Al-T | mg/L | | 0.049 | 0.0357 | 0.076 | 0.0947 | 0.0638 | - | - |
| As-T | mg/L | | 0.00085 | 0.0011 | 0.00089 | 0.00064 | 0.00087 | - | 0.005 |
| Ba-T | mg/L | | 0.0046 | 0.0051 | 0.0052 | 0.0047 | 0.0049 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000012 | 0.000005 | 0.000012 | 0.000017 | 0.000012 | - | - |
| Ca-T | mg/L | | 12.7 | 14.2 | 9.27 | 9.56 | 11.43 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | 0.004 | 0.11 |
| Cu-T | mg/L | | 0.00062 | 0.00055 | 0.00078 | 0.00072 | 0.00067 | 0.0020 | 0.0070 |
| Hard-T | mg/L | | 35.5 | 39.6 | 26.7 | 27.4 | 32.3 | - | - |
| Fe-T | mg/L | | 0.029 | 0.019 | 0.059 | 0.058 | 0.041 | - | 1.00 |
| Pb-T | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | | 0.955 | 1 | 0.865 | 0.844 | 0.916 | - | - |
| Mn-T | mg/L | | 0.0005 | 0.0005 | 0.0011 | 0.0017 | 0.00095 | 0.7 | 0.8 |
| Hg-T | mg/L | | 0.000001 | 0.0000023 | 0.0000026 | 0.000001 | 0.0000017 | - | 0.0001 |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | | 0.171 | 0.179 | 0.191 | 0.194 | 0.184 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | | 0.00028 | 0.00028 | 0.00018 | 0.00019 | 0.00023 | - | - |
| Ag-T | mg/L | | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.000010 | 0.00005 | 0.0001 |
| Na-T | mg/L | | 1.22 | 1.33 | 1.29 | 1.15 | 1.25 | - | - |
| Sr-T | mg/L | | 0.0426 | 0.047 | 0.0327 | 0.0324 | 0.0387 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.033 |
| Al-D | mg/L | | 0.0431 | 0.0346 | 0.0676 | 0.0778 | **0.0558** | 0.05 | 0.1 |
| As-D | mg/L | | 0.00082 | 0.00105 | 0.00084 | 0.0006 | 0.00083 | - | - |
| Ba-D | mg/L | | 0.0043 | 0.0051 | 0.0052 | 0.0041 | 0.0047 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.000011 | 0.000005 | 0.000005 | 0.000013 | 0.0000085 | 0.00008 | 0.00016 |
| Ca-D | mg/L | | 12.8 | 14.1 | 9.62 | 9.28 | 11.45 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | - | - |
| Cu-D | mg/L | | 0.00058 | 0.00051 | 0.00072 | 0.00068 | 0.00062 | - | - |
| Hard-D | mg/L | | 35.6 | 39.4 | 28 | 26.7 | 32.4 | - | - |
| Fe-D | mg/L | | 0.021 | 0.0151 | 0.0469 | 0.039 | 0.0305 | - | 0.35 |
| Pb-D | mg/L | | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | - | - |
| Mg-D | mg/L | | 0.889 | 1.01 | 0.953 | 0.846 | 0.924 | - | - |
| Mn-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | | 0.000001 | 0.0000026 | 0.000001 | 0.0000024 | 0.0000018 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.169 | 0.183 | 0.195 | 0.185 | 0.183 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | | 0.00028 | 0.0003 | 0.00018 | 0.0002 | 0.00024 | - | - |
| Na-D | mg/L | | 1.23 | 1.36 | 1.32 | 1.1 | 1.25 | - | - |
| Sr-D | mg/L | | 0.0418 | 0.0452 | 0.0328 | 0.0313 | 0.0378 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 150
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| EMS ID | E297232 | Iron River Downstream of 7 South Mine Operation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | Monthly | | Water Quality Guidelines | |
| Site Name | IR8 | | | | | | | | | |
| Date | | 11-Apr-19 | 18-Apr-19 | 25-Apr-19 | 2-May-19 | 7-May-19 | 20-Jun-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | 1.70 | 1.70 | 1.8 | 0.50 | 0.50 | 6.6 | 1.24 | 128 | - |
| Alk-T | mg/L | 24.8 | 26.4 | 24 | 25.8 | 17.8 | 57.0 | 23.8 | - | - |
| Acidity 8.3 | mg/L | 0.50 | 0.50 | 0.50 | 0.5 | 0.5 | 0.50 | 0.5 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 5 | 25 |
| Al-T | mg/L | 0.0755 | 0.0655 | 0.0691 | 0.0579 | 0.0884 | 0.0193 | 0.07128 | - | - |
| As-T | mg/L | 0.00079 | 0.00089 | 0.00077 | 0.00106 | 0.00078 | 0.00924 | 0.000858 | - | 0.005 |
| Ba-T | mg/L | 0.0034 | 0.0036 | 0.0031 | 0.0036 | 0.0027 | 0.0091 | 0.00328 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.00001 | 0.000012 | 0.000005 | 0.000013 | 0.000017 | 0.000013 | 0.000011 | - | - |
| Ca-T | mg/L | 8.31 | 9.58 | 9.01 | 9.47 | 7.34 | 19.9 | 8.742 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.004 | 0.11 |
| Cu-T | mg/L | 0.00064 | 0.00060 | 0.00069 | 0.00067 | 0.00101 | 0.00061 | 0.000722 | 0.0020 | 0.0070 |
| Hard-T | mg/L | 23.4 | 26.8 | 25.3 | 26.3 | 20.7 | 56.3 | 24.5 | - | - |
| Fe-T | mg/L | 0.047 | 0.031 | 0.03 | 0.021 | 0.035 | 0.01 | 0.0328 | - | 1 |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | 0.005 |
| Mg-T | mg/L | 0.644 | 0.704 | 0.679 | 0.639 | 0.573 | 1.61 | 0.6478 | - | - |
| Mn-T | mg/L | 0.0011 | 0.0005 | 0.0005 | 0.0005 | 0.0011 | 0.0010 | 0.00074 | 0.7 | 0.8 |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | 0.0001 |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | 0.161 | 0.163 | 0.154 | 0.162 | 0.344 | 0.269 | 0.1968 | - | - |
| S-T | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | 0.00017 | 0.00019 | 0.00016 | 0.00015 | 0.00011 | 0.00019 | 0.00016 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00005 | 0.0001 |
| Na-T | mg/L | 0.877 | 0.89 | 0.837 | 0.796 | 0.826 | 2.81 | 0.8452 | - | - |
| Sr-T | mg/L | 0.0292 | 0.0333 | 0.029 | 0.0326 | 0.0234 | 0.0649 | 0.0295 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.03 |
| Al-D | mg/L | 0.06720 | 0.04340 | 0.05890 | 0.05180 | 0.07130 | 0.01770 | 0.0585 | **0.05** | 0.1 |
| As-D | mg/L | 0.00082 | 0.00076 | 0.00075 | 0.00102 | 0.00076 | 0.00922 | 0.000822 | - | - |
| Ba-D | mg/L | 0.0034 | 0.0033 | 0.0028 | 0.0035 | 0.0026 | 0.0087 | 0.00312 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.0000080 | 0.000011 | 0.0000140 | 0.0000120 | 0.0000150 | 0.0000090 | 0.0000120 | 0.000088 | 0.000170 |
| Ca-D | mg/L | 8.69 | 8.72 | 8.57 | 9.19 | 7.38 | 21.5 | 8.51 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | 0.00054 | 0.00049 | 0.00058 | 0.00066 | 0.00082 | 0.00057 | 0.000618 | - | - |
| Hard-D | mg/L | 24.6 | 24.3 | 24 | 25.4 | 20.7 | 60.1 | 23.8 | - | - |
| Fe-D | mg/L | 0.0226 | 0.0149 | 0.0172 | 0.0144 | 0.018 | 0.0076 | 0.01742 | - | 0.35 |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | 0.71 | 0.602 | 0.629 | 0.603 | 0.551 | 1.59 | 0.619 | - | - |
| Mn-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000024 | 0.0000010 | 0.0000010 | 0.0000013 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.153 | 0.133 | 0.133 | 0.154 | 0.147 | 0.299 | 0.144 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | 0.00019 | 0.00019 | 0.00016 | 0.00014 | 0.00005 | 0.00017 | 0.00015 | - | - |
| Na-D | mg/L | 0.956 | 0.763 | 0.82 | 0.771 | 0.697 | 2.77 | 0.8014 | - | - |
| Sr-D | mg/L | 0.0293 | 0.0315 | 0.0272 | 0.0308 | 0.0227 | 0.0663 | 0.0283 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 151
# 2019-2020 Annual Report

| EMS ID | E297232 | Iron River Downstream of 7 South Mine Operation | | | | | | | Water Quality Guidelines | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | | | | |
| Site Name | IR8 | | | | | | | | | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | 18-Sep-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | Week 1 | 3.1 | 4.6 | 5.7 | 8.7 | 4.2 | 5.53 | 128 | - |
| Alk-T | mg/L | No Results | 43 | 46 | 49 | 56 | 36 | 48.5 | - | - |
| Acidity 8.3 | mg/L | | 0.50 | 0.50 | 0.50 | 0.50 | 0.50 | 0.5 | - | - |
| TSS | mg/L | | 2.0 | 0.5 | 0.5 | 0.5 | 2.0 | 0.9 | 5 | 25 |
| Al-T | mg/L | | 0.0272 | 0.0265 | 0.0172 | 0.0153 | 0.0354 | 0.02155 | - | - |
| As-T | mg/L | | 0.00265 | 0.00222 | 0.0048 | 0.00613 | 0.00143 | 0.00395 | - | 0.005 |
| Ba-T | mg/L | | 0.0065 | 0.0062 | 0.0081 | 0.0096 | 0.0051 | 0.0076 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000012 | 0.000010 | 0.000005 | 0.000005 | 0.000013 | 0.000008 | - | - |
| Ca-T | mg/L | | 14.5 | 15.8 | 18.9 | 20.9 | 14.9 | 17.525 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.004 | 0.11 |
| Cu-T | mg/L | | 0.00075 | 0.00072 | 0.00057 | 0.00056 | 0.00076 | 0.00065 | 0.002 | 0.0070 |
| Hard-T | mg/L | | 40.2 | 43.8 | 52.8 | 58.2 | 40.7 | 48.75 | - | - |
| Fe-T | mg/L | | 0.014 | 0.016 | 0.005 | 0.005 | 0.028 | 0.01 | - | 1 |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | | 0.987 | 1.03 | 1.35 | 1.48 | 0.884 | 1.21175 | - | - |
| Mn-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.7 | 0.8 |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000140 | 0.0000010 | 0.0000025 | 0.0000043 | - | 0.0001 |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | | 0.212 | 0.2 | 0.228 | 0.25 | 0.196 | 0.2225 | - | - |
| S-T | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-T | mg/L | | 0.00021 | 0.00029 | 0.00029 | 0.0003 | 0.00024 | 0.00027 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.00005 | 0.0001 |
| Na-T | mg/L | | 1.46 | 1.34 | 1.98 | 2.27 | 1.23 | 1.7625 | - | - |
| Sr-T | mg/L | | 0.0508 | 0.0501 | 0.0597 | 0.0728 | 0.0465 | 0.05835 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.03 |
| Al-D | mg/L | | 0.0269 | 0.0225 | 0.0164 | 0.0147 | 0.0300 | 0.0201 | 0.05 | 0.1 |
| As-D | mg/L | | 0.00257 | 0.00225 | 0.00451 | 0.00606 | 0.00137 | 0.0038475 | - | - |
| Ba-D | mg/L | | 0.0064 | 0.0063 | 0.0079 | 0.0095 | 0.005 | 0.007525 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000100 | 0.0000050 | 0.000005 | 0.000011 | 0.0000063 | 0.000080 | 0.00017 |
| Ca-D | mg/L | | 14.4 | 16.5 | 18.3 | 20.7 | 13.7 | 17.475 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | | 0.00088 | 0.0007 | 0.00054 | 0.00065 | 0.00079 | 0.0006925 | - | - |
| Hard-D | mg/L | | 40.2 | 45.6 | 51.2 | 57.6 | 37.8 | 48.65 | - | - |
| Fe-D | mg/L | | 0.0113 | 0.0110 | 0.0053 | 0.0057 | 0.0171 | 0.008325 | - | 0.35 |
| Pb-D | mg/L | | 0.00049 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00020 | - | - |
| Mg-D | mg/L | | 1.02 | 1.06 | 1.32 | 1.46 | 0.893 | 1.215 | - | - |
| Mn-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0012 | 0.0005 | 0.0007 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.22 | 0.202 | 0.225 | 0.297 | 0.189 | 0.236 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | | 0.00021 | 0.00031 | 0.00028 | 0.00029 | 0.00023 | 0.00027 | - | - |
| Na-D | mg/L | | 1.45 | 1.4 | 1.94 | 2.31 | 1.19 | 1.775 | - | - |
| Sr-D | mg/L | | 0.0493 | 0.0517 | 0.0622 | 0.0719 | 0.0451 | 0.058775 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0610 | 0.0025 | 0.0025 | 0.0171 | - | - |

# Table 152
# 2019-2020 Annual Report

| EMS ID | E297232 | Iron River Downstream of 7 South Mine Operation | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Site Name | IR8 | | | | | | | | |
| Date | | 17-Oct-19 | 22-Oct-19 | 29-Oct-19 | 4-Nov-19 | 12-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 2.1 | 1.1 | 5.2 | 4.5 | 4.2 | 3.42 | 128 | - |
| Alk-T | mg/L | 25 | 22 | 31 | 38 | 28 | 28.8 | - | - |
| Acidity 8.3 | mg/L | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | 0.5 | - | - |
| TSS | mg/L | 11.6 | 2 | 2 | 2 | 2 | 3.9 | 5 | 25 |
| Al-T | mg/L | 0.267 | 0.0884 | 0.0445 | 0.0356 | 0.0637 | 0.09984 | - | - |
| As-T | mg/L | 0.00136 | 0.00055 | 0.00136 | 0.00199 | 0.00116 | 0.001284 | - | 0.005 |
| Ba-T | mg/L | 0.0062 | 0.0041 | 0.0047 | 0.0056 | 0.0051 | 0.00514 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | 0.000033 | 0.000005 | 0.000011 | 0.000005 | 0.000005 | 0.000012 | - | - |
| Ca-T | mg/L | 11.6 | 10.1 | 12.2 | 13.9 | 10.3 | 11.62 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00022 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00012 | 0.004 | 0.11 |
| Cu-T | mg/L | 0.00188 | 0.00093 | 0.00059 | 0.00059 | 0.00092 | 0.000982 | 0.002 | 0.0070 |
| Hard-T | mg/L | 33.1 | 30.1 | 34.4 | 39.1 | 29.8 | 33.3 | - | - |
| Fe-T | mg/L | 0.43 | 0.136 | 0.024 | 0.022 | 0.071 | 0.1366 | - | 1 |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | 1.01 | 1.21 | 0.982 | 1.07 | 0.99 | 1.0524 | - | - |
| Mn-T | mg/L | 0.0157 | 0.0056 | 0.0005 | 0.0005 | 0.0017 | 0.0048 | 0.7 | 0.8 |
| Hg-T | mg/L | 0.000001 | 0.0000028 | 0.000001 | 0.000001 | 0.0000027 | 0.0000017 | - | 0.0001 |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | 0.266 | 0.252 | 0.16 | 0.182 | 0.189 | 0.2098 | - | - |
| S-T | mg/L | 1.5 | 4.7 | 1.5 | 1.5 | 1.5 | 2.14 | - | - |
| Se-T | mg/L | 0.00025 | 0.00011 | 0.00027 | 0.00029 | 0.00019 | 0.00022 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.000010 | 0.00005 | 0.0001 |
| Na-T | mg/L | 1.14 | 5.77 | 1.28 | 1.45 | 1.47 | 2.222 | - | - |
| Sr-T | mg/L | 0.0382 | 0.0479 | 0.0412 | 0.0461 | 0.0348 | 0.04164 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.033 |
| Al-D | mg/L | 0.062 | 0.108 | 0.0408 | 0.0315 | 0.0488 | 0.0582 | 0.05 | 0.1 |
| As-D | mg/L | 0.00078 | 0.00065 | 0.00133 | 0.00198 | 0.00114 | 0.001176 | - | - |
| Ba-D | mg/L | 0.005 | 0.0047 | 0.0045 | 0.0057 | 0.0052 | 0.00502 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.000016 | 0.000011 | 0.000011 | 0.00001 | 0.000005 | 0.0000106 | 0.00008 | 0.00017 |
| Ca-D | mg/L | 10.9 | 8.25 | 12.2 | 13.8 | 10.4 | 11.11 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | - | - |
| Cu-D | mg/L | 0.00112 | 0.00096 | 0.00058 | 0.00051 | 0.00079 | 0.000792 | - | - |
| Hard-D | mg/L | 31.2 | 24.1 | 34.2 | 38.7 | 30.4 | 31.72 | - | - |
| Fe-D | mg/L | 0.0508 | 0.0869 | 0.0197 | 0.014 | 0.0474 | 0.04376 | - | 0.35 |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | - | - |
| Mg-D | mg/L | 0.975 | 0.844 | 0.943 | 1.03 | 1.07 | 0.9724 | - | - |
| Mn-D | mg/L | 0.0027 | 0.0024 | 0.0005 | 0.0005 | 0.0012 | 0.00146 | - | - |
| Hg-D | mg/L | 0.0000031 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.0000014 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.253 | 0.207 | 0.167 | 0.176 | 0.185 | 0.1976 | - | - |
| S-D | mg/L | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | 1.5 | - | - |
| Se-D | mg/L | 0.00022 | 0.00014 | 0.00025 | 0.00028 | 0.00017 | 0.00021 | - | - |
| Na-D | mg/L | 1.25 | 1.13 | 1.37 | 1.43 | 1.47 | 1.33 | - | - |
| Sr-D | mg/L | 0.0356 | 0.0287 | 0.0403 | 0.0451 | 0.0337 | 0.03668 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 153
# 2019-2020 Annual Report

| EMS ID | E299256 | Quinsam River Downstream of the Confluence with Iron River | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | Monthly | | Water Quality Guidelines | |
| Site Name | IRQR | | | | | | | | | |
| Date | | 11-Apr-19 | 18-Apr-19 | 25-Apr-19 | 2-May-19 | 7-May-19 | 20-Jun-19 | 5x30 Average | Average | Max |
| Parameter | | | | | | | | | | |
| SO4-D | mg/L | 29.6 | 29.0 | 24.6 | 22.2 | 18.9 | 22.3 | 24.86 | 128 | - |
| Alk-T | mg/L | 33.7 | 35.9 | 34.2 | 36.8 | 32.3 | 37.7 | 34.6 | - | - |
| Acidity 8.3 | mg/L | 0.5 | 1.00 | 0.50 | 0.5 | 0.5 | 0.50 | 0.6 | - | - |
| TSS | mg/L | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 2.0 | 5 | 25 |
| Al-T | mg/L | 0.0467 | 0.0472 | 0.0423 | 0.0436 | 0.0572 | 0.0173 | 0.0474 | - | - |
| As-T | mg/L | 0.00047 | 0.00055 | 0.00047 | 0.00061 | 0.00059 | 0.00043 | 0.000538 | - | 0.005 |
| Ba-T | mg/L | 0.0034 | 0.0033 | 0.003 | 0.0035 | 0.0029 | 0.0026 | 0.00322 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.053 | 0.025 | - | - |
| Cd-T | mg/L | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | 11.8 | 12.4 | 10.8 | 12 | 10.3 | 11.1 | 11.46 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | 0.05 |
| Cu-T | mg/L | 0.00087 | 0.00051 | 0.00057 | 0.0009 | 0.00073 | 0.00051 | 0.000716 | 0.0020 | 0.0070 |
| Hard-T | mg/L | 34.6 | 36.7 | 32 | 34.9 | 30.2 | 33.5 | 33.68 | - | - |
| Fe-T | mg/L | 0.07 | 0.064 | 0.059 | 0.068 | 0.065 | 0.079 | 0.0652 | - | 1 |
| Pb-T | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | 1.27 | 1.38 | 1.25 | 1.21 | 1.08 | 1.38 | 1.238 | - | - |
| Mn-T | mg/L | 0.0034 | 0.0031 | 0.0031 | 0.0043 | 0.0034 | 0.0055 | 0.00346 | 0.7 | 0.8 |
| Hg-T | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | 0.0001 |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | 0.271 | 0.268 | 0.232 | 0.255 | 0.228 | 0.212 | 0.2508 | - | - |
| S-T | mg/L | 9.1 | 9.8 | 8.3 | 8.2 | 6.7 | 7.4 | 8.42 | - | - |
| Se-T | mg/L | 0.00011 | 0.00010 | 0.00005 | 0.00011 | 0.00005 | 0.00005 | 0.00008 | - | - |
| Ag-T | mg/L | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | - | 0.0001 |
| Na-T | mg/L | 11.5 | 12.10 | 10.2 | 11 | 9.48 | 12.7 | 10.856 | - | - |
| Sr-T | mg/L | 0.0665 | 0.0662 | 0.0565 | 0.0614 | 0.0533 | 0.0553 | 0.06078 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.03 |
| Al-D | mg/L | 0.0386 | 0.0247 | 0.0339 | 0.0254 | 0.0428 | 0.0118 | 0.0331 | 0.05 | 0.1 |
| As-D | mg/L | 0.0005 | 0.00046 | 0.00043 | 0.00055 | 0.00053 | 0.00044 | 0.000494 | - | - |
| Ba-D | mg/L | 0.0034 | 0.003 | 0.0028 | 0.0033 | 0.003 | 0.0025 | 0.0031 | - | - |
| B-D | mg/L | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | 0.0000025 | 0.000008 | 0.0000050 | 0.0000025 | 0.0000070 | 0.0000025 | 0.0000050 | 0.000088 | 0.000170 |
| Ca-D | mg/L | 13 | 10.7 | 10.9 | 11.7 | 9.8 | 11.9 | 11.22 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | 0.00054 | 0.00046 | 0.00058 | 0.00053 | 0.00069 | 0.00045 | 0.00056 | - | - |
| Hard-D | mg/L | 38 | 31.7 | 32.3 | 34.1 | 28.9 | 35.2 | 33 | - | - |
| Fe-D | mg/L | 0.0374 | 0.0329 | 0.0358 | 0.0363 | 0.0364 | 0.0476 | 0.03576 | - | 0.35 |
| Pb-D | mg/L | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | 1.36 | 1.19 | 1.21 | 1.17 | 1.07 | 1.32 | 1.2 | - | - |
| Mn-D | mg/L | 0.0024 | 0.0021 | 0.0022 | 0.003 | 0.0026 | 0.0043 | 0.00246 | - | - |
| Hg-D | mg/L | 0.000001 | 0.000001 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000010 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.269 | 0.237 | 0.237 | 0.244 | 0.229 | 0.237 | 0.2432 | - | - |
| S-D | mg/L | 10.3 | 8.4 | 7.9 | 8.4 | 7 | 8 | 8.4 | - | - |
| Se-D | mg/L | 0.00005 | 0.00011 | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00006 | - | - |
| Na-D | mg/L | 12.6 | 11.2 | 10.7 | 10.7 | 9.46 | 12.1 | 10.932 | - | - |
| Sr-D | mg/L | 0.068 | 0.0595 | 0.0586 | 0.0616 | 0.0533 | 0.0552 | 0.0602 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 154
# 2019-2020 Annual Report

| EMS ID | E299256 | Quinsam River Downstream of the Confluence with Iron River | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | Monthly | | Water Quality Guidelines | |
| Site Name | IRQR | | | | | | | | | |
| Date | | 29-Jul-19 | 6-Aug-19 | 12-Aug-19 | 19-Aug-19 | 26-Aug-19 | 18-Sep-19 | 4x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | | |
| SO4-D | mg/L | Week 1 | 7.9 | 7 | 7.9 | 9.2 | 10.0 | 8.00 | 128 | - |
| Alk-T | mg/L | No Results | 33 | 35 | 28 | 28 | 32 | 31.0 | - | - |
| Acidity 8.3 | mg/L | | 2.70 | 1.50 | 0.50 | 0.50 | 0.50 | 1.3 | - | - |
| TSS | mg/L | | 2.0 | 1.2 | 1.2 | 0.5 | 2.0 | 1.2 | 5 | 25 |
| Al-T | mg/L | | 0.0177 | 0.0177 | 0.0238 | 0.0133 | 0.0225 | 0.018125 | - | - |
| As-T | mg/L | | 0.00071 | 0.00067 | 0.00053 | 0.00046 | 0.00079 | 0.0005925 | - | 0.005 |
| Ba-T | mg/L | | 0.0031 | 0.0033 | 0.0024 | 0.0024 | 0.0037 | 0.0028 | - | - |
| B-T | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-T | mg/L | | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | - | - |
| Ca-T | mg/L | | 10.9 | 10.7 | 10.3 | 9.98 | 12.4 | 10.47 | - | - |
| Cr-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | 0.05 |
| Cu-T | mg/L | | 0.00074 | 0.00053 | 0.00025 | 0.00025 | 0.0006 | 0.0004425 | 0.002 | 0.007 |
| Hard-T | mg/L | | 31.7 | 31.1 | 30.5 | 29.7 | 36.1 | 30.75 | - | - |
| Fe-T | mg/L | | 0.075 | 0.073 | 0.08 | 0.078 | 0.096 | 0.0765 | - | 1 |
| Pb-T | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | | 1.07 | 1.09 | 1.19 | 1.16 | 1.24 | 1.1275 | - | - |
| Mn-T | mg/L | | 0.0051 | 0.0045 | 0.0049 | 0.0048 | 0.0051 | 0.004825 | 0.7 | 0.8 |
| Hg-T | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000060 | 0.0000010 | 0.0000023 | - | 0.0001 |
| Mo-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | | 0.166 | 0.155 | 0.141 | 0.143 | 0.215 | 0.15125 | - | - |
| S-T | mg/L | | 3.4 | 1.5 | 1.5 | 1.5 | 4.2 | 1.975 | - | - |
| Se-T | mg/L | | 0.00005 | 0.00005 | 0.00005 | 0.00005 | 0.00010 | 0.00005 | - | - |
| Ag-T | mg/L | | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | 0.000010 | - | 0.0001 |
| Na-T | mg/L | | 4.16 | 3.43 | 4.03 | 3.97 | 4.44 | 3.8975 | - | - |
| Sr-T | mg/L | | 0.042 | 0.0382 | 0.0369 | 0.0365 | 0.0468 | 0.0384 | - | - |
| Zn-T | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.03 |
| Al-D | mg/L | | 0.0112 | 0.0098 | 0.0083 | 0.0076 | 0.0149 | 0.0092 | 0.05 | 0.1 |
| As-D | mg/L | | 0.00066 | 0.0007 | 0.00049 | 0.00048 | 0.00072 | 0.0005825 | - | - |
| Ba-D | mg/L | | 0.0031 | 0.0034 | 0.0024 | 0.0023 | 0.0037 | 0.0028 | - | - |
| B-D | mg/L | | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | 0.025 | - | - |
| Cd-D | mg/L | | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.0000050 | 0.00017 | 0.00043 |
| Ca-D | mg/L | | 10.6 | 11.7 | 10.1 | 9.77 | 12.1 | 10.5425 | - | - |
| Cr-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Cu-D | mg/L | | 0.00051 | 0.00051 | 0.00041 | 0.00042 | 0.00061 | 0.0004625 | - | - |
| Hard-D | mg/L | | 31.3 | 34 | 30.1 | 28.9 | 35.2 | 31.075 | - | - |
| Fe-D | mg/L | | 0.0498 | 0.0463 | 0.053 | 0.0484 | 0.0597 | 0.049375 | - | 0.35 |
| Pb-D | mg/L | | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | 0.00010 | - | - |
| Mg-D | mg/L | | 1.16 | 1.17 | 1.17 | 1.1 | 1.18 | 1.15 | - | - |
| Mn-D | mg/L | | 0.0044 | 0.0039 | 0.0043 | 0.004 | 0.0039 | 0.00415 | - | - |
| Hg-D | mg/L | | 0.0000010 | 0.0000010 | 0.0000010 | 0.0000036 | 0.0000036 | 0.0000017 | - | - |
| Mo-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | | 0.156 | 0.165 | 0.137 | 0.137 | 0.193 | 0.14875 | - | - |
| S-D | mg/L | | 1.5 | 1.5 | 1.5 | 1.5 | 3.8 | 1.5 | - | - |
| Se-D | mg/L | | 0.00005 | 0.00010 | 0.00005 | 0.00005 | 0.00012 | 0.00006 | - | - |
| Na-D | mg/L | | 4.02 | 3.78 | 3.9 | 3.94 | 4.25 | 3.91 | - | - |
| Sr-D | mg/L | | 0.0407 | 0.0397 | 0.0359 | 0.0354 | 0.0459 | 0.037925 | - | - |
| Zn-D | mg/L | | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 155
# 2019-2020 Annual Report

| EMS ID | E299256 | Quinsam River Downstream of the Confluence with Iron River | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Site Description | | 5 in 30 Weekly Samples | | | | | | Water Quality Guidelines | |
| Site Name | IRQR | | | | | | | | |
| Date | | 17-Oct-19 | 22-Oct-19 | 29-Oct-19 | 4-Nov-19 | 12-Nov-19 | 5x30 Average | Average | Max |
| Parameter | Unit | | | | | | | | |
| SO4-D | mg/L | 13 | 16 | 21 | 25 | 14 | 17.80 | 128 | - |
| Alk-T | mg/L | 32 | 27 | 35 | 40 | 33 | 33.4 | - | - |
| Acidity 8.3 | mg/L | 0.5 | 0.5 | 0.5 | 0.5 | 1.2 | 0.64 | - | - |
| TSS | mg/L | 8 | 2 | 2 | 2 | 2 | 3.2 | 5 | 25 |
| Al-T | mg/L | 0.197 | 0.0599 | 0.031 | 0.0187 | 0.0444 | 0.0702 | - | - |
| As-T | mg/L | 0.00111 | 0.00052 | 0.0006 | 0.00058 | 0.00079 | 0.00072 | - | 0.005 |
| Ba-T | mg/L | 0.0053 | 0.004 | 0.0039 | 0.0038 | 0.0041 | 0.0042 | - | - |
| B-T | mg/L | 0.025 | 0.025 | 0.025 | 0.052 | 0.025 | 0.0304 | - | - |
| Cd-T | mg/L | 0.000027 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.000009 | - | - |
| Ca-T | mg/L | 11.9 | 10.3 | 12.9 | 13.2 | 11.4 | 11.9 | - | - |
| Cr-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | - | 0.05 |
| Cu-T | mg/L | 0.00149 | 0.00088 | 0.00059 | 0.0005 | 0.0007 | 0.00083 | 0.0020 | 0.0070 |
| Hard-T | mg/L | 35 | 30.7 | 38.5 | 39.5 | 34.2 | 35.6 | - | - |
| Fe-T | mg/L | 0.344 | 0.076 | 0.08 | 0.109 | 0.11 | 0.144 | - | 1 |
| Pb-T | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | 0.003 | 0.005 |
| Mg-T | mg/L | 1.29 | 1.23 | 1.52 | 1.6 | 1.41 | 1.41 | - | - |
| Mn-T | mg/L | 0.0142 | 0.0032 | 0.0045 | 0.0054 | 0.0048 | 0.0064 | 0.7 | 0.8 |
| Hg-T | mg/L | 0.0000041 | 0.000001 | 0.000001 | 0.0000022 | 0.000001 | 0.0000019 | - | 0.0001 |
| Mo-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-T | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | 0.025 |
| K-T | mg/L | 0.296 | 0.254 | 0.247 | 0.265 | 0.246 | 0.262 | - | - |
| S-T | mg/L | 4.6 | 4.7 | 7.8 | 8.2 | 5.6 | 6.2 | - | - |
| Se-T | mg/L | 0.00025 | 0.0001 | 0.00012 | 0.00016 | 0.00005 | 0.00014 | - | - |
| Ag-T | mg/L | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.00001 | 0.000010 | - | 0.0001 |
| Na-T | mg/L | 5.97 | 5.8 | 10.4 | 13.3 | 8.52 | 8.8 | - | - |
| Sr-T | mg/L | 0.0502 | 0.0478 | 0.0661 | 0.0647 | 0.0531 | 0.0564 | - | - |
| Zn-T | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0075 | 0.033 |
| Al-D | mg/L | 0.0487 | 0.0334 | 0.0259 | 0.0129 | 0.0355 | 0.0313 | 0.05 | 0.1 |
| As-D | mg/L | 0.00065 | 0.00039 | 0.00062 | 0.00059 | 0.0007 | 0.00059 | - | - |
| Ba-D | mg/L | 0.0046 | 0.0035 | 0.0037 | 0.0037 | 0.004 | 0.0039 | - | - |
| B-D | mg/L | 0.025 | 0.052 | 0.025 | 0.054 | 0.025 | 0.0362 | - | - |
| Cd-D | mg/L | 0.000012 | 0.000005 | 0.000005 | 0.000005 | 0.000005 | 0.0000064 | 0.000088 | 0.00017 |
| Ca-D | mg/L | 11.7 | 13.3 | 13 | 13.1 | 11.6 | 12.5 | - | - |
| Cr-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Co-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | - | - |
| Cu-D | mg/L | 0.00097 | 0.00057 | 0.00056 | 0.00049 | 0.00073 | 0.00066 | - | - |
| Hard-D | mg/L | 34.1 | 41.3 | 39 | 39.3 | 34.9 | 37.7 | - | - |
| Fe-D | mg/L | 0.0594 | 0.0964 | 0.0587 | 0.0551 | 0.0849 | 0.0709 | - | 0.35 |
| Pb-D | mg/L | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.0001 | 0.00010 | - | - |
| Mg-D | mg/L | 1.2 | 1.93 | 1.61 | 1.57 | 1.46 | 1.55 | - | - |
| Mn-D | mg/L | 0.0035 | 0.0056 | 0.0041 | 0.0046 | 0.0041 | 0.0044 | - | - |
| Hg-D | mg/L | 0.0000029 | 0.000001 | 0.000001 | 0.000001 | 0.000001 | 0.0000014 | - | - |
| Mo-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| Ni-D | mg/L | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | 0.0005 | - | - |
| K-D | mg/L | 0.27 | 0.348 | 0.253 | 0.263 | 0.249 | 0.277 | - | - |
| S-D | mg/L | 4.2 | 10.7 | 7.7 | 8.1 | 5.6 | 7.3 | - | - |
| Se-D | mg/L | 0.00018 | 0.00005 | 0.00011 | 0.00005 | 0.0001 | 0.00010 | - | - |
| Na-D | mg/L | 5.79 | 12.8 | 11 | 13.1 | 8.85 | 10.31 | - | - |
| Sr-D | mg/L | 0.0468 | 0.079 | 0.0619 | 0.064 | 0.0507 | 0.0605 | - | - |
| Zn-D | mg/L | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | 0.0025 | - | - |

# Table 156
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| EMS ID | E292127 | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description: | 2 South Pit (CCR Water Cover) Continuos Discharge Inflow | | | | | | | | | | | | | | | | | | | | | | | |
| Site Name | 2SI | | | | | | | | | | | | | | | | | | | | | | | |
| Date | April | | May | | June | | July | | August | | September | | October | | November | | December | | Janaury | | February | | March | |
| | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) | WL | Q (L/s) |
| 1 | 0.03 | 0.27 | 0.15 | 12.90 | 0.17 | 15.69 | 0.18 | 17.85 | 0.19 | 21.13 | 0.14 | 11.03 | 0.13 | 8.88 | 0.12 | 6.60 | 0.14 | 10.66 | 0.22 | 29.65 | 0.24 | 40.88 | 0.13 | 9.24 |
| 2 | 0.03 | 0.26 | 0.15 | 11.98 | 0.16 | 15.04 | 0.18 | 18.00 | 0.19 | 22.97 | 0.15 | 11.66 | 0.13 | 8.50 | 0.11 | 6.17 | 0.16 | 13.94 | 0.20 | 23.91 | 0.18 | 19.76 | 0.14 | 9.96 |
| 3 | 0.06 | 1.10 | 0.15 | 11.53 | 0.16 | 14.08 | 0.18 | 17.98 | 0.18 | 20.00 | 0.15 | 11.29 | 0.13 | 8.31 | 0.11 | 6.11 | 0.18 | 19.59 | 0.24 | 40.05 | 0.16 | 13.78 | 0.14 | 10.03 |
| 4 | 0.11 | 5.01 | 0.15 | 11.53 | 0.15 | 12.66 | 0.18 | 18.18 | 0.18 | 19.29 | 0.15 | 11.25 | 0.16 | 15.21 | 0.15 | 12.96 | 0.21 | 26.73 | 0.25 | 41.51 | 0.14 | 10.59 | 0.13 | 9.14 |
| 5 | 0.18 | 19.63 | 0.15 | 11.61 | 0.15 | 12.09 | 0.18 | 18.44 | 0.18 | 19.03 | 0.15 | 11.72 | 0.15 | 11.25 | 0.18 | 19.81 | 0.21 | 26.51 | 0.23 | 34.01 | 0.15 | 12.30 | 0.14 | 10.93 |
| 6 | 0.25 | 44.15 | 0.14 | 10.72 | 0.15 | 12.04 | 0.18 | 18.30 | 0.18 | 18.71 | 0.15 | 11.65 | 0.14 | 10.20 | 0.17 | 15.40 | 0.22 | 30.26 | 0.21 | 28.83 | 0.15 | 12.58 | 0.14 | 9.47 |
| 7 | 0.28 | 55.95 | 0.14 | 10.11 | 0.14 | 10.57 | 0.18 | 18.37 | 0.18 | 18.58 | 0.15 | 11.87 | 0.16 | 13.72 | 0.17 | 15.93 | 0.22 | 31.46 | 0.26 | 47.09 | 0.16 | 14.10 | 0.14 | 9.90 |
| 8 | 0.25 | 43.30 | 0.14 | 9.70 | 0.12 | 7.33 | 0.18 | 18.44 | 0.18 | 18.69 | 0.15 | 11.62 | 0.15 | 11.53 | 0.17 | 16.19 | 0.22 | 30.86 | 0.23 | 34.92 | 0.17 | 16.75 | 0.13 | 9.19 |
| 9 | 0.23 | 34.13 | 0.14 | 10.02 | 0.12 | 7.28 | 0.18 | 18.25 | 0.18 | 18.81 | 0.15 | 12.89 | 0.12 | 6.23 | 0.18 | 18.95 | 0.21 | 27.44 | 0.21 | 27.99 | 0.15 | 12.58 | 0.13 | 8.31 |
| 10 | 0.22 | 30.02 | 0.14 | 9.75 | 0.13 | 7.72 | 0.19 | 22.21 | 0.18 | 18.82 | 0.16 | 13.38 | 0.11 | 5.31 | 0.18 | 17.97 | 0.18 | 18.14 | 0.20 | 24.71 | 0.15 | 11.20 | 0.13 | 8.87 |
| 11 | 0.21 | 27.84 | 0.13 | 9.03 | 0.11 | 6.18 | 0.20 | 26.00 | 0.18 | 18.71 | 0.15 | 12.91 | 0.11 | 5.21 | 0.18 | 18.38 | 0.16 | 13.95 | 0.20 | 24.98 | 0.14 | 10.93 | 0.13 | 8.97 |
| 12 | 0.20 | 25.37 | 0.13 | 7.68 | 0.11 | 5.32 | 0.20 | 23.93 | 0.19 | 20.95 | 0.15 | 13.04 | 0.12 | 6.21 | 0.19 | 22.85 | 0.18 | 19.64 | 0.20 | 24.60 | 0.14 | 10.45 | 0.13 | 7.74 |
| 13 | 0.21 | 26.75 | 0.15 | 11.93 | 0.11 | 5.15 | 0.20 | 24.02 | 0.18 | 19.82 | 0.16 | 13.88 | 0.11 | 6.02 | 0.18 | 18.93 | 0.18 | 19.32 | 0.19 | 22.78 | 0.14 | 10.67 | 0.12 | 7.59 |
| 14 | 0.19 | 22.47 | 0.21 | 26.59 | 0.10 | 4.77 | 0.20 | 23.67 | 0.18 | 18.88 | 0.16 | 13.60 | 0.11 | 5.37 | 0.18 | 18.80 | 0.18 | 18.80 | 0.19 | 22.31 | 0.14 | 10.43 | 0.12 | 7.48 |
| 15 | 0.19 | 20.78 | 0.20 | 24.14 | 0.10 | 4.48 | 0.19 | 22.39 | 0.18 | 18.13 | 0.15 | 12.05 | 0.12 | 7.60 | 0.20 | 25.01 | 0.18 | 18.70 | 0.19 | 20.45 | 0.14 | 10.20 | 0.12 | 6.77 |
| 16 | 0.18 | 18.95 | 0.18 | 18.92 | 0.10 | 4.51 | 0.19 | 20.91 | 0.18 | 18.03 | 0.15 | 11.33 | 0.17 | 15.40 | 0.21 | 28.89 | 0.18 | 18.95 | 0.19 | 22.00 | 0.14 | 9.80 | 0.12 | 6.49 |
| 17 | 0.18 | 18.35 | 0.15 | 12.55 | 0.10 | 4.69 | 0.18 | 20.26 | 0.18 | 17.94 | 0.12 | 6.87 | 0.18 | 18.87 | 0.27 | 51.85 | 0.21 | 26.46 | 0.19 | 21.09 | 0.13 | 8.86 | 0.11 | 5.96 |
| 18 | 0.21 | 27.19 | 0.17 | 16.20 | 0.17 | 16.71 | 0.19 | 21.83 | 0.18 | 18.01 | 0.10 | 4.00 | 0.18 | 18.88 | 0.20 | 26.19 | 0.23 | 34.20 | 0.18 | 19.87 | 0.13 | 8.01 | 0.11 | 5.87 |
| 19 | 0.24 | 40.93 | 0.17 | 16.85 | 0.17 | 17.10 | 0.19 | 21.23 | 0.18 | 17.85 | 0.14 | 9.53 | 0.17 | 16.99 | 0.19 | 22.25 | 0.21 | 29.46 | 0.21 | 28.62 | 0.12 | 7.43 | 0.11 | 5.87 |
| 20 | 0.23 | 35.83 | 0.18 | 18.45 | 0.17 | 17.37 | 0.18 | 20.22 | 0.17 | 17.05 | 0.15 | 12.96 | 0.16 | 14.13 | 0.22 | 29.60 | 0.21 | 27.44 | 0.25 | 44.27 | 0.12 | 7.19 | 0.11 | 5.65 |
| 21 | 0.21 | 29.07 | 0.20 | 23.37 | 0.17 | 17.45 | 0.18 | 20.27 | 0.18 | 18.30 | 0.14 | 9.86 | 0.18 | 17.75 | 0.24 | 39.33 | 0.20 | 26.24 | 0.28 | 59.83 | 0.12 | 6.85 | 0.11 | 5.41 |
| 22 | 0.21 | 28.71 | 0.20 | 24.45 | 0.17 | 17.09 | 0.19 | 20.45 | 0.18 | 18.79 | 0.14 | 9.91 | 0.16 | 14.18 | 0.24 | 37.16 | 0.20 | 25.46 | 0.24 | 37.81 | 0.12 | 7.31 | 0.11 | 4.96 |
| 23 | 0.20 | 25.88 | 0.17 | 16.67 | 0.17 | 17.21 | 0.19 | 22.15 | 0.16 | 14.11 | 0.15 | 12.13 | 0.15 | 11.85 | 0.23 | 36.42 | 0.20 | 24.96 | 0.23 | 35.76 | 0.14 | 10.19 | 0.11 | 5.79 |
| 24 | 0.19 | 21.78 | 0.18 | 18.97 | 0.17 | 17.11 | 0.19 | 21.61 | 0.15 | 11.38 | 0.17 | 16.45 | 0.19 | 21.94 | 0.23 | 34.86 | 0.20 | 24.55 | 0.23 | 34.94 | 0.13 | 8.78 | 0.11 | 5.71 |
| 25 | 0.18 | 19.14 | 0.18 | 18.30 | 0.17 | 17.09 | 0.18 | 20.18 | 0.15 | 11.73 | 0.18 | 19.82 | 0.19 | 22.39 | 0.20 | 24.25 | 0.20 | 24.68 | 0.20 | 23.18 | 0.13 | 7.85 | 0.11 | 5.43 |
| 26 | 0.18 | 18.02 | 0.18 | 18.21 | 0.17 | 17.37 | 0.18 | 20.10 | 0.15 | 11.50 | 0.15 | 12.39 | 0.17 | 17.37 | 0.15 | 12.53 | 0.19 | 21.34 | 0.25 | 41.24 | 0.13 | 8.07 | 0.11 | 5.70 |
| 27 | 0.17 | 16.19 | 0.18 | 18.13 | 0.18 | 18.61 | 0.18 | 20.25 | 0.14 | 11.00 | 0.14 | 9.68 | 0.16 | 14.68 | 0.15 | 11.57 | 0.18 | 19.76 | 0.21 | 27.48 | 0.13 | 8.94 | 0.11 | 6.11 |
| 28 | 0.16 | 14.46 | 0.18 | 17.69 | 0.18 | 19.34 | 0.18 | 19.00 | 0.14 | 10.24 | 0.13 | 8.86 | 0.16 | 14.69 | 0.14 | 10.68 | 0.19 | 21.28 | 0.21 | 27.33 | 0.14 | 11.04 | 0.11 | 5.63 |
| 29 | 0.16 | 13.92 | 0.18 | 19.06 | 0.18 | 18.64 | 0.18 | 18.95 | 0.14 | 10.34 | 0.13 | 8.91 | 0.16 | 14.05 | 0.14 | 10.68 | 0.19 | 22.25 | 0.22 | 31.35 | 0.15 | 11.09 | 0.11 | 5.38 |
| 30 | 0.16 | 13.16 | 0.18 | 18.87 | 0.18 | 17.78 | 0.18 | 20.09 | 0.14 | 10.55 | 0.13 | 9.05 | 0.15 | 11.68 | 0.14 | 10.50 | 0.19 | 21.58 | 0.19 | 22.24 | | | 0.12 | 7.06 |
| 31 | | | 0.17 | 15.94 | | | 0.18 | 19.76 | 0.14 | 10.85 | | | 0.12 | 7.43 | | | 0.21 | 27.91 | 0.23 | 33.49 | | | 0.12 | 6.95 |
| WL= Water Level | | | Q= Quantity | | | | | | | | | | | | | | | | | | | | | |

# Table 157
# 2019-2020 Annual Report

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **EMS ID** | | **E292127** | | | | | | | | | | | | | | | | | | | | | | |
| **Site Description:** | | **2 South Pit Continuos Discharge Outflow** | | | | | | | | | | | | | | | | | | | | | | |
| **Site Name** | | **2S** | | | | | | | | | | | | | | | | | | | | | | |
| **Date** | **April** | | **May** | | **June** | | **July** | | **August** | | **September** | | **October** | | **November** | | **December** | | **Janaury** | | **February** | | **March** | |
| | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** | **WL** | **Q (L/s)** |
| 1 | 0.13 | 9.07 | 0.14 | 10.58 | 0.12 | 8.04 | 0.13 | 9.35 | 0.19 | 20.51 | 0.28 | 48.36 | 0.13 | 9.81 | 0.15 | 13.18 | 0.15 | 13.18 | 0.24 | 34.12 | Missing Data | Missing Data | 0.13 | 9.62 |
| 2 | 0.13 | 9.26 | 0.14 | 10.52 | 0.12 | 8.44 | 0.13 | 8.76 | 0.19 | 20.04 | 0.27 | 45.65 | 0.13 | 9.50 | 0.15 | 11.76 | 0.15 | 12.81 | 0.22 | 28.36 | Missing Data | Missing Data | 0.14 | 9.97 |
| 3 | 0.14 | 10.19 | 0.14 | 9.98 | 0.12 | 8.32 | 0.13 | 9.05 | 0.15 | 11.93 | 0.27 | 46.80 | 0.13 | 9.81 | 0.14 | 11.25 | 0.16 | 13.54 | 0.25 | 36.40 | Missing Data | Missing Data | 0.14 | 10.28 |
| 4 | 0.13 | 9.60 | 0.14 | 9.98 | 0.12 | 8.23 | 0.13 | 8.48 | 0.14 | 9.96 | 0.27 | 45.65 | 0.14 | 9.96 | 0.15 | 11.59 | 0.18 | 19.35 | 0.31 | 63.30 | 0.20 | 23.22 | 0.13 | 9.89 |
| 5 | 0.14 | 10.04 | 0.13 | 9.77 | 0.13 | 8.51 | 0.13 | 9.20 | 0.13 | 9.35 | 0.27 | 44.90 | 0.14 | 10.12 | 0.14 | 11.25 | 0.19 | 20.04 | 0.30 | 56.17 | 0.19 | 20.75 | 0.14 | 10.13 |
| 6 | 0.15 | 12.57 | 0.13 | 9.65 | 0.13 | 8.93 | 0.13 | 8.62 | 0.11 | 6.62 | 0.27 | 44.15 | 0.13 | 9.81 | 0.15 | 11.59 | 0.29 | 51.97 | 0.28 | 48.75 | Missing Data | Missing Data | 0.14 | 10.26 |
| 7 | 0.16 | 13.72 | 0.13 | 9.53 | 0.12 | 8.36 | 0.12 | 7.92 | 0.11 | 6.75 | 0.27 | 44.90 | 0.14 | 10.43 | 0.15 | 11.93 | 0.21 | 26.67 | 0.32 | 68.01 | 0.17 | 17.14 | 0.14 | 10.24 |
| 8 | 0.15 | 13.32 | 0.13 | 9.23 | 0.12 | 8.31 | 0.12 | 8.33 | 0.11 | 6.62 | 0.30 | 56.60 | 0.14 | 9.96 | 0.14 | 9.96 | 0.21 | 26.39 | 0.32 | 65.63 | 0.19 | 19.72 | 0.13 | 9.31 |
| 9 | 0.15 | 12.73 | 0.13 | 9.06 | 0.13 | 8.75 | 0.12 | 8.19 | 0.13 | 8.91 | 0.28 | 48.36 | 0.14 | 10.60 | 0.17 | 16.09 | 0.21 | 25.31 | 0.27 | 44.90 | 0.18 | 17.95 | 0.13 | 8.83 |
| 10 | 0.16 | 13.97 | 0.13 | 8.96 | 0.13 | 8.48 | 0.13 | 8.76 | 0.13 | 8.91 | 0.31 | 62.38 | 0.14 | 9.96 | 0.18 | 18.22 | 0.20 | 23.47 | 0.26 | 40.87 | 0.17 | 16.10 | | 9.24 |
| 11 | 0.18 | 17.92 | 0.13 | 9.22 | 0.12 | 7.78 | 0.11 | 7.00 | 0.14 | 10.43 | 0.18 | 17.35 | 0.13 | 9.65 | 0.17 | 16.09 | 0.18 | 17.78 | 0.24 | 33.48 | 0.16 | 14.34 | 0.13 | 8.70 |
| 12 | 0.17 | 16.32 | 0.13 | 9.09 | 0.12 | 7.86 | 0.12 | 8.33 | 0.12 | 8.33 | 0.17 | 15.48 | 0.13 | 9.35 | 0.19 | 20.99 | 0.18 | 19.35 | 0.23 | 31.01 | 0.16 | 13.63 | 0.12 | 8.31 |
| 13 | 0.17 | 16.51 | 0.13 | 9.44 | 0.12 | 7.81 | 0.13 | 8.76 | 0.18 | 17.57 | 0.14 | 10.92 | 0.13 | 9.81 | 0.19 | 19.81 | 0.18 | 18.89 | 0.21 | 26.39 | 0.15 | 12.70 | 0.12 | 7.96 |
| 14 | 0.16 | 15.25 | 0.13 | 9.69 | 0.12 | 7.76 | 0.12 | 8.33 | 0.20 | 22.21 | 0.14 | 10.43 | 0.14 | 10.43 | 0.18 | 17.78 | 0.19 | 20.28 | 0.29 | 51.97 | 0.15 | 12.41 | 0.12 | 7.40 |
| 15 | 0.16 | 14.07 | 0.13 | 9.36 | 0.12 | 7.64 | 0.13 | 9.05 | 0.12 | 7.92 | 0.13 | 9.81 | 0.14 | 10.28 | 0.20 | 22.96 | 0.18 | 17.78 | 0.28 | 50.35 | 0.15 | 12.02 | 0.11 | 7.11 |
| 16 | 0.15 | 13.05 | 0.13 | 9.79 | 0.12 | 7.70 | 0.13 | 9.05 | 0.25 | 37.40 | 0.13 | 9.81 | 0.13 | 9.35 | 0.21 | 25.04 | 0.18 | 19.12 | 0.21 | 26.12 | 0.14 | 11.24 | 0.11 | 6.99 |
| 17 | 0.15 | 12.30 | 0.13 | 9.25 | 0.12 | 7.93 | 0.13 | 8.76 | 0.23 | 32.54 | 0.13 | 9.65 | 0.15 | 11.76 | 0.31 | 59.67 | 0.19 | 20.28 | 0.20 | 22.96 | 0.14 | 10.42 | 0.11 | 6.79 |
| 18 | 0.17 | 15.94 | 0.13 | 8.86 | 0.12 | 7.82 | 0.13 | 8.62 | 0.24 | 35.09 | 0.13 | 8.91 | 0.15 | 11.59 | 0.28 | 49.55 | 0.29 | 52.38 | 0.21 | 24.77 | 0.13 | 9.50 | 0.11 | 6.71 |
| 19 | 0.21 | 25.10 | 0.13 | 8.72 | 0.12 | 7.88 | 0.14 | 10.43 | 0.25 | 36.73 | 0.13 | 9.81 | 0.15 | 12.81 | 0.24 | 35.41 | 0.29 | 52.38 | 0.23 | 32.23 | 0.13 | 8.92 | 0.11 | 6.63 |
| 20 | 0.21 | 24.74 | 0.13 | 9.67 | 0.12 | 7.84 | 0.12 | 8.19 | 0.25 | 37.07 | 0.13 | 9.50 | 0.16 | 13.36 | 0.23 | 31.01 | 0.22 | 29.23 | 0.31 | 59.67 | 0.12 | 8.38 | 0.11 | 6.33 |
| 21 | 0.20 | 22.08 | 0.13 | 8.56 | 0.12 | 7.72 | 0.12 | 8.06 | 0.26 | 40.16 | 0.14 | 10.12 | 0.17 | 15.28 | 0.24 | 36.07 | 0.22 | 29.23 | 0.37 | 92.33 | 0.13 | 8.58 | 0.11 | 6.21 |
| 22 | 0.19 | 21.18 | 0.13 | 8.51 | 0.12 | 8.03 | 0.12 | 8.33 | 0.25 | 37.07 | 0.15 | 12.10 | 0.19 | 21.72 | 0.25 | 36.73 | 0.21 | 26.39 | 0.33 | 71.43 | 0.12 | 7.96 | 0.11 | 6.54 |
| 23 | 0.18 | 17.95 | 0.13 | 8.60 | 0.12 | 8.44 | 0.13 | 8.76 | 0.27 | 43.78 | 0.13 | 9.81 | 0.18 | 17.35 | 0.24 | 34.44 | 0.21 | 24.51 | 0.32 | 66.57 | 0.13 | 8.50 | 0.11 | 6.72 |
| 24 | 0.17 | 15.40 | 0.12 | 8.47 | 0.12 | 8.20 | 0.13 | 8.62 | 0.27 | 46.03 | 0.15 | 11.76 | 0.17 | 15.28 | 0.25 | 38.08 | 0.21 | 25.58 | Missing Data | Missing Data | 0.12 | 8.06 | 0.11 | 6.22 |
| 25 | 0.16 | 13.76 | 0.12 | 8.39 | 0.12 | 7.81 | 0.13 | 8.48 | 0.28 | 47.19 | 0.14 | 11.09 | 0.23 | 30.41 | 0.24 | 33.80 | 0.20 | 24.25 | Missing Data | Missing Data | 0.12 | 8.23 | 0.10 | 5.86 |
| 26 | 0.15 | 12.49 | 0.12 | 8.19 | 0.12 | 7.72 | 0.12 | 8.33 | 0.27 | 43.41 | 0.14 | 10.76 | 0.20 | 22.21 | 0.26 | 40.87 | 0.20 | 23.47 | Missing Data | Missing Data | 0.12 | 8.14 | 0.11 | 6.51 |
| 27 | 0.15 | 12.12 | 0.12 | 8.25 | 0.13 | 8.81 | 0.13 | 8.62 | 0.26 | 43.04 | 0.14 | 10.43 | 0.18 | 17.35 | 0.26 | 41.23 | 0.23 | 30.11 | 0.27 | 45.27 | 0.12 | 8.32 | 0.11 | 6.34 |
| 28 | 0.14 | 11.24 | 0.12 | 8.22 | 0.13 | 9.01 | 0.15 | 12.10 | 0.27 | 45.65 | 0.14 | 10.12 | 0.17 | 16.71 | 0.17 | 15.28 | 0.23 | 30.71 | 0.28 | 47.19 | 0.13 | 8.65 | 0.11 | 6.09 |
| 29 | 0.14 | 10.92 | 0.12 | 8.17 | 0.12 | 8.29 | 0.16 | 13.36 | 0.27 | 45.27 | 0.14 | 10.12 | 0.17 | 15.48 | 0.16 | 14.69 | 0.23 | 31.31 | 0.26 | 42.31 | 0.13 | 9.24 | 0.11 | 5.99 |
| 30 | 0.14 | 10.75 | 0.12 | 8.30 | 0.12 | 7.77 | 0.17 | 16.29 | 0.26 | 43.04 | 0.15 | 12.00 | 0.14 | 10.60 | 0.16 | 13.92 | 0.22 | 28.36 | 0.26 | 39.81 | | | 0.11 | 6.04 |
| 31 | | | 0.12 | 8.27 | | | 0.21 | 25.04 | 0.26 | 41.95 | | | 0.16 | 13.54 | | | 0.21 | 25.31 | | | | | 0.11 | 6.41 |
| **= Water Level** | | | **Q= Quantity** | | | | | | | | | | | | | | | | | | | | | |

**Table 158**
**2019-2020 Annual Report**

# Groundwater Wells - Description

| Area | Groundwater ID | In-situ / Ex-situ | Screened Interval | Comment |
|---|---|---|---|---|
| 2-North | 1 Mains 2-North (1M2N) | In-situ | No. 1 Seam | Flooded Underground Workings Dewatering well |
| | 5 Mains#2 (5M#2) | In-situ | No. 1 Seam | Flooded Underground Workings Dewatering well |
| | QU08-21GD | Ex-situ | No. 1 Seam | Down gradient of u/g tailings disposal, measure water quality and hydraulic gradients downstream of forjan fault |
| | QU08-21GS | Ex-situ | No. 4 Coal Seam and | |
| | QU10-10D | Ex-situ | No. 1 Seam / mudstone | Down gradient of u/g tailings disposal, measure water quality and hydraulic head downstream of 2 North workings |
| | QU10-10S | Ex-situ | No. 4 Seam / | |
| | QU10-11S | Ex-situ | Fractured Sandstone | Measure water quality and hydraulic gradient in Forjan Fault |
| | QU10-11D | Ex-situ | No.1 Seam | Down gradient of u/g tailings disposal, measure water quality and hydraulic head downstream of 2 North workings |
| | QU10-13D | In-situ | Caved Zone | Measure hydraulic head above 2 North mine (1 mains), fine tailing disposal |
| 5-South Mine Pool | 5SMW | In-situ | Mine Pool (1 Seam) | 5-S Mine Pool pumped into 2-North Mine Pool |
| River Barrier Pillar (RBP) | QU11-05S | Ex-situ | Sandstone | Monitoring water quality and vertical gradients downstream of the RBP and 2-North mine. |
| | QU11-05D | Ex-situ | Sandstone | Monitoring water quality and vertical gradients downstream of the RBP and 2-North mine. |
| | QU11-09S | Ex-situ | Sandstone | Monitor water quality & gradients downstream of the RBP and 2-North workings. Mine pool – CCR backfill in River Barrier Pillar |
| | QU11-09M | In-situ | RBP Mine Pool | Monitor water quality & gradients downstream of the RBP and 2-North workings. Mine pool – CCR backfill in River Barrier Pillar. |
| 2-North Plant Site | MW-00-1S | Ex-situ | Till | Seepage to MQL |
| | MW-00-1D | Ex-situ | 1-Seam | Seepage to MQL |
| | MW-00-6D | Ex-situ | Till | Seepage to MQL |
| | MW-00-6S | Ex-situ | Till | Seepage to MQL |
| 4-South | QU10-08D | Ex-situ | No. 3 Seam | 4 South (just outside mine pool) up gradient of existing workings |
| | QU11-01 | | Foot print area of 4 South GOB | Assess 4 South Mine Pool water quality |
| | QU10-09S | Ex-situ | Down gradient of existing workings | Access vertical gradients and water quality adjacent to Long Lake. |
| | QU10-09D | Ex-situ | Down gradient of existing workings | Access vertical gradients and water quality adjacent to Long Lake. |
| 2-South & 3-South | MW002 | Ex-situ | 1 Seam | 3S seepage to Long Lake |
| | MW004 | In-Situ | Mine Pool (1 Seam) | 2-South Mine Pool Gob depillared area |
| | MW1223 | Ex-situ | Silt Stone | 2-South seepage to No Name Lake |
| | MW1224 | Ex-situ | Silt Stone | 2-South seepage to No Name Lake |
| | QU11-11 (INF) | In-Situ | Mine Pool (1 Seam) | 2-South mine pool dewatering well for Passive Treatment System |
| 7-South | 1M7S | In-Situ | No. 4 Coal Seam | Underground Sump |
| | QU08-10 | Ex-situ | No. 4 Coal Seam | Downgradient of 7S -screened No. 3 Coal -Southern margin of workings |
| | QU08-13A | Ex-situ | No. 4 Coal Seam | Down Gradient of the CCR backfill towards QR |
| | QU08-13B | Ex-situ | Till & SST contact | Down Gradient of the CCR backfill towards QR |
| | QU14-10 | In-Situ | Mine Void | PAG Storage Mine Void |
| 7- South Area 5 | 7SA5 | In-Situ | Mine Void | Groundwater draining into mine void |
| | QU1128 | Ex-situ | N0. 4 Seam and 4L | Upgradiernt of 7SA5. Background 7 South Area 5 |
| | QU1118S | Ex-situ | Till | Down Gradient of 7SA5 - Background info for 7S A5 Subcrop |
| | QU1118D | Ex-situ | Sandstone | Down Gradient of 7SA5 - Background info for 7S A5 Subcrop |
| | QU1206S | Ex-situ | Faulted sandstone near No. 4 Seam | Upgradient of 7SA5 along margine with proposed 4S expansion |
| | QU11-35 | Ex-situ | Sandstone above No. 4 Seam | South end of 7SA5 footprint at 100280m N (mine grid) |
| 242 AREA | QU11-36S | Ex-situ | Sandstone below No. 5 seam | Downgradient of 7SA5. Background (Between 242 and IR). |
| | QU11-36D | Ex-situ | Sandstone below No. 5 seam | Downgradient of 7SA5. Background (Between 242 and IR). |
| | 242MW | In-situ | No. 4 Seam | Mine pool |
| | 242PS | Ex-situ | Shallow groundwater/ rain water | Old Portal Sump |

# Table 159
# 2019-2020 Annual Report

## BC CSR Aquatic Life 2019 - Lowest Level Exceedances for Ex-situ Groundwater

| *Sample No.* | *Sample ID* | *BV Labs Sample ID* | *BV Labs Job ID* | *Class* | *Parameter* | *Criteria* | *Result* | *DL* | *Units* |
|---|---|---|---|---|---|---|---|---|---|
| QU0813A-31JUL19-M | QU0813A | WF4676 | B963465 | | Dissolved Arsenic (As) | 0.05 | 0.371 | 0.0001 | mg/L |
| QU0813A-26NOV19-M | QU0813A | XA2672 | B9A2391 | | Dissolved Arsenic (As) | 0.05 | 0.38 | 0.0001 | mg/L |
| QU0813A-26NOV19-R | QU0813A | XA2673 | B9A2391 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.384 | 0.0001 | mg/L |
| QU0813A-10MAR20-M | QU0813A | XN6782 | C018595 | | Dissolved Arsenic (As) | 0.05 | 0.398 | 0.0001 | mg/L |
| QU0813A-10MAR20-R | QU0813A | XN6783 | C018595 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.404 | 0.0001 | mg/L |
| QU0813B-26NOV19-M | QU0813B | XA2674 | B9A2391 | | Dissolved Arsenic (As) | 0.05 | 0.462 | 0.0001 | mg/L |
| QU0813B-10MAR20-M | QU0813B | XN6784 | C018595 | | Dissolved Arsenic (As) | 0.05 | 0.486 | 0.0001 | mg/L |
| QU0821GD-3SEPT19-M | QU0821GD | WL1627 | B974776 | | Dissolved Arsenic (As) | 0.05 | 0.231 | 0.0002 | mg/L |
| QU0821GD-27NOV19-M | QU0821GD | XA2671 | B9A2391 | | Dissolved Arsenic (As) | 0.05 | 0.14 | 0.0005 | mg/L |
| QU0821GD-19FEB20-R | QU0821GD | XK6352 | C012293 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.155 | 0.0005 | mg/L |
| QU0821GD-19FEB20-M | QU0821GD | XK6353 | C012293 | | Dissolved Arsenic (As) | 0.05 | 0.153 | 0.0005 | mg/L |
| QU0821GD-23MAY19-M | QU0821GD | VS8836 | B939562 | | Dissolved Arsenic (As) | 0.05 | 0.109 | 0.0002 | mg/L |
| QU0821GS-23MAY19-M | QU0821GS | VS8837 | B939562 | | Dissolved Arsenic (As) | 0.05 | 0.186 | 0.0001 | mg/L |
| QU0821GS-3SEPT19-M | QU0821GS | WL1628 | B974776 | | Dissolved Arsenic (As) | 0.05 | 0.125 | 0.001 | mg/L |
| QU0821GS-27NOV19-M | QU0821GS | XA2669 | B9A2391 | | Dissolved Arsenic (As) | 0.05 | 0.182 | 0.0002 | mg/L |
| QU0821GS-27NOV19-R | QU0821GS | XA2670 | B9A2391 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.184 | 0.0002 | mg/L |
| QU0821GS-19FEB20-M | QU0821GS | XK6351 | C012293 | | Dissolved Arsenic (As) | 0.05 | 0.222 | 0.0001 | mg/L |
| QU0821GD-3SEPT19-R | QU082GD | WL1629 | B974776 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.232 | 0.0002 | mg/L |
| QU1008D-18MAR20-M | QU1008D | XO6011 | C020554 | | Dissolved Arsenic (As) | 0.05 | 0.152 | 0.0005 | mg/L |
| QU1008D-18MAR20-R | QU1008D | XO6012 | C020554 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.147 | 0.0002 | mg/L |
| QU1009D-27MAY19-M | QU1009D | VT5252 | B940757 | | Dissolved Arsenic (As) | 0.05 | 0.0993 | 0.0001 | mg/L |
| QU1009D-5SEPT19-M | QU1009D | WL1744 | B974802 | | Dissolved Arsenic (As) | 0.05 | 0.122 | 0.0001 | mg/L |
| QU1009D-5SEPT19-R | QU1009D | WL1745 | B974802 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.122 | 0.0001 | mg/L |
| QU1009S-27MAY19-M | QU1009S | VT5251 | B940757 | | Dissolved Arsenic (As) | 0.05 | 0.0722 | 0.0001 | mg/L |
| QU1009S-27MAY19-R | QU1009S | VT5253 | B940757 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.0715 | 0.0001 | mg/L |
| QU1009S-5SEPT19-M | QU1009S | WL1743 | B974802 | | Dissolved Arsenic (As) | 0.05 | 0.0921 | 0.0001 | mg/L |
| QU1010S-30SEPT19-M | QU1010S | WP8751 | B984272 | | Dissolved Arsenic (As) | 0.05 | 0.0969 | 0.0001 | mg/L |
| QU1010S-30SEPT19-R | QU1010S | WP8752 | B984272 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.0967 | 0.0001 | mg/L |
| QU1010S-11DEC19-R | QU1010S | XC5933 | B9A6860 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.1 | 0.0001 | mg/L |
| QU1010S-11DEC19-M | QU1010S | XC5934 | B9A6860 | | Dissolved Arsenic (As) | 0.05 | 0.0978 | 0.0001 | mg/L |
| QU1105S-16DEC19-M | QU1105S | XD4473 | B9A8419 | | Dissolved Arsenic (As) | 0.05 | 0.0522 | 0.0001 | mg/L |
| QU1105S-12MAR20-M | QU1105S | XN7876 | C018847 | | Dissolved Arsenic (As) | 0.05 | 0.11 | 0.0001 | mg/L |
| QU1109S-15AUG19-19-M | QU1109S | WH7272 | B968040 | | Dissolved Arsenic (As) | 0.05 | 0.142 | 0.0001 | mg/L |
| QU1109S-18DEC19-M | QU1109S | XD8442 | B9A9201 | | Dissolved Arsenic (As) | 0.05 | 0.15 | 0.0001 | mg/L |
| QU1109S-18DEC19-R | QU1109S | XD8443 | B9A9201 | Replicate | Dissolved Arsenic (As) | 0.05 | 0.151 | 0.0001 | mg/L |
| QU1136D-16MAR20-M | QU1136D | XO3450 | C020041 | | Dissolved Arsenic (As) | 0.05 | 0.932 | 0.0001 | mg/L |

**Legend**

**Criteria 1- Applies only to ex-situ wells = BC CSR Aquatic Life 2019 - LOW LEVEL**

# Table 160
# 2019-2020 Annual Report

## BC CSR Aquatic Life 2019 - Lowest Level Exceedances for Ex-situ Groundwater

| Sample No. | Sample ID | BV Labs Sample ID | BV Labs Job ID | Class | Parameter | Criteria | Result | DL | Units |
|---|---|---|---|---|---|---|---|---|---|
| Sample ID | Sample ID | BV Labs Sample ID | BV Labs Job ID | | Parameter | Criteria | Result | DL | Units |
| QU1010D-30SEPT19-M | QU1010D | WP8750 | B984272 | | Dissolved Chloride (Cl) | 1500 | 3500 | 100 | mg/L |
| QU1010D-11DEC19-M | QU1010D | XC5935 | B9A6860 | | Dissolved Chloride (Cl) | 1500 | 3700 | 100 | mg/L |
| MW1223-16MAY19-M | MW1223 | VS0188 | B937753 | | Sulphide (as H2S) | 0.02 | 0.064 | 0.01 | mg/L |
| QU0810-10-DEC19-M | QU0810 | XC5932 | B9A6860 | | Sulphide (as H2S) | 0.02 | 0.089 | 0.019 | mg/L |
| QU0813A-31JUL19-M | QU0813A | WF4676 | B963465 | | Sulphide (as H2S) | 0.02 | 0.2 | 0.002 | mg/L |
| QU0813A-26NOV19-M | QU0813A | XA2672 | B9A2391 | | Sulphide (as H2S) | 0.02 | 0.084 | 0.002 | mg/L |
| QU0813A-26NOV19-R | QU0813A | XA2673 | B9A2391 | Replicate | Sulphide (as H2S) | 0.02 | 0.14 | 0.002 | mg/L |
| QU0813A-10MAR20-M | QU0813A | XN6782 | C018595 | | Sulphide (as H2S) | 0.02 | 0.066 | 0.002 | mg/L |
| QU0813A-10MAR20-R | QU0813A | XN6783 | C018595 | Replicate | Sulphide (as H2S) | 0.02 | 0.029 | 0.002 | mg/L |
| QU0813B-26NOV19-M | QU0813B | XA2674 | B9A2391 | | Sulphide (as H2S) | 0.02 | 0.42 | 0.019 | mg/L |
| QU0813B-10MAR20-M | QU0813B | XN6784 | C018595 | | Sulphide (as H2S) | 0.02 | 0.077 | 0.002 | mg/L |
| QU0821GD-3SEPT19-M | QU0821GD | WL1627 | B974776 | | Sulphide (as H2S) | 0.02 | 0.024 | 0.002 | mg/L |
| QU0821GD-27NOV19-M | QU0821GD | XA2671 | B9A2391 | | Sulphide (as H2S) | 0.02 | 0.055 | 0.002 | mg/L |
| QU0821GD-19FEB20-R | QU0821GD | XK6352 | C012293 | Replicate | Total Sulphide (as H2S) | 0.02 | 0.086 | 0.0019 | mg/L |
| QU0821GD-19FEB20-M | QU0821GD | XK6353 | C012293 | | Total Sulphide (as H2S) | 0.02 | 0.085 | 0.0019 | mg/L |
| QU0821GS-3SEPT19-M | QU0821GS | WL1628 | B974776 | | Sulphide (as H2S) | 0.02 | 0.058 | 0.002 | mg/L |
| QU0821GS-27NOV19-M | QU0821GS | XA2669 | B9A2391 | | Sulphide (as H2S) | 0.02 | 0.051 | 0.002 | mg/L |
| QU0821GS-27NOV19-R | QU0821GS | XA2670 | B9A2391 | Replicate | Sulphide (as H2S) | 0.02 | 0.041 | 0.002 | mg/L |
| QU0821GS-19FEB20-M | QU0821GS | XK6351 | C012293 | | Total Sulphide (as H2S) | 0.02 | 0.075 | 0.0019 | mg/L |
| QU1008D-18MAR20-M | QU1008D | XO6011 | C020554 | | Sulphide (as H2S) | 0.02 | 0.089 | 0.002 | mg/L |
| QU1008D-18MAR20-R | QU1008D | XO6012 | C020554 | Replicate | Sulphide (as H2S) | 0.02 | 0.063 | 0.002 | mg/L |
| QU1009D-27MAY19-M | QU1009D | VT5252 | B940757 | | Sulphide (as H2S) | 0.02 | 0.11 | 0.002 | mg/L |
| QU1009D-5SEPT19-M | QU1009D | WL1744 | B974802 | | Sulphide (as H2S) | 0.02 | 0.13 | 0.002 | mg/L |
| QU1009D-5SEPT19-R | QU1009D | WL1745 | B974802 | | Sulphide (as H2S) | 0.02 | 0.12 | 0.002 | mg/L |
| QU1010S-30SEPT19-M | QU1010S | WP8751 | B984272 | | Sulphide (as H2S) | 0.02 | 0.26 | 0.019 | mg/L |
| QU1010S-30SEPT19-R | QU1010S | WP8752 | B984272 | Replicate | Sulphide (as H2S) | 0.02 | 0.25 | 0.019 | mg/L |
| QU1010S-11DEC19-R | QU1010S | XC5933 | B9A6860 | Replicate | Sulphide (as H2S) | 0.02 | 0.19 | 0.002 | mg/L |
| QU1010S-11DEC19-M | QU1010S | XC5934 | B9A6860 | | Sulphide (as H2S) | 0.02 | 0.17 | 0.002 | mg/L |
| QU1011D-24MAR20-M | QU1011D | XP1218 | C021848 | | Sulphide (as H2S) | 0.02 | 0.12 | 0.002 | mg/L |
| QU1105D-16DEC19-M | QU1105D | XD4475 | B9A8419 | | Sulphide (as H2S) | 0.02 | 16 | 0.19 | mg/L |
| QU1105D-12MAR20-M | QU1105D | XN7875 | C018847 | | Sulphide (as H2S) | 0.02 | 10 | 0.096 | mg/L |
| QU1105S-16DEC19-M | QU1105S | XD4473 | B9A8419 | | Sulphide (as H2S) | 0.02 | 0.087 | 0.002 | mg/L |
| QU1105S-16DEC19-R | QU1105S | XD4474 | B9A8419 | Replicate | Sulphide (as H2S) | 0.02 | 0.084 | 0.002 | mg/L |
| QU1105S-12MAR20-M | QU1105S | XN7876 | C018847 | | Sulphide (as H2S) | 0.02 | 0.071 | 0.002 | mg/L |
| QU1109S-15AUG19-19-M | QU1109S | WH7272 | B968040 | | Sulphide (as H2S) | 0.02 | 0.44 | 0.006 | mg/L |
| QU1109S-18DEC19-M | QU1109S | XD8442 | B9A9201 | | Sulphide (as H2S) | 0.02 | 0.19 | 0.002 | mg/L |
| QU1109S-18DEC19-R | QU1109S | XD8443 | B9A9201 | Replicate | Sulphide (as H2S) | 0.02 | 0.26 | 0.002 | mg/L |

**Legend**

**Criteria 1- Applies only to ex-situ wells = BC CSR Aquatic Life 2019 - LOW LEVEL**

# TABLE 161
# 2019-20 Annual Report

## Maximum Values Summary Table

| *Sample ID* | *BV Labs Sample ID* | *BV Labs Job ID* | *Parameter* | *Criteria* [1] | *Result* | *Units* |
|---|---|---|---|---|---|---|
| QU1410-19MAR20-M | XO6010 | C020553 | Dissolved Hardness (CaCO3) | | 2060 | mg/L |
| QU1011D-24MAR20-M | XP1218 | C021848 | Dissolved Aluminum (Al) | | 0.233 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Antimony (Sb) | 0.09 | <0.0050 | mg/L |
| QU1136D-16MAR20-M | XO3450 | C020041 | Dissolved Arsenic (As) | 0.05 | **0.932** | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Barium (Ba) | 10 | 2.98 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Beryllium (Be) | 0.0015 | <0.0010 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Bismuth (Bi) | | <0.010 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Boron (B) | 12 | 3.41 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Cadmium (Cd) | 0.0005 | <0.00010 | mg/L |
| QU1010D-11DEC19-M | XC5935 | B9A6860 | Dissolved Calcium (Ca) | | 632 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Chromium (Cr) | | <0.010 | mg/L |
| 1M7S-4DEC19-M | XB7445 | B9A5254 | Dissolved Cobalt (Co) | | 0.0117 | mg/L |
| 3M2N-4SEPT19-M | WL1832 | B974824 | Dissolved Copper (Cu) | | 0.00215 | mg/L |
| 1M7S-4DEC19-M | XB7445 | B9A5254 | Dissolved Iron (Fe) | | 16.2 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Lead (Pb) | 0.04 | <0.0020 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Lithium (Li) | | 0.212 | mg/L |
| QU1410-20NOV19-R | WZ3619 | B9A0774 | Dissolved Magnesium (Mg) | | 190 | mg/L |
| MW001S-29JAN20-M | XH7508 | C006723 | Dissolved Manganese (Mn) | | 2.6 | mg/L |
| MW002-15MAY19-M | VR7889 | B937289 | Dissolved Mercury (Hg) | | 0.0000068 | mg/L |
| 5M#2-27JAN20-R | XH4199 | C006011 | Dissolved Molybdenum (Mo) | | 0.0462 | mg/L |
| 1M7S-4DEC19-M | XB7445 | B9A5254 | Dissolved Nickel (Ni) | | 0.0198 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Potassium (K) | | 10.9 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Selenium (Se) | 0.02 | <0.0010 | mg/L |
| QU1009D-5SEPT19-M | WL1744 | B974802 | Dissolved Silicon (Si) | | 9.64 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Silver (Ag) | 0.0005 | <0.00020 | mg/L |
| QU1010D-30SEPT19-M | WP8750 | B984272 | Dissolved Sodium (Na) | | 1350 | mg/L |
| QU1010D-11DEC19-M | XC5935 | B9A6860 | Dissolved Strontium (Sr) | | 6.53 | mg/L |
| QU1410-30APR19-M | VQ7678 | B935103 | Dissolved Sulphur (S) | | 671 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Thallium (Tl) | 0.003 | <0.00010 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Tin (Sn) | | <0.050 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Titanium (Ti) | 1 | <0.050 | mg/L |
| MW006S-8AUG19-19-M | WG8047 | B966017 | Dissolved Uranium (U) | 0.085 | 0.00689 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Vanadium (V) | | <0.050 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Zinc (Zn) | 0.075 | <0.050 | mg/L |
| QU0821S-3SEPT19-M | WL1628 | B974776 | Dissolved Zirconium (Zr) | | <0.0010 | mg/L |
| 1M2N-03APR19-M | VM3019 | B925186 | Total Hardness (CaCO3) | | 492 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Aluminum (Al) | | 4.57 | mg/L |
| 7SA5B-6MAY19-M | VQ5916 | B934686 | Total Arsenic (As) | | 0.334 | mg/L |
| 7SA5A-6MAY19-M | VQ5917 | B934686 | Total Barium (Ba) | | 0.526 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Beryllium (Be) | 0.0015 | 0.00025 | mg/L |
| 1M2N-21MAY19-M | VS4002 | B938559 | Total Boron (B) | | 1.25 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Cadmium (Cd) | 0.0005 | 0.000165 | mg/L |
| 1M2N-03APR19-M | VM3019 | B925186 | Total Calcium (Ca) | | 170 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Chromium (Cr) | | 0.0054 | mg/L |
| 1M7S-4DEC19-M | XB7445 | B9A5254 | Total Cobalt (Co) | | 0.0122 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Copper (Cu) | 0.02 | **0.0223** | mg/L |
| 1M7S-4DEC19-M | XB7445 | B9A5254 | Total Iron (Fe) | | 21 | mg/L |
| 7SA5-8APR19-M | VM8336 | B926344 | Total Lithium (Li) | | 0.0474 | mg/L |
| 1M7S-4DEC19-M | XB7445 | B9A5254 | Total Magnesium (Mg) | | 27.3 | mg/L |
| 1M2N-03APR19-M | VM3019 | B925186 | Total Manganese (Mn) | | 0.628 | mg/L |
| 7SPS-21MAY19-M | VS4004 | B938559 | Total Mercury (Hg) | | 0.0000027 | mg/L |
| 7SA5-8APR19-M | VM8336 | B926344 | Total Molybdenum (Mo) | | 0.0085 | mg/L |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 162
# 2019-20 Annual Report

## Maximum Values Summary Table

| Sample ID | BV Labs Sample ID | BV Labs Job ID | Parameter | Criteria [1] | Result | Units |
|---|---|---|---|---|---|---|
| 1M7S-4DEC19-M | XB7445 | B9A5254 | Total Nickel (Ni) | | 0.0212 | mg/L |
| 1M2N-03APR19-M | VM3019 | B925186 | Total Potassium (K) | | 6.01 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Selenium (Se) | 0.02 | 0.0003 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Silicon (Si) | | 12.1 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Silver (Ag) | 0.0005 | 0.000124 | mg/L |
| 1M2N-03APR19-M | VM3019 | B925186 | Total Sodium (Na) | | 421 | mg/L |
| 1M2N-03APR19-M | VM3019 | B925186 | Total Strontium (Sr) | | 1.73 | mg/L |
| 1M2N-03APR19-M | VM3019 | B925186 | Total Sulphur (S) | | 326 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Thallium (Tl) | 0.003 | 0.000117 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Titanium (Ti) | 1 | 0.159 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Uranium (U) | 0.085 | 0.00072 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Vanadium (V) | | 0.0128 | mg/L |
| QU0810-10-DEC19-M | XC5932 | B9A6860 | Total Zirconium (Zr) | | 0.00277 | mg/L |
| 5M#2-03APR19-M | VM3020 | B925186 | Alkalinity (PP as CaCO3) | | 11.5 | mg/L |
| 5M#2-03APR19-M | VM3020 | B925186 | Alkalinity (Total as CaCO3) | | 520 | mg/L |
| 5M#2-21MAY19-M | VS4003 | B938559 | Bicarbonate (HCO3) | | 609 | mg/L |
| 5M#2-03APR19-M | VM3020 | B925186 | Carbonate (CO3) | | 13.8 | mg/L |
| QU1410-30APR19-M | VQ7678 | B935103 | Hydroxide (OH) | | <1.0 | mg/L |
| QU810-27FEB20-M | XL8496 | C014792 | Acidity (pH 4.5) | | <1.0 | mg/L |
| QU0810GD-23MAY19-M | VS8836 | B939562 | Dissolved Chloride (Cl) | 1500 | 1000 | mg/L |
| QU0810GS-23MAY19-M | VS8837 | B939562 | Fluoride (F) | 2 | 1.8 | mg/L |
| QU1410-30APR19-M | VQ7678 | B935103 | Dissolved Sulphate (SO4) | | 1770 | mg/L |
| QU1010D-30SEPT19-M | WP8750 | B984272 | Dissolved Nitrogen (N) | | 0.998 | mg/L |
| 3M2N-4SEPT19-M | WL1832 | B974824 | Nitrate plus Nitrite (N) | | <0.020 | mg/L |
| QU1105D-16DEC19-M | XD4475 | B9A8419 | Total Sulphide | | 15 | mg/L |
| QU1105D-16DEC19-M | XD4475 | B9A8419 | Sulphide (as H2S) | 0.02 | **16** | mg/L |
| QU0821D-19FEB20-R | XK6352 | C012293 | Total Sulphide (as H2S) | 0.02 | **0.086** | mg/L |
| 7SA5-8APR19-M | VM8336 | B926344 | Dissolved Phosphorus (P) | | 0.0213 | mg/L |
| QU10009S-27MAY19-M | VT5251 | B940757 | Turbidity | | 67 | NTU |
| 1M7S-10SEPT19-M | WM2949 | B977214 | Total Suspended Solids | | 30.8 | mg/L |
| 1M7S-03APR19-M | VM3018 | B925186 | Orthophosphate (P) | | 0.0031 | mg/L |
| QU1109S-15AUG19-19-M | WH7272 | B968040 | pH | | 8.62 | pH |
| QU1010D-11DEC19-M | XC5935 | B9A6860 | Dissolved Bromide (Br) | | 4.7 | mg/L |
| 1M2N-03APR19-M | VM3019 | B925186 | Total Nitrogen (N) | | 0.46 | mg/L |
| 1M7S-03APR19-M | VM3018 | B925186 | Total Phosphorus (P) | | 0.0078 | mg/L |
| QU1105D-16DEC19-M | XD4475 | B9A8419 | Dissolved Organic Carbon (C) | | 11 | mg/L |
| 1M2N-03APR19-M | VM3019 | B925186 | Dissolved Mercury (Hg) | 0.25 | <0.25 | ug/L |
| 7SA5-8APR19-M | VM8336 | B926344 | Total Suspended Solids | | 100 | mg/L |
| QU1105D-16DEC19-M | XD4475 | B9A8419 | Dissolved Phosphorus (P) | | 0.75 | mg/L |
| 7SA5B-6MAY19-M | VQ5917 | B934686 | Dissolved Nitrogen (N) | | 0.4 | mg/L |
| MW002-15MAY19-R | VR7891 | B937289 | Total Ammonia (N) | | 0.29 | mg/L |
| QU1010D-11DEC19-M | XC5935 | B9A6860 | Dissolved Chloride (Cl) | 1500 | **3700** | mg/L |
| QU1410-19MAR20-M | XO6010 | C020553 | Dissolved Sulphate (SO4) | | 1900 | mg/L |
| QU1109S-15AUG19-19-M | WH7272 | B968040 | Alkalinity (PP as CaCO3) | | 16 | mg/L |
| 5M#2-27JAN20-R | XH4199 | C006011 | Alkalinity (Total as CaCO3) | | 560 | mg/L |
| 5M#2-27JAN20-R | XH4199 | C006011 | Bicarbonate (HCO3) | | 680 | mg/L |
| QU1109S-15AUG19-19-M | WH7272 | B968040 | Carbonate (CO3) | | 19 | mg/L |
| QU810-27FEB20-M | XL8496 | C014792 | Hydroxide (OH) | | <1.0 | mg/L |
| QU0813B-26NOV19-M | XA2674 | B9A2391 | Turbidity | | 400 | NTU |
| QU1008D-18MAR20-M | XO6011 | C020554 | Dissolved Fluoride (F) | 2 | 2 | mg/L |
| 3M2N-4SEPT19-M | WL1832 | B974824 | Nitrite (N) | | <0.0050 | mg/L |
| 3M2N-4SEPT19-M | WL1832 | B974824 | Nitrate (N) | | <0.020 | mg/L |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# Table 163
# 2019-2020 Annual Report

| Dissolved Metals | BC CSR Aquatic Life 2019- LOW LEVEL | Area | | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool |
| | | Sample Number | | 1M2N-03APR19-M | 1M2N-21MAY19-M | 1M2N-10SEPT19-M | 1M2N-18NOV19-M | 1M2N-4DEC19-M | 1M2N-27JAN20-M | 1M2N-26FEB20-R | 1M2N-26FEB20-M | 1M2N-25MAR20-M | 3M2N-4SEPT19-M | 3M2N-4MAR20-M | 5M#2-03APR19-M | 5M#2-21MAY19-M |
| | | Lab Report / Lab Sample | | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 3M2N | 3M2N | 5M#2 | 5M#2 |
| | | | | B925186 / VM3019 | B938559 / VS4002 | B977214 / WM2950 | B9A0774 / WZ3620 | B9A5254 / XB7443 | C006011 / XH4200 | C014787 / XL8434 | C014787 / XL8435 | C021848 / XP1219 | B974824 / WL1832 | C017120 / XM9234 | B925186 / VM3020 | B938559 / VS4003 |
| *Parameter* | *Criteria* [1] | Date | | 2019-04-03 | 2019-05-21 | 2019-09-10 | 2019-11-18 | 2019-12-04 | 2020-01-27 | 2020-02-26 | 2020-02-26 | 2020-03-25 | 2019-09-04 | 2020-03-04 | 2019-04-03 | 2019-05-21 |
| | | *units* | *RDL* | | | | | | | | | | | | | |
| Dissolved Hardness (CaCO3) | | mg/L | 0.50 | 500 | 247 | 215 | 249 | 282 | 238 | 346 | 357 | 447 | 431 | 334 | 149 | 151 |
| Dissolved Aluminum (Al) | | mg/L | 0.0030 - 0.030 | <0.015 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0060 | 0.0267 | <0.0030 | <0.0030 | <0.0030 |
| Dissolved Antimony (Sb) | 0.09 | mg/L | 0.00050 - 0.0050 | <0.0025 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.0010 | <0.0010 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Arsenic (As) | 0.05 | mg/L | 0.00010 - 0.0010 | 0.00997 | 0.00752 | 0.00908 | 0.0233 | 0.0108 | 0.0116 | 0.00539 | 0.00548 | 0.0064 | 0.0007 | 0.00061 | 0.00681 | 0.00585 |
| Dissolved Barium (Ba) | 10 | mg/L | 0.0010 - 0.010 | 0.0285 | 0.0214 | 0.0284 | 0.0524 | 0.0321 | 0.0388 | 0.0326 | 0.0329 | 0.0346 | 0.0158 | 0.0141 | 0.0279 | 0.0275 |
| Dissolved Beryllium (Be) | 0.0015 | mg/L | 0.00010 - 0.0010 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Bismuth (Bi) | | mg/L | 0.0010 - 0.010 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Boron (B) | 12 | mg/L | 0.050 - 0.50 | 1.3 | 1.12 | 1.07 | 1.03 | 0.964 | 0.911 | 1.03 | 1.01 | 1.01 | 0.84 | 0.693 | 0.955 | 0.813 |
| Dissolved Cadmium (Cd) | 0.0005 | mg/L | 0.0000050 - 0.00010 | <0.000025 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000020 | <0.000020 | <0.000010 | <0.0000050 | <0.0000050 |
| Dissolved Calcium (Ca) | | mg/L | 0.050 - 0.50 | 172 | 85.5 | 73.9 | 85.1 | 97.8 | 83.6 | 120 | 124 | 154 | 141 | 109 | 52.3 | 53.6 |
| Dissolved Chromium (Cr) | | mg/L | 0.0010 - 0.010 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Cobalt (Co) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.0010 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00040 | 0.0038 | 0.00078 | 0.00023 | <0.00020 |
| Dissolved Copper (Cu) | 0.02 | mg/L | 0.00020 - 0.0020 | <0.0010 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00032 | 0.00027 | 0.00053 | 0.00215 | 0.00025 | <0.00020 | <0.00020 |
| Dissolved Iron (Fe) | | mg/L | 0.0050 - 0.050 | 6.93 | 2.68 | 1.65 | 2.07 | 2.6 | 1.99 | 2.98 | 3.11 | 4.64 | 0.791 | 0.0467 | 0.436 | 0.462 |
| Dissolved Lead (Pb) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.0010 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00040 | <0.00040 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Lithium (Li) | | mg/L | 0.0020 - 0.020 | 0.016 | 0.0088 | 0.013 | 0.0174 | 0.0122 | 0.0132 | 0.011 | 0.0105 | 0.0123 | 0.019 | 0.0154 | 0.0069 | 0.0044 |
| Dissolved Magnesium (Mg) | | mg/L | 0.050 - 0.50 | 17.2 | 8.12 | 7.32 | 8.86 | 9.26 | 7.2 | 11 | 11.3 | 14.8 | 19.2 | 15 | 4.47 | 4.08 |
| Dissolved Manganese (Mn) | | mg/L | 0.0010 - 0.010 | 0.749 | 0.294 | 0.211 | 0.243 | 0.28 | 0.227 | 0.35 | 0.357 | 0.506 | 0.445 | 0.182 | 0.0981 | 0.0947 |
| Dissolved Mercury (Hg) | 0.00025 | mg/L | 0.0000019 - 0.0000020 | <0.0000020 | <0.0000020 | 0.0000022 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000019 | <0.0000019 | <0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 |
| Dissolved Molybdenum (Mo) | 10 | mg/L | 0.0010 - 0.010 | <0.0050 | 0.0016 | <0.0010 | 0.002 | <0.0010 | <0.0010 | 0.0035 | 0.0021 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Nickel (Ni) | 0.25 | mg/L | 0.0010 - 0.010 | <0.0050 | <0.0010 | <0.0010 | 0.0029 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | 0.005 | 0.0013 | <0.0010 | <0.0010 |
| Dissolved Potassium (K) | | mg/L | 0.050 - 0.50 | 6.32 | 4.22 | 4.22 | 4.37 | 4.44 | 3.96 | 4.81 | 4.93 | 5.74 | 3.74 | 3.14 | 2.54 | 2.3 |
| Dissolved Selenium (Se) | 0.02 | mg/L | 0.00010 - 0.0010 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Silicon (Si) | | mg/L | 0.10 - 1.0 | 4.04 | 3.04 | 3.46 | 3.77 | 3.66 | 3.82 | 3.76 | 3.74 | 3.91 | 3.22 | 3.23 | 3.06 | 2.88 |
| Dissolved Silver (Ag) | 0.0005 | mg/L | 0.000020 - 0.00020 | <0.00010 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000040 | <0.000040 | <0.000020 | <0.000020 | <0.000020 |
| Dissolved Sodium (Na) | | mg/L | 0.050 - 0.50 | 434 | 323 | 295 | 302 | 305 | 248 | 342 | 351 | 397 | 339 | 291 | 255 | 233 |
| Dissolved Strontium (Sr) | | mg/L | 0.0010 - 0.010 | 1.86 | 0.839 | 0.776 | 0.919 | 1.1 | 0.967 | 1.3 | 1.3 | 1.65 | 1.43 | 1.15 | 0.6 | 0.536 |
| Dissolved Sulphur (S) | | mg/L | 3.0 - 30 | 336 | 145 | 134 | 150 | 159 | 135 | 203 | 205 | 276 | 262 | 209 | 74.6 | 57 |
| Dissolved Thallium (Tl) | 0.003 | mg/L | 0.000010 - 0.00010 | <0.000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000020 | <0.000020 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Tin (Sn) | | mg/L | 0.0050 - 0.050 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Titanium (Ti) | 1 | mg/L | 0.0050 - 0.050 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Uranium (U) | 0.085 | mg/L | 0.00010 - 0.0010 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Vanadium (V) | | mg/L | 0.0050 - 0.050 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Zinc (Zn) | 0.075 | mg/L | 0.0050 - 0.050 | <0.025 | <0.0050 | <0.0050 | 0.0067 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Zirconium (Zr) | | mg/L | 0.00010 - 0.0010 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 |

| Legend | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-situ Groundwater**) |

# Table 164
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| Dissolved Metals | BC CSR Aquatic Life 2019- LOW LEVEL | Area | | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Number | | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 2-North Mine pool | 5-South Mine Pool | 5-South Mine Pool | 7-South Sump | 7-South Sump |
| | | Lab Report / Lab Sample | | 5M#2-10SEPT19-M<br>5M#2<br>B977214 / WM2951 | 5M#2-18NOV19-M<br>5M#2<br>B9A0774 / WZ3621 | 5M#2-4DEC19-M<br>5M#2<br>B9A5254 / XB7444 | 5M#2-27JAN20-R<br>5M#2<br>C006011 / XH4199 | 5M#2-27JAN20-M<br>5M#2<br>C006011 / XH4201 | QU1013D-24SEPT19-M<br>QU1013D<br>B981435 / WO5274 | QU1013D-24SEPT19-R<br>QU1013D<br>B981435 / WO5275 | QU1013D-31DEC19-M<br>QU1013D<br>C001911 / XF3656 | QU1013D-11MAR20-M<br>QU1013D<br>C018589 / XN6759 | 5SMW-10DEC19-M<br>5SMW<br>B9A6860 / XC5936 | 5SMW-27JAN20-M<br>5SMW<br>C006011 / XH4202 | 7SA5-8APR19-M<br>7SA5<br>B926344 / VM8336 | 7SA5-6MAY19-M<br>7SA5<br>B934686 / VQ5917 |
| | | Date | | 2019-09-10 | 2019-11-18 | 2019-12-04 | 2020-01-27 | 2020-01-27 | 2019-09-24 | 2019-09-24 | 2019-12-31 | 2020-03-11 | 2019-12-10 | 2020-01-27 | 2019-04-08 | 2019-05-06 |
| ***Parameter*** | ***Criteria*** [1] | ***units*** | ***RDL*** | | | | | | | | | | | | | |
| Dissolved Hardness (CaCO3) | | mg/L | 0.50 | 152 | 170 | 183 | 173 | 174 | 142 | 142 | 142 | 203 | 170 | 150 | 124 | 130 |
| Dissolved Aluminum (Al) | | mg/L | 0.0030 - 0.030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | 0.0056 | 0.0072 | 0.0031 | <0.0030 |
| Dissolved Antimony (Sb) | 0.09 | mg/L | 0.00050 - 0.0050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Arsenic (As) | 0.05 | mg/L | 0.00010 - 0.0010 | 0.00846 | 0.00465 | 0.00525 | 0.00449 | 0.00441 | 0.00398 | 0.00403 | 0.0007 | 0.00361 | 0.00537 | 0.00619 | 0.169 | 0.295 |
| Dissolved Barium (Ba) | 10 | mg/L | 0.0010 - 0.010 | 0.03 | 0.0339 | 0.0345 | 0.0364 | 0.0357 | 0.0239 | 0.0242 | 0.0247 | 0.0947 | 0.0433 | 0.0397 | 0.14 | 0.538 |
| Dissolved Beryllium (Be) | 0.0015 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Bismuth (Bi) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Boron (B) | 12 | mg/L | 0.050 - 0.50 | 0.882 | 0.808 | 0.8 | 0.819 | 0.816 | 1.35 | 1.41 | 1.2 | 1.25 | 0.992 | 0.875 | 0.502 | 0.492 |
| Dissolved Cadmium (Cd) | 0.0005 | mg/L | 0.0000050 - 0.00010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.0000050 | <0.0000050 |
| Dissolved Calcium (Ca) | | mg/L | 0.050 - 0.50 | 53.4 | 60.2 | 64.6 | 61.8 | 62.2 | 51 | 51.1 | 49.8 | 73.2 | 55.2 | 48.7 | 38.2 | 40 |
| Dissolved Chromium (Cr) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Cobalt (Co) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | 0.00023 | <0.00020 | <0.00020 | 0.00028 | 0.00026 | <0.00020 | <0.00020 | 0.00053 | 0.00148 | 0.00069 | <0.00020 |
| Dissolved Copper (Cu) | 0.02 | mg/L | 0.00020 - 0.0020 | <0.00020 | 0.00022 | <0.00020 | <0.00020 | <0.00020 | 0.00031 | <0.00020 | 0.00069 | 0.00064 | 0.00031 | 0.00054 | <0.00020 | <0.00020 |
| Dissolved Iron (Fe) | | mg/L | 0.0050 - 0.050 | 0.524 | 0.46 | 0.448 | 0.325 | 0.328 | 0.549 | 0.551 | <0.0050 | 1.17 | 3.37 | 2.2 | <0.0050 | 0.0571 |
| Dissolved Lead (Pb) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Lithium (Li) | | mg/L | 0.0020 - 0.020 | 0.0074 | 0.0039 | 0.0066 | 0.0047 | 0.0045 | 0.0024 | 0.0024 | 0.0021 | 0.0021 | 0.0147 | 0.0136 | 0.0351 | 0.0449 |
| Dissolved Magnesium (Mg) | | mg/L | 0.050 - 0.50 | 4.46 | 4.87 | 5.36 | 4.54 | 4.49 | 3.58 | 3.6 | 4.21 | 4.91 | 7.89 | 6.89 | 7.04 | 7.29 |
| Dissolved Manganese (Mn) | | mg/L | 0.0010 - 0.010 | 0.0996 | 0.105 | 0.114 | 0.0983 | 0.0961 | 0.272 | 0.272 | <0.0010 | 0.285 | 0.141 | 0.133 | 0.036 | 0.0324 |
| Dissolved Mercury (Hg) | 0.00025 | mg/L | 0.0000019 - 0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 |
| Dissolved Molybdenum (Mo) | 10 | mg/L | 0.0010 - 0.010 | <0.0010 | 0.0039 | <0.0010 | 0.0462 | <0.0010 | 0.0022 | 0.0022 | 0.0023 | 0.0015 | 0.0422 | 0.0021 | 0.007 | <0.0010 |
| Dissolved Nickel (Ni) | 0.25 | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0011 | 0.0023 | 0.0012 | <0.0010 |
| Dissolved Potassium (K) | | mg/L | 0.050 - 0.50 | 2.57 | 2.58 | 2.7 | 2.58 | 2.54 | 3.4 | 3.43 | 3.59 | 3.76 | 5.07 | 4.51 | 2.29 | 2.48 |
| Dissolved Selenium (Se) | 0.02 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Silicon (Si) | | mg/L | 0.10 - 1.0 | 3.21 | 3.5 | 3.42 | 3.6 | 3.54 | 3.66 | 3.7 | 3.21 | 3.89 | 3.19 | 3.05 | 3.93 | 4.28 |
| Dissolved Silver (Ag) | 0.0005 | mg/L | 0.000020 - 0.00020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Dissolved Sodium (Na) | | mg/L | 0.050 - 0.50 | 254 | 249 | 243 | 233 | 234 | 363 | 371 | 379 | 407 | 244 | 209 | 22.1 | 21.5 |
| Dissolved Strontium (Sr) | | mg/L | 0.0010 - 0.010 | 0.563 | 0.618 | 0.722 | 0.714 | 0.715 | 0.54 | 0.54 | 0.571 | 0.867 | 0.811 | 0.72 | 0.458 | 0.509 |
| Dissolved Sulphur (S) | | mg/L | 3.0 - 30 | 59.3 | 53.5 | 58 | 57.1 | 56.2 | 101 | 102 | 104 | 187 | 88.3 | 81.6 | 13.2 | <3.0 |
| Dissolved Thallium (Tl) | 0.003 | mg/L | 0.000010 - 0.00010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Tin (Sn) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Titanium (Ti) | 1 | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Uranium (U) | 0.085 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00021 | 0.0002 | 0.00018 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Vanadium (V) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Zinc (Zn) | 0.075 | mg/L | 0.0050 - 0.050 | 0.006 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Zirconium (Zr) | | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-situ Groundwater**) |

# Table 165
# 2019-2020 Annual Report

| Dissolved Metals | BC CSR Aquatic Life 2019- LOW LEVEL | Area | | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Number | | 7-South Sump | 7-South Sump | 7-South Sump | 3-South Pit Area | 3-South Pit Area | 3-South Pit Area | 3-South Pit Area | 3-South Pit Area | 3-South Pit Area | 2-South Mine Pool | 2-South Mine Pool | 2-South Mine Pool | 2-South Mine Pool |
| | | Lab Report / Lab Sample | | 7SA5-6MAY19-M<br>7SA5<br>B934686 / VQ5916 | 7SA5-28JAN20-M<br>7SA5<br>C006011 / XH4203 | 7SA5-4MAR20-M<br>7SA5<br>C017120 / XM9233 | MW002-15MAY19-M<br>MW002<br>B937289 / VR7889 | MW002-15MAY19-R<br>MW002<br>B937289 / VR7891 | MW002-27AUG19-M<br>MW002<br>B971660 / WJ5686 | MW002-5DEC19-M<br>MW002<br>B9A5258 / XB7475 | MW002-5DEC19-R<br>MW002<br>B9A5258 / XB7476 | MW002-25FEB20-M<br>MW002<br>C013628 / XL3505 | MW004-15MAY19-M<br>MW004<br>B937289 / VR7890 | MW004-27AUG19-M<br>MW004<br>B971660 / WJ5684 | MW004-27AUG19-R<br>MW004<br>B971660 / WJ5685 | MW004-5DEC19-M<br>MW004<br>B9A5258 / XB7477 |
| | | Date | | 2019-05-06 | 2020-01-28 | 2020-03-04 | 2019-05-15 | 2019-05-15 | 2019-08-27 | 2019-12-05 | 2019-12-05 | 2020-02-25 | 2019-05-15 | 2019-08-27 | 2019-08-27 | 2019-12-05 |
| ***Parameter*** | ***Criteria*** [1] | ***units*** | ***RDL*** | | | | | | | | | | | | | |
| Dissolved Hardness (CaCO3) | | mg/L | 0.50 | 113 | 135 | 135 | 1350 | 1340 | 1320 | 1380 | 1370 | 1320 | 289 | 483 | 489 | 351 |
| Dissolved Aluminum (Al) | | mg/L | 0.0030 - 0.030 | <0.0030 | <0.0030 | <0.0030 | <0.0060 | <0.0060 | <0.0060 | <0.015 | <0.015 | <0.0060 | 0.004 | 0.0058 | 0.0053 | 0.0033 |
| Dissolved Antimony (Sb) | 0.09 | mg/L | 0.00050 - 0.0050 | <0.00050 | <0.00050 | <0.00050 | <0.0010 | <0.0010 | <0.0010 | <0.0025 | <0.0025 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Arsenic (As) | 0.05 | mg/L | 0.00010 - 0.0010 | 0.309 | 0.246 | 0.237 | 0.00188 | 0.00186 | 0.00232 | 0.00186 | 0.00178 | 0.00184 | 0.0002 | 0.00047 | 0.00042 | 0.0002 |
| Dissolved Barium (Ba) | 10 | mg/L | 0.0010 - 0.010 | 0.17 | 0.436 | 0.406 | 0.013 | 0.0122 | 0.0141 | 0.0146 | 0.0145 | 0.0137 | 0.0219 | 0.0362 | 0.036 | 0.0255 |
| Dissolved Beryllium (Be) | 0.0015 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00020 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Bismuth (Bi) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0020 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Boron (B) | 12 | mg/L | 0.050 - 0.50 | 0.472 | 0.473 | 0.489 | 0.83 | 0.8 | 0.67 | 0.77 | 0.79 | 0.74 | 0.24 | 0.286 | 0.287 | 0.207 |
| Dissolved Cadmium (Cd) | 0.0005 | mg/L | 0.0000050 - 0.00010 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000020 | <0.000050 | <0.000050 | <0.000020 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Calcium (Ca) | | mg/L | 0.050 - 0.50 | 34.3 | 41.5 | 40.9 | 465 | 461 | 452 | 468 | 465 | 454 | 97.1 | 164 | 166 | 119 |
| Dissolved Chromium (Cr) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0020 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Cobalt (Co) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | 0.00027 | 0.00349 | 0.00349 | 0.00379 | 0.0036 | 0.0036 | 0.00332 | <0.00020 | 0.00034 | 0.00033 | <0.00020 |
| Dissolved Copper (Cu) | 0.02 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | <0.00020 | <0.00040 | <0.00040 | <0.00040 | <0.0010 | <0.0010 | 0.00043 | 0.00069 | 0.00032 | 0.00033 | 0.00174 |
| Dissolved Iron (Fe) | | mg/L | 0.0050 - 0.050 | 0.0165 | 0.0086 | <0.0050 | 4.27 | 4.19 | 4.4 | 3.84 | 3.87 | 3.92 | <0.0050 | 0.0181 | 0.0173 | <0.0050 |
| Dissolved Lead (Pb) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | <0.00020 | <0.00040 | <0.00040 | <0.00040 | <0.0010 | <0.0010 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Lithium (Li) | | mg/L | 0.0020 - 0.020 | 0.0389 | 0.0441 | 0.0449 | 0.014 | 0.0132 | 0.0137 | 0.015 | 0.015 | 0.0108 | 0.0072 | 0.0105 | 0.0103 | 0.0073 |
| Dissolved Magnesium (Mg) | | mg/L | 0.050 - 0.50 | 6.71 | 7.53 | 8.07 | 46.7 | 45.2 | 47 | 51.3 | 51 | 46.4 | 11.2 | 18 | 17.9 | 13.2 |
| Dissolved Manganese (Mn) | | mg/L | 0.0010 - 0.010 | 0.0189 | 0.0214 | 0.0209 | 1.37 | 1.34 | 1.27 | 1.54 | 1.53 | 1.44 | <0.0010 | 0.0685 | 0.0688 | 0.0021 |
| Dissolved Mercury (Hg) | 0.00025 | mg/L | 0.0000019 - 0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | 0.0000068 | 0.0000056 | 0.0000022 | <0.0000020 | 0.0000024 | <0.0000019 | <0.0000020 | <0.0000020 | 0.0000021 | - |
| Dissolved Molybdenum (Mo) | 10 | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0020 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Nickel (Ni) | 0.25 | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | 0.0029 | 0.0028 | 0.0027 | <0.0050 | <0.0050 | 0.0024 | <0.0010 | 0.0011 | 0.0011 | 0.0013 |
| Dissolved Potassium (K) | | mg/L | 0.050 - 0.50 | 2.1 | 2.21 | 2.25 | 4.28 | 4.16 | 4.72 | 5.05 | 5 | 4.91 | 1.3 | 1.86 | 1.87 | 1.52 |
| Dissolved Selenium (Se) | 0.02 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00020 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Silicon (Si) | | mg/L | 0.10 - 1.0 | 4.3 | 4.98 | 4.59 | 3.31 | 3.16 | 3.34 | 3.69 | 3.66 | 3.1 | 2.45 | 2.65 | 2.6 | 3.02 |
| Dissolved Silver (Ag) | 0.0005 | mg/L | 0.000020 - 0.00020 | <0.000020 | <0.000020 | <0.000020 | <0.000040 | <0.000040 | <0.000040 | <0.00010 | <0.00010 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Dissolved Sodium (Na) | | mg/L | 0.050 - 0.50 | 21.7 | 20.4 | 21.5 | 78.7 | 74.7 | 73.2 | 76 | 76.3 | 68.9 | 28.1 | 46.8 | 46.8 | 30.2 |
| Dissolved Strontium (Sr) | | mg/L | 0.0010 - 0.010 | 0.464 | 0.543 | 0.499 | 3.77 | 3.84 | 3.96 | 3.98 | 3.92 | 3.83 | 0.816 | 1.35 | 1.33 | 0.939 |
| Dissolved Sulphur (S) | | mg/L | 3.0 - 30 | 4.7 | 6.7 | 6 | 430 | 424 | 412 | 434 | 432 | 401 | 85.6 | 144 | 145 | 105 |
| Dissolved Thallium (Tl) | 0.003 | mg/L | 0.000010 - 0.00010 | <0.000010 | <0.000010 | <0.000010 | <0.000020 | <0.000020 | <0.000020 | <0.000050 | <0.000050 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Tin (Sn) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.010 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Titanium (Ti) | 1 | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.010 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Uranium (U) | 0.085 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | 0.00078 | 0.0004 | 0.00038 | <0.00050 | <0.00050 | 0.00044 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Vanadium (V) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.010 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Zinc (Zn) | 0.075 | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.010 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.0050 | <0.0050 | 0.0176 |
| Dissolved Zirconium (Zr) | | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00020 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-situ Groundwater**) |

# Table 166
# 2019-2020 Annual Report

| Dissolved Metals | BC CSR Aquatic Life 2019- LOW LEVEL | Area | | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ | In-Situ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Number | | 2-South Mine Pool | 4-South Mine Pool | 4-South Mine Pool | River Barrier Pillar PAG-CCR Water Cover | River Barrier Pillar PAG-CCR Water Cover | 7-South PAG-CCR Water Cover | 7-South PAG-CCR Water Cover | 7-South PAG-CCR Water Cover | 7-South PAG-CCR Water Cover | 7-South PAG-CCR Water Cover | 7-South PAG-CCR Water Cover | 7-South PAG-CCR Water Cover |
| | | | | MW004-25FEB20-M | QU1101-23DEC19-M | QU1101-23DEC19-R | QU1109M-15AUG19-19-M | QU1109M-18DEC19-M | QU1410-30APR19-M | QU1410-11SEPT19-M | QU1410-11SEPT19-R | QU1410-20NOV19-M | QU1410-20NOV19-R | QU1410-28JAN20-M | QU1410-28JAN20-R |
| | | Lab Report / Lab Sample | | MW004 | QU1101 | QU1101 | QU1109M | QU1109M | QU1410 | QU1410 | QU1410 | QU1410 | QU1410 | QU1410 | QU1410 |
| | | | | C013628 / XL3506 | B9A9931 / XE3098 | B9A9931 / XE3099 | B968040 / WH7273 | B9A9201 / XD8444 | B935103 / VQ7678 | B977217 / WM2963 | B977217 / WM2964 | B9A0774 / WZ3618 | B9A0774 / WZ3619 | C006018 / XH4261 | C006018 / XH4262 |
| | | Date | | 2020-02-25 | 2019-12-23 | 2019-12-23 | 2019-08-15 | 2019-12-18 | 2019-04-30 | 2019-09-11 | 2019-09-11 | 2019-11-20 | 2019-11-20 | 2020-01-28 | 2020-01-28 |
| ***Parameter*** | ***Criteria*** [1] | ***units*** | ***RDL*** | | | | | | | | | | | | |
| Dissolved Hardness (CaCO3) | | mg/L | 0.50 | 356 | 1160 | 1160 | 249 | 227 | 2050 | 2010 | 2000 | 2040 | 2060 | 2010 | 2010 |
| Dissolved Aluminum (Al) | | mg/L | 0.0030 - 0.030 | 0.006 | <0.015 | <0.015 | 0.0061 | <0.0030 | <0.0060 | <0.015 | <0.015 | <0.015 | <0.015 | <0.015 | 0.0037 |
| Dissolved Antimony (Sb) | 0.09 | mg/L | 0.00050 - 0.0050 | <0.00050 | <0.0025 | <0.0025 | <0.0010 | <0.00050 | <0.0010 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.0025 | <0.00050 |
| Dissolved Arsenic (As) | 0.05 | mg/L | 0.00010 - 0.0010 | 0.00021 | 0.101 | 0.101 | 0.00288 | 0.0025 | 0.0894 | 0.0921 | 0.0922 | 0.0905 | 0.0914 | 0.109 | 0.109 |
| Dissolved Barium (Ba) | 10 | mg/L | 0.0010 - 0.010 | 0.019 | 0.0125 | 0.0126 | 0.0132 | 0.0133 | 0.0162 | 0.0155 | 0.0154 | 0.0157 | 0.0159 | 0.0172 | 0.0169 |
| Dissolved Beryllium (Be) | 0.0015 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.00020 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00010 |
| Dissolved Bismuth (Bi) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0010 |
| Dissolved Boron (B) | 12 | mg/L | 0.050 - 0.50 | 0.162 | 1.12 | 1.1 | 0.97 | 0.849 | 1.26 | 1.1 | 1.12 | 1.2 | 1.2 | 1.13 | 1.17 |
| Dissolved Cadmium (Cd) | 0.0005 | mg/L | 0.0000050 - 0.00010 | <0.000010 | <0.000050 | <0.000050 | <0.000020 | <0.000010 | <0.000010 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000010 |
| Dissolved Calcium (Ca) | | mg/L | 0.050 - 0.50 | 118 | 372 | 372 | 86.1 | 78 | 520 | 507 | 500 | 511 | 512 | 517 | 521 |
| Dissolved Chromium (Cr) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0010 |
| Dissolved Cobalt (Co) | 0.04 | mg/L | 0.00020 - 0.0020 | 0.00046 | <0.0010 | <0.0010 | <0.00040 | <0.00020 | 0.00048 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.00058 |
| Dissolved Copper (Cu) | 0.02 | mg/L | 0.00020 - 0.0020 | 0.0014 | <0.0010 | <0.0010 | <0.00040 | <0.00020 | <0.00040 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.00020 |
| Dissolved Iron (Fe) | | mg/L | 0.0050 - 0.050 | 0.0303 | 190 | 193 | 7.25 | 5.58 | 1.6 | 1.7 | 1.71 | 1.66 | 1.67 | 1.74 | 1.71 |
| Dissolved Lead (Pb) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.0010 | <0.0010 | <0.00040 | <0.00020 | <0.00040 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.00020 |
| Dissolved Lithium (Li) | | mg/L | 0.0020 - 0.020 | 0.0056 | 0.06 | 0.059 | 0.0117 | 0.011 | 0.14 | 0.137 | 0.139 | 0.141 | 0.139 | 0.145 | 0.145 |
| Dissolved Magnesium (Mg) | | mg/L | 0.050 - 0.50 | 14.6 | 56.9 | 56.7 | 8.31 | 7.88 | 182 | 180 | 181 | 187 | 190 | 174 | 172 |
| Dissolved Manganese (Mn) | | mg/L | 0.0010 - 0.010 | 0.0198 | 3 | 2.98 | 0.173 | 0.158 | 1.35 | 1.42 | 1.44 | 1.53 | 1.54 | 1.51 | 1.46 |
| Dissolved Mercury (Hg) | 0.00025 | mg/L | 0.0000019 - 0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 |
| Dissolved Molybdenum (Mo) | 10 | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0050 | <0.0050 | 0.0043 | 0.0041 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.001 |
| Dissolved Nickel (Ni) | 0.25 | mg/L | 0.0010 - 0.010 | 0.0023 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | 0.0031 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0026 |
| Dissolved Potassium (K) | | mg/L | 0.050 - 0.50 | 1.23 | 6.73 | 6.74 | 4.68 | 4.55 | 7.61 | 7.41 | 7.42 | 7.77 | 7.75 | 7.33 | 7.21 |
| Dissolved Selenium (Se) | 0.02 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.00020 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00010 |
| Dissolved Silicon (Si) | | mg/L | 0.10 - 1.0 | 3.01 | 5.76 | 5.84 | 2.98 | 2.97 | 3.26 | 3 | 3 | 3.35 | 3.24 | 3.51 | 3.54 |
| Dissolved Silver (Ag) | 0.0005 | mg/L | 0.000020 - 0.00020 | <0.000020 | <0.00010 | <0.00010 | <0.000040 | <0.000020 | <0.000040 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.000020 |
| Dissolved Sodium (Na) | | mg/L | 0.050 - 0.50 | 23.8 | 128 | 128 | 433 | 420 | 55 | 52.7 | 54.4 | 55.4 | 55.8 | 51.5 | 50.8 |
| Dissolved Strontium (Sr) | | mg/L | 0.0010 - 0.010 | 0.837 | 2.12 | 2.1 | 1 | 0.994 | 4.34 | 4.28 | 4.29 | 4.48 | 4.47 | 5.11 | 5.07 |
| Dissolved Sulphur (S) | | mg/L | 3.0 - 30 | 105 | 511 | 522 | 235 | 224 | 671 | 613 | 613 | 645 | 647 | 665 | 654 |
| Dissolved Thallium (Tl) | 0.003 | mg/L | 0.000010 - 0.00010 | <0.000010 | <0.000050 | <0.000050 | <0.000020 | <0.000010 | <0.000020 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000010 |
| Dissolved Tin (Sn) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.010 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.0050 |
| Dissolved Titanium (Ti) | 1 | mg/L | 0.0050 - 0.050 | <0.0050 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.010 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.0050 |
| Dissolved Uranium (U) | 0.085 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | 0.00095 | 0.00101 | 0.001 | 0.00095 | 0.00095 | 0.00098 | 0.00099 |
| Dissolved Vanadium (V) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.010 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.0050 |
| Dissolved Zinc (Zn) | 0.075 | mg/L | 0.0050 - 0.050 | 0.0091 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.010 | <0.025 | <0.025 | <0.025 | <0.025 | <0.025 | <0.0050 |
| Dissolved Zirconium (Zr) | | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.00020 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00014 |

| Legend | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-situ Groundwater**) |

# Table 167
# 2019-2020 Annual Report

| Dissolved Metals | | Area | | In-Situ | In-Situ | In-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ 7-South | Ex-Situ | Ex-Situ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BC CSR Aquatic Life 2019- LOW LEVEL | | | 7-South PAG-CCR Water Cover | 7-South PAG-CCR Water Cover | 7-South PAG-CCR Water Cover | 2-North Plant Area | 2-North Plant Area | 2-North Plant Area | 2-North Plant Area | 2-North Plant Area | 2-North Plant Area | 7-South | 7-South | 7-South | 7-South |
| | | Sample Number | | QU1410-24FEB20-M | QU1410-24FEB20-R | QU1410-19MAR20-M | MW001D-29JAN20-M | MW001S-29JAN20-M | MW006D-8AUG19-19-M | MW006D-12FEB20-M | MW006S-8AUG19-19-M | MW006S-29JAN20-M | QU0810-10-DEC19-M | QU0810-27FEB20-M | QU0813A-31JUL19-M | QU0813A-26NOV19-M |
| | | Lab Report / Lab Sample | | QU1410 | QU1410 | QU1410 | MW001D | MW001S | MW006D | MW006D | MW006S | MW006S | QU0810 | QU0810 | QU0813A | QU0813A |
| | | | | C013626 / XL3498 | C013626 / XL3499 | C020553 / XO6010 | C006723 / XH7507 | C006723 / XH7508 | B966017 / WG8048 | C010630 / XJ8602 | B966017 / WG8047 | C006723 / XH7509 | B9A6860 / XC5932 | C014792 / XL8496 | B963465 / WF4676 | B9A2391 / XA2672 |
| | | Date | | 2020-02-24 | 2020-02-24 | 2020-03-19 | 2020-01-29 | 2020-01-29 | 2019-08-08 | 2020-02-12 | 2019-08-08 | 2020-01-29 | 2019-12-10 | 2020-02-27 | 2019-07-31 | 2019-11-26 |
| ***Parameter*** | ***Criteria*** [1] | ***units*** | ***RDL*** | | | | | | | | | | | | | |
| Dissolved Hardness (CaCO3) | | mg/L | 0.50 | 1900 | 2000 | 2060 | 536 | 560 | 45.6 | 46.1 | 458 | 403 | 154 | 351 | 119 | 122 |
| Dissolved Aluminum (Al) | | mg/L | 0.0030 - 0.030 | <0.0060 | <0.015 | <0.015 | 0.0053 | <0.0030 | 0.0164 | 0.0165 | 0.0057 | <0.0030 | 0.0071 | 0.0058 | <0.0030 | <0.0030 |
| Dissolved Antimony (Sb) | 0.09 | mg/L | 0.00050 - 0.0050 | <0.0010 | <0.0025 | <0.0025 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Arsenic (As) | 0.05 | mg/L | 0.00010 - 0.0010 | 0.0949 | 0.0972 | 0.0926 | 0.0054 | 0.00047 | 0.0282 | 0.028 | 0.00187 | 0.00153 | 0.00057 | 0.0005 | **0.371** | **0.38** |
| Dissolved Barium (Ba) | 10 | mg/L | 0.0010 - 0.010 | 0.0146 | 0.0147 | 0.0158 | 0.0898 | 0.0191 | 0.0092 | 0.0096 | 0.0319 | 0.0326 | 0.112 | 0.231 | 0.246 | 0.262 |
| Dissolved Beryllium (Be) | 0.0015 | mg/L | 0.00010 - 0.0010 | <0.00020 | <0.00050 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Bismuth (Bi) | | mg/L | 0.0010 - 0.010 | <0.0020 | <0.0050 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Boron (B) | 12 | mg/L | 0.050 - 0.50 | 0.98 | 1.14 | 1.12 | 0.325 | 0.384 | 0.051 | 0.051 | 0.187 | 0.163 | 0.191 | 0.229 | 0.754 | 0.717 |
| Dissolved Cadmium (Cd) | 0.0005 | mg/L | 0.0000050 - 0.00010 | <0.000020 | <0.000050 | <0.000050 | 0.000044 | 0.000065 | <0.000010 | <0.000010 | 0.000023 | 0.000022 | <0.000010 | 0.000022 | <0.000010 | <0.000010 |
| Dissolved Calcium (Ca) | | mg/L | 0.050 - 0.50 | 493 | 518 | 519 | 174 | 175 | 17.4 | 17.6 | 158 | 140 | 46.4 | 106 | 34.6 | 35.1 |
| Dissolved Chromium (Cr) | | mg/L | 0.0010 - 0.010 | <0.0020 | <0.0050 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Cobalt (Co) | 0.04 | mg/L | 0.00020 - 0.0020 | 0.00049 | <0.0010 | <0.0010 | 0.0053 | 0.00136 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00027 | <0.00020 | <0.00020 |
| Dissolved Copper (Cu) | 0.02 | mg/L | 0.00020 - 0.0020 | <0.00040 | <0.0010 | <0.0010 | 0.00036 | 0.00048 | 0.00075 | 0.00061 | 0.00063 | 0.0008 | 0.0013 | 0.00107 | <0.00020 | <0.00020 |
| Dissolved Iron (Fe) | | mg/L | 0.0050 - 0.050 | 1.68 | 1.81 | 1.69 | 0.023 | 0.129 | <0.0050 | <0.0050 | 0.0277 | <0.0050 | 0.0111 | 0.0146 | 0.166 | 0.182 |
| Dissolved Lead (Pb) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00040 | <0.0010 | <0.0010 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Lithium (Li) | | mg/L | 0.0020 - 0.020 | 0.112 | 0.123 | 0.137 | <0.0020 | <0.0020 | <0.0020 | <0.0020 | <0.0020 | <0.0020 | <0.0020 | <0.0020 | 0.0483 | 0.0488 |
| Dissolved Magnesium (Mg) | | mg/L | 0.050 - 0.50 | 163 | 170 | 186 | 24.5 | 29.8 | 0.525 | 0.534 | 15.5 | 13.1 | 9.28 | 20.8 | 7.92 | 8.43 |
| Dissolved Manganese (Mn) | | mg/L | 0.0010 - 0.010 | 1.35 | 1.42 | 1.47 | 1.76 | 2.6 | <0.0010 | 0.0032 | 0.126 | 0.0432 | 0.0058 | 0.0711 | 0.0351 | 0.0349 |
| Dissolved Mercury (Hg) | 0.00025 | mg/L | 0.0000019 - 0.0000020 | <0.0000019 | <0.0000019 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 |
| Dissolved Molybdenum (Mo) | 10 | mg/L | 0.0010 - 0.010 | <0.0020 | <0.0050 | <0.0050 | 0.0023 | <0.0010 | 0.0035 | 0.0035 | 0.0294 | 0.0305 | <0.0010 | 0.0017 | <0.0010 | <0.0010 |
| Dissolved Nickel (Ni) | 0.25 | mg/L | 0.0010 - 0.010 | 0.0024 | <0.0050 | <0.0050 | 0.0069 | 0.0012 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0018 | <0.0010 | <0.0010 |
| Dissolved Potassium (K) | | mg/L | 0.050 - 0.50 | 7.14 | 7.35 | 7.8 | 1.72 | 1.82 | 0.656 | 0.704 | 2.3 | 2.13 | 2.39 | 3.26 | 2.22 | 2.23 |
| Dissolved Selenium (Se) | 0.02 | mg/L | 0.00010 - 0.0010 | <0.00020 | <0.00050 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00029 | 0.00028 | <0.00010 | <0.00010 | <0.00010 | 0.00046 |
| Dissolved Silicon (Si) | | mg/L | 0.10 - 1.0 | 2.74 | 2.93 | 2.94 | 6.44 | 7.02 | 3.35 | 3.61 | 4.76 | 4.04 | 3.71 | 3.1 | 3.58 | 3.6 |
| Dissolved Silver (Ag) | 0.0005 | mg/L | 0.000020 - 0.00020 | <0.000040 | <0.00010 | <0.00010 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Dissolved Sodium (Na) | | mg/L | 0.050 - 0.50 | 51.6 | 52.7 | 57.5 | 85.2 | 79.5 | 20.5 | 20.2 | 156 | 137 | 3.25 | 9.59 | 48.8 | 48 |
| Dissolved Strontium (Sr) | | mg/L | 0.0010 - 0.010 | 4.39 | 4.32 | 4.42 | 0.973 | 1.13 | 0.0816 | 0.081 | 0.979 | 0.803 | 0.395 | 0.864 | 0.433 | 0.484 |
| Dissolved Sulphur (S) | | mg/L | 3.0 - 30 | 595 | 601 | 614 | 128 | 142 | 4 | 4 | 210 | 185 | 3.4 | 66.1 | 12 | 13.6 |
| Dissolved Thallium (Tl) | 0.003 | mg/L | 0.000010 - 0.00010 | <0.000020 | <0.000050 | <0.000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.00002 | 0.000018 | <0.000010 | <0.000010 |
| Dissolved Tin (Sn) | | mg/L | 0.0050 - 0.050 | <0.010 | <0.025 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Titanium (Ti) | 1 | mg/L | 0.0050 - 0.050 | <0.010 | <0.025 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Uranium (U) | 0.085 | mg/L | 0.00010 - 0.0010 | 0.00094 | 0.00093 | 0.00092 | 0.00257 | 0.00136 | 0.0007 | 0.00074 | 0.00689 | 0.00611 | 0.00033 | 0.00239 | <0.00010 | <0.00010 |
| Dissolved Vanadium (V) | | mg/L | 0.0050 - 0.050 | <0.010 | <0.025 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Zinc (Zn) | 0.075 | mg/L | 0.0050 - 0.050 | <0.010 | <0.025 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Zirconium (Zr) | | mg/L | 0.00010 - 0.0010 | <0.00020 | <0.00050 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00057 |

| Legend | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-situ Groundwater**) |

# Table 168
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| Dissolved Metals | BC CSR Aquatic Life 2019- LOW LEVEL | Area | | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Number | | 7-South | 7-South | 7-South | 7-South | 7-South | 2-North | 2-North | 2-North | 2-North | 2-North | 2-North | 2-North | 2-North |
| | | Lab Report / Lab Sample | | QU0813A-26NOV19-R | QU0813A-10MAR20-M | QU0813A-10MAR20-R | QU0813B-26NOV19-M | QU0813B-10MAR20-M | QU0821GD-3SEPT19-M | QU0821GD-3SEPT19-R | QU0821GD-27NOV19-M | QU0821GD-19FEB20-R | QU0821GD-19FEB20-M | QU0821GD-23MAY19-M | QU0821GS-23MAY19-M | QU0821GS-3SEPT19-M |
| | | | | QU0813A | QU0813A | QU0813A | QU0813B | QU0813B | QU0821GD | QU0821GD | QU0821GD | QU0821GD | QU0821GD | QU0821GD | QU0821GS | QU0821GS |
| | | | | B9A2391 / XA2673 | C018595 / XN6782 | C018595 / XN6783 | B9A2391 / XA2674 | C018595 / XN6784 | B974776 / WL1627 | B974776 / WL1629 | B9A2391 / XA2671 | C012293 / XK6352 | C012293 / XK6353 | B939562 / VS8836 | B939562 / VS8837 | B974776 / WL1628 |
| | | Date | | 2019-11-26 | 2020-03-10 | 2020-03-10 | 2019-11-26 | 2020-03-10 | 2019-09-03 | 2019-09-03 | 2019-11-27 | 2020-02-19 | 2020-02-19 | 2019-05-23 | 2019-05-23 | 2019-09-03 |
| ***Parameter*** | ***Criteria*** [1] | ***units*** | ***RDL*** | | | | | | | | | | | | | |
| Dissolved Hardness (CaCO3) | | mg/L | 0.50 | 123 | 120 | 120 | 101 | 111 | 74.1 | 73.5 | 321 | 289 | 288 | 300 | 78.5 | 396 |
| Dissolved Aluminum (Al) | | mg/L | 0.0030 - 0.030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0060 | <0.0060 | <0.015 | <0.015 | <0.015 | <0.0060 | 0.0035 | <0.030 |
| Dissolved Antimony (Sb) | 0.09 | mg/L | 0.00050 - 0.0050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.0010 | <0.0010 | <0.0025 | <0.0025 | <0.0025 | <0.0010 | <0.00050 | <0.0050 |
| Dissolved Arsenic (As) | 0.05 | mg/L | 0.00010 - 0.0010 | **0.384** | **0.398** | **0.404** | **0.462** | **0.486** | **0.231** | **0.232** | **0.14** | **0.155** | **0.153** | **0.109** | **0.186** | **0.125** |
| Dissolved Barium (Ba) | 10 | mg/L | 0.0010 - 0.010 | 0.264 | 0.237 | 0.238 | 0.0446 | 0.0707 | 0.467 | 0.464 | 2.12 | 2.26 | 2.28 | 2.27 | 0.547 | 2.98 |
| Dissolved Beryllium (Be) | 0.0015 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00050 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.0010 |
| Dissolved Bismuth (Bi) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | <0.010 |
| Dissolved Boron (B) | 12 | mg/L | 0.050 - 0.50 | 0.739 | 0.68 | 0.668 | 0.276 | 0.634 | 1.96 | 1.97 | 2.86 | 2.95 | 2.93 | 2.79 | 1.93 | 3.41 |
| Dissolved Cadmium (Cd) | 0.0005 | mg/L | 0.0000050 - 0.00010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000020 | <0.000020 | <0.000050 | <0.000050 | <0.000050 | <0.000010 | <0.0000050 | <0.00010 |
| Dissolved Calcium (Ca) | | mg/L | 0.050 - 0.50 | 35.4 | 34.2 | 34.3 | 31.7 | 34 | 21.7 | 21.4 | 107 | 90.7 | 90.5 | 95.8 | 22.4 | 129 |
| Dissolved Chromium (Cr) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | <0.010 |
| Dissolved Cobalt (Co) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00040 | <0.00040 | <0.0010 | <0.0010 | <0.0010 | <0.00040 | <0.00020 | <0.0020 |
| Dissolved Copper (Cu) | 0.02 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00040 | <0.00040 | <0.0010 | <0.0010 | <0.0010 | <0.00040 | <0.00020 | <0.0020 |
| Dissolved Iron (Fe) | | mg/L | 0.0050 - 0.050 | 0.184 | 0.317 | 0.321 | 0.0594 | 0.219 | 0.891 | 0.892 | 1.53 | 0.709 | 0.689 | 0.743 | 0.485 | 1.15 |
| Dissolved Lead (Pb) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00040 | <0.00040 | <0.0010 | <0.0010 | <0.0010 | <0.00040 | <0.00020 | <0.0020 |
| Dissolved Lithium (Li) | | mg/L | 0.0020 - 0.020 | 0.0494 | 0.0446 | 0.0454 | 0.023 | 0.0353 | 0.0858 | 0.0842 | 0.142 | 0.188 | 0.192 | 0.175 | 0.0872 | 0.212 |
| Dissolved Magnesium (Mg) | | mg/L | 0.050 - 0.50 | 8.44 | 8.35 | 8.38 | 5.28 | 6.46 | 4.83 | 4.85 | 13 | 15.2 | 15.1 | 14.7 | 5.47 | 18.2 |
| Dissolved Manganese (Mn) | | mg/L | 0.0010 - 0.010 | 0.0351 | 0.0508 | 0.052 | 0.0841 | 0.0673 | 0.157 | 0.157 | 0.238 | 0.0495 | 0.05 | 0.108 | 0.0837 | 0.144 |
| Dissolved Mercury (Hg) | 0.00025 | mg/L | 0.0000019 - 0.0000020 | <0.0000020 | <0.0000019 | <0.0000019 | <0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 |
| Dissolved Molybdenum (Mo) | 10 | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | 0.0025 | 0.0016 | <0.0020 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | <0.010 |
| Dissolved Nickel (Ni) | 0.25 | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0050 | <0.0050 | <0.0050 | <0.0020 | <0.0010 | <0.010 |
| Dissolved Potassium (K) | | mg/L | 0.050 - 0.50 | 2.24 | 2.22 | 2.22 | 1.45 | 1.7 | 4.56 | 4.63 | 9.41 | 9.37 | 9.3 | 8.94 | 4.56 | 10.9 |
| Dissolved Selenium (Se) | 0.02 | mg/L | 0.00010 - 0.0010 | 0.00066 | 0.00016 | 0.00032 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00050 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.0010 |
| Dissolved Silicon (Si) | | mg/L | 0.10 - 1.0 | 3.6 | 3.65 | 3.72 | 4.08 | 3.99 | 3.49 | 3.5 | 4.07 | 3.7 | 3.73 | 3.37 | 2.94 | 4.5 |
| Dissolved Silver (Ag) | 0.0005 | mg/L | 0.000020 - 0.00020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000040 | <0.000040 | <0.00010 | <0.00010 | <0.00010 | <0.000040 | <0.000020 | <0.00020 |
| Dissolved Sodium (Na) | | mg/L | 0.050 - 0.50 | 47.8 | 46.1 | 46 | 23.3 | 41.2 | 140 | 142 | 583 | 480 | 481 | 493 | 155 | 660 |
| Dissolved Strontium (Sr) | | mg/L | 0.0010 - 0.010 | 0.489 | 0.473 | 0.476 | 0.257 | 0.321 | 0.557 | 0.565 | 2.18 | 2.11 | 2.04 | 2.05 | 0.555 | 2.65 |
| Dissolved Sulphur (S) | | mg/L | 3.0 - 30 | 13.9 | 12.1 | 12 | 11.9 | 10 | <6.0 | <6.0 | <15 | <15 | <15 | <6.0 | <3.0 | <30 |
| Dissolved Thallium (Tl) | 0.003 | mg/L | 0.000010 - 0.00010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000020 | <0.000020 | <0.000050 | <0.000050 | <0.000050 | <0.000020 | <0.000010 | <0.00010 |
| Dissolved Tin (Sn) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.025 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.050 |
| Dissolved Titanium (Ti) | 1 | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.025 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.050 |
| Dissolved Uranium (U) | 0.085 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | 0.00012 | <0.00010 | <0.00020 | <0.00020 | <0.00050 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.0010 |
| Dissolved Vanadium (V) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.025 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.050 |
| Dissolved Zinc (Zn) | 0.075 | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.010 | <0.010 | <0.025 | <0.025 | <0.025 | <0.010 | <0.0050 | <0.050 |
| Dissolved Zirconium (Zr) | | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00050 | <0.00050 | <0.00050 | <0.00020 | <0.00010 | <0.0010 |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-situ Groundwater**) |

# Table 169
# 2019-2020 Annual Report

| Dissolved Metals | BC CSR Aquatic Life 2019- LOW LEVEL | Area | | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Number | | 2-North | 2-North | 2-North | 4-South Area | 4-South Area | 4-South Area | 4-South Area | 4-South Area | 4-South Area | 4-South Area | 4-South Area | 2-North | 2-North |
| | | Lab Report / Lab Sample | | QU0821GS-27NOV19-M<br>QU0821GS | QU0821GS-27NOV19-R<br>QU0821GS | QU0821GS-19FEB20-M<br>QU0821GS | QU1009D-27MAY19-M<br>QU1009D | QU1009S-27MAY19-M<br>QU1009S | QU1009S-27MAY19-R<br>QU1009S | QU1008D-18MAR20-M<br>QU1008D | QU1008D-18MAR20-R<br>QU1008D | QU1009D-5SEPT19-M<br>QU1009D | QU1009D-5SEPT19-R<br>QU1009D | QU1009S-5SEPT19-M<br>QU1009S | QU1010D-30SEPT19-M<br>QU1010D | QU1010D-11DEC19-M<br>QU1010D |
| | | Date | | B9A2391 / XA2669<br>2019-11-27 | B9A2391 / XA2670<br>2019-11-27 | C012293 / XK6351<br>2020-02-19 | B940757 / VT5252<br>2019-05-27 | B940757 / VT5251<br>2019-05-27 | B940757 / VT5253<br>2019-05-27 | C020554 / XO6011<br>2020-03-18 | C020554 / XO6012<br>2020-03-18 | B974802 / WL1744<br>2019-09-05 | B974802 / WL1745<br>2019-09-05 | B974802 / WL1743<br>2019-09-05 | B984272 / WP8750<br>2019-09-30 | B9A6860 / XC5935<br>2019-12-11 |
| ***Parameter*** | ***Criteria*** [1] | ***units*** | ***RDL*** | | | | | | | | | | | | | |
| Dissolved Hardness (CaCO3) | | mg/L | 0.50 | 56.9 | 56.9 | 46.6 | 160 | 213 | 219 | 6.28 | 6.87 | 171 | 170 | 223 | 1520 | 1630 |
| Dissolved Aluminum (Al) | | mg/L | 0.0030 - 0.030 | <0.0060 | <0.0060 | 0.0038 | <0.0030 | <0.0030 | <0.0030 | <0.015 | <0.0060 | <0.0030 | <0.0030 | 0.0209 | 0.117 | <0.015 |
| Dissolved Antimony (Sb) | 0.09 | mg/L | 0.00050 - 0.0050 | <0.0010 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.0025 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.0025 | <0.0025 |
| Dissolved Arsenic (As) | 0.05 | mg/L | 0.00010 - 0.0010 | **0.182** | **0.184** | **0.222** | **0.0993** | **0.0722** | **0.0715** | **0.152** | **0.147** | **0.122** | **0.122** | **0.0921** | 0.0147 | 0.0149 |
| Dissolved Barium (Ba) | 10 | mg/L | 0.0010 - 0.010 | 0.317 | 0.318 | 0.28 | 0.109 | 0.13 | 0.129 | 0.0228 | 0.0225 | 0.126 | 0.124 | 0.128 | 1.4 | 1.29 |
| Dissolved Beryllium (Be) | 0.0015 | mg/L | 0.00010 - 0.0010 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00050 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00050 | <0.00050 |
| Dissolved Bismuth (Bi) | | mg/L | 0.0010 - 0.010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0050 |
| Dissolved Boron (B) | 12 | mg/L | 0.050 - 0.50 | 1.78 | 1.79 | 1.68 | 0.539 | <0.050 | <0.050 | 1.81 | 1.81 | 0.595 | 0.607 | 0.062 | 0.29 | 0.32 |
| Dissolved Cadmium (Cd) | 0.0005 | mg/L | 0.0000050 - 0.00010 | <0.000020 | <0.000020 | <0.000010 | <0.0000050 | <0.0000050 | <0.0000050 | <0.000050 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000050 | <0.000050 |
| Dissolved Calcium (Ca) | | mg/L | 0.050 - 0.50 | 16.2 | 16.1 | 12.8 | 48.6 | 68.6 | 70.6 | 2.51 | 2.37 | 51.1 | 50.6 | 72 | 591 | 632 |
| Dissolved Chromium (Cr) | | mg/L | 0.0010 - 0.010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0050 |
| Dissolved Cobalt (Co) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00040 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.0010 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.0010 | <0.0010 |
| Dissolved Copper (Cu) | 0.02 | mg/L | 0.00020 - 0.0020 | <0.00040 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.0010 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | 0.0013 | <0.0010 |
| Dissolved Iron (Fe) | | mg/L | 0.0050 - 0.050 | 0.585 | 0.555 | 0.247 | 0.477 | 4.75 | 4.94 | 0.104 | 0.103 | 0.472 | 0.473 | 4.37 | 9.6 | 11 |
| Dissolved Lead (Pb) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00040 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.0010 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.0010 | <0.0010 |
| Dissolved Lithium (Li) | | mg/L | 0.0020 - 0.020 | 0.0725 | 0.0708 | 0.0675 | 0.0355 | 0.013 | 0.0129 | 0.015 | 0.0155 | 0.0402 | 0.0403 | 0.0153 | <0.010 | <0.010 |
| Dissolved Magnesium (Mg) | | mg/L | 0.050 - 0.50 | 4.01 | 4.04 | 3.58 | 9.49 | 10.2 | 10.5 | <0.25 | 0.23 | 10.6 | 10.5 | 10.6 | 11.4 | 11.5 |
| Dissolved Manganese (Mn) | | mg/L | 0.0010 - 0.010 | 0.136 | 0.136 | 0.0403 | 0.0581 | 0.377 | 0.387 | 0.168 | 0.162 | 0.0502 | 0.0492 | 0.35 | 0.409 | 0.427 |
| Dissolved Mercury (Hg) | 0.00025 | mg/L | 0.0000019 - 0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 |
| Dissolved Molybdenum (Mo) | 10 | mg/L | 0.0010 - 0.010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0050 |
| Dissolved Nickel (Ni) | 0.25 | mg/L | 0.0010 - 0.010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0050 |
| Dissolved Potassium (K) | | mg/L | 0.050 - 0.50 | 4.4 | 4.37 | 3.79 | 1.65 | 0.66 | 0.692 | 0.67 | 0.62 | 1.95 | 1.9 | 0.701 | 8.36 | 8.4 |
| Dissolved Selenium (Se) | 0.02 | mg/L | 0.00010 - 0.0010 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00050 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00050 | <0.00050 |
| Dissolved Silicon (Si) | | mg/L | 0.10 - 1.0 | 3.01 | 3 | 3.32 | 9.1 | 7.84 | 8.25 | 4.83 | 4.89 | 9.64 | 9.52 | 9.23 | 4.41 | 3.73 |
| Dissolved Silver (Ag) | 0.0005 | mg/L | 0.000020 - 0.00020 | <0.000040 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.00010 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.00010 | <0.00010 |
| Dissolved Sodium (Na) | | mg/L | 0.050 - 0.50 | 112 | 112 | 93.9 | 33.1 | 8.39 | 8.83 | 126 | 118 | 43.3 | 42.2 | 8.99 | 1350 | 1320 |
| Dissolved Strontium (Sr) | | mg/L | 0.0010 - 0.010 | 0.461 | 0.447 | 0.387 | 0.906 | 0.267 | 0.271 | 0.0618 | 0.0619 | 0.985 | 0.986 | 0.273 | 5.8 | 6.53 |
| Dissolved Sulphur (S) | | mg/L | 3.0 - 30 | <6.0 | <6.0 | <3.0 | 22.7 | 34.3 | 36.7 | <15 | <6.0 | 25.6 | 25.4 | 34.8 | <15 | <15 |
| Dissolved Thallium (Tl) | 0.003 | mg/L | 0.000010 - 0.00010 | <0.000020 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000050 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000050 | 0.000098 |
| Dissolved Tin (Sn) | | mg/L | 0.0050 - 0.050 | <0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.025 |
| Dissolved Titanium (Ti) | 1 | mg/L | 0.0050 - 0.050 | <0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.025 |
| Dissolved Uranium (U) | 0.085 | mg/L | 0.00010 - 0.0010 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00050 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00050 | <0.00050 |
| Dissolved Vanadium (V) | | mg/L | 0.0050 - 0.050 | <0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.025 |
| Dissolved Zinc (Zn) | 0.075 | mg/L | 0.0050 - 0.050 | <0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.025 |
| Dissolved Zirconium (Zr) | | mg/L | 0.00010 - 0.0010 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00050 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00050 | <0.00050 |

| Legend | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-situ Groundwater**) |

# Table 170
# 2019-2020 Annual Report

| Dissolved Metals | | Area | | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ | Ex-Situ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | BC CSR Aquatic Life 2019- LOW LEVEL | | | 2-North | 2-North | 2-North | 2-North | 2-North | River Barrier Pillar | River Barrier Pillar | River Barrier Pillar | River Barrier Pillar | River Barrier Pillar | River Barrier Pillar | River Barrier Pillar | 7-South Area 5 |
| | | Sample Number | | QU1010S-30SEPT19-M | QU1010S-30SEPT19-R | QU1010S-11DEC19-R | QU1010S-11DEC19-M | QU1011D-24MAR20-M | QU1105D-16DEC19-M | QU1105S-16DEC19-M | QU1105S-16DEC19-R | QU1105S-12MAR20-M | QU1109S-15AUG19-19-M | QU1109S-18DEC19-M | QU1109S-18DEC19-R | QU1136D-16MAR20-M |
| | | Lab Report / Lab Sample | | QU1010S | QU1010S | QU1010S | QU1010S | QU1011D | QU1105D | QU1105S | QU1105S | QU1105S | QU1109S | QU1109S | QU1109S | QU1136D |
| | | | | B984272 / WP8751 | B984272 / WP8752 | B9A6860 / XC5933 | B9A6860 / XC5934 | C021848 / XP1218 | B9A8419 / XD4475 | B9A8419 / XD4473 | B9A8419 / XD4474 | C018847 / XN7876 | B968040 / WH7272 | B9A9201 / XD8442 | B9A9201 / XD8443 | C020041 / XO3450 |
| | | Date | | 2019-09-30 | 2019-09-30 | 2019-12-11 | 2019-12-11 | 2020-03-24 | 2019-12-16 | 2019-12-16 | 2019-12-16 | 2020-03-12 | 2019-08-15 | 2019-12-18 | 2019-12-18 | 2020-03-16 |
| ***Parameter*** | ***Criteria*** [1] | ***units*** | ***RDL*** | | | | | | | | | | | | | |
| Dissolved Hardness (CaCO3) | | mg/L | 0.50 | 76.2 | 78.9 | 83.4 | 82.4 | 159 | 398 | 171 | 158 | 114 | 118 | 102 | 105 | 143 |
| Dissolved Aluminum (Al) | | mg/L | 0.0030 - 0.030 | 0.0134 | 0.0053 | 0.0039 | 0.0037 | 0.233 | 0.016 | 0.003 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 | <0.0030 |
| Dissolved Antimony (Sb) | 0.09 | mg/L | 0.00050 - 0.0050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.0025 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Dissolved Arsenic (As) | 0.05 | mg/L | 0.00010 - 0.0010 | **0.0969** | **0.0967** | **0.1** | **0.0978** | 0.0186 | 0.0111 | **0.0522** | 0.0498 | **0.11** | **0.142** | **0.15** | **0.151** | **0.932** |
| Dissolved Barium (Ba) | 10 | mg/L | 0.0010 - 0.010 | 0.372 | 0.37 | 0.353 | 0.349 | 0.341 | 0.3 | 0.176 | 0.163 | 0.146 | 0.0545 | 0.0511 | 0.0534 | 0.109 |
| Dissolved Beryllium (Be) | 0.0015 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Bismuth (Bi) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Boron (B) | 12 | mg/L | 0.050 - 0.50 | 0.542 | 0.553 | 0.538 | 0.557 | 1.62 | 0.49 | 0.618 | 0.573 | 0.856 | 1.78 | 1.63 | 1.67 | 0.573 |
| Dissolved Cadmium (Cd) | 0.0005 | mg/L | 0.0000050 - 0.00010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Calcium (Ca) | | mg/L | 0.050 - 0.50 | 21.6 | 22.6 | 24.5 | 23.9 | 54.5 | 151 | 52.7 | 47.7 | 34.1 | 32.3 | 27.5 | 28.1 | 42.8 |
| Dissolved Chromium (Cr) | | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Cobalt (Co) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.0010 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Copper (Cu) | 0.02 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00081 | <0.0010 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Iron (Fe) | | mg/L | 0.0050 - 0.050 | 0.181 | 0.188 | 0.22 | 0.213 | 2.21 | <0.025 | 1.3 | 1.14 | 0.824 | 0.147 | 0.116 | 0.118 | 0.567 |
| Dissolved Lead (Pb) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.0010 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Dissolved Lithium (Li) | | mg/L | 0.0020 - 0.020 | 0.0477 | 0.0511 | 0.0454 | 0.0453 | 0.0286 | <0.010 | 0.0501 | 0.0471 | 0.0616 | 0.0608 | 0.0544 | 0.0583 | 0.0473 |
| Dissolved Magnesium (Mg) | | mg/L | 0.050 - 0.50 | 5.45 | 5.44 | 5.37 | 5.5 | 5.48 | 5.22 | 9.59 | 9.37 | 6.9 | 9.18 | 8.14 | 8.49 | 8.81 |
| Dissolved Manganese (Mn) | | mg/L | 0.0010 - 0.010 | 0.0389 | 0.0397 | 0.0434 | 0.0448 | 0.267 | 0.295 | 0.213 | 0.204 | 0.0862 | 0.0284 | 0.023 | 0.0239 | 0.0405 |
| Dissolved Mercury (Hg) | 0.00025 | mg/L | 0.0000019 - 0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 |
| Dissolved Molybdenum (Mo) | 10 | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0034 |
| Dissolved Nickel (Ni) | 0.25 | mg/L | 0.0010 - 0.010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Dissolved Potassium (K) | | mg/L | 0.050 - 0.50 | 3.43 | 3.47 | 3.33 | 3.42 | 4.82 | 5.23 | 2.76 | 2.59 | 3.44 | 3.5 | 3.27 | 3.43 | 0.849 |
| Dissolved Selenium (Se) | 0.02 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | 0.00088 | 0.00081 | <0.00010 | <0.00050 | <0.00010 | <0.00010 | 0.0002 | 0.00018 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Silicon (Si) | | mg/L | 0.10 - 1.0 | 4.19 | 4.27 | 4.62 | 4.55 | 6.11 | 5.57 | 3.27 | 2.87 | 3.47 | 6.45 | 6.13 | 6.43 | 4.37 |
| Dissolved Silver (Ag) | 0.0005 | mg/L | 0.000020 - 0.00020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.00010 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Dissolved Sodium (Na) | | mg/L | 0.050 - 0.50 | 34.5 | 34.3 | 33 | 33.8 | 362 | 924 | 89.9 | 88.3 | 121 | 254 | 235 | 243 | 10.6 |
| Dissolved Strontium (Sr) | | mg/L | 0.0010 - 0.010 | 0.396 | 0.392 | 0.427 | 0.43 | 0.863 | 1.49 | 0.501 | 0.467 | 0.523 | 0.455 | 0.409 | 0.411 | 0.402 |
| Dissolved Sulphur (S) | | mg/L | 3.0 - 30 | <3.0 | <3.0 | <3.0 | <3.0 | <3.0 | 68 | 51.2 | 45.9 | 31.3 | 87.1 | 68.1 | 70.3 | 3.9 |
| Dissolved Thallium (Tl) | 0.003 | mg/L | 0.000010 - 0.00010 | <0.000010 | <0.000010 | 0.000021 | <0.000010 | <0.000010 | <0.000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Dissolved Tin (Sn) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Titanium (Ti) | 1 | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0054 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Uranium (U) | 0.085 | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00016 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Dissolved Vanadium (V) | | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Zinc (Zn) | 0.075 | mg/L | 0.0050 - 0.050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.025 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Dissolved Zirconium (Zr) | | mg/L | 0.00010 - 0.0010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00035 | <0.00050 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |

| Legend | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-situ Groundwater**) |

# Table 171
# 2019-2020 Annual Report

| Dissolved Metals | BC CSR Aquatic Life 2019- LOW LEVEL | Area | | Ex-Situ |
|---|---|---|---|---|
| | | Sample Number | | 2-South |
| | | | | MW1223-16MAY19-M |
| | | Lab Report / Lab Sample | | MW1223 |
| | | | | B937753 / VS0188 |
| *Parameter* | *Criteria* [1] | Date | | 2019-05-16 |
| | | *units* | *RDL* | |
| Dissolved Hardness (CaCO3) | | mg/L | 0.50 | 19.8 |
| Dissolved Aluminum (Al) | | mg/L | 0.0030 - 0.030 | 0.0211 |
| Dissolved Antimony (Sb) | 0.09 | mg/L | 0.00050 - 0.0050 | <0.00050 |
| Dissolved Arsenic (As) | 0.05 | mg/L | 0.00010 - 0.0010 | 0.00297 |
| Dissolved Barium (Ba) | 10 | mg/L | 0.0010 - 0.010 | 0.0193 |
| Dissolved Beryllium (Be) | 0.0015 | mg/L | 0.00010 - 0.0010 | <0.00010 |
| Dissolved Bismuth (Bi) | | mg/L | 0.0010 - 0.010 | <0.0010 |
| Dissolved Boron (B) | 12 | mg/L | 0.050 - 0.50 | 0.343 |
| Dissolved Cadmium (Cd) | 0.0005 | mg/L | 0.0000050 - 0.00010 | 0.000011 |
| Dissolved Calcium (Ca) | | mg/L | 0.050 - 0.50 | 7.47 |
| Dissolved Chromium (Cr) | | mg/L | 0.0010 - 0.010 | <0.0010 |
| Dissolved Cobalt (Co) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 |
| Dissolved Copper (Cu) | 0.02 | mg/L | 0.00020 - 0.0020 | 0.0014 |
| Dissolved Iron (Fe) | | mg/L | 0.0050 - 0.050 | 0.0305 |
| Dissolved Lead (Pb) | 0.04 | mg/L | 0.00020 - 0.0020 | <0.00020 |
| Dissolved Lithium (Li) | | mg/L | 0.0020 - 0.020 | <0.0020 |
| Dissolved Magnesium (Mg) | | mg/L | 0.050 - 0.50 | 0.267 |
| Dissolved Manganese (Mn) | | mg/L | 0.0010 - 0.010 | 0.0475 |
| Dissolved Mercury (Hg) | 0.00025 | mg/L | 0.0000019 - 0.0000020 | <0.0000020 |
| Dissolved Molybdenum (Mo) | 10 | mg/L | 0.0010 - 0.010 | 0.0151 |
| Dissolved Nickel (Ni) | 0.25 | mg/L | 0.0010 - 0.010 | 0.0027 |
| Dissolved Potassium (K) | | mg/L | 0.050 - 0.50 | 1 |
| Dissolved Selenium (Se) | 0.02 | mg/L | 0.00010 - 0.0010 | 0.00023 |
| Dissolved Silicon (Si) | | mg/L | 0.10 - 1.0 | 1.86 |
| Dissolved Silver (Ag) | 0.0005 | mg/L | 0.000020 - 0.00020 | <0.000020 |
| Dissolved Sodium (Na) | | mg/L | 0.050 - 0.50 | 213 |
| Dissolved Strontium (Sr) | | mg/L | 0.0010 - 0.010 | 0.0959 |
| Dissolved Sulphur (S) | | mg/L | 3.0 - 30 | 26.6 |
| Dissolved Thallium (Tl) | 0.003 | mg/L | 0.000010 - 0.00010 | <0.000010 |
| Dissolved Tin (Sn) | | mg/L | 0.0050 - 0.050 | <0.0050 |
| Dissolved Titanium (Ti) | 1 | mg/L | 0.0050 - 0.050 | <0.0050 |
| Dissolved Uranium (U) | 0.085 | mg/L | 0.00010 - 0.0010 | 0.00637 |
| Dissolved Vanadium (V) | | mg/L | 0.0050 - 0.050 | <0.0050 |
| Dissolved Zinc (Zn) | 0.075 | mg/L | 0.0050 - 0.050 | <0.0050 |
| Dissolved Zirconium (Zr) | | mg/L | 0.00010 - 0.0010 | 0.00016 |

| Legend | |
|---|---|
| Exceeds one Criteria | Result |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-situ Groundwater**) |

# TABLE 172
# 2019-20 Annual Report

| Total Metals - Water | | Sample Number | 1M2N-03APR19-M | 1M2N-21MAY19-M | 1M2N-10SEPT19-M | 1M2N-18NOV19-M | 1M2N-4DEC19-M | 1M2N-27JAN20-M |
|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N |
| | | | B925186 / VM3019 | B938559 / VS4002 | B977214 / WM2950 | B9A0774 / WZ3620 | B9A5254 / XB7443 | C006011 / XH4200 |
| | | Date | 2019-04-03 | 2019-05-21 | 2019-09-10 | 2019-11-18 | 2019-12-04 | 2020-01-27 |
| ***Parameter*** | ***Units*** | ***RDL*** | | | | | | |
| | | | | | | | | |
| Total Hardness (CaCO3) | mg/L | 0.5 | 492 | 253 | 226 | 251 | 271 | 241 |
| Total Aluminum (Al) | mg/L | 0.0030 - 0.0060 | <0.0060 | 0.0034 | 0.0048 | 0.024 | <0.0030 | 0.014 |
| Total Antimony (Sb) | mg/L | 0.00050 - 0.0010 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Arsenic (As) | mg/L | 0.00010 - 0.00020 | 0.0102 | 0.00907 | 0.00937 | 0.0239 | 0.0104 | 0.0127 |
| Total Barium (Ba) | mg/L | 0.0010 - 0.0020 | 0.0269 | 0.0238 | 0.0302 | 0.0522 | 0.0318 | 0.0365 |
| Total Beryllium (Be) | mg/L | 0.00010 - 0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Bismuth (Bi) | mg/L | 0.0010 - 0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Boron (B) | mg/L | 0.050 - 0.10 | 1.19 | 1.25 | 0.908 | 1 | 0.94 | 0.919 |
| Total Cadmium (Cd) | mg/L | 0.000010 - 0.000020 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Calcium (Ca) | mg/L | 0.050 - 0.10 | 170 | 87.4 | 78.4 | 86.5 | 93.3 | 84.1 |
| Total Chromium (Cr) | mg/L | 0.0010 - 0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Cobalt (Co) | mg/L | 0.00020 - 0.00040 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Total Copper (Cu) | mg/L | 0.00050 - 0.0010 | 0.0027 | 0.00266 | 0.00104 | <0.00050 | <0.00050 | 0.00054 |
| Total Iron (Fe) | mg/L | 0.010 - 0.020 | 6.13 | 2.75 | 2.11 | 2.27 | 2.57 | 2.28 |
| Total Lead (Pb) | mg/L | 0.00020 - 0.00040 | <0.00040 | <0.00020 | <0.00020 | 0.00087 | <0.00020 | 0.00107 |
| Total Lithium (Li) | mg/L | 0.0020 - 0.0040 | 0.0152 | 0.009 | 0.012 | 0.0173 | 0.0114 | 0.0126 |
| Total Magnesium (Mg) | mg/L | 0.050 - 0.10 | 16.4 | 8.32 | 7.37 | 8.58 | 9.32 | 7.6 |
| Total Manganese (Mn) | mg/L | 0.0010 - 0.0020 | 0.628 | 0.297 | 0.217 | 0.235 | 0.275 | 0.222 |
| Total Mercury (Hg) | mg/L | 0.0000019 - 0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 |
| Total Molybdenum (Mo) | mg/L | 0.0010 - 0.0020 | <0.0020 | 0.0015 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Nickel (Ni) | mg/L | 0.0010 - 0.0020 | <0.0020 | <0.0010 | <0.0010 | 0.0026 | <0.0010 | <0.0010 |
| Total Potassium (K) | mg/L | 0.050 - 0.10 | 6.01 | 4.39 | 4.44 | 4.4 | 4.38 | 3.88 |
| Total Selenium (Se) | mg/L | 0.00010 - 0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Silicon (Si) | mg/L | 0.10 - 0.20 | 4.02 | 3.48 | 3.45 | 3.53 | 3.46 | 3.66 |
| Total Silver (Ag) | mg/L | 0.000020 - 0.000040 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Total Sodium (Na) | mg/L | 0.050 - 0.10 | 421 | 342 | 315 | 299 | 304 | 257 |
| Total Strontium (Sr) | mg/L | 0.0010 - 0.0020 | 1.73 | 0.84 | 0.897 | 0.939 | 1.01 | 0.857 |
| Total Sulphur (S) | mg/L | 3.0 - 6.0 | 326 | 151 | 132 | 147 | 160 | 132 |
| Total Thallium (Tl) | mg/L | 0.000010 - 0.000020 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Tin (Sn) | mg/L | 0.0050 - 0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Titanium (Ti) | mg/L | 0.0050 - 0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Uranium (U) | mg/L | 0.00010 - 0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Vanadium (V) | mg/L | 0.0050 - 0.010 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Zinc (Zn) | mg/L | 0.0050 - 0.010 | <0.010 | <0.0050 | 0.0105 | 0.0105 | <0.0050 | 0.0221 |
| Total Zirconium (Zr) | mg/L | 0.00010 - 0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |

# TABLE 173
# 2019-20 Annual Report

| Total Metals - Water | | 1M2N-26FEB20-R | 1M2N-26FEB20-M | 1M2N-25MAR20-M | 3M2N-4SEPT19-M | 3M2N-4MAR20-M | 5M#2-03APR19-M | 5M#2-21MAY19-M |
|---|---|---|---|---|---|---|---|---|
| | | 1M2N | 1M2N | 1M2N | 3M2N | 3M2N | 5M#2 | 5M#2 |
| | | C014787 / XL8434 | C014787 / XL8435 | C021848 / XP1219 | B974824 / WL1832 | C017120 / XM9234 | B925186 / VM3020 | B938559 / VS4003 |
| | | 2020-02-26 | 2020-02-26 | 2020-03-25 | 2019-09-04 | 2020-03-04 | 2019-04-03 | 2019-05-21 |
| ***Parameter*** | ***Units*** | | | | | | | |
| | | | | | | | | |
| Total Hardness (CaCO3) | mg/L | 330 | 355 | 473 | 474 | 337 | 145 | 162 |
| Total Aluminum (Al) | mg/L | 0.008 | 0.0079 | 0.0335 | 0.0098 | 0.0074 | <0.0030 | <0.0030 |
| Total Antimony (Sb) | mg/L | <0.00050 | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Arsenic (As) | mg/L | 0.00579 | 0.00595 | 0.00849 | 0.00039 | 0.00073 | 0.00664 | 0.00667 |
| Total Barium (Ba) | mg/L | 0.0313 | 0.0324 | 0.0368 | 0.0143 | 0.0144 | 0.0274 | 0.0294 |
| Total Beryllium (Be) | mg/L | <0.00010 | <0.00010 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Bismuth (Bi) | mg/L | <0.0010 | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Boron (B) | mg/L | 0.959 | 0.989 | 1.04 | 0.782 | 0.716 | 0.887 | 0.926 |
| Total Cadmium (Cd) | mg/L | 0.00002 | 0.000016 | 0.000022 | 0.000013 | 0.00001 | <0.000010 | <0.000010 |
| Total Calcium (Ca) | mg/L | 113 | 122 | 164 | 160 | 110 | 50.2 | 57.6 |
| Total Chromium (Cr) | mg/L | <0.0010 | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Cobalt (Co) | mg/L | <0.00020 | <0.00020 | <0.00040 | 0.00355 | 0.00078 | 0.00024 | <0.00020 |
| Total Copper (Cu) | mg/L | 0.0051 | 0.00582 | 0.0064 | 0.00101 | 0.00065 | 0.00075 | <0.00050 |
| Total Iron (Fe) | mg/L | 3.34 | 3.55 | 5.22 | 0.106 | 0.189 | 0.438 | 0.495 |
| Total Lead (Pb) | mg/L | 0.00442 | 0.0052 | 0.00578 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Total Lithium (Li) | mg/L | 0.0119 | 0.0121 | 0.0128 | 0.0183 | 0.0152 | 0.0069 | 0.0044 |
| Total Magnesium (Mg) | mg/L | 11.4 | 12.1 | 15.4 | 18.3 | 14.8 | 4.69 | 4.45 |
| Total Manganese (Mn) | mg/L | 0.359 | 0.381 | 0.521 | 0.391 | 0.18 | 0.0961 | 0.0969 |
| Total Mercury (Hg) | mg/L | <0.0000019 | <0.0000019 | <0.0000019 | <0.0000020 | <0.0000019 | <0.0000020 | <0.0000020 |
| Total Molybdenum (Mo) | mg/L | <0.0010 | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Nickel (Ni) | mg/L | <0.0010 | <0.0010 | <0.0020 | 0.0044 | 0.0013 | <0.0010 | <0.0010 |
| Total Potassium (K) | mg/L | 5.05 | 5.44 | 5.93 | 3.58 | 3.19 | 2.61 | 2.55 |
| Total Selenium (Se) | mg/L | <0.00010 | <0.00010 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Silicon (Si) | mg/L | 4.06 | 4.14 | 4.12 | 3.49 | 3.14 | 2.82 | 3.49 |
| Total Silver (Ag) | mg/L | <0.000020 | <0.000020 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Total Sodium (Na) | mg/L | 344 | 365 | 412 | 335 | 292 | 256 | 254 |
| Total Strontium (Sr) | mg/L | 1.08 | 1.1 | 1.72 | 1.29 | 1.12 | 0.564 | 0.557 |
| Total Sulphur (S) | mg/L | 215 | 233 | 277 | 252 | 207 | 72 | 61.5 |
| Total Thallium (Tl) | mg/L | <0.000010 | <0.000010 | <0.000020 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Tin (Sn) | mg/L | <0.0050 | <0.0050 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Titanium (Ti) | mg/L | <0.0050 | <0.0050 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Uranium (U) | mg/L | <0.00010 | <0.00010 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Vanadium (V) | mg/L | <0.0050 | <0.0050 | <0.010 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Zinc (Zn) | mg/L | **0.346** | **0.348** | **0.444** | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Zirconium (Zr) | mg/L | <0.00010 | <0.00010 | <0.00020 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |

# TABLE 174
# 2019-20 Annual Report

| Total Metals - Water | | 5M#2-10SEPT19-M | 5M#2-18NOV19-M | 5M#2-4DEC19-M | 5M#2-27JAN20-R | 5M#2-27JAN20-M | 5SMW-10DEC19-M | 5SMW-27JAN20-M |
|---|---|---|---|---|---|---|---|---|
| | | 5M#2 | 5M#2 | 5M#2 | 5M#2 | 5M#2 | 5SMW | 5SMW |
| | | B977214 / WM2951 | B9A0774 / WZ3621 | B9A5254 / XB7444 | C006011 / XH4199 | C006011 / XH4201 | B9A6860 / XC5936 | C006011 / XH4202 |
| | | 2019-09-10 | 2019-11-18 | 2019-12-04 | 2020-01-27 | 2020-01-27 | 2019-12-10 | 2020-01-27 |
| ***Parameter*** | ***Units*** | | | | | | | |
| | | | | | | | | |
| Total Hardness (CaCO3) | mg/L | 161 | 174 | 174 | 165 | 171 | 167 | 152 |
| Total Aluminum (Al) | mg/L | 0.0094 | 0.0043 | <0.0030 | <0.0030 | <0.0030 | 0.0194 | 0.0185 |
| Total Antimony (Sb) | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Arsenic (As) | mg/L | 0.0087 | 0.0047 | 0.00523 | 0.00447 | 0.00465 | 0.00547 | 0.00808 |
| Total Barium (Ba) | mg/L | 0.0317 | 0.0353 | 0.0345 | 0.0328 | 0.0333 | 0.042 | 0.0385 |
| Total Beryllium (Be) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Bismuth (Bi) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Boron (B) | mg/L | 0.736 | 0.798 | 0.805 | 0.775 | 0.775 | 0.953 | 0.922 |
| Total Cadmium (Cd) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Calcium (Ca) | mg/L | 56.7 | 62 | 60.7 | 58.2 | 61 | 54 | 48.3 |
| Total Chromium (Cr) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Cobalt (Co) | mg/L | <0.00020 | <0.00020 | 0.00022 | <0.00020 | <0.00020 | 0.00055 | 0.00156 |
| Total Copper (Cu) | mg/L | 0.00074 | 0.00071 | 0.00051 | 0.00135 | 0.00077 | 0.00141 | 0.00193 |
| Total Iron (Fe) | mg/L | 0.604 | 0.517 | 0.493 | 0.361 | 0.633 | 3.29 | 2.44 |
| Total Lead (Pb) | mg/L | 0.00033 | 0.00063 | 0.00031 | 0.00031 | 0.0004 | <0.00020 | <0.00020 |
| Total Lithium (Li) | mg/L | 0.0066 | 0.004 | 0.0062 | 0.0042 | 0.0041 | 0.0141 | 0.0138 |
| Total Magnesium (Mg) | mg/L | 4.64 | 4.66 | 5.4 | 4.64 | 4.5 | 7.72 | 7.62 |
| Total Manganese (Mn) | mg/L | 0.0957 | 0.111 | 0.113 | 0.0947 | 0.0929 | 0.139 | 0.135 |
| Total Mercury (Hg) | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | - | <0.0000020 |
| Total Molybdenum (Mo) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0025 | 0.0021 |
| Total Nickel (Ni) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0012 | 0.0024 |
| Total Potassium (K) | mg/L | 2.68 | 2.62 | 2.72 | 2.48 | 2.47 | 5.02 | 4.69 |
| Total Selenium (Se) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Silicon (Si) | mg/L | 3.15 | 3.41 | 3.31 | 3.17 | 3.32 | 3.06 | 2.93 |
| Total Silver (Ag) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Total Sodium (Na) | mg/L | 268 | 252 | 248 | 241 | 236 | 233 | 221 |
| Total Strontium (Sr) | mg/L | 0.641 | 0.639 | 0.665 | 0.628 | 0.632 | 0.8 | 0.72 |
| Total Sulphur (S) | mg/L | 56.9 | 53.2 | 58.4 | 54.1 | 54.6 | 87.2 | 86.7 |
| Total Thallium (Tl) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Tin (Sn) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Titanium (Ti) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Uranium (U) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Vanadium (V) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Zinc (Zn) | mg/L | <0.0050 | 0.0061 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Zirconium (Zr) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |

# TABLE 175
# 2019-20 Annual Report

| Total Metals - Water | | 7SA5-8APR19-M | 7SA5-6MAY19-M | 7SA5-6MAY19-M | 7SA5-28JAN20-M | 7SA5-4MAR20-M | 7SPS-26FEB20-M | 1M7S-03APR19-M |
|---|---|---|---|---|---|---|---|---|
| | | 7SA5 | 7SA5 | 7SA5 | 7SA5 | 7SA5 | 7SPS | 1M7S |
| | | B926344 / VM8336 | B934686 / VQ5916 | B934686 / VQ5917 | C006011 / XH4203 | C017120 / XM9233 | C014787 / XL8436 | B925186 / VM3018 |
| | | 2019-04-08 | 2019-05-06 | 2019-05-06 | 2020-01-28 | 2020-03-04 | 2020-02-26 | 2019-04-03 |
| ***Parameter*** | ***Units*** | | | | | | | |
| | | | | | | | | |
| Total Hardness (CaCO3) | mg/L | 154 | 114 | 130 | 138 | 137 | 285 | 369 |
| Total Aluminum (Al) | mg/L | 1.2 | 0.261 | 0.0044 | 0.0155 | 0.0634 | 0.125 | 0.214 |
| Total Antimony (Sb) | mg/L | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | 0.00086 |
| Total Arsenic (As) | mg/L | 0.221 | 0.334 | 0.309 | 0.27 | 0.262 | 0.00194 | 0.0198 |
| Total Barium (Ba) | mg/L | 0.202 | 0.173 | 0.526 | 0.408 | 0.42 | 0.0152 | 0.065 |
| Total Beryllium (Be) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Bismuth (Bi) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Boron (B) | mg/L | 0.585 | 0.459 | 0.459 | 0.476 | 0.47 | 0.056 | 0.434 |
| Total Cadmium (Cd) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000015 | <0.000010 |
| Total Calcium (Ca) | mg/L | 47.5 | 34.4 | 40.7 | 42.2 | 42.2 | 81.8 | 109 |
| Total Chromium (Cr) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Cobalt (Co) | mg/L | 0.00128 | <0.00020 | <0.00020 | <0.00020 | 0.00034 | 0.00239 | 0.00385 |
| Total Copper (Cu) | mg/L | 0.00219 | 0.00054 | <0.00050 | <0.00050 | 0.00069 | 0.00135 | 0.00227 |
| Total Iron (Fe) | mg/L | 0.908 | 0.4 | 0.178 | 0.099 | 0.18 | 4.9 | 1.93 |
| Total Lead (Pb) | mg/L | 0.00024 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | 0.00109 |
| Total Lithium (Li) | mg/L | 0.0474 | 0.0379 | 0.0399 | 0.0419 | 0.0425 | <0.0020 | 0.0367 |
| Total Magnesium (Mg) | mg/L | 8.46 | 6.87 | 6.81 | 7.82 | 7.8 | 19.5 | 23.7 |
| Total Manganese (Mn) | mg/L | 0.0518 | 0.0232 | 0.0318 | 0.0216 | 0.0224 | 0.23 | 0.264 |
| Total Mercury (Hg) | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 | <0.0000019 | <0.0000020 |
| Total Molybdenum (Mo) | mg/L | 0.0085 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0043 |
| Total Nickel (Ni) | mg/L | 0.0021 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.005 | 0.0125 |
| Total Potassium (K) | mg/L | 2.96 | 2.14 | 2.42 | 2.18 | 2.18 | 0.998 | 3.02 |
| Total Selenium (Se) | mg/L | 0.00012 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Total Silicon (Si) | mg/L | 6.69 | 4.7 | 4.41 | 4.68 | 4.83 | 5.25 | 3.69 |
| Total Silver (Ag) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Total Sodium (Na) | mg/L | 26.9 | 21.6 | 20.8 | 21.2 | 20.7 | 7.46 | 24.1 |
| Total Strontium (Sr) | mg/L | 0.513 | 0.468 | 0.494 | 0.5 | 0.478 | 0.276 | 0.797 |
| Total Sulphur (S) | mg/L | 17 | <3.0 | <3.0 | 6.4 | 6.4 | 72.8 | 103 |
| Total Thallium (Tl) | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Total Tin (Sn) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Titanium (Ti) | mg/L | 0.028 | 0.0169 | <0.0050 | <0.0050 | <0.0050 | 0.005 | 0.0111 |
| Total Uranium (U) | mg/L | 0.00013 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00025 | 0.00022 |
| Total Vanadium (V) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Zinc (Zn) | mg/L | 0.0065 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0133 | 0.0066 |
| Total Zirconium (Zr) | mg/L | 0.00024 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |

# TABLE 176
# 2019-20 Annual Report

| Total Metals - Water | | 1M7S-21MAY19-M | 1M7S-10SEPT19-M | 1M7S-4DEC19-M | 1M7S-27JAN20-M | 1M7S-26FEB20-M | 1M7SA5-02MAR20-M | QU0810-10-DEC19-M |
|---|---|---|---|---|---|---|---|---|
| | | 1M7S | 1M7S | 1M7S | 1M7S | 1M7S | 1M7SA5 | QU0810 |
| | | B938559 / VS4001 | B977214 / WM2949 | B9A5254 / XB7445 | C006011 / XH4204 | C014787 / XL8437 | C015991 / XM4295 | B9A6860 / XC5932 |
| | | 2019-05-21 | 2019-09-10 | 2019-12-04 | 2020-01-27 | 2020-02-26 | 2020-03-02 | 2019-12-10 |
| ***Parameter*** | ***Units*** | | | | | | | |
| | | | | | | | | |
| Total Hardness (CaCO3) | mg/L | 222 | 448 | 356 | 163 | 354 | 332 | 171 |
| Total Aluminum (Al) | mg/L | 0.0517 | 0.565 | 0.3 | 0.512 | 0.111 | 0.239 | 4.57 |
| Total Antimony (Sb) | mg/L | 0.00083 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Total Arsenic (As) | mg/L | 0.067 | 0.00424 | 0.00192 | 0.00222 | 0.0177 | 0.0164 | 0.00717 |
| Total Barium (Ba) | mg/L | 0.139 | 0.0849 | 0.0154 | 0.0104 | 0.0416 | 0.0376 | 0.181 |
| Total Beryllium (Be) | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00025 |
| Total Bismuth (Bi) | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Boron (B) | mg/L | 0.561 | 0.155 | 0.063 | 0.062 | 0.159 | 0.141 | 0.204 |
| Total Cadmium (Cd) | mg/L | <0.000010 | 0.000029 | 0.000065 | 0.000028 | 0.000015 | 0.000022 | 0.000165 |
| Total Calcium (Ca) | mg/L | 66.5 | 136 | 97.6 | 47.9 | 106 | 97 | 50.4 |
| Total Chromium (Cr) | mg/L | <0.0010 | 0.001 | 0.0011 | 0.0014 | <0.0010 | <0.0010 | 0.0054 |
| Total Cobalt (Co) | mg/L | 0.00143 | 0.00597 | 0.0122 | 0.00407 | 0.00251 | 0.00327 | 0.00894 |
| Total Copper (Cu) | mg/L | 0.00172 | 0.00402 | 0.00516 | 0.00942 | 0.00137 | 0.0169 | 0.0223 |
| Total Iron (Fe) | mg/L | 2.53 | 2.44 | 21 | 6.13 | 4.16 | 5.17 | 11.2 |
| Total Lead (Pb) | mg/L | 0.00252 | 0.00041 | <0.00020 | 0.00034 | <0.00020 | 0.00097 | 0.00406 |
| Total Lithium (Li) | mg/L | 0.0419 | 0.0059 | 0.0031 | <0.0020 | 0.0119 | 0.0106 | 0.0036 |
| Total Magnesium (Mg) | mg/L | 13.5 | 26.6 | 27.3 | 10.6 | 22 | 21.7 | 10.9 |
| Total Manganese (Mn) | mg/L | 0.0927 | 0.394 | 0.576 | 0.204 | 0.229 | 0.236 | 0.294 |
| Total Mercury (Hg) | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000022 | <0.0000019 | <0.0000019 | - |
| Total Molybdenum (Mo) | mg/L | 0.0052 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Total Nickel (Ni) | mg/L | 0.0125 | 0.0126 | 0.0212 | 0.0074 | 0.0057 | 0.0081 | 0.0123 |
| Total Potassium (K) | mg/L | 2.89 | 2.63 | 0.983 | 0.611 | 1.43 | 1.45 | 3.25 |
| Total Selenium (Se) | mg/L | <0.00010 | 0.00026 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.0003 |
| Total Silicon (Si) | mg/L | 4.56 | 4.41 | 6 | 4.81 | 5.04 | 4.85 | 12.1 |
| Total Silver (Ag) | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | 0.000124 |
| Total Sodium (Na) | mg/L | 26 | 17.3 | 8.78 | 3.3 | 10.7 | 9.47 | 3.75 |
| Total Strontium (Sr) | mg/L | 0.554 | 0.618 | 0.377 | 0.171 | 0.478 | 0.431 | 0.421 |
| Total Sulphur (S) | mg/L | 40.8 | 133 | 109 | 39.6 | 93.2 | 94 | 3.6 |
| Total Thallium (Tl) | mg/L | <0.000010 | 0.000013 | 0.00001 | <0.000010 | <0.000010 | <0.000010 | 0.000117 |
| Total Tin (Sn) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Total Titanium (Ti) | mg/L | <0.0050 | 0.0389 | <0.0050 | 0.0167 | <0.0050 | 0.0107 | 0.159 |
| Total Uranium (U) | mg/L | 0.00013 | 0.00014 | 0.00028 | 0.00016 | 0.00024 | 0.00022 | 0.00072 |
| Total Vanadium (V) | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | 0.0128 |
| Total Zinc (Zn) | mg/L | 0.0653 | 0.0081 | 0.0529 | 0.0411 | 0.0143 | 0.0739 | 0.0232 |
| Total Zirconium (Zr) | mg/L | <0.00010 | 0.00024 | <0.00010 | 0.00014 | <0.00010 | <0.00010 | 0.00277 |

# TABLE 177
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| Inorganic - Groundwater | | | | 1M2N-03APR19-M | 1M2N-21MAY19-M | 1M2N-10SEPT19-M | 1M2N-18NOV19-M | 1M2N-4DEC19-M | 1M2N-27JAN20-M | 1M2N-26FEB20-R | 1M2N-26FEB20-M | 1M2N-25MAR20-M | 3M2N-4SEPT19-M | 3M2N-4MAR20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sample Number** | | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 1M2N | 3M2N | 3M2N |
| | | **Lab Report / Lab Sample** | | B925186 / VM3019 | B938559 / VS4002 | B977214 / WM2950 | B9A0774 / WZ3620 | B9A5254 / XB7443 | C006011 / XH4200 | C014787 / XL8434 | C014787 / XL8435 | C021848 / XP1219 | B974824 / WL1832 | C017120 / XM9234 |
| | | **Date** | | 2019-04-03 | 2019-05-21 | 2019-09-10 | 2019-11-18 | 2019-12-04 | 2020-01-27 | 2020-02-26 | 2020-02-26 | 2020-03-25 | 2019-09-04 | 2020-03-04 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | 8.16 | 7.51 | 7.51 | 7.67 | 7.6 | 7.67 | 7.67 | 7.67 | 7.82 | 7.32 | 7.32 |
| Conductivity | | Cond | | 1987 | 1994 | 1994 | 1787 | 1794 | 1529 | 2.01 | 2.01 | 1774 | 2.22 | 2.22 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | 5.5 | - | - | - | - | - | - | - | - | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 484 | 491 | - | - | - | - | - | - | - | - | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 590 | 585 | - | - | - | - | - | - | - | - | - |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | 6.6 | - | - | - | - | - | - | - | - | - |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | - | - | - | - | - | - | - | - | - |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | 36.5 | <1.0 | <1.0 | 10.9 | 4.7 | 7.9 | 4.2 | 4.2 | 12.1 | 14.9 | 4.2 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | 20 | 51 | - | - | - | - | - | - | - | - | - |
| Fluoride (F) | 2 | mg/L | 0.020 | 0.13 | 0.16 | 0.21 | - | - | - | - | - | - | - | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 994 | 444 | - | - | - | - | - | - | - | - | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.42 | 0.296 | - | - | - | 0.285 | 0.357 | 0.35 | 0.37 | - | 0.163 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | <0.020 | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | 0.13 | - | 0.024 | - | - | 0.054 | 0.15 | 0.25 | - | - | - |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | 0.14 | - | 0.025 | - | - | 0.057 | 0.16 | 0.26 | - | - | - |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | 0.0047 | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | 33 | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 4.0 | 19.2 | 6.8 | 10 | - | - | - | - | - | - | - | - |

**Legend**

**Exceeds one Criteria** Result

**Criteria 1** **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater**

# TABLE 178
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| Inorganic - Groundwater | | | | 5M#2-03APR19-M | 5M#2-21MAY19-M | 5M#2-10SEPT19-M | 5M#2-18NOV19-M | 5M#2-4DEC19-M | 5M#2-27JAN20-R | 5M#2-27JAN20-M | QU1013D-24SEPT19-M | QU1013D-24SEPT19-R | QU1013D-31DEC19-M | QU1013D-11MAR20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sample Number** | | 5M#2 | 5M#2 | 5M#2 | 5M#2 | 5M#2 | 5M#2 | 5M#2 | QU1013D | QU1013D | QU1013D | QU1013D |
| | | **Lab Report / Lab Sample** | | B925186 / VM3020 | B938559 / VS4003 | B977214 / WM2951 | B9A0774 / WZ3621 | B9A5254 / XB7444 | C006011 / XH4199 | C006011 / XH4201 | B981435 / WO5274 | B981435 / WO5275 | C001911 / XF3656 | C018589 / XN6759 |
| | | **Date** | | 2019-04-03 | 2019-05-21 | 2019-09-10 | 2019-11-18 | 2019-12-04 | 2020-01-27 | 2020-01-27 | 2019-09-24 | 2019-09-24 | 2019-12-31 | 2020-03-11 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | 7.68 | 7.51 | 7.34 | 7.34 | 7.54 | 7.77 | 7.77 | 7.43 | 7.43 | 7.67 | 7.17 |
| Conductivity | | Cond | | 976 | 1051 | 1274 | 1274 | 1306 | 1285 | 1285 | 1401 | 1401 | 2953.9 | 1548.2 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | 11.5 | 9.6 | - | - | - | - | - | - | - | - | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 520 | 518 | - | - | - | - | - | - | - | - | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 607 | 609 | - | - | - | - | - | - | - | - | - |
| Carbonate (CO3) | | mg/L | 1.0 | 13.8 | 11.5 | - | - | - | - | - | - | - | - | - |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | - | - | - | - | - | - | - | - | - |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | 1.1 | <1.0 | <1.0 | 9.1 | 2 | 4.1 | 3.3 | 8.6 | 7.5 | <1.0 | 8.3 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | 10 | 12 | - | - | - | - | - | - | - | - | - |
| Fluoride (F) | 2 | mg/L | 0.020 | 0.078 | 0.07 | 0.073 | - | - | - | - | 0.17 | 0.19 | - | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 214 | 187 | - | - | - | - | - | - | - | - | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.075 | 0.12 | - | - | - | 0.184 | 0.167 | 0.292 | 0.294 | 0.274 | 0.287 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | 0.0049 | - | 0.0028 | - | - | <0.0018 | <0.0018 | - | - | <0.0018 | 0.18 |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | 0.005 | - | 0.003 | - | - | <0.0020 | <0.0020 | - | - | <0.0020 | 0.2 |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | 0.0034 | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | 1.6 | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 4.0 | <4.0 | <4.0 | <4.0 | - | - | - | - | - | - | - | - |

**Legend**

**Exceeds one Criteria** **Result**

**Criteria 1** **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater**

# TABLE 179
# 2019-20 Annual Report

| Inorganic - Groundwater | | | | 1M7S-03APR19-M | 1M7S-21MAY19-M | 1M7S-10SEPT19-M | 1M7S-4DEC19-M | 1M7S-27JAN20-M | 1M7S-26FEB20-M | 1M7SA5-02MAR20-M | 7SA5-8APR19-M | 7SA5-6MAY19-M | 7SA5-6MAY19-M | 7SA5-28JAN20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sample Number** | | 1M7S | 1M7S | 1M7S | 1M7S | 1M7S | 1M7S | 1M7SA5 | 7SA5 | 7SA5 | 7SA5 | 7SA5 |
| | | **Lab Report / Lab Sample** | | B925186 / VM3018 | B938559 / VS4001 | B977214 / WM2949 | B9A5254 / XB7445 | C006011 / XH4204 | C014787 / XL8437 | C015991 / XM4295 | B926344 / VM8336 | B934686 / VQ5916 | B934686 / VQ5917 | C006011 / XH4203 |
| | | **Date** | | 2019-04-03 | 2019-05-21 | 2019-09-10 | 2019-12-04 | 2020-01-27 | 2020-02-26 | 2020-03-02 | 2019-04-08 | 2019-05-06 | 2019-05-06 | 2020-01-28 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | 7 | 7.83 | 7.24 | 7.41 | 7.21 | 7.67 | 6.97 | 7.94 | | | 7.58 |
| Conductivity | | Cond | | 740 | 552 | 1631 | 851 | 391 | 2.01 | 764 | 471 | | | 267 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | <1.0 | - | - | - | - | - | <1.0 | <1.0 | <1.0 | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 144 | 155 | - | - | - | - | - | 164 | 155 | 184 | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 176 | 189 | - | - | - | - | - | 201 | 189 | 225 | - |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | <1.0 | - | - | - | - | - | <1.0 | <1.0 | <1.0 | - |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | - | - | - | - | - | <1.0 | <1.0 | <1.0 | - |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | 3.2 | <1.0 | 1.2 | 9.8 | 2.9 | 2.6 | 2.5 | <1.0 | <1.0 | <1.0 | <1.0 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | 17 | 7.1 | - | - | - | - | - | 3.4 | <1.0 | <1.0 | - |
| Fluoride (F) | 2 | mg/L | 0.020 | 0.37 | 0.5 | 0.095 | - | - | - | - | 0.57 | 0.59 | 0.44 | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 285 | 107 | - | - | - | - | - | 42.6 | 4.8 | 8 | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.147 | 0.238 | - | - | 0.212 | 0.184 | 0.162 | 0.334 | - | - | 0.275 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | <0.0019 | - | 0.0028 | - | <0.0018 | 0.0024 | - | - | - | - | - |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | <0.0020 | - | 0.003 | - | <0.0020 | 0.0025 | - | - | - | - | - |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | 0.0026 | - | - | - | - | - | - | 0.0213 | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | 3.5 | - | - | - | - | - | - | 9.4 | 11 | 0.7 | - |
| Total Suspended Solids | | mg/L | 4.0 | 14.8 | 8.4 | 30.8 | - | - | - | - | - | 9.6 | <4.0 | - |

**Legend**

| | |
|---|---|
| **Exceeds one Criteria** | **Result** |
| **Criteria 1** | **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater** |

# TABLE 180
# 2019-20 Annual Report

| Inorganic - Groundwater | | | | 7SA5-4MAR20-M | 7SPS-26FEB20-M | 242MP-15AUG19-M | 242MP-10DEC19-M | 242MP-10DEC19-R | 242MP-26FEB20-M | 242MP-26FEB20-R | 5SMW-10DEC19-M | 5SMW-27JAN20-M | MW001D-8AUG19-M | MW001D-29JAN20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Number | | 7SA5 | 7SPS | 242MP | 242MP | 242MP | 242MP | 242MP | 5SMW | 5SMW | MW001D | MW001D |
| | | Lab Report / Lab Sample | | C017120 / XM9233 | C014787 / XL8436 | B968040 / WH7274 | B9A6860 / XC5930 | B9A6860 / XC5931 | C014793 / XL8497 | C014793 / XL8498 | B9A6860 / XC5936 | C006011 / XH4202 | B966017 / WG8049 | C006723 / XH7507 |
| | | Date | | 2020-03-04 | 2020-02-26 | 2019-08-15 | 2019-12-10 | 2019-12-10 | 2020-02-26 | 2020-02-26 | 2019-12-10 | 2020-01-27 | 2019-08-08 | 2020-01-29 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | | 7.26 | 7.89 | 6.57 | 6.57 | 6.55 | 6.55 | 7.5 | 7.59 | 9.22 | 6.65 |
| Conductivity | | Cond | | | 815 | 300.1 | 216.2 | 216.2 | 201.3 | 201.3 | 1484 | 1254 | 246.4 | 2223.1 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Carbonate (CO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Hydroxide (OH) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | <1.0 | 3.4 | 1.6 | 12.8 | 23.8 | 3.6 | 3.6 | 13.9 | 7.3 | <1.0 | 24 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - | - | - |
| Fluoride (F) | 2 | mg/L | 0.020 | - | - | 0.1 | - | - | - | - | - | - | 0.12 | 0.032 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - | - | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.341 | 0.167 | 0.205 | 0.19 | 0.156 | 0.188 | 0.167 | 0.458 | 0.302 | 0.204 | 0.277 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | - | 0.0029 | 0.0078 | 0.0027 | 0.0032 | <0.0018 | <0.0018 | 0.027 | <0.0018 | 0.0096 | <0.0018 |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | - | 0.003 | 0.008 | 0.0029 | 0.0034 | <0.0020 | <0.0020 | 0.029 | <0.0020 | 0.01 | <0.0020 |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 4.0 | - | - | - | - | - | - | - | - | - | - | - |

**Legend**

| | |
|---|---|
| **Exceeds one Criteria** | **Result** |
| **Criteria 1** | **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater** |

# TABLE 181
# 2019-20 Annual Report

| Inorganic - Groundwater | | | | MW001S-29JAN20-M | MW006D-8AUG19-19-M | MW006D-12FEB20-M | MW006S-8AUG19-19-M | MW006S-29JAN20-M | MW002-15MAY19-M | MW002-15MAY19-R | MW002-27AUG19-M | MW002-5DEC19-M | MW002-5DEC19-R | MW002-25FEB20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sample Number** | | MW001S | MW006D | MW006D | MW006S | MW006S | MW002 | MW002 | MW002 | MW002 | MW002 | MW002 |
| | | **Lab Report / Lab Sample** | | C006723 / XH7508 | B966017 / WG8048 | C010630 / XJ8602 | B966017 / WG8047 | C006723 / XH7509 | B937289 / VR7889 | B937289 / VR7891 | B971660 / WJ5686 | B9A5258 / XB7475 | B9A5258 / XB7476 | C013628 / XL3505 |
| | | **Date** | | 2020-01-29 | 2019-08-08 | 2020-02-12 | 2019-08-08 | 2020-01-29 | 2019-05-15 | 2019-05-15 | 2019-08-27 | 2019-12-05 | 2019-12-05 | 2020-02-25 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | 6.42 | 8.83 | 7.59 | | 7.78 | 7.49 | 7.49 | 6.75 | 6.75 | 6.89 | 6.74 |
| Conductivity | | Cond | | 2317.9 | 126.4 | 1176 | | 2324.3 | 2550 | 2550 | 1977.1 | 1977.1 | 1924.4 | 2179 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | <1.0 | <1.0 | - | - | - | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | 258 | 265 | - | - | - | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | - | - | - | - | - | 315 | 323 | - | - | - | - |
| Carbonate (CO3) | | mg/L | 1.0 | - | - | - | - | - | <1.0 | <1.0 | - | - | - | - |
| Hydroxide (OH) | | mg/L | 1.0 | - | - | - | - | - | <1.0 | <1.0 | - | - | - | - |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | 31.4 | <1.0 | <1.0 | 3 | 2.1 | 10.3 | 12.6 | 13.6 | 12.7 | 10.5 | 13.6 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | - | - | - | - | - | 2.2 | 2 | - | - | - | - |
| Fluoride (F) | 2 | mg/L | 0.020 | <0.020 | 0.099 | - | 0.056 | 0.059 | 0.12 | 0.14 | 0.12 | 0.13 | 0.13 | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | - | - | - | - | - | 1300 | 1320 | - | - | - | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.47 | 0.295 | 0.181 | 0.293 | 0.336 | 0.196 | 0.2 | 0.232 | 0.224 | 0.234 | 0.253 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0019 | <0.0019 | <0.0018 | <0.0018 | <0.0018 | <0.0018 |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | - | <0.0020 | - | <0.0020 | - | <0.0020 | <0.0020 | <0.0020 | - | - | <0.0020 |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | <0.0018 | - | - | - | - | - | <0.0019 | <0.0019 | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | - | - | - | - | - | 52 | 51 | - | - | - | - |
| Total Suspended Solids | | mg/L | 4.0 | - | - | - | - | - | - | - | - | - | - | - |

**Legend**

**Exceeds one Criteria** **Result**

**Criteria 1** **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater**

# TABLE 182
# 2019-20 Annual Report

| Inorganic - Groundwater | | | | MW004-15MAY19-M | MW004-27AUG19-M | MW004-27AUG19-R | MW004-5DEC19-M | MW004-25FEB20-M | QU1109M-15AUG19-19-M | QU1109M-18DEC19-M | MW1223-16MAY19-M | QU0810-10-DEC19-M | QU0813A-31JUL19-M | QU0813A-26NOV19-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sample Number** | | MW004 | MW004 | MW004 | MW004 | MW004 | QU1109M | QU1109M | MW1223 | QU0810 | QU0813A | QU0813A |
| | | **Lab Report / Lab Sample** | | B937289 / VR7890 | B971660 / WJ5684 | B971660 / WJ5685 | B9A5258 / XB7477 | C013628 / XL3506 | B968040 / WH7273 | B9A9201 / XD8444 | B937753 / VS0188 | B9A6860 / XC5932 | B963465 / WF4676 | B9A2391 / XA2672 |
| | | **Date** | | 2019-05-15 | 2019-08-27 | 2019-08-27 | 2019-12-05 | 2020-02-25 | 2019-08-15 | 2019-12-18 | 2019-05-16 | 2019-12-10 | 2019-07-31 | 2019-11-26 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | 7.28 | 7.04 | 7.04 | 7.08 | 6.88 | 8.06 | 8.03 | 8 | 7.02 | 7.97 | 7.84 |
| Conductivity | | Cond | | 808.5 | 970.1 | 970.1 | 556.1 | 542.7 | 1302 | 2043.2 | 903 | 270.8 | 306.1 | 519.4 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | - | - | - | - | - | - | 12.4 | - | - | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 110 | - | - | - | - | - | - | 431 | - | - | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 134 | - | - | - | - | - | - | 496 | - | - | - |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | - | - | - | - | - | - | 14.9 | - | - | - |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | - | - | - | - | - | - | <1.0 | - | - | - |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | 1.8 | 4.6 | 4.4 | - | 1 | <1.0 | 4.3 | <1.0 | <1.0 | <1.0 | <1.0 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | <1.0 | - | - | - | - | - | - | 12 | - | - | - |
| Fluoride (F) | 2 | mg/L | 0.020 | 0.08 | 0.084 | 0.084 | 0.075 | - | 0.11 | - | 0.28 | - | 0.75 | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 280 | - | - | - | - | - | - | 128 | - | - | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.165 | 0.12 | 0.256 | - | 0.2 | 0.264 | 0.353 | 0.513 | 0.337 | 0.222 | 0.16 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | <0.0019 | 0.011 | 0.013 | - | <0.0018 | 0.014 | 0.048 | **0.06** | **0.083** | **0.19** | **0.079** |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | <0.0020 | 0.012 | 0.014 | - | <0.0020 | 0.015 | 0.051 | **0.064** | **0.089** | **0.2** | **0.084** |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | 0.44 | - | - | - | - | - | - | 1900 | - | - | - |
| Total Suspended Solids | | mg/L | 4.0 | - | - | - | - | - | - | - | - | - | - | - |

**Legend**

| | |
|---|---|
| **Exceeds one Criteria** | **Result** |
| **Criteria 1** | **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater** |

# TABLE 183
# 2019-20 Annual Report

| Inorganic - Groundwater | | | | QU0813A-26NOV19-R | QU0813A-10MAR20-M | QU0813A-10MAR20-R | QU0813B-26NOV19-M | QU0813B-10MAR20-M | QU1410-30APR19-M | QU1410-11SEPT19-M | QU1410-11SEPT19-R | QU1410-20NOV19-M | QU1410-20NOV19-R | QU1410-28JAN20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sample Number** | | QU0813A | QU0813A | QU0813A | QU0813B | QU0813B | QU1410 | QU1410 | QU1410 | QU1410 | QU1410 | QU1410 |
| | | **Lab Report / Lab Sample** | | B9A2391 / XA2673 | C018595 / XN6782 | C018595 / XN6783 | B9A2391 / XA2674 | C018595 / XN6784 | B935103 / VQ7678 | B977217 / WM2963 | B977217 / WM2964 | B9A0774 / WZ3618 | B9A0774 / WZ3619 | C006018 / XH4261 |
| | | **Date** | | 2019-11-26 | 2020-03-10 | 2020-03-10 | 2019-11-26 | 2020-03-10 | 2019-04-30 | 2019-09-11 | 2019-09-11 | 2019-11-20 | 2019-11-20 | 2020-01-28 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | 7.84 | 7.97 | 7.97 | 7.97 | 7.97 | 6.55 | 6.58 | 6.58 | 6.72 | 6.72 | 6.73 |
| Conductivity | | Cond | | 519.4 | 304.6 | 304.6 | 345.6 | 304.6 | 2306.9 | 2673.8 | 2673.8 | 3409.1 | 3409.1 | 2468 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | - | | - | - | - | <1.0 | - | - | - | - | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | 308 | - | - | - | - | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | - | - | - | - | - | 376 | - | - | - | - | - |
| Carbonate (CO3) | | mg/L | 1.0 | - | - | - | - | - | <1.0 | - | - | - | - | - |
| Hydroxide (OH) | | mg/L | 1.0 | - | - | - | - | - | <1.0 | - | - | - | - | - |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 12.8 | 12 | 14.5 | 19.1 | 22.3 | 22.2 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | - | - | - | - | - | 5.7 | - | - | - | - | - |
| Fluoride (F) | 2 | mg/L | 0.020 | - | - | - | - | - | 0.18 | - | - | - | - | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | - | - | - | - | - | 1770 | - | - | - | - | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.183 | 0.207 | 0.206 | 0.323 | 0.16 | - | 0.311 | 0.533 | 0.487 | 0.28 | - |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | **0.13** | **0.062** | **0.027** | **0.39** | **0.073** | <0.0019 | <0.0018 | <0.0018 | <0.0018 | <0.0018 | <0.0018 |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | **0.14** | **0.066** | **0.029** | **0.42** | **0.077** | <0.0020 | <0.0020 | <0.0020 | <0.0020 | <0.0020 | <0.0020 |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | - | - | - | - | - | 20 | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 4.0 | - | - | - | - | - | - | - | - | - | - | - |

**Legend**

| | |
|---|---|
| **Exceeds one Criteria** | **Result** |
| **Criteria 1** | **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater** |

# TABLE 184
# 2019-20 Annual Report

| Inorganic - Groundwater | | | | QU1410-28JAN20-R | QU1410-24FEB20-M | QU1410-24FEB20-R | QU1410-19MAR20-M | QU0821GD-3SEPT19-M | QU0821GD-3SEPT19-R | QU0821GD-27NOV19-M | QU0821GD-19FEB20-R | QU0821GD-19FEB20-M | QU0821GD-23MAY19-M | QU0821GS-23MAY19-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sample Number** | | QU1410 | QU1410 | QU1410 | QU1410 | QU0821GD | QU0821GD | QU0821GD | QU0821GD | QU0821GD | QU0821GD | QU0821GS |
| | | **Lab Report / Lab Sample** | | C006018 / XH4262 | C013626 / XL3498 | C013626 / XL3499 | C020553 / XO6010 | B974776 / WL1627 | B974776 / WL1629 | B9A2391 / XA2671 | C012293 / XK6352 | C012293 / XK6353 | B939562 / VS8836 | B939562 / VS8837 |
| | | **Date** | | 2020-01-28 | 2020-02-24 | 2020-02-24 | 2020-03-19 | 2019-09-03 | 2019-09-03 | 2019-11-27 | 2020-02-19 | 2020-02-19 | 2019-05-23 | 2019-05-23 |
| ***Parameter*** | ***Criteria [1]*** | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | 6.73 | 6.72 | 6.72 | 6.73 | 7.71 | 7.71 | 7.56 | 7.5 | 7.5 | | |
| Conductivity | | Cond | | 2468 | 2284.3 | 2284.3 | 2454.9 | 3275 | 3275 | 4120.3 | 465.3 | 465.3 | | |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | <1.0 | 3.6 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | 202 | 204 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | 247 | 240 |
| Carbonate (CO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | <1.0 | 4.3 |
| Hydroxide (OH) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | <1.0 | <1.0 |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | 21.6 | 15.8 | 16.7 | 32.4 | <1.0 | <1.0 | 2.6 | 7.7 | 8.8 | 2 | <1.0 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - | 1000 | 170 |
| Fluoride (F) | 2 | mg/L | 0.020 | - | - | - | - | 1.7 | 1.7 | - | - | - | 1.1 | 1.8 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - | <1.0 | <1.0 |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | 0.232 | 0.246 | 0.274 | - | - | 0.514 | 0.592 | 0.512 | 0.466 | 0.299 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | <0.0018 | <0.0018 | <0.0018 | 0.0061 | **0.022** | 0.012 | **0.052** | **0.081** | **0.08** | 0.0021 | 0.0035 |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | <0.0020 | <0.0020 | <0.0020 | 0.0065 | **0.024** | 0.013 | **0.055** | - | - | 0.002 | 0.004 |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | - | - | - | - | **0.086** | **0.085** | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | - | - | - | - | - | - | - | - | - | 5.4 | 2.8 |
| Total Suspended Solids | | mg/L | 4.0 | - | - | - | - | - | - | - | - | - | - | - |

**Legend**

| | |
|---|---|
| **Exceeds one Criteria** | **Result** |
| **Criteria 1** | **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater** |

# TABLE 185
# 2019-20 Annual Report

| Inorganic - Groundwater | | | | QU0821GS-3SEPT19-M | QU0821GS-27NOV19-M | QU0821GS-27NOV19-R | QU0821GS-19FEB20-M | QU1010D-30SEPT19-M | QU1010D-11DEC19-M | QU1010S-30SEPT19-M | QU1010S-30SEPT19-R | QU1010S-11DEC19-R | QU1010S-11DEC19-M | QU1011D-24MAR20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sample Number** | | QU0821GS | QU0821GS | QU0821GS | QU0821GS | QU1010D | QU1010D | QU1010S | QU1010S | QU1010S | QU1010S | QU1011D |
| | | **Lab Report / Lab Sample** | | B974776 / WL1628 | B9A2391 / XA2669 | B9A2391 / XA2670 | C012293 / XK6351 | B984272 / WP8750 | B9A6860 / XC5935 | B984272 / WP8751 | B984272 / WP8752 | B9A6860 / XC5933 | B9A6860 / XC5934 | C021848 / XP1218 |
| | | **Date** | | 2019-09-03 | 2019-11-27 | 2019-11-27 | 2020-02-19 | 2019-09-30 | 2019-12-11 | 2019-09-30 | 2019-09-30 | 2019-12-11 | 2019-12-11 | 2020-03-24 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | 7.81 | 7.98 | 7.98 | 8.11 | 7.16 | 7.32 | 7.95 | 7.95 | 8.03 | 8.03 | 7.39 |
| Conductivity | | Cond | | 678.2 | 721.1 | 721.1 | 768.1 | 8630 | 7578.1 | 251 | 251 | 232.2 | 232.2 | 1615 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Carbonate (CO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Hydroxide (OH) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | - |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | 5.7 | 18.7 | <1.0 | <1.0 | <1.0 | <1.0 | 1.4 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - | - | - |
| Fluoride (F) | 2 | mg/L | 0.020 | 0.93 | - | - | - | - | - | - | - | - | - | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - | - | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | 0.325 | 0.496 | 0.307 | 0.998 | 0.818 | 0.295 | 0.288 | 0.298 | 0.312 | 0.358 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | **0.055** | **0.048** | **0.038** | **0.071** | <0.018 | 0.0032 | **0.24** | **0.23** | **0.18** | **0.16** | **0.11** |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | **0.058** | **0.051** | **0.041** | - | <0.019 | 0.0034 | **0.26** | **0.25** | **0.19** | **0.17** | **0.12** |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | **0.075** | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 4.0 | - | - | - | - | - | - | - | - | - | - | - |

**Legend**

| | |
|---|---|
| **Exceeds one Criteria** | **Result** |
| **Criteria 1** | **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater** |

# TABLE 186
# 2019-20 Annual Report

| Inorganic - Groundwater | | | | QU1101-23DEC19-M | QU1101-23DEC19-R | QU1105D-16DEC19-M | QU1105D-12MAR20-M | QU1105S-16DEC19-M | QU1105S-16DEC19-R | QU1105S-12MAR20-M | QU1109S-15AUG19-19-M | QU1109S-18DEC19-M | QU1109S-18DEC19-R | QU1009D-27MAY19-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | **Sample Number** | | QU1101 | QU1101 | QU1105D | QU1105D | QU1105S | QU1105S | QU1105S | QU1109S | QU1109S | QU1109S | QU1009D |
| | | **Lab Report / Lab Sample** | | B9A9931 / XE3098 | B9A9931 / XE3099 | B9A8419 / XD4475 | C018847 / XN7875 | B9A8419 / XD4473 | B9A8419 / XD4474 | C018847 / XN7876 | B968040 / WH7272 | B9A9201 / XD8442 | B9A9201 / XD8443 | B940757 / VT5252 |
| | | **Date** | | 2019-12-23 | 2019-12-23 | 2019-12-16 | 2020-03-12 | 2019-12-16 | 2019-12-16 | 2020-03-12 | 2019-08-15 | 2019-12-18 | 2019-12-18 | 2019-05-27 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | |
| pH | | pH | | 6.82 | 6.82 | 7.77 | 7.35 | 7.15 | 7.15 | 7.59 | 8.06 | 8.03 | 8.03 | 7.22 |
| Conductivity | | Cond | | 4382.8 | 4382.8 | 3885 | 5519.1 | 515.5 | 515.5 | 558 | 1302 | 2043.2 | 2043.2 | 371.5 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | 177 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | 215 |
| Carbonate (CO3) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | - | - | - | - | - | - | - | - | - | - | <1.0 |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | 196 | 185 | <1.0 | <1.0 | <1.0 | 2 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - | - | - |
| Fluoride (F) | 2 | mg/L | 0.020 | 0.39 | 0.37 | - | - | - | - | - | 0.49 | - | - | 0.26 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - | - | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.525 | 0.505 | 0.592 | - | 0.196 | 0.209 | 0.237 | 0.337 | 0.41 | 0.383 | 0.136 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | <0.018 | <0.018 | **15** | **9.6** | **0.081** | **0.079** | **0.067** | **0.42** | **0.18** | **0.24** | **0.1** |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | <0.019 | <0.019 | **16** | **10** | **0.087** | **0.084** | **0.071** | **0.44** | **0.19** | **0.26** | **0.11** |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | - | - | - | - | - | - | - | - | - | - | 3.5 |
| Total Suspended Solids | | mg/L | 4.0 | - | - | - | - | - | - | - | - | - | - | - |

**Legend**

| | |
|---|---|
| **Exceeds one Criteria** | **Result** |
| **Criteria 1** | **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater** |

# TABLE 187
# 2019-20 Annual Report

| Inorganic - Groundwater | | | | QU1009S-27MAY19-M | QU1009S-27MAY19-R | QU1008D-18MAR20-M | QU1008D-18MAR20-R | QU1009D-5SEPT19-M | QU1009D-5SEPT19-R | QU1009S-5SEPT19-M | QU1136D-16MAR20-M | QU0810-27FEB20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Sample Number | | QU1009S | QU1009S | QU1008D | QU1008D | QU1009D | QU1009D | QU1009S | QU1136D | QU0810 |
| | | Lab Report / Lab Sample | | B940757 / VT5251 | B940757 / VT5253 | C020554 / XO6011 | C020554 / XO6012 | B974802 / WL1744 | B974802 / WL1745 | B974802 / WL1743 | C020041 / XO3450 | C014792 / XL8496 |
| | | Date | | 2019-05-27 | 2019-05-27 | 2020-03-18 | 2020-03-18 | 2019-09-05 | 2019-09-05 | 2019-09-05 | 2020-03-16 | 2020-02-27 |
| ***Parameter*** | ***Criteria [1]*** | ***Units*** | ***RDL*** | | | | | | | | | |
| pH | | pH | | 7.22 | 6.55 | 8.57 | 8.57 | 7.45 | 7.45 | 6.24 | 7.59 | 7.73 |
| Conductivity | | Cond | | 371.5 | 396.2 | 371 | 371 | 354 | 354 | 379.5 | 240.1 | 481.2 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | <1.0 | - | - | - | - | - | - | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 137 | 138 | - | - | - | - | - | - | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 167 | 169 | - | - | - | - | - | - | - |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | <1.0 | - | - | - | - | - | - | - |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | - | - | - | - | - | - | - |
| Acidity (pH 4.5) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Acidity (pH 8.3) | | mg/L | 1.0 | 3 | 3.8 | <1.0 | <1.0 | 3.2 | 2.9 | 16.6 | <1.0 | <1.0 |
| Bromide (Br) | | mg/L | | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - |
| Fluoride (F) | 2 | mg/L | 0.020 | 0.055 | 0.056 | - | - | - | - | - | - | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | - | - | - | - | - | - | - | - | - |
| Biochemical Oxygen Demand | | mg/L | | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | | mg/L | | - | - | - | - | - | - | - | - | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.108 | 0.096 | - | - | 0.23 | 0.221 | 0.178 | 0.18 | 0.198 |
| Nitrate plus Nitrite (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - |
| Total Organic Carbon (C) | | mg/L | | - | - | - | - | - | - | - | - | - |
| Total Oil and grease | | mg/L | | - | - | - | - | - | - | - | - | - |
| Total Sulphide | 0.0188 | mg/L | 0.0018 - 0.18 | 0.0087 | 0.0078 | **0.084** | **0.06** | **0.12** | **0.11** | 0.011 | 0.0085 | <0.0018 |
| Sulphide (as H2S) | 0.02 | mg/L | 0.0020 - 0.19 | 0.009 | 0.008 | **0.089** | **0.063** | **0.13** | **0.12** | 0.012 | 0.009 | <0.0020 |
| Total Sulphide (as H2S) | 0.02 | mg/L | 0.0018 - 0.0019 | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | | - | - | - | - | - | - | - | - | - |
| Turbidity | | NTU | 0.10 - 0.50 | 67 | 67 | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 4.0 | - | - | - | - | - | - | - | - | - |

**Legend**

| | |
|---|---|
| **Exceeds one Criteria** | **Result** |
| **Criteria 1** | **BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater** |

# TABLE 188
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | 1M2N-03APR19-M | 1M2N-10SEPT19-M | 1M2N-18NOV19-M | 1M2N-21MAY19-M | 1M2N-21MAY19-M Lab-Dup | 1M2N-25MAR20-M | 1M2N-25MAR20-M Lab-Dup | 1M2N-26FEB20-M | 1M2N-26FEB20-R | 1M2N-26FEB20-R Lab-Dup | 1M2N-27JAN20-M | 1M2N-27JAN20-M Lab-Dup |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | B925186 / VM3019 | B977214 / WM2950 | B9A0774 / WZ3620 | B938559 / VS4002 | B938559 / VS4002 | C021848 / XP1219 | C021848 / XP1219 | C014787 / XL8435 | C014787 / XL8434 | C014787 / XL8434 | C006011 / XH4200 | C006011 / XH4200 |
| | | Date | | 03-04-2019 | 10-09-2019 | 18-11-2019 | 21-05-2019 | 21-05-2019 | 25-03-2020 | 25-03-2020 | 26-02-2020 | 26-02-2020 | 26-02-2020 | 27-01-2020 | 27-01-2020 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | <0.0030 | - | - | - | - | - | - | - | - | - | - | - |
| pH | | pH | | 8.16 | 7.24 | 7.67 | 7.51 | 7.51 | 7.82 | 7.82 | 7.67 | 7.67 | 7.67 | 7.67 | 7.67 |
| Conductivity | | Cond | | 1987 | 1631 | 1787 | 1994 | 1994 | 1774 | 1774 | 2.01 | 2.01 | 2.01 | 1529 | 1529 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.21 | 0.13 | - | 0.16 | - | 0.16 | - | 0.12 | 0.11 | - | 0.066 | - |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | FIELD | FIELD | - | FIELD | - | FIELD | FIELD | - | FIELD | - |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | 0.46 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | 0.0066 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 1.1 | - | - | <0.50 | <0.50 | 0.85 | - | - | - | - | 1.6 | - |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | <0.25 | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | - | - | - | <0.0030 | - | <0.0030 | - | <0.0030 | <0.0030 | <0.0030 | <0.0030 | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | - | 41 | - | - | - | 11 | 11 | 11 | 11 | - | 13 | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | - | 340 | 290 | - | - | 720 | 670 | 560 | 550 | - | 380 | - |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | - | 6.4 | <1.0 | - | - | <1.0 | - | 6.8 | <1.0 | - | <1.0 | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | - | 460 | 420 | - | - | 490 | - | 480 | 480 | - | 420 | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | - | 540 | 520 | - | - | 590 | - | 570 | 590 | - | 510 | - |
| Carbonate (CO3) | | mg/L | 1.0 | - | 7.7 | <1.0 | - | - | <1.0 | - | 8.2 | <1.0 | - | <1.0 | - |
| Hydroxide (OH) | | mg/L | 1.0 | - | <1.0 | <1.0 | - | - | <1.0 | - | <1.0 | <1.0 | - | <1.0 | - |
| Turbidity | | NTU | 0.10 | - | - | 11 | - | - | 34 | - | 28 | 19 | 18 | 26 | - |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | - | - | - | - | - | 0.11 | - | 0.12 | 0.12 | - | 0.15 | 0.15 |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 189
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | 1M2N-4DEC19-M | 1M2N-4DEC19-M Lab-Dup | 1M7S-03APR19-M | 1M7S-03APR19-M Lab-Dup | 1M7S-10SEPT19-M | 1M7S-10SEPT19-M Lab-Dup | 1M7S-21MAY19-M | 1M7S-26FEB20-M | 1M7S-27JAN20-M | 1M7S-4DEC19-M | 1M7SA5-02MAR20-M | 242MP-10DEC19-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | B9A5254 / XB7443 | B9A5254 / XB7443 | B925186 / VM3018 | B925186 / VM3018 | B977214 / WM2949 | B977214 / WM2949 | B938559 / VS4001 | C014787 / XL8437 | C006011 / XH4204 | B9A5254 / XB7445 | C015991 / XM4295 | B9A6860 / XC5930 |
| | | Date | | 04-12-2019 | 04-12-2019 | 03-04-2019 | 03-04-2019 | 10-09-2019 | 10-09-2019 | 21-05-2019 | 26-02-2020 | 27-01-2020 | 04-12-2019 | 02-03-2020 | 10-12-2019 |
| *Parameter* | *Criteria* [1] | *Units* | *RDL* | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | 0.0031 | <0.0030 | - | - | - | - | - | - | - | - |
| pH | | pH | | 7.6 | 7.6 | 7 | 7 | 7.24 | 7.24 | 7.83 | 7.67 | 7.21 | 7.41 | 6.97 | 6.57 |
| Conductivity | | Cond | | 1794 | 1794 | 740 | 740 | 1631 | 1631 | 552 | 2.01 | 391 | 851 | 764 | 216.2 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.098 | 0.1 | 0.042 | - | 0.15 | - | 0.025 | 0.084 | 0.033 | 0.099 | 0.072 | <0.010 |
| Filter and HNO3 Preservation | | N/A | | FIELD | - | FIELD | - | FIELD | - | FIELD | FIELD | FIELD | FIELD | FIELD | FIELD |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | 0.148 | 0.15 | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | 0.0078 | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | - | - | 1.1 | - | - | - | 0.86 | - | 2.3 | - | 1.7 | 0.94 |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - | - | - | - | 23 | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | - | - | - | - | - | - | <0.0030 | <0.0030 | <0.0030 | - | <0.0030 | 0.01 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 21 | - | - | - | 7.2 | - | - | 1.5 | <1.0 | 1.2 | 1.6 | 1.6 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 490 | - | - | - | 380 | - | - | 230 | 140 | 350 | 240 | 40 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | - | - | - | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 420 | - | - | - | 58 | 58 | - | 110 | 49 | 50 | 94 | 90 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 510 | - | - | - | 71 | 70 | - | 130 | 59 | 62 | 110 | 110 |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | - | - | - | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | - | - | - | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Turbidity | | NTU | 0.10 | 30 | - | - | - | - | - | - | 37 | 29 | 200 | 40 | 110 |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | 0.14 | - | - | - | - | - | - | 0.094 | <0.050 | <0.050 | 0.099 | 0.096 |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 190
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | 242MP-10DEC19-R | 242MP-15AUG19-M | 24MP-26FEB20-M | 24MP-26FEB20-R | 3M2N-4SEPT19-M | 3M2N-4SEPT19-M Lab-Dup | 5M#2-03APR19-M | 5M#2-03APR19-M Lab-Dup | 5M#2-10SEPT19-M | 5M#2-18NOV19-M | 5M#2-21MAY19-M | 5M#2-27JAN20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | B9A6860 / XC5931 | B968040 / WH7274 | C014793 / XL8497 | C014793 / XL8498 | B974824 / WL1832 | B974824 / WL1832 | B925186 / VM3020 | B925186 / VM3020 | B977214 / WM2951 | B9A0774 / WZ3621 | B938559 / VS4003 | C006011 / XH4201 |
| | | Date | | 10-12-2019 | 15-08-2019 | 26-02-2020 | 26-02-2020 | 04-09-2019 | 04-09-2019 | 03-04-2019 | 03-04-2019 | 10-09-2019 | 18-11-2019 | 21-05-2019 | 27-01-2020 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | <0.0030 | - | - | - | - | - |
| pH | | pH | | 6.57 | 7.89 | 6.55 | 6.55 | 7.32 | 7.32 | 7.68 | 7.68 | 7.34 | 7.34 | 7.51 | 7.77 |
| Conductivity | | Cond | | 216.2 | 300.1 | 201.3 | 201.3 | 2.22 | 2.22 | 976 | 976 | 1274 | 1274 | 1051 | 1285 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | <0.010 | <0.010 | 0.011 | <0.010 | 0.15 | 0.16 | 0.038 | 0.034 | 0.04 | - | 0.034 | 0.024 |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | FIELD | FIELD | FIELD | - | FIELD | - | FIELD | FIELD | FIELD | FIELD |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | 0.074 | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | 0.0021 | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 0.54 | 1.2 | 0.57 | 0.55 | - | - | 1.2 | - | - | - | 0.92 | 1.2 |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | 3.2 | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | 0.011 | <0.0030 | <0.0030 | <0.0030 | - | - | - | - | - | - | <0.0030 | <0.0030 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | 0.15 | 0.15 | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 1.7 | <1.0 | <1.0 | <1.0 | 9.8 | - | - | - | 14 | - | - | 9.3 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 38 | 34 | 35 | 42 | 770 | - | - | - | 160 | 160 | - | 180 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | - | - | 11 | <1.0 | - | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 90 | 100 | 92 | 90 | 410 | - | - | - | 550 | 500 | - | 540 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 110 | 120 | 110 | 110 | 500 | - | - | - | 640 | 610 | - | 660 |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | - | - | 13 | <1.0 | - | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | - | - | <1.0 | <1.0 | - | <1.0 |
| Turbidity | | NTU | 0.10 | 83 | 120 | 92 | 110 | 5 | - | - | - | - | 2.8 | - | 3.1 |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | 0.1 | - | 0.085 | 0.084 | 0.14 | - | - | - | - | - | - | 0.059 |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | <0.0050 | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | <0.020 | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | <0.0030 | <0.0030 | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 191
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | 5M#2-27JAN20-R | 5M#2-4DEC19-M | 5SMW-10DEC19-M | 5SMW-10DEC19-M Lab-Dup | 5SW-27JAN20-M | 7SA5-28JAN20-M | 7SA5-8APR19-M | 7SPS-21MAY19-M | 7SPS-26FEB20-M | A55XCB-6MAY19-M | A5AA1-6MAY19-M | MW001D-12FEB20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | C006011 / XH4199 | B9A5254 / XB7444 | B9A6860 / XC5936 | B9A6860 / XC5936 | C006011 / XH4202 | C006011 / XH4203 | B926344 / VM8336 | B938559 / VS4004 | C014787 / XL8436 | B934686 / VQ5917 | B934686 / VQ5916 | C010630 / XJ8602 |
| | | Date | | 27-01-2020 | 04-12-2019 | 10-12-2019 | 10-12-2019 | 27-01-2020 | 28-01-2020 | 08-04-2019 | 21-05-2019 | 26-02-2020 | 06-05-2019 | 06-05-2019 | 12-02-2020 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |
| pH | | pH | | 7.77 | 7.54 | 7.5 | 7.5 | 7.59 | 7.58 | 7.94 | 7.26 | 7.28 | - | - | 8.01 |
| Conductivity | | Cond | | 1285 | 1306 | 1484 | 1484 | 1254 | 267 | 471 | 815 | 680 | | | |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.023 | 0.023 | 0.043 | 0.035 | 0.055 | <0.010 | 0.012 | 0.13 | 0.086 | <0.010 | 0.013 | <0.010 |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | FIELD | - | FIELD | FIELD | FIELD | FIELD | FIELD | FIELD | FIELD | FIELD |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | 0.401 | - | - | 0.413 | 0.223 | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 1.4 | - | 2.5 | - | 2.7 | 1.3 | 1.1 | 3.5 | - | 1.2 | 0.58 | 0.74 |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | 100 | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | <0.0030 | - | <0.0030 | - | 0.018 | 0.012 | - | <0.0030 | <0.0030 | 0.017 | 0.015 | 0.15 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | 0.4 | 0.31 | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 9.5 | 12 | 14 | - | 17 | 1.2 | - | - | 1.5 | - | - | <1.0 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 180 | 170 | 220 | - | 250 | 20 | - | - | 240 | - | - | 11 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | 10 | <1.0 | - | <1.0 | <1.0 | - | - | <1.0 | - | - | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 560 | 480 | 400 | - | 380 | 170 | - | - | 92 | - | - | 81 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 680 | 560 | 490 | - | 470 | 210 | - | - | 110 | - | - | 99 |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | 12 | <1.0 | - | <1.0 | <1.0 | - | - | <1.0 | - | - | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | - | - | <1.0 | - | - | <1.0 |
| Turbidity | | NTU | 0.10 | 2.2 | 2.5 | 11 | - | 8.2 | 2.6 | - | - | 32 | - | - | 0.4 |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | 0.059 | 0.064 | 0.2 | - | 0.21 | 0.5 | - | - | <0.050 | - | - | 0.1 |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 192
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | MW001D-29JAN20-M | MW001D-8AUG19-M | MW001S-29JAN20-M | MW002-15MAY19-M | MW002-15MAY19-M Lab-Dup | MW002-15MAY19-R | MW002-25FEB20-M | MW002-27AUG19-M | MW002-5DEC19-M | MW002-5DEC19-R | MW004-15MAY19-M | MW004-25FEB20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | C006723 / XH7507 | B966017 / WG8049 | C006723 / XH7508 | B937289 / VR7889 | B937289 / VR7889 | B937289 / VR7891 | C013628 / XL3505 | B971660 / WJ5686 | B9A5258 / XB7475 | B9A5258 / XB7476 | B937289 / VR7890 | C013628 / XL3506 |
| | | Date | | 29-01-2020 | 08-08-2019 | 29-01-2020 | 15-05-2019 | 15-05-2019 | 15-05-2019 | 25-02-2020 | 27-08-2019 | 05-12-2019 | 05-12-2019 | 15-05-2019 | 25-02-2020 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |
| pH | | pH | | 6.65 | 9.22 | 6.42 | 7.49 | 7.49 | 7.49 | 6.74 | 6.75 | 6.89 | 6.89 | 7.28 | 6.88 |
| Conductivity | | Cond | | 2223.1 | 246.4 | 2317.9 | 2550 | 2550 | 2550 | 2179 | 1977.1 | 1924.4 | 1924.4 | 808.5 | 542.7 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.055 | 0.014 | 0.069 | 0.3 | - | 0.29 | 0.24 | 0.19 | 0.18 | 0.16 | 0.042 | 0.045 |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | FIELD | FIELD | - | FIELD | FIELD | FIELD | FIELD | FIELD | FIELD | FIELD |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 2.6 | 2.4 | 3.7 | 0.57 | 0.54 | 0.66 | 0.77 | 0.96 | 0.91 | 0.9 | 1.8 | 1.5 |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | 0.027 | 0.13 | 0.0026 | <0.0030 | - | <0.0030 | 0.0014 | <0.0030 | - | - | <0.0030 | <0.0010 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | 0.16 | 0.15 | 0.29 | - | - | - | - | <0.015 | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 3.2 | 1.2 | 2.9 | - | - | - | 1.8 | 1.7 | 2.2 | 1.9 | - | <1.0 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 360 | 26 | 400 | - | - | - | **1300** | **1400** | 1200 | 1200 | - | 290 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | 1.8 | <1.0 | - | - | - | <1.0 | <1.0 | - | - | - | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 340 | 94 | 310 | - | - | - | 290 | 270 | - | - | - | 77 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 420 | 110 | 370 | - | - | - | 360 | 330 | - | - | - | 94 |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | 2.1 | <1.0 | - | - | - | <1.0 | <1.0 | - | - | - | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | - | - | - | <1.0 | <1.0 | - | - | - | <1.0 |
| Turbidity | | NTU | 0.10 | 7.7 | 22 | 0.85 | - | - | - | 49 | 51 | 39 | 31 | - | 0.96 |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | - | - | - | - | - | - | 0.14 | - | - | - | - | 0.068 |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 193
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | MW004-27AUG19-M | MW004-27AUG19-R | MW004-5DEC19-M | MW006D-8AUG19-19-M | MW006S-29JAN20-M | MW006S-29JAN20-M Lab-Dup | MW006S-8AUG19-19-M | QU0810-10-DEC19-M | QU0810GD-23MAY19-M | QU0810GS-23MAY19-M | QU0813A-10MAR20-M | QU0813A-10MAR20-M Lab-Dup |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | B971660 / WJ5684 | B971660 / WJ5685 | B9A5258 / XB7477 | B966017 / WG8048 | C006723 / XH7509 | C006723 / XH7509 | B966017 / WG8047 | B9A6860 / XC5932 | B939562 / VS8836 | B939562 / VS8837 | C018595 / XN6782 | C018595 / XN6782 |
| | | Date | | 27-08-2019 | 27-08-2019 | 05-12-2019 | 08-08-2019 | 29-01-2020 | 29-01-2020 | 08-08-2019 | 10-12-2019 | 23-05-2019 | 23-05-2019 | 10-03-2020 | 10-03-2020 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |
| pH | | pH | | 7.04 | 7.04 | 7.08 | 8.83 | 7.78 | 7.78 | 7.59 | 7.73 | 5.66 | 5.34 | 7.8 | 7.8 |
| Conductivity | | Cond | | 970.1 | 970.1 | 556.1 | 126.4 | 2324.3 | 2324.3 | 1176 | 481.2 | 7.17 | 7.52 | 313.9 | 313.9 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.07 | 0.073 | 0.04 | <0.010 | 0.086 | - | 0.1 | <0.010 | 1.5 | 0.26 | 0.018 | - |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | FIELD | FIELD | FIELD | - | FIELD | FIELD | FIELD | FIELD | FIELD | - |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 1.8 | 2.6 | - | 0.58 | 1.7 | - | 1.5 | 1.5 | <2.5 | <2.5 | 0.53 | - |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | <0.0030 | <0.0030 | - | 0.12 | 0.048 | 0.048 | 0.039 | 0.013 | 0.035 | 0.12 | 0.027 | 0.022 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | <1.0 | <1.0 | <1.0 | 1.2 | 3.4 | - | 5.8 | <1.0 | - | - | 10 | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 420 | 430 | 210 | 12 | 400 | - | 550 | 11 | - | - | 36 | - |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | - | <1.0 | <1.0 | - | - | <1.0 | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 170 | 170 | - | 83 | 150 | - | 160 | 150 | - | - | 180 | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 200 | 200 | - | 100 | 180 | - | 200 | 190 | - | - | 220 | - |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | - | <1.0 | <1.0 | - | - | <1.0 | - |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | - | <1.0 | <1.0 | - | - | <1.0 | - |
| Turbidity | | NTU | 0.10 | 0.39 | 0.95 | - | 0.22 | 0.26 | - | 0.28 | 190 | - | - | 5.1 | - |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | - | - | - | - | - | - | - | 0.66 | - | - | 0.7 | - |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 194
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | QU0813A-10MAR20-R | QU0813A-26NOV19-M | QU0813A-26NOV19-R | QU0813A-31JUL19-M | QU0813A-31JUL19-M Lab-Dup | QU0813B-10MAR20-M | QU0813B-26NOV19-M | QU0821D-19FEB20-M | QU0821D-19FEB20-R | QU0821D-27NOV19-M | QU0821D-3SEPT19-M | QU0821D-3SEPT19-R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | C018595 / XN6783 | B9A2391 / XA2672 | B9A2391 / XA2673 | B963465 / WF4676 | B963465 / WF4676 | C018595 / XN6784 | B9A2391 / XA2674 | C012293 / XK6353 | C012293 / XK6352 | B9A2391 / XA2671 | B974776 / WL1627 | B974776 / WL1629 |
| | | Date | | 10-03-2020 | 26-11-2019 | 26-11-2019 | 31-07-2019 | 31-07-2019 | 10-03-2020 | 26-11-2019 | 19-02-2020 | 19-02-2020 | 27-11-2019 | 03-09-2019 | 03-09-2019 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |
| pH | | pH | | 7.8 | 7.84 | 7.84 | 7.97 | 7.97 | 7.97 | 7.97 | 7.5 | 7.5 | 7.56 | 7.71 | 7.71 |
| Conductivity | | Cond | | 313.9 | 519.4 | 519.4 | 306.1 | 306.1 | 304.6 | 345.6 | 465.3 | 465.3 | 4120.3 | 3275 | 3275 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.019 | <0.010 | <0.010 | 0.01 | - | 0.018 | <0.010 | 1.2 | 1.2 | 1.6 | 0.18 | 0.18 |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | FIELD | FIELD | - | FIELD | FIELD | FIELD | FIELD | FIELD | FIELD | FIELD |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 0.77 | <0.50 | 0.52 | 0.52 | <0.50 | 0.67 | 1.2 | 5.3 | 5.9 | <2.5 | - | - |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | 0.018 | 0.055 | 0.06 | 0.02 | - | 0.039 | 0.067 | 0.015 | 0.016 | 0.1 | 0.17 | 0.16 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 10 | 9.3 | 9.3 | 9 | - | 11 | <1.0 | 900 | 890 | 1100 | 130 | 130 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 36 | 28 | 41 | 36 | - | 32 | 37 | <1.0 | <1.0 | 2.1 | <1.0 | <1.0 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | 2 | 2.1 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 180 | 190 | 190 | 190 | - | 160 | 110 | 210 | 210 | 200 | 200 | 200 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 220 | 230 | 230 | 230 | - | 200 | 140 | 260 | 260 | 250 | 250 | 250 |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | 2.4 | 2.5 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Turbidity | | NTU | 0.10 | 4.9 | 1.3 | 1.5 | 1.2 | - | 2.3 | 400 | 6.4 | 6.8 | 9.5 | 1.6 | 0.72 |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | 0.73 | 0.73 | 0.72 | - | - | 0.61 | 0.37 | 1.3 | 1.3 | 0.87 | - | - |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 195
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | QU0821S-19FEB20-M | QU0821S-19FEB20-M Lab-Dup | QU0821S-27NOV19-M | QU0821S-27NOV19-R | QU0821S-3SEPT19-M | QU10009D-27MAY19-M | QU10009S-27MAY19-M | QU10009S-27MAY19-R | QU10009S-27MAY19-R Lab-Dup | QU1008D-18MAR20-M | QU1008D-18MAR20-R | QU1009D-5SEPT19-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | C012293 / XK6351 | C012293 / XK6351 | B9A2391 / XA2669 | B9A2391 / XA2670 | B974776 / WL1628 | B940757 / VT5252 | B940757 / VT5251 | B940757 / VT5253 | B940757 / VT5253 | C020554 / XO6011 | C020554 / XO6012 | B974802 / WL1744 |
| | | Date | | 19-02-2020 | 19-02-2020 | 27-11-2019 | 27-11-2019 | 03-09-2019 | 27-05-2019 | 27-05-2019 | 27-05-2019 | 27-05-2019 | 18-03-2020 | 18-03-2020 | 05-09-2019 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |
| pH | | pH | | 8.11 | 8.11 | 7.98 | 7.98 | 7.81 | 7.22 | 6.55 | 6.55 | 6.55 | 8.57 | 8.57 | 7.45 |
| Conductivity | | Cond | | 768.1 | 768.1 | 721.1 | 721.1 | 678.2 | 371.5 | 396.2 | 396.2 | 396.2 | 371 | 371 | 354 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.069 | - | 0.11 | 0.11 | 1.6 | 0.023 | 0.044 | 0.04 | 0.041 | <0.010 | <0.010 | 0.022 |
| Filter and HNO3 Preservation | | N/A | | FIELD | - | FIELD | FIELD | LAB | FIELD | FIELD | FIELD | - | FIELD | FIELD | FIELD |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 0.81 | - | 0.87 | 1.5 | - | 0.97 | 1.2 | 1.1 | - | 3.1 | 3.2 | 0.95 |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | 0.057 | 0.051 | 0.18 | 0.18 | 0.024 | 0.02 | 0.014 | 0.011 | - | 0.17 | 0.17 | 0.013 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 50 | - | 90 | 94 | 1100 | 2.3 | 1.4 | 1.8 | - | 4.3 | 4.4 | 2 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | <1.0 | - | <1.0 | <1.0 | <1.0 | 69 | 120 | 120 | - | <1.0 | <1.0 | 76 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | - | 2.9 | 2.5 | <1.0 | - | - | - | - | 8.2 | 8.2 | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 200 | - | 190 | 210 | 200 | - | - | - | - | 260 | 250 | 190 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 240 | - | 220 | 240 | 240 | - | - | - | - | 290 | 290 | 230 |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | - | 3.5 | 2.9 | <1.0 | - | - | - | - | 9.8 | 9.8 | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | - | - | - | - | <1.0 | <1.0 | <1.0 |
| Turbidity | | NTU | 0.10 | 0.81 | - | 1.2 | 1.2 | 1 | - | - | - | - | 44 | 42 | 3.7 |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | 1.8 | - | 1.8 | 1.7 | - | - | - | - | - | 2 | 2 | 0.28 |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 196
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | QU1009D-5SEPT19-R | QU1009S-5SEPT19-M | QU1009S-5SEPT19-M Lab-Dup | QU1010D-11DEC19-M | QU1010D-30SEPT19-M | QU1010S-11DEC19-M | QU1010S-11DEC19-R | QU1010S-30SEPT19-M | QU1010S-30SEPT19-M Lab-Dup | QU1010S-30SEPT19-R | QU1011D-24MAR20-M | QU1013D-11MAR20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | B974802 / WL1745 | B974802 / WL1743 | B974802 / WL1743 | B9A6860 / XC5935 | B984272 / WP8750 | B9A6860 / XC5934 | B9A6860 / XC5933 | B984272 / WP8751 | B984272 / WP8751 | B984272 / WP8752 | C021848 / XP1218 | C018589 / XN6759 |
| | | Date | | 05-09-2019 | 05-09-2019 | 05-09-2019 | 11-12-2019 | 30-09-2019 | 11-12-2019 | 11-12-2019 | 30-09-2019 | 30-09-2019 | 30-09-2019 | 24-03-2020 | 11-03-2020 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |
| pH | | pH | | 7.45 | 6.24 | 6.24 | 7.32 | 7.16 | 8.03 | 8.03 | 7.95 | 7.95 | 7.95 | 7.39 | 7.17 |
| Conductivity | | Cond | | 354 | 379.5 | 379.5 | 7578.1 | 8630 | 232.2 | 232.2 | 251 | 251 | 251 | 1615 | 1548.2 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.019 | 0.038 | 0.037 | 4.7 | 4.7 | <0.010 | <0.010 | <0.010 | - | <0.010 | 0.82 | 0.11 |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | - | FIELD | FIELD | FIELD | FIELD | FIELD | - | FIELD | FIELD | FIELD |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 1 | 1.5 | - | <10 | <10 | 1.1 | 0.71 | <0.50 | <0.50 | <0.50 | 3.6 | 1.6 |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | 0.014 | 0.0055 | - | <0.0030 | 0.065 | 0.028 | 0.026 | 0.021 | - | 0.023 | 0.072 | 0.011 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 1.8 | <1.0 | - | **3700** | **3500** | 4 | 4.3 | 4.8 | - | 5.2 | 470 | 20 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 72 | 100 | - | <1.0 | <1.0 | 5.8 | 6 | 3.4 | - | 3 | <1.0 | 560 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 180 | 140 | - | 88 | 87 | 150 | 150 | 150 | - | 150 | 320 | 510 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 220 | 170 | - | 110 | 110 | 180 | 180 | 190 | - | 190 | 390 | 630 |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 |
| Turbidity | | NTU | 0.10 | 3.8 | 37 | - | 130 | 81 | 15 | 17 | 40 | - | 38 | 230 | 15 |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | 0.28 | 0.062 | - | <0.050 | <0.050 | 0.6 | 0.63 | 0.65 | - | 0.6 | 0.49 | 0.13 |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 197
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | QU1013D-24SEPT19-M | QU1013D-24SEPT19-R | QU1013D-24SEPT19-R Lab-Dup | QU1013D-31DEC19-M | QU1105D-12MAR20-M | QU1105D-16DEC19-M | QU1105S-12MAR20-M | QU1105S-16DEC19-M | QU1105S-16DEC19-R | QU1109D-18DEC19-M | QU1109M-15AUG19-19-M | QU1109M-15AUG19-19-M Lab-Dup |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | B981435 / WO5274 | B981435 / WO5275 | B981435 / WO5275 | C001911 / XF3656 | C018847 / XN7875 | B9A8419 / XD4475 | C018847 / XN7876 | B9A8419 / XD4473 | B9A8419 / XD4474 | B9A9201 / XD8444 | B968040 / WH7273 | B968040 / WH7273 |
| | | Date | | 24-09-2019 | 24-09-2019 | 24-09-2019 | 31-12-2019 | 12-03-2020 | 16-12-2019 | 12-03-2020 | 16-12-2019 | 16-12-2019 | 18-12-2019 | 15-08-2019 | 15-08-2019 |
| ***Parameter*** | ***Criteria*** [1] | ***Units*** | ***RDL*** | | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |
| pH | | pH | | 7.43 | 7.43 | 7.43 | 7.67 | 7.35 | 7.77 | 7.59 | 7.15 | 7.15 | 7.43 | 7.71 | 7.71 |
| Conductivity | | Cond | | 1401 | 1401 | 1401 | 2953.9 | 5519.1 | 3885 | 558 | 515.5 | 515.5 | 3731.4 | 2528 | 2528 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | <0.20 | 0.26 | - | 0.15 | 2.1 | 2.2 | 0.023 | 0.012 | 0.018 | 0.18 | 0.19 | - |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | - | FIELD | - | FIELD | FIELD | FIELD | FIELD | FIELD | FIELD | - |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 1.3 | 1.1 | 1 | - | - | 11 | 1.9 | 1.4 | 1.5 | 1.2 | 0.79 | 0.75 |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | <0.0030 | <0.0030 | - | - | - | 0.75 | 0.0093 | 0.0079 | 0.0047 | - | <0.0030 | - |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 67 | 69 | - | 68 | 1300 | 1300 | 8.3 | 2 | 2 | 49 | 50 | - |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 270 | 270 | - | 330 | 150 | 130 | 100 | 150 | 150 | 650 | 680 | - |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | 3.9 | 6.5 | - | 6 | 5.8 | <1.0 | 3.4 | <1.0 | <1.0 | <1.0 | 8 | - |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 560 | 560 | - | 510 | 380 | 390 | 290 | 200 | 200 | 460 | 480 | - |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 680 | 670 | - | 610 | 450 | 470 | 350 | 240 | 240 | 560 | 570 | - |
| Carbonate (CO3) | | mg/L | 1.0 | 4.7 | 7.7 | - | 7.2 | 7 | <1.0 | 4.1 | <1.0 | <1.0 | <1.0 | 9.6 | - |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - |
| Turbidity | | NTU | 0.10 | 4.2 | 3.7 | - | - | 59 | 45 | 3.6 | 6.2 | 6.1 | 85 | 68 | - |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | - | - | - | 0.16 | 0.065 | 0.07 | 0.43 | 0.14 | 0.15 | 0.12 | - | - |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 198
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | QU1109S-15AUG19-19-M | QU1109S-18DEC19-M | QU1109S-18DEC19-R | QU1136D-16MAR20-M | QU1136D-16MAR20-M Lab-Dup | QU1410-11SEPT19-M | QU1410-11SEPT19-R |
|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | B968040 / WH7272 | B9A9201 / XD8442 | B9A9201 / XD8443 | C020041 / XO3450 | C020041 / XO3450 | B977217 / WM2963 | B977217 / WM2964 |
| | | Date | | 15-08-2019 | 18-12-2019 | 18-12-2019 | 16-03-2020 | 16-03-2020 | 11-09-2019 | 11-09-2019 |
| ***Parameter*** | ***Criteria [1]*** | ***Units*** | ***RDL*** | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - |
| pH | | pH | | 8.06 | 8.03 | 8.03 | 7.59 | 7.59 | 6.58 | 6.58 |
| Conductivity | | Cond | | 1302 | 2043.2 | 2043.2 | 240.1 | 240.1 | 2673.8 | 2673.8 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.079 | 0.067 | 0.067 | <0.010 | - | 0.34 | 0.35 |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | FIELD | FIELD | - | FIELD | FIELD |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 1.1 | 1.3 | <0.50 | <0.50 | - | 1.2 | 2.5 |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | 0.033 | - | - | 0.12 | 0.12 | <0.0030 | <0.0030 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 38 | 28 | 28 | <1.0 | - | 5.4 | 5.1 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 220 | 200 | 220 | 12 | - | 1700 | 1700 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | 16 | 9.6 | 11 | <1.0 | - | <1.0 | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 420 | 400 | 410 | 150 | - | 310 | 300 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 470 | 470 | 470 | 190 | - | 380 | 370 |
| Carbonate (CO3) | | mg/L | 1.0 | 19 | 11 | 13 | <1.0 | - | <1.0 | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | <1.0 |
| Turbidity | | NTU | 0.10 | 0.61 | 0.75 | 0.75 | 16 | - | 16 | 20 |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | - | 0.53 | 0.55 | 0.7 | - | 0.16 | 0.17 |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - |
| **Legend** | | | | | | | | | | |
| Exceeds one Criteria | **Result** | | | | | | | | | |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) | | | | | | | | | |

# TABLE 199
# 2019-20 Annual Report

| Inorganics - Groundwater | BC CSR Aquatic Life 2019 - LOW LEVEL | Sample Number | | QU1410-19MAR20-M | QU1410-20NOV19-M | QU1410-20NOV19-M Lab-Dup | QU1410-20NOV19-R | QU1410-24FEB20-M | QU1410-24FEB20-R | QU1410-28JAN20-M | QU1410-28JAN20-M Lab-Dup | QU1410-28JAN20-R | QU1410-30APR19-M | QU0810-27FEB20-M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Lab Report / Lab Sample | | C020553 / XO6010 | B9A0774 / WZ3618 | B9A0774 / WZ3618 | B9A0774 / WZ3619 | C013626 / XL3498 | C013626 / XL3499 | C006018 / XH4261 | C006018 / XH4261 | C006018 / XH4262 | B935103 / VQ7678 | C014792 / XL8496 |
| | | Date | | 19-03-2020 | 20-11-2019 | 20-11-2019 | 20-11-2019 | 24-02-2020 | 24-02-2020 | 28-01-2020 | 28-01-2020 | 28-01-2020 | 30-04-2019 | 27-02-2020 |
| ***Parameter*** | ***Criteria [1]*** | ***Units*** | ***RDL*** | | | | | | | | | | | |
| Orthophosphate (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - |
| pH | | pH | | 6.73 | 6.72 | 6.72 | 6.72 | 6.72 | 6.72 | 6.73 | 6.73 | 6.73 | 6.55 | 7.73 |
| Conductivity | | Cond | | 2454.9 | 3409.1 | 3409.1 | 3409.1 | 2284.3 | 2284.3 | 2468 | 2468 | 2468 | 2306.9 | 481.2 |
| Dissolved Bromide (Br) | | mg/L | 0.010 - 0.20 | 0.25 | 0.25 | - | 0.26 | 0.27 | 0.33 | 0.29 | - | 0.28 | 0.39 | 0.028 |
| Filter and HNO3 Preservation | | N/A | | FIELD | FIELD | - | FIELD | FIELD | FIELD | FIELD | - | FIELD | FIELD | FIELD |
| Total Nitrogen (N) | | mg/L | 0.020 - 0.20 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0020 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Organic Carbon (C) | | mg/L | 0.50 - 10 | 1.1 | 1.9 | - | 0.92 | 0.88 | 0.78 | 1.6 | - | 1.3 | 1.2 | 1.1 |
| Dissolved Mercury (Hg) | 0.25 | ug/L | 0.25 | - | - | - | - | - | - | - | - | - | - | - |
| Total Suspended Solids | | mg/L | 1.0 - 1.5 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Phosphorus (P) | | mg/L | 0.0010 - 0.030 | 0.012 | 0.0031 | - | <0.030 | 0.003 | 0.0037 | 0.0045 | 0.0039 | 0.0041 | 0.022 | 0.0094 |
| Dissolved Nitrogen (N) | | mg/L | 0.020 - 0.055 | - | - | - | - | - | - | - | - | - | 0.28 | - |
| Total Ammonia (N) | 1.31 | mg/L | 0.015 | - | - | - | - | - | - | - | - | - | - | - |
| Dissolved Chloride (Cl) | 1500 | mg/L | 1.0 - 100 | 5.5 | 5.8 | - | 5.4 | 5 | 5 | 5.1 | - | 6.7 | - | 1.4 |
| Dissolved Sulphate (SO4) | 1280 | mg/L | 1.0 - 10 | 1900 | 1800 | - | 1700 | 1800 | 1800 | 1800 | - | 1800 | - | 220 |
| Alkalinity (PP as CaCO3) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | - | <1.0 |
| Alkalinity (Total as CaCO3) | | mg/L | 1.0 | 300 | 290 | 300 | 300 | 300 | 280 | 290 | - | 290 | - | 180 |
| Bicarbonate (HCO3) | | mg/L | 1.0 | 370 | 360 | 360 | 360 | 370 | 340 | 350 | - | 350 | - | 220 |
| Carbonate (CO3) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | - | <1.0 |
| Hydroxide (OH) | | mg/L | 1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | - | <1.0 | - | <1.0 |
| Turbidity | | NTU | 0.10 | 20 | 19 | - | 15 | 21 | 21 | 5.9 | - | 9 | - | 27 |
| Dissolved Fluoride (F) | 2 | mg/L | 0.050 | 0.19 | 0.17 | - | 0.17 | 0.16 | 0.18 | 0.17 | - | 0.17 | - | 0.63 |
| Nitrite (N) | 0.2 | mg/L | 0.0050 | - | - | - | - | - | - | - | - | - | - | - |
| Nitrate (N) | 400 | mg/L | 0.020 | - | - | - | - | - | - | - | - | - | - | - |
| Total Phosphorus (P) | | mg/L | 0.0030 | - | - | - | - | - | - | - | - | - | - | - |

| **Legend** | |
|---|---|
| Exceeds one Criteria | **Result** |
| **Criteria 1** | BC CSR Aquatic Life 2019 - LOW LEVEL (**Only Applies to Ex-Situ Groundwater**) |

# TABLE 200
# 2019-20 Annual Report

| Station Description | | 1 Mains 7-South | 1 Mains 7-South | 1 Mains 7-South | 1 Mains 7-South | 1 Mains 7-South | 1 Mains 7-South |
|---|---|---|---|---|---|---|---|
| | Stn.Code | 1M7S | 1M7S | 1M7S | 1M7S | 1M7S | 1M7S |
| Date | | 03-Apr-2019 | 21-May-2019 | 10-Sep-2019 | 04-Dec-2019 | 27-Jan-2020 | 26-Feb-2020 |
| Parameter | Unit | | | | | | |
| SO4-D | mg/L | 285 | 107 | 380 | 350 | 140 | 230 |
| TSS | mg/L | 14.8 | 8.4 | 30.8 | | | |
| Alk-T | mg/L | 144 | 155 | 58 | 50 | 49 | 110 |
| Acidity83 | mg/L | 3.2 | <1.0 | 1.2 | 9.8 | 2.9 | 2.6 |
| Al-T | mg/L | 0.214 | 0.0517 | 0.565 | 0.300 | 0.512 | 0.111 |
| As-T | mg/L | 0.0198 | 0.0670 | 0.00424 | 0.00192 | 0.00222 | 0.0177 |
| Ba-T | mg/L | 0.0650 | 0.139 | 0.0849 | 0.0154 | 0.0104 | 0.0416 |
| B-T | mg/L | 0.434 | 0.561 | 0.155 | 0.063 | 0.062 | 0.159 |
| Cd-T | mg/L | <0.000010 | <0.000010 | 0.000029 | 0.000065 | 0.000028 | 0.000015 |
| Ca-T | mg/L | 109 | 66.5 | 136 | 97.6 | 47.9 | 106 |
| Cr-T | mg/L | <0.0010 | <0.0010 | 0.0010 | 0.0011 | 0.0014 | <0.0010 |
| Co-T | mg/L | 0.00385 | 0.00143 | 0.00597 | 0.0122 | 0.00407 | 0.00251 |
| Cu-T | mg/L | 0.00227 | 0.00172 | 0.00402 | 0.00516 | 0.00942 | 0.00137 |
| Hard-T | mg/L | 369 | 222 | 448 | 356 | 163 | 354 |
| Fe-T | mg/L | 1.93 | 2.53 | 2.44 | 21.0 | 6.13 | 4.16 |
| Pb-T | mg/L | 0.00109 | 0.00252 | 0.00041 | <0.00020 | 0.00034 | <0.00020 |
| Mg-T | mg/L | 23.7 | 13.5 | 26.6 | 27.3 | 10.6 | 22.0 |
| Mn-T | mg/L | 0.264 | 0.0927 | 0.394 | 0.576 | 0.204 | 0.229 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000022 | <0.0000019 |
| Mo-T | mg/L | 0.0043 | 0.0052 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | 0.0125 | 0.0125 | 0.0126 | 0.0212 | 0.0074 | 0.0057 |
| K-T | mg/L | 3.02 | 2.89 | 2.63 | 0.983 | 0.611 | 1.43 |
| S-T | mg/L | 103 | 40.8 | 133 | 109 | 39.6 | 93.2 |
| Se-T | mg/L | <0.00010 | <0.00010 | 0.00026 | <0.00010 | <0.00010 | <0.00010 |
| Si-T | mg/L | 3.69 | 4.56 | 4.41 | 6.00 | 4.81 | 5.04 |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 24.1 | 26.0 | 17.3 | 8.78 | 3.30 | 10.7 |
| Sr-T | mg/L | 0.797 | 0.554 | 0.618 | 0.377 | 0.171 | 0.478 |
| Zn-T | mg/L | 0.0066 | 0.0653 | 0.0081 | 0.0529 | 0.0411 | 0.0143 |
| Al-D | mg/L | <0.0030 | <0.0030 | 0.0052 | 0.0048 | 0.0172 | 0.0046 |
| As-D | mg/L | 0.00199 | 0.0104 | 0.00080 | 0.00054 | 0.00071 | 0.00424 |
| Ba-D | mg/L | 0.0654 | 0.124 | 0.0934 | 0.0154 | 0.0087 | 0.0400 |
| B-D | mg/L | 0.474 | 0.497 | 0.165 | 0.062 | <0.050 | 0.158 |
| Cd-D | mg/L | 0.0000058 | <0.0000050 | 0.000020 | 0.000063 | 0.000020 | 0.000015 |
| Ca-D | mg/L | 118 | 62.4 | 132 | 104 | 44.5 | 103 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | 0.00393 | 0.00126 | 0.00501 | 0.0117 | 0.00367 | 0.00240 |
| Cu-D | mg/L | <0.00020 | 0.00034 | 0.00041 | 0.00132 | 0.00151 | 0.00043 |
| DOC | mg/L | 1.1 | 0.86 | | | 2.3 | |
| Hard-D | mg/L | 399 | 208 | 440 | 374 | 150 | 350 |
| Fe-D | mg/L | 0.330 | 0.0390 | 0.563 | | 2.63 | 2.60 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 25.3 | 12.7 | 27.0 | 27.8 | 9.50 | 22.4 |
| Mn-D | mg/L | 0.287 | 0.0869 | 0.358 | 0.573 | 0.182 | 0.247 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-D | mg/L | 0.0045 | 0.0054 | <0.0010 | 0.0018 | 0.0272 | <0.0010 |
| Ni-D | mg/L | 0.0104 | 0.0096 | 0.0111 | 0.0198 | 0.0070 | 0.0057 |
| K-D | mg/L | 2.96 | 2.65 | 2.52 | 0.985 | 0.566 | 1.41 |
| S-D | mg/L | 107 | 36.2 | 137 | 113 | 37.3 | 87.5 |
| Se-D | mg/L | <0.00010 | <0.00010 | 0.00025 | <0.00010 | <0.00010 | <0.00010 |
| Si-D | mg/L | 3.58 | 3.52 | 3.56 | 6.48 | 4.35 | 4.55 |
| Na-D | mg/L | 26.3 | 24.4 | 17.3 | 8.79 | 2.94 | 11.0 |
| Sr-D | mg/L | 0.855 | 0.543 | 0.558 | 0.415 | 0.171 | 0.509 |
| Zn-D | mg/L | <0.0050 | 0.0117 | <0.0050 | 0.0378 | 0.0130 | 0.0122 |
| N-D | mg/L | 0.147 | 0.238 | | | 0.212 | 0.184 |
| N-T | mg/L | 0.148 | | | | | |
| P-D | mg/L | 0.0026 | <0.0030 | | | <0.0030 | <0.0030 |
| PO4-D | mg/L | 0.0031 | | | | | |
| P-T | mg/L | 0.0078 | | | | | |
| S2-T | mg/L | <0.0019 | | 0.0028 | | <0.0018 | 0.0024 |
| Cl-D | mg/L | 17 | 7.1 | 7.2 | 1.2 | <1.0 | 1.5 |
| F-D | mg/L | 0.370 | 0.500 | 0.095 | <0.050 | <0.050 | 0.094 |

# TABLE 201
# 2019-20 Annual Report

| Station Description | | 7 South Area 5 | 7 South Area 5 | 7 South Area 5 | 7 South Area 5 | 7 South Area 5 | 7 South Area 5 | 7 South Area 5 |
|---|---|---|---|---|---|---|---|---|
| | Stn.Code | 7SA5 | 7SA5 | 7SA5 | 7SA5 | 7SA5 | 7SA5 | 7SA5 |
| Date | | 08-Apr-2019 | 06-May-2019 | 10-Jul-2019 | 20-Aug-2019 | 15-Oct-2019 | 28-Jan-2020 | 04-Mar-2020 |
| Parameter | Unit | | | | | | | |
| SO4-D | mg/L | 42.6 | 4.8 | 6.5 | 26 | 5.6 | 20 | 21 |
| TSS | mg/L | 100 | 9.6 | <4.0 | 7.2 | <4.0 | | 12 |
| Alk-T | mg/L | 164 | 155 | 190 | 170 | 180 | 170 | 170 |
| Acidity83 | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Al-T | mg/L | 1.20 | 0.261 | <0.0030 | 0.0121 | <0.0030 | 0.0155 | 0.0634 |
| As-T | mg/L | 0.221 | 0.334 | 0.291 | 0.0370 | 0.301 | 0.270 | 0.262 |
| Ba-T | mg/L | 0.202 | 0.173 | 0.650 | 0.276 | 0.709 | 0.408 | 0.420 |
| B-T | mg/L | 0.585 | 0.459 | 0.457 | 0.537 | 0.507 | 0.476 | 0.470 |
| Cd-T | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-T | mg/L | 47.5 | 34.4 | 41.2 | 61.6 | 46.6 | 42.2 | 42.2 |
| Cr-T | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-T | mg/L | 0.00128 | <0.00020 | <0.00020 | 0.00170 | <0.00020 | <0.00020 | 0.00034 |
| Cu-T | mg/L | 0.00219 | 0.00054 | <0.00050 | 0.00066 | <0.00050 | <0.00050 | 0.00069 |
| Hard-T | mg/L | 154 | 114 | 135 | 216 | 148 | 138 | 137 |
| Fe-T | mg/L | 0.908 | 0.400 | 0.193 | 0.445 | 0.220 | 0.099 | 0.180 |
| Pb-T | mg/L | 0.00024 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-T | mg/L | 8.46 | 6.87 | 7.74 | 15.1 | 7.80 | 7.82 | 7.80 |
| Mn-T | mg/L | 0.0518 | 0.0232 | 0.0342 | 0.0631 | 0.0370 | 0.0216 | 0.0224 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-T | mg/L | 0.0085 | <0.0010 | <0.0010 | 0.0020 | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | 0.0021 | <0.0010 | <0.0010 | 0.0037 | <0.0010 | <0.0010 | <0.0010 |
| K-T | mg/L | 2.96 | 2.14 | 2.35 | 2.45 | 2.37 | 2.18 | 2.18 |
| S-T | mg/L | 17.0 | <3.0 | <3.0 | 39.3 | <3.0 | 6.4 | 6.4 |
| Se-T | mg/L | 0.00012 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-T | mg/L | 6.69 | 4.70 | 4.31 | 4.21 | 4.66 | 4.68 | 4.83 |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 26.9 | 21.6 | 21.0 | 22.1 | 20.4 | 21.2 | 20.7 |
| Sr-T | mg/L | 0.513 | 0.468 | 0.475 | 0.618 | 0.503 | 0.500 | 0.478 |
| Zn-T | mg/L | 0.0065 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Al-D | mg/L | 0.0031 | <0.0030 | <0.0030 | 0.0062 | <0.0030 | <0.0030 | <0.0030 |
| As-D | mg/L | 0.169 | 0.309 | 0.279 | 0.0176 | 0.280 | 0.246 | 0.237 |
| Ba-D | mg/L | 0.140 | 0.170 | 0.691 | 0.263 | 0.705 | 0.436 | 0.406 |
| B-D | mg/L | 0.502 | 0.472 | 0.492 | 0.521 | 0.512 | 0.473 | 0.489 |
| Cd-D | mg/L | <0.0000050 | <0.0000050 | <0.0000050 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ca-D | mg/L | 38.2 | 34.3 | 43.0 | 62.4 | 46.6 | 41.5 | 40.9 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | 0.00069 | <0.00020 | <0.00020 | 0.00159 | <0.00020 | <0.00020 | 0.00027 |
| Cu-D | mg/L | <0.00020 | <0.00020 | <0.00020 | 0.00046 | <0.00020 | <0.00020 | <0.00020 |
| DOC | mg/L | 1.1 | 0.58 | | | | 1.3 | 1.1 |
| Hard-D | mg/L | 124 | 113 | 139 | 217 | 150 | 135 | 135 |
| Fe-D | mg/L | <0.0050 | 0.0165 | 0.0813 | 0.0799 | 0.108 | 0.0086 | <0.0050 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 7.04 | 6.71 | 7.60 | 14.9 | 8.15 | 7.53 | 8.07 |
| Mn-D | mg/L | 0.0360 | 0.0189 | 0.0360 | 0.0598 | 0.0374 | 0.0214 | 0.0209 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-D | mg/L | 0.0070 | <0.0010 | <0.0010 | 0.0020 | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | 0.0012 | <0.0010 | <0.0010 | 0.0037 | <0.0010 | <0.0010 | <0.0010 |
| K-D | mg/L | 2.29 | 2.10 | 2.35 | 2.45 | 2.45 | 2.21 | 2.25 |
| S-D | mg/L | 13.2 | 4.7 | <3.0 | 39.9 | <3.0 | 6.7 | 6.0 |
| Se-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Si-D | mg/L | 3.93 | 4.30 | 4.61 | 4.25 | 4.80 | 4.98 | 4.59 |
| Na-D | mg/L | 22.1 | 21.7 | 20.5 | 22.1 | 21.4 | 20.4 | 21.5 |
| Sr-D | mg/L | 0.458 | 0.464 | 0.490 | 0.643 | 0.511 | 0.543 | 0.499 |
| Zn-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| N-D | mg/L | 0.334 | 0.31 | | | | 0.275 | 0.341 |
| N-NH3 | mg/L | | | | 0.037 | 0.26 | | |
| N-NO2 | mg/L | | | | 0.0278 | | | |
| N-NO23 | mg/L | | | | 0.137 | | | |
| N-NO3 | mg/L | | | | 0.109 | | | |
| N-T | mg/L | 0.401 | 0.223 | | | | | |
| P-D | mg/L | 0.0213 | 0.015 | | | | 0.012 | 0.013 |
| P-T | mg/L | | | | 0.0054 | | | |
| Cl-D | mg/L | 3.4 | <1.0 | | | | 1.2 | 1.4 |
| F-D | mg/L | 0.570 | 0.590 | | | | 0.50 | 0.50 |

# TABLE 203
# 2019-20 Annual Report

| Station Description | | 1-Mains 7S and Area 5 | 1Mains 7S and Area 5 | 1Mains 7S and Area 5 | 1Mains 7S and Area 5 | 1Mains 7S and Area 5 |
|---|---|---|---|---|---|---|
| | Stn.Code | 1M7SA5 | 1M7SA5 | 1M7SA5 | 1M7SA5 | 1M7SA5 |
| Date | | 11-Jun-2019 | 20-Aug-2019 | 01-Oct-2019 | 07-Nov-2019 | 02-Mar-2020 |
| Parameter | Unit | | | | | |
| SO4-D | mg/L | 191 | 74 | 840 | 36 | 240 |
| TSS | mg/L | <4.0 | 6.8 | 31.2 | | 23 |
| Alk-T | mg/L | 160 | 160 | <1.0 | 170 | 94 |
| Acidity83 | mg/L | 1.3 | <1.0 | 152 | <1.0 | 2.5 |
| Al-T | mg/L | 0.0235 | 0.0312 | 2.30 | 0.0082 | 0.239 |
| As-T | mg/L | 0.0461 | 0.238 | 0.00145 | 0.293 | 0.0164 |
| Ba-T | mg/L | 0.185 | 0.477 | 0.0438 | 0.641 | 0.0376 |
| B-T | mg/L | 0.450 | 0.447 | 0.188 | 0.428 | 0.141 |
| Cd-T | mg/L | <0.000010 | <0.000010 | 0.000321 | <0.000010 | 0.000022 |
| Ca-T | mg/L | 93.6 | 45.6 | 182 | 40.9 | 97.0 |
| Cr-T | mg/L | <0.0010 | <0.0010 | 0.0034 | <0.0010 | <0.0010 |
| Co-T | mg/L | 0.00311 | 0.00090 | 0.0522 | <0.00020 | 0.00327 |
| Cu-T | mg/L | 0.0161 | <0.00050 | 0.0565 | <0.00050 | 0.0169 |
| Hard-T | mg/L | 303 | 146 | 666 | 134 | 332 |
| Fe-T | mg/L | 0.244 | 0.088 | 73.7 | 0.198 | 5.17 |
| Pb-T | mg/L | 0.00762 | <0.00020 | 0.00245 | <0.00020 | 0.00097 |
| Mg-T | mg/L | 16.9 | 7.93 | 51.4 | 7.65 | 21.7 |
| Mn-T | mg/L | 0.117 | 0.0322 | 1.32 | 0.0355 | 0.236 |
| Hg-T | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000019 |
| Mo-T | mg/L | 0.0038 | 0.0017 | <0.0010 | <0.0010 | <0.0010 |
| Ni-T | mg/L | 0.0063 | 0.0012 | 0.0871 | <0.0010 | 0.0081 |
| K-T | mg/L | 2.59 | 2.43 | 2.34 | 2.26 | 1.45 |
| S-T | mg/L | 65.1 | 8.3 | 270 | <3.0 | 94.0 |
| Se-T | mg/L | <0.00010 | <0.00010 | 0.00016 | <0.00010 | <0.00010 |
| Si-T | mg/L | 3.29 | 5.30 | 8.25 | 4.35 | 4.85 |
| Ag-T | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Na-T | mg/L | 21.5 | 21.4 | 12.5 | 20.5 | 9.47 |
| Sr-T | mg/L | 0.735 | 0.477 | 0.764 | 0.465 | 0.431 |
| Zn-T | mg/L | 0.0736 | <0.0050 | 0.169 | <0.0050 | 0.0739 |
| Al-D | mg/L | 0.0034 | <0.0030 | 0.432 | <0.0030 | 0.0083 |
| As-D | mg/L | 0.0368 | 0.223 | 0.00068 | 0.264 | 0.00284 |
| Ba-D | mg/L | 0.195 | 0.453 | 0.0496 | 0.272 | 0.0248 |
| B-D | mg/L | 0.542 | 0.407 | 0.176 | 0.523 | 0.097 |
| Cd-D | mg/L | 0.0000060 | <0.000010 | 0.000326 | <0.000010 | 0.000018 |
| Ca-D | mg/L | 100 | 44.8 | 191 | 43.6 | 84.1 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | 0.00300 | 0.00086 | 0.0506 | 0.00028 | 0.00312 |
| Cu-D | mg/L | 0.00087 | <0.00020 | 0.0496 | <0.00020 | 0.00073 |
| DOC | mg/L | | | | | 1.7 |
| Hard-D | mg/L | 324 | 144 | 689 | 147 | 290 |
| Fe-D | mg/L | 0.0288 | <0.0050 | 75.1 | <0.0050 | 3.43 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 18.0 | 7.87 | 51.7 | 9.17 | 19.5 |
| Mn-D | mg/L | 0.117 | 0.0322 | 1.46 | 0.0250 | 0.229 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | | <0.0000019 |
| Mo-D | mg/L | 0.0041 | 0.0017 | <0.0010 | 0.0016 | <0.0010 |
| Ni-D | mg/L | 0.0057 | 0.0011 | 0.0891 | <0.0010 | 0.0068 |
| K-D | mg/L | 2.75 | 2.41 | 2.39 | 2.20 | 1.07 |
| S-D | mg/L | 73.4 | 8.2 | 272 | 11.8 | 76.8 |
| Se-D | mg/L | <0.00010 | <0.00010 | 0.00015 | <0.00010 | <0.00010 |
| Si-D | mg/L | 3.85 | 5.34 | 8.63 | 4.79 | 4.50 |
| Na-D | mg/L | 22.9 | 21.0 | 12.7 | 23.9 | 7.70 |
| Sr-D | mg/L | 0.819 | 0.496 | 0.790 | 0.555 | 0.361 |
| Zn-D | mg/L | 0.0061 | <0.0050 | 0.169 | <0.0050 | 0.0197 |
| N-NH3 | mg/L | | 0.19 | | | |
| N-NO2 | mg/L | | 0.0157 | | | |
| N-NO23 | mg/L | 0.085 | 0.168 | | | |
| N-NO3 | mg/L | | 0.153 | | | |
| P-D | mg/L | 0.0040 | | | | <0.0030 |
| P-T | mg/L | 0.0074 | 0.016 | | | |
| Cl-D | mg/L | | | | | 1.6 |
| F-D | mg/L | | | | | 0.099 |

# Table 203
# 2019-2020 Annual Report

| EMS ID | | E292110 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Site Description | | Sump that collects surface runnoff from coal pad and mine water from underground. Water is pumped to 5S mine pool then to 2N. | | | | | | | | | | | | |
| Site Name | | 7-South Adit / Portal Sump (7SPS) | | | | | | | | | | | | |
| Date | | 1-Apr-19 | 6-May-19 | 21-May-19 | 11-Jun-19 | 15-Jul-19 | 12-Aug-19 | 9-Sep-19 | 1-Oct-19 | 6-Nov-19 | 4-Dec-19 | 9-Jan-20 | 26-Feb-20 | 2-Mar-20 |
| Parameter | Units | | | | | | | | | | | | | |
| SO4-D | mg/L | 335 | 249 | 237 | 257 | 330 | 400 | 440 | 810 | 300 | 280 | 240 | 240 | 260 |
| H2SEquiv | mg/L | | | | | | | | | | | | 0.00308 | |
| Alk-T | mg/L | 120 | 108 | 116 | 150 | 49 | 46 | 55 | <1.0 | 63 | 80 | 23 | 92 | 77 |
| Acidity83 | mg/L | 17.4 | 2.4 | 1.1 | <1.0 | 5.3 | 5.4 | 4.3 | 161 | 17.4 | 4.3 | 8.4 | 3.4 | 4.2 |
| N-D | mg/L | | | 0.164 | | | | | | | | | 0.167 | |
| DOC | mg/L | 2.2 | 2.6 | 3.5 | | | | 2.9 | | | | | | |
| Hydrox | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Bicarb | mg/L | 146 | 132 | 141 | 180 | 59 | 56 | 67 | <1.0 | 77 | 97 | 28 | 110 | 94 |
| Carb | mg/L | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| Cl-D | mg/L | | | 7.2 | | | | | | | | | 1.5 | |
| F-D | mg/L | | | 0.057 | | | | | | | | | <0.050 | |
| Br-D | mg/L | | | 0.13 | | | | | | | | | 0.086 | |
| P-D | mg/L | 0.0026 | | <0.0030 | | | | | | | | | <0.0030 | |
| TSS | mg/L | 20 | 9.6 | 22.4 | <4.0 | 21.6 | 25.2 | 8.0 | 14.0 | 30.4 | 30.0 | 23 | | 22 |
| Turb | NTU | | | | | | | | | | | | 32 | |
| Al-D | mg/L | <0.0030 | 0.0040 | 0.0047 | 0.0055 | <0.0030 | <0.0030 | <0.0030 | 1.13 | 0.0033 | 0.0077 | 0.0221 | 0.0046 | 0.0100 |
| Ag-D | mg/L | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| As-D | mg/L | 0.00125 | 0.00038 | 0.00048 | 0.00036 | 0.00022 | 0.00046 | 0.00028 | 0.00077 | 0.00078 | 0.00059 | 0.00074 | 0.00115 | 0.00110 |
| Ba-D | mg/L | 0.0530 | 0.0177 | 0.0254 | 0.0306 | 0.0351 | 0.0311 | 0.0297 | 0.0326 | 0.0220 | 0.0164 | 0.0119 | 0.0149 | 0.0141 |
| B-D | mg/L | 0.375 | 0.056 | 0.065 | 0.083 | 0.130 | 0.145 | 0.148 | 0.179 | 0.061 | 0.057 | 0.054 | 0.075 | 0.069 |
| Be-D | mg/L | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00036 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| Bi-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Cd-D | mg/L | 0.0000270 | 0.0000190 | 0.0000160 | <0.0000050 | 0.0000460 | 0.000052 | 0.000025 | 0.000295 | 0.000057 | 0.000039 | 0.000064 | 0.000014 | 0.000016 |
| Ca-D | mg/L | 137 | 100 | 107 | 135 | 123 | 137 | 139 | 179 | 119 | 91.4 | 69.5 | 83.2 | 77.6 |
| Cr-D | mg/L | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0017 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Co-D | mg/L | 0.00765 | 0.00506 | 0.00240 | 0.00146 | 0.00660 | 0.0114 | 0.00598 | 0.0525 | 0.0148 | 0.00702 | 0.0103 | 0.00226 | 0.00311 |
| Cu-D | mg/L | <0.00020 | 0.00024 | 0.00057 | 0.00059 | 0.00065 | <0.00020 | 0.00029 | 0.0668 | <0.00020 | 0.00042 | 0.00505 | 0.00039 | 0.00063 |
| Fe-D | mg/L | 4.44 | 0.787 | 0.0232 | 0.0553 | 0.174 | 12.3 | 0.181 | 71.9 | 17.0 | 10.9 | 10.7 | 3.12 | 3.80 |
| Hard-D | mg/L | 467 | 348 | 357 | 460 | 395 | 468 | 466 | 654 | 430 | 330 | 250 | 288 | 272 |
| Pb-D | mg/L | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Mg-D | mg/L | 30.2 | 23.7 | 21.8 | 29.9 | 21.3 | 30.7 | 29.1 | 50.2 | 32.4 | 24.8 | 18.4 | 19.5 | 19.0 |
| Mn-D | mg/L | 0.492 | 0.444 | 0.246 | 0.170 | 0.401 | 0.582 | 0.445 | 1.35 | 0.708 | 0.521 | 0.380 | 0.236 | 0.243 |
| Hg-D | mg/L | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | <0.0000020 | 0.0000041 | <0.0000020 | <0.0000020 | 0.0000043 | <0.0000020 | <0.0000019 | <0.0000019 |
| Na-D | mg/L | 21.3 | 10.4 | 14.5 | 19.9 | 14.8 | 16.8 | 18.1 | 12.3 | 10.6 | 9.53 | 4.55 | 7.30 | 6.37 |
| Mo-D | mg/L | 0.0027 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0015 | <0.0010 | <0.0010 | <0.0010 |
| Ni-D | mg/L | 0.0151 | 0.0094 | 0.0046 | 0.0047 | 0.0101 | 0.0203 | 0.0125 | 0.0882 | 0.0249 | 0.0126 | 0.0184 | 0.0050 | 0.0068 |
| K-D | mg/L | 2.55 | 1.13 | 1.63 | 1.90 | 2.43 | 2.26 | 2.56 | 2.33 | 1.15 | 1.01 | 0.869 | 0.939 | 0.919 |
| S-D | mg/L | 134 | 95.7 | 89.2 | 120 | 120 | 154 | 152 | 263 | 130 | 89.1 | 76.5 | 68.6 | 68.6 |
| Sb-D | mg/L | 0.00055 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Se-D | mg/L | <0.00010 | <0.00010 | 0.00017 | <0.00010 | 0.00045 | 0.00018 | 0.00022 | 0.00017 | <0.00010 | <0.00010 | 0.00011 | <0.00010 | <0.00010 |
| Si-D | mg/L | 4.90 | 5.33 | 3.93 | 5.21 | 4.02 | 5.76 | 4.13 | 7.51 | 6.39 | 5.49 | 4.80 | 4.64 | 4.45 |
| Sr-D | mg/L | 0.775 | 0.406 | 0.393 | 0.496 | 0.424 | 0.508 | 0.576 | 0.720 | 0.481 | 0.336 | 0.275 | 0.311 | 0.294 |
| Tl-D | mg/L | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | 0.000010 | <0.000010 | 0.000027 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| Ti-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| U-D | mg/L | 0.00025 | 0.00028 | 0.00030 | 0.00040 | <0.00010 | 0.00014 | 0.00012 | 0.00111 | 0.00018 | 0.00024 | <0.00010 | 0.00023 | 0.00020 |
| V-D | mg/L | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 | <0.0050 |
| Zn-D | mg/L | 0.0112 | 0.0082 | <0.0050 | <0.0050 | 0.0079 | 0.0235 | 0.0051 | 0.174 | 0.0374 | 0.0227 | 0.0333 | 0.0108 | 0.0134 |

# Appendix II

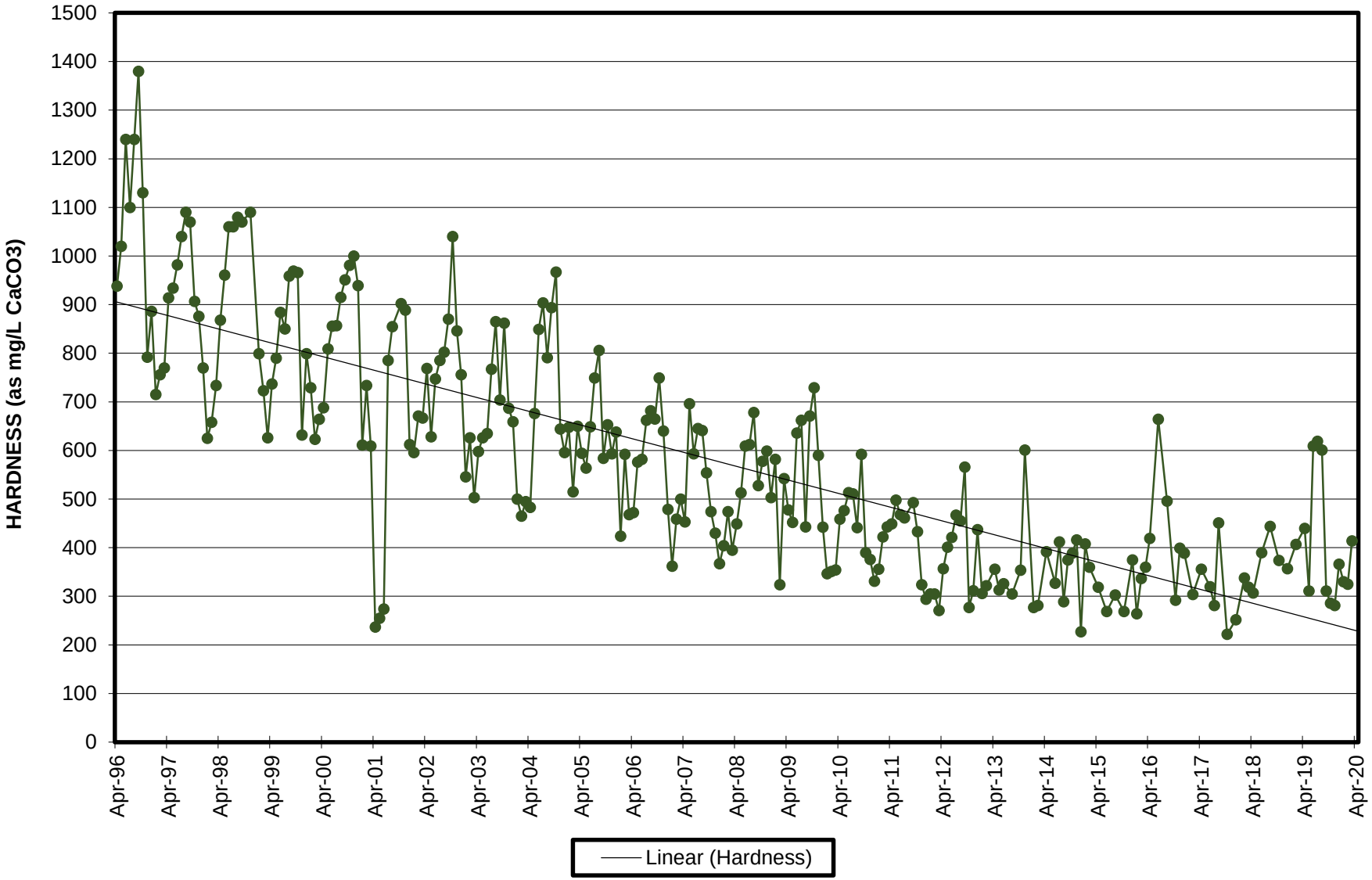
Graph 1 Hardness Settling Pond 4
Graph 2 Average Monthly Dissolved Sulphate Settling Pond 4
Graph 3 Weekly pH Settling Pond 4
Graph 4 Total Suspended Solids Settling Pond 4 & WC
Graph 5 Dissolved Arsenic Settling Pond 4
Graph 6 Dissolved Iron Settling Pond 4
Graph 7 Total Iron at Settling Pond 4
Graph 8 Total Manganese Settling Pond 4
Graph 9 Hardness Settling Pond 1
Graph 10 Average Monthly Dissolved Sulphate Settling Pond 1
Graph 11 Weekly pH Settling Pond 1
Graph 12 Total Suspended Solids Settling Pond 1 & SPC
Graph 13 Dissolved Iron Settling Pond 1
Graph 14 Total Manganese Settling Pond 1
Graph 15 Rolling Average Dissolved Sulphate vs Discharge LLE
Graph 16 Dissolved Iron vs Discharge LLE
Graph 17 Total Iron vs Discharge LLE
Graph 18 Total Manganese vs Discharge LLE
Graph 19 Dissolved Sulphate Seeps Into Long Lake
Graph 20 Dissolved Arsenic Seeps Into Long Lake
Graph 21 Total Manganese Seeps Into Long Lake
Graph 22 Dissolved Iron Seeps Into Long Lake
Graph 23 5 in 30 pH No Name Lake
Graph 24 5 in 30 Average Total Copper No Name Lake
Graph 25 5 in 30 Hardness Long Lake
Graph 26 5 in 30 pH Long Lake
Graph 27 DO vs Mn-T Long Lake 1 Metre From Bottom 2000-2019
Graph 28 Historic Dissolved Sulphate Long Lake
Graph 29 5 in 30 Average Dissolved Sulphate Long Lake
Graph 30 5 in 30 Total Manganese Long Lake
Graph 31 5 in 30 Average Total Manganese Long Lake
Graph 32 5 in 30 Hardness Middle Quinsam Lake
Graph 33 5 in 30 pH Middle Quinsam Lake
Graph 34 5 in 30 Average Dissolved Sulphate Middle Quinsam Lake

Graph 35 5 in 30 Total Manganese Middle Quinsam Lake
Graph 36 5 in 30 Average Total Manganese Middle Quinsam Lake
Graph 37 5 in 30 Total Arsenic Middle Quinsam Lake
Graph 38 5 in 30 Total Iron Middle Quinsam Lake
Graph 39 5 in 30 Hardness Lower Quinsam Lake
Graph 40 5 in 30 pH Lower Quinsam Lake
Graph 41 5 in 30 Average Dissolved Sulphate Lower Quinsam Lake
Graph 42 5 in 30 Total Manganese Lower Quinsam Lake
Graph 43 5 in 30 Average Total Manganese Lower Quinsam Lake
Graph 44 5 in 30 Dissolved Iron vs Dissolved Oxygen Lower Quinsam Lake 1mb
Graph 45 5 in 30 Total Iron vs Dissolved Oxygen Lower Quinsam Lake 1mb
Graph 46 5 in 30 Average Dissolved Sulphate Quinsam Sub Basin: Rivers and Streams
Graph 47 Dissolved Sulphate Quinsam Sub Basin: Rivers and Streams (NNO to LLO)
Graph 48 Dissolved Sulphate Quinsam River Sites (WA, WB to 7SQR)
Graph 49 Total Arsenic: Quinsam River
Graph 50 Dissolved Arsenic Quinsam River
Graph 51 Dissolved Iron Quinsam River
Graph 52 Dissolved Manganese Quinsam River
Graph 53 Dissolved Aluminum vs. Flow Iron River
Graph 54 5 in 30 Average Dissolved Aluminum vs. Flow Iron River
Graph 55 Total Arsenic vs. Flow Iron River
Graph 56 Flow vs. Precipitation Quinsam River @ Argonaut Bridge (WA)
Graph 57 Flow vs. Precipitation Middle Quinsam Lake Outlet (WB)
Graph 58 Discharge vs. Precipitation Long Lake Seep Middle (LLSM)
Graph 59 Discharge vs. Precipitation Long Lake Entry (LLE)
Graph 60 Flow vs. Precipitation Long Lake Outlet (LLO)
Graph 61 Flow vs. Precipitation Stream 1 (7S)
Graph 62 Flow vs. Precipitation Iron River (IR8)
Graph 63 Cumulative & Daily Discharge Rates Settling Pond 1 (SPD)
Graph 64 Comparison of Cumulative Annual Discharges Settling Pond 4 (WD)
Graph 65 Cumulative & Daily Discharge Rates Settling Pond 4 (WD)
Graph 66 Daily Precipitation Accumulation (mm) 2-South Pit Area
Graph 67 Flow Rate (L/s) @ 90$^{o}$ V-notch Weir vs Staff Gauge 2-South Inflow
Graph 68 Flow Rate (L/s) @ 90º V-notch Weir vs Precipitation (mm) 2-South Inflow
Graph 69 Flow & Precipitation 2-South Outflow / 2-South Culvert Entering 3-South Pit (2SC)

GRAPH 1

# HARDNESS

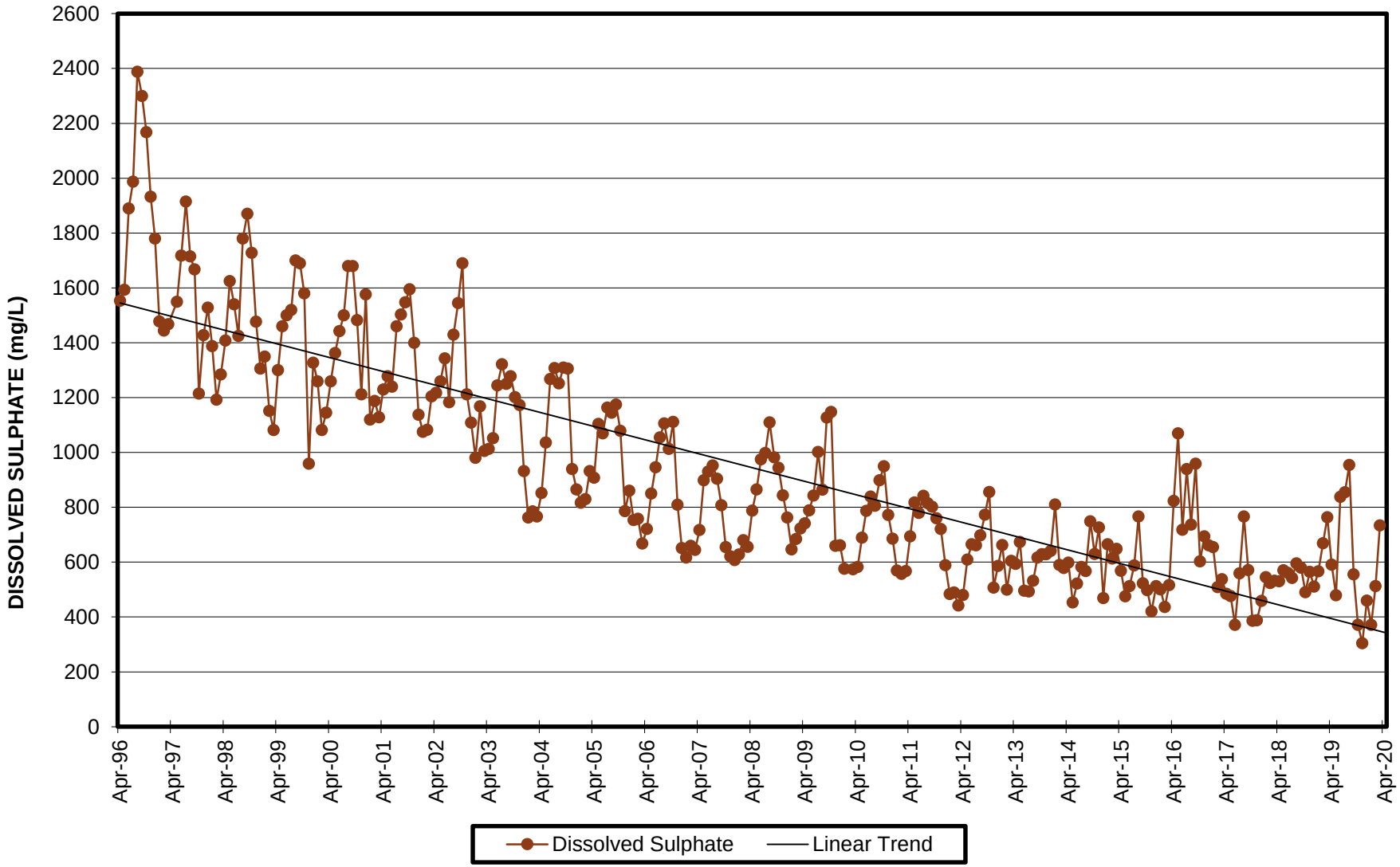
## SETTLING POND 4



GRAPH 2

# AVERAGE MONTHLY DISSOLVED SULPHATE

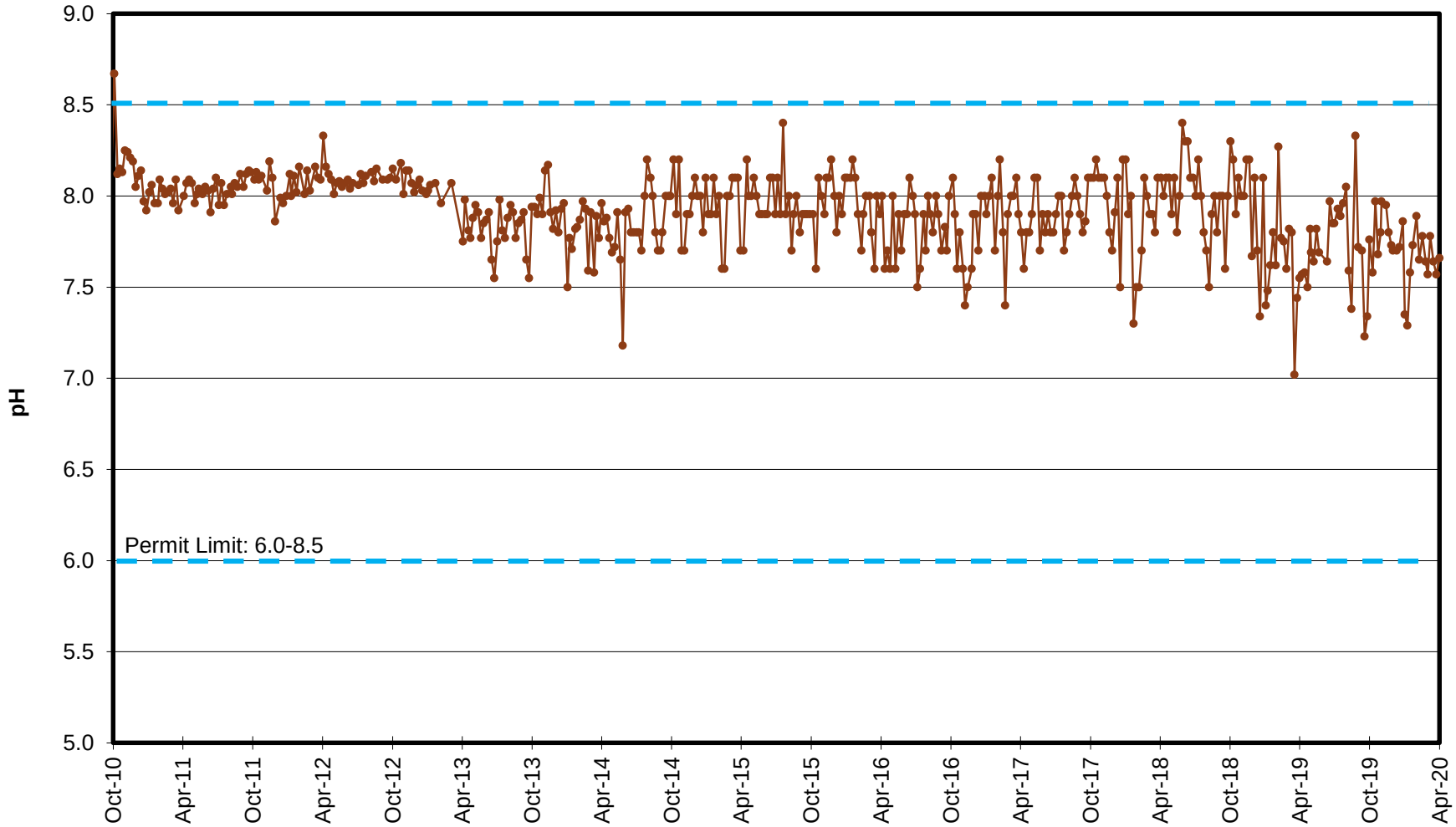
## SETTLING POND 4



GRAPH 3

# WEEKLY pH

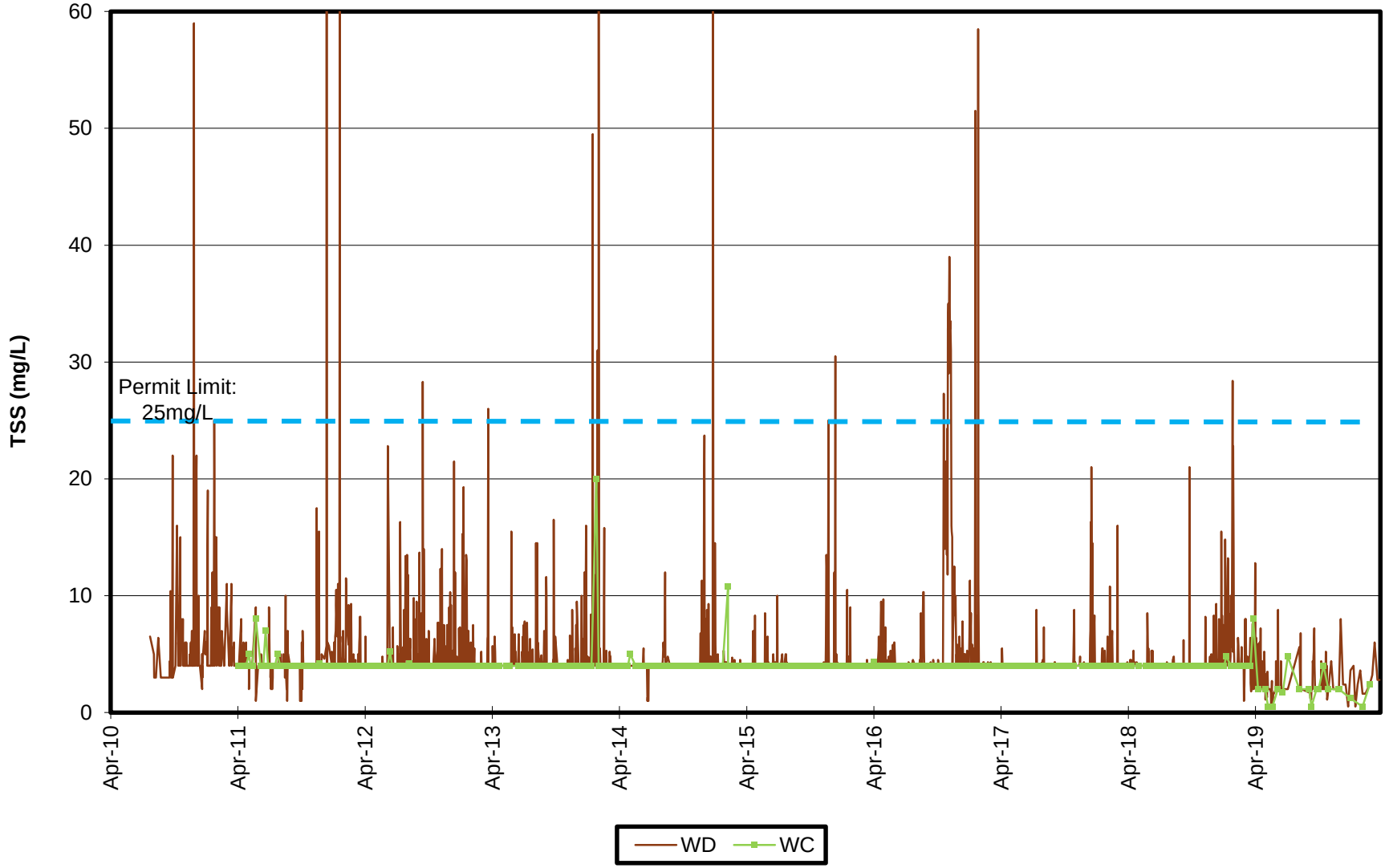
## SETTLING POND 4



GRAPH 4

# TOTAL SUSPENDED SOLIDS

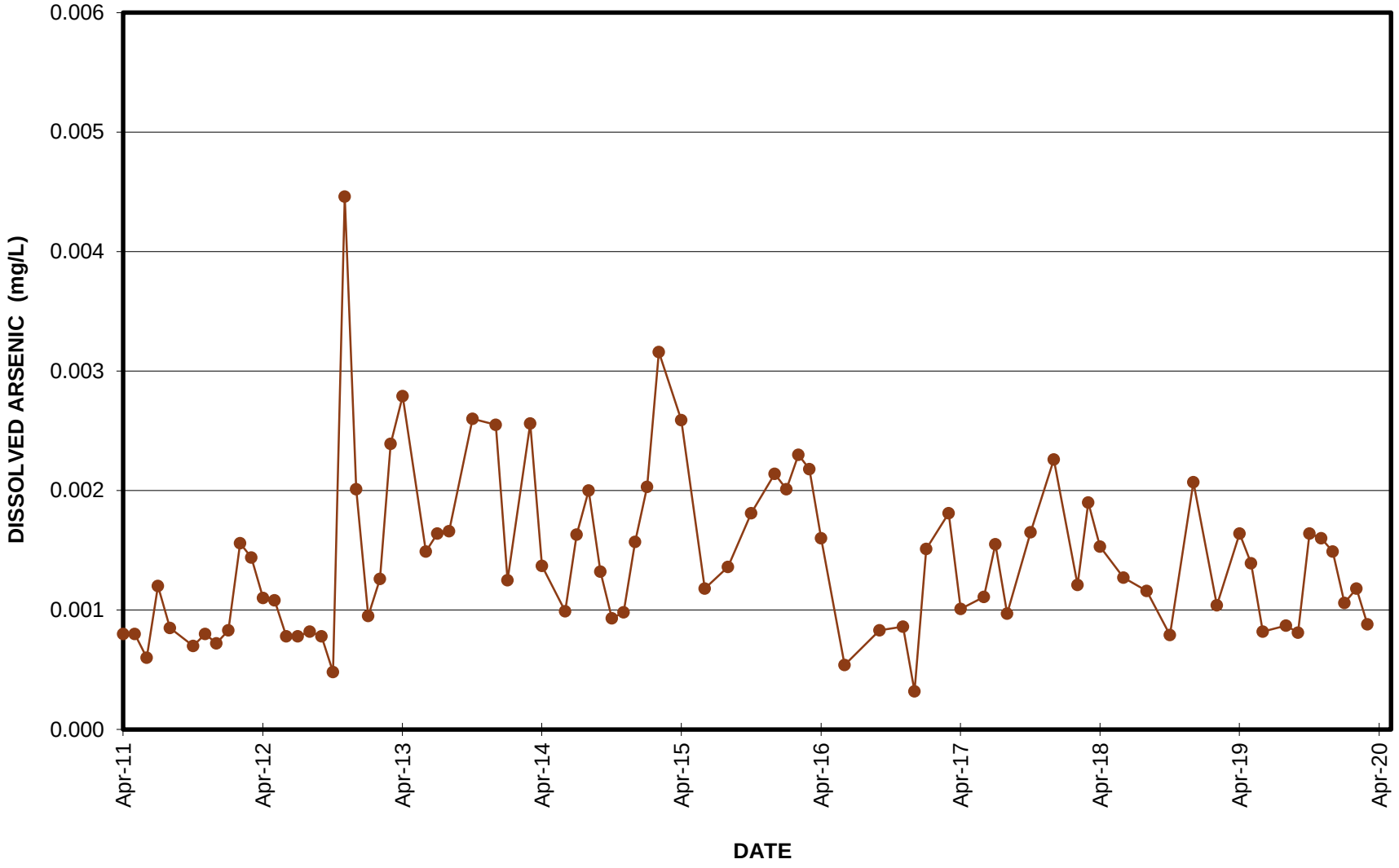
## SETTLING POND 4 & WC



GRAPH 5

# DISSOLVED ARSENIC

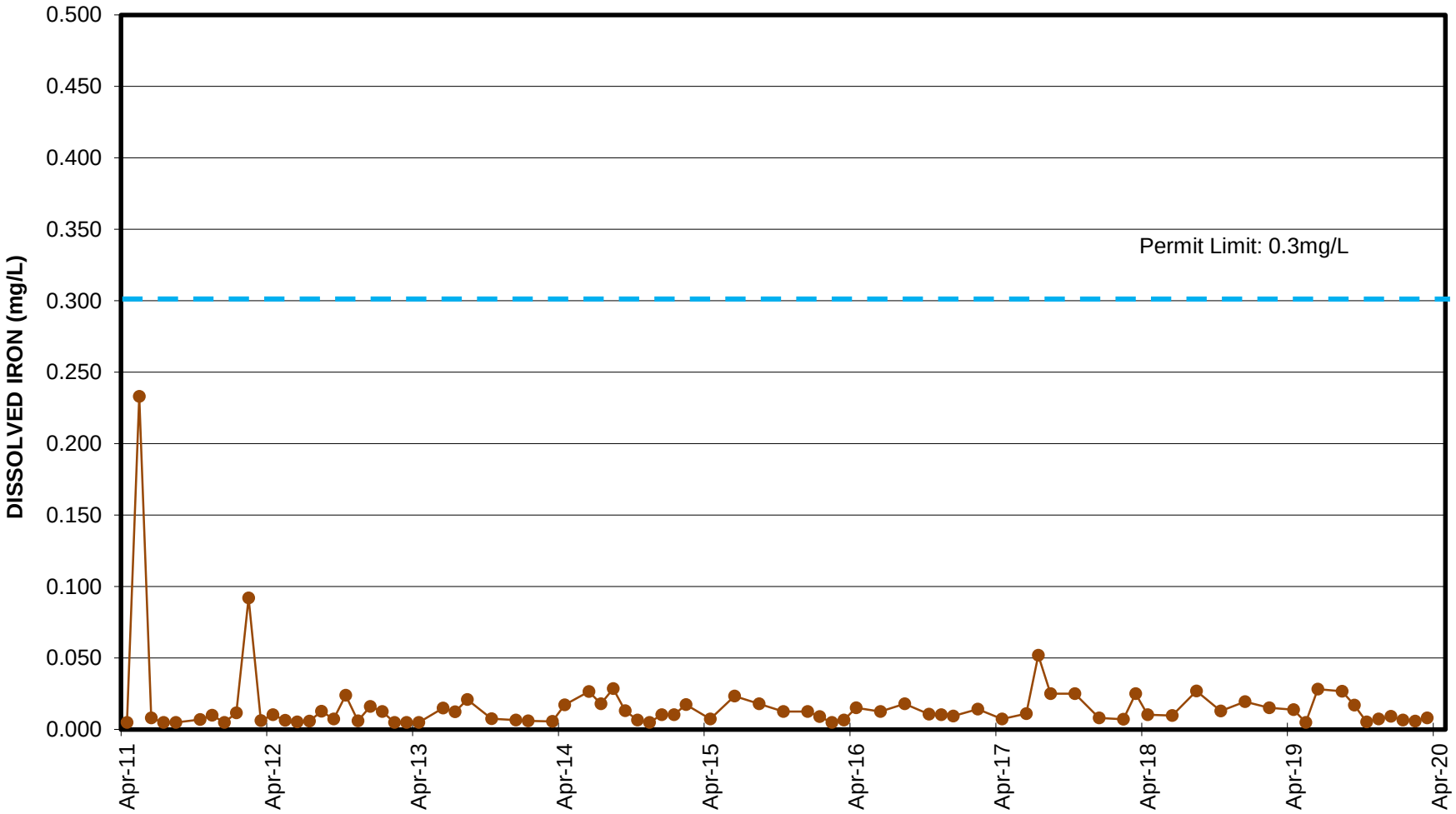
## SETTLING POND 4



GRAPH 6

# DISSOLVED IRON

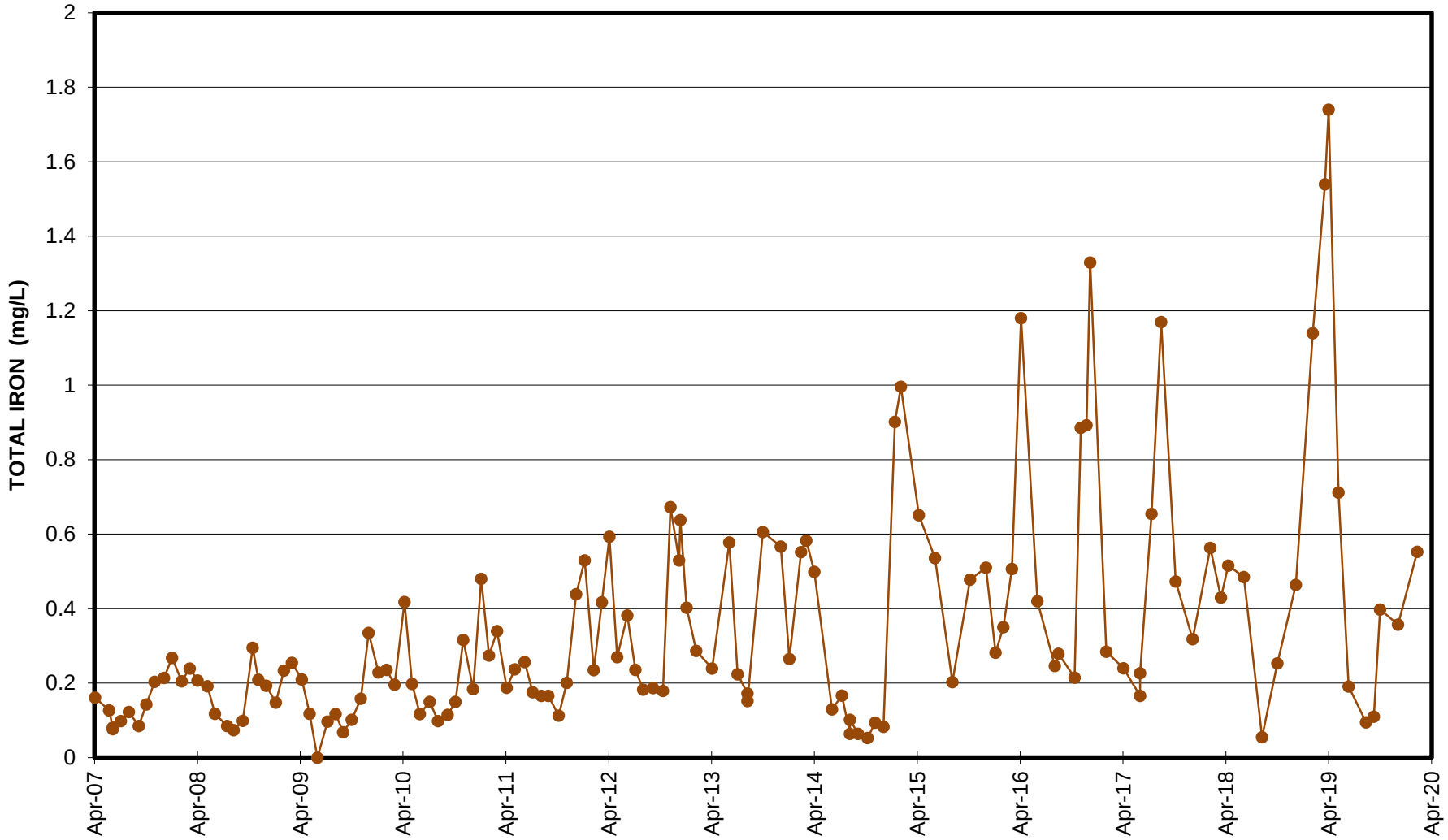
## SETTLING POND 4



GRAPH 7

# TOTAL IRON

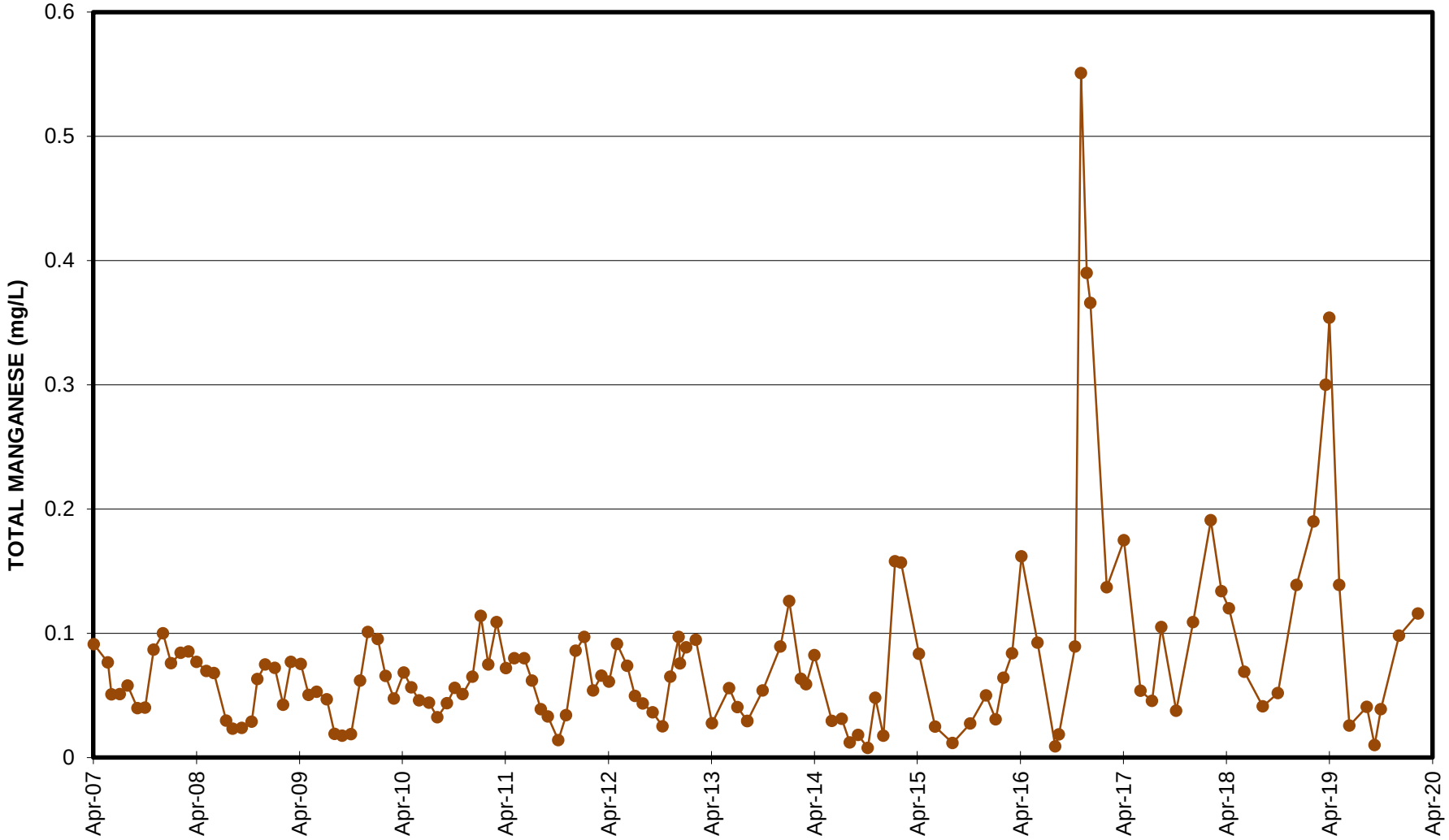
## SETTLING POND 4



GRAPH 8

# TOTAL MANGANESE

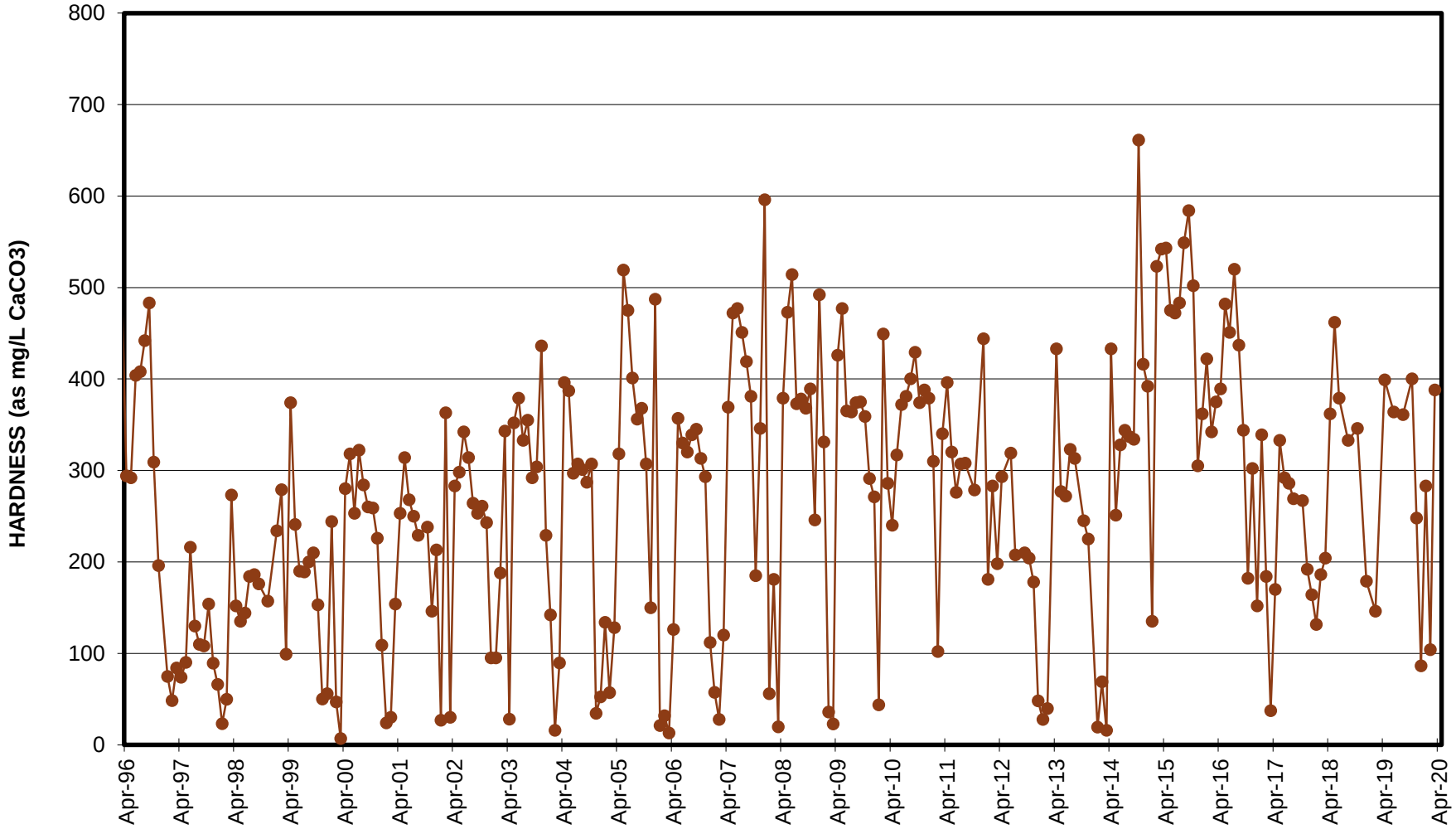
## SETTLING POND 4



GRAPH 9

# HARDNESS

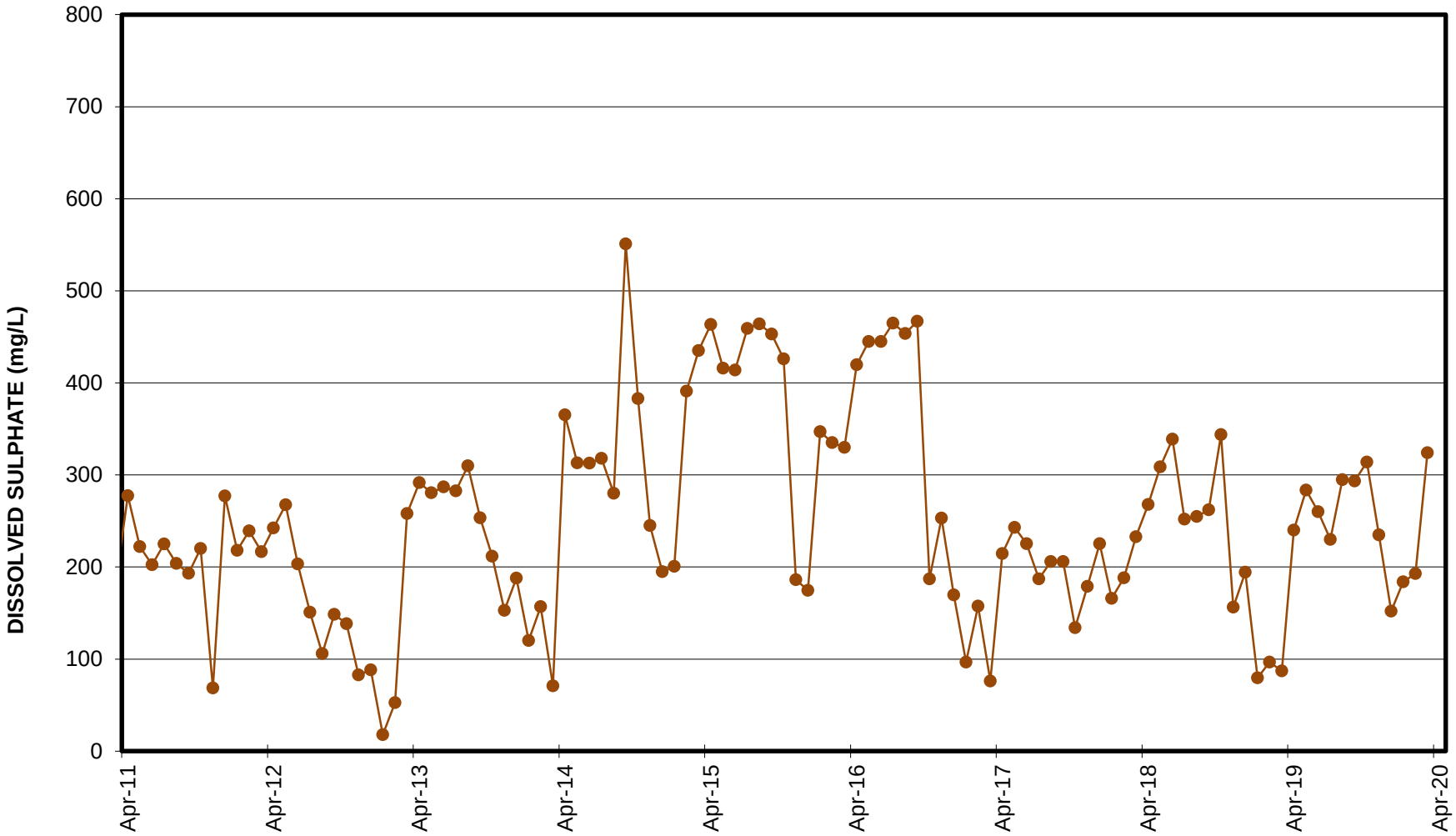
## SETTLING POND 1



GRAPH 10

# AVERAGE MONTHLY DISSOLVED SULPHATE

## SETTLING POND 1

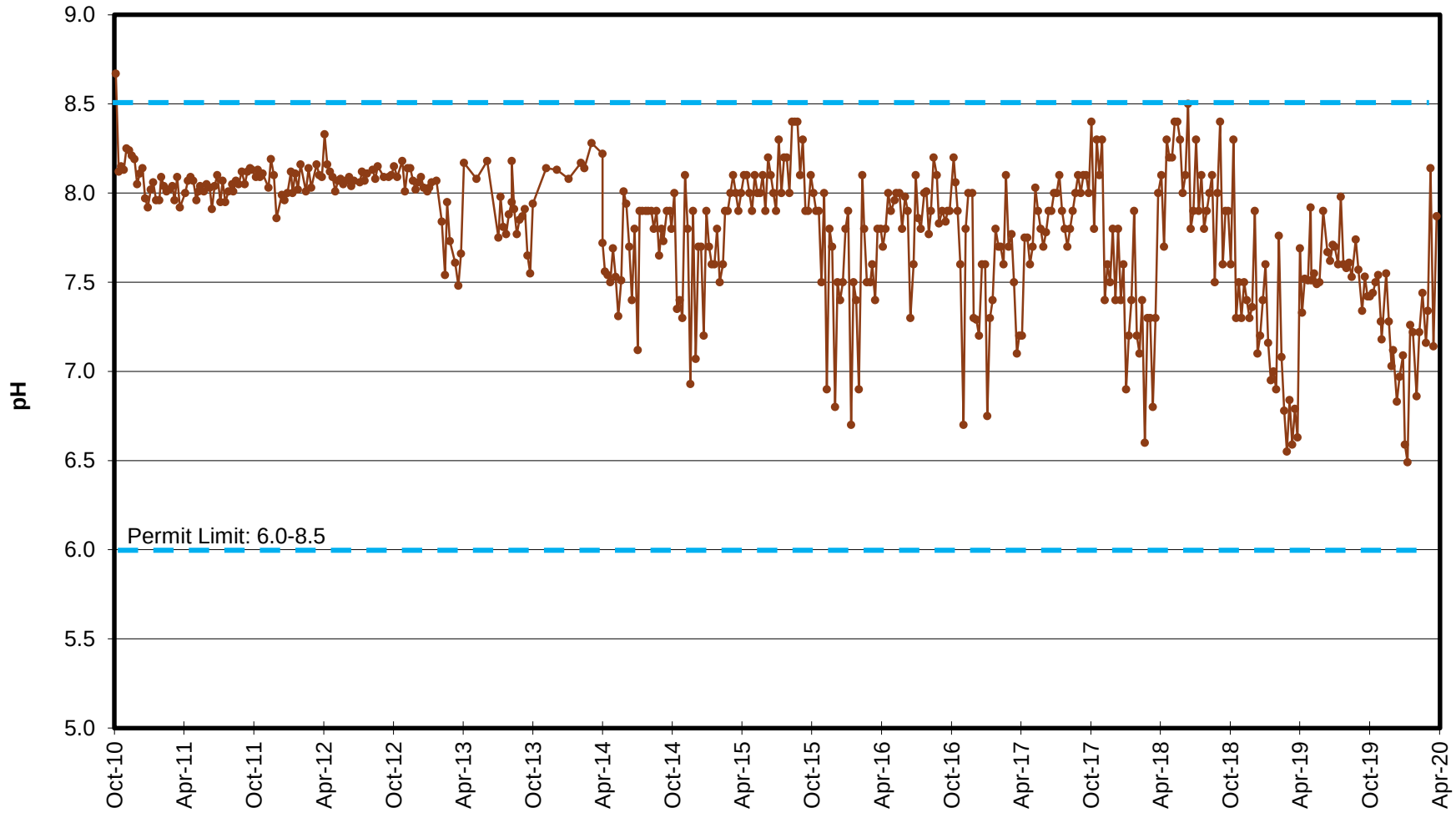


QUINSAM COAL

GRAPH 11

# WEEKLY FIELD pH

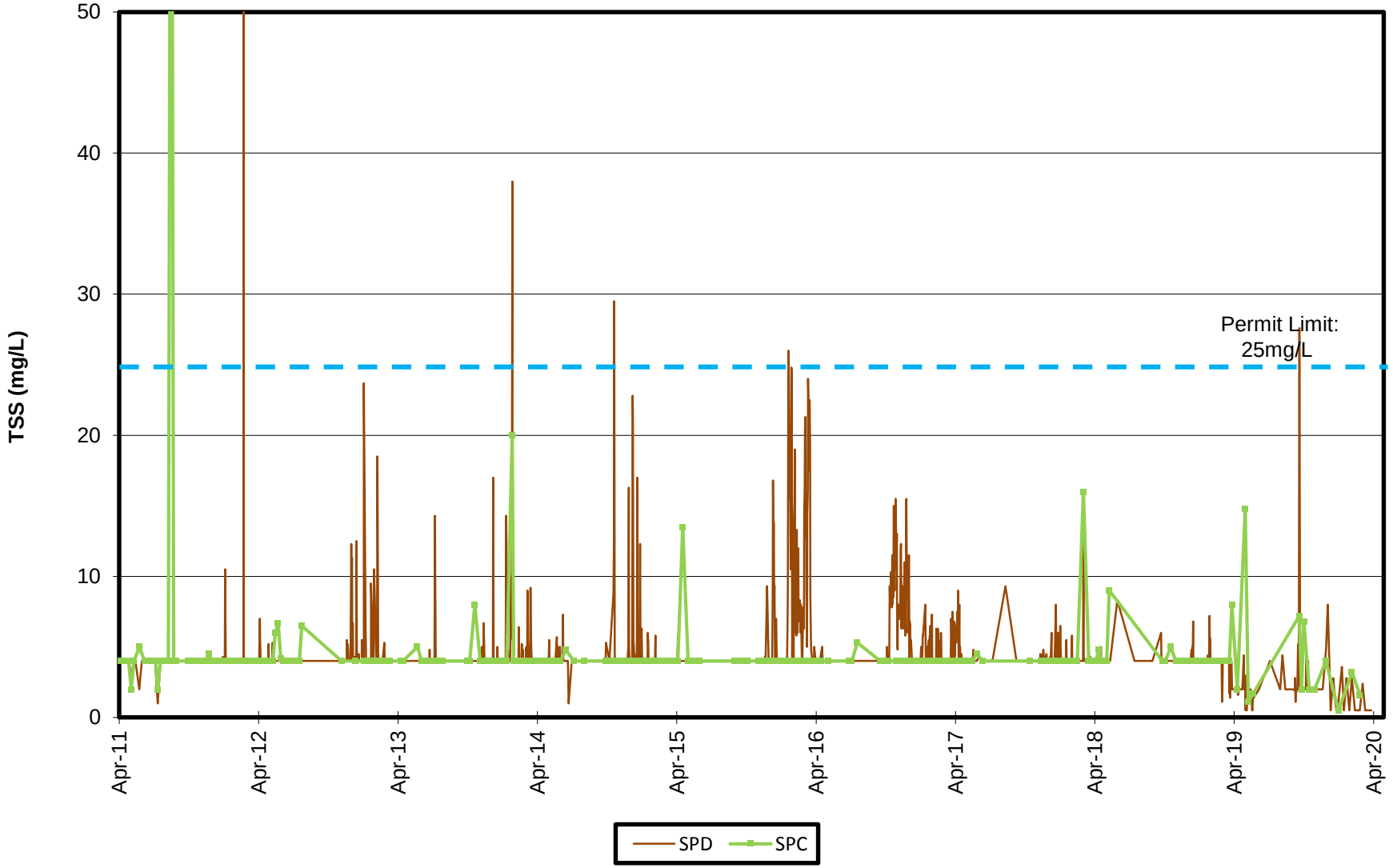
## SETTLING POND 1



GRAPH 12

# TOTAL SUSPENDED SOLIDS

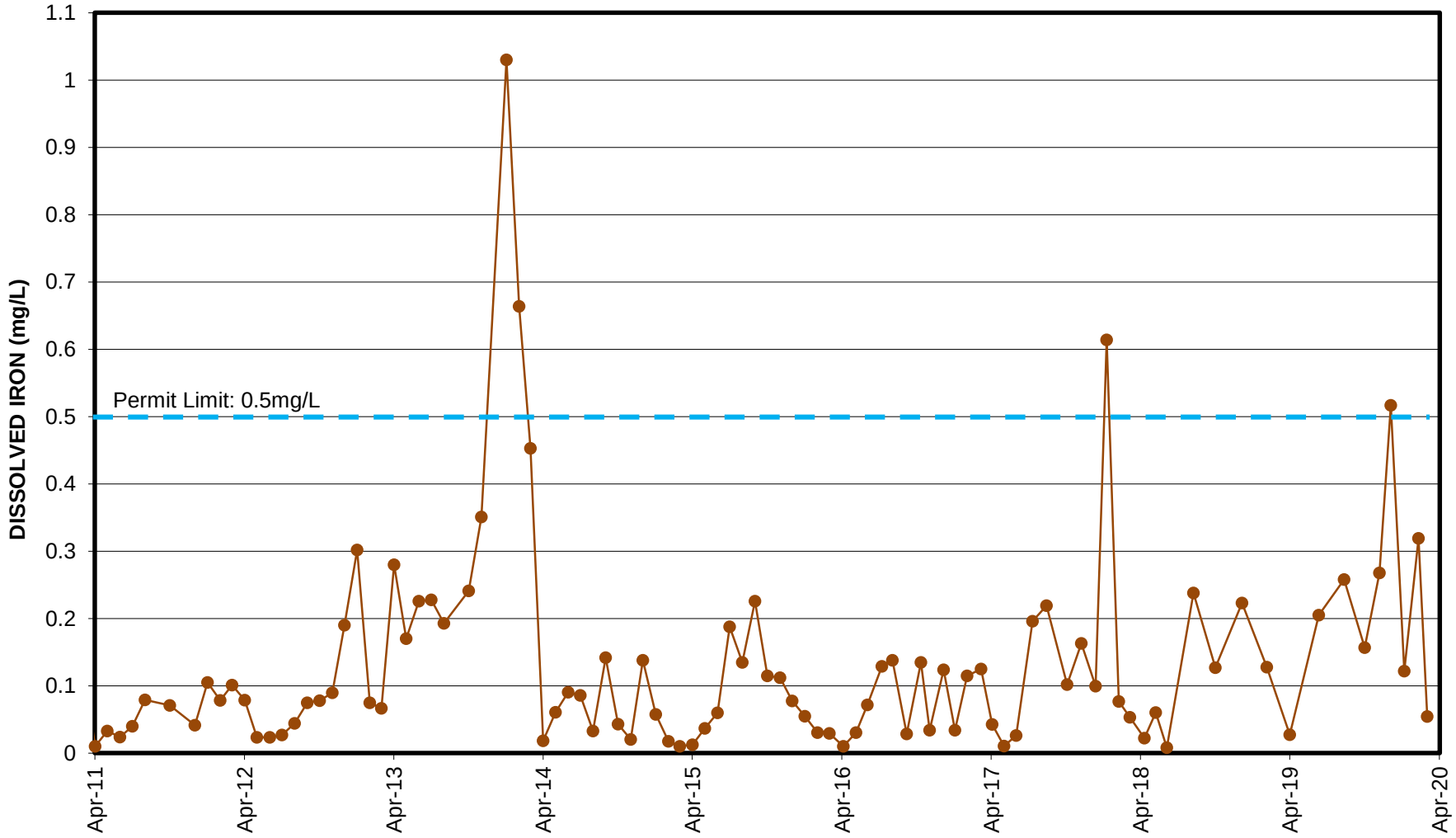
## SETTLING POND 1 and SPC



GRAPH 13

# DISSOLVED IRON

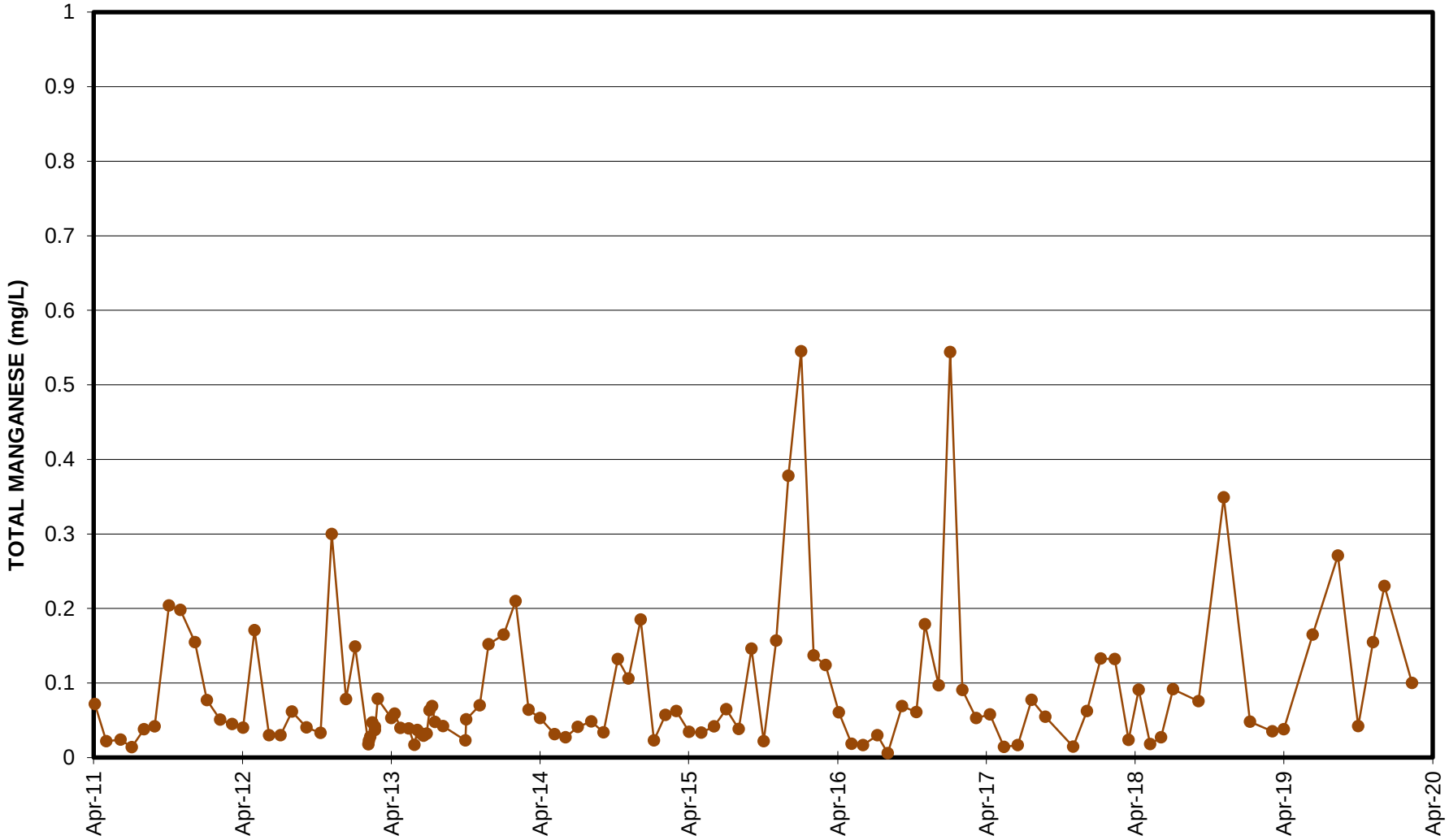
## SETTLING POND 1



GRAPH 14

# TOTAL MANGANESE

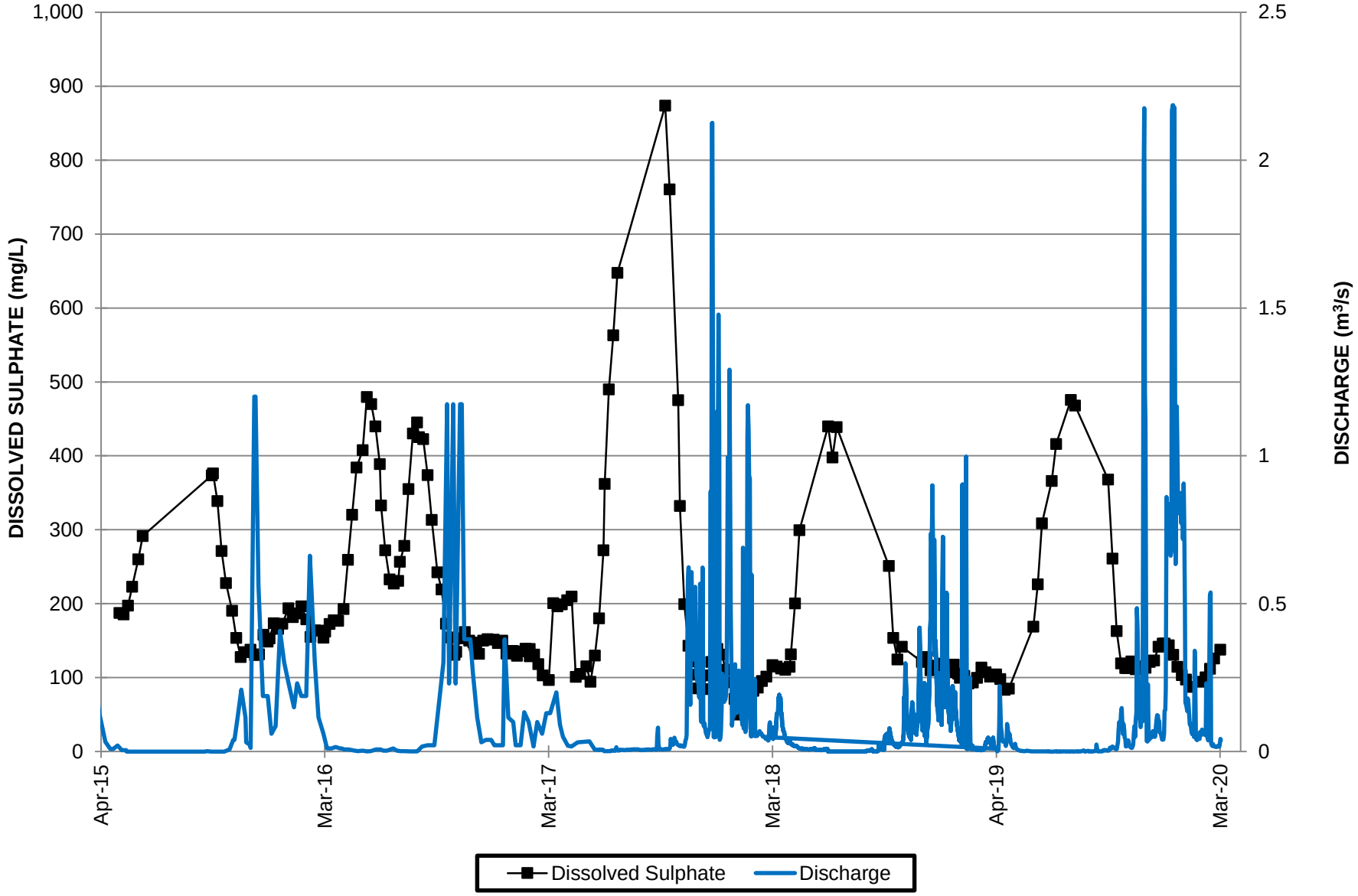
## SETTLING POND 1



GRAPH 15

# ROLLING AVERAGE DISSOLVED SULPHATE VS DISCHARGE

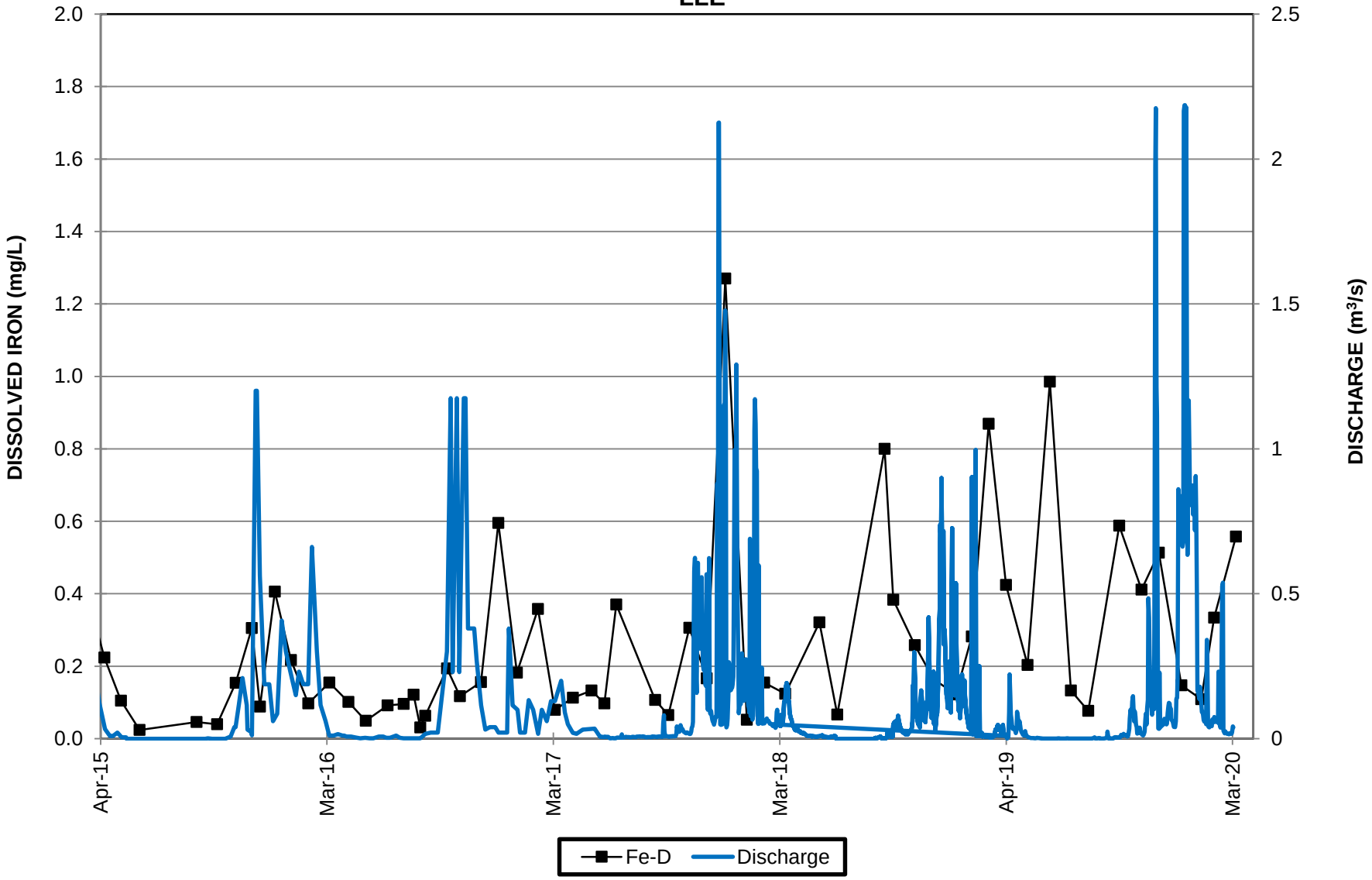
LLE



GRAPH 16

# DISSOLVED IRON VS DISCHARGE

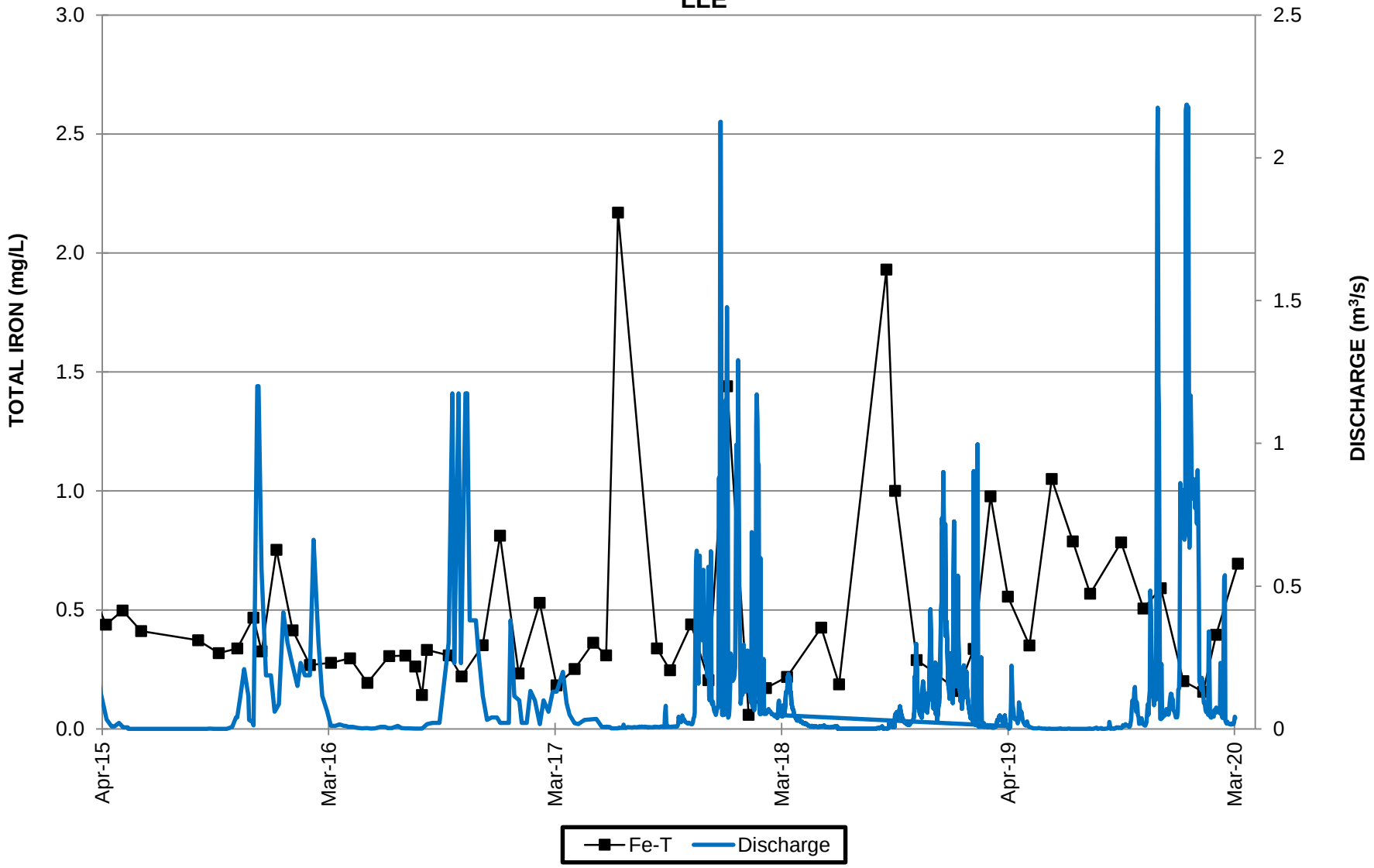
## LLE



GRAPH 17

# TOTAL IRON VS DISCHARGE

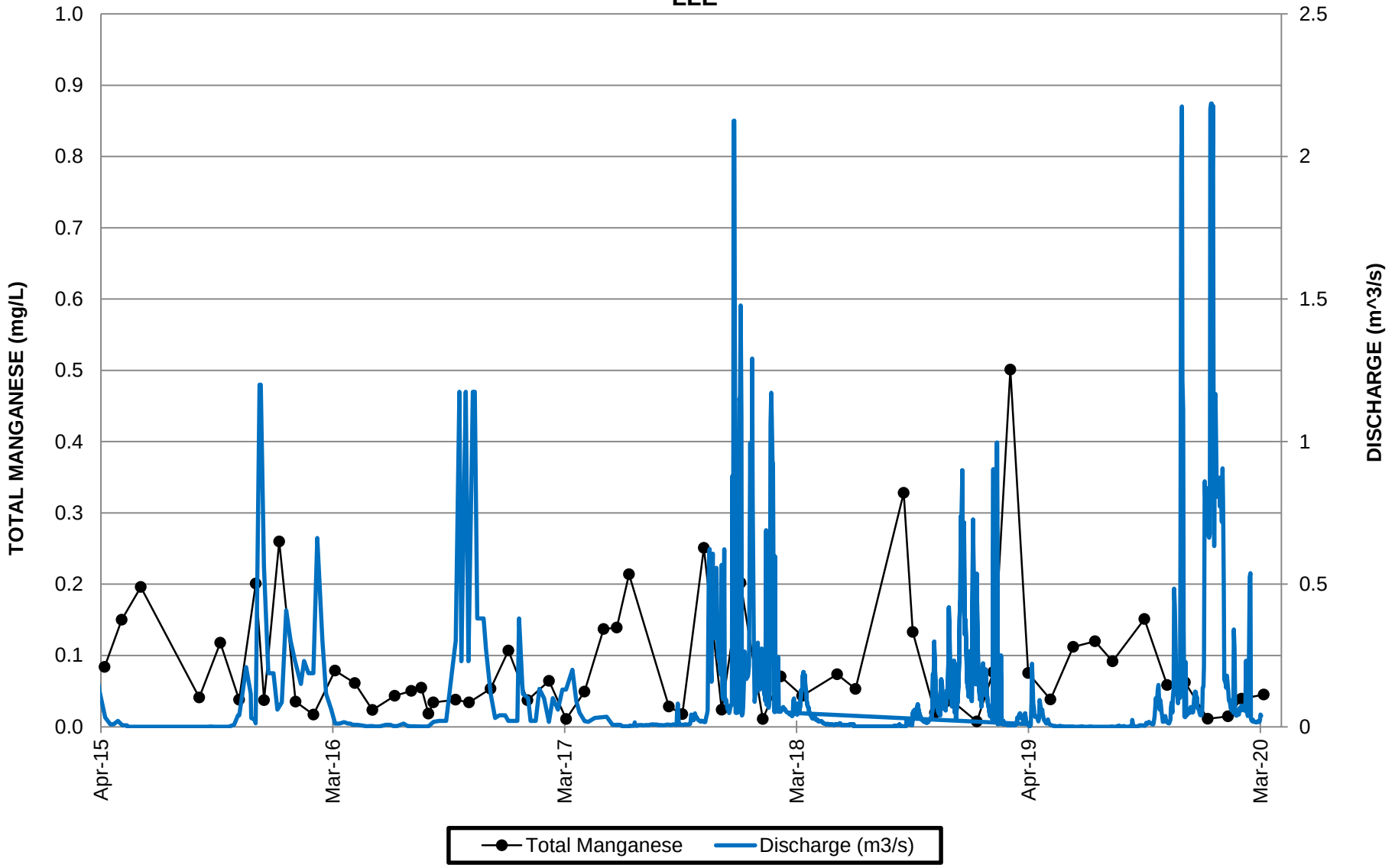
LLE



GRAPH 18

# TOTAL MANGANESE VS DISCHARGE

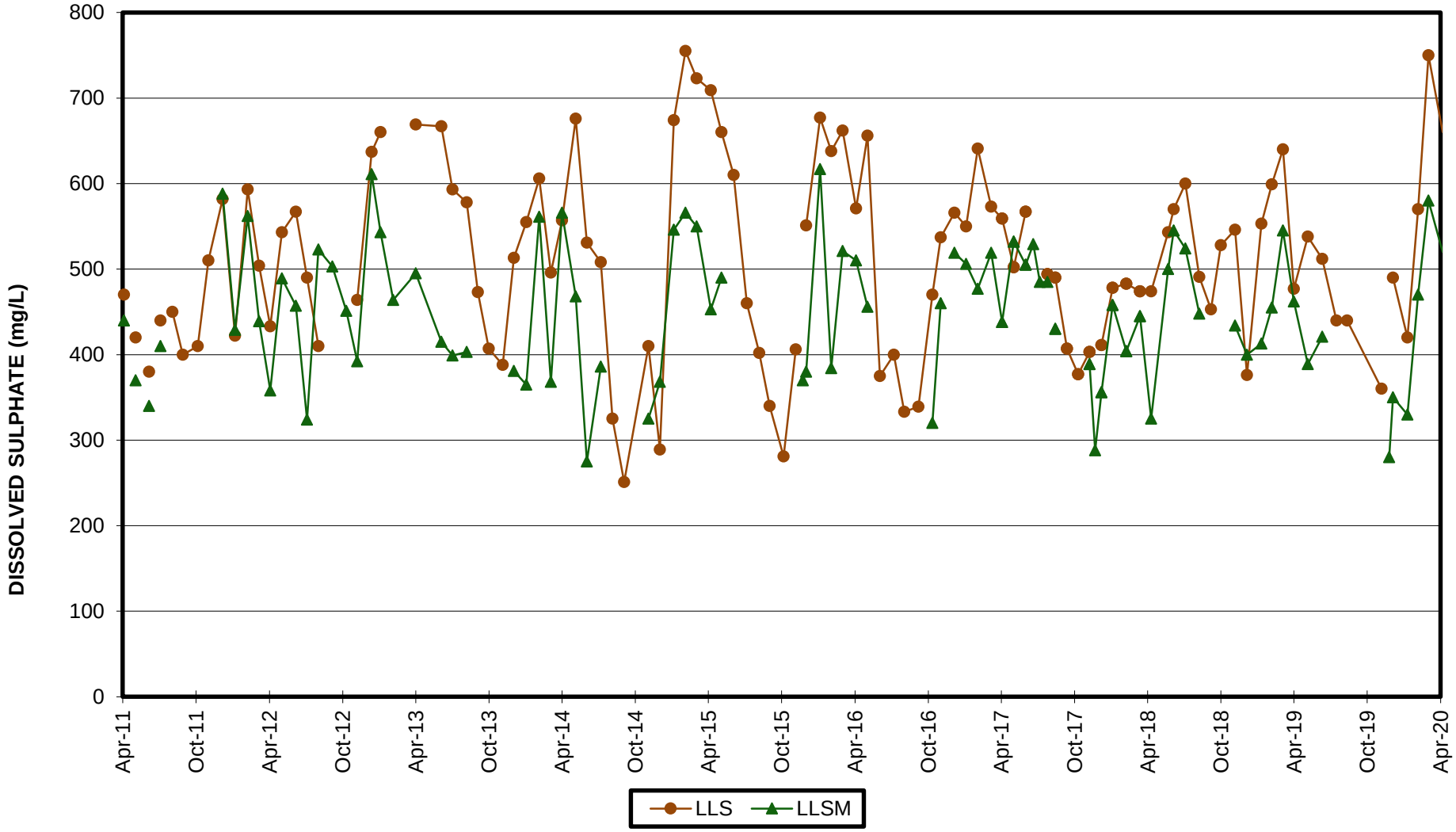
## LLE



GRAPH 19

# DISSOLVED SULPHATE

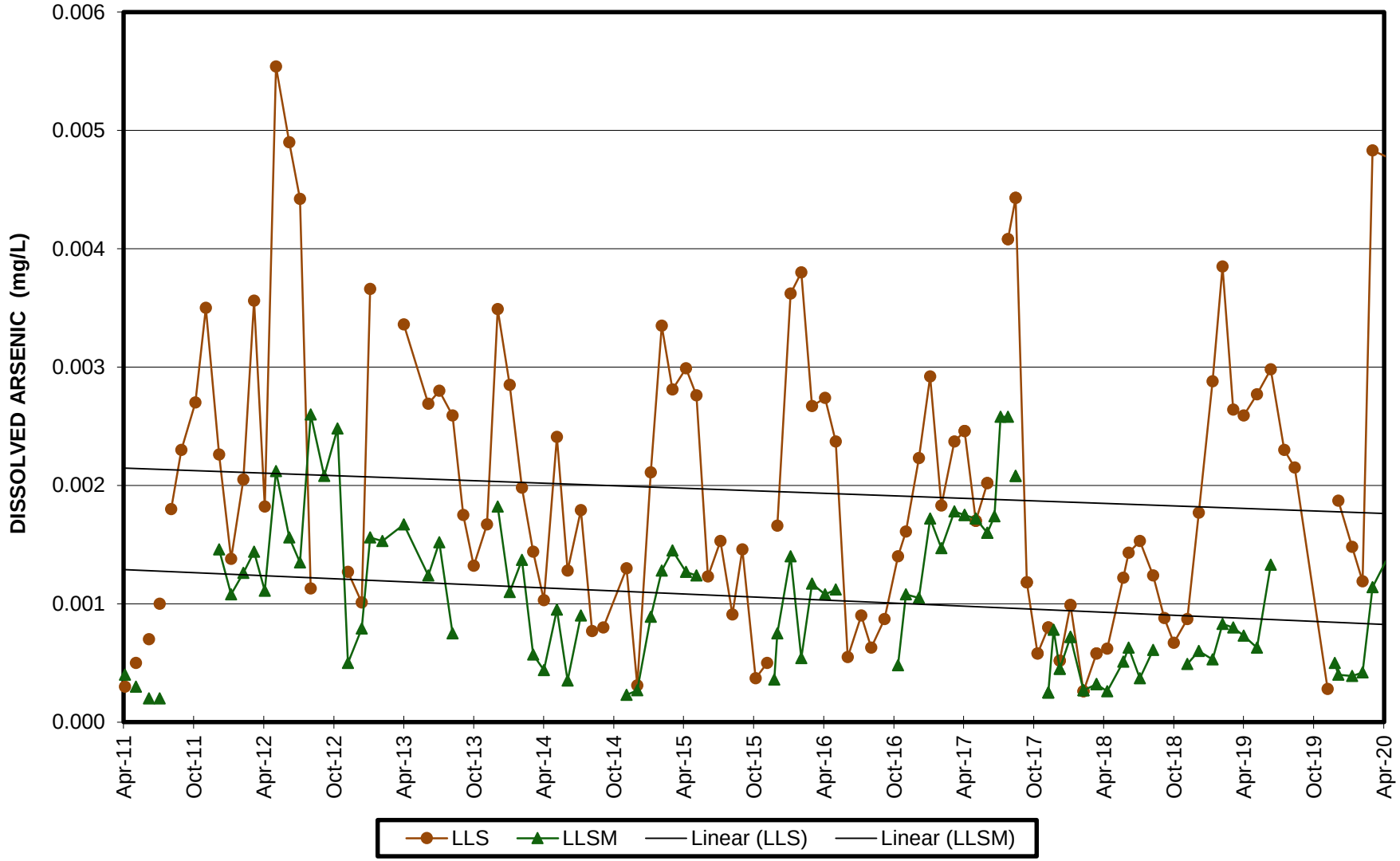
## SEEPS INTO LONG LAKE



GRAPH 20

# DISSOLVED ARSENIC

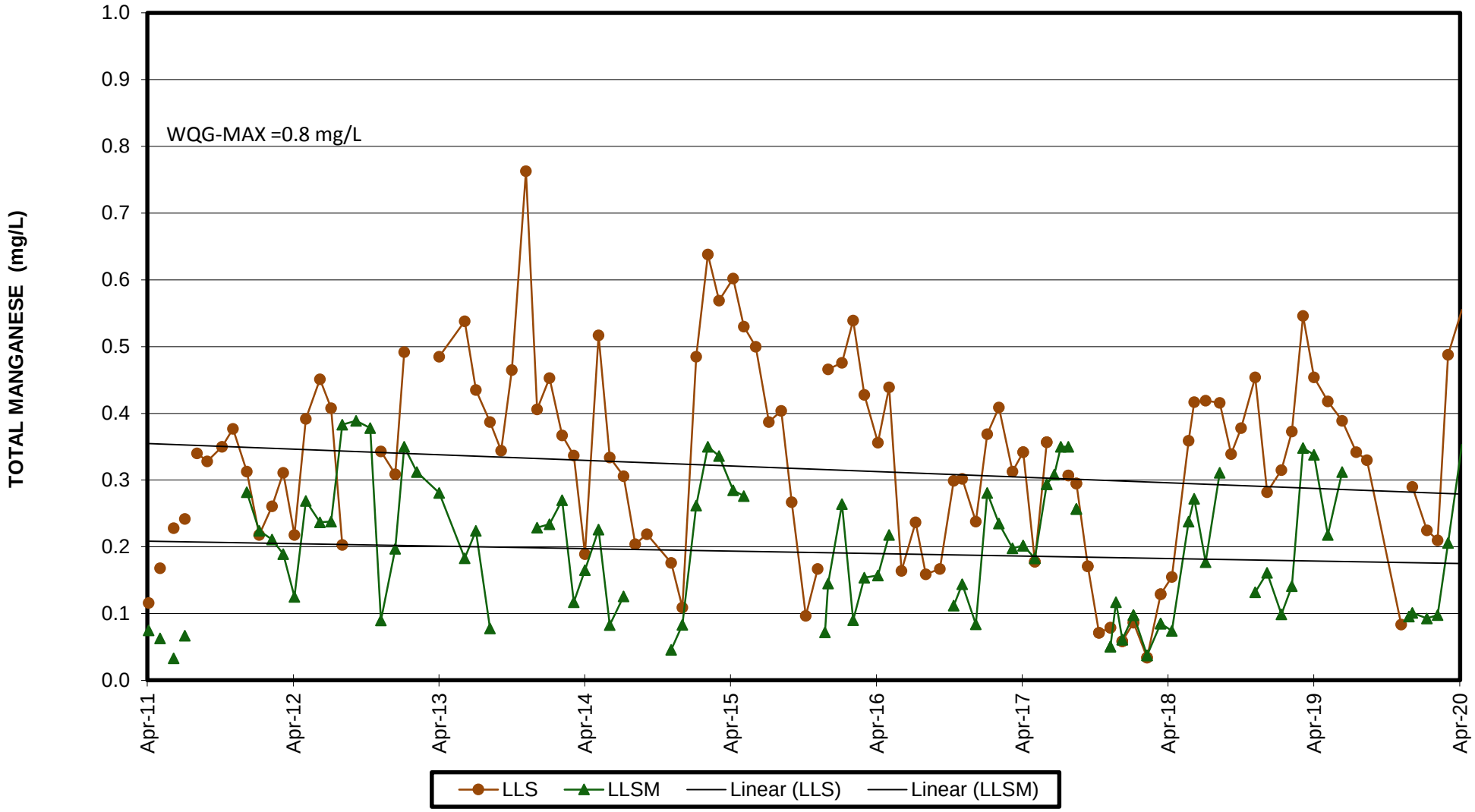
## SEEPS INTO LONG LAKE



GRAPH 21

# TOTAL MANGANESE

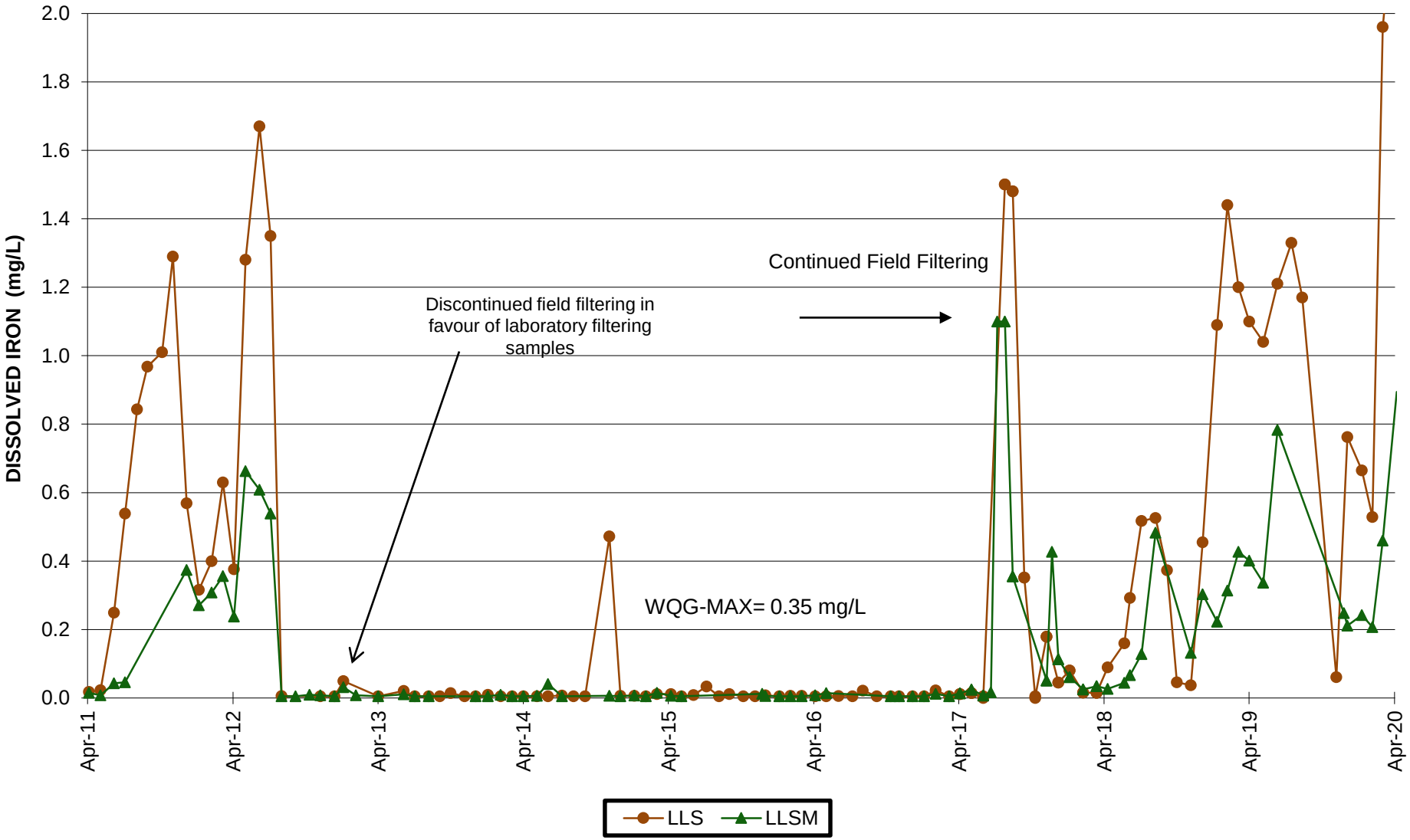
## SEEPS INTO LONG LAKE



GRAPH 22

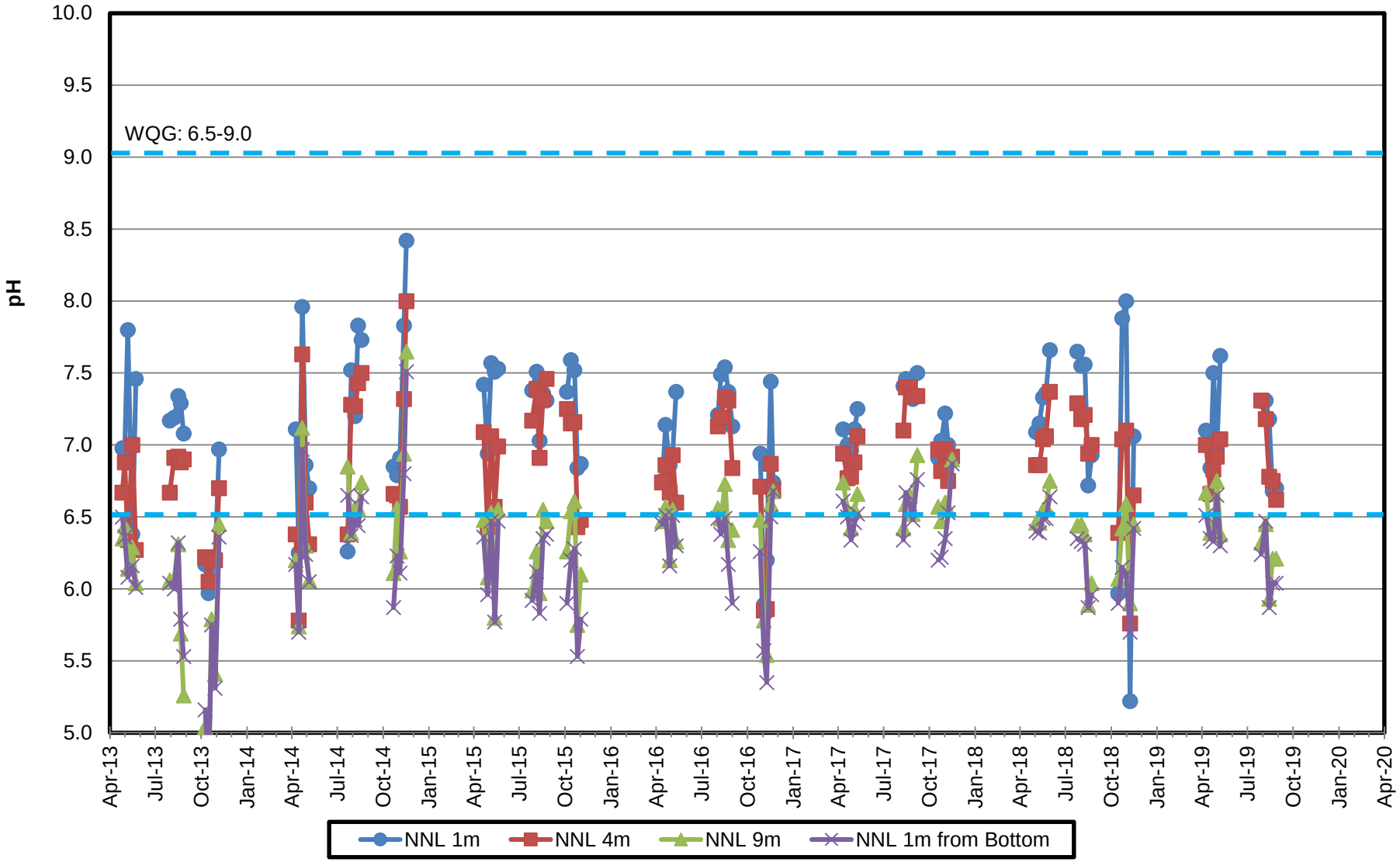
# DISSOLVED IRON

## SEEPS INTO LONG LAKE



QUINSAM COAL

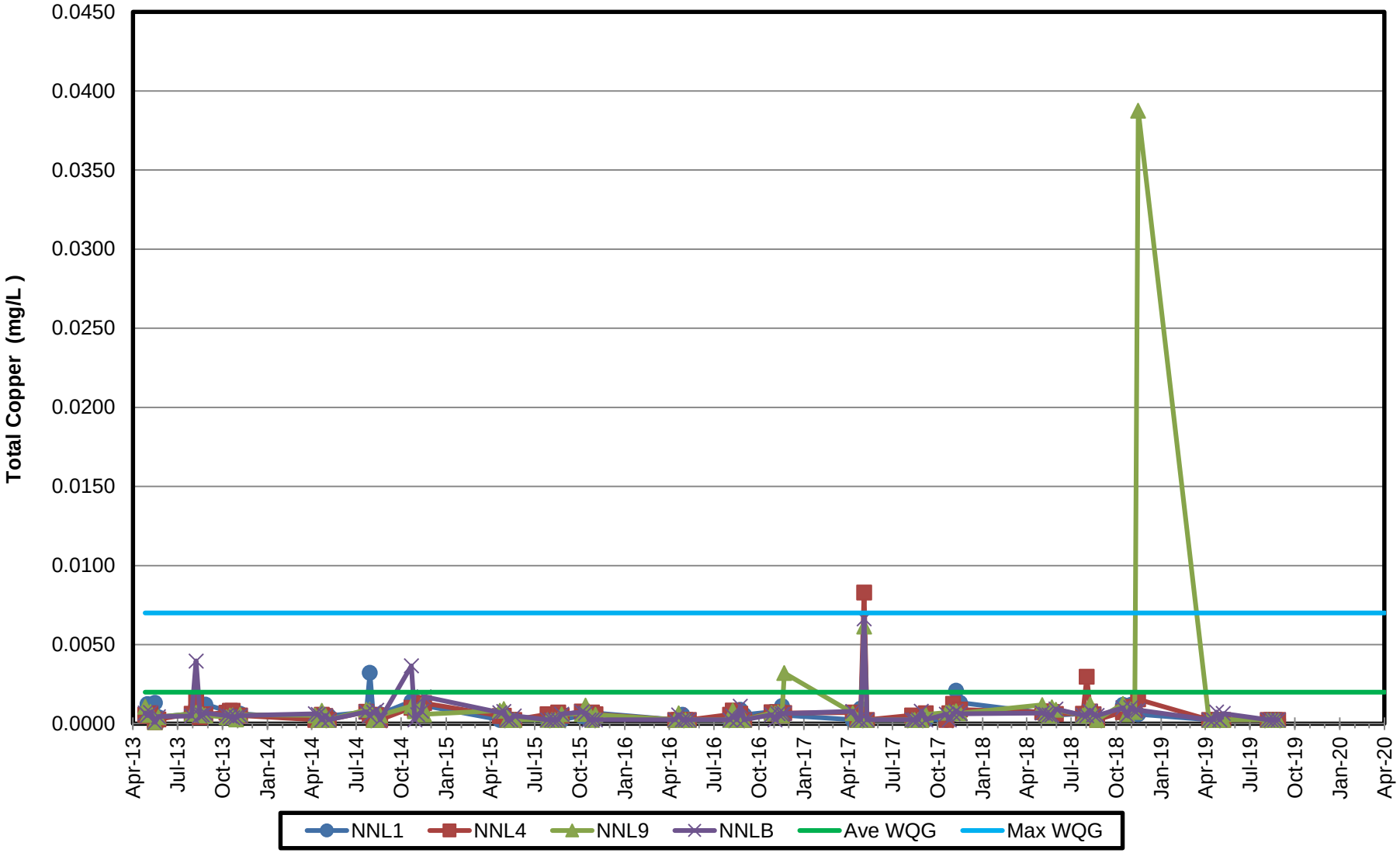
## GRAPH 23
# 5 in 30 PH
### NO NAME LAKE



GRAPH 24

# 5 in 30 AVERAGE TOTAL COPPER

## NO NAME LAKE

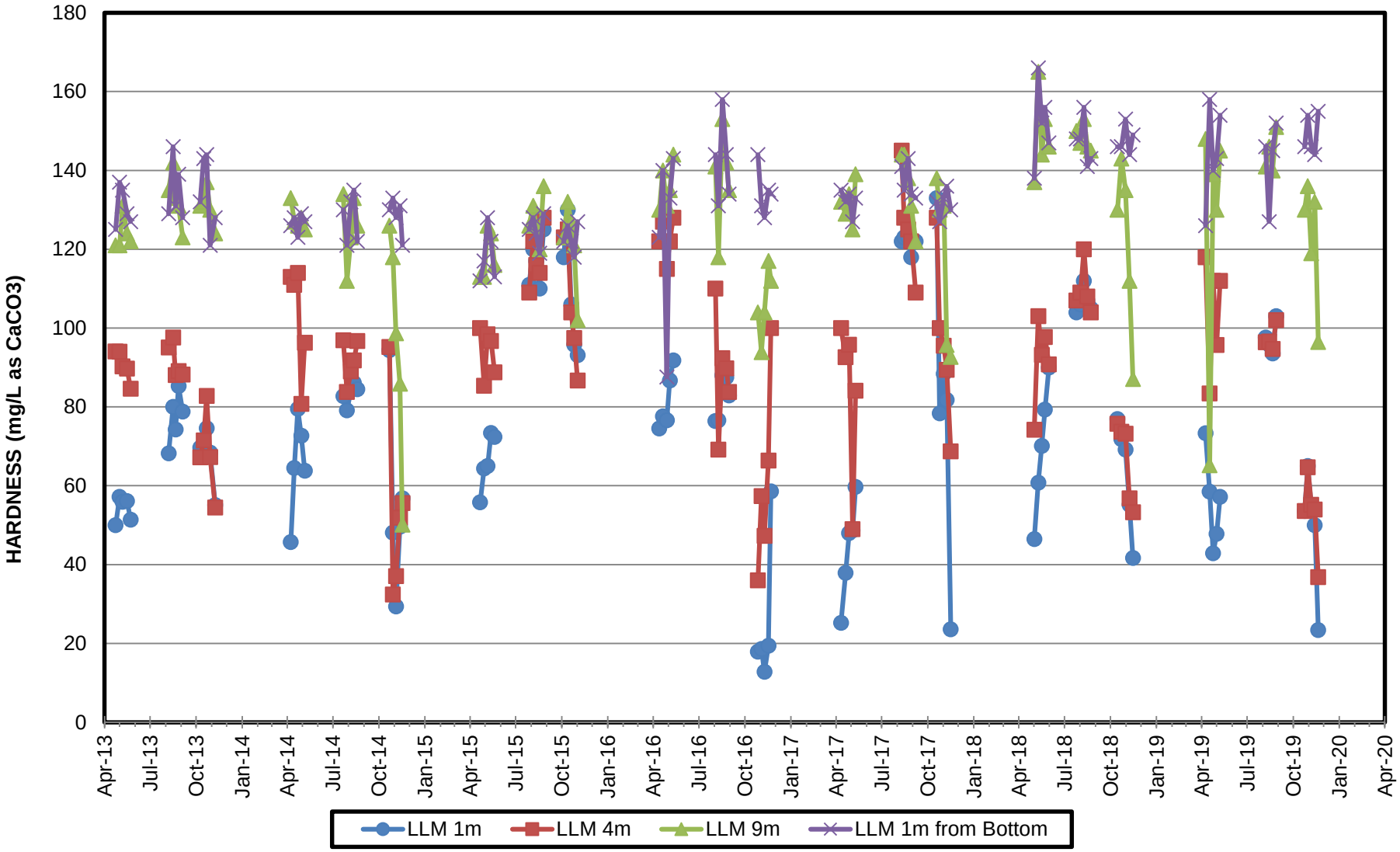


QUINSAM COAL

GRAPH 25

# 5 in 30 HARDNESS

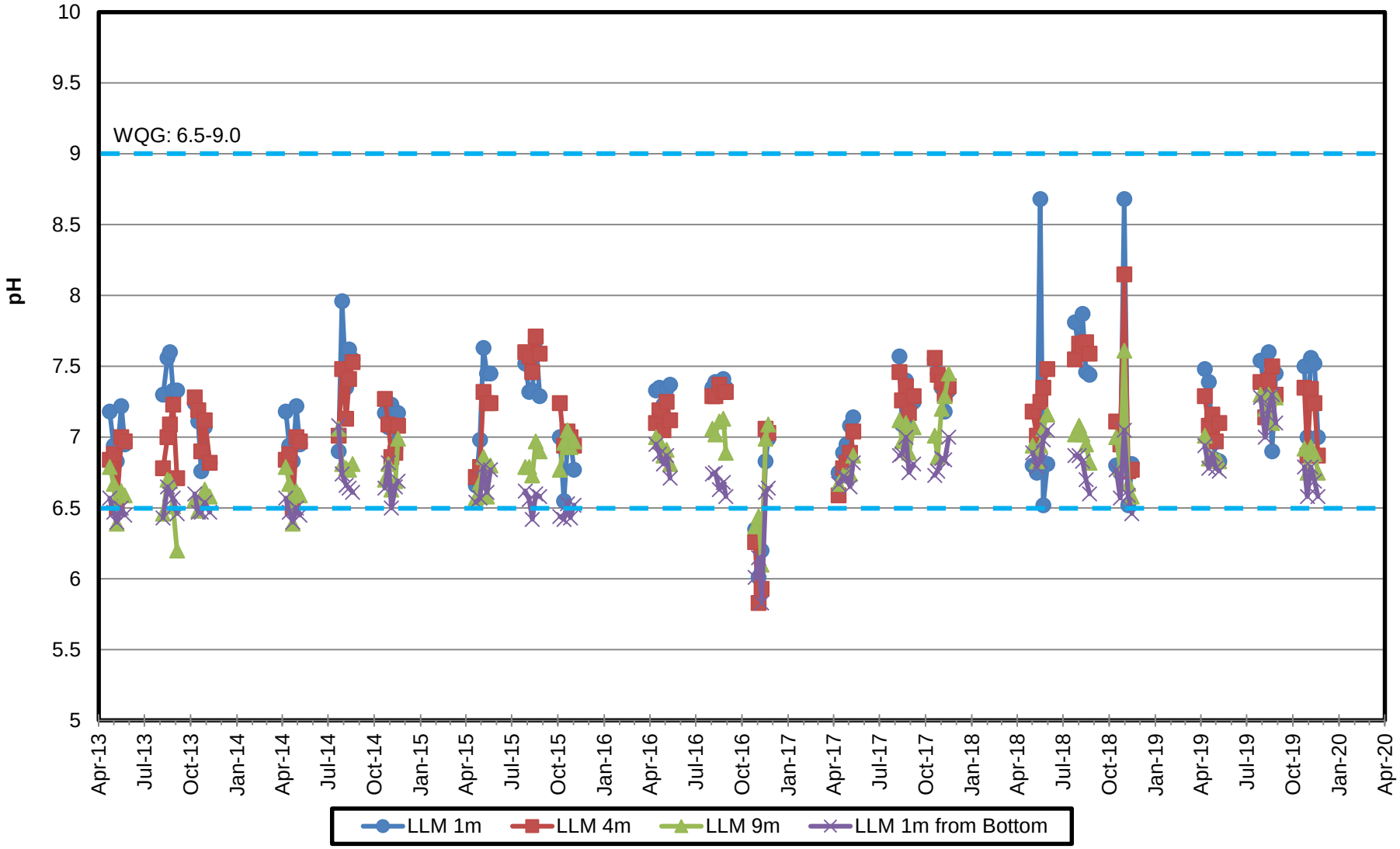
## LONG LAKE



GRAPH 26

# 5 in 30 PH

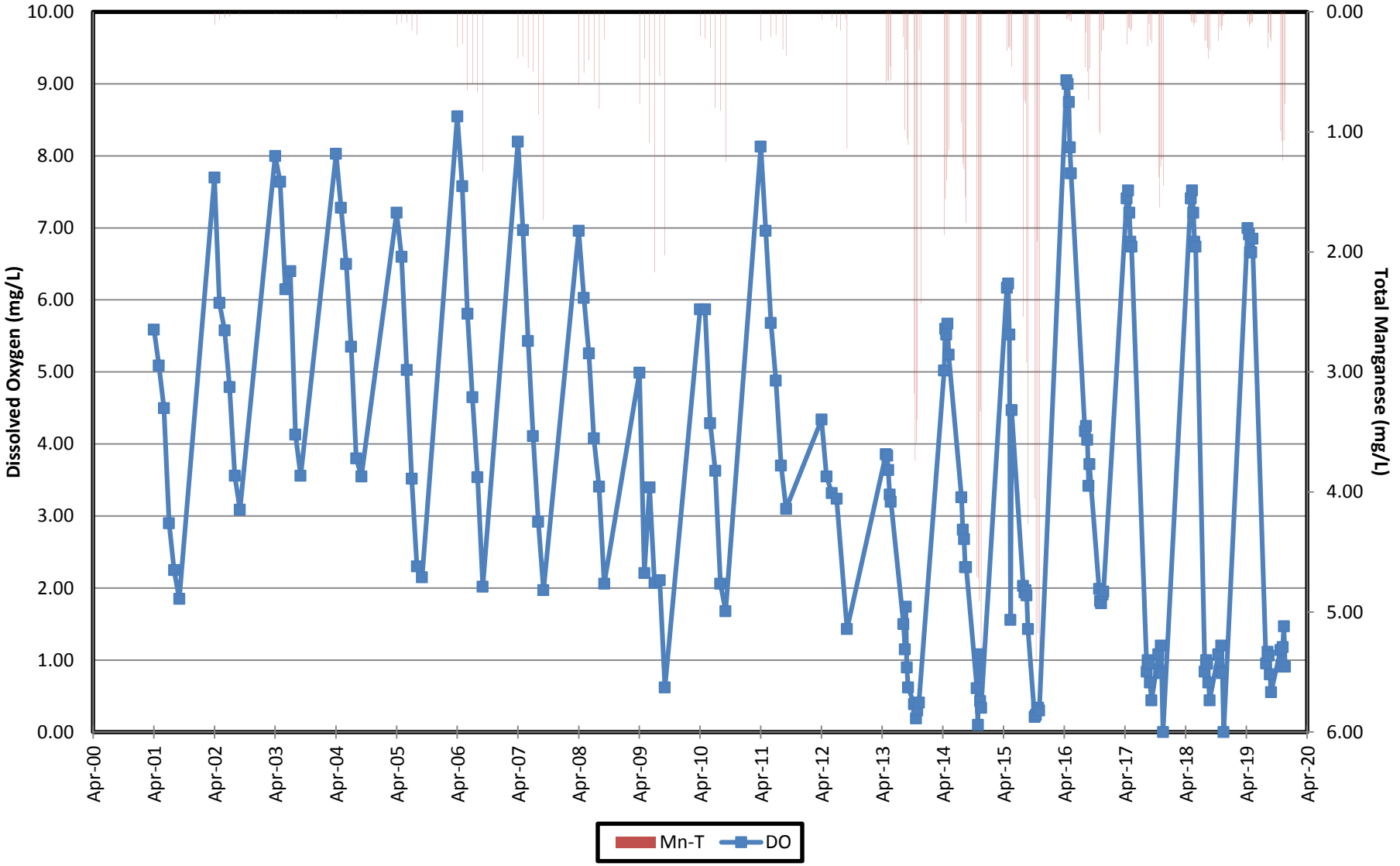
## LONG LAKE



GRAPH 27

# DO vs Mn-T - Long Lake 1 Metre From Bottom

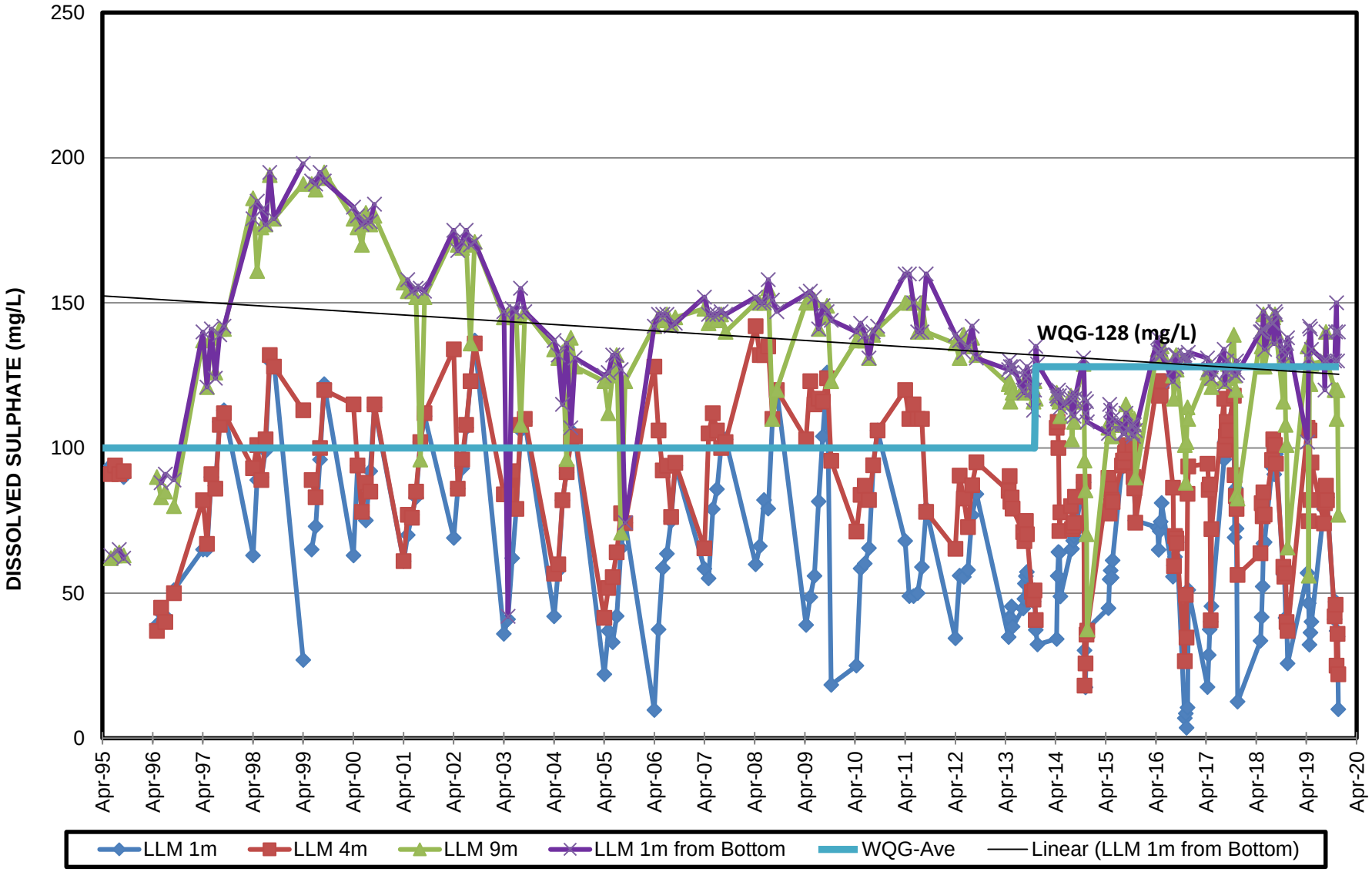
2000-2019



GRAPH 28

# HISTORIC DISSOLVED SULPHATE

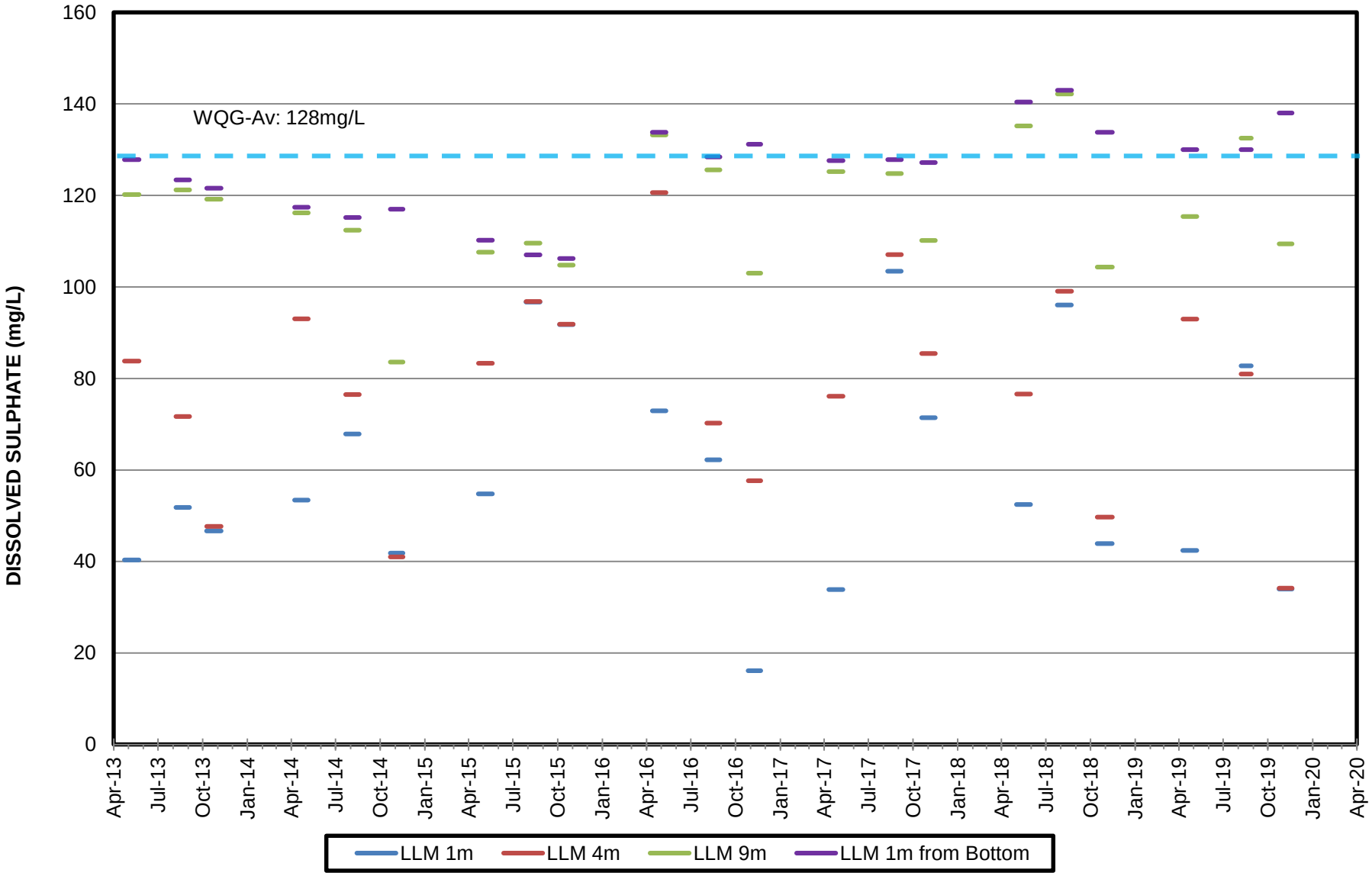
## LONG LAKE



GRAPH 29

# 5 in 30 AVERAGE DISSOLVED SULPHATE

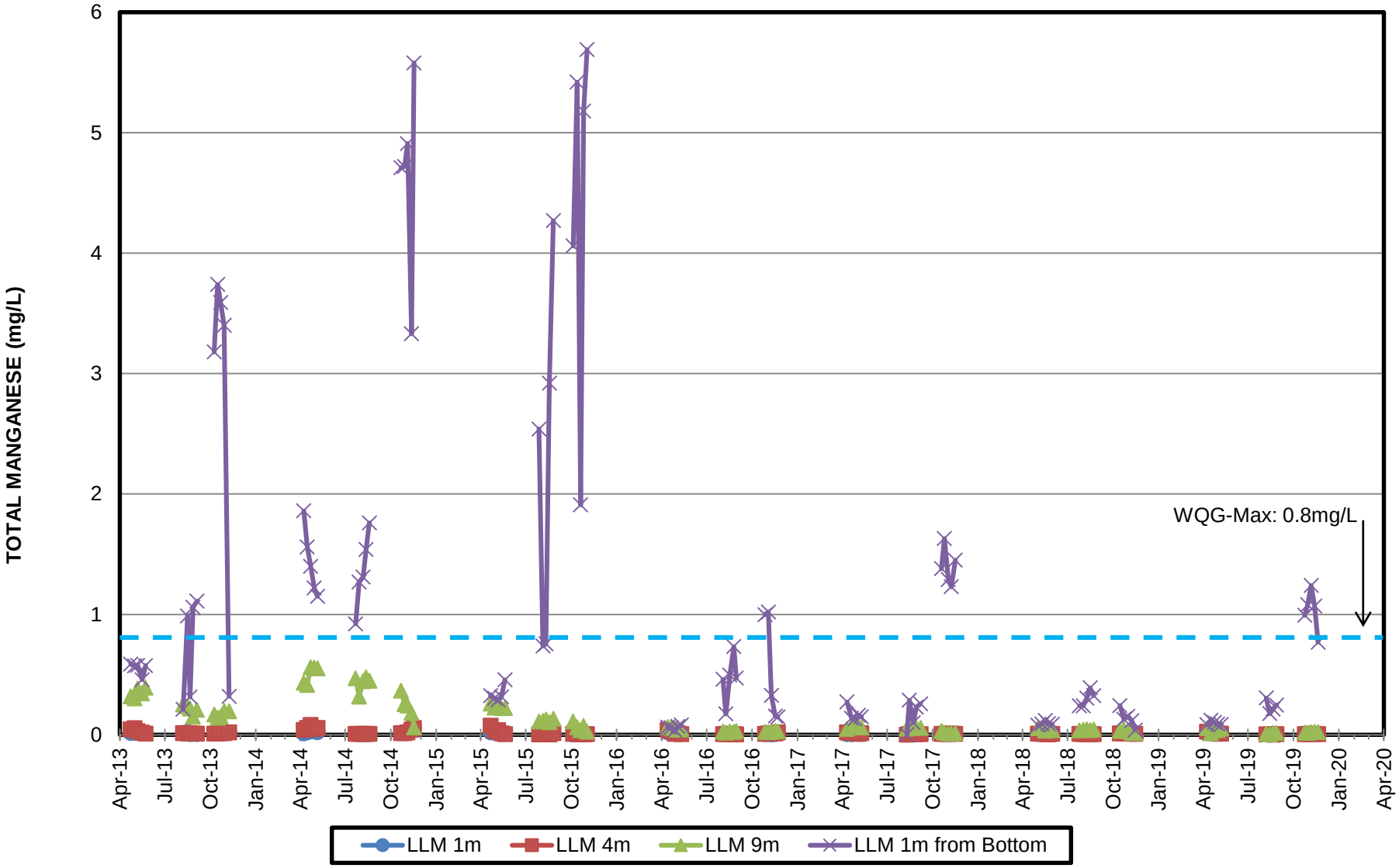
## LONG LAKE



GRAPH 30

# 5 in 30 TOTAL MANGANESE

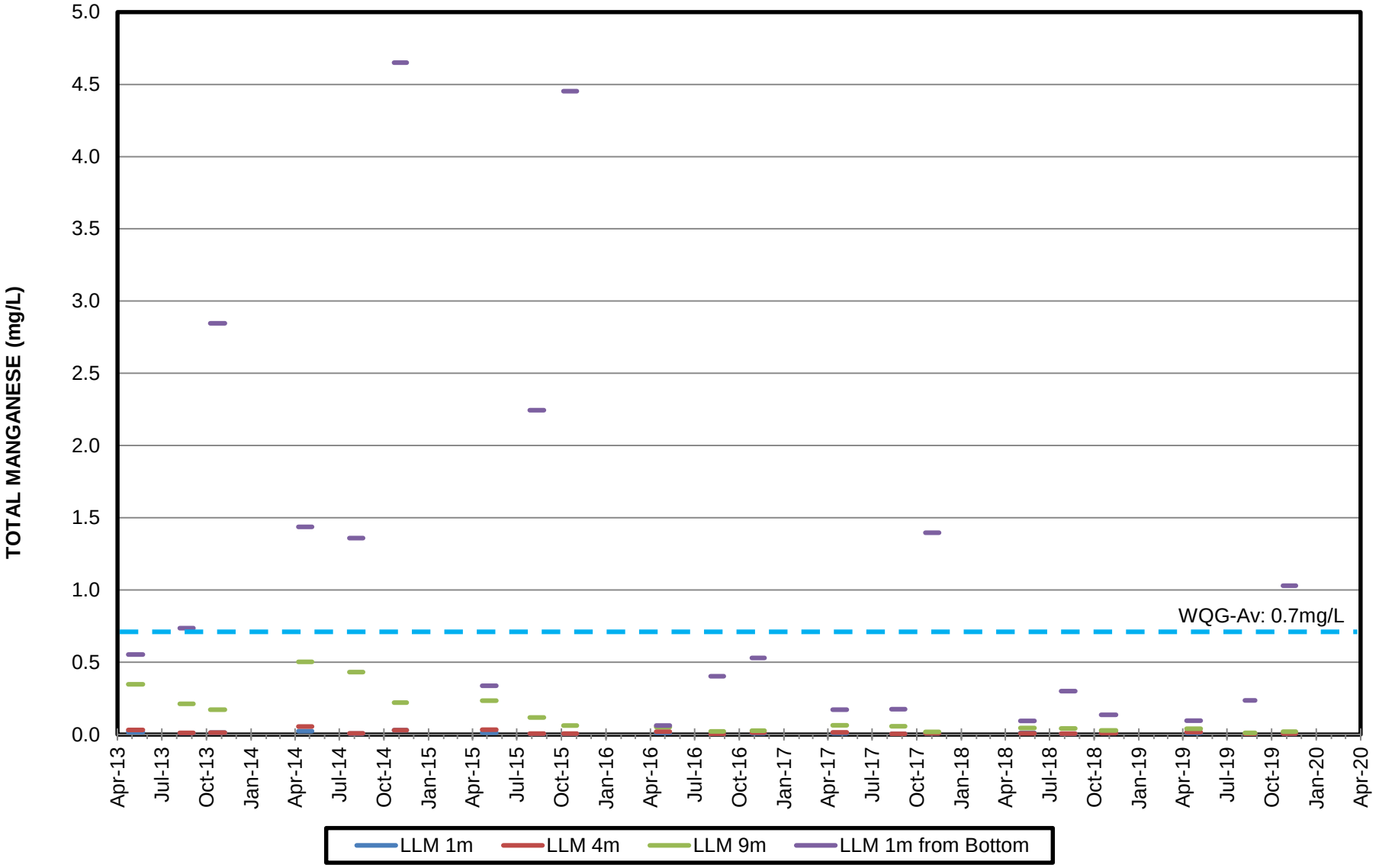
## LONG LAKE



GRAPH 31

# 5 in 30 AVERAGE TOTAL MANGANESE

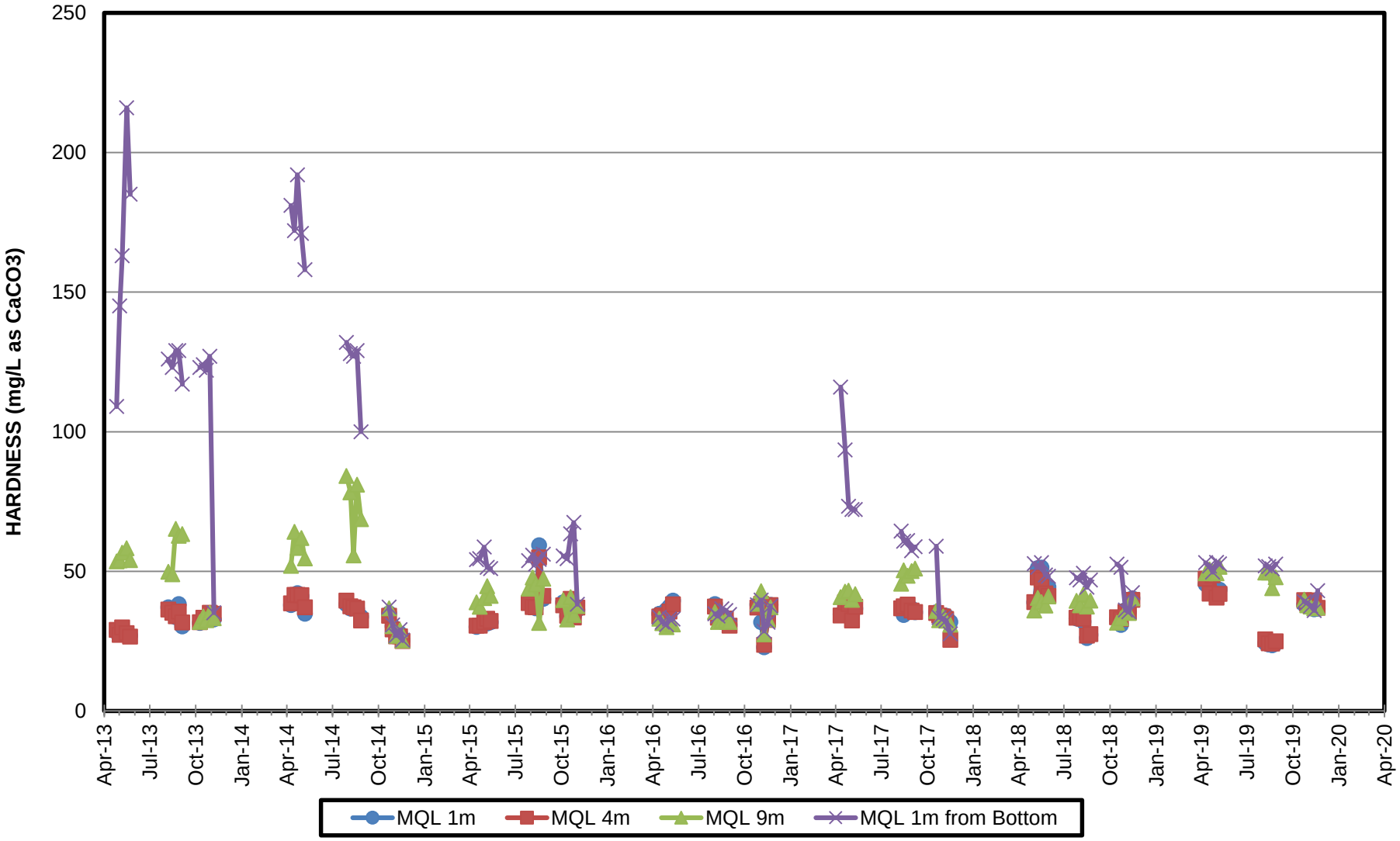
## LONG LAKE



GRAPH 32

# 5 in 30 HARDNESS

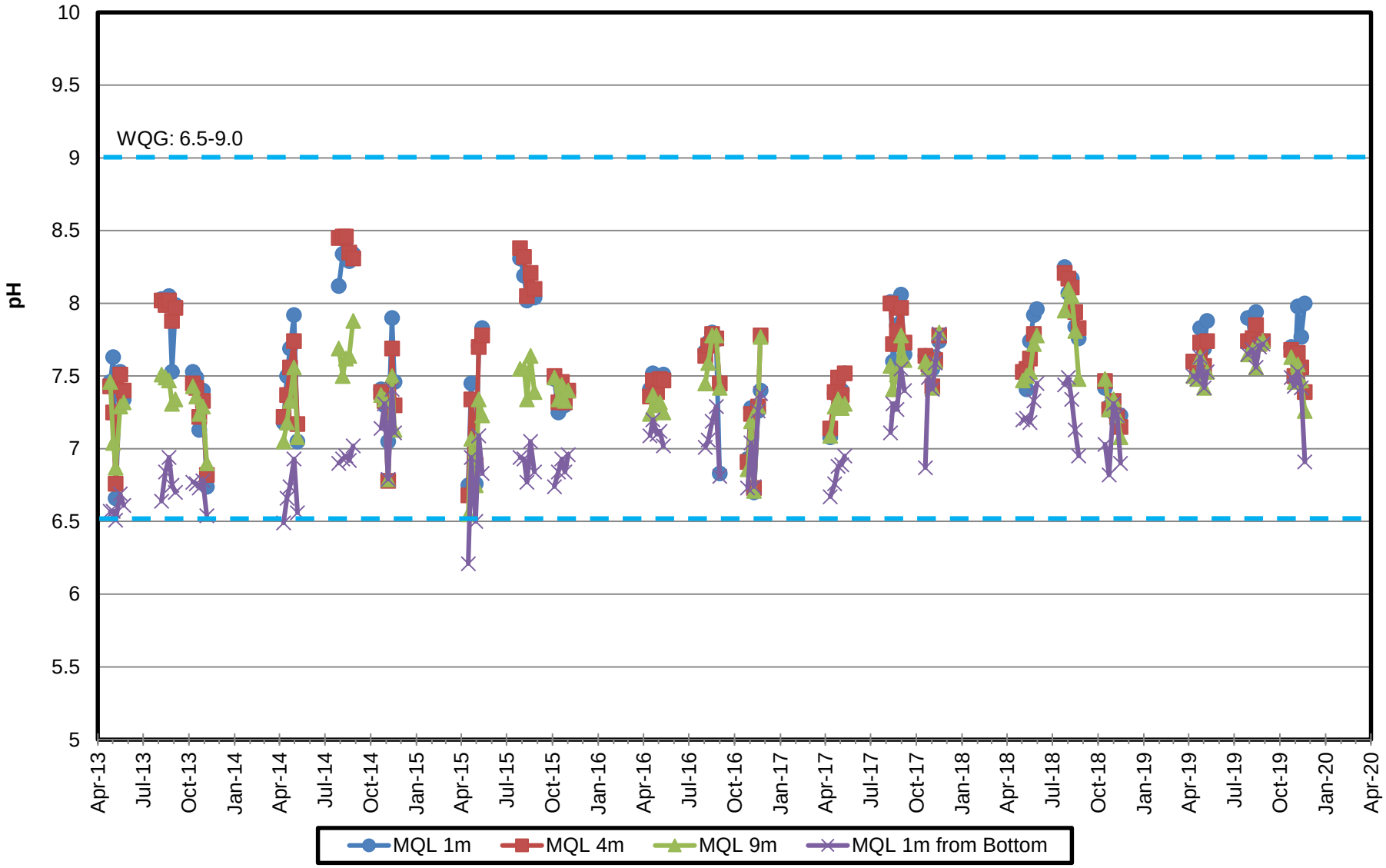
## MIDDLE QUINSAM LAKE



GRAPH 33

# 5 in 30 PH

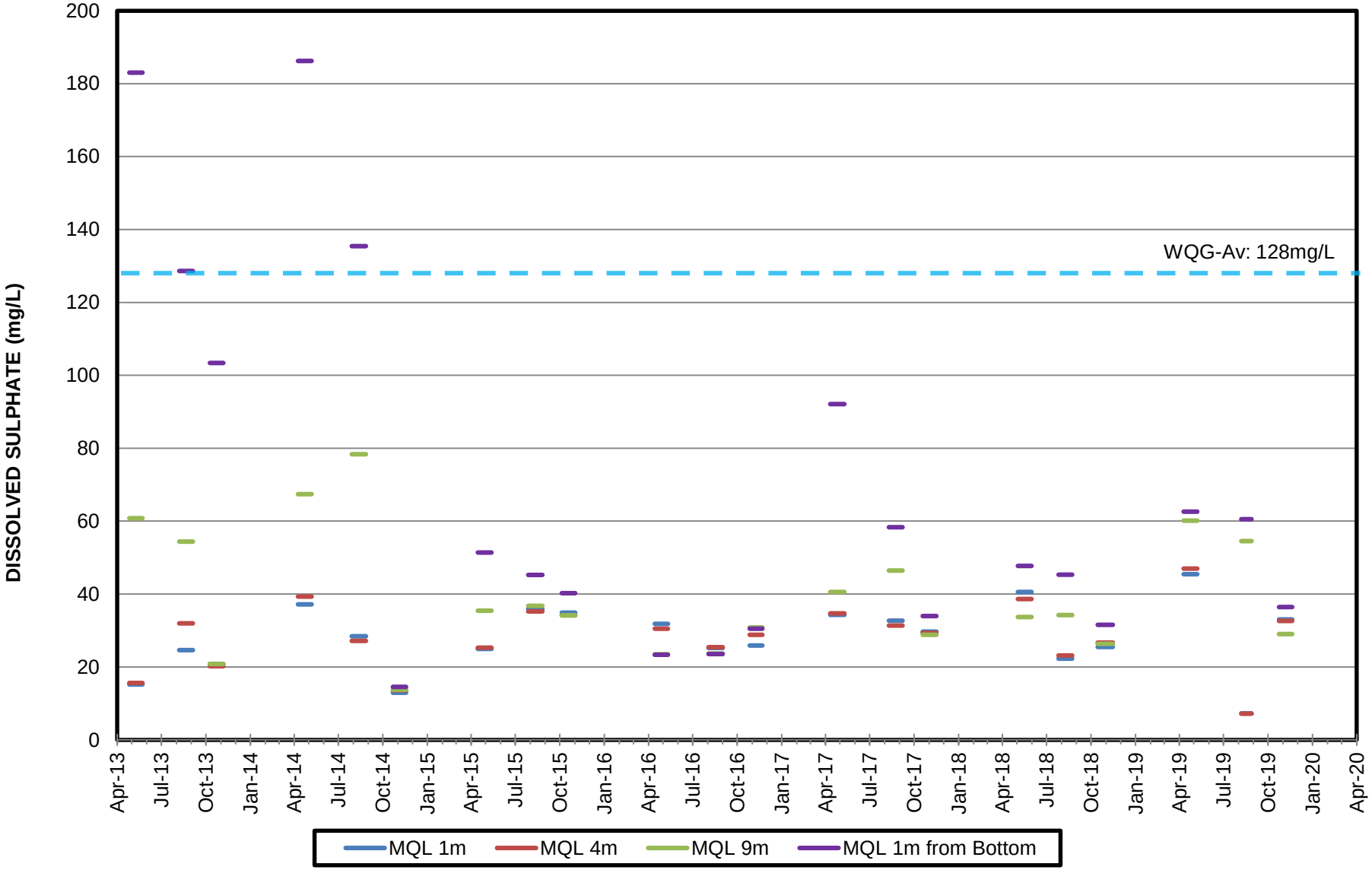
## MIDDLE QUINSAM LAKE



GRAPH 34

# 5 in 30 AVERAGE DISSOLVED SULPHATE

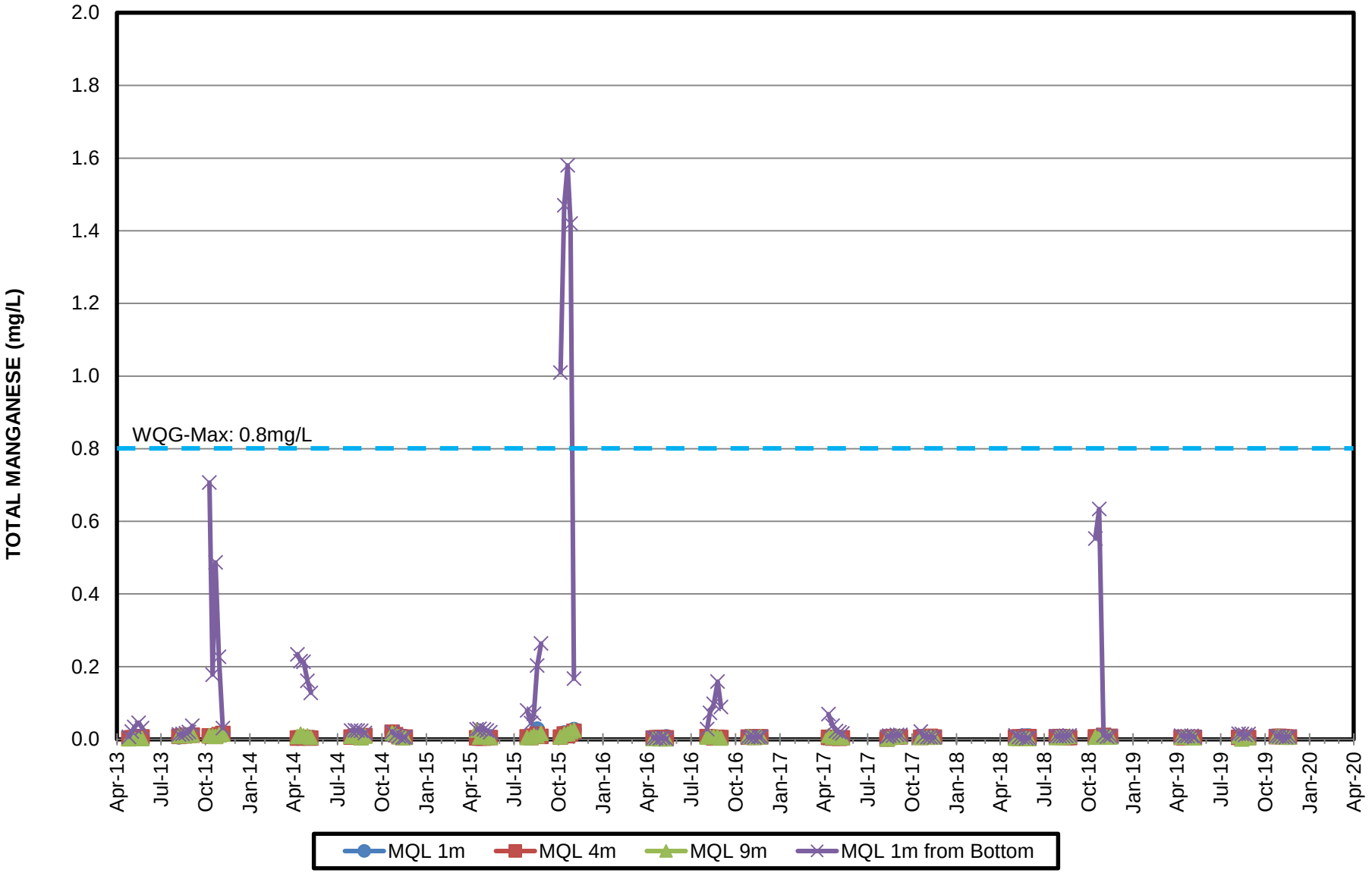
## MIDDLE QUINSAM LAKE



GRAPH 35

# 5 in 30 TOTAL MANGANESE

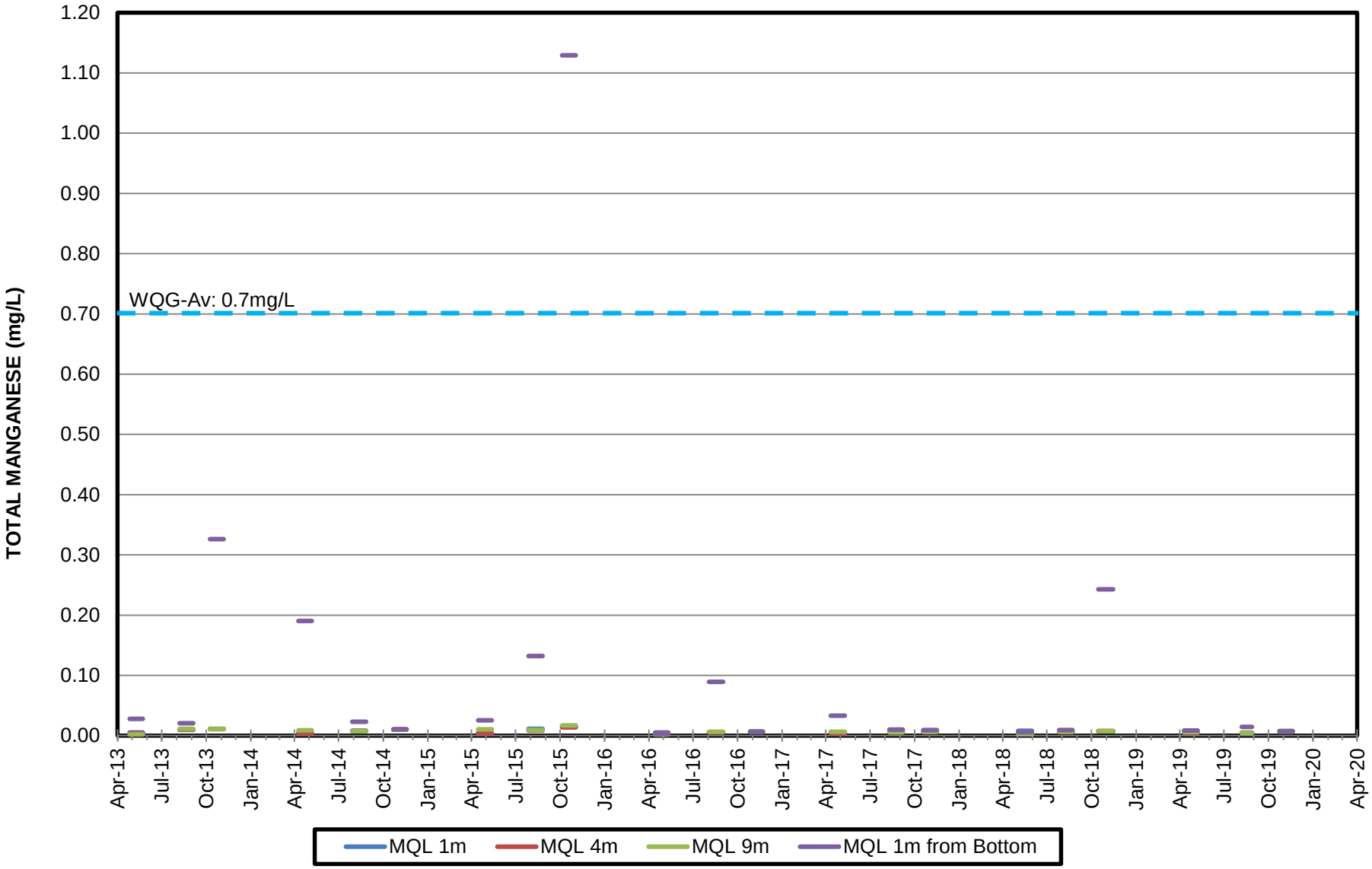
## MIDDLE QUINSAM LAKE



GRAPH 36

# 5 in 30 AVERAGE TOTAL MANGANESE

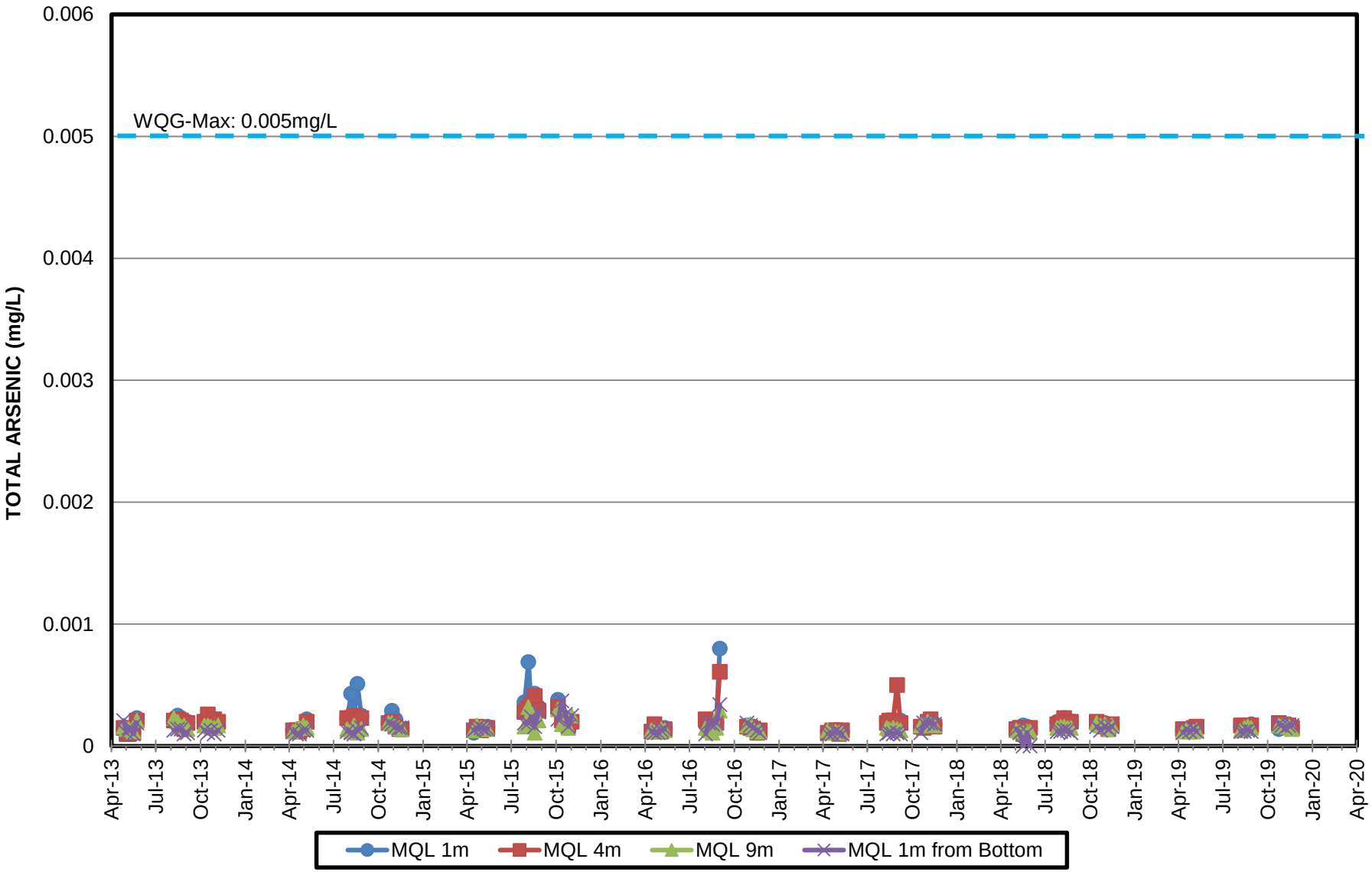
## MIDDLE QUINSAM LAKE



GRAPH 37

# 5 in 30 TOTAL ARSENIC

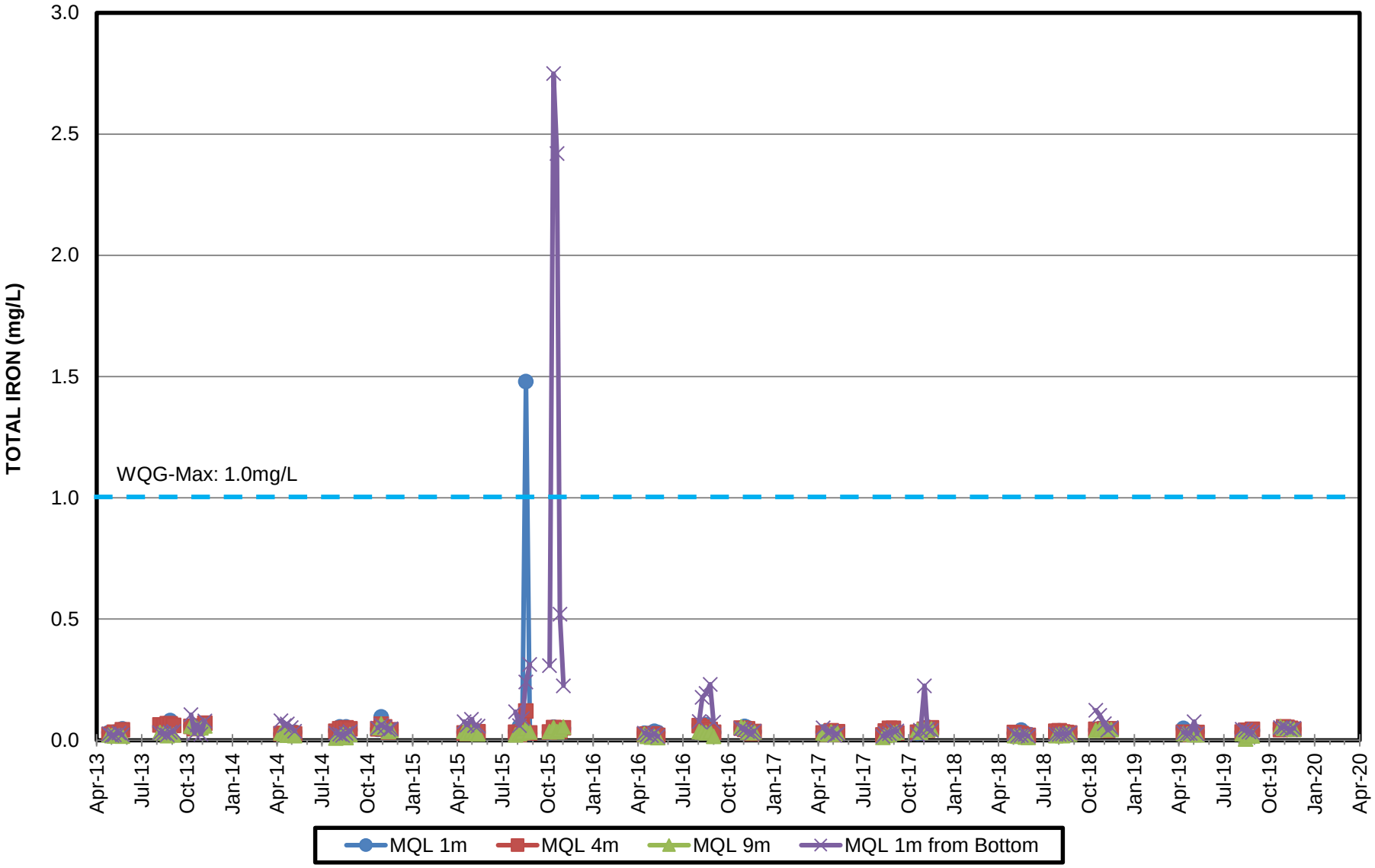
## MIDDLE QUINSAM LAKE



GRAPH 38

# 5 in 30 TOTAL IRON

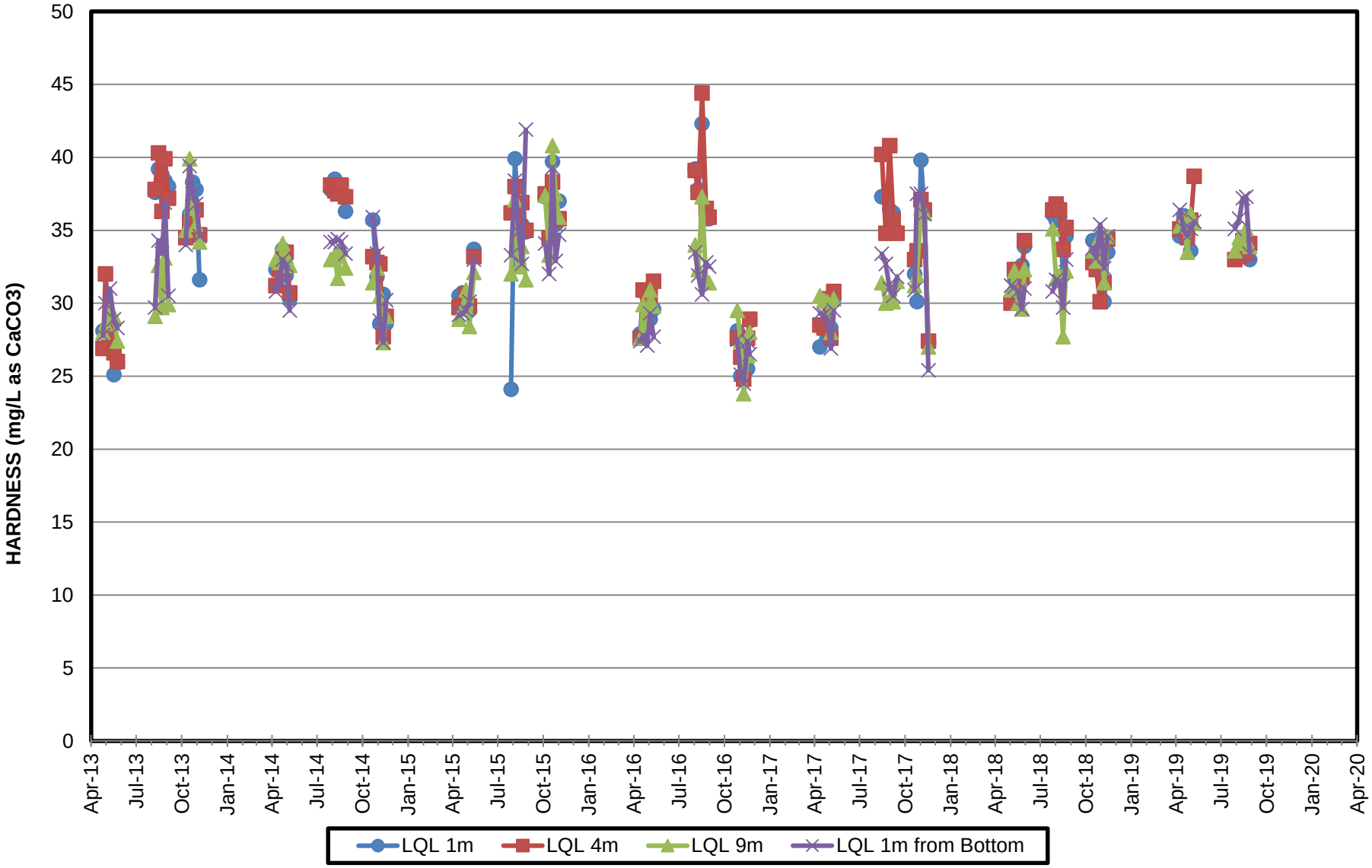
## MIDDLE QUINSAM LAKE



GRAPH 39

# 5 in 30 HARDNESS

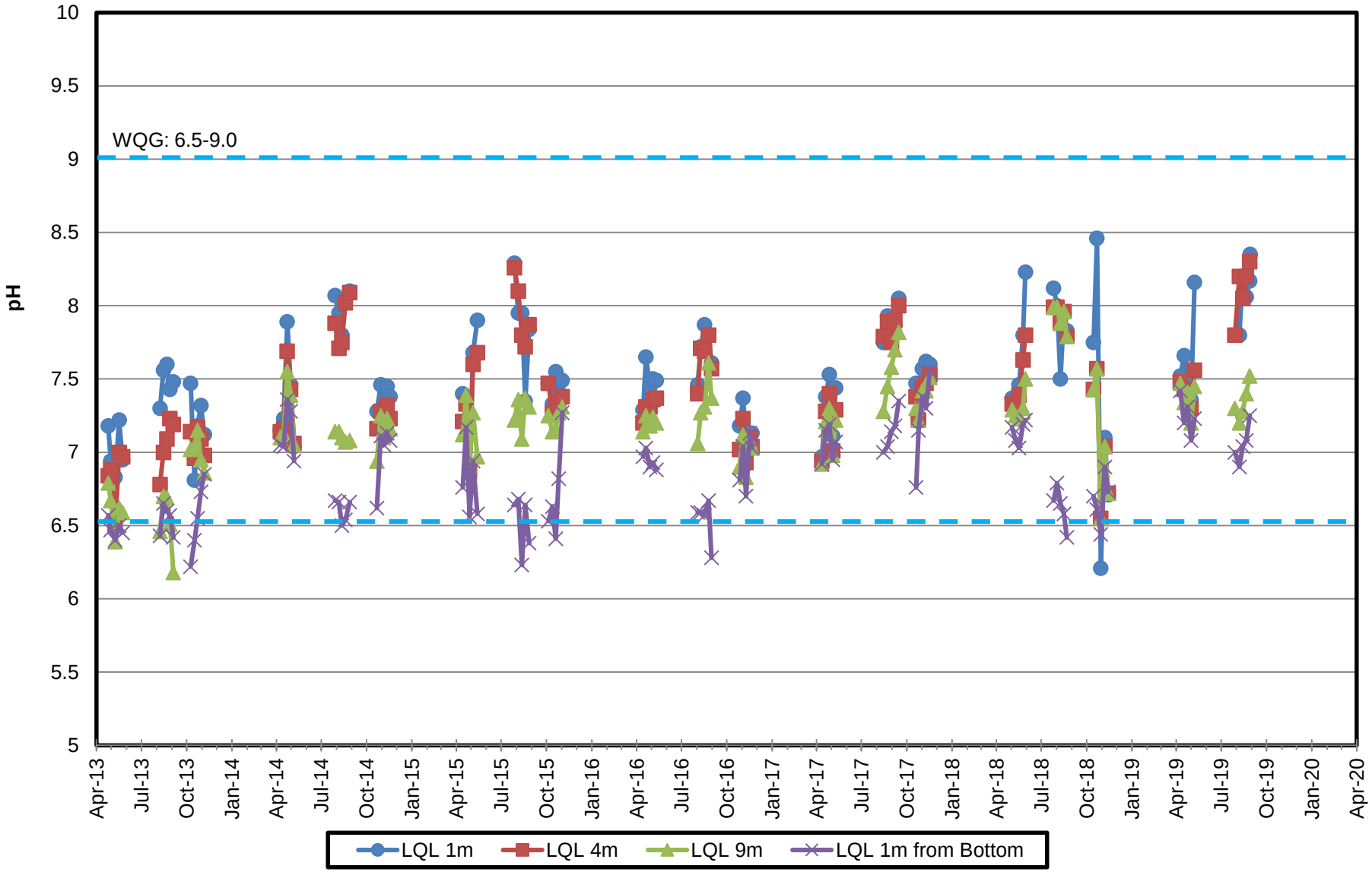
## LOWER QUINSAM LAKE



GRAPH 40

# 5 in 30 PH

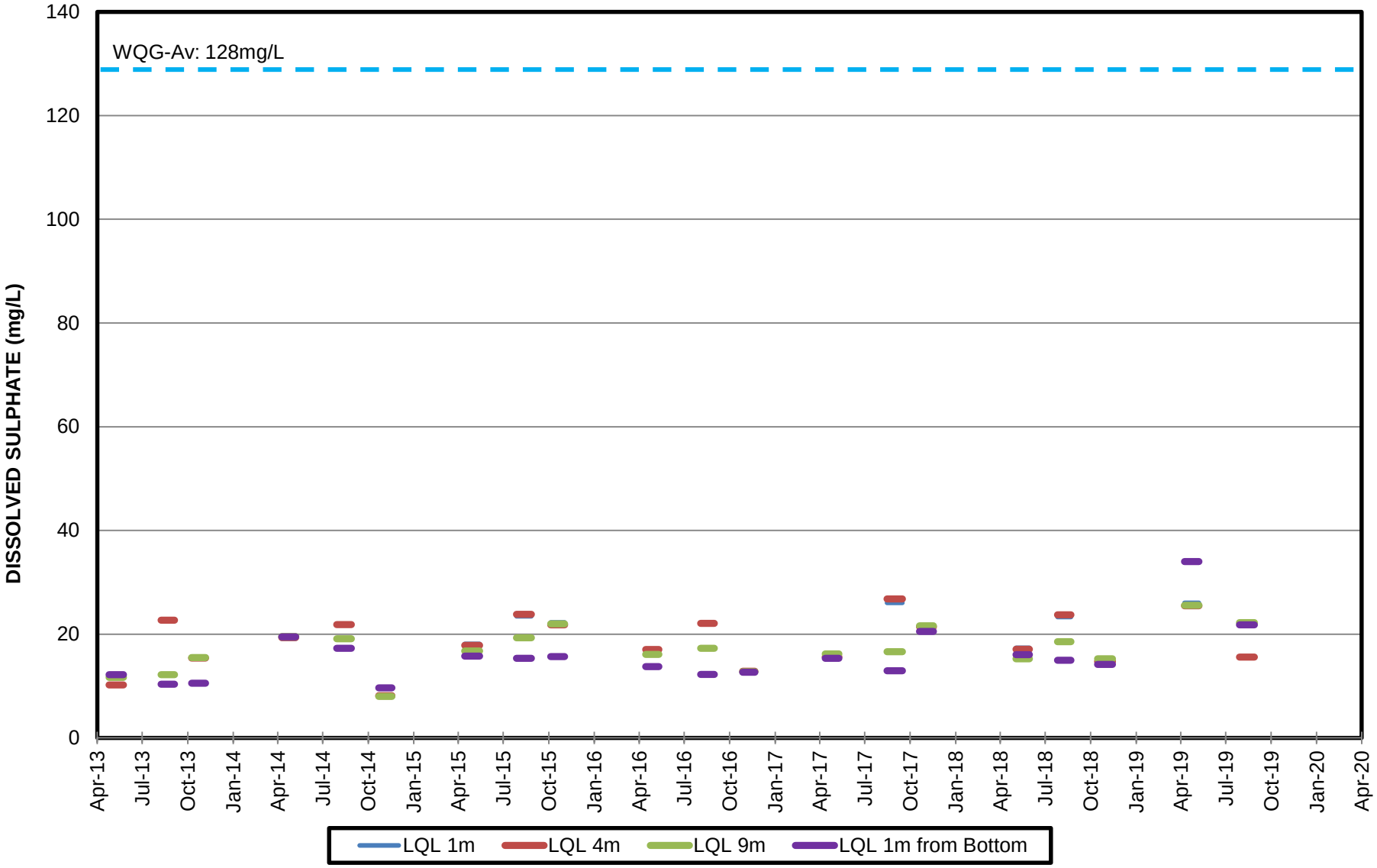
## LOWER QUINSAM LAKE



Graph 41

# 5 in 30 AVERAGE DISSOLVED SULPHATE

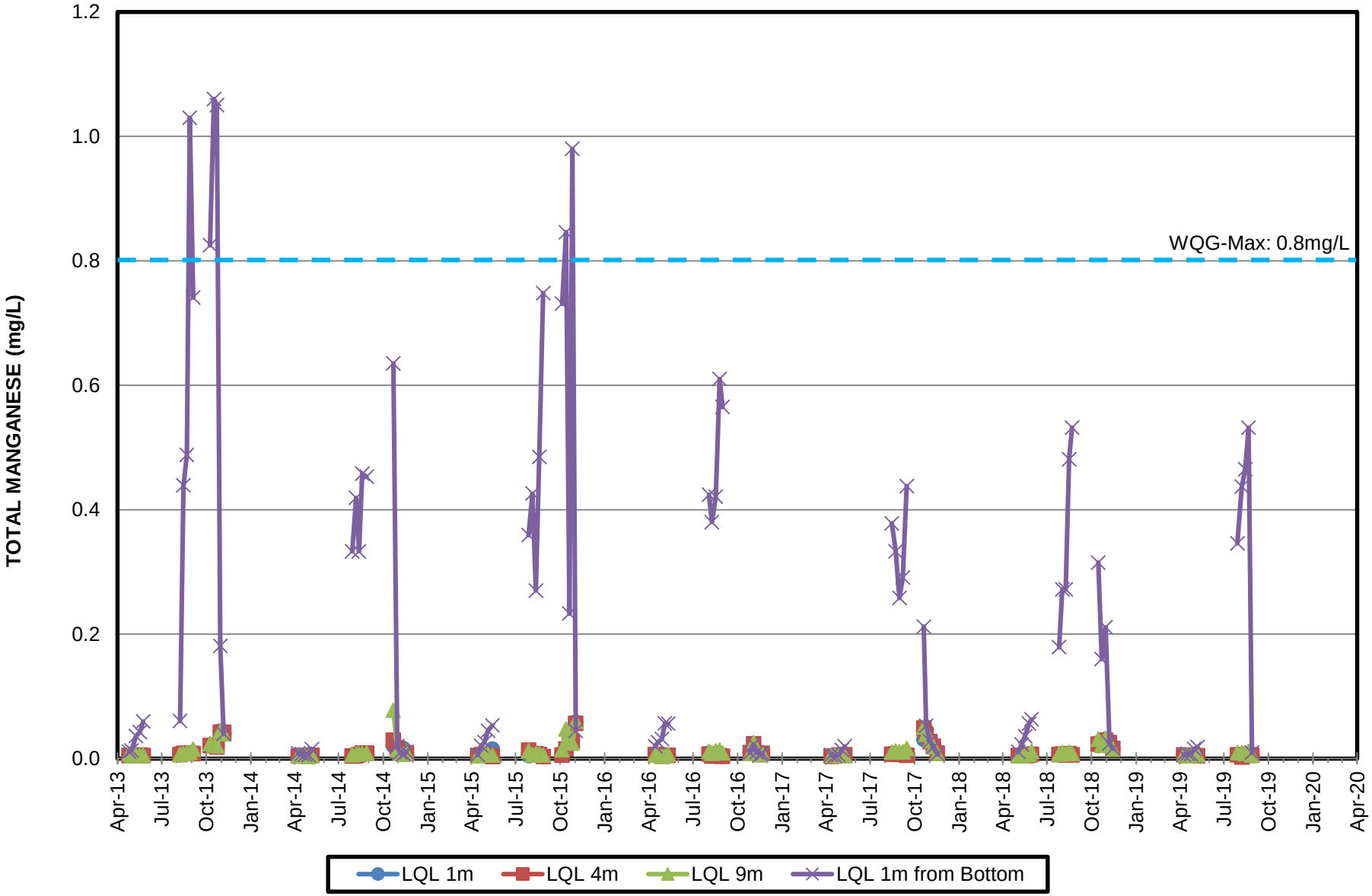
## LOWER QUINSAM LAKE



GRAPH 42

# 5 in 30 TOTAL MANGANESE

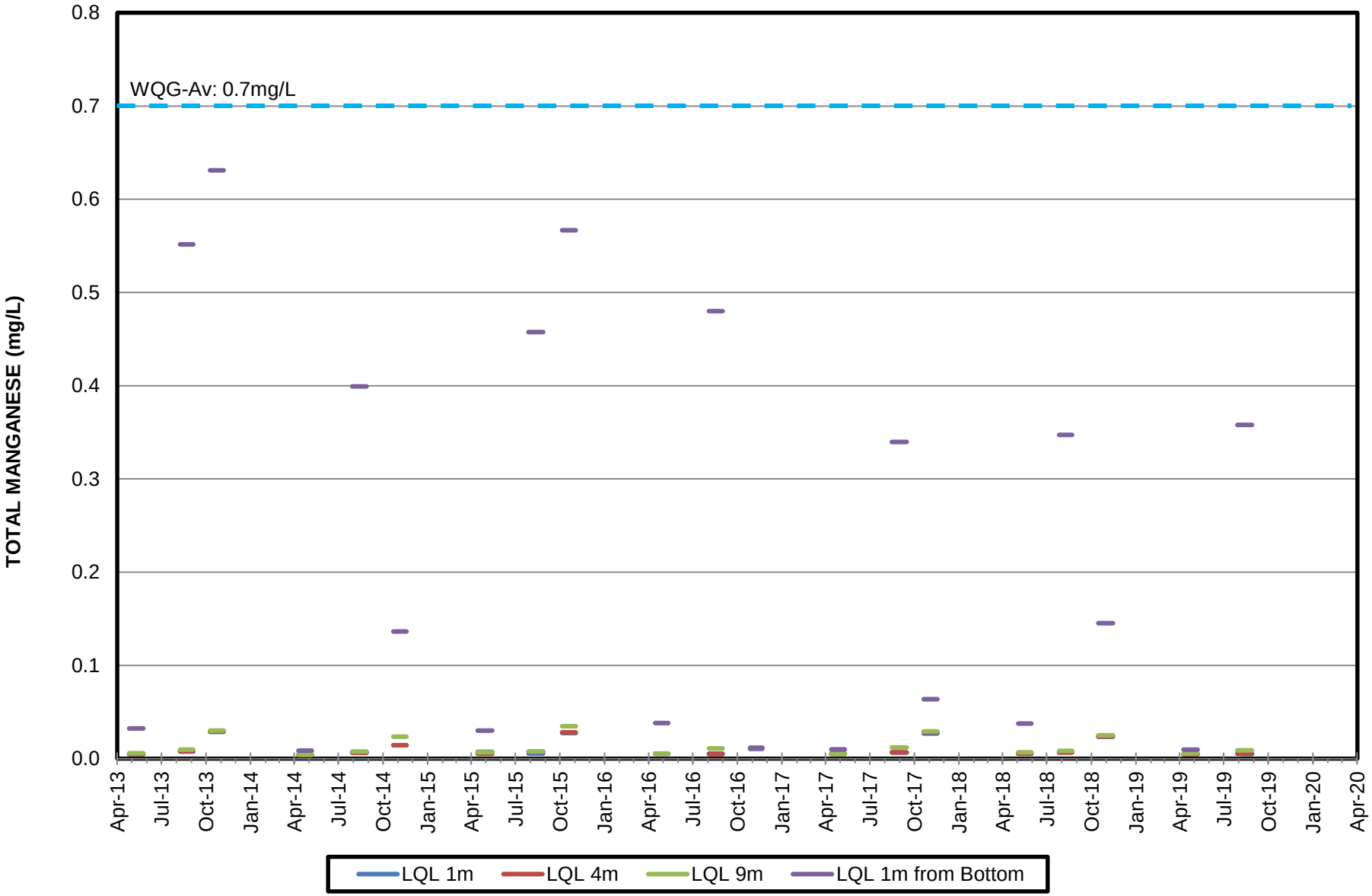
## LOWER QUINSAM LAKE



GRAPH 43

# 5 in 30 AVERAGE TOTAL MANGANESE

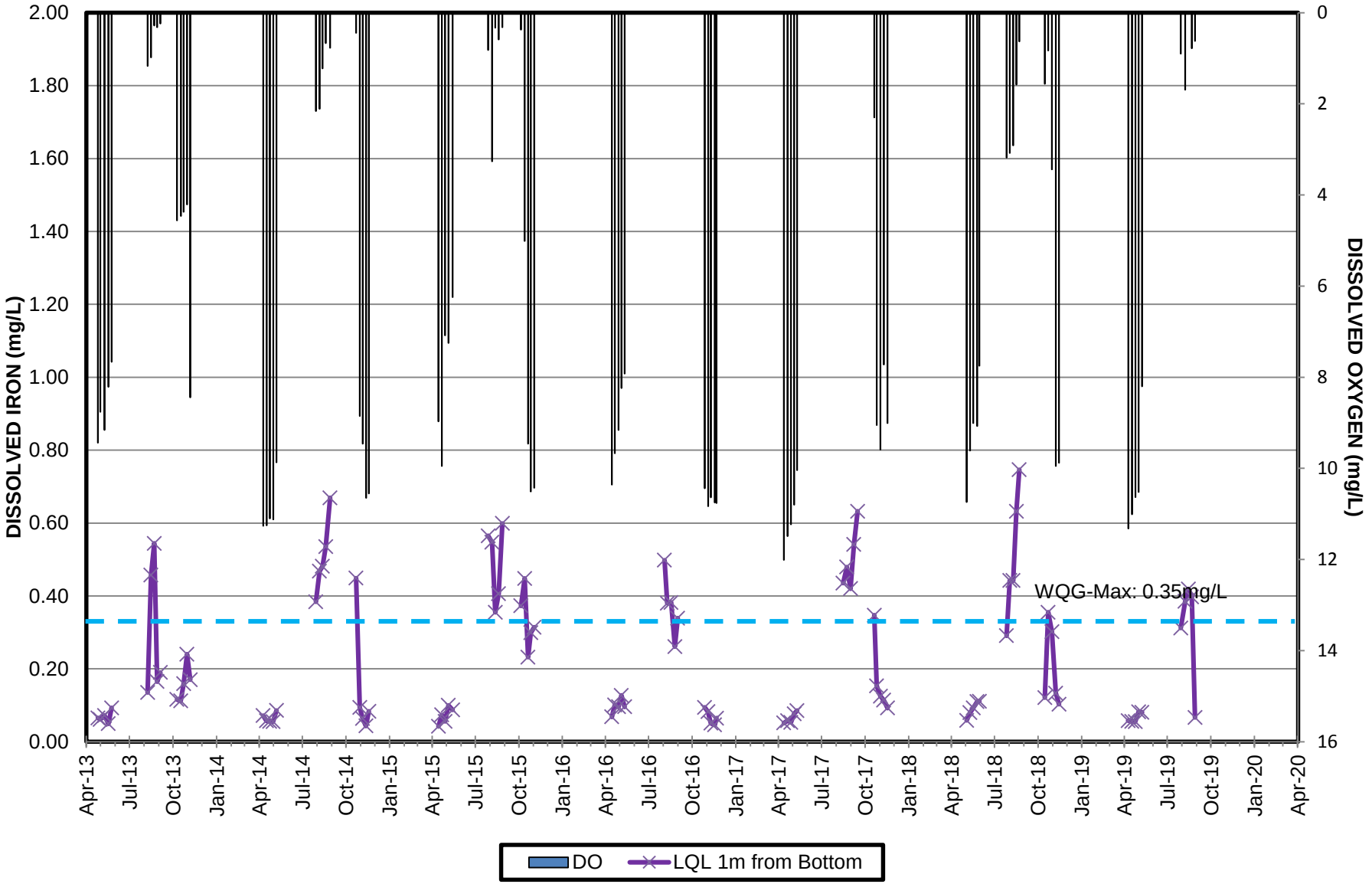
## LOWER QUINSAM LAKE



GRAPH 44

# 5 in 30 DISSOLVED IRON VS DISSOLVED OXYGEN

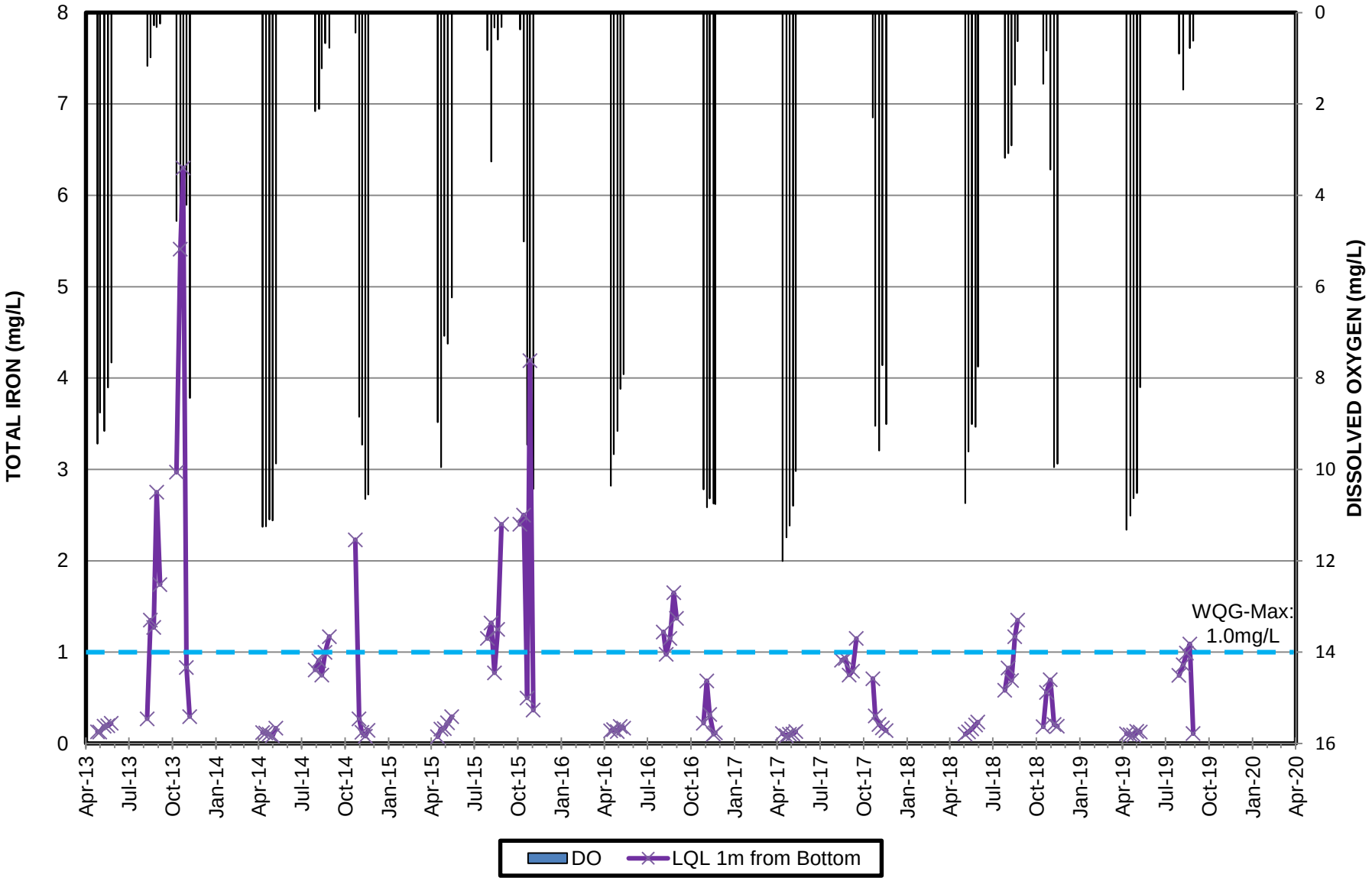
## LOWER QUINSAM LAKE (1mb)



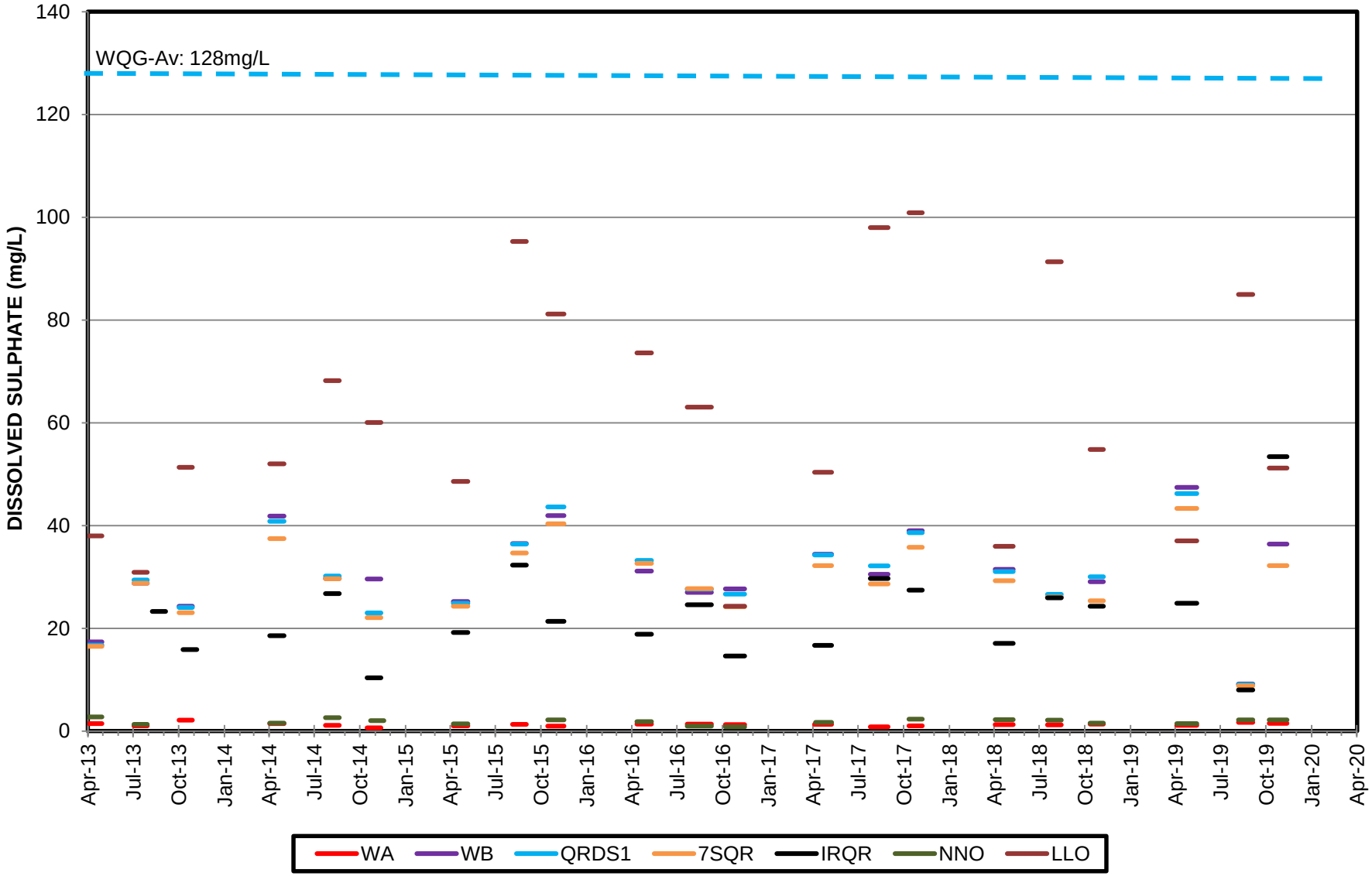
GRAPH 45

# 5 in 30 TOTAL IRON VS DISSOLVED OXYGEN

## LOWER QUINSAM LAKE (1mb)



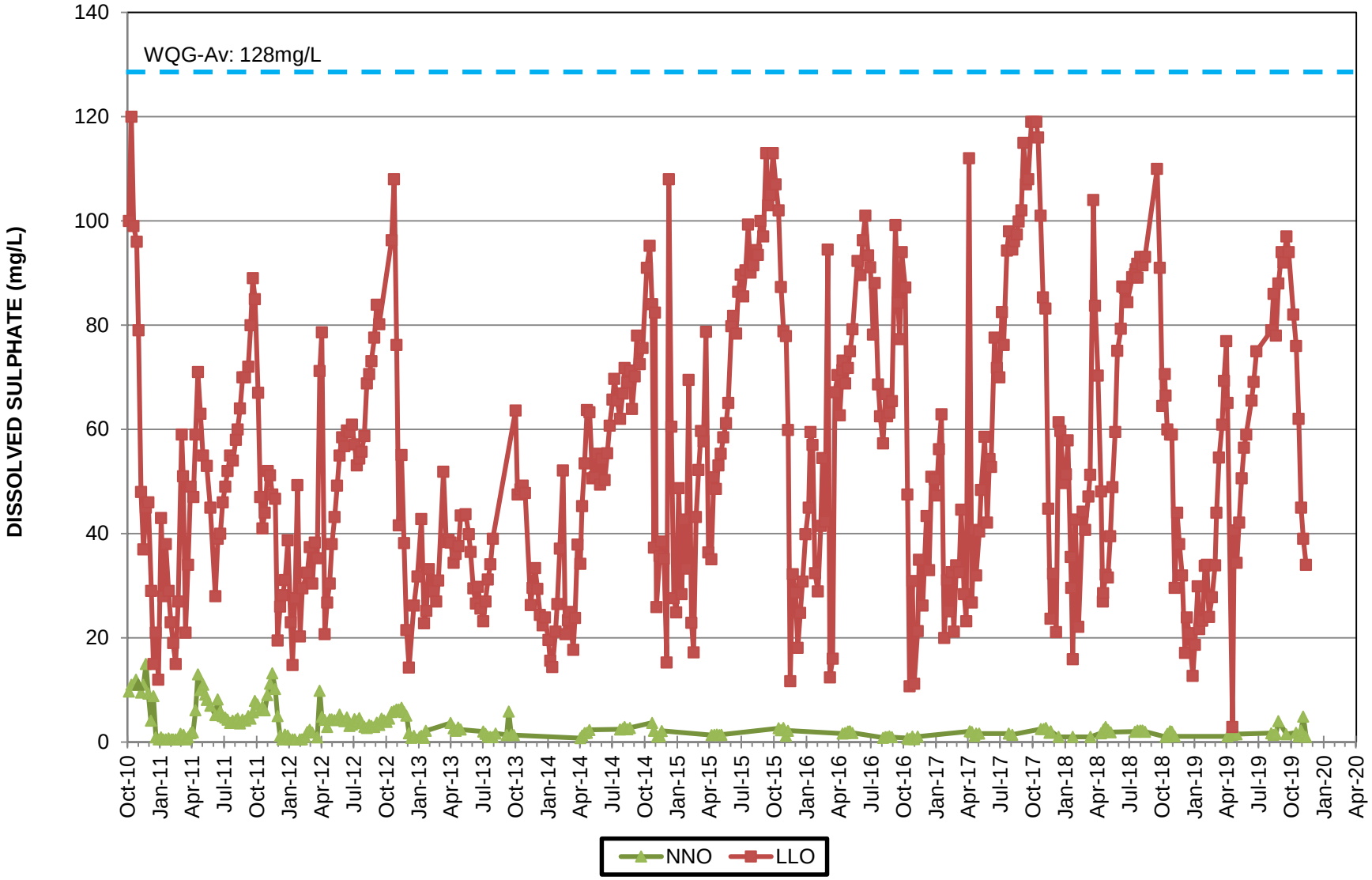
**GRAPH 46**
**5 IN 30 AVERAGE DISSOLVED SULPHATE**
**QUINSAM SUB BASIN: RIVERS AND STREAMS**



GRAPH 47

# DISSOLVED SULPHATE

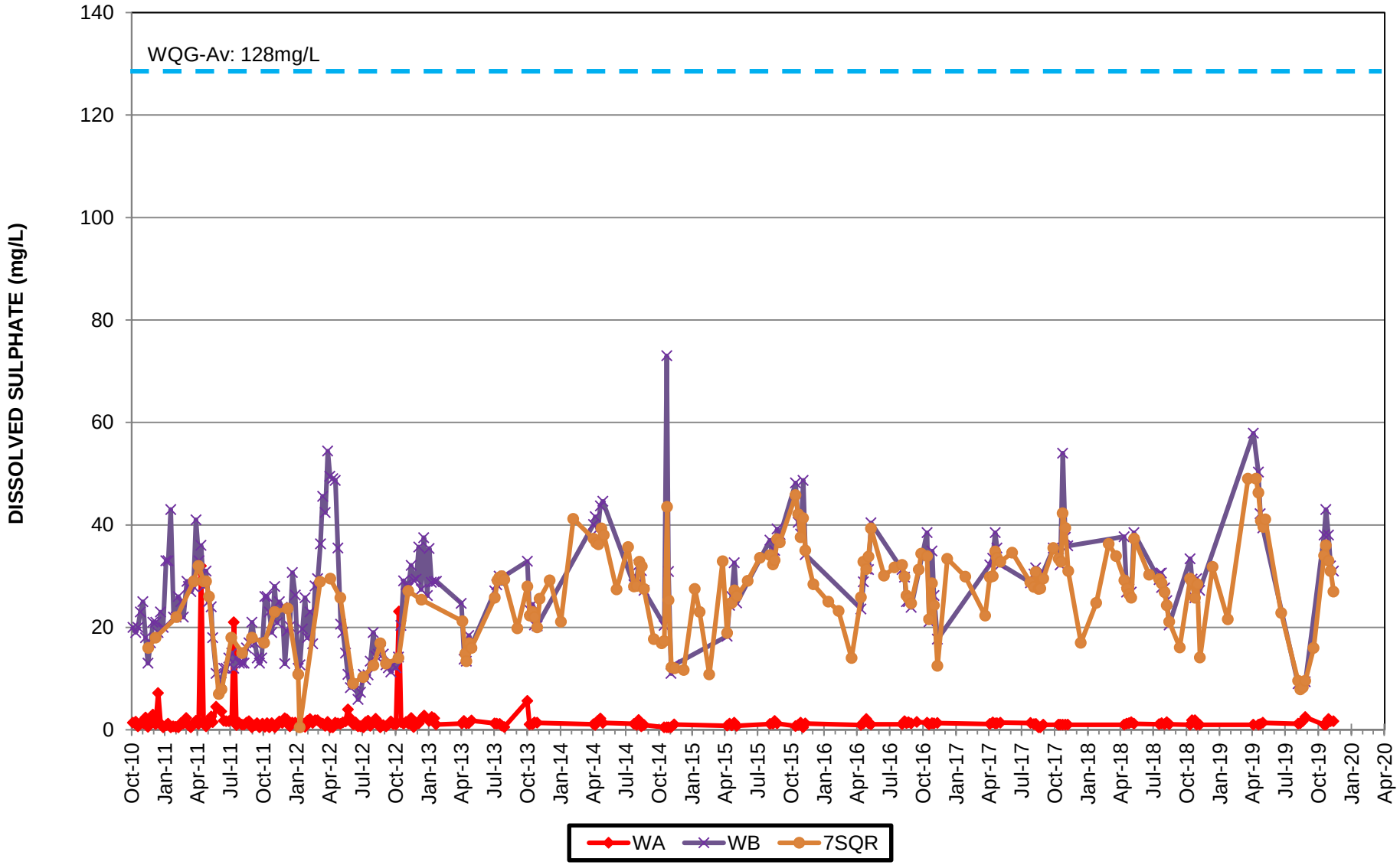
## QUINSAM SUB BASIN: RIVERS AND STREAMS



GRAPH 48

# DISSOLVED SULPHATE

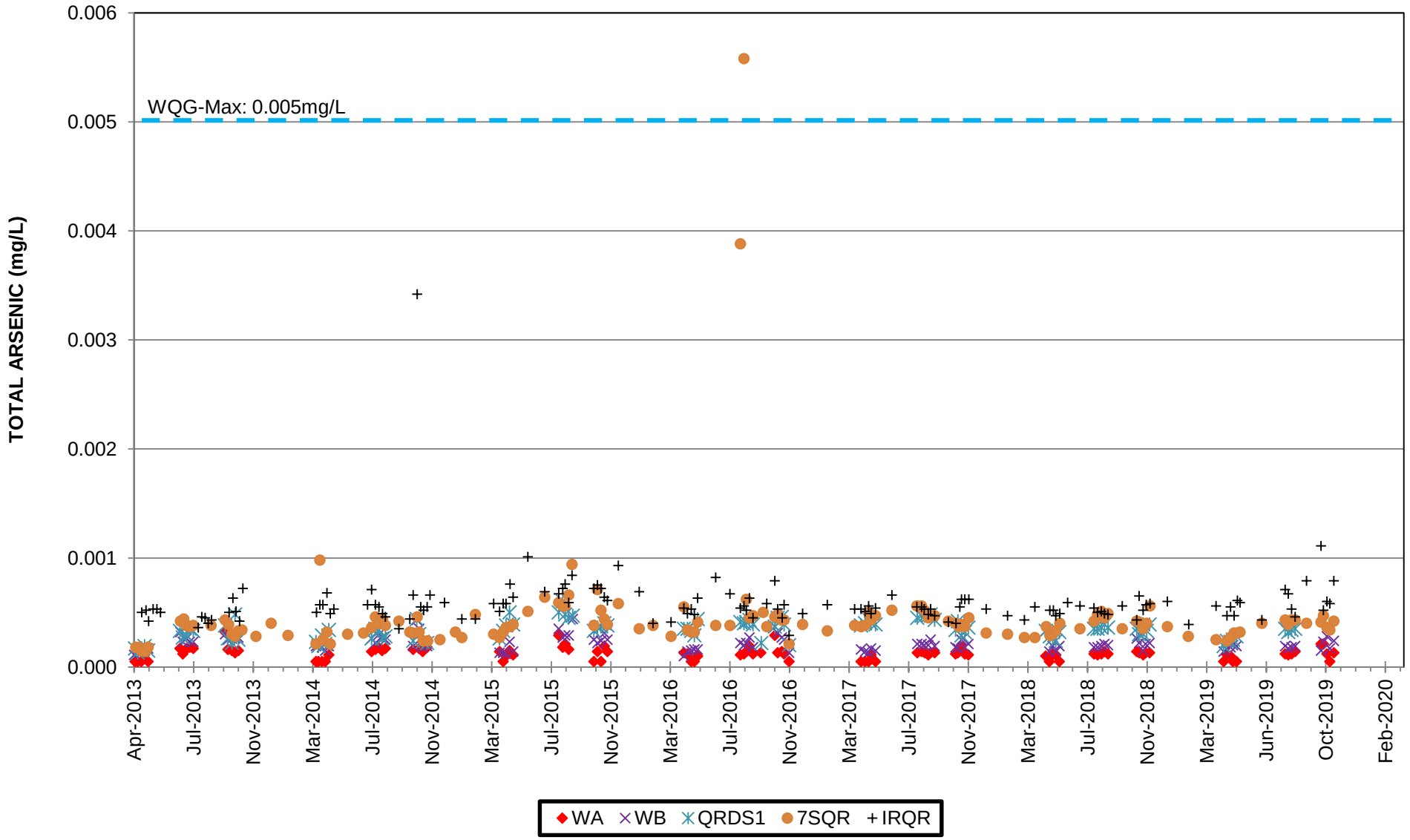
## QUINSAM RIVER SITES (WA, WB to 7SQR)



GRAPH 49

# TOTAL ARSENIC

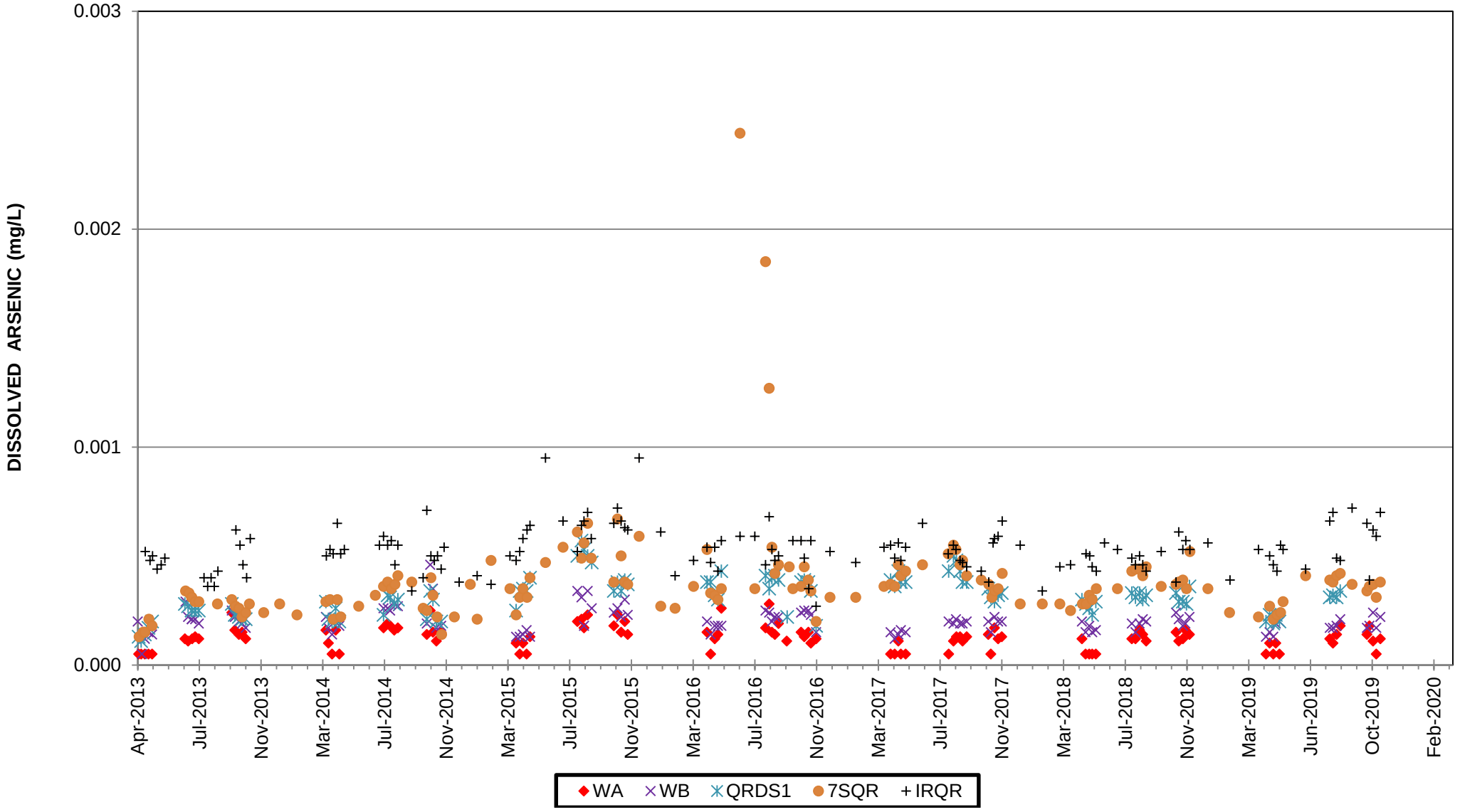
## QUINSAM RIVER



GRAPH 50

# DISSOLVED ARSENIC

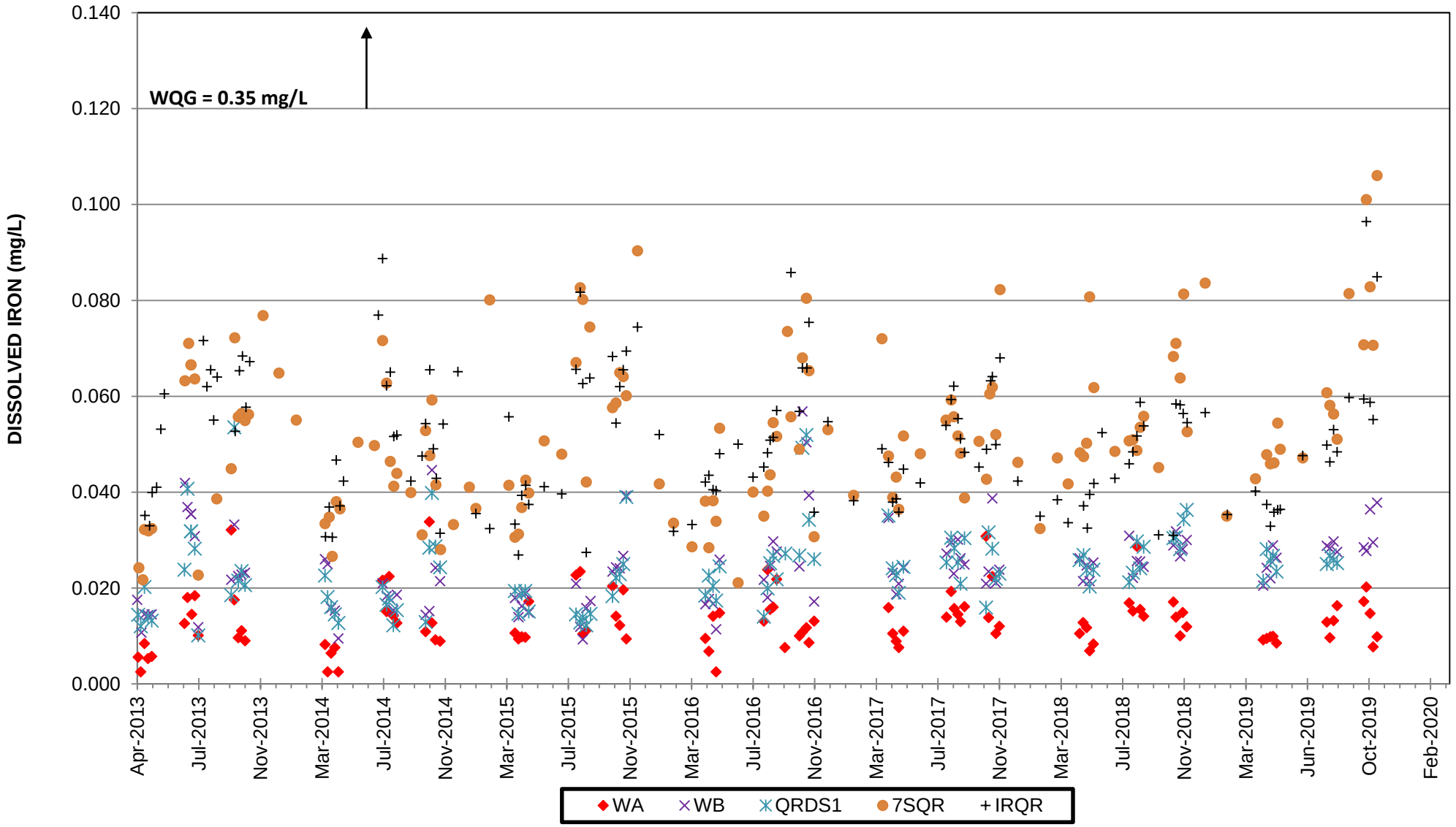
## QUINSAM RIVER



GRAPH 51

# DISSOLVED IRON

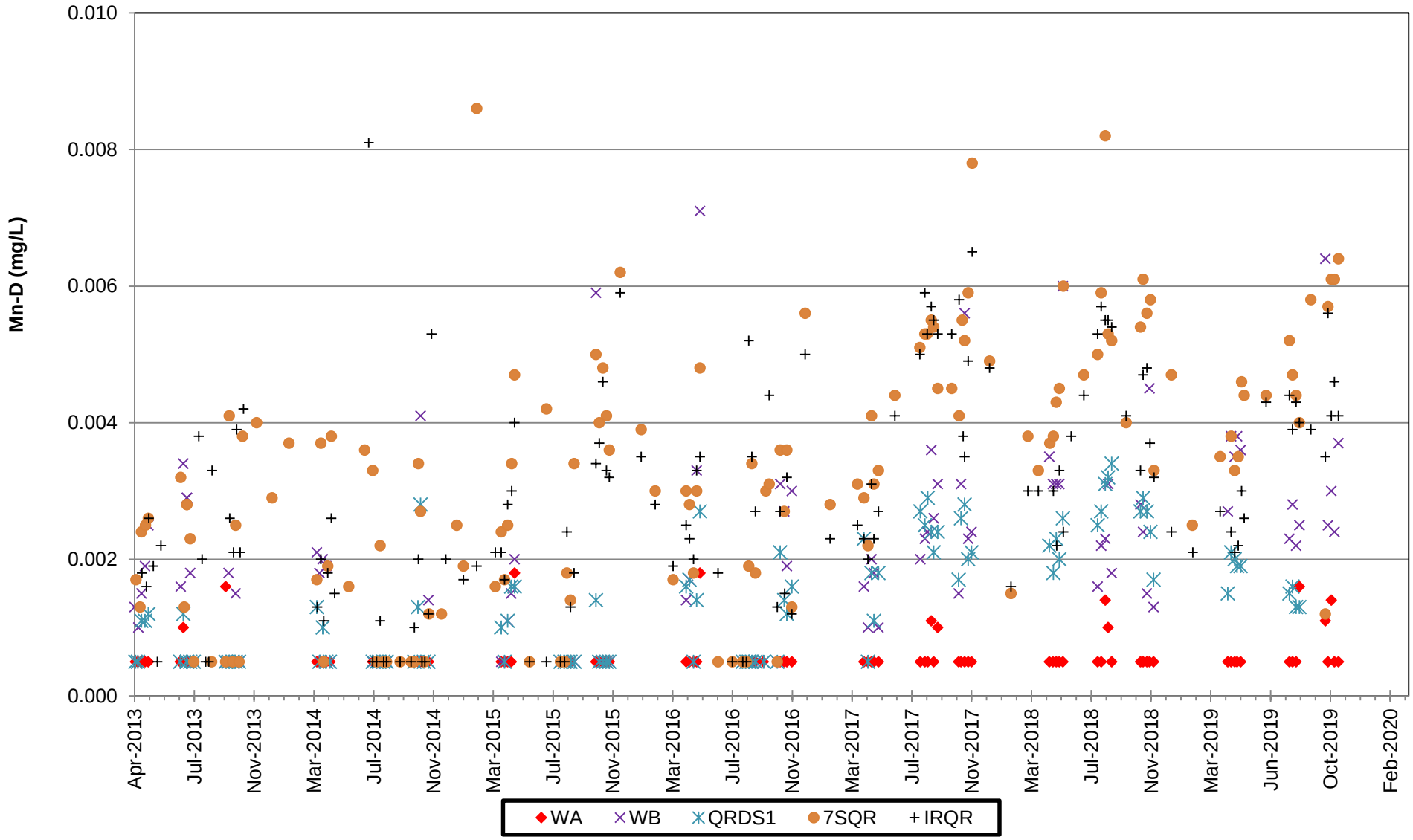
## QUINSAM RIVER



GRAPH 52

# DISSOLVED MANGANESE

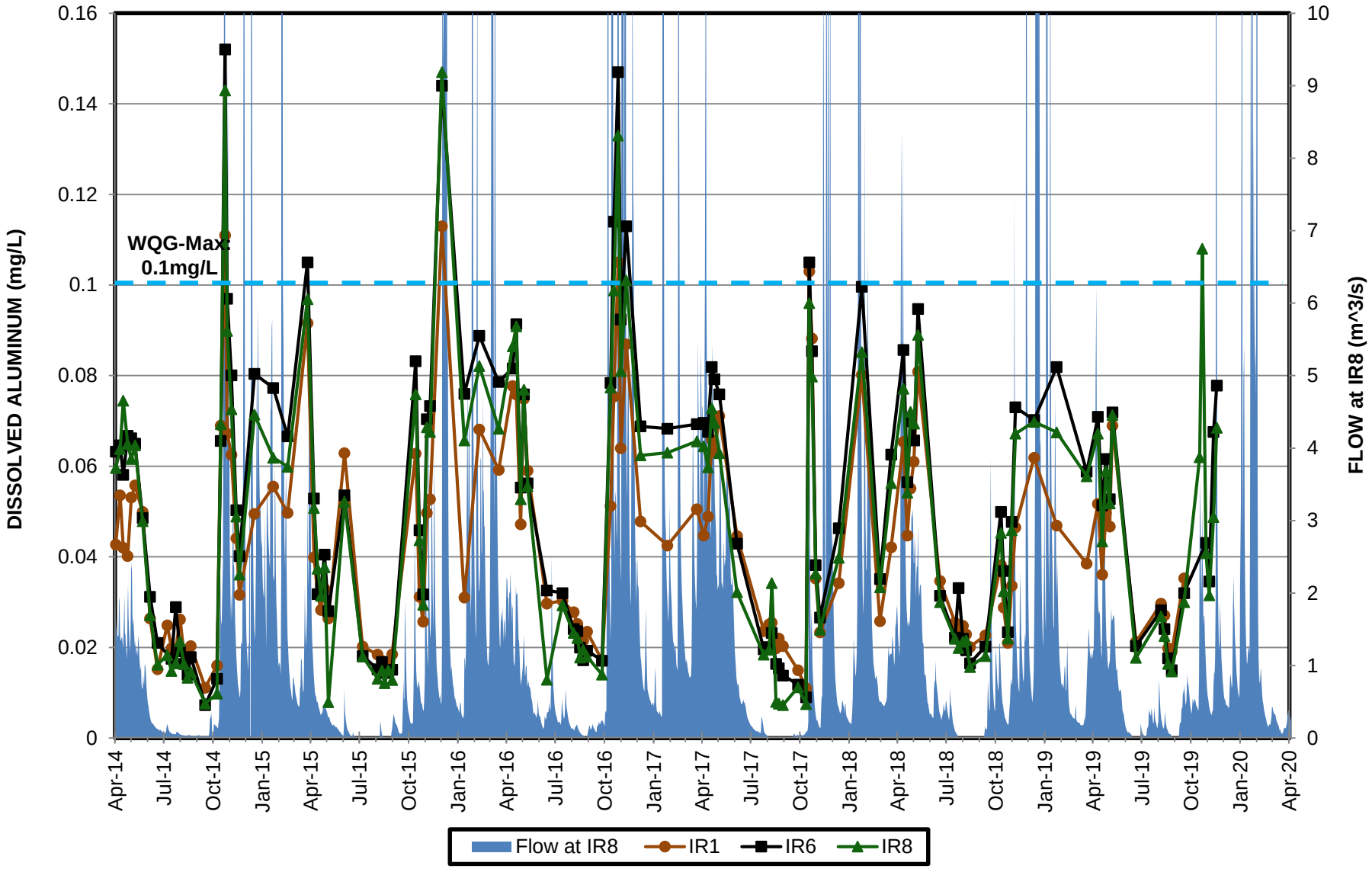
## QUINSAM RIVER



GRAPH 53

# DISSOLVED ALUMINUM vs FLOW

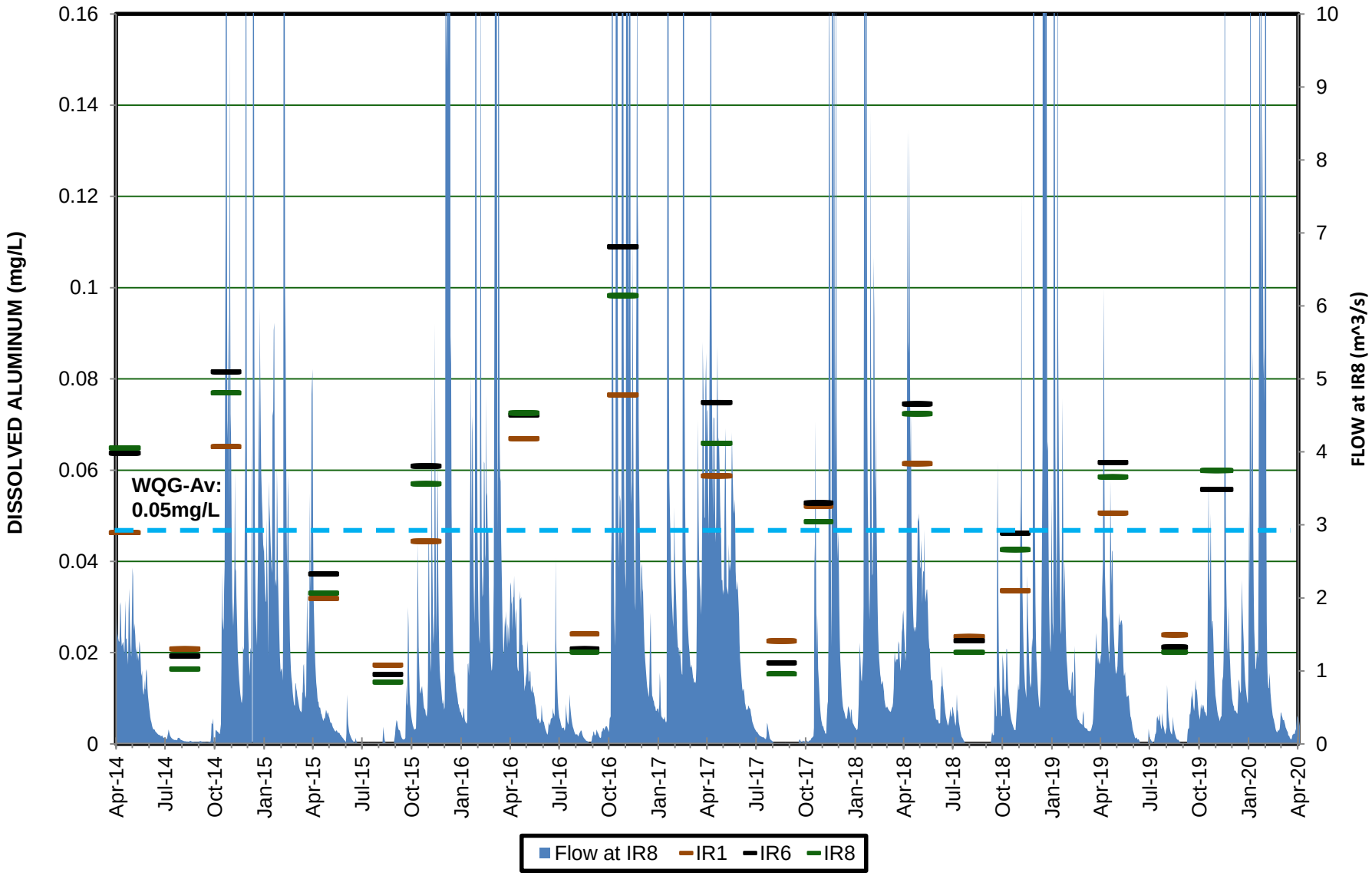
## IRON RIVER



GRAPH 54

# 5 in 30 AVERAGE DISSOLVED ALUMINUM vs FLOW

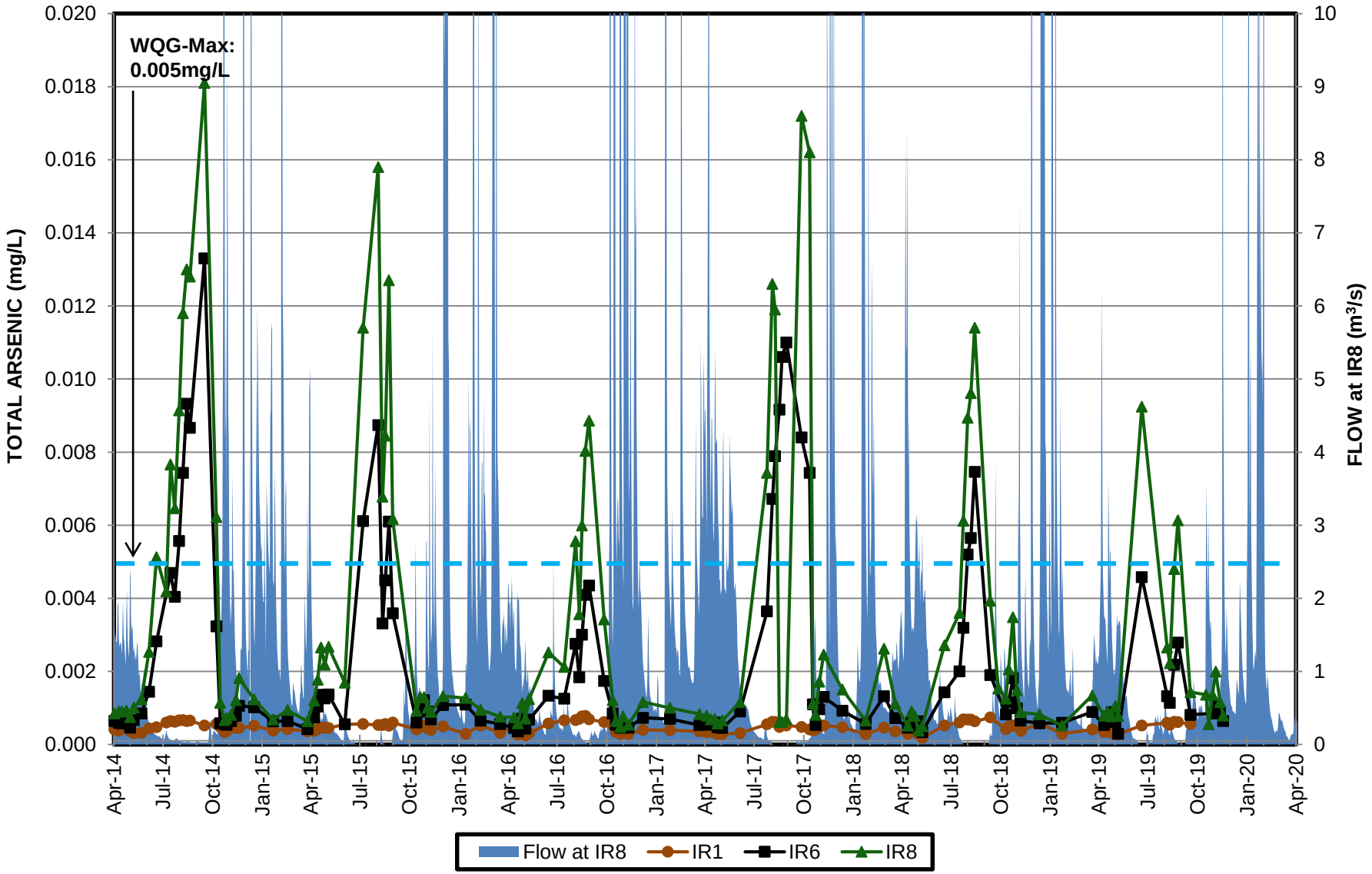
## IRON RIVER



GRAPH 55

# TOTAL ARSENIC vs FLOW

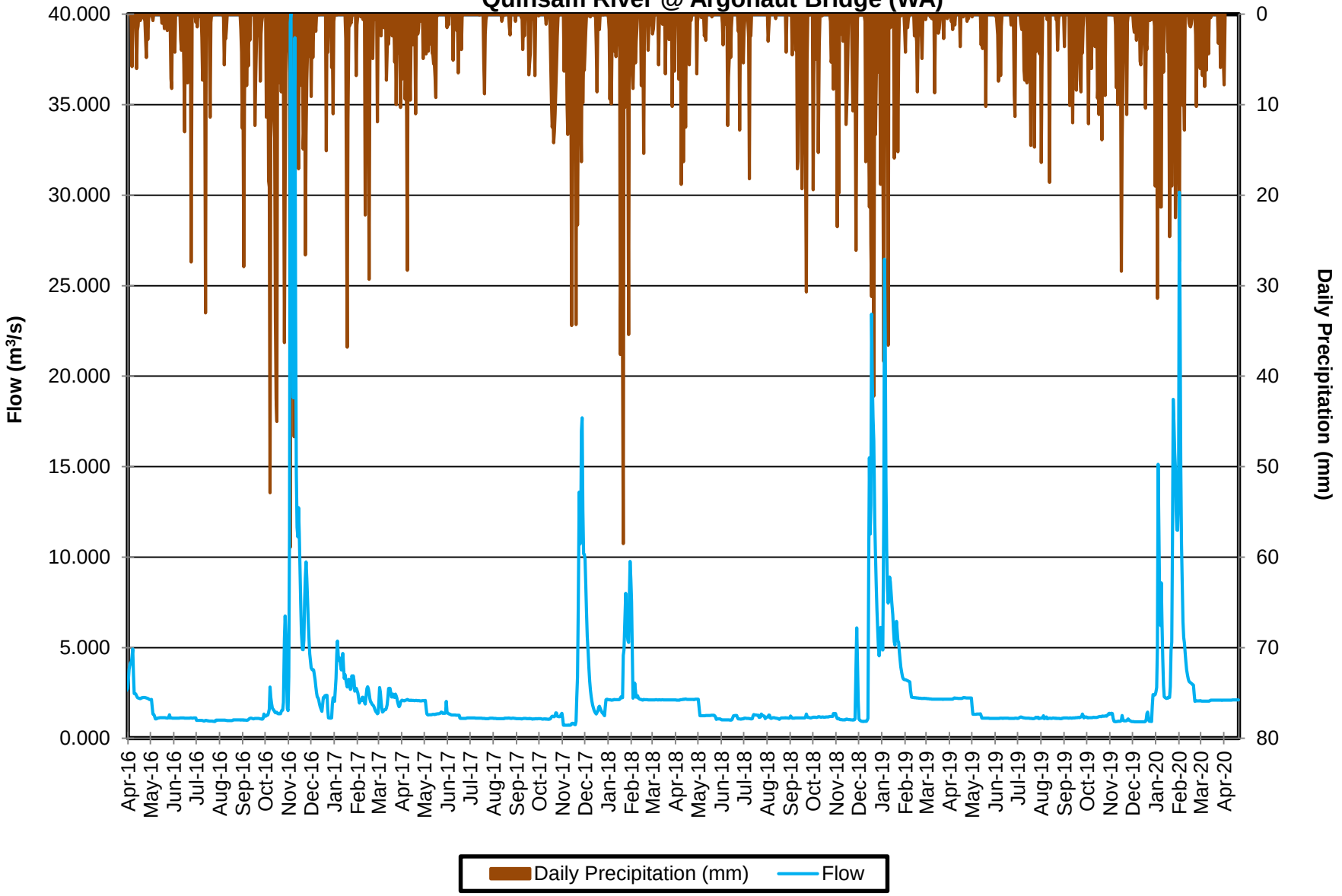
## IRON RIVER



GRAPH 56

# FLOW & PRECIPITATION

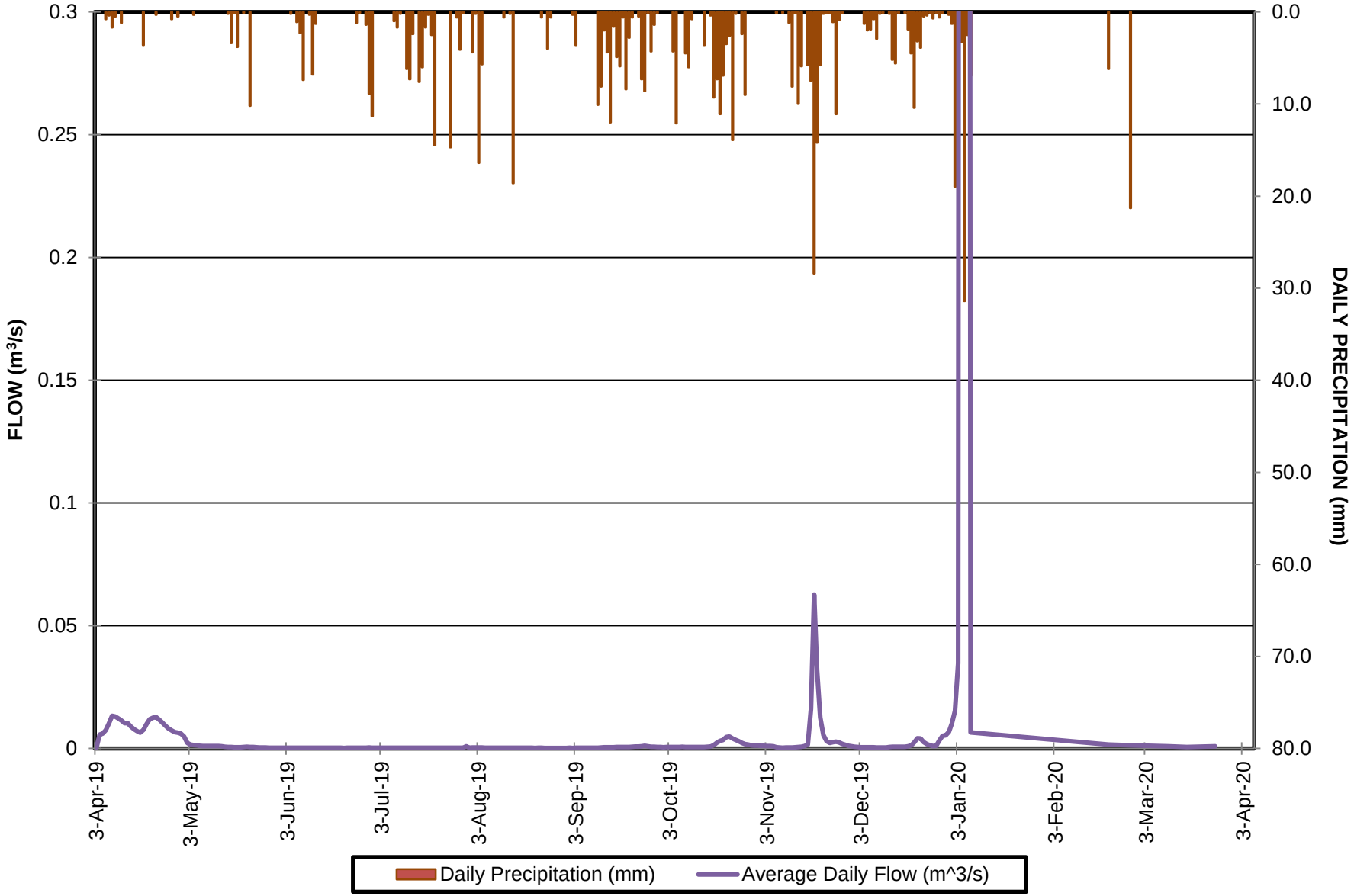
## Quinsam River @ Argonaut Bridge (WA)



GRAPH 57

# FLOW VS PRECIPITATION

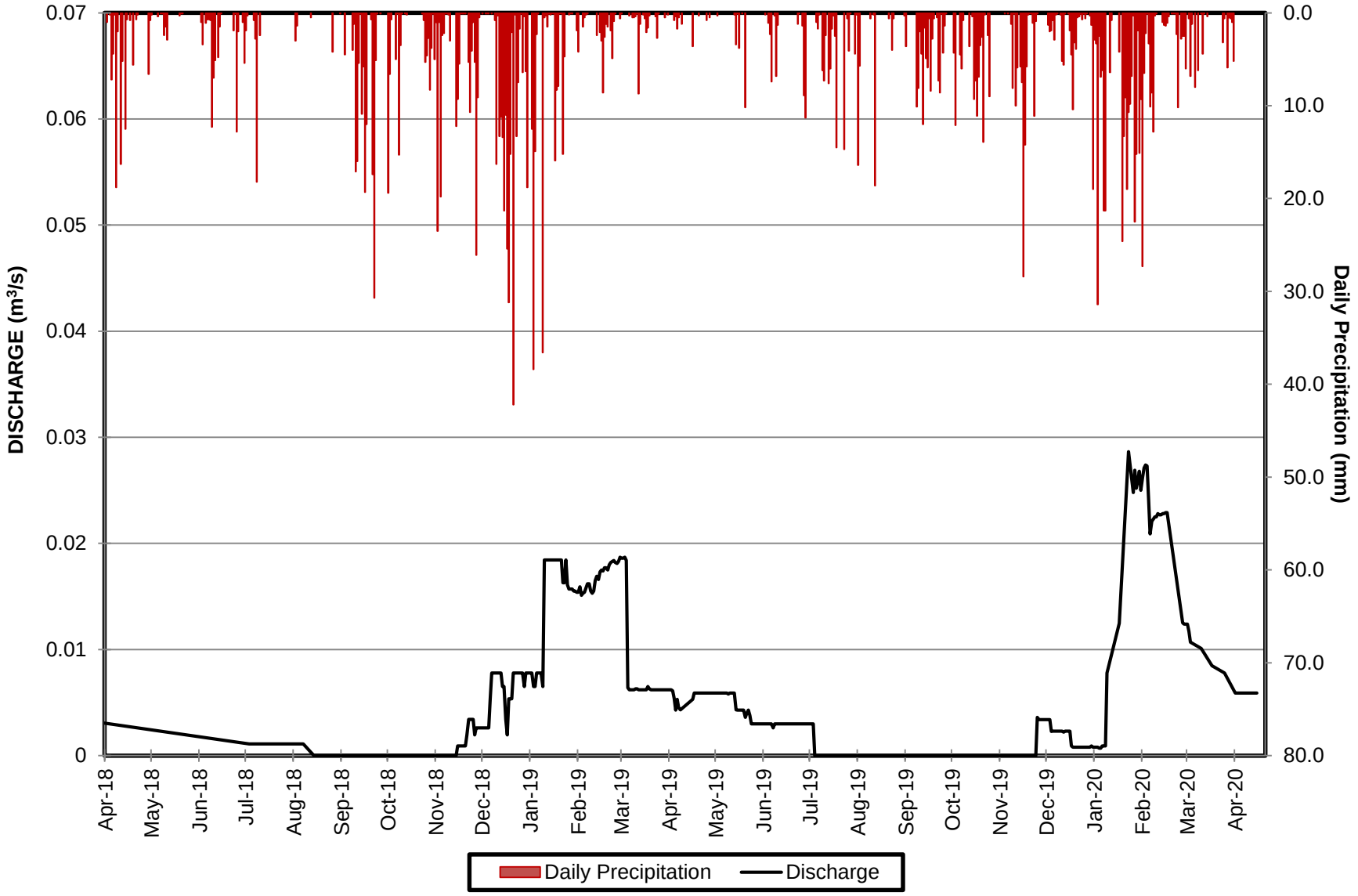
## Middle Quinsam Lake Outlet (WB)



GRAPH 58

# DISCHARGE vs PRECIPITATION

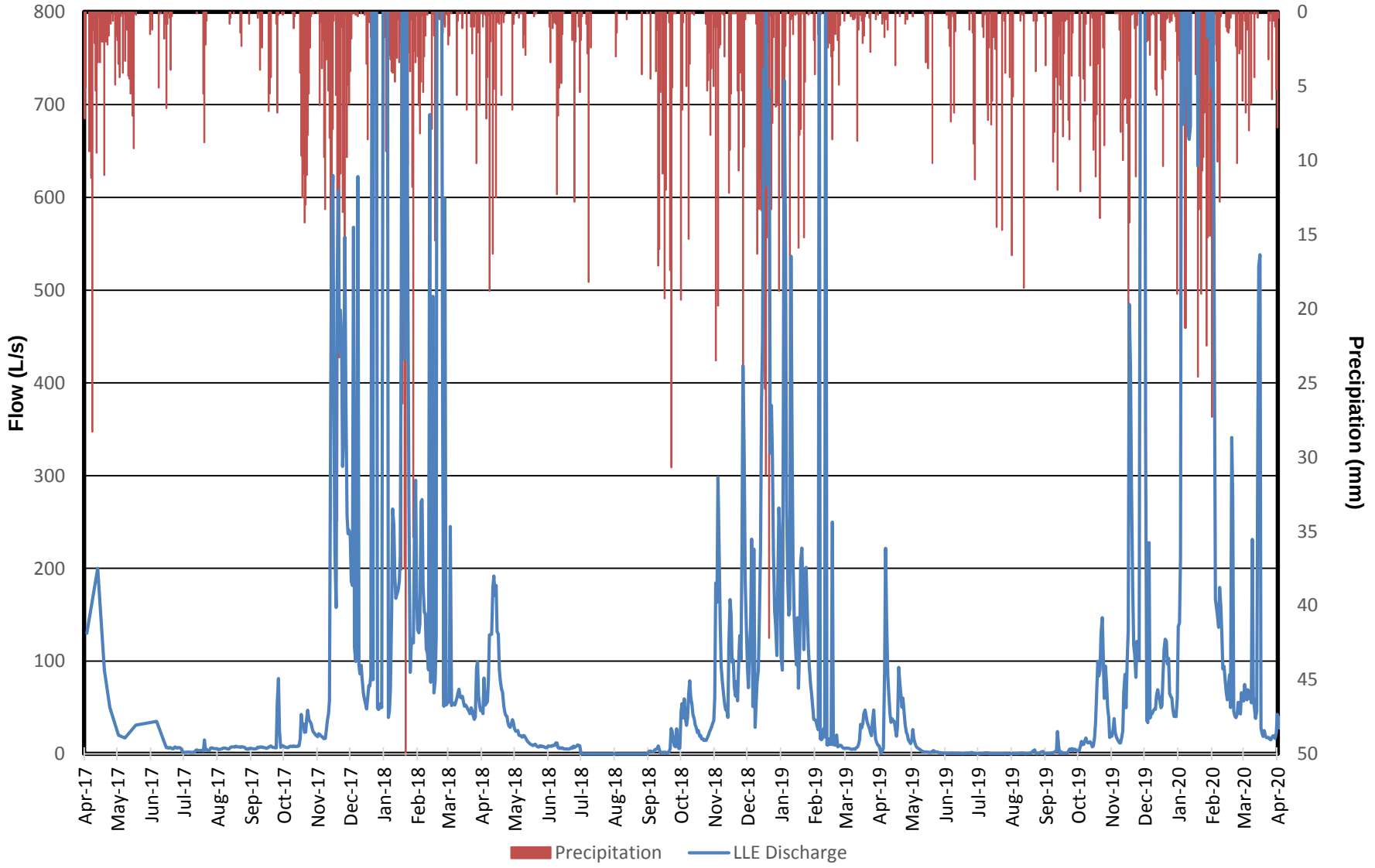
## Long Lake Seep Middle (LLSM)



GRAPH 59

# DISCHARGE vs PRECIPITATION

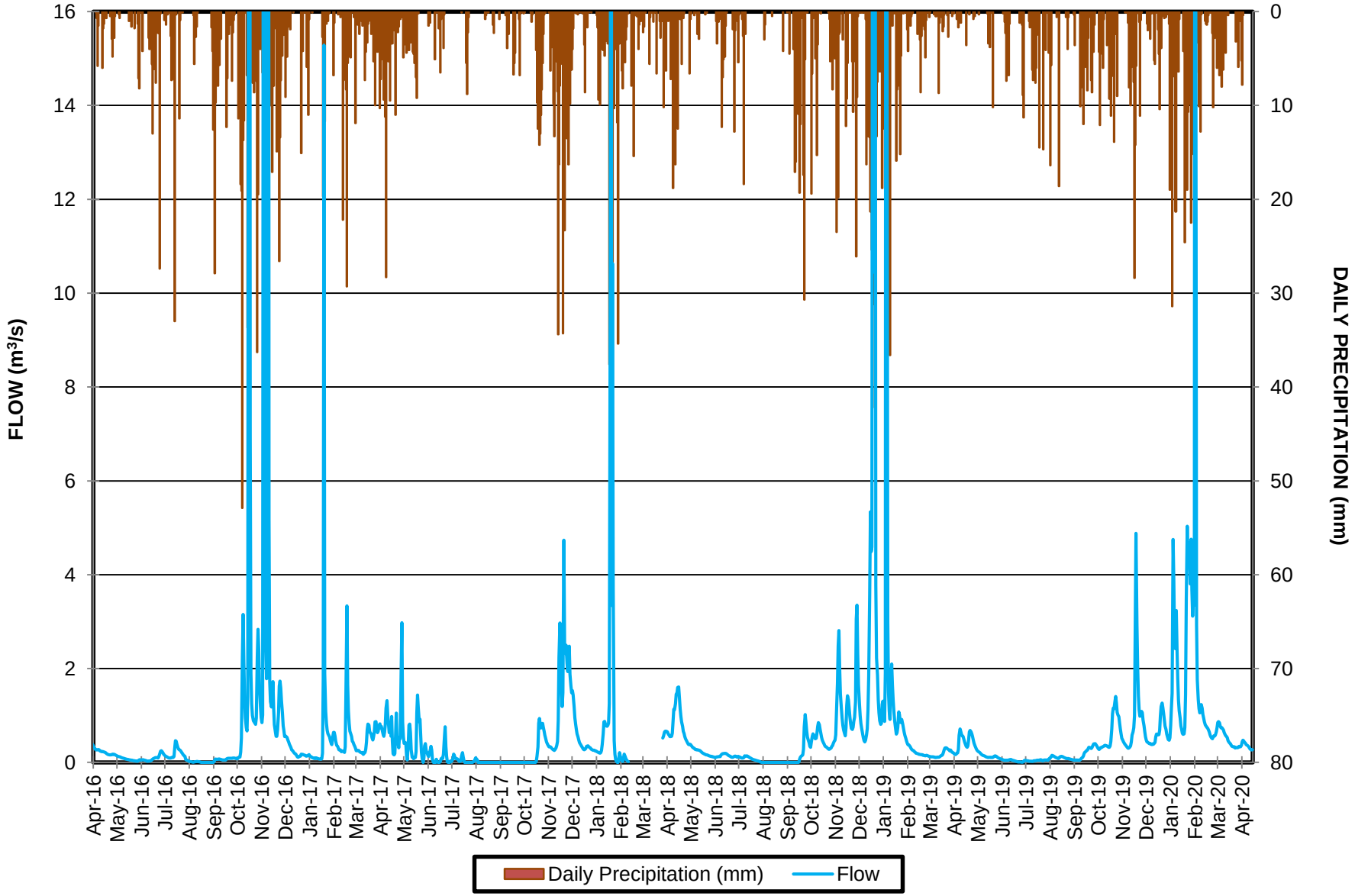
## Long Lake Entry (LLE)



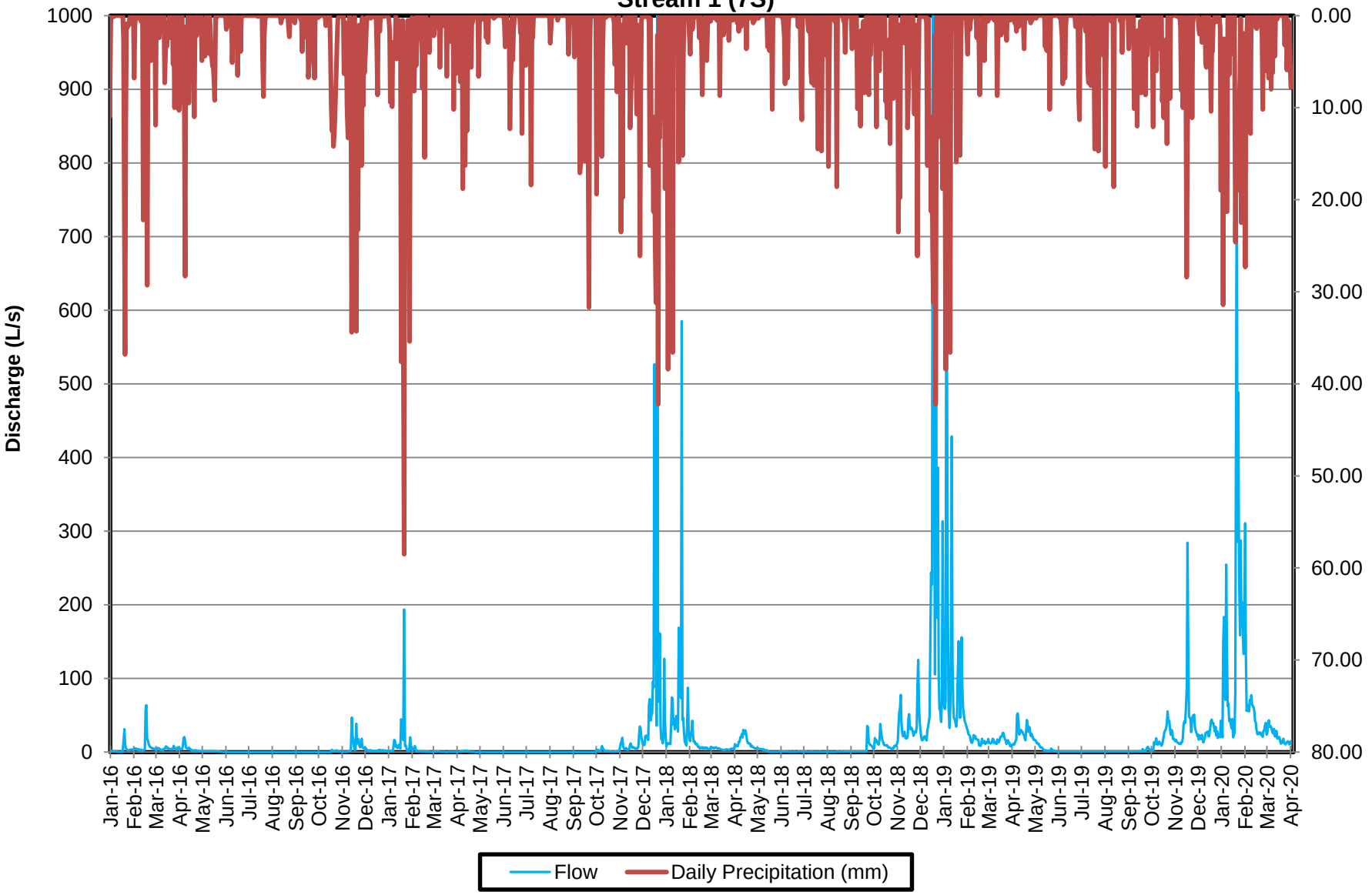
GRAPH 60

# FLOW vs PRECIPITATION

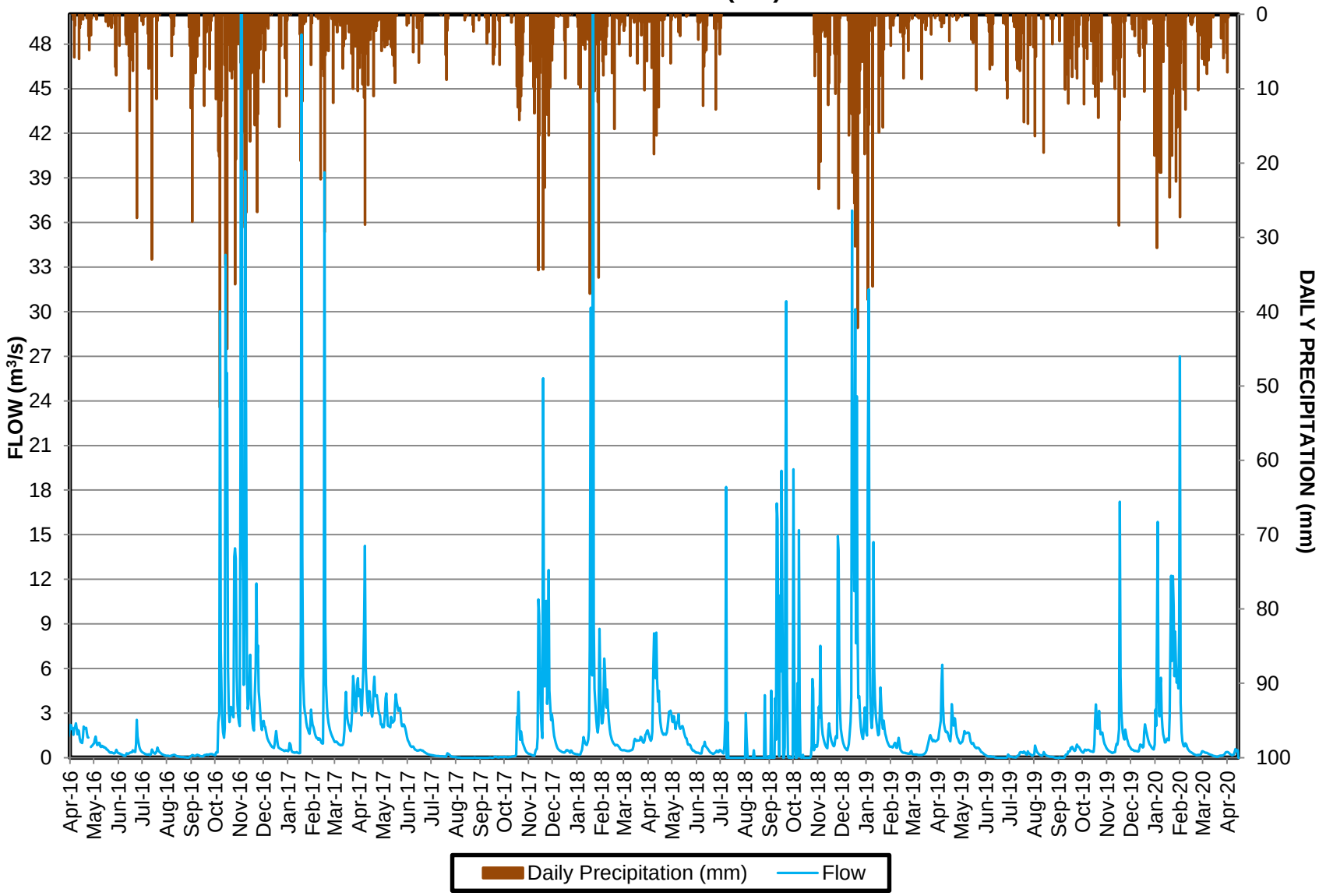
## Long Lake Outlet (LLO)



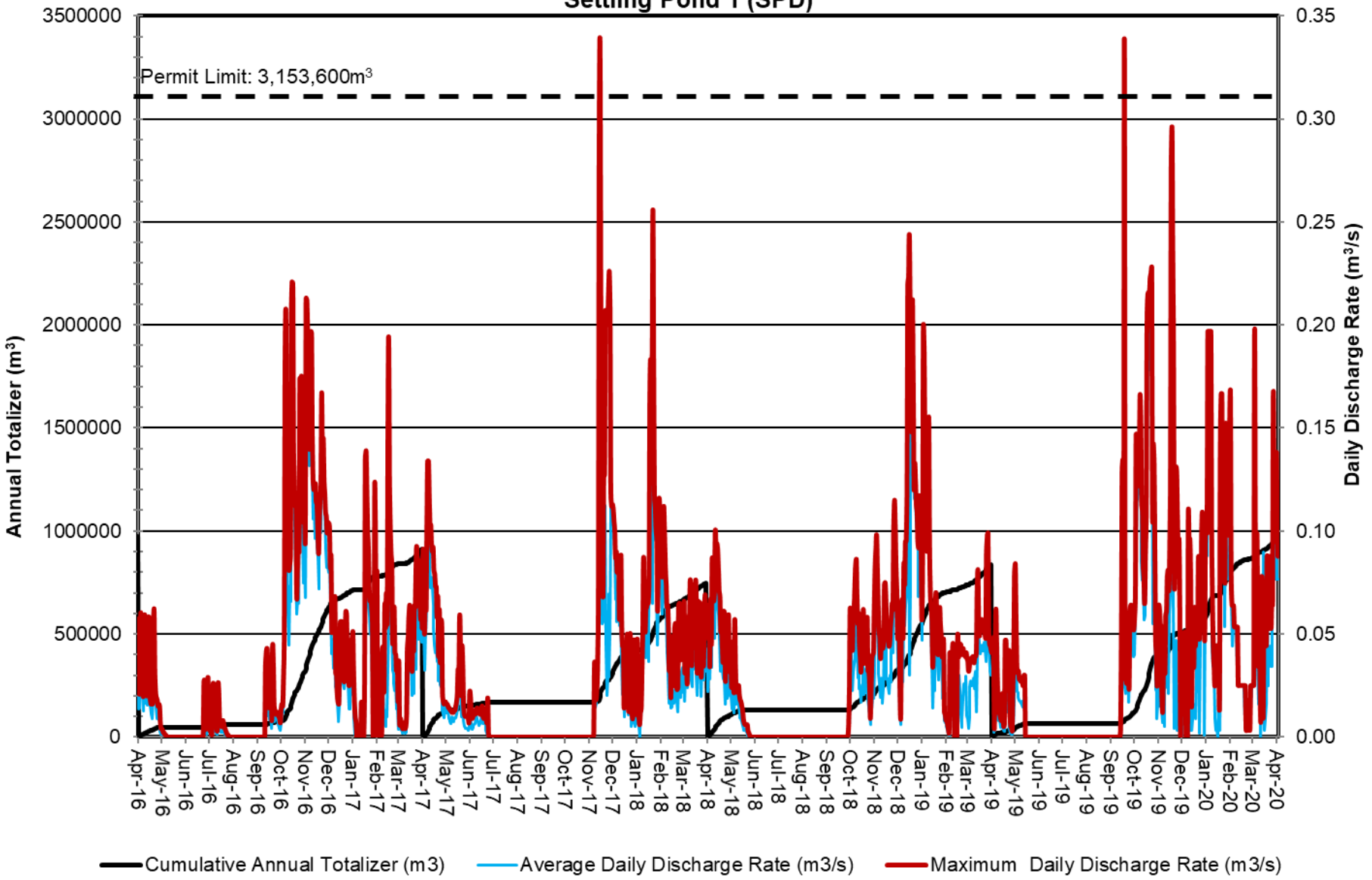
# GRAPH 61
# FLOW vs PRECIPITATION
## Stream 1 (7S)



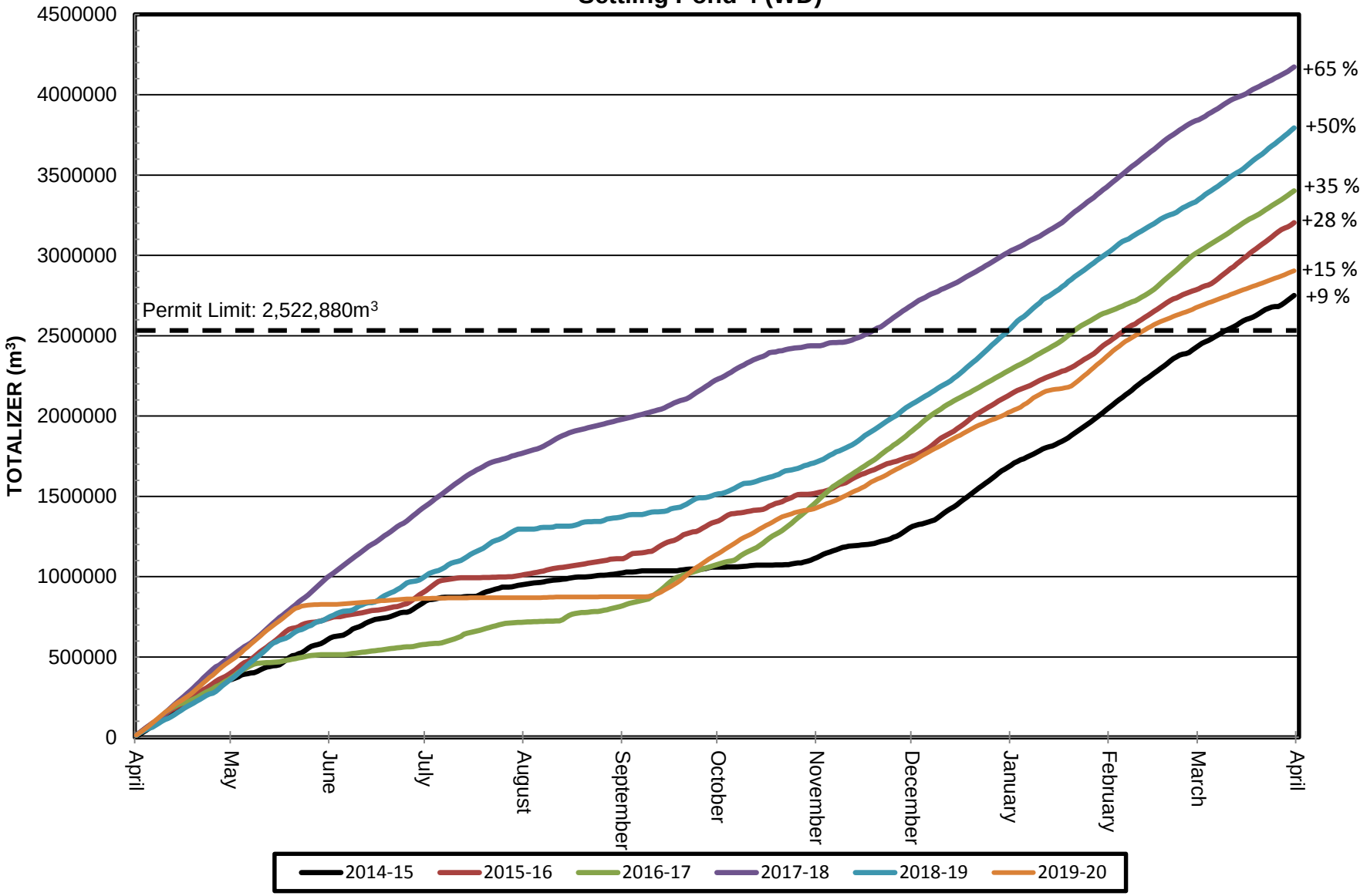
# GRAPH 62
# FLOW vs PRECIPITATION
## Iron River (IR8)



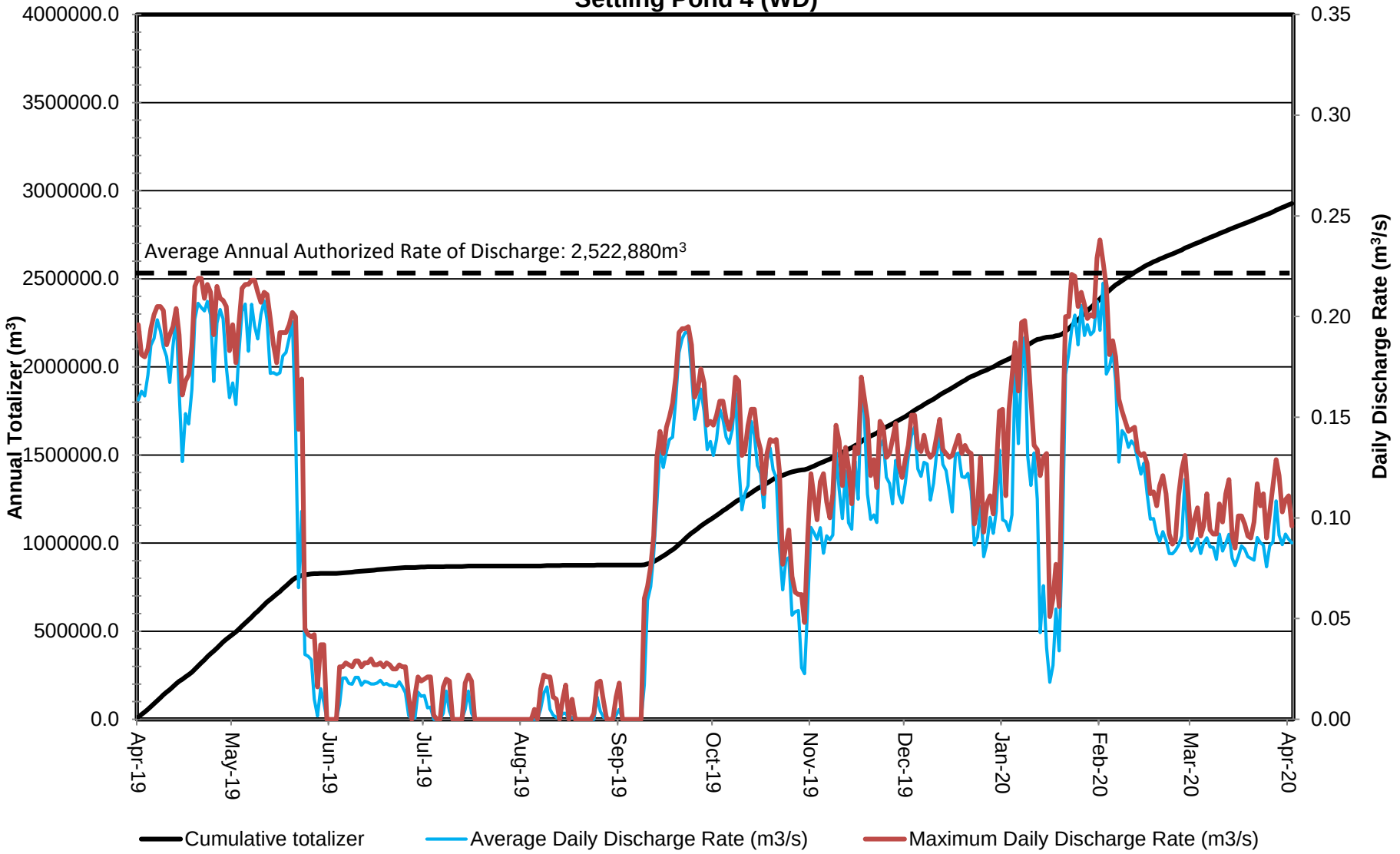
# GRAPH 63
## Cumulative & Daily Discharge Rates
### Settling Pond 1 (SPD)



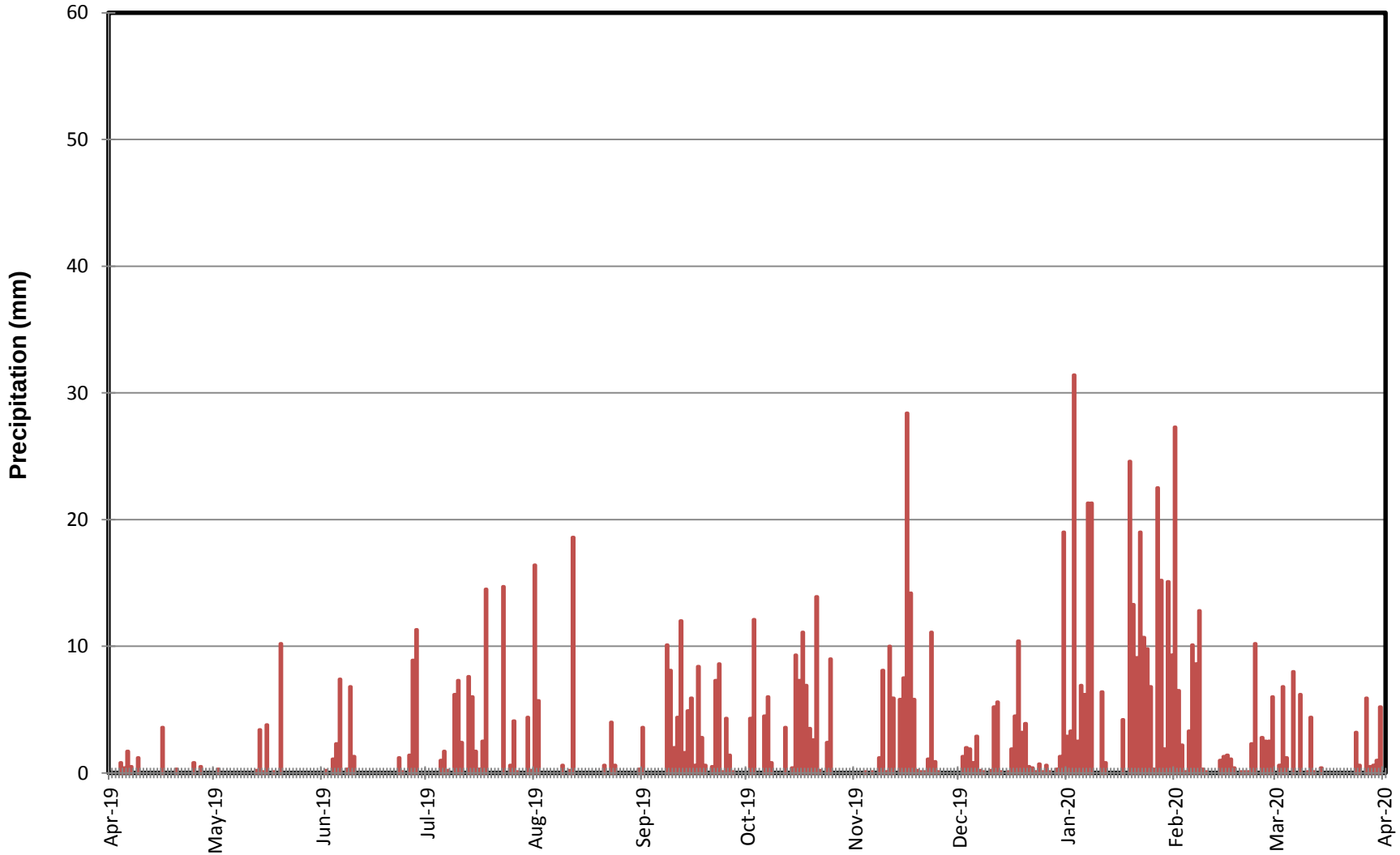
# GRAPH 64
## Comparison of Cumulative Annual Discharges
### Settling Pond 4 (WD)



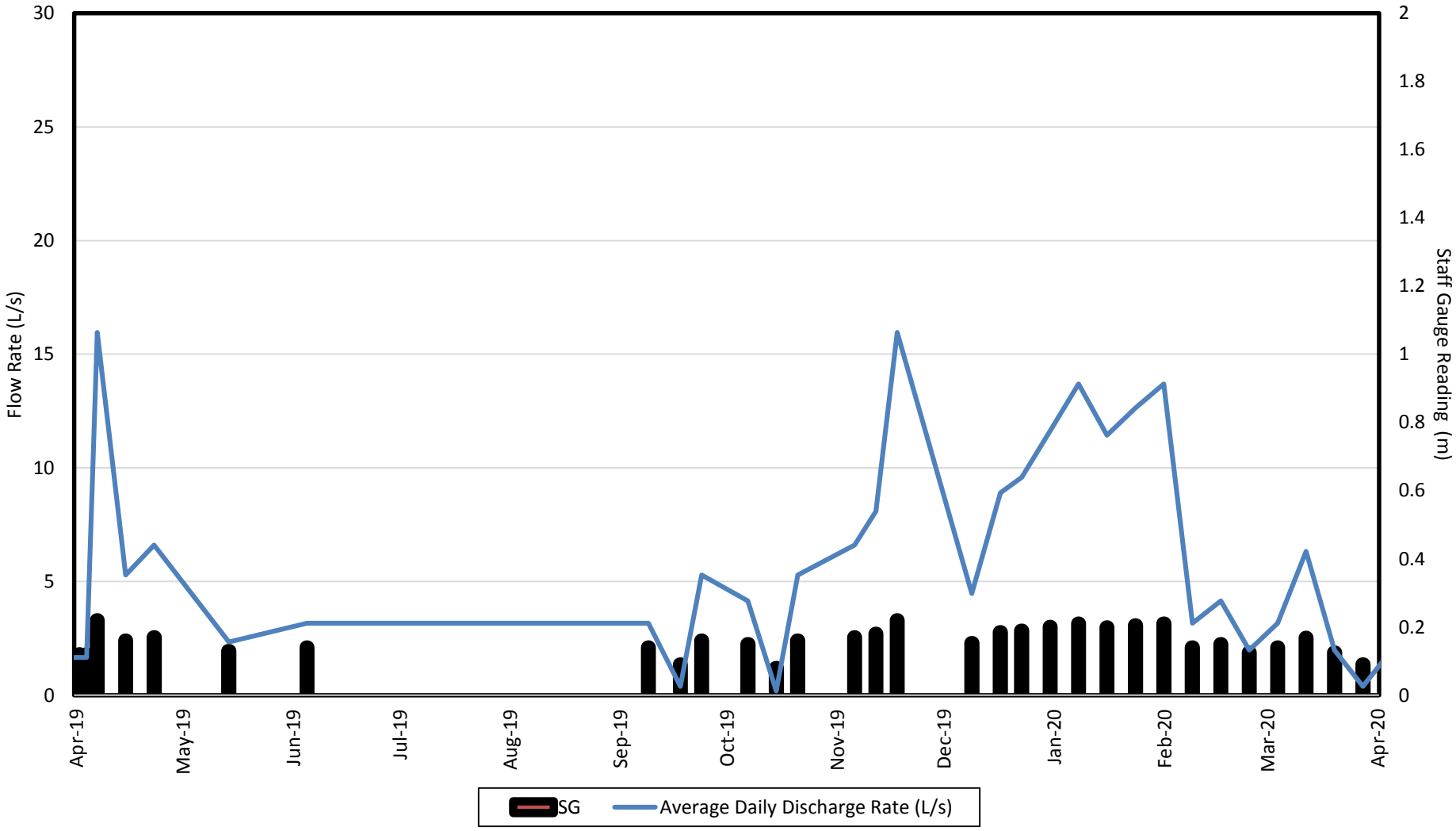
# GRAPH 65
## Cumulative & Daily Discharge Rates
### Settling Pond 4 (WD)



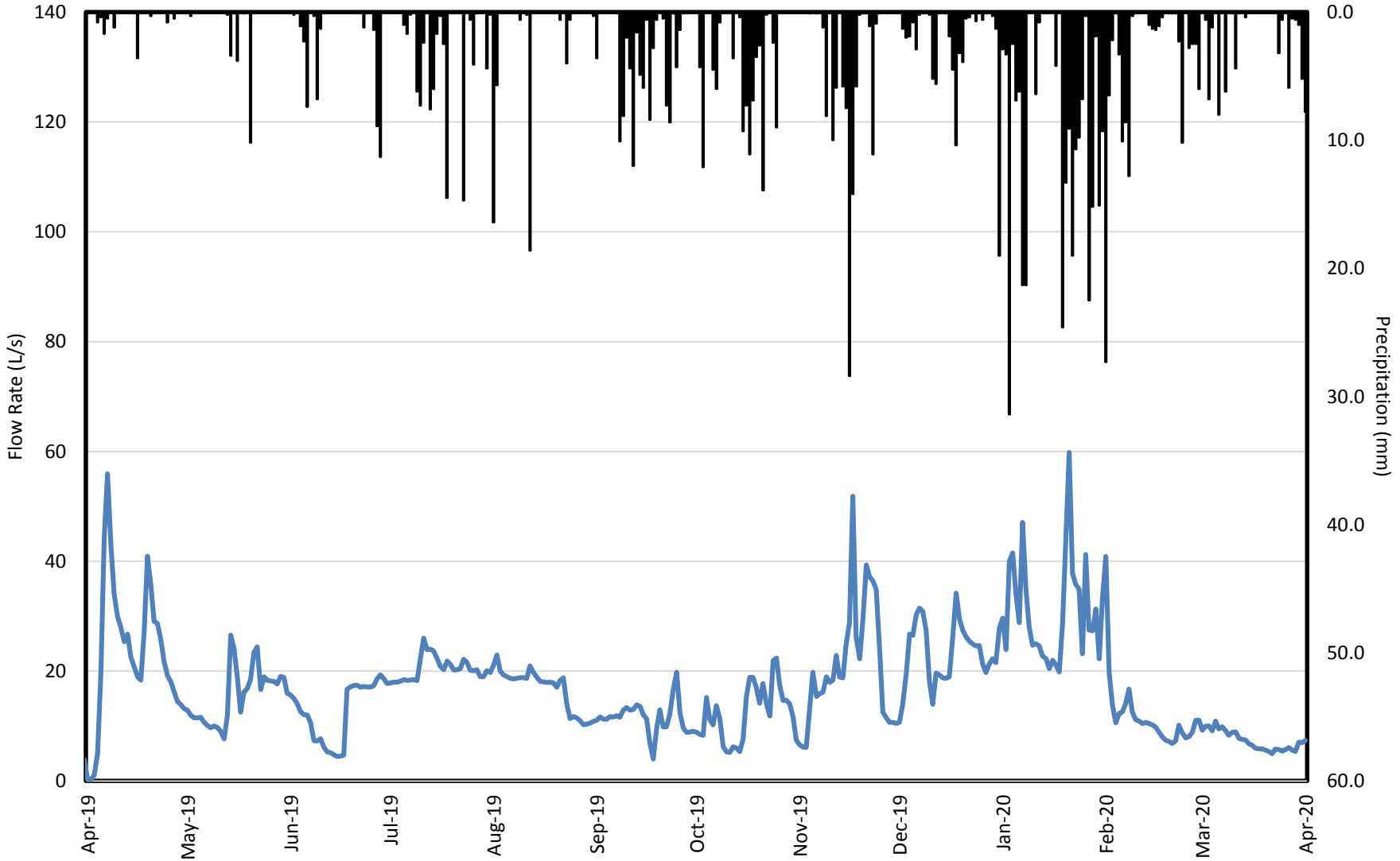
# GRAPH 66
## Daily Precipitation Accumulation (mm)
### 2-South Pit Area



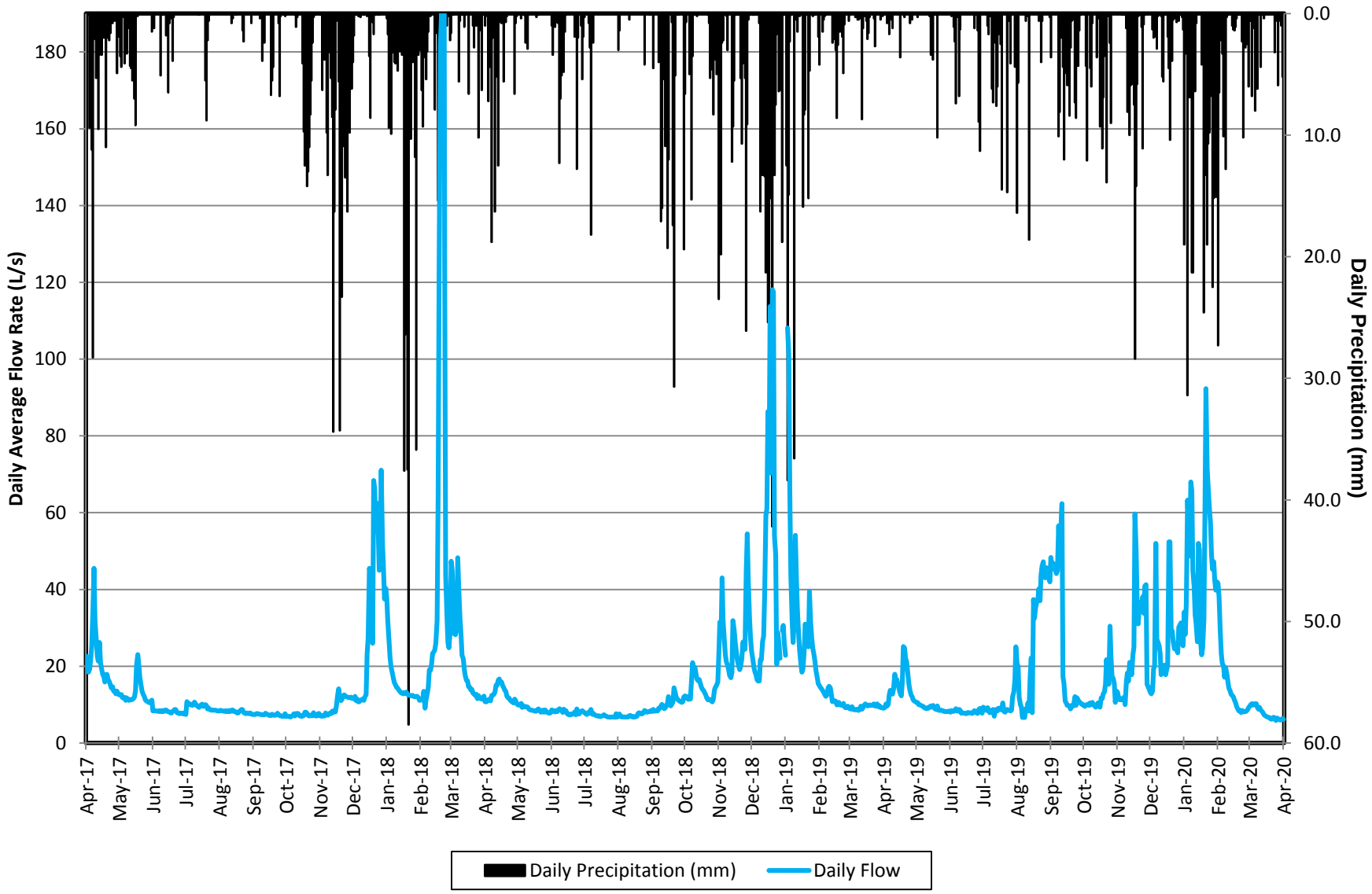
# GRAPH 67
## Flow Rate (L/s) @ 90º V-notch Weir vs Staff Gauge
### 2-South Inflow



# GRAPH 68
## Flow Rate (L/s) @ 90o V-notch Weir vs Precipitation (mm)
### 2-South Inflow



# GRAPH 69
## Flow Rate (L/s) vs Precipitation (mm)
### Culvert Entering 3-South (2SC)



# Appendix III

# RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

**Client :** 13210 The Bowra Group Inc., Contractor for Province of BC as MEMPR Representative, **COD** Job Number: B979156

Client Project Name & Number: SPD BIOASSAY

**Test Result:**

**96 hrs Mortality %** 0.0 Statistical Method: Visual

**Sample Name :** SPD

| | | | | | |
|---|---|---|---|---|---|
| Description: | Yellow and clear | | | Sample Number: | WN2966-01 |
| Sample Collected: | Sep 18, 2019 04:00 PM | Sampling Method : | Grab | Site Collection: | N/A |
| Sample Collected By: | Kathleen Russell | Volume Received: | 21 x 1LP | Temp.Upon Arrival: 9 °C | Storage: 2-6°C |
| Sample Received: | Sep 19, 2019 11:00 AM | pH: | 7.6 | Dissolved Oxygen: | 8.4 mg/L |
| Analysis Start : | Sep 20, 2019 11:40 AM | Temperature : | 14 °C | Sample Conductance: | 1061 µS/cm |

| Concentration | Temperature (°C) | Temperature (°C) | Dissolved Oxygen (mg/L) | Dissolved Oxygen (mg/L) | pH | pH | Conductivity (uS/cm) | Mortality (#) | Mortality (%) | Atypical Behaviour (#) |
|---|---|---|---|---|---|---|---|---|---|---|
| % vol/vol | Initial | 96 hrs | Initial | 96 hrs | Initial | 96 hrs | Initial | 96 hrs | 96 hrs | 96 hrs |
| 0 | 15 | 15 | 9.9 | 9.6 | 7.6 | 7.5 | 53 | 0 | 0 | 0 |
| 100 | 14 | 15 | 9.3 | 9.7 | 7.8 | 8.0 | 1061 | 0 | 0 | 0 |

**Comments :** All fish appeared and behaved normally during the test.
The LC50 of the reference toxicant was outside of 2 standard deviations, but within 3, of the Historic Geometric Mean LC50. The Historic Geometric Mean LC50's Lower Warning Limit (-3 values of S.D.) is 0.051 and the Upper Warning Limit (+3 values of S.D.) is 0.25. There were no issues with the test or culture health, therefore the reference toxicant test is valid and has been included in the control chart.

**Culture/Control/Dilution Water** Burnaby Municipal Dechlorinated Water

Hardness: 20 mg/L $CaCO_3$ Other parameters available on request.

**Test Conditions** Test concentration : 0,100 (% vol/vol)

| | | | | | |
|---|---|---|---|---|---|
| Organisms per Vessel : | 10 | Test Temperature : | 15 ± 1 °C | Solution Depth : | >15 cm |
| Total # of Organisms Used : | 20 | Pre-aeration Time : | 30 min. | Rate of Aeration | 6.5±1 mL/min/L |
| Test Volume : | 18 L | Vessel Volume : | 20L | Test pH Adjusted: | No |
| Loading Density : | 0.4 g/L | Photoperiod : | 16:8 (light: dark) | | |

**Test Organism :** Rainbow Trout *(Oncorhynchus mykiss)* Source : Aqua Farm

| | | | | | |
|---|---|---|---|---|---|
| Culture Temperature : | 15 ± 2 °C | Weight (Mean) +- SD : | 0.7 ± 0.1 g | Length (Mean) +- SD : | 4.46 ± 0.28 cm |
| Culture Water Renewal : | ≥ 1L/min/kg fish | Weight (Range) : | 0.5 – 0.9 g | Length (Range) : | 4.00 – 4.90 cm |
| Culture Photoperiod : | 16:8 (light: dark) | | | % Mortality within 7 days : | 0.0% |
| Feeding rate and frequency : | daily: 1-5% biomass of trout. | | | Acclimation Time: | >14 days |

**Reference chemical:** Zinc Test Date: Sep 19, 2019

Test Endpoint 96 hrs LC50 (95% confidence interval) : 0.20 (0.15, 0.26)mg/L Statistical Method : Probit

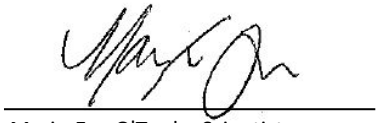
Historical Mean LC50 (warning limits) : 0.11 (0.07, 0.19) mg/L Concentration : 0,0.04,0.08,0.16,0.32,0.64 mg/L

**Test Method** BV Labs' BBY2SOP-00004 is based on the latest versions of EPS 1/RM/9, EPS 1/RM/13, and EPS 1/RM/50.

Method Deviations : None.

**Note:** The results contained in this report refer only to the testing of the sample submitted. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Mustaffa Hamad



Verified By : Marie-Eve O'Toole, Scientist Date: Oct 03, 2019 12:49 PM

# RESULTS OF RAINBOW TROUT SINGLE CONCENTRATION-100%

**Client :** 13210 The Bowra Group Inc., Contractor for Province of BC as MEMPR Representative, **COD** Job Number: B979146

Client Project Name & Number: WD BIOASSAY

**Test Result:**

**96 hrs Mortality %** 0.0 Statistical Method: Visual

**Sample Name :** WD

| | | | | | |
|---|---|---|---|---|---|
| Description: | Light yellow and clear | | | Sample Number: | WN2939-01 |
| Sample Collected: | Sep 18, 2019 04:00 PM | Sampling Method : | N/A | Site Collection: | N/A |
| Sample Collected By: | Kathleen Russell | Volume Received: | 21 x 1LP | Temp.Upon Arrival: 10 °C | Storage: 2-6°C |
| Sample Received: | Sep 19, 2019 11:00 AM | pH: | 7.8 | Dissolved Oxygen: | 9.5 mg/L |
| Analysis Start : | Sep 20, 2019 11:40 AM | Temperature : | 14 °C | Sample Conductance: | 1933 µS/cm |

| Concentration | Temperature (°C) | Temperature (°C) | Dissolved Oxygen (mg/L) | Dissolved Oxygen (mg/L) | pH | pH | Conductivity (uS/cm) | Mortality (#) | Mortality (%) | Atypical Behaviour (#) |
|---|---|---|---|---|---|---|---|---|---|---|
| % vol/vol | Initial | 96 hrs | Initial | 96 hrs | Initial | 96 hrs | Initial | 96 hrs | 96 hrs | 96 hrs |
| 0 | 15 | 15 | 9.9 | 9.8 | 7.6 | 7.4 | 53 | 0 | 0 | 0 |
| 100 | 14 | 15 | 9.7 | 9.7 | 7.9 | 8.0 | 1929 | 0 | 0 | 0 |

**Comments :** All fish appeared and behaved normally during the test.
The LC50 of the reference toxicant was outside of 2 standard deviations, but within 3, of the Historic Geometric Mean LC50. The Historic Geometric Mean LC50's Lower Warning Limit (-3 values of S.D.) is 0.051 and the Upper Warning Limit (+3 values of S.D.) is 0.25. There were no issues with the test or culture health, therefore the reference toxicant test is valid and has been included in the control chart.

**Culture/Control/Dilution Water** Burnaby Municipal Dechlorinated Water

Hardness: 20 mg/L $CaCO_3$ Other parameters available on request.

**Test Conditions** Test concentration : 0,100 (% vol/vol)

| | | | | | |
|---|---|---|---|---|---|
| Organisms per Vessel : | 10 | Test Temperature : | 15 ± 1 °C | Solution Depth : | >15 cm |
| Total # of Organisms Used : | 20 | Pre-aeration Time : | 30 min. | Rate of Aeration | 6.5±1 mL/min/L |
| Test Volume : | 18 L | Vessel Volume : | 20L | Test pH Adjusted: | No |
| Loading Density : | 0.4 g/L | Photoperiod : | 16:8 (light: dark) | | |

**Test Organism :** Rainbow Trout *(Oncorhynchus mykiss)* Source : Aqua Farm

| | | | | | |
|---|---|---|---|---|---|
| Culture Temperature : | 15 ± 2 °C | Weight (Mean) +- SD : | 0.7 ± 0.2 g | Length (Mean) +- SD : | 4.48 ± 0.34 cm |
| Culture Water Renewal : | ≥ 1L/min/kg fish | Weight (Range) : | 0.5 – 1.0 g | Length (Range) : | 4.00 – 5.00 cm |
| Culture Photoperiod : | 16:8 (light: dark) | | | % Mortality within 7 days : | 0.0% |
| Feeding rate and frequency : | daily: 1-5% biomass of trout. | | | Acclimation Time: | >14 days |

**Reference chemical:** Zinc Test Date: Sep 19, 2019

Test Endpoint 96 hrs LC50 (95% confidence interval) : 0.20 (0.15, 0.26)mg/L Statistical Method : Probit

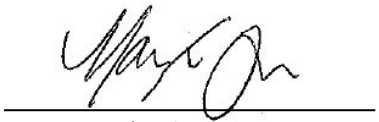
Historical Mean LC50 (warning limits) : 0.11 (0.07, 0.19) mg/L Concentration : 0,0.04,0.08,0.16,0.32,0.64 mg/L

**Test Method** BV Labs' BBY2SOP-00004 is based on the latest versions of EPS 1/RM/9, EPS 1/RM/13, and EPS 1/RM/50.

Method Deviations : None.

**Note:** The results contained in this report refer only to the testing of the sample submitted. This report may not be reproduced, except in its entirety, without the written approval of the laboratory.

Analyst : Mustaffa Hamad



Verified By : Marie-Eve O'Toole, Scientist Date: Oct 03, 2019 12:47 PM

# Appendix IV

Stantec Consulting Ltd.
500-4730 Kingsway, Burnaby BC V5H 0C6

February 14, 2020
File: 123210406

**Attention: Morgan Melnychuk**
Maxxam Analytics Laboratory
4606 Canada Way
Burnaby, BC V5G 1K5

Dear Morgan,

**Reference: Quinsam Lakes Phytoplankton, October 24, 2019 (Sample Reference WU2301-07 and WU2296-07; Job Numbers B991978 and B991979)**

# Introduction

Quinsam Coal Ltd. collects water samples from the Quinsam Lakes system during the growing season to meet long-term water quality monitoring requirements as per the effluent discharge permit. From 1994 through 2012, the permit required sampling at 1, 4 and 9 m in April through September for Long Lake and Middle Quinsam Lake, with No Name Lake added to the program in June 2012 and Lower Quinsam Lake added in 2013. In 2014 the permit was revised to include surface water sampling (1.0 m depth) three times a year (spring, late summer, fall overturn). The long-term dataset is included in Attachment 1.

Samples are collected by Quinsam Coal and submitted to Stantec Consulting Ltd. for phytoplankton taxonomic analysis, as part of ongoing monitoring requirements of the Ministry of Environment and Climate Change Strategy. Some months, an additional sample is taken as a field replicate for quality assurance/quality control. This brief report provides information about samples from Long Lake and Middle Quinsam Lake collected in October 2019. No Name and Lower Quinsam lakes were not sampled in October, given that the mine is now in care and maintenance.

# Methods

Sub-samples (27 mL) of preserved lake water were settled and examined at 100 X, 400 X and 1,000 X magnifications using a Zeiss inverted microscope. Counting effort is defined as at least 100 organisms of the predominant species at 400 X, up to 200 fields at 1,000 X and a half or whole sub-sample at 100 X.

# Results

## Abundance

Abundance data for 1993 to 2018 are summarized in Attachment 1 and detailed taxonomic results for October 2019 are presented in Attachment 2.

**Reference:** **Quinsam Lakes Phytoplankton, October 24, 2019 (Sample Reference WU2301-07 and WU2296-07; Job Numbers B991978 and B991979)**

Total abundance in the May, July and October 2019 samples is shown in Table 1. Total abundance for the October 24, 2019 samples was 2,400 cells/mL for Long Lake and 1,300 cells/mL for Middle Quinsam Lake.

**Table 1 Phytoplankton Abundance (cells/mL) in Quinsam Lake System, 2019**

| Lake | Date | Abundance (cells/mL) at 1 m depth | | | |
|---|---|---|---|---|---|
| | | Total | < 5 µm (1,000 X) | 5 to 25 µm (400 X) | > 25 µm (100 X) |
| Long | May 1 | 2,400 | 1,900 | 430 | 1.0 |
| Long—duplicate | May 1 | 2,100 | 1,700 | 420 | 1.7 |
| Middle Quinsam | May 2 | 320 | 260 | 60 | 1.2 |
| No Name | May 1 | 740 | 440 | 300 | 0.1 |
| Lower Quinsam | May 2 | 600 | 500 | 99 | 1.2 |
| Long | May 8 | 2,000 | 1,700 | 300 | 0.5 |
| Middle Quinsam | | 1,000 | 920 | 80 | 0.4 |
| No Name | | 2,700 | 2,100 | 570 | 0.03 |
| Lower Quinsam | | 2,100 | 1,800 | 310 | 11.9 |
| Long | July 30 | 2,600 | 2,300 | 220 | 1.3 |
| Middle Quinsam | | 1,800 | 1,600 | 220 | 0.7 |
| No Name | | 2,400 | 2,100 | 350 | 4.9 |
| No Name (duplicate) | | 2,200 | 1,800 | 370 | 9.0 |
| Lower Quinsam | | 1,900 | 1,500 | 320 | 1.0 |
| Long | Oct. 24 | 2,400 | 1,900 | 450 | 0.7 |
| Middle Quinsam | | 1,300 | 1,100 | 210 | 0.04 |

## Species Composition

Species composition data for October 24, 2019 samples are contained in Attachment 2. The most abundant phytoplankton in both lakes were the very small (less than or equal to 5 µm) chrysoflagellates (*Ochromonas* spp. and *Chromulina* spp.). Although these ultra-nanoplankton species were very abundant numerically, they usually contribute little to algal biomass.

The most abundant of the larger algae were as follows:

- In Long Lake, larger *Ochromonas* spp. and the cryptophyte *Rhodomonas minuta* were predominant.
- In Middle Quinsam Lake, larger *Ochromonas* spp. were predominant and *Rhodomonas minuta* and the colonial chrysophyte *Dinobryon cylindricum* were common.

**Reference:** **Quinsam Lakes Phytoplankton, October 24, 2019 (Sample Reference WU2301-07 and WU2296-07; Job Numbers B991978 and B991979)**

# Closure

We trust this information meets your present requirements. Should you have any questions or require additional information, please contact the undersigned.

Regards,

**Stantec Consulting Ltd.**

Karen Munro
Digitally signed by Karen Munro
Date: 2020.02.14 16:44:15 -08'00'

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Attachment: 1: Historical Abundance Data: Quinsam Lakes System, 1993–2018
2: Species Composition Data: October 24, 2019

# ATTACHMENT 1

## Historical Abundance Data:
## Quinsam Lakes System, 1993–2018

**Table 1-1** **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1993 and 1994**

| Date | Sampling Site | Total Abundance | < 5mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 1993 October | LLM1 | 2,300 | 1,800 | 530 | |
| | LLM3 | 3,000 | 2,400 | 550 | |
| | LLMB | 610 | 420 | 190 | |
| 1994 May | LL1R | 10,000 | 8,800 | 1,200 | |
| | LL3R | 5,000 | 3,800 | 1,200 | |
| | LL9R | 4,000 | 3,200 | 800 | |
| 1994 June | LL0 | 1,400 | 1,200 | 250 | |
| | LL1 | 1,000 | 790 | 220 | |
| | LL4 | 1,500 | 1,200 | 320 | |
| | LL9 | 2,500 | 1,900 | 580 | |
| | LLB | 830 | 440 | 390 | |
| 1994 July | LL1 | 2,100 | 1,900 | 180 | |
| | LL4 | 1900 | 1700 | 250 | |
| | LL9 | 1,500 | 1,100 | 400 | |
| 1994 August | LL1 | 1,700 | 1,400 | 290 | |
| | LL4 | 1,000 | 850 | 200 | |
| | LL9 | 900 | 780 | 150 | |
| 1994 September | LL1 | 900 | 620 | 250 | |
| | LL4 | 2,300 | 2,000 | 260 | |
| | LL9 | 2,100 | 1,700 | 350 | |

**Table 1-2** **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1995**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 1995 April | LL1 | 3,100 | 2,700 | 340 | |
| | LL4 | 3,300 | 2,900 | 350 | |
| | LL9 | 1,300 | 1,100 | 280 | |
| 1995 May | LL1 | 5,400 | 4,900 | 570 | |
| | LL4 | 4,800 | 4,100 | 700 | |
| | LL9 | 1,500 | 1,000 | 500 | |
| 1995 June | LL1 | 2,100 | 1,800 | 300 | |
| | LL4 | 2,600 | 2,100 | 500 | |
| | LL9 | 7,400 | 6,600 | 850 | |
| 1995 July | LL1 | 2,000 | 1,700 | 300 | |
| | LL4 | 1,900 | 1,650 | 350 | |
| | LL9 | 1,500 | 1,200 | 300 | |
| 1995 August | LL1 | 1,100 | 960 | 180 | |
| | LL4 | 1,300 | 1,100 | 240 | |
| | LL9 | 1,900 | 1,700 | 210 | |
| 1995 September | LL1 | 2,900 | 2,800 | 170 | |
| | LL4 | 3,400 | 3,100 | 330 | |
| | LL9 | 1,900 | 1,600 | 280 | |

**Table 1-3** **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1996**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 1996 April | LL1 | 4,600 | 4,200 | 340 | |
| | LL4 | 6,000 | 5,600 | 380 | |
| | LL9 | 1,100 | 960 | 160 | |
| 1996 May | LL1 | 2,200 | 1,600 | 600 | 31 |
| | LL4 | 2,200 | 1,700 | 540 | 16 |
| | LL9 | 1,700 | 1,400 | 290 | 26 |
| 1996 June | LL1 | 2,100 | 1,600 | 440 | 4 |
| | LL4 | 1,600 | 1,300 | 340 | 2 |
| | LL9 | 1,600 | 1,100 | 500 | 9 |
| 1996 July | LL1 | 2,400 | 2,300 | 140 | 1 |
| | LL4 | 3,200 | 3,000 | 200 | 3 |
| | LL9 | No sample | | | |
| 1996 August | LL1 | 2,100 | 1,900 | 160 | 1 |
| | LL4 | 2,200 | 1,800 | 390 | 37 |
| | LL9 | 1,700 | 1,500 | 200 | 10 |
| 1996 September | LL1 | 1,900 | 1,600 | 230 | 82 |
| | LL4 | 2,200 | 1,800 | 300 | 145 |
| | LL9 | 2,100 | 1,800 | 220 | 38 |
| 1996 April | MQ1 | No sample | | | |
| | MQ4 | No sample | | | |
| | MQ9 | No sample | | | |
| 1996 May | MQ1 | 2,000 | 1,700 | 230 | 11 |
| | MQ4 | 1,100 | 930 | 180 | 7 |
| | MQ9 | 2,200 | 1,800 | 430 | 1 |
| 1996 June | MQ1 | 2,700 | 2,500 | 150 | 3 |
| | MQ4 | 2,600 | 2,400 | 210 | 7 |
| | MQ9 | 1,200 | 1,000 | 190 | 1 |
| 1996 July | MQ1 | 2,400 | 2,100 | 335 | 24 |
| | MQ4 | 1,900 | 1,400 | 380 | 130 |
| | MQ9 | 1,200 | 860 | 320 | 29 |
| 1996 August | MQ1 | 2,800 | 2,500 | 280 | 17 |
| | MQ4 | 1,800 | 1,500 | 310 | 18 |
| | MQ9 | 2,300 | 1,900 | 390 | 21 |
| 1996 September | MQ1 | 1,700 | 1,300 | 270 | 5 |
| | MQ4 | 900 | 560 | 350 | 0.6 |
| | MQ9 | 1,200 | 1,100 | 190 | 0.7 |

**Table 1-4 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1997**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 1997 early May | LL1 | 3,200 | 2,800 | 340 | 12 |
| | LL4 | 4,300 | 4,000 | 300 | 32 |
| | LL9 | 1,700 | 1,600 | 140 | 5 |
| 1997 late May[1] | LL1 | 3,000 | 2,600 | 370 | 61 |
| | LL4 | 4,900 | 4,200 | 620 | 100 |
| | LL9 | 4,700 | 4,000 | 730 | 44 |
| 1997 June[2] | LL1 | 1,500 | 1,100 | 340 | 2 |
| | LL4 | 1,200 | 1,000 | 240 | 1 |
| | LL9 | 3,900 | 2,700 | 1,200 | 50 |
| 1997 July | LL1 | 2,400 | 2,300 | 110 | 0 |
| | LL4 | 1,700 | 1,500 | 170 | 0.1 |
| | LL9 | 480 | 390 | 80 | 2 |
| 1997 August | LL1 | 1,900 | 1,700 | 230 | 0.2 |
| | LL4 | 880 | 740 | 140 | 0.6 |
| | LL9 | 1,000 | 870 | 93 | 1.4 |
| 1997 September | LL1 | 1,000 | 870 | 140 | 0.6 |
| | LL4 | 2,000 | 1,800 | 270 | 0.3 |
| | LL9 | 700 | 490 | 210 | 0.8 |
| 1997 early May | MQ1 | 1,700 | 1,400 | 270 | 2 |
| | MQ4 | 1,600 | 1,400 | 240 | 2 |
| | MQ9 | 2,500 | 2,300 | 240 | 2 |
| 1997 late May | MQ1 | 1,200 | 1,000 | 150 | 0.4 |
| | MQ4 | 1,600 | 1,300 | 280 | 1 |
| | MQ9 | 1,200 | 1,000 | 190 | 0.2 |
| 1997 June | MQ1 | 1,900 | 1,700 | 140 | 1 |
| | MQ4 | 2,500 | 2,400 | 130 | 1 |
| | MQ9 | 1,400 | 1,200 | 200 | 1 |
| 1997 July | MQ1 | 2,400 | 2,300 | 130 | 0.3 |
| | MQ4 | 1,500 | 1,400 | 110 | 0.1 |
| | MQ9 | 890 | 640 | 260 | 0.6 |
| 1997 August | MQ1 | 2,100 | 1,900 | 220 | 0.8 |
| | MQ4 | 1,500 | 1,300 | 190 | 1.4 |
| | MQ9 | 1,000 | 760 | 240 | 1.6 |
| 1997 September | MQ1 | 800 | 640 | 170 | 1.3 |
| | MQ4 | 900 | 620 | 280 | 6.4 |
| | MQ9 | 650 | 370 | 280 | 1.5 |

NOTES:

1. Recalculated counting *Synedra radians* at 400X rather than 100X

2. Recalculated counting *Synedra radians* at 400X rather than 100X & *Cyclotella glomerata* at 1,000X rather than 400X

**Table 1-5 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1998**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 1998 April | LL1 | 2,800 | 2,600 | 210 | 12 |
| | LL4 | 4,100 | 3,700 | 390 | 12 |
| | LL9 | 1,600 | 1,100 | 500 | 10 |
| 1998 May[1] | LL1 | 2,000 | 1,500 | 430 | 76 |
| | LL4 | 1,600 | 1,100 | 480 | 85 |
| | LL9 | 2,100 | 1,500 | 630 | 20 |
| 1998 June | LL1 | 5,700 | 5,600 | 140 | 0.3 |
| | LL4 | 7,100 | 6,900 | 210 | 0.3 |
| | LL9 | 3,300 | 1,700 | 1,600 | 4 |
| 1998 July | LL1 | 1,200 | 1,100 | 130 | 10 |
| | LL4 | 740 | 560 | 170 | 8 |
| | LL9 | 760 | 130 | 630 | 5 |
| 1998 August | LL1 | 1,900 | 1,700 | 190 | 2 |
| | LL4 | 2,200 | 2,000 | 230 | 2 |
| | LL9 | 1,900 | 1,600 | 220 | 5 |
| 1998 September | LL1 | 5,000 | 4,900 | 130 | 2 |
| | LL4 | 3,500 | 3,300 | 150 | 2 |
| | LL9 | 2,200 | 2,000 | 220 | 5 |
| 1998 April | MQ1 | 2,200 | 1,900 | 250 | 3 |
| | MQ4 | 1,900 | 1,600 | 260 | 3 |
| | MQ9 | 3,100 | 2,700 | 460 | 2 |
| 1998 May | MQ1 | 2,500 | 2,300 | 210 | 1 |
| | MQ4 | 2,600 | 2,400 | 180 | 2 |
| | MQ9 | 2,100 | 1,700 | 480 | 0.4 |
| 1998 June | MQ1 | 1,900 | 1,700 | 180 | 1 |
| | MQ4 | 1,600 | 1,400 | 200 | 1 |
| | MQ9 | 1,300 | 1,000 | 310 | 0.4 |
| 1998 July | MQ1 | 1,500 | 1,400 | 120 | 19 |
| | MQ4 | 1,800 | 1,600 | 150 | 35 |
| | MQ9 | 1,300 | 1,100 | 190 | 25 |
| 1998 August | MQ1 | 1,900 | 1,700 | 250 | 12 |
| | MQ4 | 1,300 | 950 | 350 | 10 |
| | MQ9 | 1,400 | 890 | 490 | 12 |
| 1998 September | MQ1 | 2,000 | 1,800 | 200 | 11 |
| | MQ4 | 2,700 | 2,500 | 220 | 7 |
| | MQ9 | 2,100 | 1,900 | 230 | 10 |

NOTE:
1. Recalculated for counting *Synedra radians* at 400X rather than 100X

**Table 1-6** **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 1999**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 1999 April | LL1 | 3,800 | 3,500 | 310 | 9 |
| | LL4 | 6,800 | 6,200 | 560 | 17 |
| | LL9 | 3,000 | 2,600 | 410 | 10 |
| 1999 May | LL1 | No sample | | | |
| | LL4 | No sample | | | |
| | LL9 | No sample | | | |
| 1999 early July | LL1 | 1,100 | 910 | 150 | 2 |
| | LL4 | 1,400 | 1,200 | 150 | 1 |
| | LL9 | 1,300 | 1,200 | 100 | 1 |
| 1999 late July | LL1 | 1,100 | 870 | 200 | 1 |
| | LL4 | 2,000 | 1,800 | 280 | 1 |
| | LL9 | 1,000 | 860 | 130 | 1 |
| 1999 August | LL1 | 2,700 | 2,500 | 180 | 2 |
| | LL4 | 2,800 | 2,600 | 170 | 6 |
| | LL9 | 3,000 | 2,800 | 170 | 4 |
| 1999 September | LL1 | 3,700 | 3,500 | 230 | 12 |
| | LL4 | 5,000 | 4,700 | 290 | 17 |
| | LL9 | 4,000 | 3,700 | 290 | 3 |
| 1999 April | MQ1 | 2,300 | 1,600 | 220 | 430 |
| | MQ4 | 2,200 | 1,800 | 200 | 230 |
| | MQ9 | 2,700 | 1,900 | 600 | 190 |
| 1999 May | MQ1 | No sample | | | |
| | MQ4 | No sample | | | |
| | MQ9 | No sample | | | |
| 1999 early July | MQ1 | 790 | 700 | 90 | 0.4 |
| | MQ4 | 770 | 620 | 150 | 0.5 |
| | MQ9 | 1,100 | 1,000 | 130 | 0.3 |
| 1999 late July | MQ1 | 2,700 | 2,600 | 110 | 0.2 |
| | MQ4 | 2,100 | 1,900 | 220 | 0.8 |
| | MQ9 | 620 | 420 | 190 | 0.3 |
| 1999 August | MQ1 | 2,100 | 2,000 | 140 | 6 |
| | MQ4 | 1,100 | 980 | 110 | 4 |
| | MQ9 | 1,100 | 1,000 | 120 | 9 |
| 1999 September | MQ1 | 1,300 | 1,100 | 190 | 14 |
| | MQ4 | 1,500 | 1,300 | 190 | 9 |
| | MQ9 | 760 | 540 | 210 | 10 |

**Table 1-7 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2000**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 2000 April | LL1 | 2,100 | 1,600 | 450 | 33 |
| | LL4 | 2,500 | 1,800 | 700 | 68 |
| | LL9 | 1,300 | 590 | 740 | 6.8 |
| 2000 May | LL1 | 3,300 | 2,800 | 530 | 17 |
| | LL4 | 3,000 | 2,600 | 320 | 15 |
| | LL9 | 2,000 | 1,500 | 490 | 15 |
| 2000 June | LL1 | 2,900 | 2,500 | 390 | 9.1 |
| | LL4 | 2,900 | 2,400 | 400 | 19 |
| | LL9 | 6,400 | 5,700 | 730 | 19 |
| 2000 July | LL1 | 1,600 | 1,400 | 130 | 2.1 |
| | LL4 | 1,400 | 1,200 | 250 | 1.6 |
| | LL9 | 1,200 | 990 | 250 | 3.6 |
| 2000 August | LL1 | 1,800 | 1,600 | 170 | 12 |
| | LL4 | 1,100 | 940 | 190 | 8.2 |
| | LL9 | 1,500 | 1,400 | 130 | 1.9 |
| 2000 September | LL1 | 2,200 | 1,900 | 360 | 11 |
| | LL4 | 2,000 | 1,800 | 200 | 9.2 |
| | LL9 | 1,300 | 1,100 | 200 | 7.2 |
| 2000 April | MQ1 | 1,800 | 1,300 | 450 | 5.9 |
| | MQ4 | 1,700 | 1,300 | 420 | 1.6 |
| | MQ9 | 1,500 | 1,200 | 280 | 1.7 |
| 2000 May | MQ1 | 1,800 | 1,500 | 290 | 3 |
| | MQ4 | 1,600 | 1,300 | 290 | 4.4 |
| | MQ9 | 1,900 | 1,600 | 270 | 7.6 |
| 2000 June | MQ1 | 2,100 | 1,900 | 250 | 1.4 |
| | MQ4 | 2,400 | 2,200 | 200 | 2.1 |
| | MQ9 | 1,800 | 1,500 | 380 | 1.1 |
| 2000 July | MQ1 | 1,300 | 1,100 | 210 | 7.4 |
| | MQ4 | 2,100 | 1,800 | 250 | 9.6 |
| | MQ9 | 2,100 | 1,300 | 800 | 22 |
| 2000 August | MQ1 | 1,500 | 1,200 | 290 | 5.8 |
| | MQ4 | 2,200 | 1,900 | 310 | 7.2 |
| | MQ9 | 2,400 | 1,900 | 500 | 7.5 |
| 2000 September | MQ1 | 1,800 | 1,600 | 200 | 14 |
| | MQ4 | 2,100 | 1,900 | 250 | 14 |
| | MQ9 | 2,000 | 1,700 | 220 | 28 |

**Table 1-8** **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2001**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 2001 April | LL1 | 3,300 | 2,600 | 670 | 19 |
| | LL4 | 4,400 | 3,900 | 830 | 13 |
| | LL9 | 1,400 | 860 | 490 | 5 |
| 2001 May | LL1 | 7,700 | 6,200 | 1,100 | 310 |
| | LL4 | 11,000 | 10,000 | 980 | 100 |
| | LL9 | 4,600 | 3,600 | 670 | 22 |
| 2001 June | LL1 | 7,800 | 6,600 | 1,000 | 170 |
| | LL4 | 6,800 | 5,100 | 1,500 | 210 |
| | LL9 | 3,000 | 2,400 | 680 | 25 |
| 2001 July | LL1 | 3,300 | 3,100 | 170 | 1 |
| | LL4 | 3,200 | 3,000 | 180 | 1 |
| | LL9 | 1,600 | 1,400 | 160 | 2 |
| 2001 August | LL1 | 1,300 | 1,100 | 180 | 1 |
| | LL4 | 1,700 | 1,500 | 200 | 2 |
| | LL9 | 720 | 540 | 170 | 1 |
| 2001 September | LL1 | 8,200 | 8,000 | 270 | 13 |
| | LL4 | 8,800 | 8,600 | 260 | 13 |
| | LL9 | 4,800 | 4,600 | 190 | 1 |
| 2001 April | MQ1 | 3,600 | 3,200 | 400 | 10 |
| | MQ4 | 3,500 | 3,200 | 310 | 11 |
| | MQ9 | 5,700 | 4,900 | 830 | 24 |
| 2001 May | MQ1 | 1,900 | 1,500 | 360 | 17 |
| | MQ4 | 1,800 | 1,400 | 370 | 14 |
| | MQ9 | 3,800 | 3,200 | 600 | 13 |
| 2001 June | MQ1 | 2,200 | 1,900 | 240 | 2 |
| | MQ4 | 3,700 | 3,400 | 310 | 2 |
| | MQ9 | 4,000 | 3,600 | 390 | 4 |
| 2001 July | MQ1 | 2,500 | 2,300 | 230 | 8 |
| | MQ4 | 2,700 | 2,400 | 260 | 6 |
| | MQ9 | 1,500 | 1,200 | 240 | 8 |
| 2001 August | MQ1 | 1,800 | 1,600 | 190 | 17 |
| | MQ4 | 1,900 | 1,700 | 180 | 15 |
| | MQ9 | 1,800 | 1,600 | 160 | 16 |
| 2001 September | MQ1 | 1,900 | 1,700 | 180 | 24 |
| | MQ4 | 3,200 | 2,900 | 230 | 37 |
| | MQ9 | 1,800 | 1,600 | 190 | 43 |

**Table 1-9 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2002**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 2002 April | LL1 | 5,600 | 5,100 | 460 | 57 |
| | LL4 | 5,600 | 5,100 | 490 | 40 |
| | LL9 | 1,300 | 1,100 | 220 | 12 |
| 2002 May | LL1 | 2,600 | 1,900 | 710 | 29 |
| | LL4 | 2,700 | 2,000 | 690 | 41 |
| | LL9 | 1,800 | 1,300 | 460 | 37 |
| 2002 June | LL1 | 5,800 | 5,300 | 340 | 140 |
| | LL4 | 9,200 | 8,600 | 450 | 96 |
| | LL9 | 3,700 | 3,000 | 620 | 27 |
| 2002 July | LL1 | 2,900 | 2,700 | 180 | 0.3 |
| | LL4 | 2,400 | 2,200 | 160 | 0.6 |
| | LL9 | 3,900 | 3,300 | 560 | 41.2 |
| 2002 August | LL1 | 2,900 | 2,800 | 140 | 7.2 |
| | LL4 | 2,300 | 2,200 | 150 | 3.2 |
| | LL9 | 1,500 | 1,400 | 130 | 0.6 |
| 2002 September | LL1 | 3,900 | 3,700 | 220 | 27 |
| | LL4 | 3,500 | 3,200 | 260 | 31 |
| | LL9 | 2,500 | 2,300 | 210 | 2.2 |
| 2002 April | MQ1 | 2,000 | 1,700 | 360 | 8.2 |
| | MQ4 | 1,900 | 1,600 | 300 | 3.6 |
| | MQ9 | 1,500 | 1,200 | 260 | 4 |
| 2002 May | MQ1 | 1,400 | 1,100 | 270 | 1.1 |
| | MQ4 | 1,400 | 1,200 | 230 | 1.7 |
| | MQ9 | 1,400 | 1,100 | 330 | 1.4 |
| 2002 June | MQ1 | 1,000 | 940 | 110 | 1 |
| | MQ4 | 800 | 680 | 120 | 0.3 |
| | MQ9 | 60 | 50 | 7 | 0 |
| 2002 July | MQ1 | 1,700 | 1,300 | 330 | 50 |
| | MQ4 | 1,500 | 1,100 | 360 | 34 |
| | MQ9 | 940 | 700 | 240 | 5.5 |
| 2002 August[1] | MQ1 | 1,400 | 1,200 | 140 | 42 |
| | MQ4 | 1,200 | 940 | 180 | 76 |
| | MQ9 | 2,600 | 200 | 300 | 275 |
| 2002 September | MQ1 | 1,400 | 1,200 | 160 | 33 |
| | MQ4 | 2,100 | 1,900 | 220 | 28 |
| | MQ9 | 1,100 | 920 | 160 | 28 |

NOTE:
1. Recalculated for counting *Cyclotella bodanica* at 400X rather than 100X

**Table 1-10 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2003**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 2003 April | LL1 | 4,800 | 4,200 | 560 | 36 |
| | LL4 | 3,600 | 2,900 | 640 | 8.6 |
| | LL9 | 640 | 450 | 190 | 6.9 |
| 2003 May | LL1 | 4,200 | 3,500 | 620 | 25 |
| | LL4 | 4,600 | 3,800 | 800 | 23 |
| | LL9 | 1,400 | 1,100 | 280 | 16 |
| 2003 June | LL1 | 2,300 | 1,600 | 630 | 37 |
| | LL4 | 6,800 | 6,100 | 600 | 43 |
| | LL9 | 4,500 | 3,800 | 680 | 42 |
| 2003 July | LL1 | 1,600 | 1,400 | 240 | 1 |
| | LL4 | 2,400 | 2,100 | 270 | 0.5 |
| | LL9 | 2,900 | 2,700 | 250 | 9.8 |
| 2003 August | LL1 | 2,000 | 1,800 | 240 | 0.8 |
| | LL4 | 2,200 | 1,900 | 250 | 0.5 |
| | LL9 | 1,900 | 1,600 | 260 | 0.6 |
| 2003 September | LL1 | 2,600 | 2,400 | 290 | 0.2 |
| | LL4 | 3,700 | 3,400 | 340 | 1.8 |
| | LL9 | 1,900 | 1,600 | 250 | 1.9 |
| 2003 April | MQ1 | 3,500 | 2,900 | 570 | 28 |
| | MQ4 | 3,000 | 2,400 | 510 | 17 |
| | MQ9 | 2,000 | 1,600 | 310 | 17 |
| 2003 May | MQ1 | 2,900 | 2,400 | 350 | 99 |
| | MQ4 | 3,000 | 2,400 | 480 | 43 |
| | MQ9 | 3,000 | 2,500 | 560 | 16 |
| 2003 June | MQ1 | 1,300 | 1,100 | 180 | 6 |
| | MQ4 | 1,900 | 1,500 | 420 | 21 |
| | MQ9 | 3,000 | 2,700 | 350 | 16 |
| 2003 July | MQ1 | 2,700 | 2,600 | 170 | 0.5 |
| | MQ4 | 2,000 | 1,600 | 380 | 1.5 |
| | MQ9 | 1,400 | 1,100 | 240 | 79 |
| 2003 August | MQ1 | 1,300 | 1,000 | 280 | 43 |
| | MQ4 | 1,500 | 1,200 | 240 | 44 |
| | MQ9 | 3,500 | 2,500 | 620 | 338 |
| 2003 September | MQ1 | 2,100 | 1,900 | 260 | 6.5 |
| | MQ4 | 2,300 | 2,000 | 290 | 23 |
| | MQ9 | Not available | | | |

**Table 1-11**

**Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2004**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 2004 | LL1 | 5,300 | 4,100 | 1,200 | 20 |
| April | LL4 | 3,500 | 2,600 | 860 | 13 |
| | LL9 | 3,300 | 2,600 | 730 | 9.1 |
| 2004 | LL1 | 8,000 | 7,100 | 860 | 34 |
| May | LL4 | 6,600 | 5,300 | 1,200 | 36 |
| | LL9 | 2,800 | 2,000 | 770 | 22 |
| 2004 | LL1 | 2,900 | 2,600 | 270 | 3.1 |
| June | LL4 | 2,900 | 2,600 | 310 | 5 |
| | LL9 | 4,900 | 4,100 | 730 | 39 |
| 2004 | LL1 | 1,600 | 1,300 | 280 | 2.7 |
| July | LL4 | 1,200 | 1,100 | 170 | 2.2 |
| | LL9 | 1,700 | 1,400 | 270 | 1 |
| 2004 | LL1 | 1,300 | 960 | 350 | 18 |
| August | LL4 | 1,400 | 1,000 | 300 | 38 |
| | LL9 | 1,700 | 1,600 | 110 | 27 |
| 2004 | LL1 | 3,800 | 3,400 | 370 | 27 |
| September | LL4 | 4,300 | 3,900 | 350 | 25 |
| | LL4 - duplicate | 3,100 | 2,800 | 320 | 19 |
| | LL9 | 3,000 | 2,700 | 280 | 12 |
| 2004 | MQ1 | 1,500 | 1,120 | 400 | 2.2 |
| April | MQ4 | 1,400 | 1,030 | 370 | 5.2 |
| | MQ9 | 1,500 | 1,200 | 340 | 4.2 |
| 2004 | MQ1 | 2,300 | 2,000 | 310 | 2.4 |
| May | MQ4 | 1,500 | 1,200 | 300 | 3.6 |
| | MQ9 | 2,600 | 2,100 | 470 | 2.4 |
| 2004 | MQ1 | 1,900 | 1,700 | 190 | 34 |
| June | MQ4 | 3,000 | 2,700 | 250 | 48 |
| | MQ9 | 2,200 | 1,900 | 210 | 123 |
| 2004 | MQ1 | 1,200 | 960 | 260 | 6.2 |
| July[1] | MQ4 | 1,700 | 1,400 | 260 | 9.9 |
| | MQ9 | 1,300 | 840 | 340 | 82 |
| 2004 | MQ1 | 2,900 | 2,600 | 260 | 53 |
| August[2] | MQ4 | 3,800 | 3,500 | 250 | 51 |
| | MQ4 - duplicate | 2,500 | 2,200 | 210 | 53 |
| | MQ9 | 3,900 | 3,600 | 260 | 44 |
| 2004 | MQ1 | 2,300 | 1,700 | 550 | 25 |
| September | MQ4 | 2,100 | 1,600 | 420 | 26 |
| | MQ9 | 2,500 | 2,000 | 520 | 19 |

NOTES:

1. MQ9 recalculated for counting *Cyclotella bodanica* at 400X rather than 100X
2. MQ1, MQ4, MQ9 recalculated for counting *Elakatothrix gelatinosa* colonies at 400X rather than 100X

**Table 1-12 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2005**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 2005 April | LL1 | 2,700 | 2,100 | 550 | 24 |
| | LL4 | 3,500 | 2,800 | 610 | 29 |
| | LL9 | 670 | 460 | 200 | 8.5 |
| 2005 May | LL1 | 7,200 | 6,600 | 670 | 55 |
| | LL4 | 5,700 | 4,900 | 850 | 20 |
| | LL9 | 1,300 | 850 | 440 | 20 |
| 2005 June | LL1 | 2,700 | 2,400 | 300 | 2.4* |
| | LL4 | 2,800 | 2,500 | 330 | 8.3* |
| | LL9 | 990 | 850 | 130 | 8.9 |
| 2005 July | LL1 | 1,200 | 800 | 400 | 44* |
| | LL4 | 1,700 | 1,200 | 460 | 33* |
| | LL9 | 692 | 540 | 150 | 3.5* |
| 2005 August | LL1 | 1,400 | 1,100 | 290 | 26 |
| | LL4 | 1,100 | 810 | 220 | 64 |
| | LL9 | 2,400 | 1,900 | 360 | 73 |
| 2005 September | LL1 | 1,400 | 1,100 | 170 | 170 |
| | LL4 | 2,300 | 1,900 | 220 | 170 |
| | LL9 | 1,800 | 1,200 | 590 | 31* |
| 2005 April | MQ1 | 1,400 | 1,100 | 370 | 8.8 |
| | MQ4 | 1,900 | 1,500 | 400 | 3.6 |
| | MQ9 | 1,700 | 1,300 | 400 | 6.6 |
| 2005 May | MQ1 | 1,300 | 1,000 | 300 | 3.4 |
| | MQ4 | 1,500 | 1,200 | 330 | 3.2 |
| | MQ9 | 1,300 | 1,000 | 340 | 3.7 |
| 2005 June | MQ1 | 1,700 | 1,600 | 150 | 4.6 |
| | MQ4 | 1,000 | 710 | 270 | 2.1 |
| | MQ9 | 1,100 | 900 | 200 | 1.1 |
| 2005 July[1] | MQ1 | 1,100 | 860 | 220 | 14.6 |
| | MQ4 | 1,100 | 920 | 200 | 11.2 |
| | MQ9 | 1,400 | 700 | 170 | 489 |
| 2005 August[2] | MQ1 | 1,100 | 950 | 170 | 0.5 |
| | MQ4 | 1,900 | 1,600 | 250 | 7.1 |
| | MQ9 | 2,100 | 1,700 | 330 | 89* |
| 2005 September | MQ1 | 870 | 710 | 140 | 10.7 |
| | MQ4 | 1,200 | 1,100 | 170 | 20.2 |
| | MQ9 | 1,400 | 1,100 | 180 | 146 |

NOTE:
* = Cyclotella bodanica counted at 400X rather than 100X

**Table 1-13** **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2006**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 mm (100X) |
|---|---|---|---|---|---|
| 2006 April | LL1 | 1,800 | 1,100 | 610 | 1.9* |
| | LL4 | 3,200 | 2,700 | 520 | 14.7 |
| | LL9 | 690 | 550 | 135 | 2.2 |
| 2006 May | LL1 | 2,600 | 2,000 | 620 | 19.7 |
| | LL4 | 4,900 | 4,200 | 640 | 12.9 |
| | LL9 | 540 | 380 | 160 | 4.8 |
| 2006 June | LL1 | 860 | 610 | 200 | 39.5 |
| | LL4 | 2,000 | 1,800 | 190 | 22.2 |
| | LL4 (rep) | 1,100 | 940 | 190 | 23.2 |
| | LL9 | 1,700 | 1,400 | 220 | 17.7 |
| 2006 July | LL1 | 1,300 | 1,100 | 160 | 54.8 |
| | LL4 | 2,700 | 2,200 | 370 | 165 |
| | LL9 | 1,700 | 1,300 | 350 | 19.1 |
| 2006 August | LL1 | 2,700 | 2,500 | 200 | 14.3 |
| | LL4 | 2,600 | 2,300 | 220 | 34.6 |
| | LL9 | 2,800 | 2,300 | 470 | 23.8 |
| 2006 September | LL1 | 3,800 | 3,600 | 160 | 0.4 |
| | LL4 | 1,300 | 1,200 | 120 | 2 |
| | LL9 | 1,800 | 1,700 | 130 | 3.6 |
| 2006 April | MQ1 | 2,200 | 16,00 | 240 | 9.4 |
| | MQ4 | 2,400 | 1,900 | 550 | 8.6 |
| | MQ9 | 1,600 | 1,400 | 180 | 8.2 |
| 2006 May | MQ1 | 1,700 | 1,500 | 240 | 10.8 |
| | MQ4 | 1,700 | 1,400 | 320 | 7.4 |
| | MQ4 (rep) | 2,100 | 1,800 | 310 | 11.8 |
| | MQ9 | 1,900 | 1,600 | 280 | 4.1 |
| 2006 June | MQ1 | 1,900 | 1,800 | 130 | 0.9 |
| | MQ4 | 1,400 | 1,200 | 200 | 4.4 |
| | MQ9 | 950 | 840 | 110 | 0.6 |
| 2006 July | MQ1 | 1,100 | 870 | 220 | 42.8 |
| | MQ4 | 2,000 | 1,700 | 260 | 16.6 |
| | MQ9 | 2,300 | 2,100 | 180 | 18.8* |
| 2006 August | MQ1 | 1,500 | 1,200 | 280 | 6.5 |
| | MQ4 | 2,100 | 1,800 | 290 | 13.3 |
| | MQ9 | 1,300 | 880 | 400 | 17.0* |
| 2006 September | MQ1 | 2,500 | 2,300 | 200 | 1.9 |
| | MQ4 | 2,100 | 1,800 | 260 | 11.8 |
| | MQ9 | 3,400 | 2,400 | 970 | 1.8* |

NOTE:
* *Cyclotella bodanica* (diatom) counted at 400X rather than 100X

**Table 1-14 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2007**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) |
|---|---|---|---|---|
| 2007 April | LL1 | 3,100 | 2,800 | 240 |
| | LL4 | 3,000 | 2,200 | 620 |
| | LL9 | 1,200 | 910 | 240 |
| 2007 May | LL1 | 2,600 | 2,000 | 540 |
| | LL4 | 3,300 | 2,600 | 670 |
| | LL9 | 1,300 | 890 | 430 |
| 2007 June | LL1 | 2,100 | 1,600 | 420 |
| | LL4 | 2,500 | 2,000 | 520 |
| | LL9 | 1,100 | 750 | 300 |
| 2007 July | LL1 | 2,300 | 2,000 | 240 |
| | LL4 | 2,400 | 2,100 | 270 |
| | LL9 | 3,100 | 3,000 | 180 |
| 2007 August | LL1 | 1,100 | 900 | 240 |
| | LL4 | 2,300 | 2,100 | 150 |
| | LL4 (rep) | 2,600 | 2,400 | 150 |
| | LL9 | 570 | 480 | 90 |
| 2007 September | LL1 | 2,500 | 2,200 | 280 |
| | LL4 | 1,700 | 1,400 | 240 |
| | LL9 | 420 | 350 | 68 |
| 2007 April | MQ1 | 1,700 | 1,500 | 230 |
| | MQ4 | 1,900 | 1,602 | 300 |
| | MQ9 | 1,100 | 900 | 200 |
| 2007 May | MQ1 | 1,500 | 1,300 | 250 |
| | MQ4 | 1,800 | 1,500 | 320 |
| | MQ9 | 2,600 | 2,300 | 310 |
| 2007 June | MQ1 | 1,500 | 1,200 | 300 |
| | MQ4 | 1,800 | 1,600 | 200 |
| | MQ9 | 1,500 | 1,200 | 290 |
| 2007 July | MQ1 | 1,500 | 1,100 | 220 |
| | MQ4 | 1,900 | 1,500 | 440* |
| | MQ9 | 1,000 | 860 | 150 |
| | MQ9 (rep) | 1,600 | 1,400 | 150 |
| 2007 August | MQ1 | 2,300 | 2,100 | 200 |
| | MQ4 | 1,100 | 970 | 160 |
| | MQ9 | 710 | 590 | 120 |
| 2007 September | MQ1 | 1,400 | 1,100 | 270 |
| | MQ4 | 1,500 | 1,200 | 290 |
| | MQ9 | 1,000 | 690 | 300 |

**Table 1-15 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2008**

| Date | Sampling Site | Total Abundance | < 5 mm (1,000X) | 5 to 25 mm (400X) | > 25 µm (100X) |
|---|---|---|---|---|---|
| 2008 April | LL1 | 2,500 | 2,070 | 360 | 30 |
| | LL4 | 3,100 | 2,500 | 540 | 50 |
| | LL9 | 1,300 | 1,030 | 240 | 20 |
| 2008 May | LL1 | 3,100 | 2,840 | 220 | 20 |
| | LL4 | 5,300 | 4,820 | 430 | 25 |
| | LL9 | 1,300 | 1,030 | 260 | 20 |
| 2008 June | LL1 | 1,000 | 880 | 110 | 1 |
| | LL4 | 960 | 730 | 220 | 8 |
| | LL9 (rep) | 1,500 | 1,060 | 380* | 16* |
| | LL9 | 1,200 | 780 | 380* | 7* |
| 2008 July | LL1 | 1,000 | 970 | 80 | 1 |
| | LL4 | 1,400 | 1,300 | 110 | 17 |
| | LL9 | 2,000 | 1,500 | 370 | 110 |
| 2008 August | LL1 | 1,100 | 1,000 | 50 | 1 |
| | LL4 | 1,400 | 1,300 | 50 | 11 |
| | LL9 | 1,100 | 1,060 | 40 | 9 |
| 2008 September | LL1 | 2,100 | 1,730 | 420** | 2** |
| | LL4 | 2,300 | 1,780 | 490** | 3** |
| | LL9 | 2,900 | 2,250 | 690** | 6** |
| 2008 April | MQ1 | 2,100 | 1,850 | 200 | 1 |
| | MQ4 | 1,700 | 1,530 | 200 | 3 |
| | MQ9 | 2,800 | 2410 | 400 | 4 |
| 2008 May | MQ1 | 1,000 | 870 | 130 | 1 |
| | MQ4 | 1,700 | 1460 | 230 | 2 |
| | MQ9 | 1,200 | 1,000 | 180 | 2 |
| 2008 June | MQ1 | 840 | 700 | 140 | 0.4 |
| | MQ4 | 1,300 | 1,040 | 240 | 1 |
| | MQ9 | 870 | 580 | 280 | 0.5 |
| 2008 July | MQ1 | 620 | 520 | 90 | 8 |
| | MQ4 | 500 | 370 | 130 | 8 |
| | MQ9 | 870 | 680 | 180 | 0.5 |
| | MQ9 (rep) | 1,000 | 760 | 260 | 9 |
| 2008 August | MQ1 | 750 | 660 | 100 | 1 |
| | MQ4 | 980 | 860 | 110 | 6 |
| | MQ9 | 1,300 | 990 | 290 | 5 |
| 2008 September | MQ1 | 1,500 | 1,310 | 160 | 14 |
| | MQ4 | 1,100 | 980 | 150 | 3 |
| | MQ9 | 2,800 | 2,680 | 130 | 10 |

NOTES:

* *Synedra radians* (diatom) counted at 400X rather than 100X, due to high numbers

** *Asterionella formosa* (diatom) counted at 400X rather than 100X, due to high numbers

**Table 1-16 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2009**

| Date | Sampling Site | Total Abundance | < 5 µm (1,000X) | 5 to 25 µm (400X) | > 25 µm (100X) |
|---|---|---|---|---|---|
| 2009 April | LL1 | 780 | 480 | 300 | 6 |
| | LL4 | 1,600 | 1,220 | 340 | 4 |
| | LL9 | 90 | 60 | 30 | 1 |
| 2009 May | LL1 | 6,000 | 5,150 | 820 | 19 |
| | LL4 | 4,900 | 4,100 | 760 | 10 |
| | LL9 | 430 | 290 | 140 | 5 |
| 2009 June | LL1 | 1,700 | 1,370 | 370 | 5 |
| | LL4 | 1,400 | 1,030 | 360 | 12 |
| | LL9 | 680 | 340 | 330 | 6 |
| 2009 July | LL1 | 2,100 | 1,900 | 270 | 3 |
| | LL4 | 2,700 | 2,400 | 330 | 4 |
| | LL9 | 700 | 340 | 350 | 4 |
| 2009 August | LL1 | 3,100 | 2,900 | 170 | 3 |
| | LL4 | 2,400 | 2,200 | 190 | 15 |
| | LL9 | 1,700 | 1,300 | 370 | 10 |
| 2009 September | LL1 | 3,700 | 3,500 | 220 | 5 |
| | LL4 | 2,300 | 2,100 | 180 | 3 |
| | LL9 | 1,100 | 950 | 170 | 1 |
| 2009 April | MQ1 | 1,400 | 1,130 | 250 | 33 |
| | MQ4 | 1,300 | 1,170 | 160 | 12 |
| | MQ9 | 2,300 | 2,730 | 520 | 13 |
| 2009 May | MQ1 | 1,700 | 1,440 | 260 | 3 |
| | MQ4 | 2,100 | 1,750 | 340 | 5 |
| | MQ9 | 3,800 | 3,060 | 720 | 18 |
| 2009 June | MQ1 | 1,500 | 1,360 | 160 | 0.1 |
| | MQ4 | 1,100 | 990 | 150 | 0.2 |
| | MQ9 | 1,100 | 940 | 200 | 0.8 |
| 2009 July | MQ1 | 1,000 | 790 | 190 | 4 |
| | MQ4 | 1,300 | 1,100 | 220 | 8 |
| | MQ9 | 1,200 | 940 | 240 | 5 |
| 2009 August | MQ1 | 610 | 450 | 160 | 0.3 |
| | MQ4 | 1,300 | 1,170 | 170 | 3 |
| | MQ9 | 1,600 | 1,200 | 390 | 0.4 |
| 2009 September | MQ1 | 830 | 670 | 160 | 5 |
| | MQ4 | 1,200 | 970 | 170 | 6 |
| | MQ9 | 1,400 | 1,200 | 240 | 1 |

**Table 1-17 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2010**

| Date | Sampling Site | Total Abundance | < 5 µm (1,000X) | 5 to 25 µm (400X) | > 25 µm (100X) |
|---|---|---|---|---|---|
| 2010 April | LL1 | 630 | 490 | 140 | 1.6 |
| | LL4 | 1,900 | 1,500 | 390 | 3 |
| | LL9 | 170 | 100 | 70 | 0.4 |
| 2010 May | LL1 | 1,200 | 940 | 270 | 13.4 |
| | LL4 | 4,500 | 3,800 | 650 | 17 |
| | LL9 | 530 | 390 | 140 | 0.9 |
| 2010 June | LL1 | 2,400 | 1,900 | 500 | 5.2 |
| | LL4 | 3,600 | 3,000 | 610 | 11 |
| | LL9 | 1,500 | 1,100 | 400 | 10.6 |
| 2010 July | LL1 | 2,100 | 1,900 | 170 | 8.7 |
| | LL1 (rep) | 1,900 | 1,700 | 180 | 5 |
| | LL4 | 3,000 | 2,800 | 250 | 2 |
| | LL9 | 1,900 | 1,700 | 210* | 0 |
| 2010 August | LL1 | 1,200 | 990 | 180 | 1.5 |
| | LL4 | 1,600 | 1,400 | 190 | 1 |
| | LL4 (rep) | 1,600 | 1,400 | 180 | 2 |
| | LL9 | 1,800 | 1,600 | 170 | 0 |
| 2010 September | LL1 | 2,100 | 1,800 | 260 | 15.1 |
| | LL4 | 4,400 | 4,200 | 200 | 5 |
| | LL9 | 1,200 | 1,100 | 130 | 0.4 |
| 2010 April | MQ1 | 1,700 | 1,600 | 100 | 0.4 |
| | MQ4 | 1,200 | 1,100 | 120 | 1 |
| | MQ9 | 800 | 710 | 90 | 2.4 |
| 2010 May | MQ1 | 1,100 | 990 | 120 | 0.9 |
| | MQ4 | 1,100 | 960 | 150 | 1 |
| | MQ9 | 1,600 | 1,330 | 240 | 2.9 |
| 2010 June | MQ1 | 2,000 | 1,700 | 270 | 0.9 |
| | MQ4 | 1,400 | 1,100 | 240 | 1 |
| | MQ9 | 1,000 | 850 | 200 | 1.1 |
| 2010 July | MQ1 | 1,800 | 1,500 | 250 | 8.7 |
| | MQ1 (rep) | 1,400 | 1,300 | 170 | 6 |
| | MQ4 | 1,500 | 1,300 | 180 | 10 |
| | MQ9 | 1,600 | 1,400 | 180 | 4 |
| 2010 August | MQ1 | 1,400 | 1,200 | 140 | 7.2 |
| | MQ4 | 1,000 | 870 | 160 | 5 |
| | MQ4 (rep) | 1,100 | 900 | 150 | 5 |
| | MQ9 | 1,200 | 1,000 | 150 | 8 |
| 2010 September | MQ1 | 1,300 | 1,000 | 260 | 1.3 |
| | MQ4 | 1,300 | 1,040 | 220 | 3 |
| | MQ9 | 1,100 | 900 | 190 | 1.7 |

**Table 1-18 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2011**

| Date | Sampling Site | Total Abundance | < 5 µm (1,000X) | 5 to 25 µm (400X) | > 25 µm (100X) |
|---|---|---|---|---|---|
| 2011 April | LL1 | 1,700 | 1,400 | 220 | 52 |
| | LL4 | 3,900 | 3,260 | 540 | 80 |
| | LL9 | 2,200 | 1,820 | 340 | 9 |
| 2011 May | LL1 | 3,600 | 2,880 | 720 | 6 |
| | LL1 (rep) | 3,500 | 2,790 | 690 | 6 |
| | LL4 | 4,900 | 4,160 | 700 | 6 |
| | LL9 | 1,300 | 900 | 350 | 5 |
| 2011 June | LL1 | 2,100 | 1,750 | 330 | 36 |
| | LL4 | 2,300 | 2,050 | 290 | 3 |
| | LL9 | 1,500 | 1,060 | 450 | 4 |
| 2011 July | LL1 | 1,400 | 1,150 | 270 | 3 |
| | LL4 | 1,800 | 1,440 | 350 | 1 |
| | LL4 (rep) | 1,900 | 1,600 | 300 | 0.1 |
| | LL9 | 1,900 | 1,550 | 320 | 2 |
| 2011 August | LL1 | 2,900 | 2,500 | 360 | 15 |
| | LL4 | 1,800 | 1,400 | 320 | 27 |
| | LL9 | 1,500 | 1,200 | 280 | 0.9 |
| 2011 September | LL1 | 1,300 | 940 | 380 | 2.2 |
| | LL4 | 1,800 | 1,500 | 380 | 0.4 |
| | LL9 | 960 | 770 | 190 | 0.3 |
| 2011 April | MQ1 | 1,600 | 1,370 | 270 | 7 |
| | MQ4 | 1,400 | 1,160 | 270 | 6 |
| | MQ9 | 1,900 | 1,400 | 490 | 3 |
| 2011 May | MQ1 | 1,200 | 1,050 | 190 | 2 |
| | MQ1 (rep) | 1,200 | 1,040 | 170 | 3 |
| | MQ4 | 1,800 | 1,370 | 410 | 4 |
| | MQ9 | 1,600 | 670 | 920 | 4 |
| 2011 June | MQ1 | 2,000 | 1,840 | 150 | 1 |
| | MQ4 | 1,500 | 1,300 | 200 | 1 |
| | MQ9 | 1,700 | 1,200 | 520 | 10 |
| 2011 July | MQ1 | 2,200 | 2,100 | 110 | 0.4 |
| | MQ4 | 1,600 | 1,330 | 230 | 3 |
| | MQ9 | 1,000 | 770 | 200 | 1 |
| | MQ9(rep) | 1,100 | 860 | 200 | 1 |
| 2011 August | MQ1 | 1,400 | 1,200 | 210 | 4 |
| | MQ4 | 3,300 | 3,000 | 280 | 0.6 |
| | MQ9 | 1,200 | 1,000 | 200 | 0.1 |
| 2011 September | MQ1 | 2,300 | 2,100 | 190 | 17.2 |
| | MQ4 | 2,600 | 2,400 | 190 | 0.2 |
| | MQ9 | 1,600 | 1,400 | 240 | 9.6 |

**Table 1-19 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2012**

| Date | Sampling Site | Total Abundance | < 5 µm (1,000X) | 5 to 25 µm (400X) | > 25 µm (100X) |
|---|---|---|---|---|---|
| 2012 April | LL1 | 2,300 | 1,980 | 330 | 5 |
| | LL4 | 3,200 | 2,570 | 590 | 6 |
| | LL9 | 1,000 | 800 | 190 | 6 |
| 2012 May | LL1 | 3,000 | 2,470 | 470 | 15 |
| | LL4 | 2,200 | 1,640 | 600 | 7 |
| | LL9 | 2,300 | 2,050 | 280 | 7 |
| 2012 June | LL1 | 1,400 | 1,080 | 310 | 3 |
| | LL4 | 1,700 | 1,400 | 320 | 2 |
| | LL9 | 980 | 810 | 170 | 2 |
| | LL9 (rep) | 1,200 | 1,020 | 140 | 1 |
| 2012 July | LL1 | 1,600 | 1,390 | 170 | 3 |
| | LL4 | Sample lost in transit (broken bottle) | | | |
| | LL9 | 880 | 730 | 150 | 2 |
| 2012 August | LL1 | 970 | 740 | 210 | 19 |
| | LL1 (rep) | 940 | 760 | 170 | 14 |
| | LL4 | 1,300 | 990 | 250 | 35 |
| | LL9 | 380 | 250 | 130 | 0.5 |
| 2012 September | LL1 | Sample unpreserved – no analysis done | | | |
| | LL4 | 2,800 | 2,350 | 480 | 1 |
| | LL9 | Sample unpreserved – no analysis done | | | |
| 2012 April | MQ1 | 2,200 | 2,010 | 200 | 3 |
| | MQ4 | 1,700 | 1,440 | 220 | 3 |
| | MQ9 | 1,600 | 1,420 | 180 | 5 |
| 2012 May | MQ1 | 1,100 | 990 | 140 | 1 |
| | MQ4 | 830 | 680 | 140 | 0 |
| | MQ9 | 1,200 | 1,000 | 150 | 0.2 |
| 2012 June | MQ1 | 2,100 | 1,920 | 170 | 0.4 |
| | MQ4 | 890 | 740 | 150 | 0.3 |
| | MQ9 | 1,100 | 910 | 200 | 0.4 |
| | MQ9 (rep) | 1,100 | 920 | 200 | 0.5 |
| 2012 July | MQ1 | 1,300 | 1,210 | 100 | 0.4 |
| | MQ4 | 1,100 | 1,010 | 90 | 10 |
| | MQ9 | 740 | 640 | 100 | 1 |
| 2012 August | MQ1 | 1,030 | 860 | 180 | 0.8 |
| | MQ1 (rep) | 920 | 720 | 200 | 0.2 |
| | MQ4 | 810 | 660 | 140 | 10 |
| | MQ9 | 430 | 340 | 90 | 1.6 |
| 2012 September | MQ1 | 900 | 730 | 170 | 0.5 |
| | MQ4 | 760 | 650 | 115 | 2 |
| | MQ9 | 580 | 430 | 160 | 0.5 |
| 2012 June | NNL1 | 1,600 | 1,240 | 320 | 0.5 |
| | NNL4 | 1,000 | 670 | 370 | 0.2 |
| | NNL9 | 840 | 700 | 140 | 1 |
| | NNL9 (rep) | 880 | 730 | 160 | 0.8 |
| 2012 July | NNL1 | 1,300 | 1,000 | 260 | 1.2 |
| | NNL4 | 1,700 | 1,390 | 310 | 1 |
| | NNL9 | 820 | 540 | 280 | 0.2 |
| 2012 August | NNL1 | 810 | 660 | 150 | 1.6 |
| | NNL1 (rep) | 790 | 590 | 200 | 1 |
| | NNL4 | 1,800 | 1,350 | 440 | 0.8 |
| | NNL9 | 730 | 530 | 195 | 0.04 |
| 2012 September | NNL1 | 1,530 | 1,170 | 360 | 1.2 |
| | NNL4 | 1,260 | 970 | 290 | 2 |
| | NNL9 | 1,740 | 1530 | 220 | 0.2 |

**Table 1-20 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2013**

| Sampling Site | Date | Depth | Total Abundance | < 5 µm (1,000X) | 5 to 25 µm (400X) | > 25 µm (100X) |
|---|---|---|---|---|---|---|
| Long Lake | April 2013 | 0.5 m | 2,300 | 1,750 | 530 | 10 |
| | | 1 m | 3,000 | 2,470 | 570 | 15 |
| | August 2013 | 0.5 m | 1,300 | 880 | 455 | 2 |
| | | 1.0 m | 1,700 | 1,170 | 470 | 15 |
| | October 2013 | 0.5 m | 1,500 | 1,150 | 340 | 12 |
| | | 1.0 m | 1,900 | 1440 | 400 | 14 |
| Middle Quinsam Lake | April 2013 | 0.5 m | 1,350 | 1,080 | 270 | 2 |
| | | 1.0 m | 1,400 | 1,150 | 250 | 2 |
| | August 2013 | 0.5 m | 1,300 | 1,045 | 235 | 7 |
| | | 1.0 m | 1,300 | 1,010 | 325 | 6 |
| | | 1.0 m (rep) | 1,200 | 990 | 230 | 9 |
| | October 2013 | 0.5 m | 1,800 | 1,440 | 350 | 2 |
| | | 1.0 m | 1,900 | 1,570 | 290 | 2 |
| | | 1.0 m (rep) | 1,600 | 1,310 | 300 | 3 |
| No Name Lake | April 2013 | 0.5 m | 1,300 | 900 | 370 | 45 |
| | | 1.0 m | 1,600 | 1,150 | 380 | 36 |
| | August 2013 | 0.5 m | 1,200 | 880 | 440 | 5 |
| | | 1.0 m | 1,500 | 1,060 | 455 | 6 |
| | | 1.0 m (rep) | 1,700 | 1,315 | 470 | 8 |
| | October 2013 | 0.5 m | 1,800 | 1,310 | 460 | 1 |
| | | 1.0 m | 1,600 | 1,060 | 540 | 1 |
| Lower Quinsam Lake | April 2013 | 0.5 m | 1,800 | 1,420 | 406 | 2 |
| | | 1 m | 950 | 700 | 245 | 2 |
| | August 2013 | 0.5 m | 960 | 810 | 150 | 2 |
| | | 1.0 m | 620 | 460 | 160 | 3 |
| | October 2013 | 0.5 m | 1,300 | 1,040 | 200 | 12 |
| | | 1.0 m | 1,300 | 1,060 | 230 | 4 |

**Table 1-21** **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2014**

| Sampling Site | Date | Depth | Total Abundance | < 5 µm (1,000X) | 5 to 25 µm (400X) | > 25 µm (100X) |
|---|---|---|---|---|---|---|
| Long Lake | April 2014 | 1 m | 3100 | 2665 | 330 | 86.6 |
| | July 2014 | 1 m | 1700 | 1170 | 490 | 0.9 |
| | October 2014 | 1 m | 1500 | 1200 | 290 | 18.6 |
| Middle Quinsam Lake | April 2014 | 1 m | 1000 | 840 | 155 | 11.4 |
| | | 1 m replicate | 590 | 480 | 100 | 11.7 |
| | July 2014 | 1 m | 3200 | 2950 | 240 | 0.5 |
| | October 2014 | 1 m | 1700 | 1400 | 310 | 3.2 |
| No Name Lake | April 2014 | 1 m | 1600 | 1260 | 290 | 83 |
| | July 2014 | 1 m | 1300 | 970 | 310 | 2.5 |
| | | 1 m replicate | 1200 | 830 | 250 | 3.1 |
| | October 2014 | 1 m | 1600 | 1400 | 200 | 1.7 |
| | | 1 m replicate | 1500 | 1200 | 230 | 2.2 |
| Lower Quinsam Lake | April 2014 | 1 m | 1600 | 1400 | 225 | 7.6 |
| | July 2014 | 1 m | 1200 | 1010 | 210 | 1.8 |
| | October 2014 | 1 m | 2400 | 2000 | 350 | 66 |

**Table 1-22 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2015**

| Lake | Month | Depth (m) | Total Abundance | < 5 µm (1,000X) | 5 to 25 µm (400X) | > 25 µm (100X) |
|---|---|---|---|---|---|---|
| Long | April | 1 | 3700 | 3300 | 400 | 15 |
| | July | 1 | 1300 | 1030 | 260 | 6.6 |
| | October | 1 | 2100 | 1800 | 230 | 14.6 |
| Middle Quinsam | April | 1 | 1600 | 1300 | 300 | 2.4 |
| | July | 1 | 2900 | 1060 | 1850 | 2.8 |
| | October | 1 | 1150 | 920 | 230 | 0.3 |
| No Name | April | 1 | 1200 | 870 | 350 | 1.1 |
| | July | 1 | 880 | 610 | 260 | 6.6 |
| | October | 1 | 1350 | 1000 | 300 | 4.3 |
| | October replicate | 1 | 1200 | 920 | 280 | 4.5 |
| Lower Quinsam | April | 1 | 2200 | 1800 | 350 | 28 |
| | April replicate | 1 | 2300 | 1800 | 520 | 18 |
| | July | 1 | 3200 | 580 | 2630 | 3.3 |
| | October | 1 | 1500 | 1100 | 330 | 71 |

**Table 1-23** **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2016**

| Lake | Month | Abundance (cells/mL) at 1 m depth | | | |
|---|---|---|---|---|---|
| | | Total | < 5 µm (1,000 X) | 5 to 25 µm (400 X) | > 25 µm (100 X) |
| Long | April | 1,500 | 1,300 | 240 | 5.5 |
| Middle Quinsam | | 1,100 | 882 | 240 | 2.8 |
| No Name | | 1,100 | 864 | 240 | 1.8 |
| No Name (replicate) | | 970 | 792 | 180 | 1.8 |
| Lower Quinsam | | 1,500 | 1,200 | 260 | 5.4 |
| Long | August | 1,200 | 990 | 140 | 22 |
| Middle Quinsam | | 930 | 810 | 116 | 1.5 |
| No Name | | 1,800 | 1,200 | 500 | 42 |
| No Name (replicate) | | 1,900 | 1,280 | 595 | 46 |
| Lower Quinsam | | 2,400 | 1,850 | 578 | 1.4 |
| Long | November | 780 | 640 | 140 | 0.5 |
| Middle Quinsam | | 610 | 520 | 90 | 3 |
| No Name | | 650 | 600 | 50 | 0.4 |
| Lower Quinsam | | 300 | 250 | 50 | 0 |

**Table 1-24** **Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2017**

| Lake | Month | Abundance (cells/mL) at 1 m depth | | | |
|---|---|---|---|---|---|
| | | Total | < 5 µm (1,000 X) | 5 to 25 µm (400 X) | > 25 µm (100 X) |
| Long | May | 2,700 | 2,400 | 340 | 16.2 |
| Middle Quinsam | | 1,900 | 1,500 | 370 | 15.4 |
| No Name | | 1,300 | 1,000 | 320 | 7.9 |
| Lower Quinsam | | 1,700 | 1,300 | 390 | 1.2 |
| Long | Sept. | 1,100 | 940 | 200 | 1.5 |
| Middle Quinsam | | 980 | 760 | 220 | 0.9 |
| No Name | | 1,400 | 860 | 480 | 29.8 |
| No Name Replicate | | 1,500 | 1,000 | 450 | 28.1 |
| Lower Quinsam | | 1,700 | 990 | 600 | 86.6 |
| Long | Oct. | 2,000 | 1,800 | 190 | 0.4 |
| Middle Quinsam | | 860 | 770 | 80 | 7.5 |
| No Name | | 1,600 | 1,370 | 260 | 1 |
| No Name Replicate | | 1,800 | 1,400 | 390 | 4.2 |
| Lower Quinsam | | 1,300 | 770 | 530 | 14.8 |

**Table 1-25 Phytoplankton Abundance (cells/mL) in the Quinsam Lakes System, 2018**

| Lake | Month | Abundance (cells/mL) at 1 m depth | | | |
|---|---|---|---|---|---|
| | | Total | <5 µm (1,000 X) | 5 to 25 µm (400 X) | >25 µm (100 X) |
| Long | May | 1,500 | 1,300 | 150 | 3.4 |
| Long - duplicate | | 1,300 | 1,100 | 140 | 4.8 |
| Middle Quinsam | | 1,000 | 920 | 110 | 0.4 |
| No Name | | 1,800 | 1,500 | 250 | 0.1 |
| Lower Quinsam | | 2,700 | 2,400 | 320 | 0.5 |
| Long | August | 1,200 | 1,100 | 110 | 1.7 |
| Middle Quinsam | | 1,600 | 1,500 | 180 | 0.2 |
| No Name | | 1,400 | 1,200 | 270 | 2 |
| Lower Quinsam | | 2,300 | 680 | 1,600 | 13 |
| Lower Quinsam - replicate | | 3,400 | 1,100 | 2,300 | 6.6 |
| Long | November | 9,200 | 2,500 | 210 | 6,500 |
| Middle Quinsam | | 2,100 | 1,700 | 360 | 0.04 |
| No Name | | 1,600 | 1,300 | 300 | 0.7 |
| Lower Quinsam | | 1,800 | 1,500 | 230 | 96 |

# ATTACHMENT 2

## Species Composition Data: October 24, 2019

**Quinsam Lake Phytoplankton - 24 October 2019**
**Long Lake 1 m (WU2296-07, Job B991978)**
**27 ml sample settled**

| | |
|---|---|
| **Total Cells Counted** | **359** |
| **Total Cells Per mL** | **2,400** |

| | Number Counted | Cells per mL |
|---|---|---|
| **1000X magnification - 25 fields** | | |
| CHRYSOPHYCEAE | | |
| Ochromonas/Chromulina spp. (2-3 um) | 30 | 1080 |
| Ochromonas/Chromulina spp. (4-5 um) | 38 | 684 |
| Ochromonas/Chromulina spp. (6-7 um) | 8 | 144 |
| Pseudokephyrion sp. | 1 | 18 |
| **TOTAL** | **77** | **1,926** |
| | | |
| **400X magnification - 1 strip** | | |
| CHRYSOPHYCEAE | | |
| Dinobryon sp. (cells) | 1 | 2 |
| Dinobryon cylindricum (cells) | 3 | 5 |
| Ochromonas spp. (8-10 um) | 102 | 173 |
| BACILLARIOPHYCEAE | | |
| Cyclotella stelligera | 3 | 5 |
| Melosira italica (cols) | 16 | 27 |
| Navicula sp. (30 um) | 1 | 2 |
| CHLOROPHYCEAE | | |
| Crucigenia sp. (cols) | 2 | 3 |
| Dictyosphaerium sp. (cols) | | |
| Gloeocystis sp. (cols+ cells) | 1 | 2 |
| Nephrocytium sp. (cells) | 13 | 22 |
| Tetraedron sp. | 2 | 3 |
| DINOPHYCEAE | | |
| Peridinium sp. | 1 | 2 |
| CRYPTOPHYCEAE | | |
| Cryptomonas spp. | 22 | 37 |
| Rhodomonas minuta | 91 | 155 |
| CYANOPHYCEAE | | |
| Dactylococcopsis aciciularis (cols) | 5 | 9 |
| Merismopedia sp. (cols) | 2 | 3 |
| **TOTAL** | **265** | **451** |
| | | |
| **100X magnification - whole sample** | | |
| BACILLARIOPHYCEAE | | |
| Synedra radians | 15 | 0.6 |
| CYANOPHYCEAE | | |
| Chroococcus cf. Prescotti (cols) | 2 | 0.1 |
| **TOTAL** | **17** | **0.7** |

**Quinsam Lake Phytoplankton - 24 October 2019**
**Middle Quinsam Lake 1 m (WU2301-07, Job B991979)**
**27 ml sample settled**

| | |
|---|---|
| **Total Cells Counted** | **304** |
| **Total Cells Per mL** | **1,300** |

| | Number Counted | Cells per mL |
|---|---|---|
| **1000X magnification - 50 fields** | | |
| CHRYSOPHYCEAE | | |
| Ochromonas/Chromulina spp. (2-3 um) | 31 | 558 |
| Ochromonas/Chromulina spp. (4-5 um) | 19 | 342 |
| Ochromonas/Chromulina spp. (6-7 um) | 4 | 72 |
| Chrysochromulina parva | 1 | 18 |
| Pseudokephyrion sp. | 3 | 54 |
| CHLOROPHYCEAE | | |
| Oocystis sp. (5x3 um) | 1 | 18 |
| **TOTAL** | **59** | **1062** |
| | | |
| **400X magnification - 2 strips** | | |
| CHRYSOPHYCEAE | | |
| Dinobryon sp. (cells) | 1 | 1 |
| Dinobryon cylindricum (mainly single cells) | 43 | 37 |
| Mallomonas sp. | 1 | 1 |
| Ochromonas spp. (8-10 um) | 112 | 95 |
| unidentified cysts | 2 | 2 |
| BACILLARIOPHYCEAE | | 0 |
| Cyclotella glomerata (cells + cols) | 3 | 3 |
| Cyclotella stelligera | 10 | 9 |
| CHLOROPHYCEAE | | |
| Crucigenia sp. (cols) | 1 | 1 |
| Dictyosphaerium sp. (cols) | 3 | 3 |
| Oocystis sp. (cells + cols) | 1 | 1 |
| Scenedesmus sp. (cols) | 2 | 2 |
| CRYPTOPHYCEAE | | |
| Cryptomonas spp. | 22 | 19 |
| Rhodomonas minuta | 34 | 29 |
| CYANOPHYCEAE | | |
| Coelosphaerium sp. (cols) | 1 | 1 |
| Dactylococcopsis aciciularis (cols) | 8 | 7 |
| **TOTAL** | **244** | **207** |
| | | |
| **100X magnification - whole sample** | | |
| CHLOROPHYCEAE | | |
| Botryococcus braunii (cols) | 1 | 0.04 |
| **TOTAL** | **1** | **0.04** |

# 2019-2020 Annual Report Appendix IV

**Taxa and Abundance of Zooplankton Samples- Spring**

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| level of id. : lowest/lowest | | | | | | | | | |
| Site Name | | LQL | LQL | NNL | NNL | LLM | LLM | MQL | MQL |
| FES Sample Number | | **190073** | **190077** | **190074** | **190080** | **190075** | **190078** | **190076** | **190079** |
| Sampling Date(s) | | May 1, 2019 | May 8, 2019 | April 30, 2019 | May 7, 2019 | April 30, 2019 | May 7, 2019 | May 1, 2019 | May 8, 2019 |
| units = total organisms/sample | | | | | | | | | |
| | stage | | | | | | | | |
| Sub-class : Copepoda | | | | | | | | | |
| Order : Cyclopoida | | | | | | | | | |
| *Cryptocyclops bicolor* | adult | | | 29 | 55 | 60 | | | 5 |
| *Diacyclops thomasi* | adult | 30 | 7 | 7 | | | 228 | 9 | 10 |
| *Ectocyclops phaleratus* | adult | | 3 | 22 | | 40 | | 9 | |
| *Microcyclops varicans* | adult | | | | 9 | | | | |
| UID | copepodid | 12 | 107 | 99 | 81 | 50 | 127 | 4 | 13 |
| Order : Calanoida | | | | | | | | | |
| Family : Diaptomidae | | | | | | | | | |
| *Hesperodiapomus novemdecimus* | adult | | | 39 | 59 | | | 25 | 21 |
| *Skistodiaptomus oregonensis* | adult | | 10 | | | 8 | 26 | | |
| *Diaptomus sp.* | adult | 1 | | | | | | | |
| UID | copepodid | 1 | 33 | 90 | 89 | 32 | 26 | 2 | 4 |
| UID Calanoida / Cyclopoida | nauplii | 675 | 918 | 281 | 260 | 446 | 1495 | 613 | 889 |
| | | | | | | | | | |
| Order : Cladocera | | | | | | | | | |
| *Bosmina longirostris* | adult | 45 | 74 | 85 | 44 | 21 | 52 | 7 | 18 |
| *Bosmina longirostris* | juvenile | | 14 | | 34 | 5 | | | 1 |
| *Daphnia longiremis* | adult | | | | | 32 | 163 | | 22 |
| *Daphnia rosea* | adult | 26 | 6 | 41 | 47 | 29 | 124 | 67 | 80 |
| *Daphnia sp.* | juvenile | 10 | 82 | 29 | 9 | 50 | 202 | 155 | 21 |
| *Diaphanosoma brachyurum* | adult | | 23 | | | | 16 | | |
| *Holopedium gibberum* | adult | 5 | 21 | 148 | 319 | | 3 | | |
| *Holopedium gibberum* | juvenile | | | 99 | | 8 | | | |
| *Polyphemus pediculus* | adult | | | | | | | | 1 |
| | | | | | | | | | |
| Phylum : Rotifera | | | | | | | | | |
| *Asplanchna sp.* | | | | | | | 306 | | |
| *Conochilus sp.* | colonies | | 12 | | 20 | 48 | | | |
| *Kellicottia longispina* | | 9 | 4 | 230 | 257 | 87 | 75 | 4 | 7 |
| *Keratella cochlearis* | | 13 | 12 | 2 | 61 | 187 | 659 | 9 | 41 |
| *Keratella quadrata* | | 1 | 2 | | 2 | 42 | 107 | 5 | 1 |
| *Polyarthra sp.* | | 4 | 160 | 128 | 223 | 209 | 646 | 25 | 22 |
| UID | | | | | | 3 | | | |
| | | | | | | | | | |
| **TOTAL** | | **832** | **1,488** | **1,329** | **1,569** | **1,357** | **4,255** | **934** | **1,156** |
| | | | | | | | | | |
| UID = unidentified due to lack of size and/or missing morphological characters. | | | | | | | | | |

# 2019-2020 Annual Report Appendix IV

**Taxa and Abundance of Zooplankton Samples - Summer**

| level of id. : lowest/lowest | | | | | |
|---|---|---|---|---|---|
| Site Name | | LQL | NNL | LLM | MQL |
| FES Sample Number | | **190145** | **190146** | **190147** | **190148** |
| Sampling Date(s) | | July 29, 2019 | August 6, 2019 | July 29, 2019 | July 29, 2019 |
| units = total organisms/sample | | | | | |
| | stage | | | | |
| Sub-class : Copepoda | | | | | |
| Order : Cyclopoida | | | | | |
| *Cryptocyclops bicolor* | adult | 111 | | 54 | 20 |
| *Diacyclops thomasi* | adult | | 50 | | 13 |
| *Ectocyclops phaleratus* | adult | | | | |
| *Microcyclops varicans* | adult | 27 | | | |
| *Orthocyclops modestus* | adult | 28 | | | |
| UID | copepodid | 162 | 11 | 380 | 119 |
| Order : Calanoida | | | | | |
| Family : Diaptomidae | | | | | |
| *Hesperodiaptomus novemdecimus* | adult | 69 | 97 | | 16 |
| *Skistodiaptomus oregonensis* | adult | | | 107 | 208 |
| UID | copepodid | 35 | 36 | 16 | 88 |
| UID Calanoida / Cyclopoida | nauplii | 417 | 517 | 242 | 239 |
| | | | | | |
| Order : Cladocera | | | | | |
| *Bosmina longirostris* | adult | 100 | 25 | 63 | 11 |
| *Bosmina longirostris* | juvenile | 62 | | | |
| *Daphnia longiremis* | adult | | | 8 | |
| *Daphnia pulicaria* | adult | | 6 | | |
| *Daphnia rosea* | adult | 317 | 320 | 55 | 362 |
| *Daphnia sp.* | juvenile | 228 | 80 | 4 | 102 |
| *Diaphanosoma brachyurum* | adult | 753 | 105 | 281 | 181 |
| *Diaphanosoma brachyurum* | juvenile | | | 123 | 115 |
| *Holopedium gibberum* | adult | | 25 | | |
| *Leptodora kindtii* | adult | | 6 | | |
| *Polyphemus pediculus* | adult | 4 | 9 | 8 | |
| *Sida crystallina* | adult | | 17 | | |
| Phylum : Rotifera | | | | | |
| *Asplanchna sp.* | | | | 337 | |
| *Conochilus sp.* | colonies | 193 | | | 9 |
| *Conochilus sp.* | individual | | 721 | | 5,569 |
| *Kellicottia longispina* | | 50 | 1,551 | 586 | 24 |
| *Keratella cochlearis* | | 58 | | 293 | 4 |
| *Polyarthra sp.* | | 31 | 275 | | 69 |
| UID | | | | | 4 |
| Benthic | | | | | |
| Hydracarina | larvae | | 6 | | |
| | | | | | |
| **TOTAL** | | **2,645** | **3,857** | **2,557** | **7,153** |
| | | | | | |
| UID = unidentified due to lack of size and/or missing morphological characters. | | | | | |

| **Taxa and Abundance of Zooplankton Samples- Fall** | | | |
|---|---|---|---|
| level of id. : lowest/lowest | | | |
| Site Name | | **LLM1** | **MQL1** |
| FES Sample Number | | **190214** | **190215** |
| Sampling Date(s) | | **October 23, 2019** | **October 23, 2019** |
| units = total organisms/sample | | | |
| | stage | | |
| Sub-class : Copepoda | | | |
| Order : Cyclopoida | | | |
| *Diacyclops thomasi* | adult | 10 | |
| *Microcyclops varicans* | adult | 30 | 1 |
| UID | copepodid | 20 | 1 |
| Order : Calanoida | | | |
| Family : Diaptomidae | | | |
| *Skistodiaptomus oregonensis* | adult | 34 | 9 |
| UID | copepodid | 20 | 3 |
| UID Calanoida / Cyclopoida | nauplii | 348 | 10 |
| Order : Cladocera | | | |
| *Bosmina longirostris* | adult | 24 | |
| *Bosmina longirostris* | juvenile | | 1 |
| *Daphnia longiremis* | adult | 18 | |
| *Daphnia pulicaria* | adult | | |
| *Daphnia rosea* | adult | 8 | 13 |
| *Daphnia sp.* | juvenile | 6 | |
| *Diaphanosoma brachyurum* | adult | 6 | |
| | | | |
| Phylum : Rotifera | | | |
| *Kellicottia longispina* | | 690 | 9 |
| *Keratella cochlearis* | | 414 | 1 |
| *Keratella quadrata* | | 6 | |
| *Polyarthra sp.* | | 28 | 12 |
| *Testudinella sp.* | | 1 | |
| **TOTAL** | | **1,663** | **60** |
| UID = unidentified due to lack of size and/or missing morphological characters. | | | |

# Appendix V

Report Date:October 10, 2019 File:7008

Report Number:139588

QUINSAM COAL CORPORATION

950-1090 West Georgia Street
Vancouver BC V6E 3V7

Dear QUINSAM COAL CORPORATION

**Re: Non-compliance Advisory Letter, Permit 7008, 5800 Argonaut Main, Campbell River, BC, Effluent**

On September 19, 2019, Ministry of Environment and Climate Change Strategy, Environmental Protection Division staff conducted an inspection of your facility, QUINSAM COAL CORPORATION located at 5800 Argonaut Main, Campbell River, BC with authorization number 7008 under the *Environmental Management Act*. Ministry staff were accompanied on site by Kathleen Russell, Quinsam Coal.

This Advisory, the alleged violations and the circumstances to which it refers will form part of the compliance history of QUINSAM COAL CORPORATION, and will be taken into account in the event of future non-compliance.

Please note that this authorization is considered to be out of compliance until such a time as it can be confirmed to meet the authorization requirements.

**Inspection Details:**

| | |
|---|---|
| Requirement Description: | **1. AUTHORISED DISCHARGES, 1.1, 1.1.1**<br>1.1.1: This subsection applies to the discharge of effluent from the NORTH COAL MINING OPERATION AND COAL PREPARATION PLANT as shown on attached Site Plan A. The site reference number for this discharge is E207409. 1.1.1 The maximum and average authorised rates of discharge are 0.32 m3/s and 0.08 m3/s respectively. The authorised discharge period is 365 d/a. |

**Ministry of Environment and Climate Change Strategy**

Compliance
Environmental Protection Division

Mailing Address:
2080-A
Labieux Rd
Nanaimo BC V9E 6J9

Telephone: 250 751 3100
Facsimile: 250 751 3103
Website: www.gov.bc.ca/env

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| Details/Findings: | On September 19, 2019, Ministry of Environment and Climate Change Strategy (Ministry) Officer Darren Stewart (Officer Stewart) and Officer Travis Kurinka conducted an on-site inspection of the Quinsam Coal Corporation (Site) coal mine located outside Campbell River, BC to verify compliance with Permit 7008 (Permit). The Permit authorizes the discharge effluent from a coal mining operation and coal preparation plant to the land with overland flows draining to Middle Quinsam Lake, Long Lake, Iron River and Quinsam River. The Permit was first issued on December 23, 1987 and last amended on June 23, 2015. The site currently has permit amendment requests submitted to the Ministry.<br><br>Present during the inspection was Kathleen Russell (Environmental Coordinator, Quinsam Coal Corporation).<br>The inspection period for this report is from April 01, 2018 to September 19, 2018 and included a review of the following documents;<br><br>- Quinsam Coal Annual Water Quality Monitoring Report 2018-2019 (April 2018 - March 2019) submitted September 11, 2019<br>- Ministry Temporary Amendment letter to monitoring requirements dated October 31, 2018 for Lower Wetland Outlet (LWO) when 7SSD is not discharging<br>- 2018 ENVIRONMENTAL PROCEDURES MANUAL, submitted April 02, 2019<br>- 2019 Q1 Report (data April 1st to June 30th 2019) submitted July 31, 2019<br><br>There were no exceedances of the maximum authorized rate of discharge during the data review period of October 2018 - June 30, 2019 for this location, known internally as Settling Pond #4 or "WD".<br><br>However, the 2018 annual average rate of discharge was reported as 0.1203 m3/s in exceedance of the average authorized rate of discharge. |
| Compliance: | Out |
| Requirement Description: | **1. AUTHORISED DISCHARGES, 1.1, 1.1.2**<br><br>1.1.2: This subsection applies to the discharge of effluent from the NORTH COAL MINING OPERATION AND COAL PREPARATION PLANT as shown on attached Site Plan A. The site reference number for this discharge is E207409. 1.1.2 The characteristics of the discharge shall not exceed: Parameters: Total Suspended Solids (daily composite), Limit: 25, Unit: mg/L; Total Suspended Solids (hourly composite), Limit: 35, Unit: mg/L; pH, Limit: 6.0 - 8.5, Unit: - ; Ammonia (as N) , Limit: 1.0, Unit: mg/L; Phosphorus (as P) (asterisk - see NOTE 1), Limit: 0.03, Unit: mg/L; NOTE 1: Dissolved; Oil and Grease (total), Limit: 5, Unit: mg/L; Aluminum (asterisk - see NOTE 1), Limit: 0.5, Unit: mg/L; NOTE 1: Dissolved; Copper (asterisk - see NOTE 1), Limit: 0.02, Unit: mg/L; NOTE 1: Dissolved; Iron (asterisk - see NOTE 1), Limit: 0.3, Unit: mg/L; NOTE 1: Dissolved; Lead (asterisk - see NOTE 1), Limit: 0.05, Unit: mg/L; NOTE 1: Dissolved; Zinc (asterisk - see NOTE 1), Limit: 0.1, Unit: mg/L; NOTE 1: Dissolved; Rainbow Trout Bioassay (Oncorhynchus mykiss), Limit: (double asterisk - see NOTE 2), Unit: - ; NOTE 2: No mortalities at 100 percent effluent concentration after 96 hours. |

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| Details/Findings: | There was one exceedance of the parameters specified in this section during the inspection period covered by this report. On February 21, 2019 the TSS result was 28 mg/L in exceedance of the permit limit of 25 mg/L.<br>All other parameters, including the Rainbow Trout Bioassay's, were compliant during the inspection period.<br><br>During the inspection Ministry Officers Stewart and Kurinka collected samples for analysis of the parameters listed in this section. Sample analysis results are appended to this report. No exceedances of any parameter were noted in the laboratory results. In situ pH was 7.71 during sample collection.<br><br>On September 24, 2019, the Environment Canada, Pacific Yukon Laboratory for Environmental Testing (PYLET) informed Officer Stewart that the R.Trout LT50 bioassay tests showed 0 mortality after 96 hours and the fish did not show any obvious signs of stress. The full, written bioassay report from PYLET was not ready at the writing of this inspection report. |
| Compliance: | Out |
| Requirement Description: | **1. AUTHORISED DISCHARGES, 1.2, 1.2.1**<br><br>1.2.1: This subsection applies to the discharge of effluent from the SOUTH COAL MINING OPERATION as shown on attached Site Plan B. The site reference number for this discharge is E218582. 1.2.1 The maximum and average authorised rates of discharge are 0.46 m3/s and 0.10 m3/s respectively. The authorised discharge period is 365 d/a. |
| Details/Findings: | There were no exceedances of the maximum authorized rate of discharge during the data review period of October 2018 - June 30, 2019 for this location, known internally as Settling Pond #1 or "SPD".<br><br>The 2018 Annual Report confirmed that both the annual maximum flow (0.244m3/s) and annual average flow (0.0265m3/s) were well below the permitted rates specified in this section. Q1 2019 data reported no exceedances with the maximum rate of discharge. |
| Compliance: | In |

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| Requirement Description: | **1. AUTHORISED DISCHARGES, 1.2, 1.2.2**<br><br>1.2.2: This subsection applies to the discharge of effluent from the SOUTH COAL MINING OPERATION as shown on attached Site Plan B. The site reference number for this discharge is E218582. 1.2.2 The characteristics of the discharge shall not exceed: Parameters: Total Suspended Solids (daily composite), Limit: 25, Unit: mg/L; Total Suspended Solids (hourly composite), Limit: 35, Unit: mg/L ; pH, Limit: 6.0 - 8.5, Unit: - ; Ammonia (as N) , Limit: 1.0, Unit: mg/L; Phosphorus (as P) (asterisk - see NOTE 1), Limit: 0.03, Unit: mg/L; NOTE 1: Dissolved; Oil and Grease (total), Limit: less than DL (3 asterisk - See NOTE 3), Unit: mg/L; NOTE 3: less than Detection Limit; Aluminum (asterisk - see NOTE 1), Limit: 0.5, Unit: mg/L; NOTE 1: Dissolved; Copper (asterisk - see NOTE 1), Limit: 0.02, Unit: mg/L; NOTE 1: Dissolved; Iron (asterisk - see NOTE 1), Limit: 0.5, Unit: mg/L; NOTE 1: Dissolved; Lead (asterisk - see NOTE 1), Limit: 0.05, Unit: mg/L; NOTE 1: Dissolved; Zinc (asterisk - see NOTE 1), Limit: 0.2, Unit: mg/L; NOTE 1: Dissolved; Rainbow Trout Bioassay (Oncorhynchus mykiss), Limit: (double asterisk - see NOTE 2), Unit: - ; NOTE 2: No mortalities at 100 percent effluent concentration after 96 hours. |
| Details/Findings: | All permit limits, including the Rainbow Trout Bioassay's, were complied with during the inspection period as confirmed in sample analysis reports submitted by the permittee.<br><br>During the inspection Ministry Officers Stewart and Kurinka collected samples for analysis of the parameters listed in this section. Sample analysis results are appended to this report. No exceedances of any parameter limits were noted in the laboratory results. In situ pH was 7.62 during sample collection.<br><br>On September 24, 2019, the Environment Canada, Pacific Yukon Laboratory for Environmental Testing (PYLET) informed Officer Stewart that the R.Trout LT50 bioassay tests showed 0 mortality after 96 hours and the fish did not show any obvious signs of stress. The full, written bioassay report from PYLET was not ready at the writing of this inspection report. |
| Compliance: | In |
| Requirement Description: | **1. AUTHORISED DISCHARGES, 1.3, 1.3.1**<br><br>1.3.1: This subsection applies to the discharge of effluent from the BLOCK 242 COAL MINING OPERATION as shown on attached Site Plan C. The site reference number for this discharge is E225796. 1.3.1 Subject to Subsection 4.4.3 the maximum authorised rate of discharge is 0.0082 m3/s. The authorised discharge period is 365 d/a. |

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| Details/Findings: | Ms. Russell informed Officer Stewart during the inspection that there continues to be no mine activity in this area, the authorized works are removed, the mine portal has been filled in and closed off and flow rates are not being collected from this area.<br><br>Officer Stewart previously observed in 2017 that the area referenced by this section of the permit (Block 242) to be fully overgrown and wooded with no discharge occurring related to mine activity; therefore, compliance with this section is not applicable.<br><br>The only visible remnants of mine activity in this area are remnants of the settling ponds (now vegetated depressions) which occasionally collect rainwater. Ms. Russell confirmed with Officer Stewart that Quinsam has submitted a permit amendment request to remove permit requirements for the reclaimed mine area formerly known as Block 242. |
| Compliance: | Not Applicable |
| Requirement Description: | **1. AUTHORISED DISCHARGES, 1.4, 1.4.1**<br><br>1.4.1: This subsection applies to the discharge of effluent from the 7 SOUTH MINING OPERATION as shown on attached Site Plan D and E. The site reference number for this discharge is E292069. 1.4.1 The maximum authorized rate of discharge is 0.005 m3/s. The authorized discharge period is 365 d/a. |
| Details/Findings: | Data submitted to the Ministry confirmed that no discharge occurred from 7SSD during the inspection period covered by this report; therefore, compliance with this requirement was not applicable.<br><br>Ms. Russell informed Officer Stewart that the discharge of effluent from the 7 SOUTH MINING OPERATION (7SSD) was not occurring during the inspection and the surface settling pond usually goes dry during the summer months. The Q1 2019 quarterly report (April-June 2019) confirmed that "discharge did not occur during Q1 at 7SSD.<br><br>The Annual Report confirmed that "no discharge occurred during 2018-2019". |
| Compliance: | Not Applicable |

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| Requirement Description: | **2. SPECIFIC REQUIREMENTS, 2.4 7 South Mining Operation Settling Pond, 2.4.9 Toxicity Failure Monitoring and Reporting Procedures**<br>2.4.9.i: In the event of a toxicity test failure, the Permittee must implement the following in addition to the requirements stated in Subsection 3.9.2: i) Failure of the Rainbow Trout Bioassay: the settling pond discharge shall be immediately diverted to the underground workings until such time as a dilution series is completed to determine the dilution ratio which will reduce mortality to less than 50 percent of the test organisms. Upon the determination of an acceptable dilution ratio, the discharge rate may be appropriately adjusted. Failure is defined as the mortality of a minimum of one test organism compared to the test control. |
| Details/Findings: | Quinsam annual and quarterly reports confirm that there were no toxicity test failures during the inspection period; therefore, compliance with this requirement was not applicable.<br><br>Analysis results for toxicity (bioassay) of the samples collected by Ministry Officer's during the inspection showed no failures for Settling Pond #4 and Settling Pond #1 (0% mortality). |
| Compliance: | Not Applicable |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.1 Flocculation**<br><br>3.1: In order to meet the levels specified for total suspended solids in Subsections 1.1, 1.2, 1.3 and 1.4, it may be necessary to use chemical flocculating agents. The Permittee is required to carry out laboratory testing of the flocculants proposed for toxicity and effectiveness for removing suspended matter. The methodology and details of the testing program are subject to the approval of the Director. Based on the results of laboratory testing the Director may approve a flocculant for use under actual operating conditions. At least one alternate flocculant shall be tested and, if approved by the Director, an adequate supply shall be located within 6 hours travel time from the mine site. |
| Details/Findings: | Ms. Russell informed Officer Stewart that Quinsam does not currently use any chemical flocculating agents and Officer Stewart did not observe any flocculation facilities on site during the inspection.<br><br>To date, the Ministry has not required the permittee to use chemical flocculating agents. Ms. Russell confirmed with Officer Stewart that Quinsam has not proposed any flocculants for use at Quinsam, there has been no laboratory testing of flocculants and as such, none have been approved by the Director.<br><br>Due to the ambiguity of "it may be necessary to use chemical flocculating agents" and who is responsible for requiring flocculant use and determining if they are needed; compliance with this requirement was not determined. |
| Compliance: | Not Determined |

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| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.2 Environmental Procedures Manual**<br><br>3.2: An Environmental Procedures Manual shall be maintained by the Permittee as a working document for use by supervisory personnel and a guide to field staff during various stages of the project. The manual should cover all aspects of onsite environmental management applicable to mine construction and operation including but not limited to, the following items: 1) Land clearing, topsoil stripping and road construction; 2) Construction of water diversion and water collection ditches; 3) Flocculation; 4) Macrophyte growth and harvesting in the ponds, drainage ditches and discharge channels; 5) Acid-base accounting and materials handling; 6) Reclamation activities; 7) Construction of waste dumps; 8) Contingency planning for effluent liming, lake aeration and forest fertilization. 9) Settling pond operation under various flow/discharge conditions for the Block 242 coal mining operation as detailed in the Block 242 Mine Water Management Quinsam Coal Mine, AGRA Earth and Environmental Limited, February 1997; 10) Underground pump operation during extreme rainfall events; 11) Settling pond operation for the 7-South mining operation, including details on the contingency measures. The Permittee shall review the Environmental Procedures Manual at least on an annual basis to determine if any changes are required and submit any revisions to the Director for approval. Annual reviews and submission of revisions are due on March 31 of each year. |
| Details/Findings: | The most recent submission of the updated 2018 Environmental Procedures Manual included all listed applicable sections and information required by this subsection of the permit.<br><br>The annual submission of the most current revision was after the required due date of March 31 and instead submitted on April 02, 2019. |
| Compliance: | Out |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.3 Acid Generation Control**<br><br>3.3: In order to prevent generation of acid rock drainage and associated environmental problems it is necessary that potentially acid generating materials be identified and be subject to special handling techniques. The frequency of sampling and analysis shall be according to procedures outlined in Mines Act Permit C-172 and the Environmental Procedures Manual. If in the opinion of the Director acid rock generation is developing, the Permittee shall undertake corrective action as outlined in the appropriate section of the Environmental Procedures Manual or take any additional steps which are considered necessary to resolve the problem. |

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| Details/Findings:<br><br>Actions to be taken: | Officer Stewart observed an uncovered stockpile of potentially acid generating materials (waste rock) located on the corner of the coal pad near the tailings facility. Ms. Russell informed Officer Stewart that the potentially acid generating materials had been located on the permeable coal pad for approximately three months.<br>As such, these potentially acid generating materials have not been identified and subjected to special handling techniques (subaqueous disposal) as required by this section.<br><br>Potential acid rock drainage was observed by Officer Stewart as large puddles of rusty orange discoloured water pooling on the coal pad and draining off the coal pad via stormwater conveyance ditches.<br><br>Two in-situ pH measurements were taken of the potential acid rock drainage pooling on the coal pad which measured 3.0 pH and 3.3 pH. Photos are included at the end of this report.<br><br>Undertake corrective measures as outlined in the Quinsam Environmental Procedures Manual regarding the handling and storage of potentially acid generating materials. |
| Compliance: | Out |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.4 Water Quality Objectives**<br><br>3.4: Specific Water Quality Objectives have been developed by the Ministry of Environment for the Middle Quinsam Lake area and are contained in the report Campbell River Area, Middle Quinsam Lake Sub-Basin Water Quality Assessment and Objectives, November 1989. The 1989 objectives, or updated versions, may be used by the Director to assess the need for further works or controls. Presently there is no site-specific objective for sulphate in the Quinsam River watershed therefore the provincial sulphate water quality guideline for receiving waters applies. An objective for sulphate in the Middle Quinsam Lake Sub-Basin may be established in the future. The permittee shall recommend updates to the objectives, as and when requested by the Director. |
| Details/Findings: | To date, the Director has not assessed the need for further works or controls and has not established a site-specific objective for sulphate in the Quinsam River watershed, therefore compliance with this requirement is not applicable at this time. |
| Compliance: | Not Applicable |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.5 Nutrient Control**<br><br>3.5: The mine and coal preparation plant shall be operated such that the discharge of nutrients will not result in excessive algal growth or biomass accumulation which, in turn, could have a negative impact on water quality, fish production, and aesthetic values of Quinsam and Iron River systems. If in the opinion of the Director there is evidence of deterioration in the water quality, which can be attributed to the significant discharge of nutrients from the mine operation, the Permittee may be required to implement any of the mitigative measures outlined in the Environmental Procedures Manual (lake aeration/forest fertilization) or other methods as approved by the Director. |

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| Details/Findings: | Ms. Russell informed Officer Stewart that nutrient discharges from Quinsam have not resulted in excessive algal growth or biomass accumulation.<br>The 2018 Environmental Procedures Manual also states that "Since 1992, nutrient concentrations have remained at low levels, often below detection limits" due to the cessation of open pit mining and explosives use and soil disturbances were greatly reduced.<br><br>To date, the Permittee has not been required to implement any of the mitigative measures related to the significant discharge of nutrients from the mine operation, therefore compliance with this requirement is not applicable at the time of this report. |
| Compliance: | Not Applicable |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.6 Chemical Storage Contaminant Works**<br><br>3.6: Approved containment works shall be placed around the chemical storage areas to prevent spills to the environment. This includes, but is not necessarily limited to, storage areas for petroleum products and flocculating agents. |
| Details/Findings: | Officer Stewart observed approved storage and containment areas for waste petroleum products during the inspection.<br><br>Flocculating agents are not stored on site. |
| Compliance: | In |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.7 Spill Reporting**<br><br>3.7: All spills to the environment (as defined in the Spill Reporting Regulation) shall be reported immediately in accordance with the Spill Reporting Regulation. Notification shall be via the Provincial Emergency Program at 1-800-663-3456. |
| Details/Findings: | Mr. Russell confirmed with Officer Stewart that there were no spills to the environment (as defined in the Spill Reporting Regulation) during the inspection period, therefore compliance with this reporting requirement was not applicable. |
| Compliance: | Not Applicable |

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| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.8 Additional Works**<br><br>3.8: Based on the results of the monitoring program and/or other information obtained in connection with these discharges, the Permittee may be required to install additional treatment works or take other measures considered necessary. This may include, but is not necessarily limited to, facilities for the removal of nutrients and metals from the effluent or the provision of additional settling pond capacity. |
| Details/Findings: | The Permittee has not been required to install any other additional treatment works or take other measures considered necessary as described in this section during the inspection period covered by this report; therefore, compliance with this requirement was not applicable at this time.<br><br>Historically, in a Ministry letter dated December 01, 2010 and in accordance with sections 3.8 and 3.10 of this effluent discharge permit, Quinsam Coal Corporation was required to install and operate a mitigation system to collect and treat the flow of effluent entering Long Lake via a seep. These works are currently known as the Long Lake Seep Treatment system (LLST). |
| Compliance: | Not Applicable |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.9 Maintenance of Works, Non-Compliances and Emergency Procedures**<br>3.9.1: The Permittee shall inspect the authorized works regularly and maintain them in good working order. In the event of an emergency or condition beyond the control of the Permittee which prevents continuing effective operation of the authorized works, the Permittee shall take appropriate remedial action and immediately notify the Regional Waste Manager or a designated Officer. |
| Details/Findings: | Ms. Russell informed Officer Stewart that environmental staff check all ponds and pumps on a weekly basis in addition to general site maintenance and inspections. Mine managers also check on the authorized works.<br>Officer Stewart observed the authorized works to be maintained in good working order during the on site inspection.<br><br>One area of concern is the beaver activity near the decant riser at Settling Pond #1 (SPD) which is currently affecting the ability to consistently collect composite samples. The Permittee immediately notified Officer Stewart on September 18, 2019 regarding the beaver constantly disturbing the water and influencing the total suspended solids. The Permittee has taken appropriate remedial actions in collecting grabs instead of composite samples, periodically removed the materials placed by the beaver around the decant riser and has obtained the appropriate services for beaver removal.<br><br>Beaver dam building activity around the culvert at Long Lake Entrance (LLE) E292130 is also an area of concern, and removal/mitigation actions have been initiated by Quinsam. |
| Compliance: | In |

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| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.9 Maintenance of Works, Non-Compliances and Emergency Procedures, 3.9.2**<br>3.9.2: In the event of commissioning of the works, operational system modifications, equipment failure, operator error, spill, permit non-compliances or any other condition which may affect the quantity or quality of the discharge such that permit limits may be exceeded, the Permittee shall: take appropriate action to prevent or mitigate pollution, immediately notify the Provincial Emergency Program (PEP) 1-800-663-3456, as soon as possible, conduct sampling and analysis of discharges which may cause non-compliance with the characteristics of the discharge as specified in Section 1 of this permit and provide the results to the Regional Waste Manager or a designated Officer, as soon as practicable (but not later than 30-days after the Permittee became aware of the event), investigate the event and provide a report including results of sampling and analysis, permit non-compliance, corrections to the operational system, root cause of the event and decisions for corrective and preventive action. |
| Details/Findings: | The TSS exceedance from a sample obtained on February 1, 2019 (DGIR 184229) was immediately reported to the Provincial Emergency Program (PEP) on February 21, 2019 once the sample results were received from the lab.<br><br>The required report was provided on February 26, 2019 and contained all the information required by this section. |
| Compliance: | In |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.10 Bypasses**<br><br>3.10: The Permittee shall ensure that no effluent is discharged without being processed through the authorised works unless prior written approval is received from the Director. |
| Details/Findings: | Ms. Russell confirmed with Officer Stewart that the Long Lake Seeps intermittently bypass the Long Lake Seep Treatment system (LLST) based upon precipitation, accumulated 2-South underground mine pool water, and the efficacy of the pumps installed to lower those water levels. The Annual Report states that LLS is the smaller seep and LLSM is the middle seep. LLSM is considered the primary seep, as flows at this site are typically much higher (and variable). Ms. Russell informed Officer Stewart that the seeps were not discharging at the time of inspection and that LLSM had ceased flowing in July 2019 and LLS (which is normally artisan), ceased flowing in early September 2019.<br><br>The 2018/2019 Annual Status Form also confirms under section 3.10 that the "Long Lake Seep bypasses the works".<br>A grouting program was initiated in June 2018 where numerous holes were drilled in the seep area and injected with polyurethane glue in an attempt to mitigate the seep.<br><br>The LLST was a requirement of the Ministry based upon the December 01, 2010 letter titled, "Re: Mitigation of the Long Lake Seep" wherein Quinsam was required to install and operate a mitigation system to collect and treat the flow of effluent currently entering Long Lake via the seep. This letter requiring the LLST installation is appended to the inspection report. |

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| Compliance: | Out |
| Actions to be taken: | Continue to operate and maintain the LLST in order to collect and treat the flow of effluent entering Long Lake via the seep(s). |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.11 Environmental Review Procedures**<br><br>3.11: An Environmental Technical Review Committee of six members has been formed. This Committee is composed of technical representatives from the Department of Fisheries and Oceans; Environment Canada; the Ministry of Environment; the Ministry of Energy, Mines and Natural Gas; the City of Campbell River; and the Permittee for the purpose of coordinating and reviewing the construction and operational monitoring results. Based on the recommendations of the Committee, the Director may revise the monitoring requirements in Section 4. |
| Details/Findings: | Ms. Russell informed Officer Stewart that the members for the Environmental Technical Review Committee (ERTC) is no longer accurate, as Department of Fisheries and Oceans and Environment Canada no longer attend.<br><br>In addition, the Quinsam 2018/2019 Annual Status Form confirms that, "The Committee does not provide recommendations for revisions to the monitoring program to the Director and revisions are not being made to the monitoring program. All information is submitted in the Annual Report and then presented at 2 separate ETRC meetings, one for agencies and another for both agencies and stakeholders".<br><br>The members and actions of the ERTC currently deviate from what is listed in this section; however, permit section 3.11 is not a definitive compliance point, therefore "compliance" with this section is not determined. |
| Compliance: | Not Determined |
| Requirement Description: | **3. GENERAL REQUIREMENTS, 3.12 Future Monitoring**<br><br>3.12: Based on the results of the Effluent and In Mine Releases monitoring program specified in Subsection 4.1 and / or data obtained from the Receiving Environment monitoring program specified in Subsection 4.2, the Director may revise the monitoring requirements in Section 4. |

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| Details/Findings: | During the inspection period covered by this report, the Director has not revised the monitoring requirements in Section 4 based upon the effluent monitoring program results and/or data obtained from the receiving environment monitoring; therefore, compliance with this section is currently not applicable.<br><br>In a Ministry letter (sent via email) dated October 31, 2018, there was a temporary amendment issued that removed the requirement to monitor sample location LWO as detailed in section 4.2.5 when there is no discharge from 7SSD. However, this amendment (in effect until January 31, 2019) was done pursuant to section 16 of the Environmental Management Act (EMA) and not under this section of the permit. |
| Compliance: | Not Applicable |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.1 North Coal Mining and Coal Preparation Plant Operation (i) Decent - WD (EMS # E207409)**<br>4.1.1 (i): See Attached Document for Section 4.1.1 (i) Table |
| Details/Findings: | This section overviews non-compliance's with the effluent and in-mine releases monitoring program as itemized in the Quinsam 2018/2019 Annual Report, Quinsam 2018/2019 Annual Status Form and Quinsam Q1 2019 Quarterly Report (April-June 2019).<br><br>Decant WD (EMS # E207409)<br>- 7 of 353 daily composite samples between April 1, 2018 - March 31, 2019 were missed due to fluctuating water levels in the pond and the suction line for the composite sampler was not low enough In the water for required sample volume to be collected.<br>- June 03, 2019 dissolved sulphate, pH and conductivity was missed<br><br>WC (EMS# E207411) culvert, at Middle Quinsam lake Road = 3 of 26 required TSS samples were not collected during the 2018/2019 annual reporting period. |
| Compliance: | Out |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.2 South Coal Mining Operation (i) Decant - SPD (EMS # E218582)**<br>4.1.2 (i): See Attached Document for Section 4.1.2 (i) Table |

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| Details/Findings: | This section overviews non-compliance's with the effluent and in-mine releases monitoring program as itemized in the Quinsam 2018/2019 Annual Report, Quinsam 2018/2019 Annual Status Form and Quinsam Q1 2019 Quarterly Report (April-June 2019).<br><br>Decant SPD (EMS# E218582)<br>- Between April 1, 2018 - March 31, 2019, 1 of 233 required daily composite TSS samples was missed. 1 of 6 required monthly samples was missed for alkalinity/acidity and 2 of 52 weekly samples for sulphate were missed.<br>- June 03, 2019 dissolved sulphate, pH and conductivity was missed at sample location Outflow to 2-South Pit (E292127)<br>- Between April 1, 2018 - March 31, 2019, flow data for 2 of 365 days was lost due to battery failure. |
| Compliance: | Out |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.3 Block 242 Coal Mining Operation (i) Decant (EMS # E225796)**<br>4.1.3 (i): See Attached Document for Section 4.1.3 (i) Table |
| Details/Findings: | The Block 242 Coal Mining Operation Area is non-operational, reclaimed and does not discharge mine impacted water; therefore, compliance with this requirement is not applicable. |
| Compliance: | Not Applicable |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.1 Effluent and In-Mine Releases, 4.1.4 7 South Mining Operation (i) Decant - 7SSD (EMS # E292069)**<br>4.1.4 (i): See Attached Document for Section 4.1.4 (i) Table |
| Details/Findings: | This section overviews the monitoring requirements contained in permit section 4.1.4.<br><br>Decant 7SSD (EMS #E292069)<br>- There were no discharges from 7SSD during the inspection period; therefore, samples of the discharge and compliance was not applicable.<br>7-South Adit Sump (EMS #292110)<br>- The Annual Status form confirms this pond is never pumped to the 7S settling pond; therefore, compliance with the requirements to sample for an event that has not occurred is not applicable. |

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| Compliance: | Not Applicable |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.1 Initial Dilution Zone Monitoring Sites (i) Long Lake Entrance - LLE**<br>4.2.1 (i): See Attached Document for Section 4.2.1 (i) Table |
| Details/Findings: | This section overviews non-compliance's with the effluent and in-mine releases monitoring program as itemized in the Quinsam 2018/2019 Annual Report, Quinsam 2018/2019 Annual Status Form and Quinsam Q1 2019 Quarterly Report (April-June 2019).<br><br>Long Lake Entrance (LLE), EMS # E292130<br>May 01, 2018 = one monthly sample for metals, nutrients, TSS, sulphate, alkalinity/acidity was missed due to work initiated at the location to remove a beaver dam.<br>June 3, 2019 = one missed weekly sample for dissolved sulphate, pH and conductivity |
| Compliance: | Out |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.2 Seep Monitoring Sites (i) Long Lake Seeps (LLS)**<br>4.2.2 (i): See Attached Document for Section 4.2.2 (i) Table |
| Details/Findings: | The 2018/2019 Annual Report, Appendix I, Tables 23-24 confirm that all samples were obtained from the Long Lake seep monitoring sites in accordance with this section of the permit. |
| Compliance: | In |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.5 Stream Monitoring Requirements**<br>4.2.5: See Attached Document for Section 4.2.5 |

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| Details/Findings: | This section details the monitoring requirements for Receiving Water (Streams) Monitoring Sites listed in subsection 4.2.3, encompassing 13 distinct locations.<br><br>The dissolved sulphate samples at sites WA, WB, QRDS1, LLO, NNO and LWO for April 10th and 11th, 2019 were obtained by the permittee and sent to the lab, but analysis was not obtained due to laboratory error.<br><br>No monthly samples were collected at E292113 (7SRQ), E299256 (IRQR), E297230 (IR1), E297231 (IR6), and E297232 (IR8) in February 2019 due to dangerous conditions on the Quinsam and Iron rivers.<br><br>All other 5 in 30 weekly samples and monthly samples were collected for all parameters as required by the receiving environment monitoring program.<br><br>In a Ministry letter (sent via email) dated October 31, 2018, there was a temporary amendment issued that removed the requirement to monitor sample location LWO as detailed in section 4.2.5 when there is no discharge from 7SSD. This amendment was in effect until January 31, 2019. |
| Compliance: | Out |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.6 Lake Monitoring Requirements**<br>4.2.6: See Attached Document for Section 4.2.6 Table |
| Details/Findings: | This section details the monitoring requirements for Receiving Water (Lakes) Monitoring Sites listed in subsection 4.2.3, encompassing 6 distinct locations, and includes water parameters and biological monitoring.<br><br>The Quinsam 2018/2019 Annual Report confirms that all samples were obtained in accordance with the permit.<br><br>The Quinsam Q1 2019 Quarterly Report (April-June 2019) confirms that the Spring sample set was collected as required; however, no results were obtained for species count and ID and chlorophyll "A" at four locations. The report confirms that sample results were collected and submitted to the analytical laboratory but due to the site bankruptcy the results were not released. |
| Compliance: | In |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements, 4.2.7 Sediment and Benthic Monitoring**<br>4.2.7: See Attached Document for Section 4.2.7 |

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| Details/Findings: | Quinsam last conducted sediment and benthic monitoring in August through October 2016. This section of the permit requires monitoring cycles every 3 to 5 years. Ms. Russell confirmed with Officer Stewart that the next monitoring under this section is scheduled to be done in 2020 - 2021.<br><br>Due to there being no sediment and benthic monitoring activities conducted during the inspection period covered by this report; compliance with this requirement is currently not applicable. |
| Compliance: | Not Applicable |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.1 Composite Sampling**<br>4.3.1: The Permittee shall install suitable sampling facilities and obtain 24 hour composite samples of effluent for total suspended solids. Each daily composite sample shall consist of 8 samples taken at three hour intervals. Sampling shall be performed at frequencies specified in Subsections 4.1.1, 4.1.2., 4.1.3 and 4.1.4. The Permittee may also be required to collect hourly composite samples in order to verify compliance with the total suspended solids criteria of 35 mg/l specified in Subsections 1.1.2, 1.2.2, 1.3.2 and 1.4.2. Each hourly composite sample shall consist of 4 samples taken at 15 minute intervals. Proper care should be taken in sampling, storing, and transporting the samples to adequately control temperature and avoid contamination or breakage. The Permittee shall collect a grab sample instead of a composite sample when weather conditions result in freezing conditions, rendering collection of composite samples not feasible. |
| Details/Findings: | Ms. Russell confirmed with Officer Stewart that composite samplers are in place and operational at all established locations requiring composite sampling and are inspected regularly. Officer Stewart observed composite samplers in place at the two main discharge locations: WD and SPD.<br><br>On occasion during the inspection period, due to composite sampler malfunction or freezing, 24 hour composite samples of effluent for total suspended solids were not obtained. The Quinsam 2018/2019 Annual Report confirms that TSS composite samples were not obtained at WD on July 30, August 5, 6, 30, 31, 2018 and at SPD on May 23, 2018.<br>On April 29, 30 and May 1, 2019, daily composite samples for SPD and WD were collected as required and sent to the laboratory for analysis. Due to the site bankruptcy and non-payment of lab analysis fees, the results for the 6 composite TSS samples were not released.<br><br>Ms. Russell also informed Officer Stewart that some composite samples were not being collected daily in September 2019 due to beaver activity at the decant riser/sample location constantly disturbing the water and influencing the total suspended solids. The email from September 16, 2019 confirmed that daily grab samples will be collected until the beavers are removed.<br><br>Submitted data confirms that no samples exceeded the total suspended solids criteria of 35 mg/l which would trigger the requirement to collect hourly composite samples. |

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| Compliance: | Out |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.2 Continuous Flow Recording**<br>4.3.2: The Permittee shall provide and maintain suitable flow measuring devices and maintain a continuous record of the rate at which the effluent is discharged from the settling ponds authorised in Subsections 1.1.3, 1.2.3, 1.4.3 and from the secondary settling pond authorised in Subsection 1.3.3. |
| Details/Findings: | Officer Stewart observed suitable flow measuring devices measuring a continuous record of the rate at which the effluent is discharged from the settling ponds authorised in Subsections 1.1.3 (WD) and 1.2.3 (SPD).<br>A continuous record of the rate at which the effluent is discharged from the settling ponds is submitted in the quarterly and annual reports.<br><br>There was no discharge from the 1.3.3 and 1.4.3 locations during the inspection period. |
| Compliance: | In |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.3 Iron River Flow Monitoring**<br>4.3.3: The Permittee shall conduct a study to establish a flow calibration curve on the Iron River at a point selected by Environment Canada. The flow calibration curve shall be completed prior to the re-commencement of mining. Based on the results of this study and/or other information obtained in connection with this discharge the Director may increase the flow monitoring frequency in Iron River specified in Subsection 4.3.2 and/or limit the rate of discharge from the Block 242 mining operation during periods of low flow in Iron River. |
| Details/Findings: | During the previous inspection, Ms. Russell confirmed with Officer Stewart that the flow calibration curve had been established by Lorax Environmental in 2012. The point selected is defined in the Annual Report and monitoring documents as site "I8".<br><br>Iron River flow rates versus precipitation amounts are contained in Graph 62 of the 2018/2019 Annual Report. |
| Compliance: | In |

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| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.4 pH and Conductivity Monitoring**<br>4.3.4: All pH and conductivity probes used for field measurements shall be maintained according to manufacturer's requirements. Maintenance and calibration logs and instrument manuals shall be kept up to date and made available upon inspection. Any instance where pH results are deemed unreliable due to low conductance will be noted along with the corresponding conductance, and these results shall be included in quarterly and annual reports described in section 4.5. |
| Details/Findings: | Ms. Russell confirmed with Officer Stewart that all pH and conductivity probes used for field measurements are maintained according to manufacturer's requirements. |
| Compliance: | In |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.6 Groundwater Observation Wells**<br>4.3.6: The Permittee may be required to install groundwater observation wells in the vicinity of pits 2N, 1S, 2S, 3S, 4S, 5S, Block 242 and 7S. The number, location and structural details of these wells will be subject to the approval of the Director. As an alternative to the 2N, 1S, 2S, 3S, 4S, 5S and 7S wells, the Permittee may establish monitoring sites at the underground sumps subject to the approval of the Director. |
| Details/Findings: | Ms. Russell confirmed with Officer Stewart that Quinsam has installed groundwater observation wells.<br><br>Groundwater sample results and discussion is integrated into the 2018/2019 Annual Report and referenced in Appendix II, Table 171 (Groundwater Wells - Description) to Table 267.<br><br>Appendix VI of the 2018/2019 Annual Report is the "2018-2019 Annual Groundwater Monitoring Report Pertaining to the Mines Act Permit C-172 & Effluent Permit PE: 7008". |
| Compliance: | In |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.7 Monitoring of Drainage Ditches and Water Channels**<br>4.3.7: Visual inspection of drainage ditches and water channels within the mining operational areas shall be carried out by Environmental Protection staff as part of the regular inspections for the entire mine operation. Based on these monitoring results the Permittee may be required to take measures to minimize soil erosion. |

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| Details/Findings: | Officer Stewart conducted a brief, visual inspection of some drainage ditches and water channels within the mining operational areas as part of the regular inspection.<br>No areas of concern regarding soil erosion were observed; therefore, compliance with this requirement was not applicable.<br><br>The Quinsam 2018/2019 Annual Status Form also states under this section that "operations are checked daily by either the environmental technician or shift bosses". |
| Compliance: | Not Applicable |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.8 Precipitation Monitoring**<br>4.3.8: The Permittee shall maintain a suitable rain gauge at a location approved by the Director and measure and record the daily accumulated precipitation. |
| Details/Findings: | There is a suitable rain gauge located in the 2-South area. Data from this precipitation monitoring is included as Table 42 in the Annual Report. |
| Compliance: | In |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.9 Block 242 Monitoring**<br>4.3.9: Monitoring relating to the Block 242 Mining Operation required by Subsections 4.1.3 and 4.2.3 shall commence at the start of mine-influenced discharge from the Block 242 secondary settling pond. |
| Details/Findings: | Ms. Russell confirmed there is no mine-influenced discharge from the Block 242 secondary settling pond; therefore, compliance with this requirement is not applicable. |
| Compliance: | Not Applicable |

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| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.4 Monitoring Procedures, 4.4.1 Sampling and Analytical Procedures**<br>4.4.1: Sampling shall be carried out in accordance with the procedures described in the latest version of "British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emission, Water, Wastewater, Soil, Sediment, and Biological Samples (Permittee)", or by suitable alternative procedures as authorised by the Director. Analyses are to be carried out in accordance with procedures described in the latest version of "British Columbia Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment and Biological Materials", or by suitable alternative procedures as authorised by the Director. Copies of the above manuals may be purchased from Queen's Printer Publications Centre, P.O. Box 9452, Stn. Prov. Gov't. Victoria, British Columbia, V8W 9V7 (1-800-663-6105 or 250 387-6409 or via the internet at www.crownpub.bc.ca. The manuals are also available for review at all Environmental Protection offices. |
| Details/Findings: | The permittee confirmed with Officer Stewart that sampling is carried out in accordance with this section.<br><br>Sample analysis is carried out by an accredited lab, Maxxam Laboratories. |
| Compliance: | In |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.5 Reporting**<br><br>4.5: The Permittee shall submit the results of the monitoring program to the Director on a quarterly basis within thirty days following the previous quarter of monitoring. Based on these results, the monitoring program may be increased or decreased at the discretion of the Director. The format and content of the quarterly report is subject to the approval the Director. An annual review and interpretative report shall be prepared and submitted by the Permittee by June 30 of each year. The report will include, but is not necessarily limited to, the following items: 1) A summary of monitoring results for the previous twelve months. 2) Spills or other unusual events. 3) Changes in the environment resulting from mining activity. 4) Summary of completed, in progress activities or studies relevant to the permitted discharges, associated authorized works and the receiving environment relevant to the reporting period. 5) Projected activities for the coming year which may have an impact on the environment. The format and content of the annual report is subject to the approval of the Environmental Technical Review Committee and the Director. |

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| Details/Findings: | Q2 2018 Quarterly Report (July 1st, 2018 through September 31st, 2018) was submitted on November 02, 2018.<br>Q3 2018 Quarterly Report (October 1st, 2018 through December 31st, 2018) was submitted on February 01, 2019.<br>Q4 2018 Quarterly Report (January 1st to March 31st 2019) was submitted on May 01, 2019.<br>Q1 2019 Quarterly Report (April 1st to June 30th 2019) was submitted on July 31, 2019 including only raw data due to the mine abandoned. A supplemental Q1 2019 Report was submitted again on August 24, 2019.<br><br>The Quinsam 2018/2019 Annual Report (April 1, 2018 - March 31, 2019) was submitted on September 11, 2019. This annual review and interpretative report contained all the information required by this section; however, was submitted after the required deadline due to staff lay-off's and mine bankruptcy. |
| Compliance: | Out |
| Requirement Description: | **4. MONITORING AND REPORTING REQUIREMENTS, 4.5 Reporting**<br><br>4.5.1 Through the duration of mining in 7-South Area 5, quarterly and annual reports shall include a summary of:<br><br>i. Quality and quantity of water pumped from the 7-South Area 5 development with potential to reach Settling Pond 4.<br>ii. Comparison of actual water quality and quantity pumped from 7-South Area 5 development to values predicted in Lorax Environmental's June 5, 2013 report titled, "7 South Area 5 Water Quality Effects Assessment".<br>iii. Comparison of water quality pumped from the 7-South Area 5 development to water quality at Settling Pond 4 and Middle Quinsam Lake, including a comparison of data trends, Settling Pond 4 permit limits and Middle Quinsam Lake water quality guidelines and/or objectives.<br>iv. Contingency measures planned for the 7-South Area 5 development for the next quarter to address issues identified in the report for permit sections 4.5.1(i) through (iii). |
| Details/Findings: | Ms. Russell confirmed with Officer Stewart that mining in 7-South Area 5 ceased in May, 2019 due to the bankruptcy of the mine.<br>The 2018/2019 Annual Report and 2019 Q1 quarterly report included the information required for the 7-South Area 5 mining activity as required by this section. |
| Compliance: | In |

The Ministry of Environment Compliance and Enforcement Policy and Procedure (C&E Policy) prescribes common requirements and procedures for all Ministry staff to ensure consistent and riskbased assessment and response to non compliance. The C&E Policy achieves consistent compliance determinations through the use of the Non-Compliance Decision Matrix. The Non-Compliance Decision Matrix is used to determine the appropriate compliance determination is selected for each inspection, based on several factors including the nature of the non-compliances identified during the inspection, the actual or potential risks to the environment, human health or safety, the compliance history, and the capacity/willingness to comply.
Using the Non-Compliance Decision Matrix, the compliance determination for this inspection has been assessed as a Level 1, Category B.
Compliance History: 2018-11-05 -IR106411 - Advisory

More information about Environmental Compliance, the Non-Compliance Decision Matrix, and reporting and data submission requirements can be found at the links below:
General compliance information: www.gov.bc.ca/environmentalcompliance
Non-Compliance Decision Matrix information: www.gov.bc.ca/environment/how-compliance-is-assessed
Reporting and data submission requirements (to be sent to EnvAuthorizationsReporting@gov.bc.ca):
www.gov.bc.ca/submit-waste-authorization-reports

Please be advised that this inspection report may be published on the provincial government website within 7 days.

Below are attachments related to this inspection.

If you have any questions about this letter, please contact the undersigned.

Yours truly,

Darren Stewart
Environmental Protection Officer

cc: Gordon Brown, Bowra Group
Tania Demchuk, MEMPR
Mark Love, ENV

**Attachments:**
1) 2015 06 23 Tables PE 7008 - Section 4.1.1, 4.1.2, 4.1.3, 4.1.4.pdf Discharge Monitoring Requirements Sections 4.1.1, 4.1.2, 4.1.3, 4.1.4
2) 2015 06 23 Tables PE 7008 - Section 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6.pdf Receiving Environment Monitoring Requirements Sections 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5, 4.2.6
3) 2019-09-19 PE-7008 Photo Record Quinsam.pdf Photos
4) 2019-09-19 Ministry Sample Settling Pond #4 (WD) L2351088_COA.pdf WD Sample Results
5) 2019-09-19 Ministry Sample Settling Pond #1 (SPD) L2351087_COA.pdf SPD Sample Results
6) 2010-12-01 LLS Requirements.pdf 2010-12-01 Ministry Letter requiring the Long Lake Seep Treatment system

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**Ministry of Environment and Climate Change Strategy**
Compliance
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DISCLAIMER:
Please note that sections of the permit, regulation or code of practice referenced in this inspection record are for guidance and are not the official version. Please refer to the original permit, regulation or code of practice.

To see the most up to date version of the regulations and codes of practices please visit
http://www.bclaws.ca

If you require a copy of the original permit, please contact the inspector noted on this inspection record.

It is also important to note that this inspection record does not necessarily reflect each requirement or condition of the authorization therefore compliance is noted only for the requirements or conditions listed in the inspection record.

# 4. MONITORING AND REPORTING REQUIREMENTS

## 4.1 Effluent and In-Mine Releases

### 4.1.1 North Coal Mining and Coal Preparation Plant Operation

i) Decant – WD (EMS # E207409)

| Parameters | No Decant Flow | Decant Flow <0.054 $m^3/s$ | Decant Flow >0.054 $m^3/s$ |
|---|---|---|---|
| Flow | continuous | continuous | continuous |
| Total Suspended Solids (TSS) (24 Hour Composite Sample, See 4.3.1) | monthly | weekly | daily |
| Hardness, metals (t) and (d) | every 2 months | every 2 months | every 2 months |
| Conductivity, pH | weekly | weekly | weekly |
| Alkalinity and acidity | monthly | monthly | monthly |
| Sulphate (d) | monthly | weekly | weekly |
| Oil and grease | every 2 months | every 2 months | every 2 months |
| Ammonia (t), nitrate/nitrite, phosphorus (t) | - | every 3 years (conducted during low flow period (August to early September) | |
| Rainbow Trout Bioassay (Oncorhynchus mykiss) | - | 1 time/year (conducted during fall first flush event) | |

ii) Culvert, at Middle Quinsam Lake Road – WC (EMS # E207411)

| Parameters | No Decant Flow | WD Decant Flow <0.054 $m^3/s$ | WD Decant Flow >0.054 $m^3/s$ |
|---|---|---|---|
| TSS | monthly (when culvert flowing) | monthly (when culvert flowing) | every 2 weeks (when culvert flowing) |
| Conductivity, pH | weekly | weekly | weekly |
| Hardness, metals (t) and (d) | - | every 2 months | every 2 months |
| Sulphate (d) | monthly | monthly | monthly |

iii) 2-North Portal Sump Effluent – 2N-P-Sump (EMS # E283433)

| Parameters | No Decant Flow | WD Decant Flow <0.054 $m^3/s$ | WD Decant Flow >0.054 $m^3/s$ |
|---|---|---|---|
| Conductivity, pH | weekly | weekly | weekly |
| Alkalinity and acidity | - | monthly | monthly |
| Hardness, metals (t) and (d), sulphate, (d) | monthly | monthly | monthly |

iv) Additional Sites Monitoring Schedule

| Parameters | 2-North Pit Sump CCR Cover (WP) | South Dyke Sump (SDS) |
|---|---|---|
| EMS # | E207412 | E292126 |
| TSS | monthly | - |
| Conductivity, pH | weekly | weekly |
| Alkalinity and acidity | monthly | quarterly |
| Hardness, metals (t) and (d) | monthly | quarterly |
| Sulphate (d) | monthly | quarterly |

Date issued: December 23, 1987
Date amended: June 23, 2015
(most recent)

Luc Lachance, P.Eng.
for Director, *Environmental Management Act*
Permit Number: 7008

### 4.1.2 South Coal Mining Operation

i) Decant – SPD (EMS # E218582)

| Parameters | No Decant Flow | Decant SPC Flow <0.046 $m^3/s$ | Decant SPC Flow >0.046 $m^3/s$ |
|---|---|---|---|
| Flow | continuous | continuous | continuous |
| TSS (24 Hour Composite Sample, See 4.3.1) | monthly | weekly | daily |
| Conductivity, pH | weekly | weekly | weekly |
| Hardness, metals (t) and (d), alkalinity and acidity, oil and grease | every 2 months | every 2 months | every 2 months |
| Sulphate (d) | monthly | weekly | weekly |
| Ammonia (t), nitrate/nitrite, phosphorus (t) | - | every 3 years (conducted during low flow period (August to early September) | |
| Rainbow Trout Bioassay (Oncorhynchus mykiss) | - | 1 time/year (conducted during fall first flush event) | |

ii) Culvert, Downstream End at Access Road – SPC (EMS #E217014)

| Parameters | No Decant Flow | SPD Decant Flow <0.046 $m^3/s$ | SPD Decant Flow >0.046 $m^3/s$ |
|---|---|---|---|
| TSS | monthly (when culvert flowing) | monthly (when culvert flowing) | every 2 weeks (when culvert flowing) |
| Hardness, metals (t) and (d) | every 2 months | every 2 months | every 2 months |
| Conductivity, pH | weekly | weekly | weekly |
| Alkalinity and acidity, sulphate (d) | monthly | monthly | monthly |

Date issued: December 23, 1987
Date amended: June 23, 2015
(most recent)

Luc Lachance, P.Eng.
for Director, *Environmental Management Act*
Permit Number: 7008

iii) South Pit Main Sump Water – 3S (EMS # E217015)

| Parameters | No Decant Flow | SPD Decant Flow $<0.046\ m^3/s$ | SPD Decant Flow $>0.046\ m^3/s$ |
|---|---|---|---|
| Hardness, metals (t) and (d) | every 2 months | every 2 months | every 2 months |
| Conductivity, pH | weekly | weekly | weekly |
| Alkalinity and acidity, sulphate (d) | monthly | monthly | monthly |

iv) Additional Monitoring Sites Schedule (2S, 3S77, 4S-Lo)

| Parameters | 2 South Pit In Pit Water Cover (2S) | 1977 Bulk Sample Pit (3S77) | Culvert Downstream of 4 South Access Road (4S-Lo) |
|---|---|---|---|
| EMS # | E292127 | E292128 | E292129 |
| Flow | Continuous (inflow and outflow) | - | - |
| TSS | - | - | - |
| Conductivity, pH | weekly | weekly | weekly |
| Alkalinity and acidity | monthly | quarterly | monthly |
| Hardness, metals (t) and (d), sulphate (d) | monthly | quarterly | monthly (when flowing) |

### 4.1.3 Block 242 Coal Mining Operation

i) Decant (EMS # E225796)

| Parameters | No Decant Flow | Decant Flow |
|---|---|---|
| TSS (24 Hour Composite Sample, See 4.3.1), | monthly | weekly |
| Alkalinity and acidity, hardness, metals (t) and (d), Oil and Grease | every 2 months | monthly |
| Sulphate (d), pH, conductivity | monthly | monthly |
| Ammonia (t), nitrate/nitrite, phosphorus (t) | - | every 3 years (conducted during low flow period (August to early September) |
| Rainbow Trout Bioassay (Oncorhynchus mykiss) | - | 1 time/year (conducted during fall first flush event) |

ii) Underground Settling Pond Effluent (EMS # E225797)

| Parameters | No Decant Flow | Decant Flow |
|---|---|---|
| pH | monthly | weekly |
| Alkalinity and acidity, metals (t) and (d), sulphate (d) | monthly | monthly |
| Ammonia (t), nitrate/nitrite, phosphorus (t) | every 2 months | every 2 months |

### 4.1.4 7 South Mining Operation

i) Decant – 7SSD (EMS # E292069)

| Parameters | No Decant Flow | Decant Flow |
|---|---|---|
| Flow | Continuous | Continuous |
| TSS | monthly – from the ponded water | daily |
| Hardness, metals (t) and (d) | monthly – from the ponded water | weekly |
| pH, conductivity, alkalinity and acidity, sulphate (d), organic carbon (d) | monthly – from the ponded water | weekly |
| Ammonia (t), nitrate/nitrite, phosphorus (t) | - | every 3 years (conducted during low flow period (August to early September) |
| Rainbow Trout Bioassay (Oncorhynchus mykiss) | - | 2 time/year (conducted during fall first flush event and in the spring freshet) |

ii) 7 South Adit Sump – 7S-Sump (EMS # E292110)

| Parameters | 7 South Adit Sump (7S-Sump) |
|---|---|
| TSS | daily when pumping to 7S Settling Pond |
| Conductivity, pH, alkalinity and acidity | weekly when pumping to 7S Settling Pond |
| Hardness, metals (t) and (d) | weekly when pumping to 7S Settling Pond |
| Sulphate (d) | weekly when pumping to 7S Settling Pond |

Legend:

(t) = total
(d) = dissolved

**Note 1:** For monitoring tied to decant flow, the decant flow referenced at the column heading must

be established for a minimum of 15 minutes before the corresponding monitoring regime is required. All samples are grab samples unless specified otherwise within the matrices.

**Note 2:** When the flows referenced at the column heading are established according to Note 1 the corresponding monitoring regime will be required, as specified in the matrices, and be continued for at least one specified period following the recession of the flow below the tabled level.

**Note 3:** Decant samples required under Subsections 4.1.1 i), 4.2.1 i), 4.3.1 i) and Subsection 4.4.1 i) during periods of no decant flow shall be taken at a point in each settling pond adjacent to the decant.

## 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements

### 4.2.1 Initial Dilution Zone Monitoring Sites

i) Long Lake Entrance – LLE

| Parameters | Long Lake Entrance (LLE) |
|---|---|
| EMS # | E292130 |
| Flow | weekly |
| TSS | monthly |
| Conductivity, pH, alkalinity and acidity | monthly |
| Hardness, metals (t) and (d) | monthly |
| Ammonia (t), nitrate/nitrite, phosphorus (t) | monthly |
| Sulphate (d) | weekly |

be established for a minimum of 15 minutes before the corresponding monitoring regime is required. All samples are grab samples unless specified otherwise within the matrices.

**Note 2:** When the flows referenced at the column heading are established according to Note 1 the corresponding monitoring regime will be required, as specified in the matrices, and be continued for at least one specified period following the recession of the flow below the tabled level.

**Note 3:** Decant samples required under Subsections 4.1.1 i), 4.2.1 i), 4.3.1 i) and Subsection 4.4.1 i) during periods of no decant flow shall be taken at a point in each settling pond adjacent to the decant.

## 4.2 Receiving Environment Monitoring Sites and Monitoring Requirements

### 4.2.1 Initial Dilution Zone Monitoring Sites

i) Long Lake Entrance – LLE

| Parameters | Long Lake Entrance (LLE) |
|---|---|
| EMS # | E292130 |
| Flow | weekly |
| TSS | monthly |
| Conductivity, pH, alkalinity and acidity | monthly |
| Hardness, metals (t) and (d) | monthly |
| Ammonia (t), nitrate/nitrite, phosphorus (t) | monthly |
| Sulphate (d) | weekly |

ii) Road Crossing bridge on Stream 1 above the Lower Wetland – 7S (EMS # E292109)*

| Parameters | No Decant Flow | Decant Flow |
|---|---|---|
| Flow | Continuous | Continuous |
| TSS | monthly – when there is flow at surface | weekly – when there is flow at surface |
| Hardness, metals (t) and (d) | monthly – when there is flow at surface | weekly – when there is flow at surface |
| Conductivity, pH | monthly | weekly |
| Alkalinity and acidity, sulphate (d), organic carbon (d) | monthly | monthly |
| 7 day *Ceriodaphnia dubia* chronic toxicity test | - | 2 time/year (conducted during fall first flush event and in the spring freshet) |

*Sampling at 7SSD and 7S is to be conducted concurrently to allow for data interpretation and mass balance calculations.

**4.2.2 Seep Monitoring Sites**

i) Long Lake Seeps (LLS)

| Parameters | Long Lake Seep (LLS) |
|---|---|
| EMS # | E292131 |
| Flow | weekly |
| TSS | monthly |
| Conductivity, pH, alkalinity and acidity | monthly |
| Hardness, metals (t) and (d) | monthly |
| Sulphate (d) | monthly |

### 4.2.3 Receiving Water (Streams and Lakes) Monitoring Sites

| Streams | Lakes |
|---|---|
| **North Mining Operation** | |
| Quinsam River at Argonaut Road (WA)<br>(EMS # 0126402)<br>Outflow from Middle Quinsam Lake (WB)<br>(EMS # 0900504) | Middle Quinsam Lake Centre (EMS # E206618) |
| **South Mining Operation** | |
| Long Lake Outlet (LLO)<br>(EMS # E219412)<br>No Name Lake Outlet (NNO)<br>(EMS # E217017) | Long Lake at Centre (LLM)<br>(EMS # E206619)<br>No Name Lake (NNL)<br>(EMS # E217018) |
| **Block 242 Mining Operation** | |
| Iron River upstream of 242 influence (EMS #E225798)<br>Iron River downstream of 242 influence<br>(EMS # E225808) | Lower Quinsam Lake (LQL)<br>(EMS # E292118) |
| **7-South Mining Operation (Areas 1 to 4)** | |
| Quinsam River upstream of 7 South Mining Operation (QRDS1) (EMS # E286930)<br>Quinsam River downstream of 7 South Mining Operation (7SQR) (EMS # E292113)<br>Lower Wetland Outlet at the confluence of Quinsam River (LWO) (EMS # E292112) | Lower Quinsam Lake (LQL)<br>(EMS # E292118) |
| **7-South Area 5 Mining Operation** | |
| Iron River upstream of mining operations (IR1)<br>(EMS #E297230)<br>Iron River upstream of 7SA5 (IR6)<br>(EMS # E297231)<br>Iron River downstream of 7SA5 and 242 inputs (IR8)<br>(EMS # E297232)<br>Quinsam River downstream of confluence with Iron River (IRQR) (EMS # E299256) | Lower Quinsam Lake (LQL)<br>(EMS # E292118) |

### 4.2.4 Sediment and Benthic Monitoring Sites

| Lake and Wetland Monitoring Sites | |
|---|---|
| No Name Lake (NNL) | No Name Lake Inlet, NNLI (EMS # E224246)<br>No Name Lake Deep, NNLD (EMS # E217018)<br>No Name Lake Near Seep (EMS # E292114)<br>No Name Lake Outlet (EMS # E217017) |
| Middle Quinsam Lake (MQL) | Middle Quinsam Lake Inlet (EMS # E206901)<br>Middle Quinsam Lake Deep (EMS # E292115)<br>Middle Quinsam Lake Near Seep (EMS # E292116)<br>Middle Quinsam Lake Outlet (EMS # 0900504) |
| Lower Quinsam Lake (LQL) | Lower Quinsam Lake Inlet (EMS # E292117)<br>Lower Quinsam Lake Deep 1 (EMS # E29118)<br>Lower Quinsam Lake Deep 2 (EMS # E292119)<br>Lower Quinsam Lake Outlet (EMS # E292120) |
| Long Lake (LL) | Long Lake Inlet (EMS # E292121)<br>Long Lake Deep (EMS # E292122)<br>Long Lake Near Seep (EMS # E292123)<br>Long Lake Outlet (EMS # E219412) |
| Gooseneck Lake (GNL) | Middle Gooseneck Lake (EMS # 1132502) |
| Lower Wetland | Lower Wetland Inlet (EMS # E292124)<br>Lower Wetland Middle (EMS # E292125)<br>Lower Wetland Outlet (EMS # E292112) |
| **Stream Monitoring Sites** | |
| Quinsam River at Argonaut Road (WA) | (EMS # 0126402) |
| Quinsam River upstream of 7 South Mining Operation (QRDS1) | (EMS # E286930) |
| Quinsam River downstream of 7 South Mining Operation (7SQR) | (EMS # E292113) |

i) The permittee shall submit proposed sediment monitoring locations in the 7-South Area 5 receiving environment to the Director by October 1, 2014 for approval.

ii) Near seep sediment monitoring applicable to No Name Lake and Middle Quinsam Lake seeps sites consist of a set of three samples equally spaced on a 5 m triangular grid. Long Lake near seep sediment monitoring sites consist of a set of six samples equally spaced on a 5 m triangular grid.

### 4.2.5 Stream Monitoring Requirements

i) General Requirements Applicable to All Sites Defined Under Section 4.2.3

| Parameters | Schedule |
|---|---|
| Flow, total suspended solids (TSS), hardness, total and dissolved metals, conductivity, pH, alkalinity and acidity, sulphate (d) | 5 in 30 (3 times/year)* |
| Ammonia (t), nitrate/nitrite, phosphorus (t) | every 3 years (conducted during low flow period (August to early September) |

Legend:
(t) = total
(d) = dissolved
*5 in 30 refers to 5 weekly samples collected within a 30 day period

ii) Long Lake Outlet sampling requirement for dissolved sulphate is weekly until Long Lake Seep Treatment plant is authorized.

iii) Quinsam River upstream of 7 South Mining Operation (QRDS1) sampling requirements for sulphate (d) is weekly for a period approved by the Director following commissioning of the 7-South mining operation discharge.

iv) Flow is only required at WB, LLO, WA and IR8.

v) Iron River monitoring shall include monthly sampling to supplement the 5 in 30 sampling. The Director may allow cessation of monthly sampling (retaining 5 in 30 sampling), if the permittee can identify the yearly periods of worst-case water quality to the satisfaction of the Director. The earliest that monthly sampling shall be considered for cessation is 2016.

### 4.2.6 Lake Monitoring Requirements

i) General Requirements Applicable to All Sites Defined Under Section 4.2.3

| Parameters | Annual Schedule |
|---|---|
| (1)<br>Temperature, conductivity, pH, dissolved Oxygen (DO), saturation, oxidation reduction potential (ORP) | 5 in 30* (3 times/year, spring turnover, stratification period and fall turnover) |
| (2)<br>Turbidity | 5 in 30* (3 times/year, spring turnover, stratification period and fall turnover) |
| (2)<br>Phosphorus (t), alkalinity | One sampling event concurrent to a 5 in 30* event (3 times/year, spring turnover, stratification period and fall turnover) |
| (2)<br>Hardness, total and dissolved metals, sulphate (d) | 5 in 30* (3 times/year, spring turnover, stratification period and fall turnover) |
| **BIOLOGICAL MONITORING** | |
| (3)<br>chlorophyll "a"<br><br>(4)<br>Phytoplankton<br><br>(5)<br>Zooplankton | One sampling event concurrent to a 5 in 30* event (3 times/year, spring turnover, stratification period and fall turnover) |

Legend:

(t) = total
(d) = dissolved
*5 in 30 refers to 5 weekly samples collected within a 30 day period

(1) Profile at 1 metre intervals from surface to bottom
(2) Four depths: 1 metre, 4 metres, 9 metres, and 1 metre from bottom
(3) One depth: 1 metre below surface
(4) One depth: 1 metre below surface; analyzed for count and identification
(5) 10 metre vertical tow; analyzed for count and identification

ii) Lower Quinsam Lake monitoring shall be done according to Subsection 4.2.6 for a period approved by the Director following commissioning of the 7-

South mining operation discharge.

### 4.2.7 Sediment and Benthic Monitoring Requirements

i) General requirements applicable to all sites defined under section 4.2.4

| Parameters |
|---|
| **LAKE WATER CHEMISTRY PROFILE** |
| Temp, DO, specific conductivity, pH, ORP |
| **WATER CHEMISTRY** |
| Hardness, turbidity, sulphate (d), metals (t) and (d), polycyclic aromatic hydrocarbons<br><br>Mid lake sites – grab samples at two depths: near bottom and surface of lake for all sites except for deep sites where an additional sample will be collected at 5 m below surface<br><br>Stream sites, wetlands and lake inlet/outlets – grab samples just below surface |
| **SEDIMENT CHEMISTRY** |
| moisture, pH, particle size, total organic carbon (TOC), total metals, polycyclic aromatic hydrocarbons |
| **BIOLOGICAL MONITORING** |
| Benthic invertebrates at all stream monitoring sites listed in subsection 4.2.4, as per Canadian Aquatic Biomonitoring Network (CABIN) methodology |
| Benthic community taxonomy and count for all lake and wetland monitoring sites listed in subsection 4.2.4 |

ii) The monitoring program described in 4.2.7 may be conducted over two consecutive years, with upper and lower watershed sites sampled in respective years. Under this program, monitoring site WB (EMS # 0900504) shall serve as the lowest site in the upper watershed.

iii) Sediment and benthic monitoring cycles are required every 3 to 5 years. The first assessment will be completed in 2015-2016. Following the first monitoring cycle, the sediment and biological monitoring program will be revised based on the outcomes of previous years' assessments. The permittee will submit the results of the sediment and biological monitoring program along with recommendations for the subsequent monitoring cycle by an appropriately qualified professional. Recommendations will be reviewed and approved and/or modified by the director.

| | |
|---|---|
| Authorization: 7008 | Client Name: Quinsam Coal Corporation |
| NRIS IR #: 139588 | Site Inspection Date: September 19, 2009 |

| | |
|---|---|
| Photo 1<br><br>Decant riser of Settling Pond #4 (WD).<br><br>E207409 | |
| Photo 2<br><br>Settling Pond #1 (SPD).<br>E218582. | |

| | |
|---|---|
| Authorization: 7008 | Client Name: Quinsam Coal Corporation |
| NRIS IR #: 139588 | Site Inspection Date: September 19, 2009 |

| | |
|---|---|
| Photo 3<br><br>Coal pad.<br><br>Coal storage on left.<br><br>Exposed PAG pile on right, | |
| Photo 4.<br><br>PAG pile. | |

| | |
|---|---|
| Authorization: 7008 | Client Name: Quinsam Coal Corporation |
| NRIS IR #: 139588 | Site Inspection Date: September 19, 2009 |

| | |
|---|---|
| Photo 5 | |
| Photo 6 | |

| | |
|---|---|
| Authorization: 7008 | Client Name: Quinsam Coal Corporation |
| NRIS IR #: 139588 | Site Inspection Date: September 19, 2009 |

| | |
|---|---|
| Photo 7<br><br>Run off from the PAG stockpile on the coal pad | |
| Photo 8<br><br>Beaver caused turbidity and dam building activity at the Long Lake Entrance (LLE) E292130 | |

BC MINISTRY OF ENVIRONMENT - Compliance - Surrey
ATTN: Darren Stewart
200-10470 152 Street
Surrey BC V3R 0Y3

Date Received: 20-SEP-19
Report Date: 02-OCT-19 18:34 (MT)
Version: FINAL

Client Phone: 604-582-5216

# Certificate of Analysis

## Lab Work Order #: L2351088

Project P.O. #: 50245314
Job Reference: QUINSAM SETTLING POND DISCH. (PE-07008)
C of C Numbers:
Legal Site Desc:

Other Information: Client: CL
EMS ID: E207409
Project: N/A

Dean Watt, B.Sc.
Account Manager

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Sample ID** | L2351088-1 | | | | |
| | **Description** | Water | | | | |
| | **Sampled Date** | 19-SEP-19 | | | | |
| | **Sampled Time** | 12:29 | | | | |
| | **Client ID** | E207409_REG | | | | |
| **Grouping** | **Analyte** | | | | | |
| **WATER** | | | | | | |
| **Physical Tests** | Hardness (as CaCO3) (mg/L) | 342 | | | | |
| | pH (pH) | 8.17 | | | | |
| | Fixed Suspended Solids (mg/L) | <4.0 | | | | |
| **Anions and Nutrients** | Ammonia, Total (as N) (mg/L) | 0.0175 | | | | |
| | Phosphorus (P)-Total Dissolved (mg/L) | <0.0020 | | | | |
| **Dissolved Metals** | Dissolved Metals Filtration Location | FIELD | | | | |
| | Aluminum (Al)-Dissolved (mg/L) | 0.0015 | | | | |
| | Antimony (Sb)-Dissolved (mg/L) | <0.00010 | | | | |
| | Arsenic (As)-Dissolved (mg/L) | 0.00189 | | | | |
| | Barium (Ba)-Dissolved (mg/L) | 0.0246 | | | | |
| | Beryllium (Be)-Dissolved (mg/L) | <0.00010 | | | | |
| | Bismuth (Bi)-Dissolved (mg/L) | <0.000050 | | | | |
| | Boron (B)-Dissolved (mg/L) | 0.894 | | | | |
| | Cadmium (Cd)-Dissolved (mg/L) | <0.0000050 | | | | |
| | Calcium (Ca)-Dissolved (mg/L) | 114 | | | | |
| | Chromium (Cr)-Dissolved (mg/L) | <0.00010 | | | | |
| | Cobalt (Co)-Dissolved (mg/L) | <0.00010 | | | | |
| | Copper (Cu)-Dissolved (mg/L) | 0.00033 | | | | |
| | Iron (Fe)-Dissolved (mg/L) | 0.0114 | | | | |
| | Lead (Pb)-Dissolved (mg/L) | <0.000050 | | | | |
| | Magnesium (Mg)-Dissolved (mg/L) | 13.8 | | | | |
| | Manganese (Mn)-Dissolved (mg/L) | 0.0291 | | | | |
| | Molybdenum (Mo)-Dissolved (mg/L) | 0.000467 | | | | |
| | Nickel (Ni)-Dissolved (mg/L) | 0.00072 | | | | |
| | Phosphorus (P)-Dissolved (mg/L) | <0.010 | | | | |
| | Potassium (K)-Dissolved (mg/L) | 4.20 | | | | |
| | Selenium (Se)-Dissolved (mg/L) | 0.000109 | | | | |
| | Silicon (Si)-Dissolved (mg/L) | 3.40 | | | | |
| | Silver (Ag)-Dissolved (mg/L) | <0.000010 | | | | |
| | Sodium (Na)-Dissolved (mg/L) | 329 | | | | |
| | Strontium (Sr)-Dissolved (mg/L) | 1.02 | | | | |
| | Sulfur (S)-Dissolved (mg/L) | 142 | | | | |
| | Thallium (Tl)-Dissolved (mg/L) | <0.000010 | | | | |
| | Tin (Sn)-Dissolved (mg/L) | <0.00010 | | | | |
| | Titanium (Ti)-Dissolved (mg/L) | <0.00030 | | | | |
| | Uranium (U)-Dissolved (mg/L) | 0.000063 | | | | |
| | Vanadium (V)-Dissolved (mg/L) | <0.00050 | | | | |

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Sample ID** | L2351088-1 | | | | |
| | **Description** | Water | | | | |
| | **Sampled Date** | 19-SEP-19 | | | | |
| | **Sampled Time** | 12:29 | | | | |
| | **Client ID** | E207409_REG | | | | |
| **Grouping** | **Analyte** | | | | | |
| **WATER** | | | | | | |
| **Dissolved Metals** | Zinc (Zn)-Dissolved (mg/L) | <0.0010 | | | | |
| **Aggregate Organics** | Mineral Oil & Grease (mg/L) | <5.0 | | | | |

BC MINISTRY OF ENVIRONMENT - Compliance - Surrey
ATTN: Darren Stewart
200-10470 152 Street
Surrey BC V3R 0Y3

Date Received: 20-SEP-19
Report Date: 01-OCT-19 18:03 (MT)
Version: FINAL

Client Phone: 604-582-5216

# Certificate of Analysis

## Lab Work Order #: L2351087

Project P.O. #: 50245315
Job Reference: SETTLING POND 1 DECANT.QUINSAM COAL (PE-07008)
C of C Numbers:
Legal Site Desc:

Other Information: Client: CL
EMS ID: E218582
Project: N/A

Dean Watt, B.Sc.
Account Manager

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Sample ID** | L2351087-1 | | | | |
| | **Description** | Water | | | | |
| | **Sampled Date** | 19-SEP-19 | | | | |
| | **Sampled Time** | 13:15 | | | | |
| | **Client ID** | E218582_REG | | | | |
| **Grouping** | **Analyte** | | | | | |
| **WATER** | | | | | | |
| **Physical Tests** | Hardness (as CaCO3) (mg/L) | 399 | | | | |
| | pH (pH) | 7.94 | | | | |
| | Fixed Suspended Solids (mg/L) | <4.0 | | | | |
| **Anions and Nutrients** | Ammonia, Total (as N) (mg/L) | 0.0098 | | | | |
| | Phosphorus (P)-Total Dissolved (mg/L) | 0.0030 | | | | |
| **Dissolved Metals** | Dissolved Metals Filtration Location | FIELD | | | | |
| | Aluminum (Al)-Dissolved (mg/L) | 0.0019 | | | | |
| | Antimony (Sb)-Dissolved (mg/L) | <0.00010 | | | | |
| | Arsenic (As)-Dissolved (mg/L) | 0.00101 | | | | |
| | Barium (Ba)-Dissolved (mg/L) | 0.0237 | | | | |
| | Beryllium (Be)-Dissolved (mg/L) | <0.00010 | | | | |
| | Bismuth (Bi)-Dissolved (mg/L) | <0.000050 | | | | |
| | Boron (B)-Dissolved (mg/L) | 0.253 | | | | |
| | Cadmium (Cd)-Dissolved (mg/L) | <0.0000050 | | | | |
| | Calcium (Ca)-Dissolved (mg/L) | 127 | | | | |
| | Chromium (Cr)-Dissolved (mg/L) | <0.00010 | | | | |
| | Cobalt (Co)-Dissolved (mg/L) | 0.00016 | | | | |
| | Copper (Cu)-Dissolved (mg/L) | <0.00020 | | | | |
| | Iron (Fe)-Dissolved (mg/L) | 0.127 | | | | |
| | Lead (Pb)-Dissolved (mg/L) | <0.000050 | | | | |
| | Magnesium (Mg)-Dissolved (mg/L) | 20.0 | | | | |
| | Manganese (Mn)-Dissolved (mg/L) | 0.0567 | | | | |
| | Molybdenum (Mo)-Dissolved (mg/L) | 0.000157 | | | | |
| | Nickel (Ni)-Dissolved (mg/L) | 0.00100 | | | | |
| | Phosphorus (P)-Dissolved (mg/L) | <0.010 | | | | |
| | Potassium (K)-Dissolved (mg/L) | 1.94 | | | | |
| | Selenium (Se)-Dissolved (mg/L) | 0.000129 | | | | |
| | Silicon (Si)-Dissolved (mg/L) | 2.71 | | | | |
| | Silver (Ag)-Dissolved (mg/L) | <0.000010 | | | | |
| | Sodium (Na)-Dissolved (mg/L) | 30.3 | | | | |
| | Strontium (Sr)-Dissolved (mg/L) | 0.874 | | | | |
| | Sulfur (S)-Dissolved (mg/L) | 112 | | | | |
| | Thallium (Tl)-Dissolved (mg/L) | <0.000010 | | | | |
| | Tin (Sn)-Dissolved (mg/L) | <0.00010 | | | | |
| | Titanium (Ti)-Dissolved (mg/L) | <0.00030 | | | | |
| | Uranium (U)-Dissolved (mg/L) | 0.000064 | | | | |
| | Vanadium (V)-Dissolved (mg/L) | <0.00050 | | | | |

# ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Sample ID** | L2351087-1 | | | | |
| | **Description** | Water | | | | |
| | **Sampled Date** | 19-SEP-19 | | | | |
| | **Sampled Time** | 13:15 | | | | |
| | **Client ID** | E218582_REG | | | | |
| **Grouping** | **Analyte** | | | | | |
| **WATER** | | | | | | |
| **Dissolved Metals** | Zinc (Zn)-Dissolved (mg/L) | <0.0010 | | | | |
| **Aggregate Organics** | Mineral Oil & Grease (mg/L) | <5.0 | | | | |

BRITISH COLUMBIA
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December 1, 2010

File: PE-07008

REGISTERED MAIL

Gary Gould
Vice President
Hillsborough Resources Ltd
950 – 1090 West Georgia St
Vancouver BC V6E 3V7

Dear Mr Gould

Re: Mitigation of the Long Lake Seep

The seep entering Long Lake in the vicinity of the 2S underground workings is known to be influenced by the water quality in the underground workings. This is primarily confirmed by elevated concentrations of iron and sulphate in the seep water. It is the understanding of the Ministry of Environment (MoE) based on conversations with staff from Hillsborough Resources and Quinsam Coal Corporation that there is a hydraulic connection between the 2S workings and the seep via faulting and unconsolidated material. As the seep includes mine-impacted water, MoE considers it to be mine effluent.

The discharge of mine effluent without treatment is prohibited under section 3.10 of permit PE-07008. All effluent from the south mine area must be routed through settling pond 1 and must meet the discharge standards listed in section 1.2.2 of the effluent discharge permit. At present, iron concentrations in the seep discharge exceed the permit limit.

Section 3.8 of the effluent discharge permit indicates that additional treatment works may be required based on the results of monitoring studies. At the November 4, 2010 ETRC meeting, Golder Associates (Golder) discussed the results of their recent Long Lake sediment study, in which lower benthic invertebrate biodiversity downstream of the seep was correlated with elevated sediment porewater sulphate levels. While the biodiversity was lower immediately downstream of the seep, a gradual increase in biodiversity with increasing distance was also documented within Long Lake. These results are expected to be published in a Golder report by the end of 2010.

.../2

**Ministry of Environment**
Coast Region
Environmental Protection Division
Mailing Address:
2080A Labieux Rd
Nanaimo BC V9T 6J9
Telephone: 250 751-3100
Facsimile: 250 751-3103
Website: www.gov.bc.ca/env

FILE COPY



As a result of the above, and in accordance with sections 3.8 and 3.10 of effluent discharge permit PE-07008, Quinsam Coal Corporation is hereby required to install and operate a mitigation system to collect and treat the flow of effluent currently entering Long Lake via the seep, such that iron levels are reduced below the permit limits for settling pond 1. The system must also treat the effluent to reduce sulphate levels, considering the findings of the recent Long Lake sediment quality study.

Please submit a mitigation plan for the Long Lake seep by January 31, 2011. The plan should include a description of how the seep flow will be collected and routed, the proposed treatment system(s) for reduction of iron and sulphate, a management plan for precipitate currently at the seep as well as that generated through treatment, and a timeline for completion of the proposed mitigation strategy.

Thank you for your attention to this matter. If you have any questions please contact the undersigned at 250 751-3254 or Andrea Miskelly at 250 751-3195.

Yours truly,

Hubert Bunce
for Director, *Environmental Management Act*
Coast Region

AM/jlk
\\Tarpon\S40133\EnvProtection_Share\General\SAVE\2010\December\QCC letter_mitigation of LLS.docx

cc: Steve Gardner, Director of Technical Services, Quinsam Coal Corporation
Kim Bellefontaine, Ministry of Natural Resource Operation (Mines)
Ed Taje, Ministry of Natural Resource Operation (Mines)

| Permit 7008 Environmental Technical Review Committee Action Item & Outcome Tracking Table - November 7, 2019 | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Items | Meeting Type (Agency, Stakeholder) | ETRC Member or Stakeholder Responsible | Type | Context | Description | Date of Advice | Target Completion Date | Description of Follow -up | Status |
| 1 | Agency | QCC | Meeting Formalities | An update to the terms of reference was completed in 2017. | Terms of reference will be included in future meeting invites. | November 23, 2017 | Annually | No update required | **Closed** |
| 2 | Agency | QCC | Report Formalities | Data site update and report format | New website where reports will be posted : http://www.quinsamcoalenvironmentalreports.com | November 23, 2017 | Annually | Annual Reports are available online from 2012 to present. | **Closed** |
| 3 | Agency | QCC | Report Formalities | Report Format<br>Discussion around making the electronic version of the report easier to navigate. | Future Annual Reports will have separated appendices. PDF version will include bookmarks and thumbnails. | November 23, 2017 | Annually | All requests were completed in 2018-2019. | **Closed** |
| 4 | Agency | QCC | Report Formalities | Report distribution to Agencies & Library | Future hard copies and electronic copies of the Annual Report will be sent to City of Campbell River (CoCR) and EMPR. Electronic versions will be submitted to ENV. Once reviewed by CoCR, QCC will deliver the Annual Report hard copy to the Vancouver Island Regional library. | November 23, 2017 | **Not completed** | Hard copy of 2018-19 Annual Report was not produced due to bankruptcy. Is a hardcopy of the QCC 2018 annual report needed or are the digital/on-line versions sufficiently accessible by everyone. | **On-going** |
| 5 | Agency | QCC | Report Formalities | Public Notice<br>The public notice will be posted in the Campbell River Mirror. | Tear sheet from newspaper will be sent to ENV. | November 23, 2017 | Annually | Content and format reviewed at the both Agency and Stakeholder meetings. | **On-going** |
| 6 | Agency | QCC | Tracking Table Formalities | Tracking Table Updates<br>Discussion around items that did not get closed from the 2018 tracking table. | Each year, include on-going action items from previous year for follow-up. Tracking table will be updated in Annual report and finalized at that year's ETRC meeting. | November 23, 2017 | November 7, 2019 | On-going issues were discussed and some items closed. | **On-going** |
| 7 | Agency | QCC | On-going action items | Baseline monitoring on the Iron River | Iron River baseline sediment & benthic monitoring was not completed in 2019. Baseline sediment & benthic sampling was postponed due to bankruptcy. | November 23, 2017 | Unknown | Postponed until further notice | **On-going** |
| 8 | Agency | QCC | Outcome | Highlights from the Annual Report | Present an overview of the 2018 monitoring report, including the long lake seep (e.g. observations on seepage rates from the 2018 monitoring season). | November 7, 2019 | November 22, 2019 | Present information at Stakeholder meeting | **On-going** |
| 9 | Agency | QCC | Outcome | Highlights from the Annual Report | Present an overview of the current discharges to the environment. | November 7, 2019 | November 22, 2019 | Present information at Stakeholder meeting | **On-going** |
| 10 | Agency | EMPR / ENV / QCC | Outcome | Status of Mine | ENV to explain the current status of the mine following bankruptcy and what the plan is going forward with respect to MA/EMA permits and compliance and short/long term goals for the site. | November 7, 2019 | November 22, 2019 | Present in formation at Stakeholder Meeting | **On-going** |
| 11 | Agency | EMPR | Outcome | Inspection Reports | Present the environmental/geoscience inspection completed in July 2019 and the resulting orders and the implications of those orders for QCC. | November 7, 2019 | November 22, 2019 | Present in formation at Stakeholder Meeting | **On-going** |
| 12 | Agency | ENV | Outcome | Iron River Borehole | Discuss the iron river borehole, with Nicole presenting the data comparison of upstream to downstream water quality and the tox. thresholds with respect to the fish species of concern noted by CREC. | November 7, 2019 | November 22, 2019 | Present in formation at Stakeholder Meeting | **On-going** |

# Public Notice

**Quinsam Coal – Environmental Management Act Reporting**

In accordance with the provisions of Effluent Permit PE-7008 which authorizes the discharge of effluent from the Quinsam Coal mining operation and coal preparation plant, Quinsam Coal has submitted its Annual Water Quality Monitoring Report (AWQMR) covering the period from April 1, 2018 to March 31, 2019. An Environmental Technical Review Committee (ETRC) meeting is held annually in November with government and stakeholder groups for the purpose of reviewing the report findings. For further information about this meeting or if you wish to be included on the e-mailing list please contact Ministry of Environment and Climate Change Strategy (ENV) Arash Janfada at: ***Arash.Janfada@gov.bc.ca***

The AWQMR summarizes and reviews the water quality monitoring results at the approved discharge locations on the mine site and at various receiving environment sites: Middle Quinsam, Lower Quinsam, No-Name and Long Lakes and the Quinsam and Iron Rivers.

Public websites where reports are posted include the following:

Quinsam Coal's environmental reporting data site:

**http://www.quinsamcoalenvironmentalreports.com**

B.C. Mine Information website:

**https://mines.nrs.gov.bc.ca/p/quinsam/overview**

*Please note the BC mines website is not always current.*

| Permit 7008 Environmental Technical Review Committee Action Items & Outcome Tracking Table - November 22, 2019 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Items | Meeting Type (Agency, Stakeholder) | ETRC Member or Stakeholder Responsible | Type | Context | Description | Date of Advice | Target Completion Date | Description of Follow -up | Status |
| 1 | Stakeholder | Bowra | Outcome | Agenda Item 2a) Mine Operating Status: short and long term goals for the site (The Bowra Group Inc.) | Bowra Group Inc as the "Receiver" is currently overseeing the care and maintenance of the Quinsam mine site and<br>Middlepoint barge terminal pursuant to the Receivership Order.<br>The Receiver has retained qualified employees of Quinsam Coal Corporation who are responsible for the day to day duties under care and maintenance.<br>Additional activities of the Receiver include:<br>1. Completion of the sale of the existing coal inventory; and<br>2. Commence a sales process for assets of Quinsam Coal Corporation. Information concerning the Receivership is contained on the Receivers website for Quinsam Coal Corporation: https://www.bowragroup.com/quinsam-coal-corporation | November 22, 2019 | N/A | N/A | **N/A** |
| 2 | Stakeholder | QCC | Outcome | Agenda Item 2b, c & d) Review of the 2018 Monitoring Report | See attached QCC PowerPoint presentation. | November 22, 2019 | N/A | N/A | **N/A** |
| 3 | Stakeholder | ENV | Outcome | Agenda Item 2e) Iron River Borehole - water quality data assessment | See attached ENV PowerPoint presentation. Arsenic exceedances display the same peaks upstream (IR6) and downstream (IR8). Further monitoring is required on the Iron river to assess arsenic levels and remedial work performed.The data persented is also available on the website BC Water Data and Tools. For further info on arsenic, see this CCME Fact Sheet. | November 22, 2019 | November 22, 2020 | | **Ongoing** |
| 4 | Stakeholder | MEMPR | Outcome | Agenda Item 3 a) Environmental / geoscience inspection completed in July 2019 (MEMPR) | See attached MEMPR Geoscience PowerPoint presentation. | November 22, 2019 | November 22, 2020 | QCC is responsible for completing the orders requested from the inspection. | **Ongoing** |
| 5 | Stakeholder | ENV/QCC | Outcome | Agenda Item 3b) Compliance comments | See QCC PowerPoint Presentation. Compliance was mostly meet. Average annual discharge was above the permitted average. This is used for fee calculations. There were a few missed samples and/or parameters and one permit limit exceedance for TSS. | November 22, 2019 | N/A | QCC is responsible for compliance with the conditions of the permit. | **Ongoing** |

| Permit 7008 Environmental Technical Review Committee Action Items & Outcome Tracking Table - November 22, 2019 | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Items | Meeting Type (Agency, Stakeholder) | ETRC Member or Stakeholder Responsible | Type | Context | Description | Date of Advice | Target Completion Date | Description of Follow -up | Status |
| 6 | Stakeholder | QCC | Outcome | Agenda item 5a) Future administration/ enforcement of EMA permit 7008 (EMPR/ QCC/Bowra/ ENV) Permitting update - Brief explanation of the two ENV permit amendments<br>**Minor Amendment** | QCC reduced monitoring. Goal was to eliminate sites that have a robust historical data set and display stable trends or the results are captured downstream. Most relevant sites are maintained.<br>Minor amendment is more so administration not related to mining. Required Quinsam to present scientific rational, data compilation and established trends with statistics. Minor amendment submitted in October 2019. Accepted by ENV on Nov 1st, 2019. | November 22, 2019 | November 22, 2019 | Further amendments to the permit may be required. | **Closed** |
| 7 | Stakeholder | ENV | Action Item | Agenda item 5a)<br>**Minor Amendment** | ENV to send the permit amendment letter to CREC. | November 22, 2019 | December 31st, 2019 | ENV to send the permit amendment letter to CREC. | **Ongoing** |
| 8 | Stakeholder | QCC | Outcome | Agenda item 5a) Future Administration/ enforcement of EMA permit 7008 (EMPR/ QCC/Bowra/ ENV) Permitting update: **Major Amendment** | Requesting to change the location of discharge from the near the outlet of Long Lake to near the inlet of Long Lake by authorizing the discharge from 3 South pit into No Name Lake Connector stream (upstream of the inlet of Long Lake) and authorizing the LLS discharge into Long Lake. Significant amount of field work / data compilation required to fulfill the obligations outlined in the Information Requirements Table (IRT). LLS discharge is not acutely toxic. Beyond a certain distance it cannot be chronically toxic – confirmed through monitoring / ultimately, acutely toxic explanation will be presented in the permit amendment. This has been delayed due to the current status of the mine. Monitoring continues at all sites. | November 22, 2019 | N/A | Major permit amendment delayed until further notice. | **Ongoing** |
| 9 | Stakeholder | QCC | Outcome | Agenda Item 5b) Annual Report - digital or hardcopy formats | Annual reports will be submitted electronically with no hard copies produced and available upon request to non-members. Electronic copies are posted on both QCCwebsite: http://www.quinsamcoalenvironmentalreports.com and B.C. Mine information website. Please note the BC mine website is not current: https://mines.nrs.gov.bc.ca/p/quinsam/overview | November 22, 2019 | N/A | N/A | **Closed** |
| 10 | Stakeholder | QCC | Action Item | Agenda Item 5c) Public Notice | In order to bring more public awareness about the ETRC Stakeholder meeting the public notice will include ENV contact information referral to: Arash Janfada at Arash.Janfada@gov.bc.ca for interested public that would like to be included on the e-mailing list. The QCC and B.C. Mine Information website will be included in the public notice. | November 22, 2019 | December 31, 2019 | This will be published in the newspaper before the end of 2019. | **Ongoing** |
| 11 | Stakeholder | QCC | Action Item | Agenda Item 5d) CREC's Discussion Points | Closure Plan: QCC to send CREC the Closure Plan monitoring outline | November 22, 2019 | When complete | Currently completing document | **Ongoing** |
| 12 | Stakeholder | QCC | Action Item | Agenda Item 5d) CREC's Discussion Points | CREC would like QCC to continue sampling LLEZ2 – zone of dilution where LLE enters Long lake. | November 22, 2019 | Spring 2020 | QCC will continue to sample this location | **Closed** |

# Appendix VI

# 2019-2020 Annual Groundwater Monitoring Report

## Pertaining to the Mines Act Permit C-172 & Effluent Permit PE: 7008

**Submitted to: Ministry of Energy and Mines & Ministry of Environment and Climate Change Strategy**

**Prepared by:**
**Quinsam Coal Corporation**
**Kathleen Russell BSc. Environmental Coordinator**

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Appendix A: Borehole Development Logs

# 1 Introduction

Quinsam Coal Corporation, as part of the requirements under Mines Act Permit C-172 (administered by the Ministry of Energy and Mines) and Effluent Permit PE-7008 (administered by the Ministry of Environment), conducts a comprehensive groundwater monitoring program to characterize water quality associated with mining development. This edition covers a 12-month period and interprets the results from April 1, 2019 to March 31, 2020 to synchronize with the surface water monitoring report and relate to the effluent permit.

Prior to 2012, the groundwater monitoring program was executed by external consultants. In 2012, in an effort to reduce costs and improve the logistics of the program, Quinsam Coal internalized the groundwater monitoring program. Methodology of sampling followed the procedures developed in the Lorax Hydrogeological Assessment and the *British Columbia Field Sampling Manual for Continuous Monitoring and the Collection of Air, Air-Emissions, Water, Wastewater, Soil Sediment, and Biological Field Sampling 2013 Edition.* The groundwater program has been defined through work performed by Quinsam Coal and Lorax Environmental on the hydrogeology of the respective mining areas, which governs the sampling locations, methods and frequency with consideration of their relationship to mining.

As in previous reports, groundwater wells have been categorized as either ‘in-situ’ or ‘ex-situ’; the definition for each is as follows:

- In-situ: groundwater wells located within the mine workings (disturbance footprint) and therefore represent water accumulated within the mining void. In the absence of groundwater well samples, underground sump samples are used for comparison.
- Ex-situ: groundwater wells located outside the mine workings (disturbance footprint) which reflect water quality flowing from the mine void towards the receiving environment. This also includes baseline and background (up-gradient of workings) groundwater wells.

The groundwater wells outside the mine footprint (ex-situ) are compared to the British Columbia Contaminated Site Regulation (CSR) (BC reg.37/96. O.C. 1480/96), including the amendments (343/2008 January 1, 2009) describing water quality standards for freshwater Aquatic Life (AW). The aquatic life standard assumes that a minimum 1:10 dilution is available for groundwater discharged to a freshwater system; together, they are referred to as CSR-AW.

The parameters of interest (POI) captured under the CSR-AW and applied to Quinsam include: arsenic (As), cobalt (Co), copper (Cu), fluoride (F), iron (Fe), sulphate ($SO_4$), sulphide (as $H_2S$) and zinc (Zn). Section 4.1 compares sampling results performed during this program to the CSR-AW standards (by development area).

Derived from numerous studies, POI source terms have been developed by Lorax Environmental for various areas, including: geochemical characterization of the 4-South mine pool, laboratory kinetic testing conducted on the 7-South coarse coal reject, 7-South formation water and 2-North, 3-North and 5-South mine water and formation water samples collected from underground mine dewatering. It is therefore important to consider water captured and stored within the mine workings (in-situ) to ascertain potential discharge (through existing water management structures) and seepage water quality. Accordingly, groundwater wells that are located within a mine void are sampled as part of the monitoring program with results being compared to source terms developed for each respective area.

## 2 Groundwater Monitoring Regime

Throughout the 2019-2020 monitoring period, Quinsam Coal monitored 35 groundwater sites within the vicinity of the mine footprint. These sites consisted of 20 ex-situ wells, 11 in-situ wells and 4 in-situ underground sumps as illustrated in Table 1 below.

**Table 1: Groundwater Wells & Sumps Monitored in 2019-2020**

| Area | In-Situ Sumps | In-Situ Wells | Ex-Situ Wells | |
|---|---|---|---|---|
| **2-North** | 3M2N | 1M2N<br>5M#2<br>QU10-13 D | QU08-21G S<br>QU10-10 S | QU08-21G D<br>QU10-10 D<br>QU10-11 D |
| **River Barrier Pillar** | | QU11-09 M | QU11-05 S<br>QU11-09 S | QU11-05 D |
| **2-North Plant** | | | MW00-1 S<br>MW00-6 S | MW00-1 D<br>MW00-6 D |
| **7-South** | 1M7S<br>1M7SA5<br>7SA5A<br>7SA5B | QU14-10 | QU08-13 A | QU08-13 B<br>QU08-10 |
| **242** | | 242MP | | QU11-36 D |
| **4-South** | | | QU10-09 S | QU10-09 D<br>QU10-08 D |
| **5-South** | | 5SMW | | |
| **2/3 South** | | QU11-11 (INF)<br>MW00-4<br>MW00-2 | | MW12-23 |

The groundwater areas and wells description are listed in Appendix I, Table 171. Appendix IX, Site Plan, Groundwater Monitoring Locations, presents a map of the groundwater sampling sites with respect to underground workings, groundwater and pumped mine water flow paths and disturbed areas. These wells are regularly evaluated and modified in order to best monitor groundwater and potential impacts from mining. The areas encompassed in this monitoring program include: 2-North, the River Barrier Pillar (RBP), 2-South, 3-South, 4-South, 5-South, 7-South and 242 area.

The monitoring wells have been selected as they relate to:

- hydrogeology of the area
- groundwater regime
- stratigraphy and geologic structure
- formation groundwater
- mine pool water
- past and present mining conditions
- underground PAG–CCR storage
- fine tailings storage

Appendix I, Tables 158 to 203 display the groundwater chemistry results for the 2019-20 monitoring year. Completion logs for the well installations listed in Table 1 can be found in Appendix A, and a further discussion of these wells can be found in Mine Permit (C-172) Amendment: 7-South Development Volume 3: Appendix I through J and Volume 4: Appendix K. Lorax Environmental Services was retained by Quinsam Coal to perform a hydrogeological investigation in these areas. The wells are a combination of nested wells, single wells and boreholes. The nested wells include a deep well and a shallow well that are screened in zones of interest. The deeper wells are generally drilled into the lowest coal seam and the shallower wells represent other zones of interest which may include shallower coal seams, or areas of increased permeability (Lorax, 2011).

With a change of ownership and recommencement of mining at Quinsam Coal in 2017, mining in 7-South Area 5 commenced in February 2019 after blasting through the Long lake fault zone from July through mid-January with mining occurring until May 1$^{st}$, 2019 when the mine shut down. There has been no mining since May 2019 in any areas of the mine. Mining into 7-South Area 5 required the need to resume monitoring of groundwater in the area prior to mining to ensure more recent baseline data. Monitoring of the 7-South Area 5 wells will continue following the continuation of mining operations to determine any impacts on in-situ or ex-situ groundwater. Currently only underground sump 7S Area 5 (7SA5) and ex-situ well, QU11-36 D are being monitored in 7-South Area 5.

## 2.1 Hydrogeological Setting

Groundwater wells relating to mining voids or defined as ‘down gradient’ from mine development zones have been established to characterize water quality for each respective area. The water chemistry is compared to source terms for parameters of interest established through:

- Sulphur distribution in the proposed workings
- Solid phase and leaching characteristics of CCR and tailings from the 7-South areas and disposed in mined out workings
- Geochemical characterization of the hanging wall strata over the mine area
- Formation groundwater characteristics

The information pertaining to column leach testing and derivation of source terms can be found in the application for 7-South Development Mine Permit Amendment (C-172) Volume 3: Appendix J and Volume 4, Appendix K (Lorax[(1)], 2011).

Figure 1 below displays the stratigraphic column at the Quinsam mine.

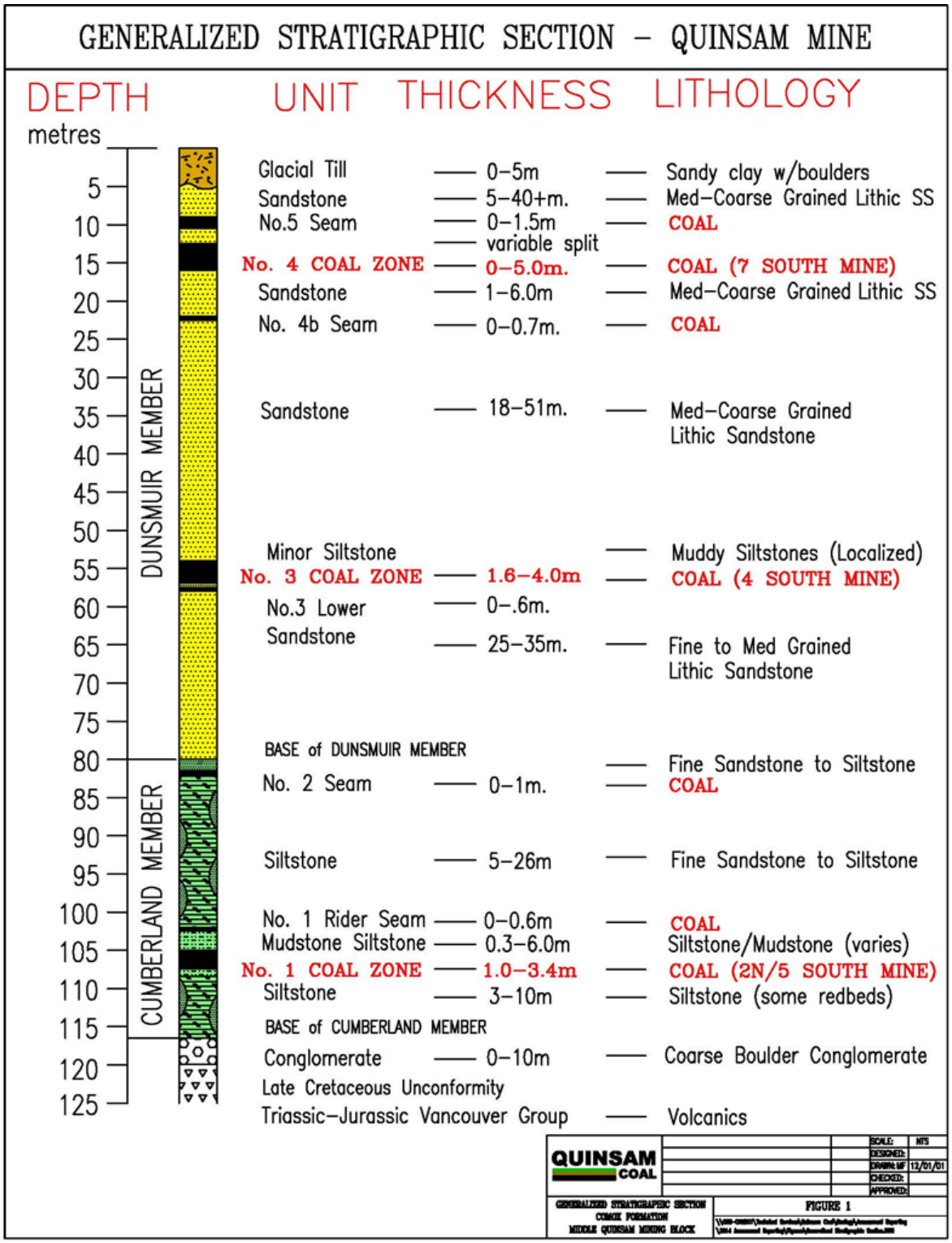



**Figure 1: General Stratigraphic Column - Quinsam Mine**

### *2.1.1 Underground PAG-CCR Storage in the River Barrier Pillar*

Coarse coal reject (CCR) material produced from the processing of raw No. 1 seam coal is defined as potentially acid generating material (PAG) when the sulphur content exceeds 1.3 %. As development of the 5-South mine progressed, inherent sulphur levels found in the #1 coal zone progressively increased above 1.3% sulphur. The run of mine coal processed through the Coal Preparation Plant and the resultant waste materials (fine tailings and CCR) were therefore classified as PAG. To mitigate potential metal leaching/acid rock drainage, Quinsam Coal established a sub-aqueous PAG-CCR disposal facility within the mine workings known as 87 Panel River Barrier Pillar (RBP). This disposal method was used as a pilot project for future PAG-CCR storage of material from the then proposed 7-South mine. Accordingly, groundwater monitoring at this facility has been a crucial part of Quinsam's past and current groundwater monitoring program. Wells used to monitor the seepage of groundwater are QU11-05 (S and D) and QU11-09 S while in-situ waters are monitored using well QU11-09 M.

### *2.1.2 Down Gradient of Subaqueous Disposal of Fine Tailings in 2-North and 3-North*

The 2-North mine has been a subaqueous disposal site of fine tailings from processing of the 7-South coal since 2012. 1Mains 2-North (1M2N) is an area within the 2-North Mine that was mined, depillared and subsequently used as a sub-aqueous storage facility for fine tailings from the processing of 7-South coal. Prior to the injection of tailings into this area, this part of the naturally flooded workings was dewatered. The fine tailings were then pumped into the in-situ mine water, allowing for the tailings to settle out throughout 1 Mains until it was necessary to relocate the tailings line in early 2015 to accommodate underground operations. The 7-South fine tailings were then pumped into another area of the 2-North Mine, called 5 Mains. At the end of 2018 (December) the tailings line was redirected back to 1M2N.

The wells installed in these areas initially supported a hydrogeological investigation performed by Lorax. The 2-North, 3-North and 5-South mine waters and formation waters have been defined as: mine water, #1 coal seam groundwater, and Dunsmuir sandstone groundwater. In these areas, the mine water is classified as circum-neutral, elevated alkalinity and conductivity, with the elevated conductivity directly related to elevated sulphate concentrations. All mine pool water (2N, 3N, 2S, 3S, 4S, 5S and 7S) has a distinct sulphate geochemical signature that can be used to trace the flow

paths of mine water (Lorax [(1)], 2011). The in-situ waters in the 2-North mine pool are monitored at well locations 1Mains 2-North (1M2N), 3Mains 2-North (3M2N), 5Mains #2 (5M#2), and QU10-13 D. QU10-13 D measures the hydraulic head above the 2-North mine (1 Mains) and fine tailings disposal.

Ex-situ groundwater wells QU10-10 (S and D), and QU10-11 (D) have been installed down gradient of the 2-North subaqueous disposal areas and measure formation water quality and hydraulic head downstream of the 2-North mine workings. Quinsam originally drilled QU08-21G in the 2-North area as a geotechnical hole but was later converted into nested monitoring wells QU08-21G S and QU08-21G D. These wells were used to characterize water quality on the opposite side of the Forjan Fault in both the No. 1 coal zone (deep well) and the overlying Dunsmuir Sandstones in the No. 4 coal zone (shallow well). QU10-11 S monitors groundwater in the overlying Dunsmuir sandstones in a fracture zone.

Water quality in the formation groundwater of the Dunsmuir sandstone is defined as being circum-neutral pH with low alkalinity and conductivity levels. The No. 1 seam groundwater is defined as having circum-neutral pH, elevated conductivity and moderate alkalinity. Conductivity and chloride concentrations in the No. 1 seam at QU08-21GD and QU10-10D are significantly higher than those found within the 2-North mine pool due to elevated sodium and chloride, not sulphate.

### *2.1.3 2-North Coal Processing Plant and Coal Pad*

The coal processing plant is located east of Middle Quinsam Lake and lies at an elevation approximately 40 metres above the lake surface. Two nested groundwater wells MW00-6 (S and D) and MW00-1 (S and D) have been installed at the peripheries of a surface collection ditch to intercept groundwater and surface runoff from the coal processing plant and coal stockpile pad. The depth of the shallow wells MW00-1 S and MW00-6 S are 8.1 and 8.7 metres respectively, while the deeper wells MW00-1 D and MW00-6 D measure 29.8 and 18.0 metres respectively. These wells monitor groundwater quality at different depths in the glacial till overburden layered overtop of the bedrock.

### *2.1.4 4-South Water Chemistry*

The 4-South mine is developed in the #3 coal zone. The #3 coal zone lies within the Dunsmuir Member of the Comox Formation. The Dunsmuir Member consists of thick-bedded medium to

coarse grained arkosic sandstones containing localized silty interbeds. Lorax classified the groundwater in this area into two groups; formation groundwater with lower overall dissolved ion concentrations and mine pool water with higher dissolved ion levels. The mine pool water is elevated in sulphate and iron; this signature is used to assess the mine pool seepage rates and groundwater flow path.

Lorax's assessment of the area found that formation groundwater wells had water quality with a geochemical signature that suggested mine pool influence in the down gradient wells of the flooded 4–South Mine. In Volume 3, Appendix I, Section 4 of the 4-South Mine Groundwater Evaluation, Lorax concludes that "*The component of seepage from the shallow westernmost portion of the 4-South mine inferred to flow to Long Lake represent about 10% (0.14 $m^3$/day) of the 1.4 $m^3$/day, estimated to represent the total seepage from 4-South. All seepage is ultimately directed to the Quinsam River"* (Lorax[(2)], 2011).

The monitoring wells established in this area were situated to intercept any groundwater transport that may occur from the 4-South mine pool. These wells include QU10-09 (S and D) and QU10-08 D (Lorax. 2011). QU10-08 is located up gradient of the 4-South mine and displays minimal influence from the 4-South mine pool.

The monitoring wells dedicated to monitoring in-situ water of the flooded workings are wells QU11-01 and QU78-161. QU11-01 is situated in the depillared area of the mine while QU78-161 is located in open mine workings east of a large fault. In past monitoring years, both of these wells were sampled due to their distance apart. It has been deemed that only one of these wells are necessary to determine mine-pool water chemistry as they have both exhibited similar characteristics when assessing historic data. Monitoring at QU78-161 has been ceased until further notice.

### *2.1.5 2-South – 3-South Area*

The 2-South – 3-South area consists of naturally flooded mine workings, the 2-South subaqueous PAG-CCR storage pit, the 3-South subaqueous PAG-CCR storage pit and other surface disturbances. Wells established in this location are used to determine if parameters of interest are

emanating from the mine workings or the PAG-CCR storage pits towards the receiving environment.

The 2-South open pit area was engineered to contain PAG-CCR material and included a sand-bentonite liner to minimize seepage and to retain water necessary for cover. Backfilling of PAG-CCR was completed in summer 2015 and water cover has been maintained since late 2015 (subaqueous disposal). It was projected that approximately $50m^3$ of water will seep from the facility daily with 10% of the water reporting to No Name Lake. The wells MW12-23 and MW12-24 were intended to intercept any water transporting from the 2-South PAG-CCR storage towards the lake. However, these two wells have been extremely difficult to monitor due to refill rates. As a result, only one sample set was collected from MW12-23 in 2019-20. The 3-South open pit development has been backfilled with PAG-CCR and was flooded to provide a full water cover; similar to the requirements of 2-South. Groundwater well MW00-2 was installed down gradient of this facility in shallow bedrock approximately 5 metres from the northeast corner to characterize seepage from 3-South. It is inferred that MW00-2 is hydraulically connected with the 3-South pit based on proximity and reported water quality (Golder Associates, 2006). This well is considered an in-situ well.

Groundwater wells MW00-4 and QU11-11 (INF) are used to monitor the 2-South mine pool and depillared areas. MW00-4 is located on the north-eastern margin of the 2-South mine in the depillared workings near Long Lake. QU11-11 is located at the deepest portion of the 2-South as it draws water from the underground mine pool for treatment in the Passive Treatment System (PTS) at sampling location, INF. This well is monitored monthly to assess mine pool chemistry and to assess the performance of sulphate reduction through the PTS. Historically, MW00-3 and MW00-5 were also monitored in this location but are presently only used to monitor the water elevation in the mine pool. The underground workings in the 3-South pit area were developed and accessed by two portals located in the 2-South pit, with the 3-South Pit separated from the underground workings by intact bedrock. It is expected that the hydraulic connection between the flooded 3-South pit and the former 2-South underground workings are a result of bedrock fractures within the intact bedrock (Golder Associates. 2007).

### *2.1.6 7-South Down Gradient of Subaqueous Disposal of PAG-CCR in 7-South*

The nested groundwater well QU08-13 (A & B) is situated topographically down gradient of the 7-South mine workings to intercept groundwater flow from the workings towards the Quinsam River. The well is located to monitor water quality and detect any seepage from the 7-South PAG-CCR underground disposal area in the 7-South mine at the stratigraphic level of the No. 4 coal zone (QU08-13 A) or as it rises through the stratigraphic column towards the Quinsam River (QU08-13 B). Source terms derived specifically for this development will be used as a comparison of water quality. Other groundwater wells within the 7-South area are used to monitor groundwater quality in relation to the seepage from the run of mine stockpile (QU08-10). At present, monitoring well QU14-10 is being used to measure water quality of the in-situ underground PAG-CCR subaqueous disposal. When the storage of PAG-CCR, drillholes QU08-07 and / or QU09-01 will be developed into monitoring wells to measure in-situ underground water quality within the PAG-CCR storage facility.

### *2.1.7 Baseline/Background*

Groundwater monitoring wells within areas without mine related impact or up gradient of the perceived flow path are established to identify baseline/background information on water quality for modeling purposes and when comparing/identifying sites encountering mining influence. Two primary areas of focus for collecting baseline groundwater quality in the near future are 7-South Area 5 and the 4-South / 6-South areas. Wells in 7-South Area 5 were monitored in the past (2013-2015) with additional monitoring performed in 2018. If mining operations continue some wells will be required to be drilled and completed as monitoring wells in 7S Area 5. These include QU11-21S and QU14-A. The shallow well QU11-21S will be designated to intercept the potential seepage from the northerly portions of 7SA5. On the south side of 7SA5 another well QU14-A will be required to intercept the potential for peripheral pathways between 7SA5 and the Iron river. The C-172 permit has an important stipulation for this area, south of the northing 100280 m. This northing is significant in that it represents the southernmost most influence of the 7SA5 pump test performed by Lorax, in support of the 7-South Area 5 mine permit amendment. Section A3, of the amended C-172 permit received for 7SA5, approves mining up to northing 100280 m with stipulations for further progression south of this point. The development of these wells will provide

further information to support the structural and hydrogeological conditions of the mine beyond this point.

### *2.1.8 Mine Pools, Underground Sumps and Mine Water Pumped to Surface*

A mine pool is a flooded mine void or previously mined out area which may or may not be backfilled with waste material. Mine pools often exhibit elevated concentrations of metals and sulphate associated with developed coal seams. Concentrations become increasingly elevated if mine pools have waste deposits present as constituents tend to dissolve and accumulate at depth. A chemical stratification occurs when there is limited mixing of the mine water and the heavily mineralized waters settle on the bottom of the water column while the lighter, less mineralized waters, concentrate in the upper portion.

In-situ mine pool monitoring locations include: 1M2N, 5M#2, 3M2N, and QU10-13 D in 2-North; 5SMW in 5-South; QU11-09 M in the RBP; QU14-10 in 7-South; QU11-01 in 4-South; MW00-4 and QU11-11 in 2-South; and 242MW for the 242 mine. In addition to mine pool monitoring sites that are not accessible to monitoring personnel, underground sumps are used to characterize in-situ locations including: 1 Mains 7-South (1M7S), (7SA5) and combined 1 Mains 7-South with Area 5 (1M7SA5).

# 3 Methods and Procedures for Monitoring Groundwater

During groundwater sampling, water is directed through a flow cell connected to a water quality sonde to instantaneously measure parameters such as pH, conductivity, temperature, oxidation reduction potential and dissolved oxygen. These parameters are used to identify when intercepted groundwater entering the column is steady and representative of the targeted water based on the well design. Water samples are obtained for laboratory analysis when the appropriate volume of water has been purged, water levels have stabilized, and the physical parameters listed above stabilize. Ultimately, the objective is to collect a sample that represents the 'active' groundwater in an area as opposed to stagnant water within a well.

## 3.1 Sampling Techniques

Generally, four methods/systems (dependent on groundwater setting) are employed for monitoring groundwater. These methods include:

- Inertial lift
- Peristaltic pumping
- Portable bladder pump
- Dedicated bladder pump

The most suitable sampling device is selected based on:

- Parameters being monitored
- Maximum efficiency
- Purging rate compared to well yield
- Well diameter
- Depth of well
- Sample collection point
- Ease of use of the sampling device

### *3.1.1 Inertial Lift Sampling*

This method of sampling uses HDPE tubing fitted with an inert foot valve placed down the well casing at the desired depth. Oscillation of this tubing forces water up to surface while the foot valve prevents backflow on the downswing. This constant oscillation is achieved using a mechanical actuator known as a hydrolift. The hydrolift is attached to the tubing end on surface and cycles up and down to provide the motion needed to lift water. Flow rate is directly proportional to the speed of oscillation, well design and water level. Inertial lift sampling is appropriate in wells in which a high purge rate is required as flow rates can range from 0.5 to over 4 L/min.

### *3.1.2 Peristaltic Sampling*

This method employs a peristaltic pump connected to tubing that is placed within the well casing at a desired depth. Peristalsis is a cyclic compression and decompression on the tubing to create a negative pressure point in which the water is drawn up the tubing. This method is employed at very shallow wells that can potentially have poor recharge rates.

### *3.1.3 Bladder Pumps*

Bladder pumps are submerged to an appropriate level and operate by filling and discharging a bladder system inside a housing unit. Compressed gas ($N_2$) is supplied at surface and is pumped down the tubing to provide the compression and release of water within the bladder housing. Flow rate is controlled via timing cycles of recharge and discharge, air pressure and depth of water. Bladder pumps are used in deeper wells in which inertial lift and peristaltic pumping capabilities and efficiencies are not possible.

### 3.2 Parameters Monitored

The total metals suite was removed from the analytical requests in 2014 to eliminate the potential artifacts (associated with higher total suspended sediment) in sampling results. Since then, analytical results have included dissolved metals, turbidity or Total Suspended Solids (TSS), dissolved anions (i.e. bromide ($Br^-$), chloride ($Cl^-$), fluoride ($F^-$), sulphide ($S^{2-}$), sulphide as ($H_2S$), sulphate ($SO_4$), total dissolved nitrogen (TDN), dissolved organic carbon (DOC), total-alkalinity (Alk) and acidity. Furthermore, field measurements for pH, temperature, conductivity, oxidation reduction potential and dissolved oxygen continue to be part of the monitoring program.

Results for hydrogen sulphide are calculated using a gravimetric conversion factor (sulphide result multiplied by 1.063) as the laboratory only provides results as sulphide. This calculation is necessary to compare results to the CSR-AW standards as the standard is measured as $H_2S$ (0.02 mg/L). In the past, sulphide results that were expressed as <MDL were calculated using the MDL value which was often 0.02 mg/L. For all previous results and results included in this reporting year that were <MDL, a value of half the MDL was used for calculation. This may eliminate past issues of false positive bias when the gravimetric conversion factor is applied.

In 2013 the Ambient Water Quality Guideline for dissolved sulphate was updated from an acute guideline of 100 mg/L to a chronic guideline based on a 30-day average. The new guideline is relative to background water hardness concentrations. As a result, sulphate water quality guidelines for the protection of aquatic life were developed for different categories of water hardness as displayed in Table 2 below.

**Table 2: Sulphate Water Quality Guideline (mg/L) - Based on Water Hardness (mg/L) Categories**

| Water Hardness* (mg/L) | Sulphate Guideline (mg/L) |
|---|---|
| Very Soft (0-30) | 128 |
| Soft to moderately soft (31-75) | 218 |
| Moderately soft/hard to hard (76-180) | 309 |
| Very hard (181-250) | 429 |

*Water hardness categories adapted from the CCME.

** Toxicity tests on the early stage rainbow trout were only conducted up to a water hardness of 250 mg/L.

The BC Land Remediation Section develops the Contaminated Sites Regulations standards. As it is a regulation, standards do not change when a water quality guideline change. As a result, the CSR-AW for some updated parameters was not updated when the BC Water Quality Guideline was revised.

Currently, the CSR-AW standards are subject to revision, with the first step of the process being to review the policy (e.g. developing a CSR standard) and the second step applying the newly derived standard. These new guidelines derived from the Water Quality Guidelines are often a factor of the guideline (e.g. 10 times higher).

Starting March 2015, in an effort to reduce costs, all water samples were analyzed by Maxxam Analytics in favor of ALS Environmental (ALS). While both labs provided analyses of water with similar detection limits, not all analysis methods were the same. Results have been consistent for all parameters except Sulphide as $H_2S$ at low ranges.

### 3.3 Quality Assurance/Quality Control

Quality Assurance / Quality Control (QA/QC) for the Quinsam groundwater sampling program is conducted in accordance with *"The British Columbia Field Sampling Manual, For Continuous Monitoring and Collection of Air, Air-Emissions, Water, Wastewater, Soil, Sediment, and Biological Samples, 2013 Edition"* (MOE, 2013).

Quality control measures that have been applied since last year's monitoring period includes an increased attention to cleanliness of sampling equipment and tubing installed in groundwater wells. Tubing assemblies installed within the wells are re-used as it is unfeasible to replace tubing assembly wells every sampling event. An in-depth review of the integrity of the assemblies will occur immediately to evaluate the need for replacement. For tubing assemblies not installed in the well (portable bladder pump and surface sampling tubing), increased cleaning and proper storage methods will be applied.

In 2019-20 an extensive overview of the groundwater result quality was performed by QCC related certain results considered to be outliers. It was discovered groundwater identification number's were mixed up for some deep and shallow groundwater wells. The QA/QC was performed with

all data corrected. These wells included the following: QU0813B, QU0810, QU1109M and QU1109S, QU0821GS and QU0821GD. Each well has a certain signature and over the years any anomalies were overlooked or marked as outliers. After further investigation the data was corrected for those outliers and obvious sample identification confusion. The analytical laboratory was contacted, and the reports were reissued and uploaded into the database.

During this reporting period, 24 replicate samples were collected across 35 sites. Sites where replicate samples were obtained included:, MW00-2, MW00-4, QU08-13 A, QU08-21 GS, QU10-10 S, QU10-09 D, QU10-09 S, QU10-13 D, QU11-09 S, QU11-05 S, QU14-10, 5M#2, 1M2N, 242MW, QU11-01 and QU11-01.

Relative Percent Difference (RPD) values were calculated for the analytical results from the sample and its respective replicate. In accordance with the British Columbia Field-Sampling Manual, the calculation was applied as stated below:

$$RPD = Absolute \frac{(Sample\ Concentration - Replicate\ Concentration)}{\left(\frac{Sample\ Concentration + Replicate\ Concentration}{2}\right)}\ x\ 100\%$$

RPD calculations were only practical for results where concentrations were found at or greater than five times the reported detection limit (RDL) as there is considerable uncertainty at low levels. In addition, mathematical calculations for RPD appear exaggerated with low values where absolute differences may be relatively low.

### *3.3.1 Results of Field Replicates*

It is expected to see variation between a sample and its respective field replicate for a number of reasons. Some considerations include: inconsistent sample stream at sampling locations; heterogeneity of water at sampling location; the possibility of minor contaminations; laboratory sample preparation and accuracy of analytical instrument to name a few. Taking these possibilities into consideration, RPD values less than 20% are deemed “acceptable” and indicate proper sampling methodology with representative results. It has been acknowledged that RPD values greater than 20% indicate a potential problem with sampling integrity whereas values greater than 50% indicate a definite problem. When taking a groundwater replicate during a sampling event,

approximately 60 parameters are analyzed from the same set of samples. It is common to have one or a select few of these parameters exceed an acceptable RPD threshold while the rest do not. Concerns over sampling integrity or methodology are raised when numerous results have high RPD values within the same sample or if certain parameters have repeated failures throughout the year. The following table displays failures observed in this year's monitoring period.

**Table 3: Replicates & Relative Percent Difference Greater than 20%**

| Relative Percent Difference Values Greater Than 20 % | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Stn.Code** | **Date** | **Parameter** | **Lab MDL 1** | **Result 1** | **Result 2** | **RPD** | **Ratio** |
| MW002 | 15-May-19 | Acidity 8.3 | 1 | 10.3 | 12.6 | 20 | 0.82 |
| QU1410 | 28-Jan-20 | Cl-D | 1 | 6.7 | 5.1 | 27 | 1.31 |
| QU1101 | 23-Dec-19 | Alk-T | 1 | 71 | 100 | 34 | 0.71 |
| QU0813A | 26-Nov-19 | Se-D | 0.0001 | 0.00066 | 0.00046 | 36 | 1.43 |
| QU0813A | 26-Nov-19 | SO4-D | 1 | 41 | 28 | 38 | 1.46 |
| QU0813A | 10-Mar-20 | P-D | 0.003 | 0.018 | 0.027 | 40 | 0.67 |
| QU1013D | 24-Sep-19 | Carbonate | 1 | 7.7 | 4.7 | 48 | 1.64 |
| **All values with an RPD > 20% and one or more results greater than 5 X DL** | | | | | | | |
| **Relative Percent Difference Values Greater Than 50 %** | | | | | | | |
| **Stn.Code** | **Date** | **Parameter** | **DL 1** | **Result 1** | **Result 2** | **RPD** | **Ratio** |
| QU1013D | 24-Sep-19 | Alk-PP | 1 | 6.5 | 3.9 | 50 | 1.67 |
| 5M#2 | 27-Jan-20 | Fe-T | 0.01 | 0.361 | 0.633 | 55 | 0.57 |
| MW002 | 15-May-19 | N-NH3 | 0.015 | 0.16 | 0.29 | 58 | 0.55 |
| 242MW | 10-Dec-19 | Acidity 8.3 | 1 | 23.8 | 12.8 | 60 | 1.86 |
| QU0813A | 26-Nov-19 | Zr-D | 0.0001 | 0.0001 | 0.00057 | 140 | 0.18 |
| 1M2N | 26-Feb-20 | Alk-PP | 1 | 1 | 6.8 | 149 | 0.15 |
| 1M2N | 26-Feb-20 | Carbonate | 1 | 1 | 8.2 | 157 | 0.12 |
| QU1410 | 20-Nov-19 | P-D | 0.03 | 0.03 | 0.0031 | 163 | 9.68 |
| 5M#2 | 27-Jan-20 | Mo-D | 0.001 | 0.0462 | 0.001 | 192 | 46.2 |
| **All values with an RPD > 50% and one or more results greater than 5 X DL** | | | | | | | |

Within the 24 replicate samples and 1318 measurement pairs analyzed, 7 parameters had an RPD greater than 20% and 9 had an RPD greater than 50%. This results in a 1.21% failure rate for replicate samples.

When assessing the parameters for replicate failures, it was noted that the acidity 8.3, alkalinity, carbonate and phosphorous had RPD exceedances this monitoring year. Similar replicate failures have been observed in other monitoring locations in past monitoring periods. This year there were far less RPD exceedances than earlier years.

# 4 Results and Discussion

## 4.1 References for Water Quality Data

Geochemical source terms have been developed by Lorax as a conceptual model that represents the progression of mine pool geochemistry for all mine pool areas on the Quinsam Mine Site. This model is explained in detail in the 7-South Development Mine Permit Amendment Volume 3, Appendix I and Volume 4, Appendix K.

Geochemical source terms were developed for the anticipated mine plan in 2-North, 3-North and 5-South mine areas where 7-South tailings will be stored, as well as 2/3North, 4-South and 5-South flooded mine voids without PAG-CCR or fine tailings. Source terms provide an overview developed for each respective mine area compared to the measured water quality.

The source terms have been developed using a set of empirical data including the following:

- Water chemistry collected from underground mine dewatering and mine void,
- Kinetic saturated column leach tests performed on 7-South CCR and tailings,
- Sulphur distribution in the proposed workings.

Comparison of water quality data to source terms can be found in tables within each respective area in the discussion of results.

All water quality results for groundwater wells located between mine working(s) and the receiving environment have been compared to Contaminated Sites Regulations for Aquatic Life (CSR-AW). Numerical standards used for CSR-AW are described in Table 4 below. A groundwater map displaying the location of each well in relationship to the underground mine area can be found in Appendix IX, Site Plan Groundwater Monitoring. Appendix I, Tables 159 to 203 display the analytical water quality results for 2019-2020.

**Table 4: CSR-AW Lowest Level for Dissolved Metals and Total Sulphide**

| Parameter | CSR-AW (mg/L) | Parameter | CRS-AW (mg/L) |
|---|---|---|---|
| Dissolved Sulphate* | 1280 | Dissolved Lead* | 0.04 |
| Dissolved Chloride | 1500 | Dissolved Mercury | 0.00025 |
| Dissolved Fluoride* | 2-3 | Dissolved Molybdenum | 10 |
| Dissolved Silver | 0.0005 - 0.015 | Dissolved Nickel* | 0.25 |
| Dissolved Arsenic | 0.05 | Dissolved Antimony | 0.09 |
| Dissolved Barium | 10 | Dissolved Selenium | 0.02 |
| Dissolved Boron | 12 | Dissolved Thallium | 0.003 |
| Dissolved Beryllium | 0.0015 | Dissolved Titanium | 1 |
| Dissolved Cadmium* | 0.0005 | Dissolved Uranium | 0.085 |
| Dissolved Chromium* | 0.01 | Dissolved Zinc* | 0.075 |
| Dissolved Cobalt | 0.04 | Sulphide as $H_2S$* | 0.02 |
| Dissolved Copper* | 0.02 | | |
| ***Indicates the CSR-AW is a calculated parameter** | | | |

Table 5 below and Appendix I, Tables 159 to 160 display a summary of exceedances noted during the 2019-20 sampling program at the ex-situ wells compared to the CSR-AW.

**Table 5: Parameters Above the CSR-AW Standards found in Ex-Situ Groundwater Wells**

| Parameter | Site with Failures | CSR-AW | Results Program |
|---|---|---|---|
| As-D | QU08-13 (A and B), QU08-21G (S and D), QU10-08 D, QU10-09 (S and D), QU10-10 S, QU11-05 S, QU11-09 S, QU11-36 D | 0.05 | 0.0522 - 0.932 |
| Cl-D | QU10-10 D | 1500 | 3500 and 3700 |
| H2S | QU08-10, QU08-13 (A and B), QU08-21G (S and D), QU11-05 (S and D), QU11-09S, QU10-09 D, QU10-08 D, QU10-10 D, QU10-10 S, QU10-11 D, MW12-23 | 0.02 | 0.024 - 16 |

## 4.2 Key Observations and Conclusions

### *4.2.1 North Mining Area*

The North mining area represents the largest operation on the mine-site and has been the longest project at Quinsam Coal spanning nearly 30 years of mining. The North mining area is divided into 3 sections based on source terms: 2/3 North Mine Void, 2 North Mine Water with 7-South tailings, and North Mining Area Ex-Situ groundwater.

#### ***4.2.1.1 2/3 North Mine Void***

Much of the mined out 2/3-North mine is allowed to naturally flood and mine pool water has been found to be circum-neutral pH, elevated alkalinity and conductivity with a unique sulphate geochemical characteristic. Water is found to be oxic to strongly reducing in various locations in the mine. Source terms as established by Lorax (2011) are displayed in Table 7. Due to retreat and depillaring mining occurring in the 2-North mine the 6-Mains 2N pump was removed. This location is used as a comparison to the area that does not contain tailings storage and has no influence from tailings storage in other areas of the mine. Previous monitoring years used samples from a well named QU11-03 in the 3-North mine (10 Panel) to represent the 2/3-North mine void. Sampling at this well was discontinued as water samples were difficult to obtain and a local fault was thought to influence water in this area and give potentially unrepresentative results. There has been no replacement for this area to use as a comparison in 2019-2020.

The location 3Mains 2-North (3M2N) site has been included in this program in 2019-2020. The location 3M2N is the area of the mine where combined 5-South and 7-South mine water enters the 2-North mine and is diluted with the water in flooded 2-North mine pool, 3-Mains. Table 6 compares the expected and worst-case scenarios for the flooded mine void in 2 / 3 North with the two sets of results from 2019/2020.

All parameters were below the worst case with most parameters below expected case. Those that were averaging slightly higher than the expected case include sulphate, aluminum, cobalt, copper and nickel. Further monitoring on a more frequent basis has been included in the monitoring

program to accurately represent this location and ensure consistency and overall representation of this area.

**Table 6: Source Terms Comparison for 2/3 North Mine Void from 2019/2020**

| 2N Mine Void - 3M2N | | | | |
|---|---|---|---|---|
| **Parameters** | **Expected** | **Worst Case** | **Annual Average** | **Comparison to Source Terms** |
| Alkalinity (CaCO3) | 450 | - | 390 | Below Expected |
| Fluoride (F) | 0.29 | 0.3 | 0.14 | Below Expected |
| Sulphate (SO4) | 278 | 1280 | 680 | **Above Expected** |
| **Dissolved Metals** | | | | |
| Aluminum (Al) | 0.013 | 0.027 | 0.0141 | **Above Expected** |
| Arsenic (As) | 0.036 | 0.04 | 0.00066 | Below Expected |
| Boron (B) | 1.1 | 1.2 | 0.766 | Below Expected |
| Cadmium (Cd) | 0.00002 | 0.00008 | 0.0000075 | Below Expected |
| Cobalt (Co) | 0.001 | 0.0035 | 0.00229 | **Above Expected** |
| Copper (Cu) | 0.001 | 0.004 | 0.0012 | **Above Expected** |
| Iron (Fe) | 0.49 | 2.45 | 0.4188 | Below Expected |
| Manganese (Mn) | 0.36 | 0.95 | 0.314 | Below Expected |
| Nickel (Ni) | 0.001 | 0.008 | 0.0032 | **Above Expected** |
| Selenium (Se) | 0.0002 | 0.001 | 0.000075 | Below Expected |
| Zinc (Zn) | 0.006 | 0.007 | 0.00375 | Below Expected |

**All units in mg/L**

**Factor applied to less-than results when calculating statistics: 0.5**

#### *4.2.1.2 2-North Mine Water with 7-South Tailings*

Both 1M2N and 5M#2 are compared to geochemical source terms and are expected to reflect those terms very closely. On February 23rd, 2019 the 5M#2 dewatering pump located in 5Mains 2-North, faulted on restart and has not operated since as a result only 6 samples were collected for comparison. Currently only 1M2N is operating to dewater the 2-North 1 Mains area.

The POI results from sampling events were averaged using half the detection limits to an annual average, and are displayed in Table 7 and 8, below. As shown, the majority of the parameters averaged to below the expected values, in both 1M2N and 5M#2 with the exception of alkalinity. In 1M2N average sulphate and iron were above the expected case in 1M2N with iron above the worst case. Magnesium and nickel remained at the expected case.

Iron concentrations in 1M2N reported much higher than expected due to improved sampling technique and field filtering/preservation introduced in 2016, after Lorax derived the source terms.

Certain anoxic metals were observed to be suspiciously low in past monitoring and field filtering/preservation was implemented to improve representation. Water quality at 5M#2 is normally lower in most parameters compared to 1M2N due to this location being higher in elevation with less accumulated tailings stored here. The 2-North mine pool is moderately to strongly reducing indicated by the elevated concentrations of dissolved iron and sulphide in the mine pool. The redox indicator species include iron, ammonia and sulphide. These parameters are present in the 2-North, No. 1 Seam and Dunsmuir sandstone groundwater.

**Table 7: Source Terms Comparison for 2-North Mine Water with 7-South Tailings**

| 2N with 7S Tailings - 1M2N (N=8) | | | | |
|---|---|---|---|---|
| **Parameters** | **Expected** | **Worst Case** | **Annual Average** | **Comparison to Source Terms** |
| Alkalinity (CaCO3) | 450 | - | 458 | **Above Expected** |
| Fluoride (F) | 1.1 | 1.2 | 0.146 | Below Expected |
| Sulfate (SO4) | 278 | 1280 | 527 | **Above Expected** |
| **Dissolved Metals** | | | | |
| Aluminum (Al) | 0.013 | 0.027 | 0.0024 | Below Expected |
| Arsenic (As) | 0.113 | 0.125 | 0.011 | Below Expected |
| Boron (B) | 1.1 | 1.2 | 1.052 | Below Expected |
| Cadmium (Cd) | 0.00002 | 0.00008 | 0.000006 | Below Expected |
| Cobalt (Co) | 0.001 | 0.023 | 0.0002 | Below Expected |
| Copper (Cu) | 0.001 | 0.004 | 0.0002 | Below Expected |
| Iron (Fe) | 0.49 | 2.902 | 3.21 | **Above Worst Case** |
| Manganese (Mn) | 0.36 | 0.95 | 0.36 | **At Expected** |
| Nickel (Ni) | 0.001 | 0.033 | 0.001 | **At Expected** |
| Selenium (Se) | 0.0002 | 0.007 | 0.000081 | Below Expected |
| Zinc (Zn) | 0.006 | 0.019 | 0.005 | Below Expected |

All units are in mg/L

**Table 8: Source Terms Comparison for 2-North Mine Water with 7-South Tailings**

| 2N with 7S Tailings – 5M#2 (N=6) | | | | |
|---|---|---|---|---|
| **Parameters** | **Expected** | **Worst Case** | **Annual Average** | **Comparison to Source Terms** |
| Alkalinity (CaCO3) | 450 | - | 518 | **Above Expected** |
| Fluoride (F) | 1.1 | 1.2 | 0.069 | Below Expected |
| Sulfate (SO4) | 278 | 1280 | 178.5 | Below Expected |
| **Dissolved Metals** | | | | |
| Aluminum (Al) | 0.013 | 0.027 | 0.0015 | Below Expected |
| Arsenic (As) | 0.113 | 0.125 | 0.0059 | Below Expected |
| Boron (B) | 1.1 | 1.2 | 0.846 | Below Expected |
| Cadmium (Cd) | 0.00002 | 0.00008 | 0.000004 | Below Expected |
| Cobalt (Co) | 0.001 | 0.023 | 0.000143 | Below Expected |
| Copper (Cu) | 0.001 | 0.004 | 0.00012 | Below Expected |
| Iron (Fe) | 0.49 | 2.902 | 0.443 | Below Expected |
| Manganese (Mn) | 0.36 | 0.95 | 0.1012 | Below Expected |
| Nickel (Ni) | 0.001 | 0.033 | 0.0005 | Below Expected |
| Selenium (Se) | 0.0002 | 0.007 | 0.00005 | Below Expected |
| Zinc (Zn) | 0.006 | 0.019 | 0.00308 | Below Expected |

All units are in mg/L

Figure 2 below displays sulphate concentrations in the 2-North mine pool compared to those developed as the expected and worst-case scenario predictions derived by Lorax. The results indicate that 1M2N was above the expected case and nearing the worst-case scenarios historically (2015, 2017 and 2019) in winter with peak concentrations occurring when the mine pool was full after being dewatered during summer. 5M#2 has remained at or below the expected case since April 2016. In 2019-2020 peak concentrations were observed in February through April 2019 with sulphate concentrations decreasing in May 2019, coinciding with the cessation of tailings injection. QU10-13D seems to follow the same trend as 1M2N; this is related to the water elevation in the mine pool fluctuating based on pumping rates and groundwater infiltration. Concentrations are on an upward trend in spring of 2020 at both 1M2N and QU10 -13D, following the same pattern as previous years.

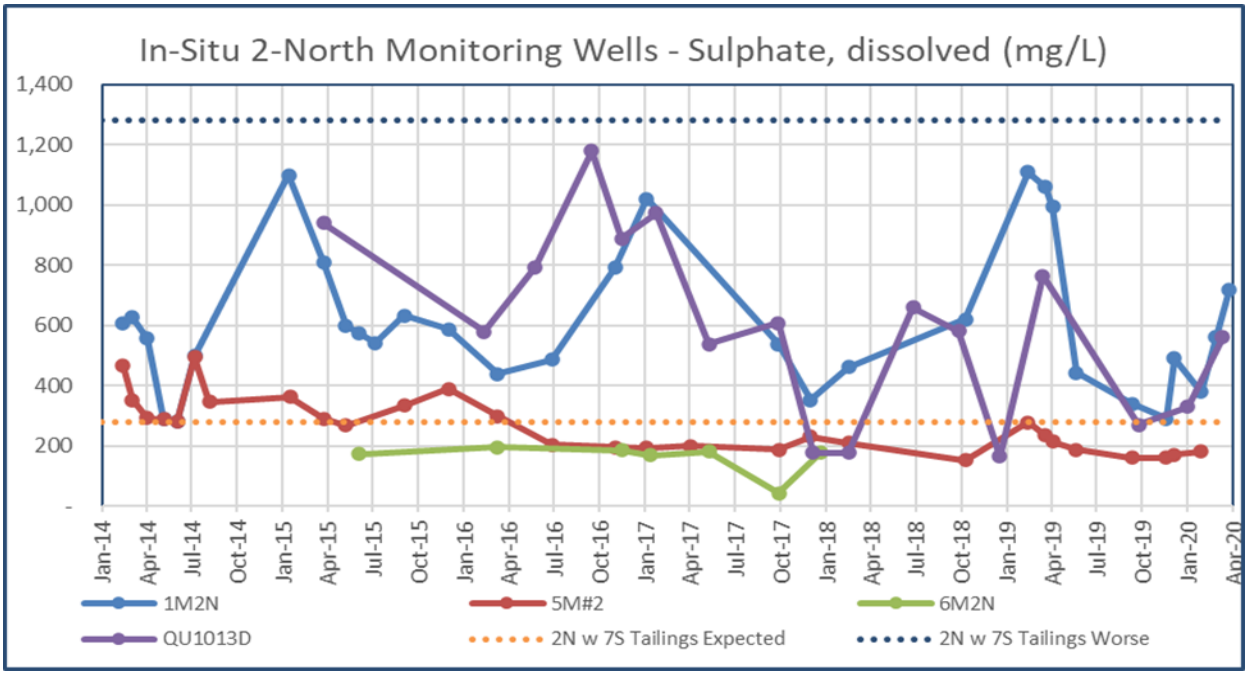



**Figure 2: In-Situ 2N Monitoring Wells - Dissolved Sulphate**

#### *4.2.1.3 North Mining Area Ex-Situ Groundwater*

The parameters of interest in the in-situ 2-North mining area were previously identified by Lorax in the 2-North/3-North and 5-South groundwater evaluation and include: fluoride, sulphate, aluminum, arsenic, boron, cadmium, cobalt, copper, iron, manganese, nickel, selenium, and zinc (Lorax 2011). These parameters may be found within ex-situ formation groundwater based on the geology the well is intercepting. Seepage from the 2-North area is expected to transport outside the mine void through the geological features surrounding and encompassing the 2-North mine. Migration and transportation rates are considerably slower in groundwater compared to surface waters; therefore, incremental increases are observed over many years.

Parameters that were observed to be naturally elevated in 2-North / 3-North include arsenic, sodium, chloride, sulphide as $H_2S$ and iron. Those parameters that displayed exceedances against the CSR-AW were graphed along with sodium and dissolved iron. Parameters above the CSR-AW included arsenic, chloride, and sulphide (as $H_2S$). Arsenic and sulphide (as $H_2S$) were observed elevated in groundwater wells QU10-10 S, QU08-21G (S and D) with chloride elevated above the CSR-AW in QU10-10 D. Sodium and chloride is elevated in all deep groundwater wells in the No. 1 seam of 2-North area as formation groundwater is defined as sodium - chloride type waters.

QU08-21GD and QU10-10D are not strongly influenced by mine water. Elevated chloride in formation groundwater is an indication of older formation groundwater. Appendix I, Tables 172 and 173, and Figures 3 through 5 below, represent the water quality results for these areas.

Notable observations for this area include:

- Most parameters remained consistent with previous monitoring years with no major changes
- 2-North ex-situ deep formation groundwater wells interesting the No. 1 seam have elevated chloride, sodium, conductivity and dissolved iron
- All POI were below the CSR-AW standards except dissolved arsenic, sulphide as H2S and chloride
- Dissolved arsenic concentrations exceeded the CSR-AW standard (0.05 mg/L) in all sampling events at Q08-21G (S and D) and QU10-10 S since monitoring began
- $H_2S$ concentrations at QU08-21G (S and D) and QU10-10 S and QU10-11 D were found at or in excess of the CSR-AW standards (0.02 mg/L) on all sampling events
- Dissolved iron was found in highest concentration in the No. 1 coal seam (QU10-10 D) consistent with previous years
- Sodium concentrations found within the Ex-Situ wells have shown similar profiles to that of chloride evolving to sodium chloride type water as its ages in the formation flow path
- Sulphate is observed in low concentrations in all ex-situ groundwater in 2-North. QU10-10 S continues to trend down from the peak in Oct 2016

Throughout the 2-North, 3-North, and RBP areas, wells located in the 'deep' Cumberland Member of the stratigraphic column, particularly No.1 coal seam, have consistently reported low dissolved arsenic during all sampling events. Wells in 'shallower' Dunsmuir Member sandstones, particularly nested in the area of the #4 coal zone, reported arsenic values that were consistently elevated. The Dunsmuir sandstone member contains higher levels of arsenic and has been verified during drilling programs conducted by Quinsam Coal. These observations are consistent with the findings of Lorax (Lorax[(2)], 2011), who determined that elevated arsenic concentrations are found in formation waters of the Dunsmuir Formation including sandstone and the #3 and #4 coal zones. These results are in contrast of those found from formation waters of the #1 coal zone of the Cumberland Member. An exception to this observation is the monitoring well QU08-21G S and

D. QU08-21G is fault separated from the other 2 North and 5 South wells in the No. 1 coal seam (Lorax[(2)], 2011) This well is nested within the Cumberland Member on the Eastern side of the Forjan Fault, and while lower than those found in the Dunsmuir Member Sandstones and coal measures, all three sampling events during this reporting period exceeded the CSR-AW standards. The groundwater in this location follows a different flow path than other No. 1 coal seam wells in 2-North (Lorax[(2)], 2011).

Figure 3 displays arsenic concentrations in the 2-North area.

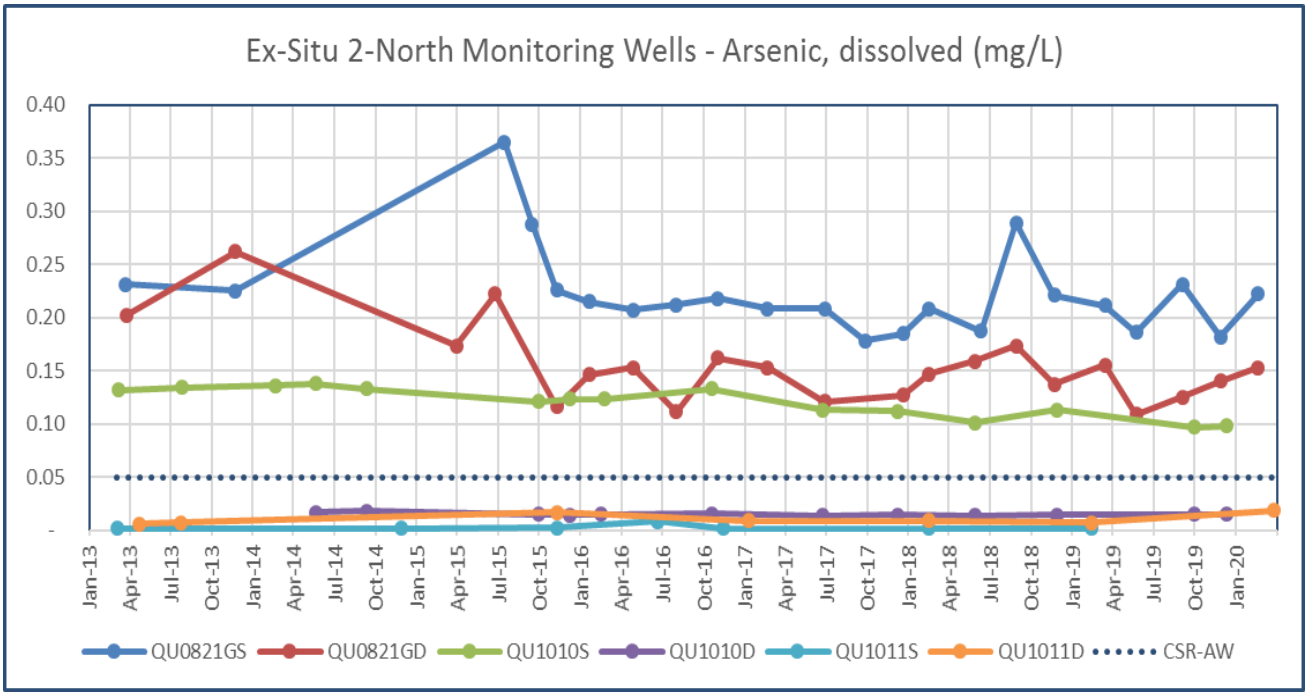



**Figure 3: Ex-Situ 2-North Monitoring Wells Dissolved Arsenic**

Concentrations of dissolved sulphate in the 2-North mine area outside of mine workings are low and frequently below detection levels (0.5 mg/L). A notably higher sulphate result was reported at the well QU 10-10S during heavy precipitation in October while water levels in the 2-North mine increased considerably. Additional sampling information has not shown a persisting trend with dissolved sulphate to date but will be monitored closely in the future with relation to water levels in the mine pool. There is little trending or concerns with sulphate for the remainder of the 2-North ex-situ wells.

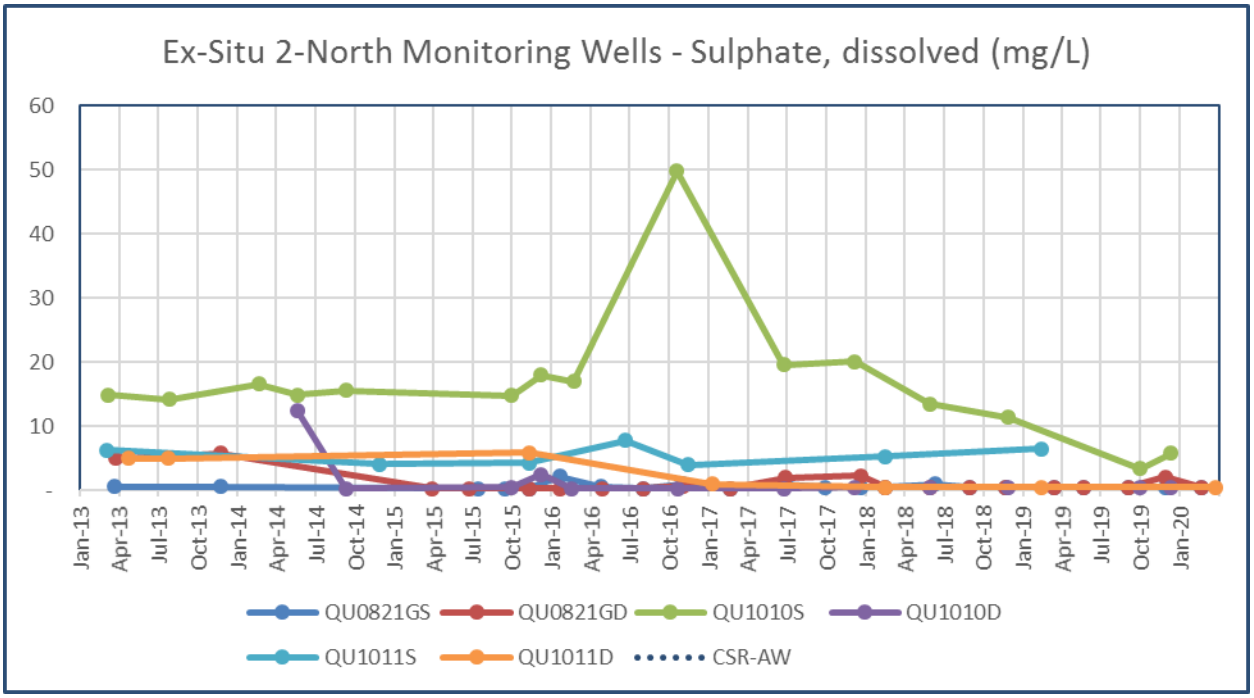



**Figure 4: Ex-Situ 2N Monitoring Wells – Dissolved Sulphate**

Sulphide has been found in elevated concentrations in many monitoring wells near the mine site. Sulphur is present in local geologic formations (particularly coal seams) and has been extensively documented by Quinsam Coal. As water interacts with sulphur bearing rock, leaching of the sulphur occurs and it can take many different forms dissolved into the water. Sulphide (as $H_2S$) occurs in groundwater with low dissolved oxygen and negative redox potentials. In the presence of oxygen, sulphur typical takes the form of sulphate. Figure 5 displays sulphide concentrations found with ex-situ 2-North wells with sulphide displaying an increasing trend in all wells in. These wells intercept groundwater from the #1 and #4 coal seams, respectively and have been found to have low dissolved oxygen and negative redox potentials.

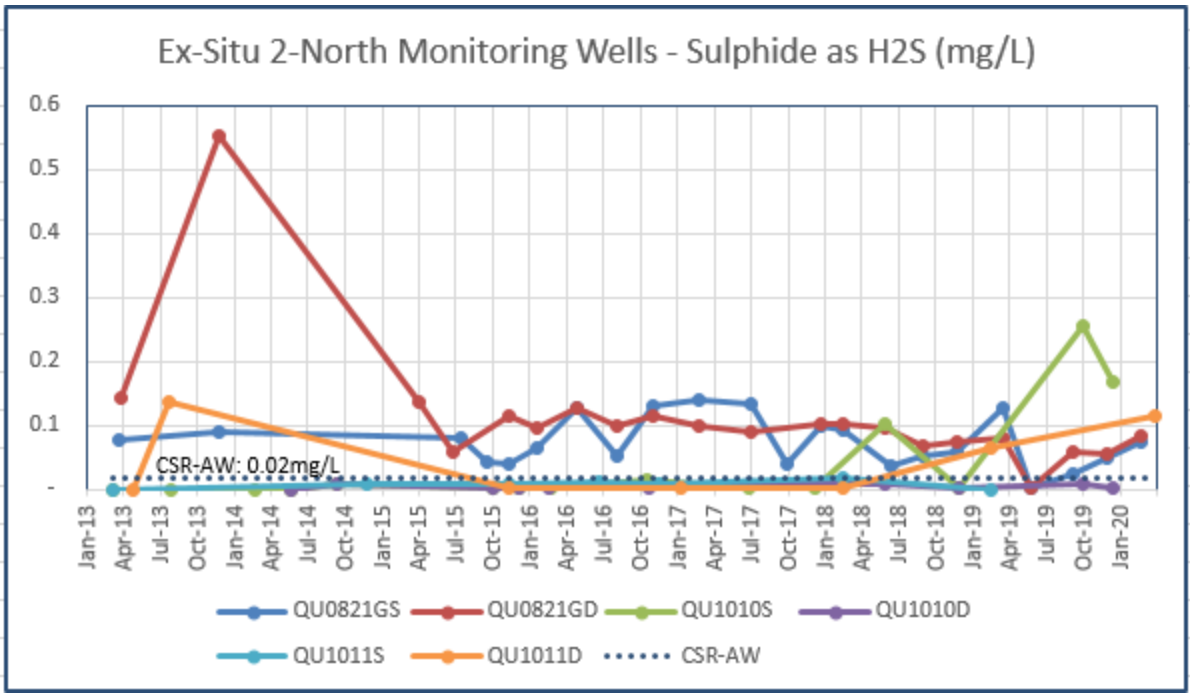



**Figure 5: Ex-Situ 2N Monitoring Wells - Sulphide as $H_2S$**

### *4.2.2 River Barrier Pillar Area*

#### ***4.2.2.1 River Barrier Pillar with 5-South CCR***

Groundwater well QU11-09 M represents water in the underground PAG-CCR disposal location at 87 Panel RBP. Disposing of PAG-CCR was completed in the RBP in September of 2012 with the PAG-CCR elevation at 153.5 m. The water level in QU11-09 M increased since 2012 from 145 m to 180 - 210 m dependent on groundwater influx and dewatering efforts in 2-North. Groundwater elevations continue to be monitored to better understand the dynamics within the RBP with respect to historic mining operations.

Source terms for the River Barrier Pillar (RBP) with PAG-CCR were originally developed using 7-South CCR quality data. As mining operations progressed, a storage area for the existing 5-South PAG-CCR was needed prior to mining 7-South. The RBP location was deemed suitable and excess 5-South PAG-CCR was backfilled in that location. In previous reports, the generated source terms (using 7-South PAG-CCR) were used for comparing and evaluating water quality results. As these source terms aren't necessarily applicable for water quality in this storage area, additional information including annual averages were used to help evaluate water quality.

As displayed in Table 9, source terms derived from 7-South PAG-CCR along with annual averages from 2012 to 2020 including cumulative averages. Observations for each parameter in QU11-09 M are as follows:

- Alkalinity displayed an increase since initial flooding of the PAG-CCR with a relatively stable trend since
- Fluoride saw an increase after initial flooding in 2014 but has since declined
- Sulphate peak concentrations were observed as 1680 mg/L during initial flooding with a steep decline since 2014 (after flooding) to 650 mg/L observed in December 2019
- Arsenic has remained in low concentrations at QU1109M with the shallow groundwater well (QU1109S) displaying the greatest concentrations.
- Boron remained relatively stable after initial flooding
- Cadmium has been observed in low levels throughout monitoring
- Cobalt saw an increase after initial flooding and has since declined
- Coppered remained in low concentrations just above expected case
- Iron and manganese remain elevated but have started to decline in concentrations
- Nickel has remained in low concentrations
- Selenium peaks have been observed in the past with a declined in 2019-20
- Zinc has slight fluctuations but remains stable

**Table 9: Source Terms Comparison for RBP with 7-South CCR and Averages**

| RBP (QU-11-09 M) w / 7S CCR | | | 2012-2013 | 2013-2014 | 2014-2015 | 2015-2016 | 2016-2017 | 2017-2018 | 2018-19 | 2019-20 | Average of all years |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Parameter | Expected Case | Worst Case | n=1 | n=5 | n=7 | n=12 | n=11 | n=12 | n=5 | n=2 | |
| Alk-T | 282 | | | 387.8 | 412.9 | 508 | 508.6 | 513 | 496 | 470 | 471 |
| F-D | 0.71 | 1 | 0.2 | 0.248 | 0.35 | 0.118 | 0.114 | 0.108 | 0.108 | 0.12 | 0.170 |
| SO4-D | 396 | 1990 | 2210 | 1540 | 1031 | 1220 | 1206 | 915 | 786 | 665 | 1197 |
| Al-D | 0.02 | 0.05 | 0.0075 | 0.001 | 0.0059 | 0.00847 | 0.00631 | 0.00676 | 0.0054 | 0.004 | 0.006 |
| As-D | 0.128 | 0.19 | 0.00335 | 0.00332 | 0.00479 | 0.00709 | 0.00523 | 0.00258 | 0.00258 | 0.0027 | 0.004 |
| B-D | 0.71 | 1.88 | 1.9 | 1.51 | 1.114 | 1.34 | 1.09 | 1.074 | 1.061 | 0.91 | 1.250 |
| Cd-D | 0.000017 | 0.000175 | 0.000025 | 0.00001 | 0.0000089 | 0.00000417 | 0.00002224 | 0.00001038 | 0.000009 | 0.0000075 | 0.0000121 |
| Co-D | 0.005 | 0.148 | 0.0129 | 0.00496 | 0.01237 | 0.000485 | 0.000274 | 0.0004 | 0.00036 | 0.0002 | 0.004 |
| Cu-D | 0.0001 | 0.001 | 0.00125 | 0.0002 | 0.000471 | 0.002193 | 0.000183 | 0.0004 | 0.00036 | 0.0002 | 0.001 |
| Fe-D | 0.805 | 33.5 | 0.499 | 7.72 | 16.19 | 16.6 | 19.3 | 13.7042 | 10.28 | 6.420 | 11.339 |
| Mn-D | 0.14 | 2.89 | 0.424 | 0.314 | 0.5 | 0.4 | 0.427 | 0.2955 | 0.248 | 0.165 | 0.347 |
| Ni-D | 0.007 | 0.213 | 0.0299 | 0.007 | 0.0141 | 0.0006 | 0.00058 | 0.002 | 0.0018 | 0.0008 | 0.0071 |
| Se-D | 0.0002 | 0.0004 | 0.00025 | 0.0001 | 0.000093 | 0.00005 | 0.000055 | 0.0002 | 0.000258 | 0.00008 | 0.000135 |
| Zn-D | 0.008 | 0.088 | 0.0075 | 0.001 | 0.00186 | 0.00755 | 0.00279 | 0.01 | 0.009 | 0.0038 | 0.005 |

#### *4.2.2.2 RBP Ex-Situ Groundwater*

Concentrations of dissolved sulphate measured in the ex-situ wells of the River Barrier Pillar area are low but are elevated enough to assist with analysis of the groundwater paths exiting from the in-situ mine waters (Figure 6). Storage of the PAG-CCR and subsequent flooding of the workings are thought to contribute to these elevated sulphate concentrations.

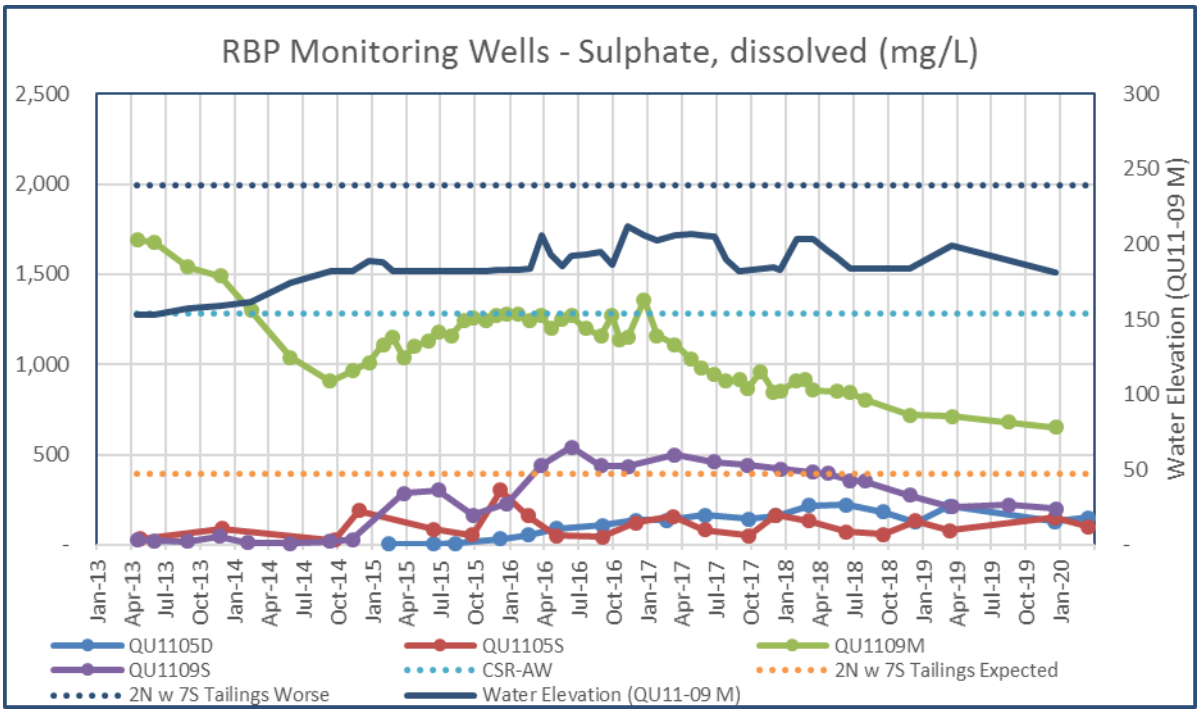



**Figure 6: Ex-Situ River Barrier Pillar Monitoring - Dissolved Sulphate vs Water Elevation**

QU11-05 D is nested down dip/gradient from the RBP PAG-CCR storage facility in the #1 coal seam and contains dissolved sulphate levels that have steadily increased from 6 mg/L in June 2015, to 150 mg/L in March 2020. Although sulphate trended down and seems to be stabilizing in all wells over years. Sulphate concentrations indicates water transport from either the RBP, 2 North workings, 5-South workings or a combination of all three. Another parameter that has shown a steep increase concurrent with sulphate from June 2015 to March 2019 is sulphide as $H_2S$. The depth of this well along with low dissolved oxygen indicates a favourable location to have high sulphide concentrations. This trend for high sulphide decreased considerably in 2019-20 from 41

mg/L to 10.2 mg/L in March 2020 as displayed in Figure 7 below. This result could also be considered an outlier.

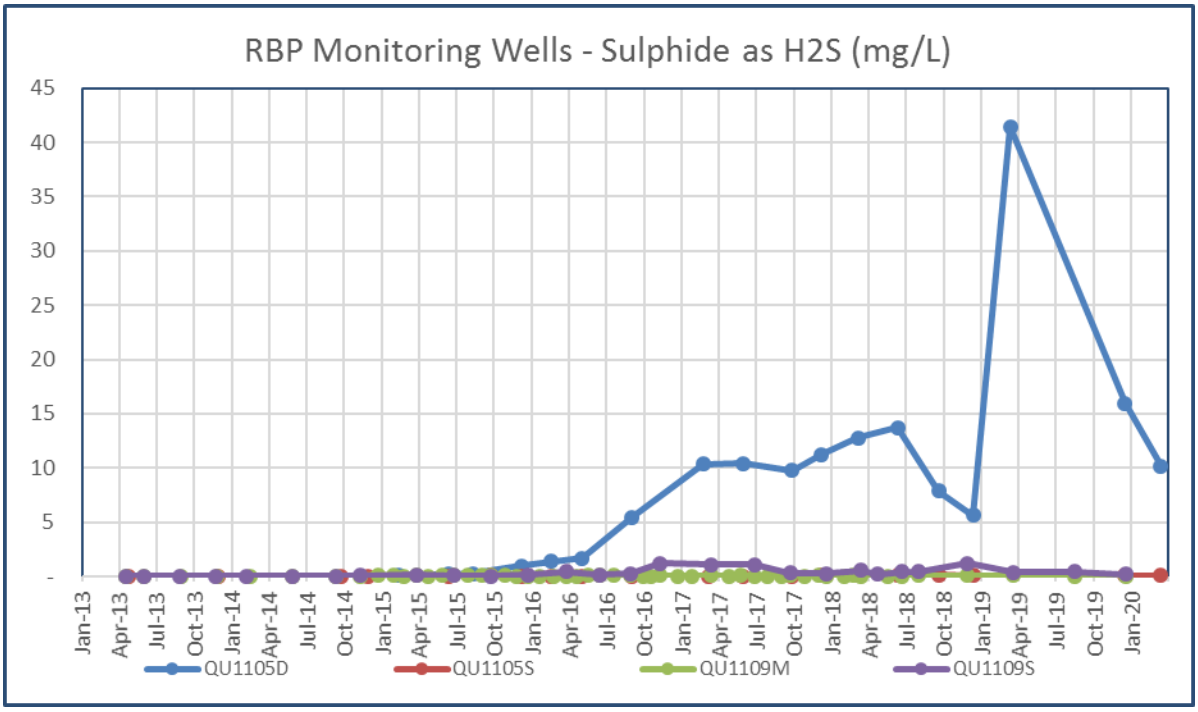



**Figure 7: Sulphide as H2S in RBP**

QU11-05 S, nested stratigraphically above, but down gradient/dip from the RBP, report sulphate concentrations that are elevated compared to other ex-situ 2-North wells. The increase in sulphate concentrations occur as autumn precipitation bring large quantities of water to the mine site and water levels underground rise. The fluctuations aren't completely proportionate to underground water levels in either the RBP or 2-North mine pool; however, they provide some evidence that there is hydraulic conductivity or migration of groundwater across the stratigraphy.

QU11-09 S is a well nested in the stratigraphy directly above the RBP in-situ monitoring well, QU11-09 M. Prior to 2015, sulphate concentrations at this well have ranged from approximately 20-50 mg/L when water levels were low in the PAG-CCR storage area below. Since early 2015, sulphate concentrations have fluctuated in both shallow groundwater wells (QU11-09S and QU11-05 S), with increasing concentrations observed in QU11-09 S. Since 2018 the trend has been decreasing in QU11-09 S with a stable tends observed in QU11-05 S. As displayed in Figure 6, sulphate concentrations at QU11-09 S appeared to be directly correlated to groundwater elevations in the PAG-CCR storage area. This increase indicates migrating in-situ waters up vertically, likely

via the natural hydraulic conductivity of the geology, as well as structural conduits (fault and joint planes) encountered during mining. Based on observations, these increases occur when groundwater elevation in the well below rise above 181-185 MASL, the elevation at which the lithology transitions into the sandstone that hosts QU11-09 S. It can also be inferred that water migrating to this well is sourced from above the 5-South mine. See Figure 8 for groundwater migration paths (Lorax, 2011).

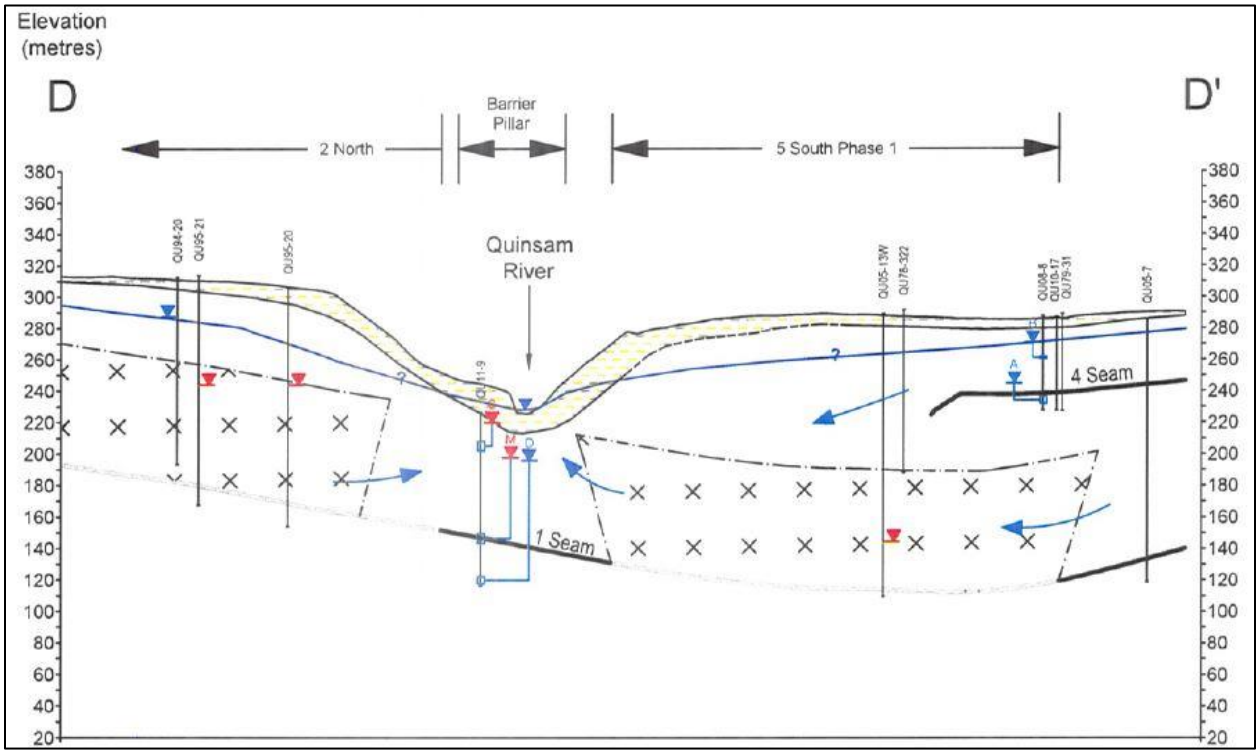



**Figure 8: Groundwater Transport in RBP and Vicinity**

Following the completion of the 8-Mains plugs (engineering control established to eliminate unnatural mixing of groundwater accumulated in the 5-South side of the mine, and the 2-North side of the mine) in February of 2014, the water levels in 5-South began to rise, increasing the hydraulic head pressure on the groundwater stored in 5-South and RBP. It is assumed that as the water level rose, the pressure on the groundwater flow path was increased, as shown by the increase of sulphate levels in QU11-09 S.

### *4.2.3 North Mining Area Plant Monitoring Wells*

Two nested monitoring wells (MW00-6 and MW00-1) are in the peripheries of a catchment drainage ditch located below the coal processing plant (CPP) and the clean coal pad. Both wells contain a "shallow" and "deep" groundwater intercept nested at different depths of the overburden till layer as shown in Appendix C.

Noted in the well installation completion log for MW00-1 (D&S), the 'Shallow' well was nested in a layer of the till that contained a larger percentage of cobbles and coarse gravels compared to the finer grained gravelly sands and clay materials noted surrounding the 'Deep' well. This is important to note, as observations made in the shallow groundwater wells compared to the deep wells include more conductive water that is higher in alkalinity and exhibits elevated concentrations of dissolved sulphate. This leads to the assumption that the shallow wells are getting direct communication from the CPP and clean coal pad via the catchment drainage ditch while the deeper wells are isolated from that groundwater due to some other control, possibly based on grain size differences in the till. However, while the differences between the groundwater results from the shallow and deep wells are obvious, any difference between the host till of the shallow and deep well located at MW00-6 were not noted in the completion log and therefore cannot be easily explained by geologic control. MW00-1 D is nested significantly deeper in the till at 28 metres than MW00-6 D at 14 metres. Interestingly, MW00-6 is geographically closer (while only 15 metres) to the plant ditch and coal pad where iron and sulphate should be observed in higher concentrations.

Historically, MW00-1 S displayed slightly acidic conditions, with the pH falling just below 6.4 on most occasions, while MW00-6 S was generally neutral. The deeper wells are more alkaline with pH ranging from 8.3 - 9.5. MW00-1 S displayed the highest concentrations of dissolved sulphate, hardness, iron, manganese and other constituents. The deeper wells (MW00-1 D and MW00-6 D) have low concentrations of metals and sulphate with alkaline pH and low conductivity. Since January of 2013, regardless of the variation of precipitation throughout the year, the groundwater maintains its natural path through the clean coal pad and its surroundings, into the ditch, and through the till substrates.

Consistent with past years, dissolved arsenic (Figure 9), aluminum and zinc are found in greater concentrations in the deeper wells than the shallow wells but remain at moderate concentrations and below CSR-AW standards. The main concern and objective of these wells is to intercept plant stockpile water to trace effects the coal pad may have near Middle Quinsam Lake.

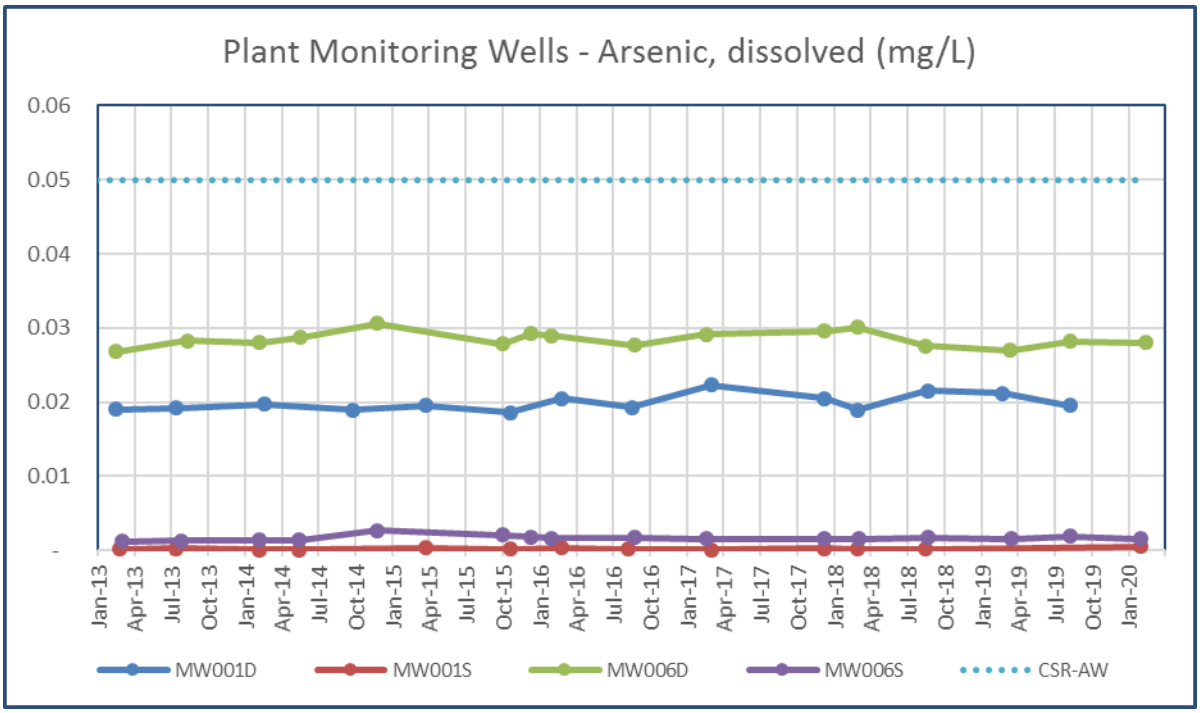



**Figure 9: Plant Monitoring Wells - Dissolved Arsenic**

Dissolved sulphate levels (Figure 10) in both shallow wells exhibit a decreasing trend with some apparent seasonal variation showing higher concentrations of sulphate throughout the drier season and lower concentrations through the rainy season. Dissolved sulphate concentrations at MW00-6 S have shown stable trends with little seasonal variation since 2015. Sulphate is the main parameter of interest as it indicates any changes or improvement on water management practices implemented and those effects on local groundwater from the coal pad and plant site collection ditch.

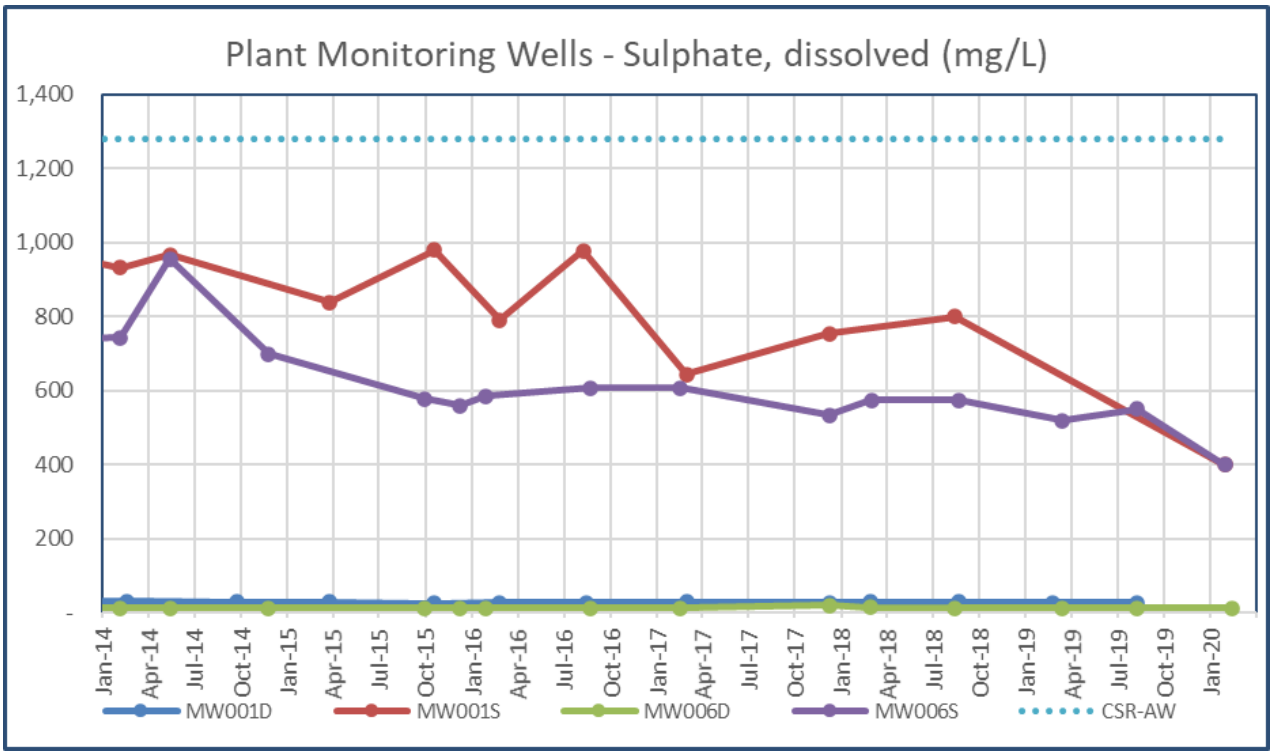



**Figure 10: Plant Monitoring Wells - Dissolved Sulphate**

The Quinsam Coal Environmental Department is currently assessing this area of groundwater monitoring, considering the possibility of eliminating one of these monitoring wells (due to similar parameter trends) and re-establishing a groundwater monitoring site closer to the southern drainage of the CPP and the clean coal pad. In 2019-20 one well MW001D collapsed and could not be monitored.

### *4.2.4 7-South*

#### ***4.2.4.1 7-South Mine with PAG-CCR***

Area 2 of the 7-South mine is being used as a sub-aqueous PAG-CCR storage facility for waste material produced by the mechanical processing (crushing and floatation) of the 7-South raw coal product. Storage of this PAG-CCR commenced March 12, 2015 and has subsequently flooded due to natural groundwater infiltration. The in-situ flooded water in this area has been monitored using well QU14-10, with 10 sampling events taking place during this monitoring period. The 7-South mine void water will continue to be monitored following completion of mining and subsequent subaqueous disposal of PAG-CCR.

Lorax predicted Source Term concentrations, which are provided in Mine Permit (C-172) Amendment; 7-South Development Volume 3 Appendix J. Lorax outlined three scenarios in which results would vary, which are, in summary:

> Scenario 1: Water quality based on the CCR that is being stored, having been given enough time on surface (greater than 2 years) to become acidic, prior to being flooded.
>
> Scenario 2: Water quality based on the CCR being stored less than 2 years since being produced, which would not be acidic.
>
> Scenario 3: Expected long term water quality concentrations following the complete dissolution of stored oxidation products and the influenced mine water being completely discharged from the mine, or re-stabilized as metal sulphides within the flooded workings.

Table 10 displays the Source Term expectations for Scenario 2 for 7-South mine containing saturated CCR. The average results for the sampling events of 2019-20 were derived using half the detection limits for those results reported as less than detection limits. Average concentrations calculated are then compared to scenario 2 as they are most applicable. Although not a parameter of interest, the water in the flooded 7-South workings is very hard, higher than any other well on site. Hardness levels averaged 2046 mg/L, indicating a strong influence from calcium and magnesium carbonates, likely found interstitially in the sandstone that is a large constituent in the 7-South coarse coal reject (Figure 13).

**Table 10: Source Terms Comparison for 7-South with PAG-CCR**

| Parameters | Source Terms for 7 South Mine Containing Saturated CCR[1] | 2019-2020 Results (*n* = 6) | | |
|---|---|---|---|---|
| | | Minimum | Maximum | *Average |
| | | | | > expected |
| pH | 6.48 | 6.55 | 6.73 | **6.68 (<)** |
| Acidity (as $CaCO_3$) | | 12 | 32.4 | 20.3 |
| Alkalinity (as $CaCO_3$) | | 290 | 310 | 299.7 |
| Fluoride (F) | 0.6 | 0.16 | 0.19 | 0.172 |
| Sulphate ($SO_4$) | 1260 | 1700 | 1900 | **1795** |
| Aluminum (Al) | 0.009 | 0.003 | 0.0075 | 0.006 |
| Arsenic (As) | 0.19 | 0.0894 | 0.109 | 0.0948 |
| Boron (B) | 0.98 | 0.98 | 1.26 | **1.13** |
| Cadmium (Cd) | 0.0002 | 0.000005 | 0.000025 | 0.0000192 |
| Cobalt (Co) | 0.062 | 0.00048 | 0.0005 | 0.0005 |
| Copper (Cu) | 0.001 | 0.0002 | 0.0005 | 0.0004 |
| Iron (Fe) | 6.705 | 1.6 | 1.74 | 1.68 |
| Manganese (Mn) | 2.885 | 1.35 | 1.53 | 1.44 |
| Nickel (Ni) | 0.122 | 0.0024 | 0.0031 | 0.00258 |
| Selenium (Se) | 0.004 | 0.0001 | 0.00025 | 0.0002 |
| Zinc (Zn) | 0.088 | 0.005 | 0.0125 | 0.01 |

All units are in mg/L except pH

***When a result was less than the detection level (ie. <0.5), half detection level value was used for averaging (ie. <0.5 = 0.25)**

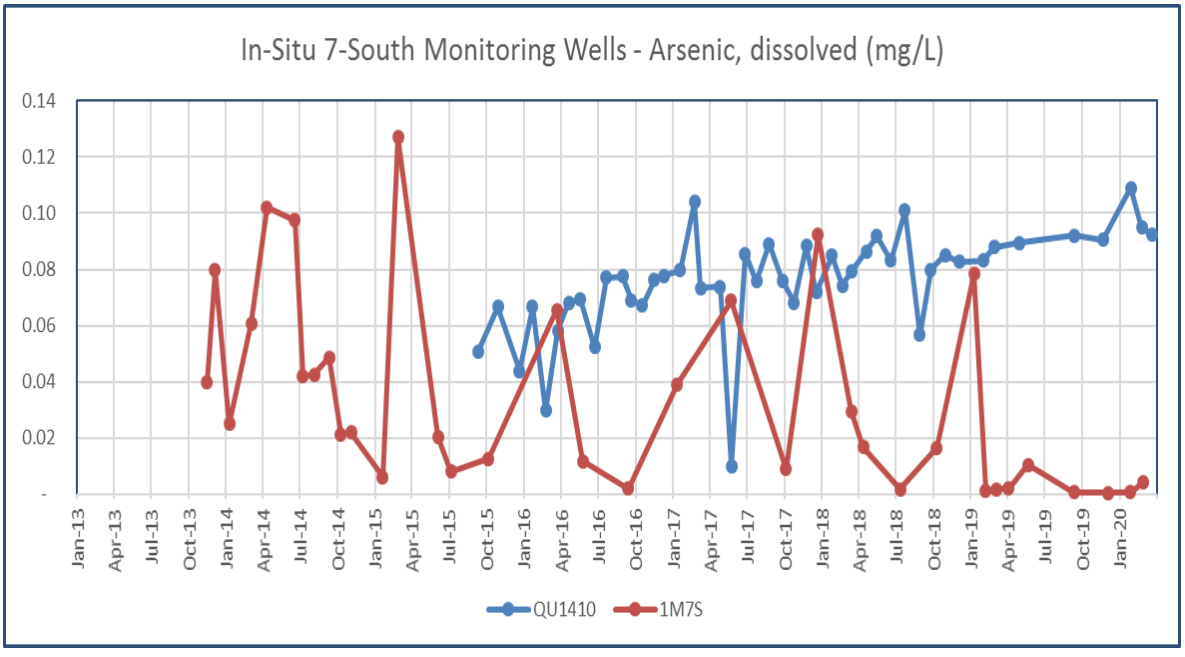



**Figure 11: 7-South In-Situ Monitoring Wells - Dissolved Arsenic**

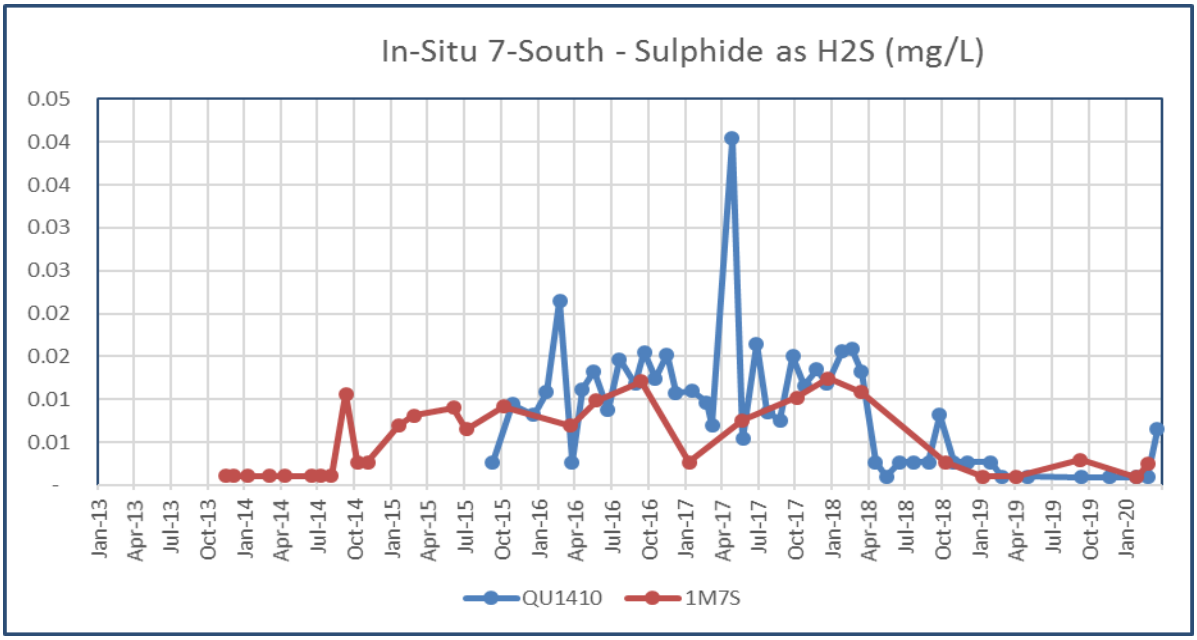



**Figure 12: 7-South In-Situ Monitoring Wells – Sulphide as H2S**

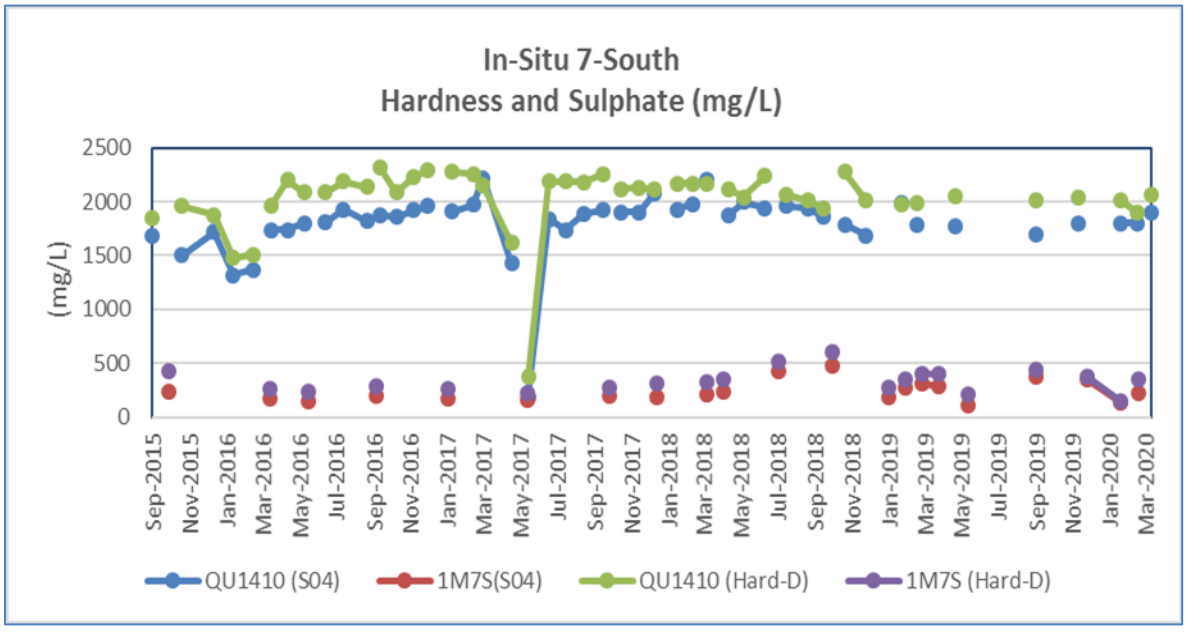



**Figure 13: 7-South In-Situ – Dissolved Hardness and Sulphate**

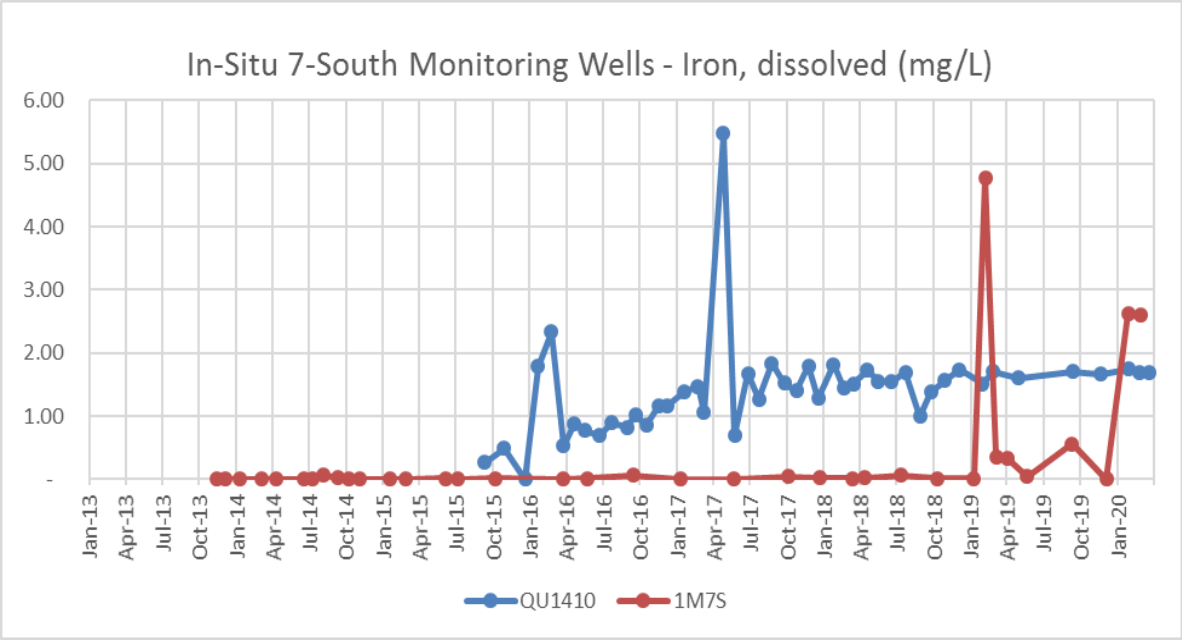
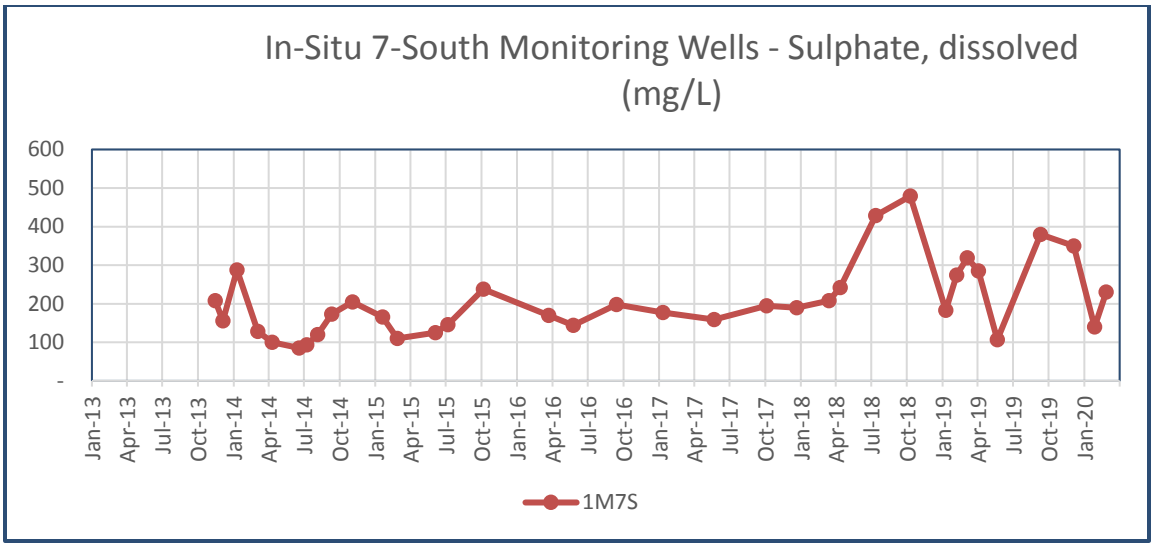



**Figure 14: 7-South In-Situ Monitoring Wells - Dissolved Iron**

#### *4.2.4.2 7-South Underground Sump*

Water chemistry in the 7-South mine pool was monitored via sump sampling in 1 Mains (1M7S). Samples from 1M7S exhibit low and consistent levels of dissolved sulphate and dissolved iron with average values of 249 mg/L and 1.23 mg/L respectively, during this monitoring period. Dissolved arsenic, however, has shown fluctuations since monitoring has been established, with the higher concentrations observed throughout the winter, likely attributed to high groundwater infiltration through sandstone. These inconsistent arsenic values may be attributed to variable amounts of water either pumped into or out of this sump for mining purposes. There was one dissolved As and Fe result that was elevated above all other results collected in January. These results are suspicious and do seem to fall outside of the normal range of water quality observed for 1M7S, it is suspected to be an outlier or sampler error.




#### *4.2.4.3 7-South Ex-Situ*

The primary focus of the 7-South ex-situ groundwater monitoring is to evaluate water flowing from Area 2 (permanent PAG CCR storage location) towards the Quinsam River; monitoring wells QU08-13 A and B satisfy this consideration. In addition to monitoring seepages from Area 2, monitoring well QU08-10 is situated to monitor groundwater transport from permitted mining reserves in 7-South (areas 4 & 5) towards the Iron river. This well is located adjacent to the Area 4 development on the North side of the Long Lake fault and is nested in the #4 coal zone.

The No. 4 coal zone at 7-South is hosted within the Dunsmuir Member sandstones of the Comox Formation, which is naturally elevated in arsenic and fluoride. On average, the highest concentration of arsenic in the current Quinsam Coal monitoring regime is found in the 7-South area. The northern limit of the 7-South underground mine workings is limited by the location of a normal fault called the Overlook Fault, which displaces the #4 coal zone vertically by 14 metres. The Overlook Fault defines the groundwater flow path between the 7-South mine, and the monitoring wells QU08-13 A and B. Well QU08-13 A monitor's groundwater traveling down-gradient from the 7-South workings within the #4 coal zone at 52 metres deep. QU08-13 B monitors groundwater higher up in the stratigraphic column at the glacial till overburden/sandstone contact at 26 metres deep, effectively monitoring groundwater that would be migrating up through the stratigraphy towards the Quinsam River. This groundwater is suspected to follow a different flow path at the down gradient northern extent of the 7-South mine than other groundwater in the

area (Lorax, 2011). Lorax has described this well as significantly sodium enriched with circum-neutral pH. The groundwater is anoxic with mild to moderate reducing conditions.

Starting March 2015 PAG-CCR from the processing of 7-South raw coal was transported from the Quinsam Coal Preparation Plant to the 7-South Disposal Bin, which delivers PAG-CCR directly onto the underground belt structure for transport into Area 2. Since that date, material has been backfilled, and allowed to naturally flood. The in-situ flooded water in this area has been monitored using well QU14-10, while the ex-situ groundwater has been monitored using QU08-13 A & B. Data acquired prior to March 2015 has provided information about baseline conditions and will be used for comparison when analyzing future monitoring.

The most notable and relevant observation was the low, stable sulphate concentrations throughout the years with a distinctive increase in dissolved iron and sulphate in February 2018. This increase was concurrent with advance mining in the northern extent of 3-Mains. With expansion of mining boundaries in this area, it is believed that mobilization of materials and "shrinkage" of the effective barrier between the mine and monitoring well has contributed to the increase in these parameters. Future monitoring has displayed a decreasing trend in these parameters where they have not persisted at elevated levels. In both QU08-13 A & B arsenic and sulphide as hydrogen sulphide exceeded the CSW-AW.

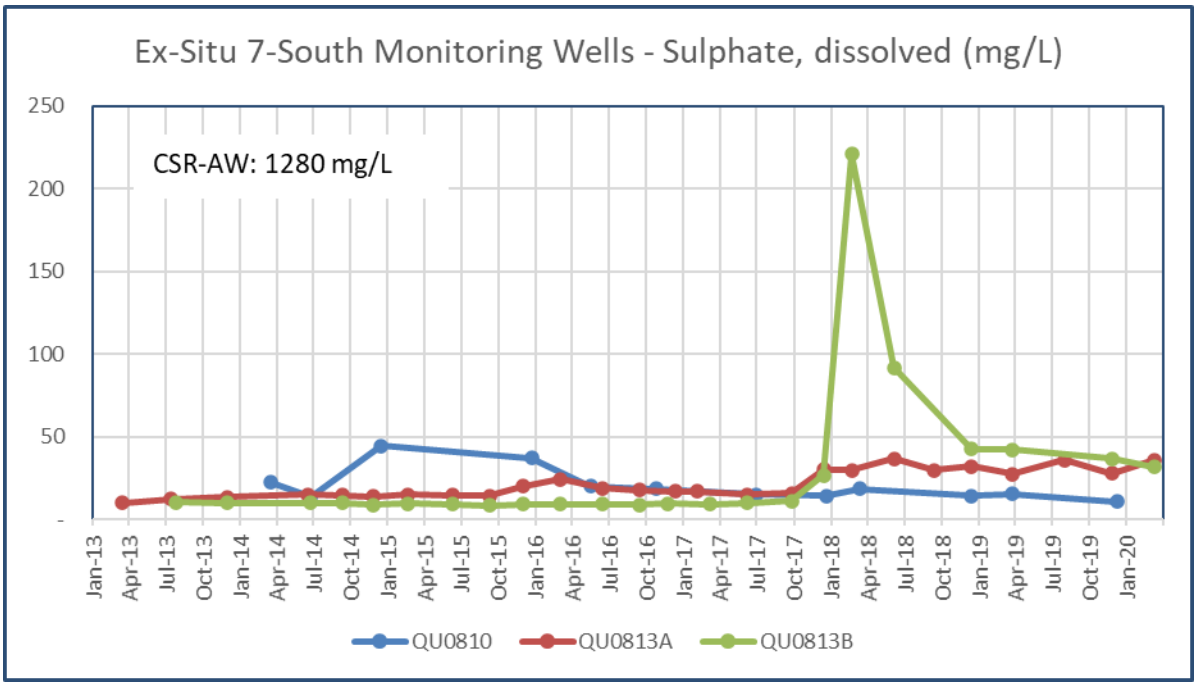



**Figure 15: 7-South Ex-Situ Monitoring Wells - Dissolved Sulphate**

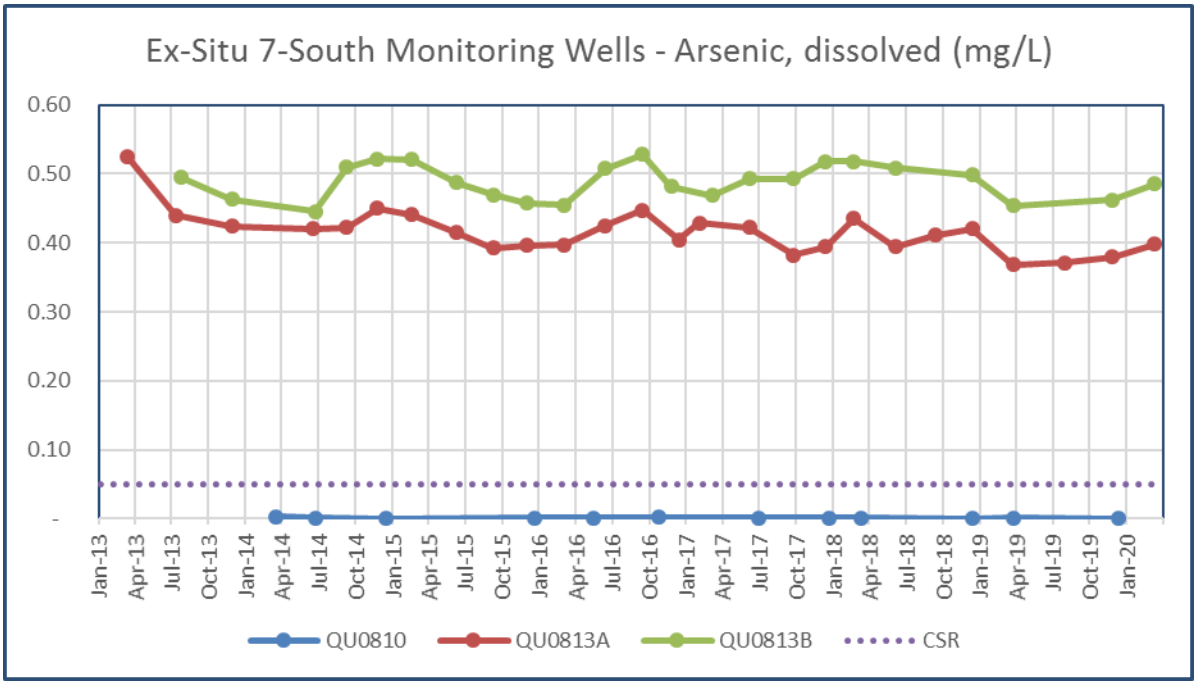



**Figure 16: 7-South Ex-Situ Monitoring Wells - Dissolved Arsenic**

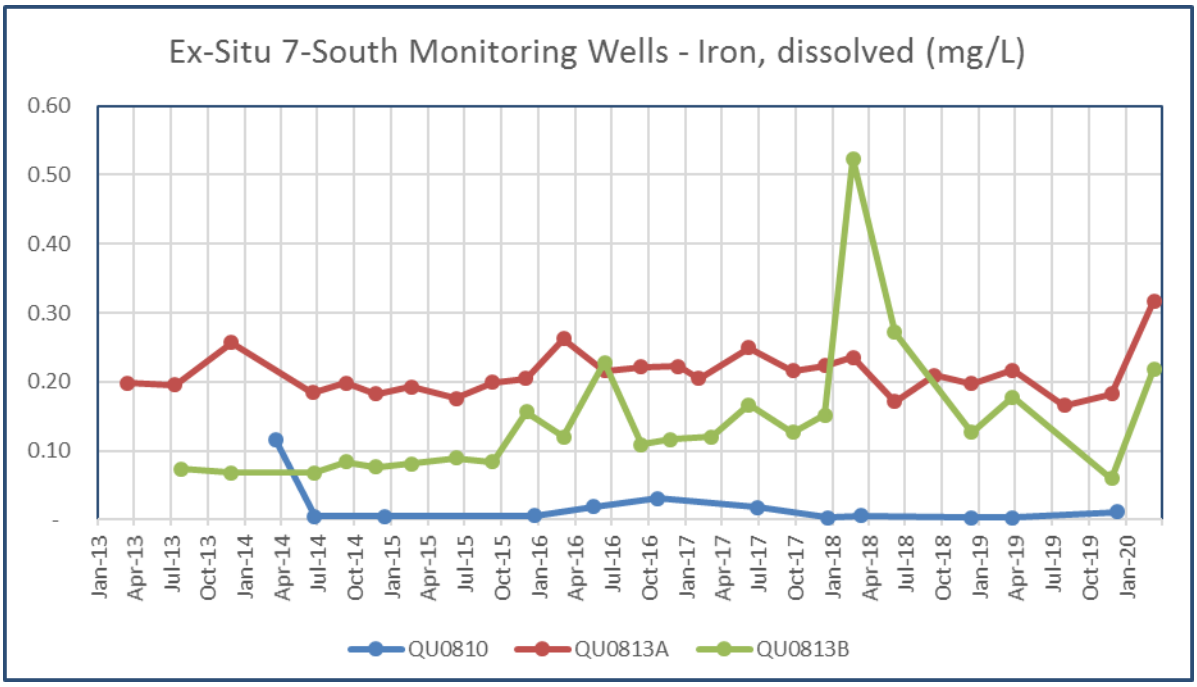



**Figure 17: 7S Ex-Situ Monitoring Wells - Dissolved Iron**

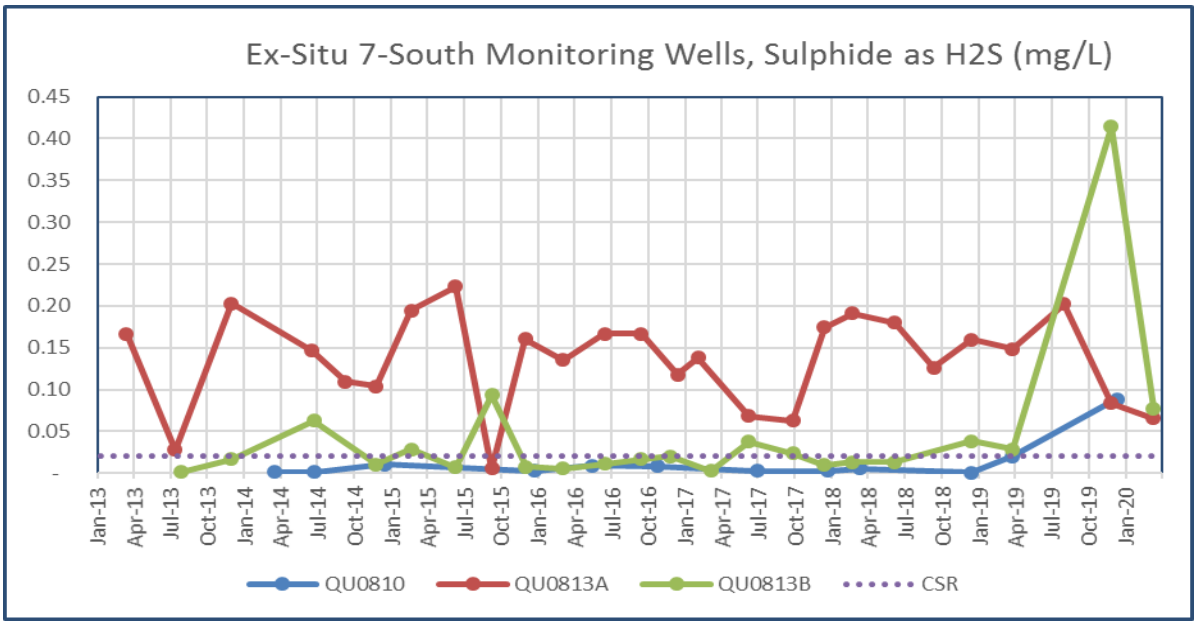



**Figure 18: 7S Ex-Situ Monitoring Wells – Sulphide as Hydrogen Sulphide ($H_2S$)**

### *4.2.5 2/3 South Monitoring Wells*

#### ***4.2.5.1 2/3 South Mine Pool***

Monitoring wells MW00-4 and QU11-11 were established for monitoring the 2-South mine pool water quality while QU11-11 is also used for reference for the treatment system influent. 2-South mine pool water enters Long Lake via the Long Lake Seep and discharges are closely related to water levels monitored at MW00-4. These wells exhibit moderate concentrations of sulphate averaging 300 mg/L (MW00-4) and 605 mg/L (QU11-11) in this monitoring period. It is noted that both wells are relatively stable for sulphate concentrations although QU11-11 declined slightly since late 2016. Concentrations of dissolved metals are relatively low in these wells and exhibit neutral pH. Dissolved arsenic and iron concentrations display a periodic spike in well QU11-11 (INF) and are typically related to rising mine pool water elevations as flushing of the mine walls encourages a gradational increase in dissolved metals. The distinct increase of dissolved arsenic and iron in mid-2017 at QU11-11 is a direct result of changing to field filtering and preservation on site.

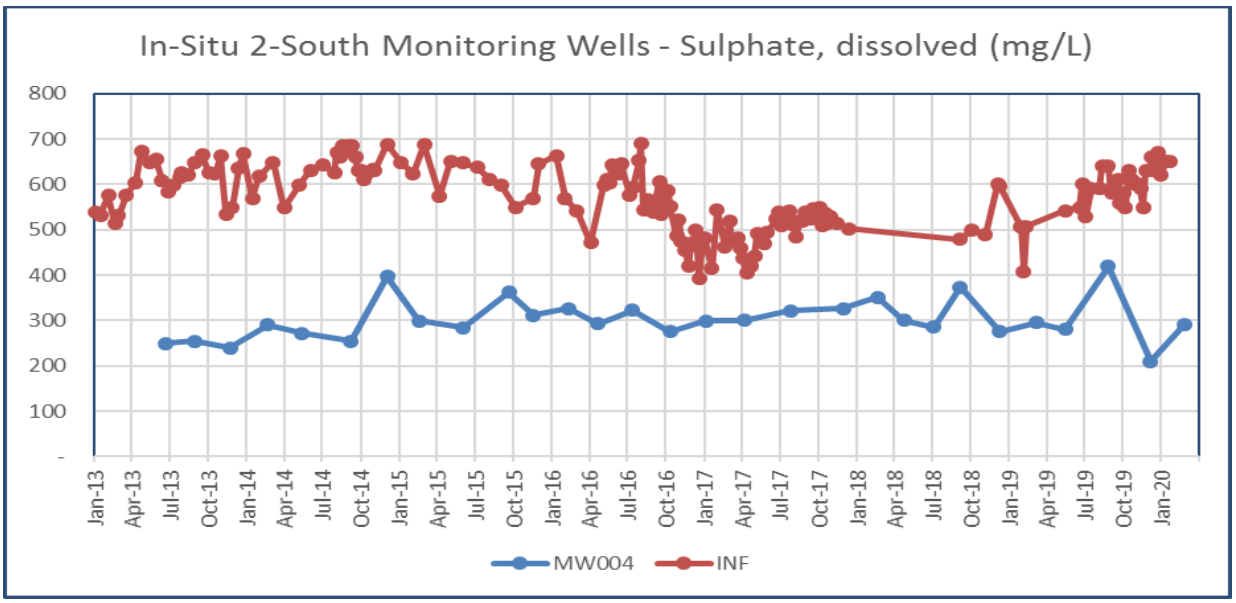



**Figure 19: In-Situ 2S Monitoring Wells - Dissolved Sulphate**

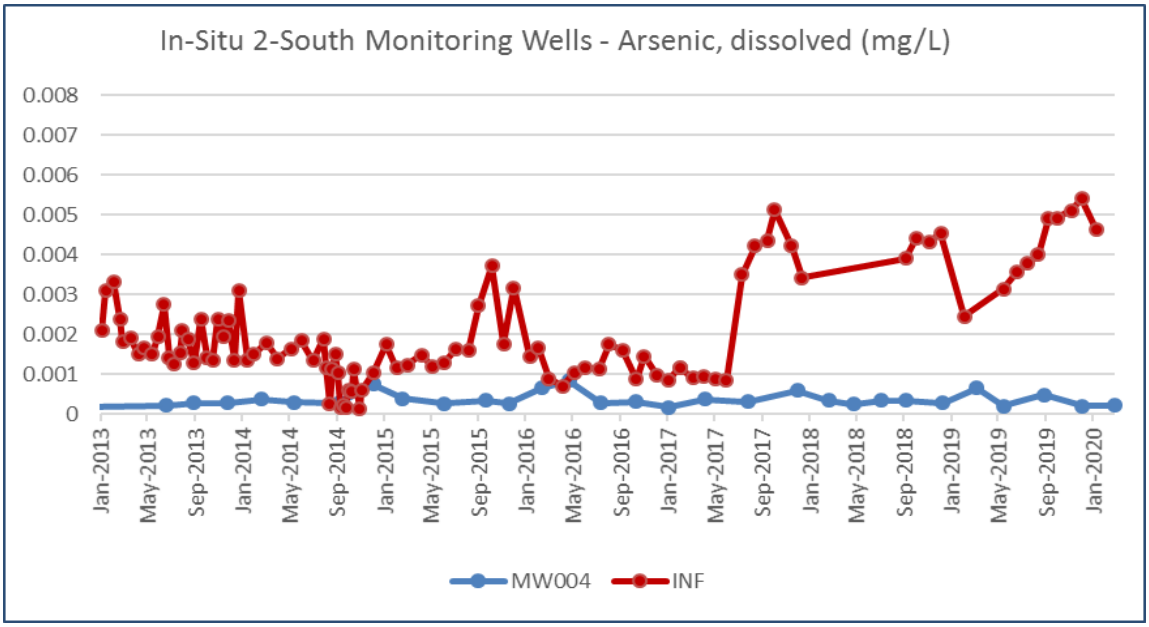



**Figure 20: In-Situ 2-South Monitoring Wells - Dissolved Arsenic**

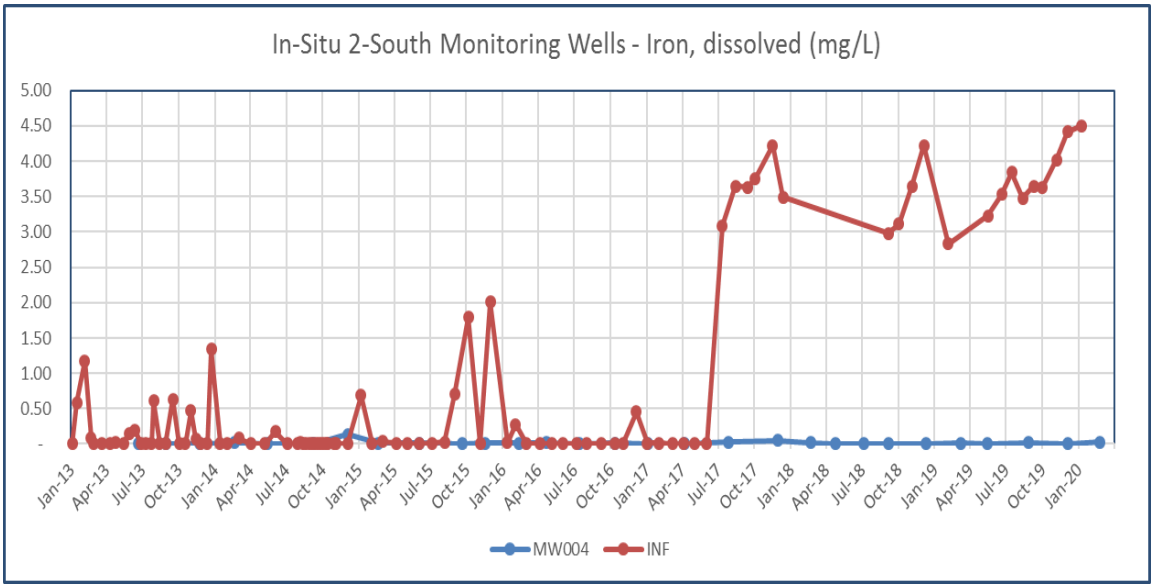



**Figure 21: In-Situ 2-South Monitoring Wells - Dissolved Iron**

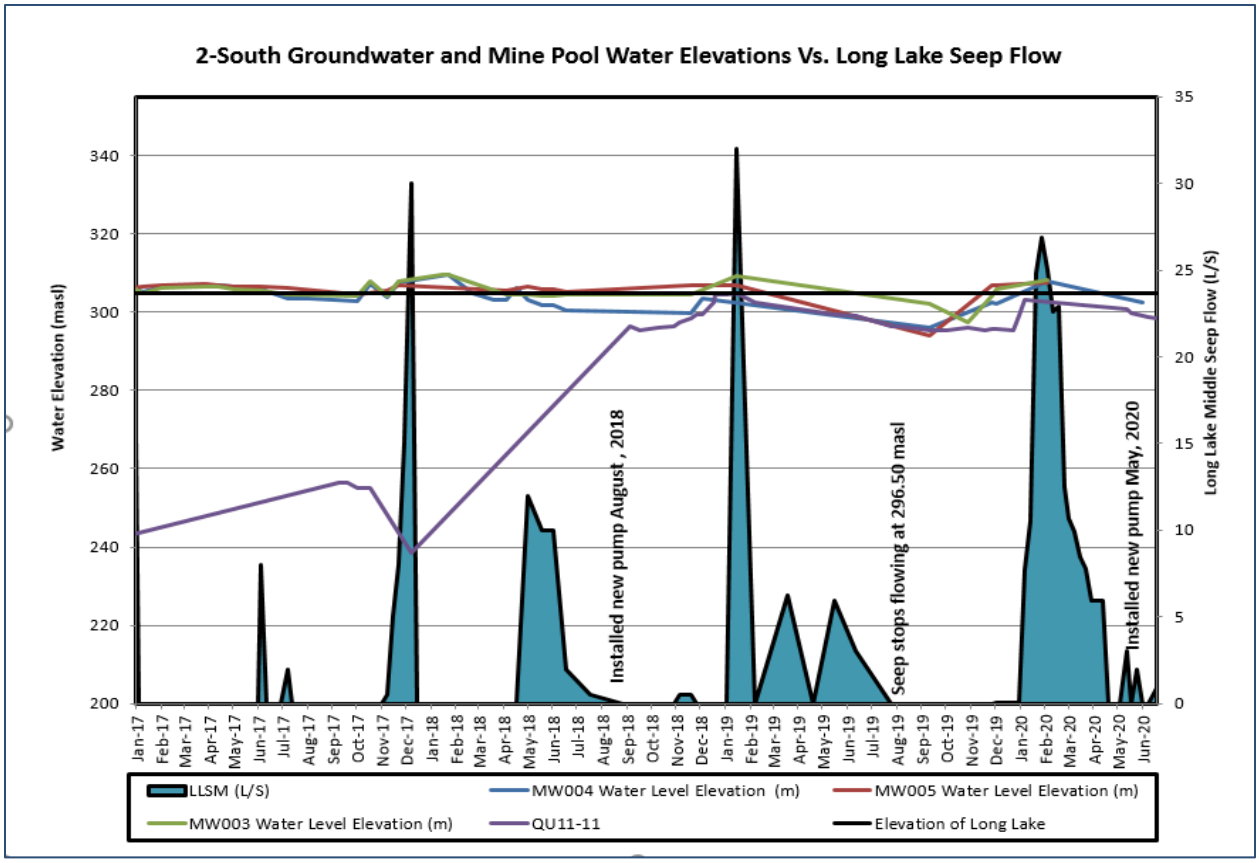



**Figure 22: 2-South Groundwater and Mine Pool Water Elevations**

In February 2020 the underground dewatering pump at QU11-11 faulted on restart and was replaced in May 2020. The relationship between the mine pool elevation and flow at the Long lake seeps continues to be established. Currently the seep stops flowing when the mine pool drops below 296.50 masl.

#### *4.2.5.2 2 & 3 South In-situ and Ex-Situ Wells*

Monitoring wells in the 2 and 3-South areas exhibit elevated concentrations of sulphate and some metals based on their proximity to the 2-South and 3-South PAG-CCR storage facilities and past surface disturbances; both open pit and underground mining activities. These wells include MW00-2 (in-situ) located next to the 3-South flooded PAG-CCR Storage Facility as well as MW12-23 and MW12-24 (ex-situ) established as wells between the 2-South flooded PAG-CCR Storage Facility and No Name Lake. Dissolved iron, manganese and other dissolved materials are

elevated at MW00-2 as it is situated about 5 metres from the 3-South PAG-CCR pond and intercepts the water that flows through the hydraulically conductive till.

While MW00-2 is located to monitor the drainage from the 3-South pit, MW12-23 and 24 are designed to intercept seepage from the reclaimed 1-South pit, the 1-South sump, and the 2-South pit. As evidenced by the dissolved sulphate levels found in these wells, the shallower well MW12-24, intercepts a perched water table, potentially attributed to the reclaimed 1-South pit up gradient, but independent of 2-South groundwater, whereas the deeper well MW12-23, intercepts 2-South seepage groundwater at an elevation approximately 3 metres below the surface water elevation in No Name Lake. Lorax suggests that No Name Lake is a 'losing' lake (i.e., recharging the aquifer at its downstream end). According to initial drill logs during the installation of these monitoring wells, the siltstone bedrock appears very tight in this area with no water bearing features intercepted

Monitoring wells MW12-23 and MW12-24 (particularly MW12-23) have slow recharging rates, making proper sampling very difficult and often, not feasible. Sampling at MW12-23 occurs over two days; day one involves purging the well and day two involves a low flow sampling technique to obtain water that has formed over a 24-hour period using a portable bladder. While quarterly sampling is required, MW 12-23 is often found to be dry, (especially during the summer) and sampling is not possible. Only MW 12-23 was monitored in 2019-20. Most of the time the groundwater has been found to oxidize and remain stagnant rather than have any freshwater infiltration.

Notable observations in for MW002 include:

- Dissolved arsenic and iron concentrations at MW-002 are displaying an increasing trend
- Conductivity was found to be very high in MW00-2 related to the 3-South PAG-CCR
- Dissolved manganese is elevated in MW00-2 indicating influence from PAG-CCR storage, but the trend is declining
- Sulphate is displaying an elevated but stable trend

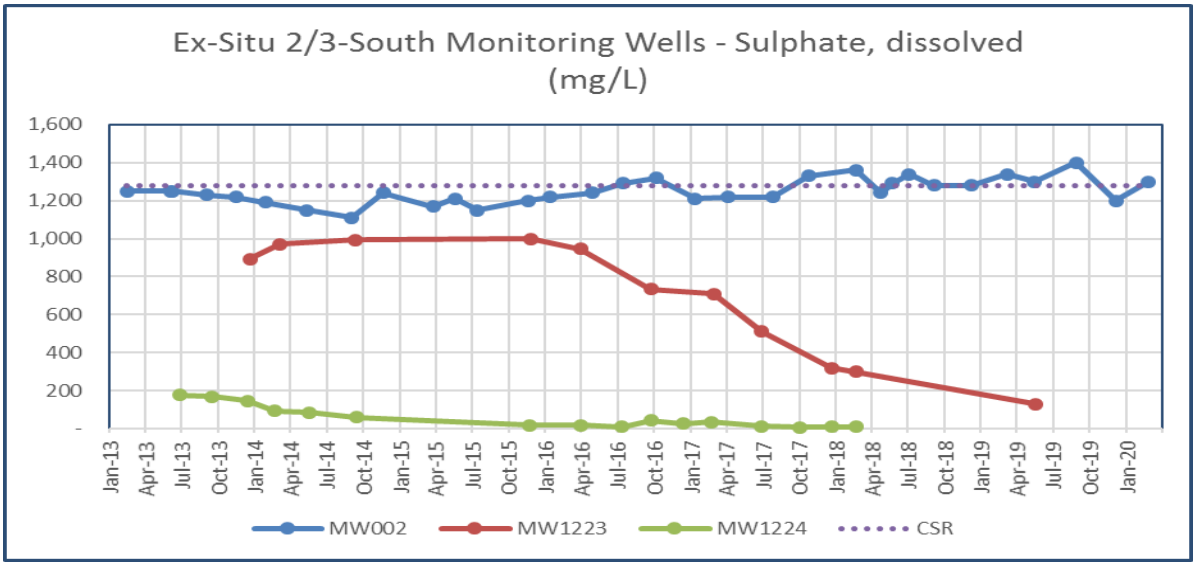



**Figure 23: Ex-Situ/ In-Situ 2/3 South Monitoring Wells - Dissolved Sulphate**

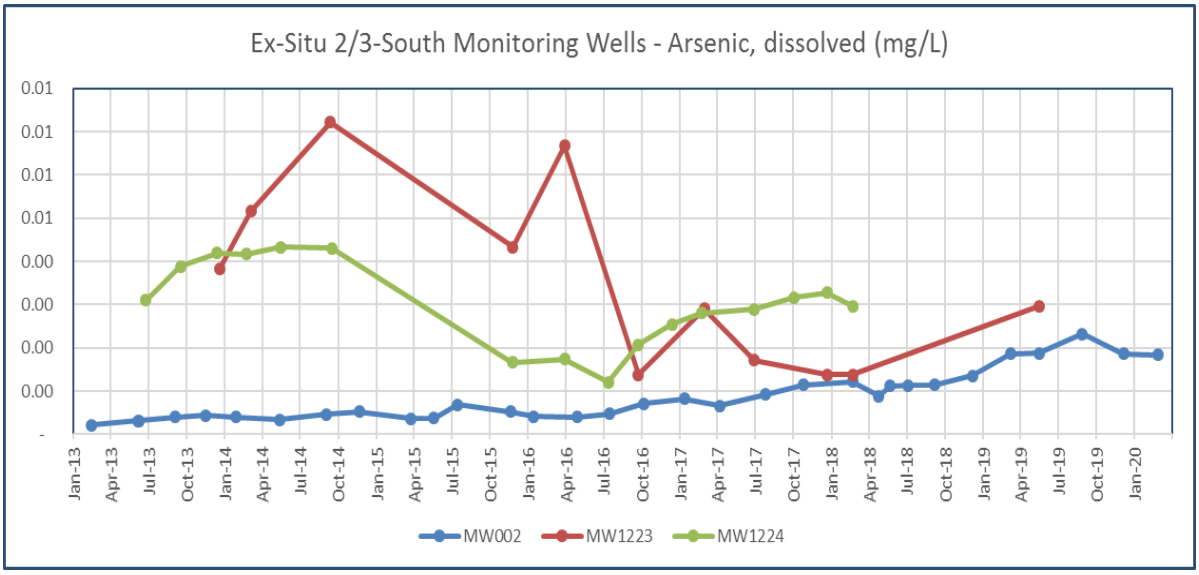



**Figure 24: Ex-Situ/ In-Situ 2/3 South Monitoring Wells - Dissolved Arsenic**

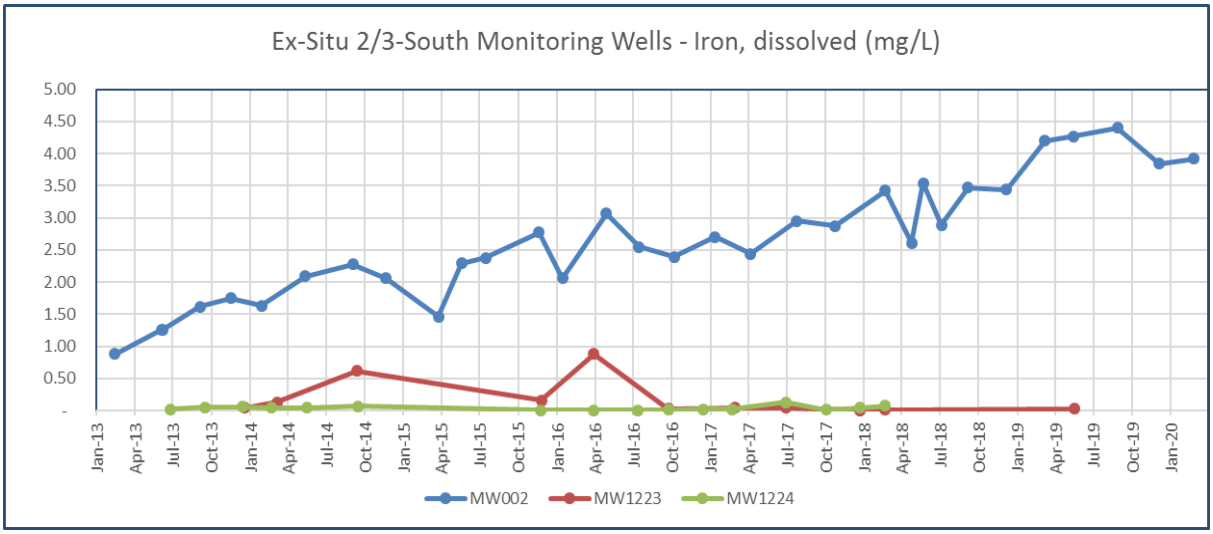



**Figure 25: Ex-Situ/ In-Situ 2/3 South Monitoring Wells - Dissolved Iron**

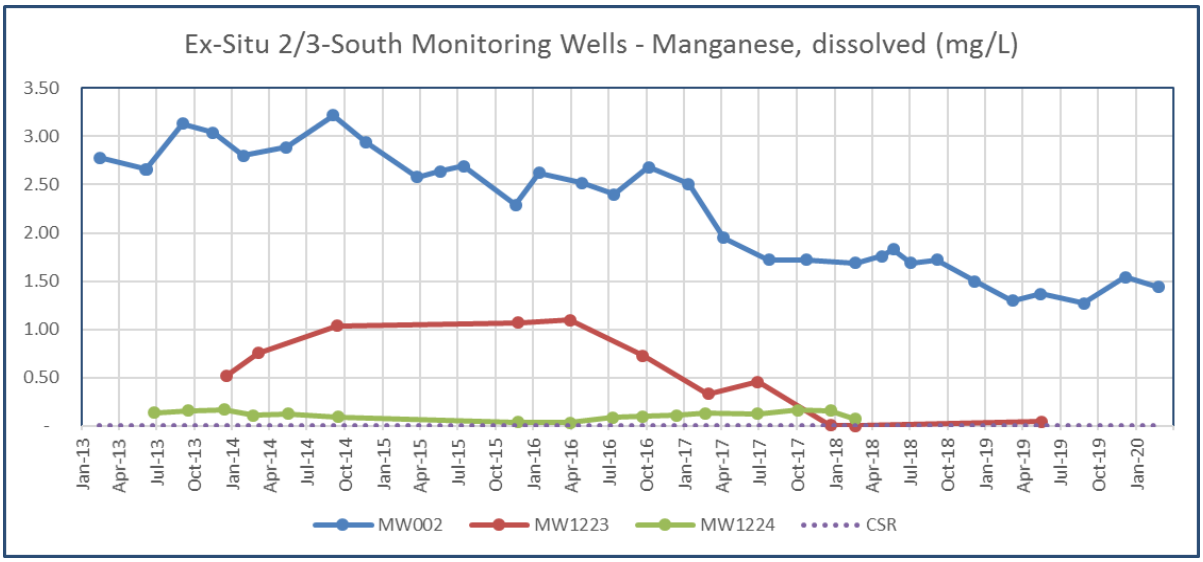



**Figure 26: Ex-Situ/ In-Situ 2/3 South Monitoring Wells - Dissolved Manganese**

### *4.2.6 4-South Mine Area*

#### ***4.2.6.1 4-South Mine Pool***

Predicted mature mine pool source terms were developed for the flooded 4-South mine and are quantified using maximum concentrations measured in QU78-161 and QU11-01. The 4-South mine pool chemistry indicates that the mine water has evolved into a mature state and can be used to estimate long term water chemistry. The mine water is expected to be anoxic and contain elevated sulphate, reduced iron and traces of dissolved sulphide, although eventually the mine

waters are predicted to display higher pH, alkalinity and lower metal concentrations as iron and other metals are sequestered into sulphide minerals. The monitoring well 78-161 was dropped this monitoring period due to difficult access and chemical similarities to QU11-01. POI concentrations seen this monitoring period are lower to previous monitoring years and continue to demonstrate a decline in iron, manganese and sulphate.

Table 11 below displays the comparison between predicted water quality to observed water quality during this monitoring period. The values used were the maximum values found for QU11-01 from the only sampling event completed in 2019-20. The only parameters that were above the predicted concentration levels were arsenic and boron.

**Table 11: Source Terms Comparison of Flooded 4-South Mine Void Mature Mine Pool**

| Parameters | Predicted Max. Values | 2019-20 QU11 -01 (N=1) | Results obtained |
|---|---|---|---|
| **Alkalinity (as $CaCO_3$)** | 450 | 100 | Below Predicted |
| **Aluminum (Al)** | 0.024 | 0.0075 | Below Predicted |
| **Arsenic (As)** | 0.0924 | 0.101 | **Above Predicted** |
| **Boron (B)** | 0.637 | 1.12 | **Above Predicted** |
| **Cadmium (Cd)** | 0.000085 | 0.000025 | Below Predicted |
| **Cobalt (Co)** | 0.063 | 0.0005 | Below Predicted |
| **Copper (Cu)** | 0.0564 | 0.0005 | Below Predicted |
| **Fluoride (F)** | 1 | 0.39 | Below Predicted |
| **Iron (Fe)** | 257 | 190 | Below Predicted |
| **Manganese (Mn)** | 5.97 | 3 | Below Predicted |
| **Selenium (Se)** | 0.0004 | 0.00025 | Below Predicted |
| **Sulphate ($SO_4$)** | 2060 | 1400 | Below Predicted |
| **Zinc (Zn)** | 0.0712 | 0.0125 | Below Predicted |

According to Lorax, chemical stratification is apparent in this mine pool as the heavily mineralized water remains on the bottom of the water column and the less mineralized water remains in the upper portion due to limited mixing of the water column. Lorax described the groundwater in this area as having an age affected signature of fluoride and arsenic, directly related to the increased residence time in the groundwater system.

The mine void is “flooded” and water levels in the mine pool show little change as there are no dewatering efforts or active operations in this mine. The water level measuring device (*pressure transducer*) installed at QU11-01 failed in May 2018 and was reinstalled in September 2019 as noted in Figure 27. Further investigation is warranted to re-establish and confirm the mine pool elevation.

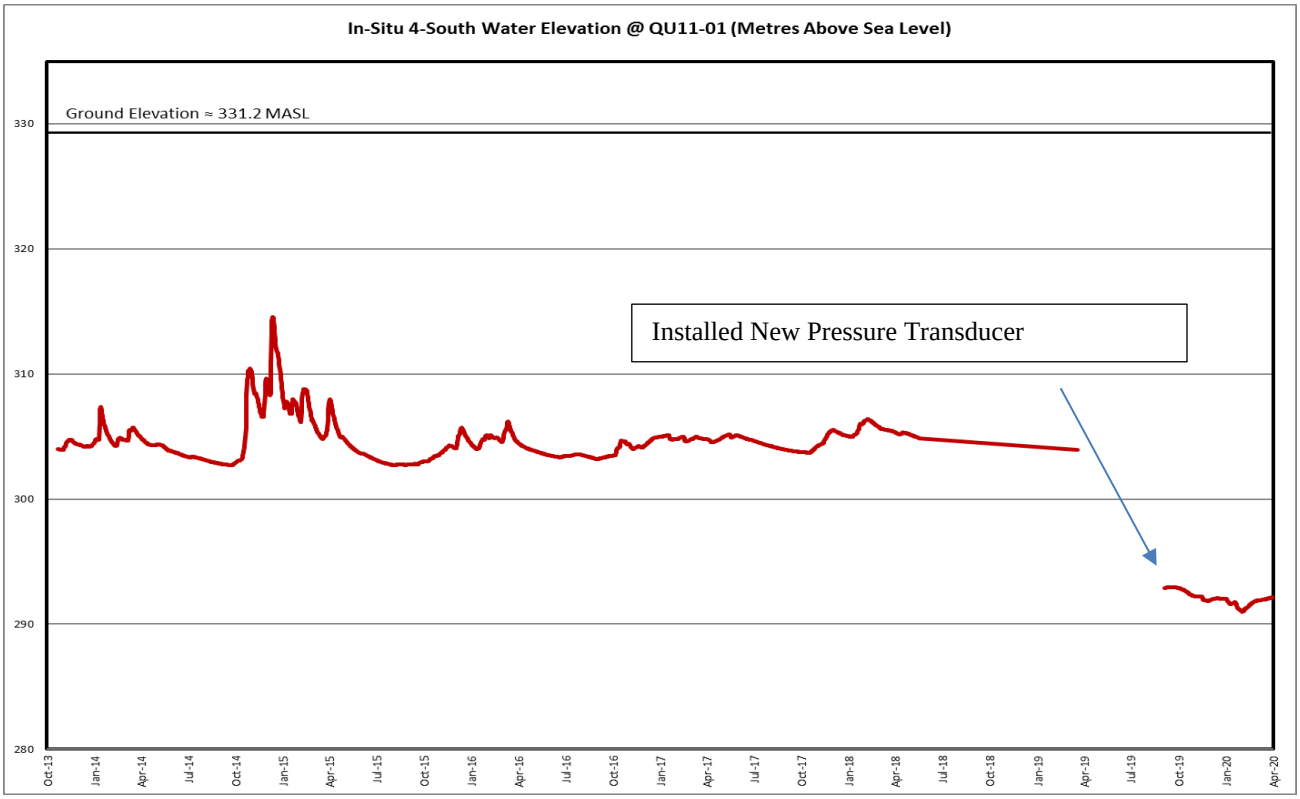



**Figure 27: 4-South Mine Pool Water Elevation at QU11-01**

POI are generally elevated with slight decrease observed with the redox reactive parameters between 2018 to present due to the maturity and flooded status of the mine. In 2018 there was a major fluctuation in water level and certain parameters (arsenic, copper, flouride and selenium) increased. Normally the mine pool has remained flooded at a steady elevation limiting exposure and oxidation of mine walls from fluctuating mine pools. It is noted that some redox reactive POI concentrations are trending downward (iron, manganese and sulphate); while arsenic displayed a steady increase with a spike observed in April 2018, and a steep decline stabilizing just above predicted mine pool source terms. (Figures 28-30).

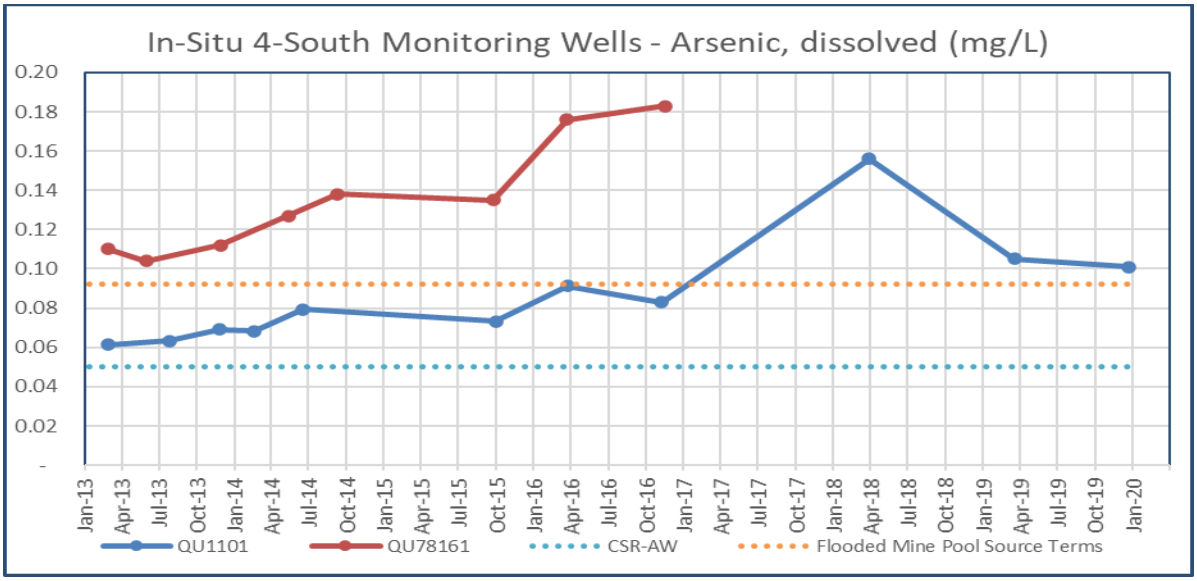



**Figure 28: In-Situ 4-South Monitoring Wells - Dissolved Arsenic**

The 4-South mine pool is dominated by iron reducing conditions with elevated concentrations of iron and sulphate. The chemical stratification is characterized by the high concentrations of iron and sulphate found at depth in the mine pool. Even with a slight declining trend, the mine pool water quality has the highest concentration of dissolved iron on the mine site, having exhibiting concentrations greater than 200 mg/L at QU11-01.

Lorax observed that sulphate has an opposite trend to fluoride; sulphate is found in lowest concentrations in the formation water and highest in the mine pool. Sulphate concentrations are elevated and follow a similar profile to dissolved iron where concentrations have been generally decreasing since 2013 to below the predicted values of the flooded mine pool.

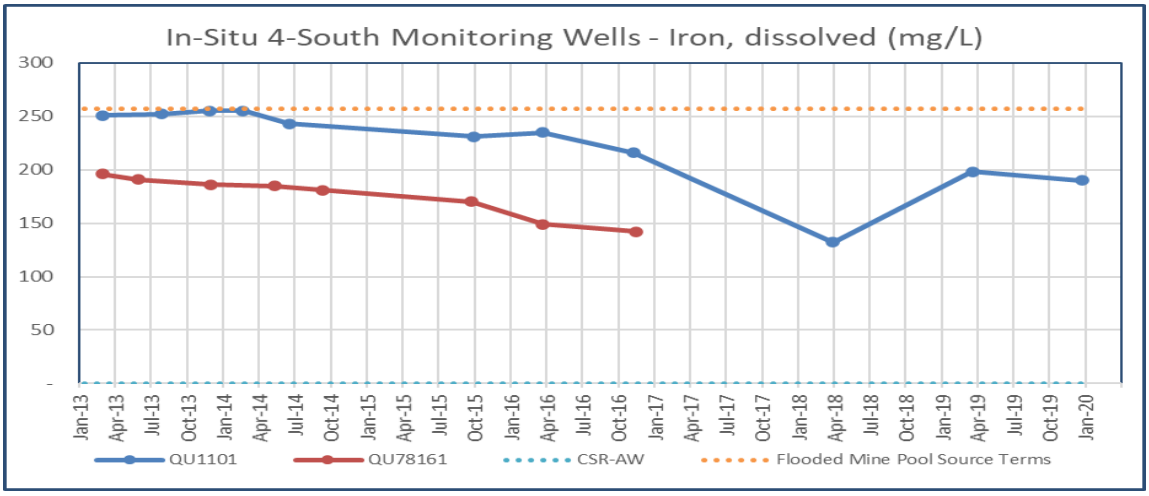



**Figure 29: In-Situ 4-South Monitoring Wells - Dissolved Iron**

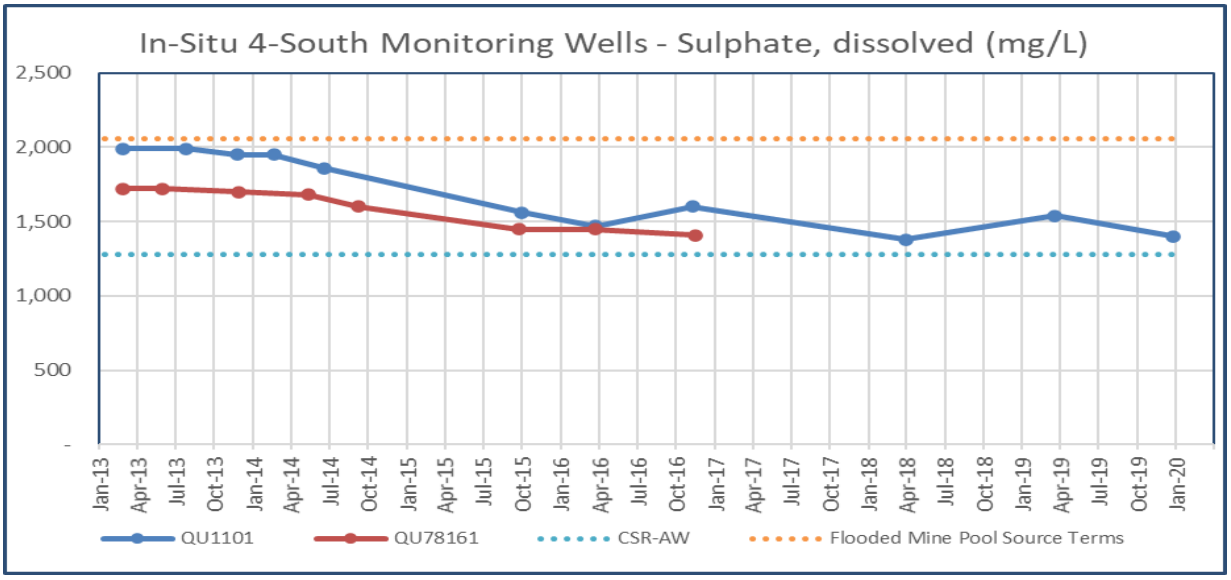



**Figure 30: In-Situ 4-South Monitoring Wells - Dissolved Sulphate**

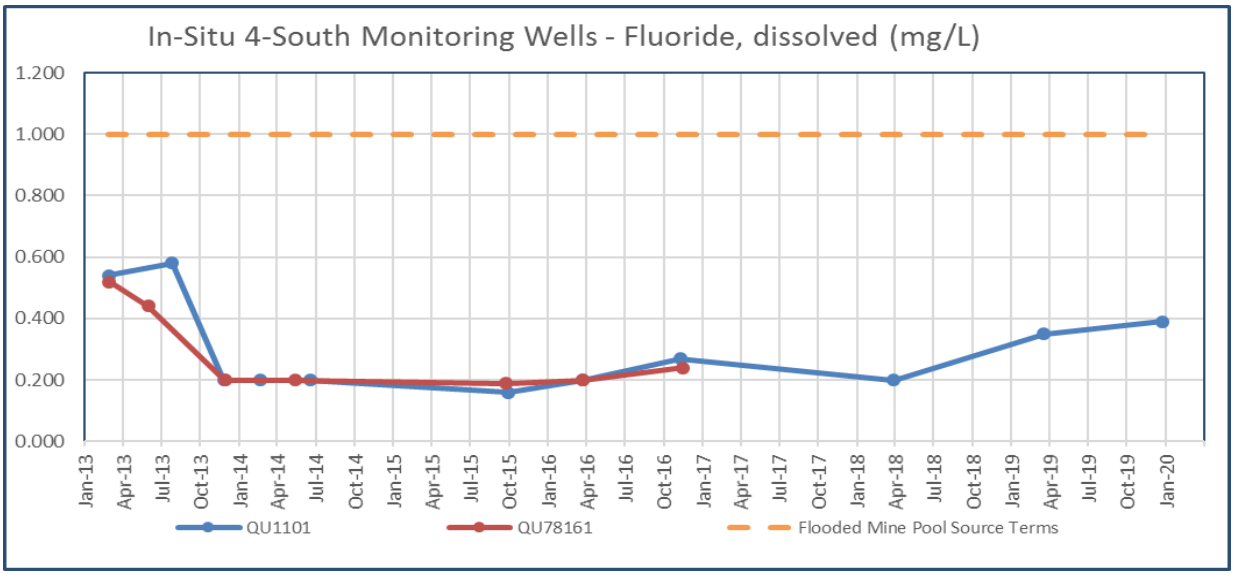



**Figure 31: In-Situ 4-South Monitoring Wells - Dissolved Fluoride**

#### *4.2.6.2 4-South Ex-Situ Wells*

Observations made of formation water down-gradient of the 4-South mine indicate mine and age-affected groundwater signatures suggesting a hydraulic connection between the 4-South mine pool and the down gradient monitoring wells. The hydraulic connection is most obvious at QU10-09 S, and less obvious at QU10-07 D and QU10-08 D. The strong mine signature in QU10-09 indicates

that it is along the flow path of the juvenile mine waters discharging from the upper portion of the 4-South mine workings (Lorax, 2011).

Monitoring wells in this area are focused on four types of water quality:

- QU10-09 (S & D) ex-situ formation waters, outside of existing workings, assess vertical gradients and water quality adjacent to Long Lake
- QU10-07 D ex-situ formation waters; down gradient of existing workings next to the Long Lake Entrance wetland (LLE)
- QU10-08 D ex-situ up gradient of the existing workings; assess water quality immediately up gradient of existing workings

Generally, major ion concentrations highest in the mine pool waters and lowest in the formation groundwater. POI concentrations in and outside the 4-South mine pool are relatively stable, showing some minor trending.

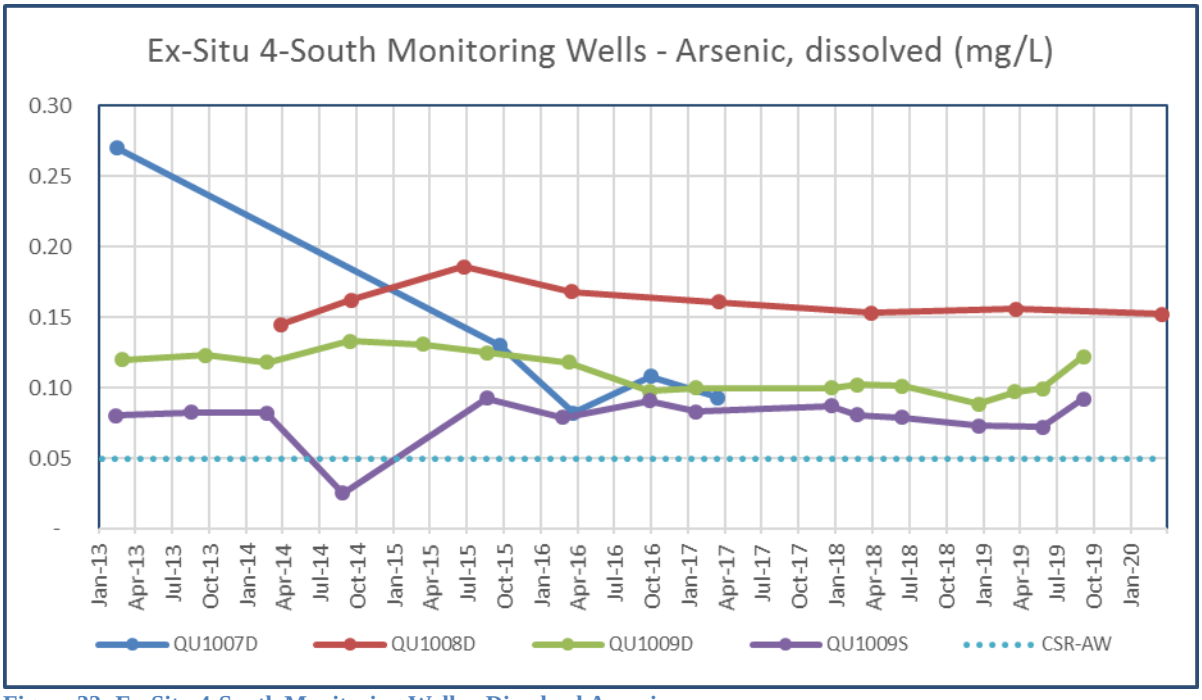



**Figure 32: Ex-Situ 4-South Monitoring Wells - Dissolved Arsenic**

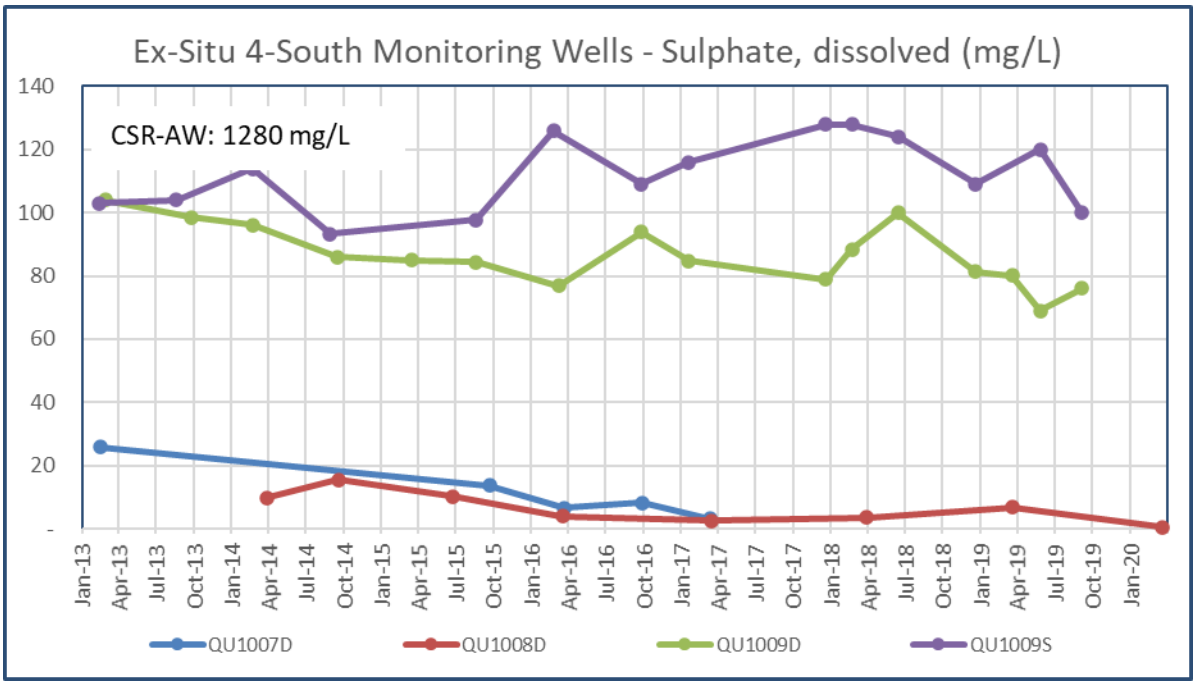



**Figure 33: Ex-Situ 4S Monitoring Wells - Dissolved Sulphate**

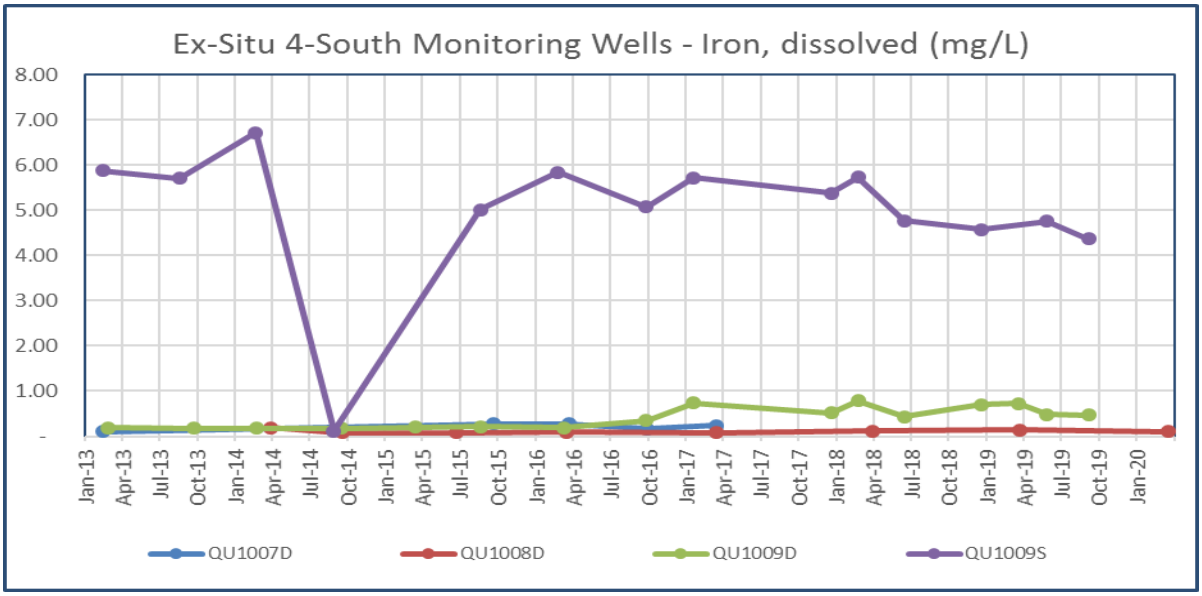



**Figure 34: Ex-situ 4S Monitoring Wells - Iron dissolved**

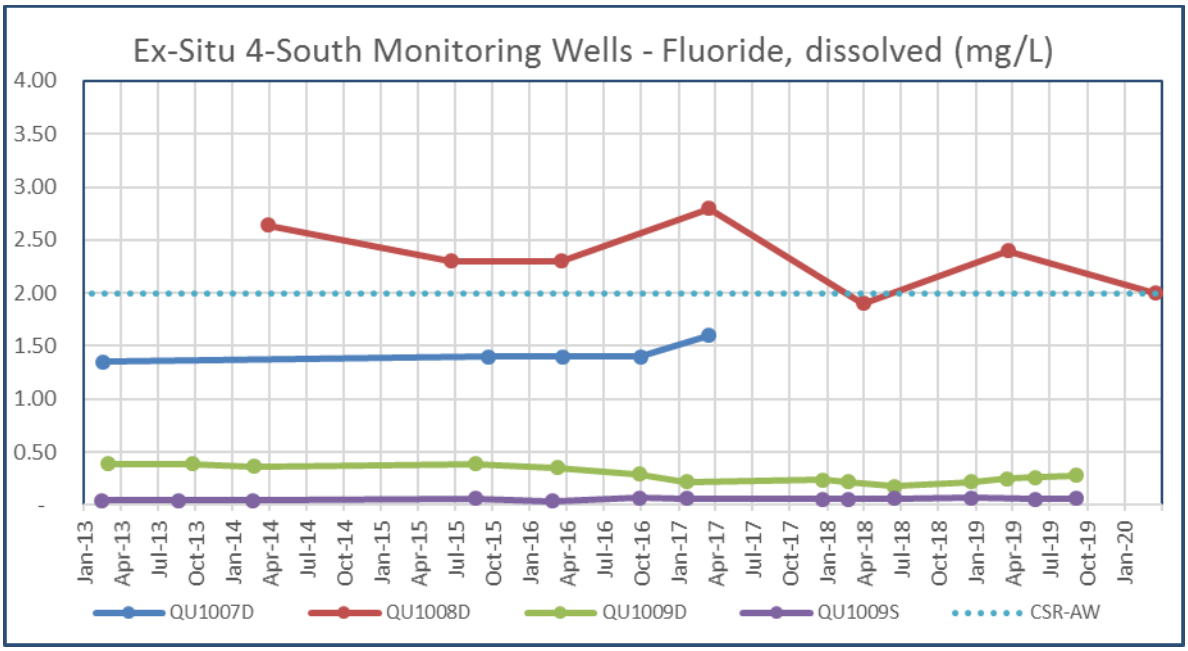



**Figure 35: Ex-situ 4S Monitoring Wells – Fluoride dissolved**

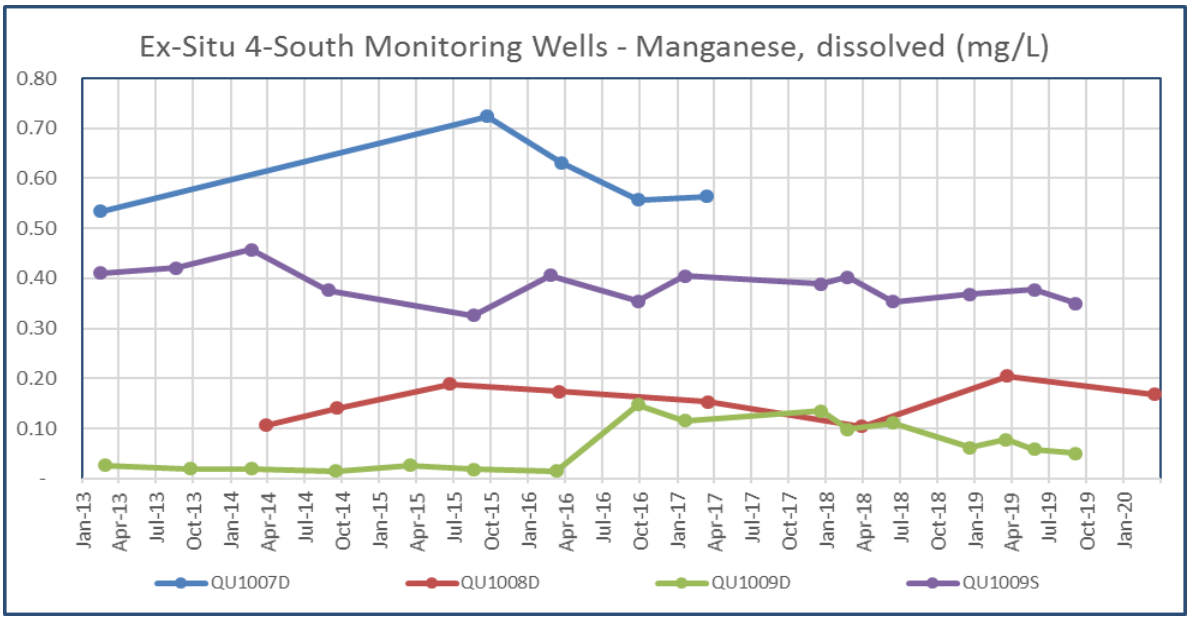



**Figure 36: Ex-situ 4S Monitoring Wells –Manganese dissolved**

Notable observations include:

- Dissolved arsenic concentrations were elevated above CSR-AW standards (0.05mg/L) at each well for all sampling events, reflecting historic results (Figure 32)
- Dissolved sulphate levels were generally low (as observed in the past), highest in the QU10-09 S & D and lowest at QU10-08 D

- Dissolved iron was below 1.0 mg/L in all wells except in QU10-09 S, where results persisted just below 5 mg/L
- Fluoride was at CSR-AW standards in well QU10-08 D during the lone sampling event resulting in 2.0 mg/L. Fluoride is an indication of younger groundwater influencing the water in this well.
- Manganese is highest in wells QU10-09 S and QU10-08 D

### *4.2.7 242 Mine*

The 242 Portal site was reclaimed in Spring, 2016 with backfilling of the portal, permanent slope creation, topsoil cover and subsequent revegetation. A new sampling site (242MW) was created in 2017 with the drilling and installation of an additional groundwater well.

The pH of the flooded waters of the historic 242 mine has been consistently circum-neutral this year averaging 6.82 and low conductivity averaging 227. During this monitoring period, the water exhibited low concentrations of alkalinity, sulphate and metals, consistent with past monitoring events since 2014. Water quality is expected to contain low levels of sulphate and metals due to the limited impact from mining in this area that occurred was prior to 1996. After mining was completed the mine flooded immediately, with no additional disturbances.

Dissolved arsenic has an inconsistent pattern not related to seasonal highs and lows, although mostly elevated in fall and winter. Dissolved iron is trending upwards since monitoring began.

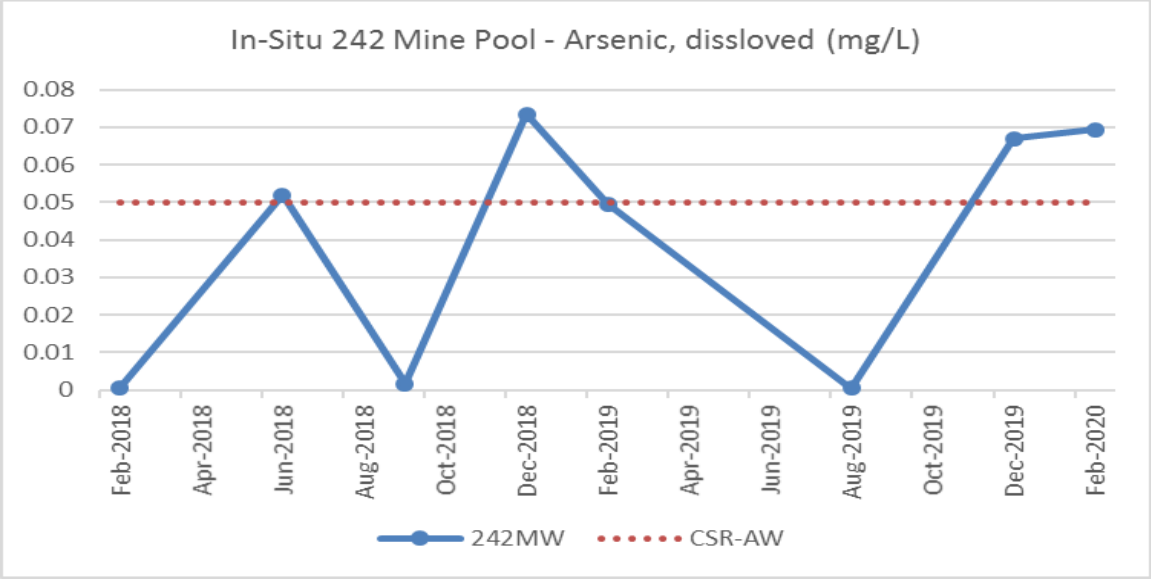



**Figure 37: In-situ 242 Mine Pool – Arsenic, dissolved**

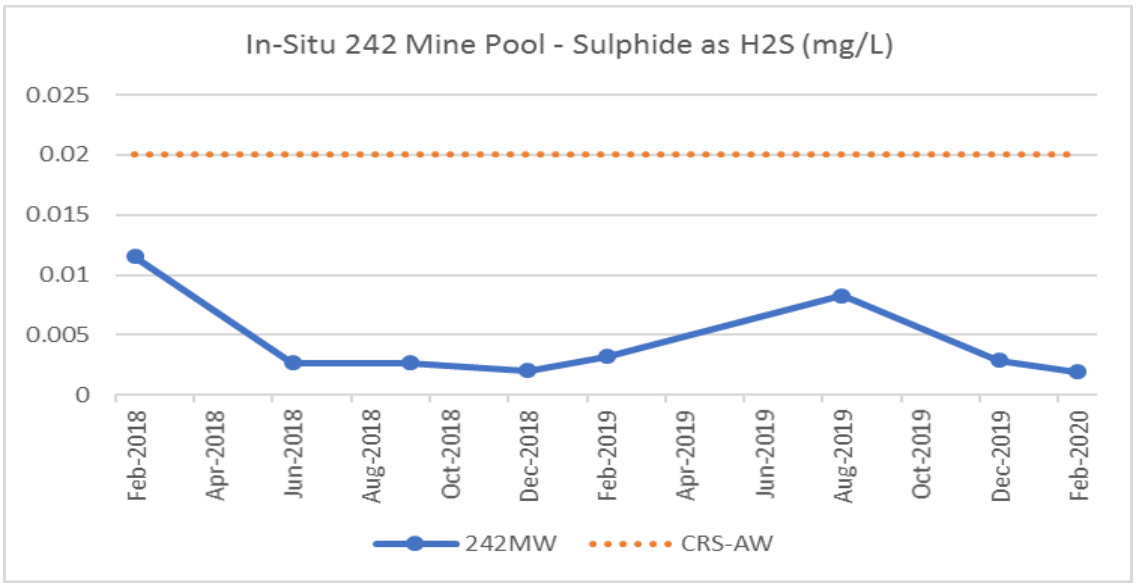



**Figure 38: In-situ 242 Mine Pool – Sulphide as $H_2S$**

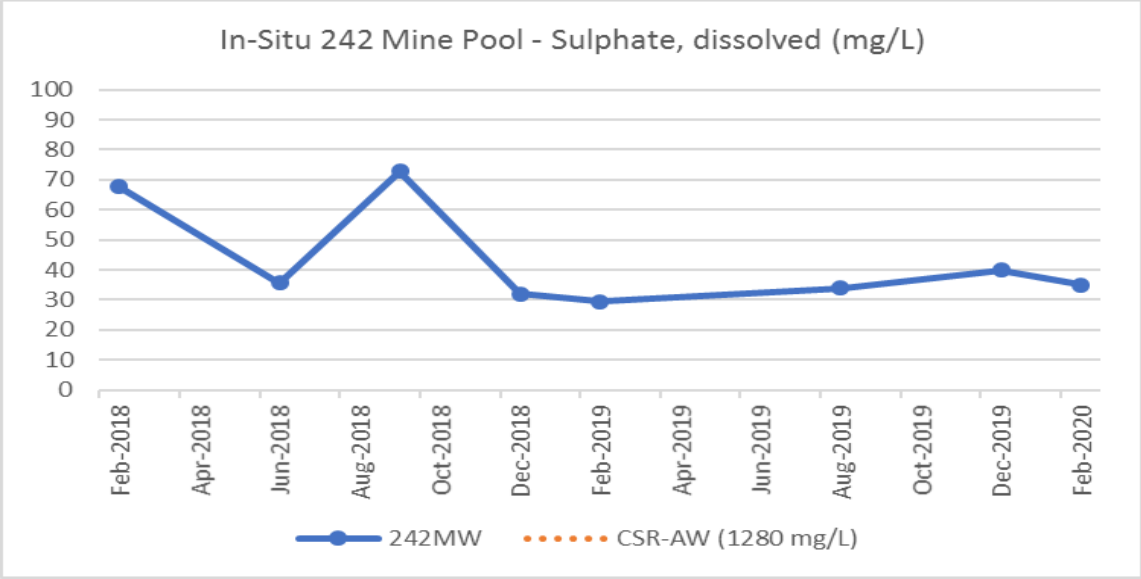



**Figure 39: In-situ 242 Mine Pool – Sulphate, dissolved**

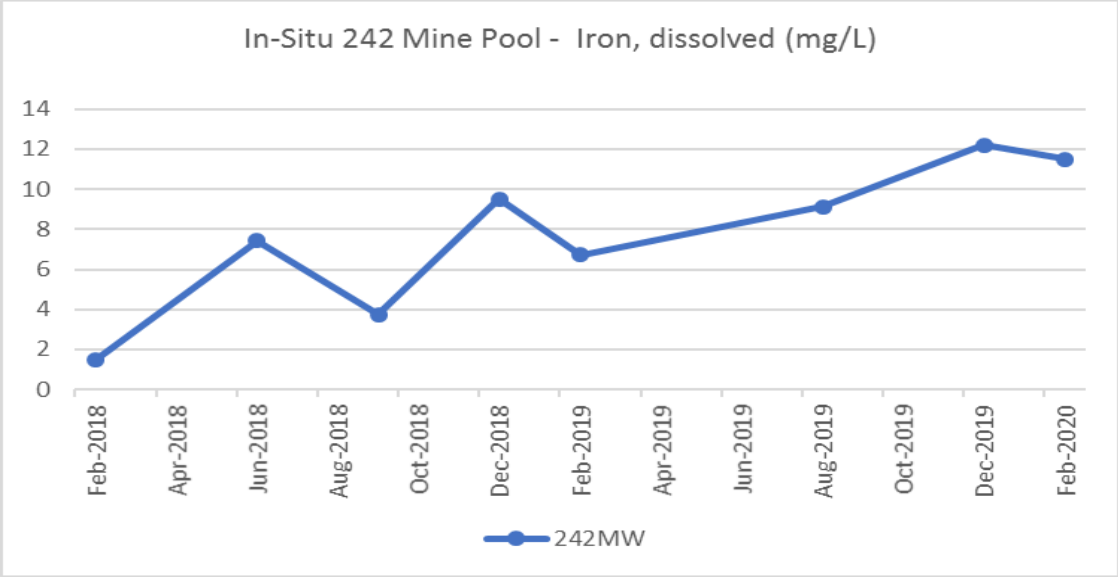



**Figure 40: In-situ 242 Mine Pool – Iron, dissolved**

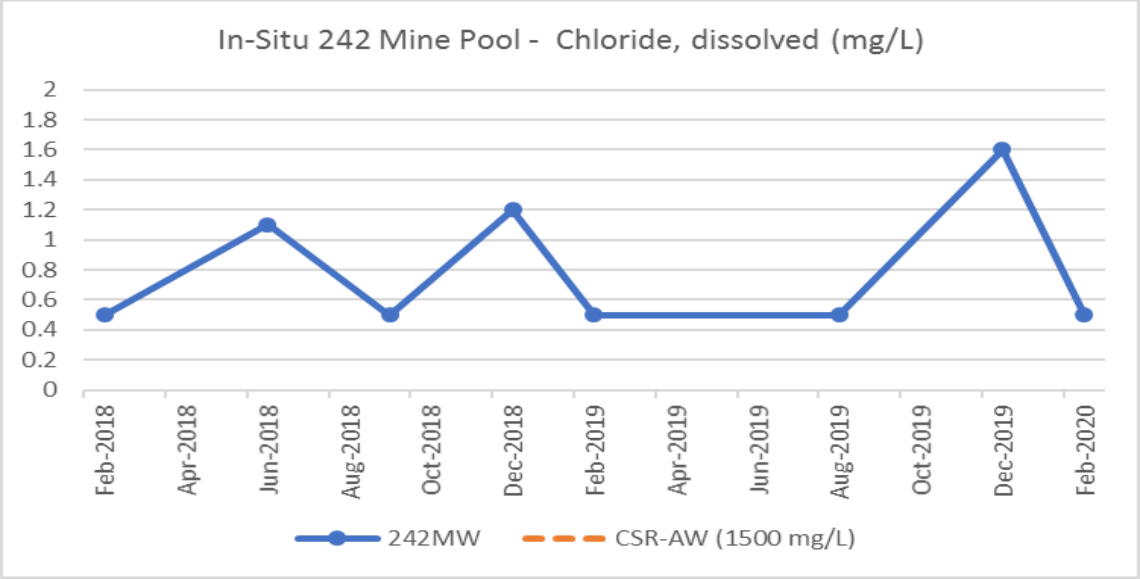



**Figure 41: In-situ 242 Mine Pool –Chloride, dissolved**

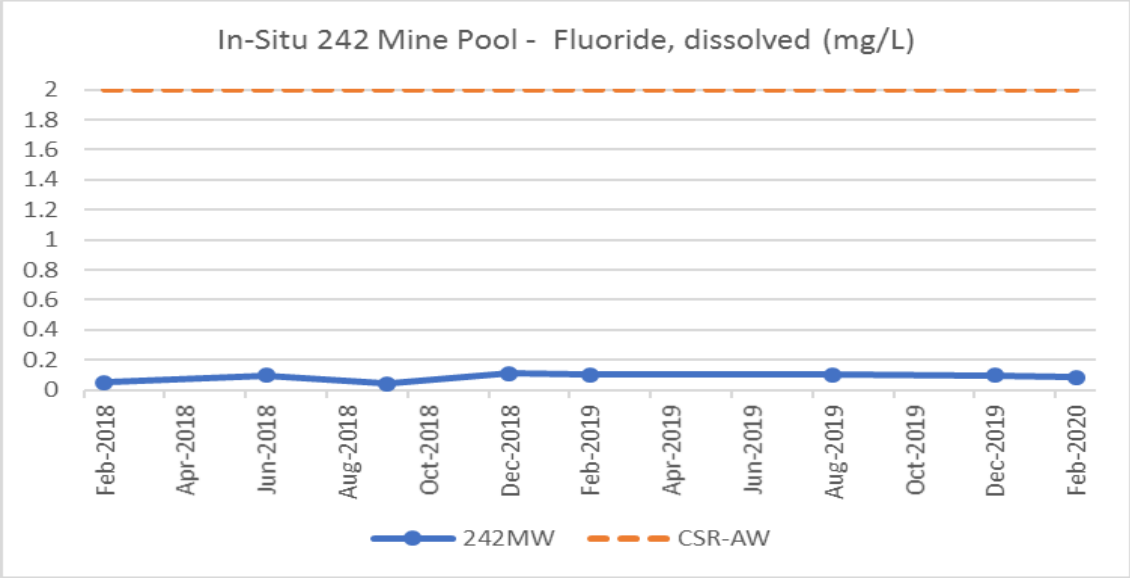



**Figure 42: In-situ 242 Mine Pool –Fluoride, dissolved**

### *4.2.8 7-South Area 5 Background*

In July 2018 blasting through the Long Lake Fault Zone commenced in order to gain access to 7-South Area 5 No. 4 seam coal. Mining did not occur until late January to early February 2019. A full set of groundwater wells were monitored. Those include QU11-36 S/D, QU12-06S, QU11-18 S/D and QU11-28. The groundwater in this area is characterized as being elevated in arsenic with

some wells exhibiting elevated concentrations of sulfide as $H_2S$. Figures 43 and 44 display these results since monitoring began in 2013. Currently the groundwater in this area is non-mine impacted and all monitoring results contribute to baseline conditions. This year only QU11-36 D was monitored on an annual basis.

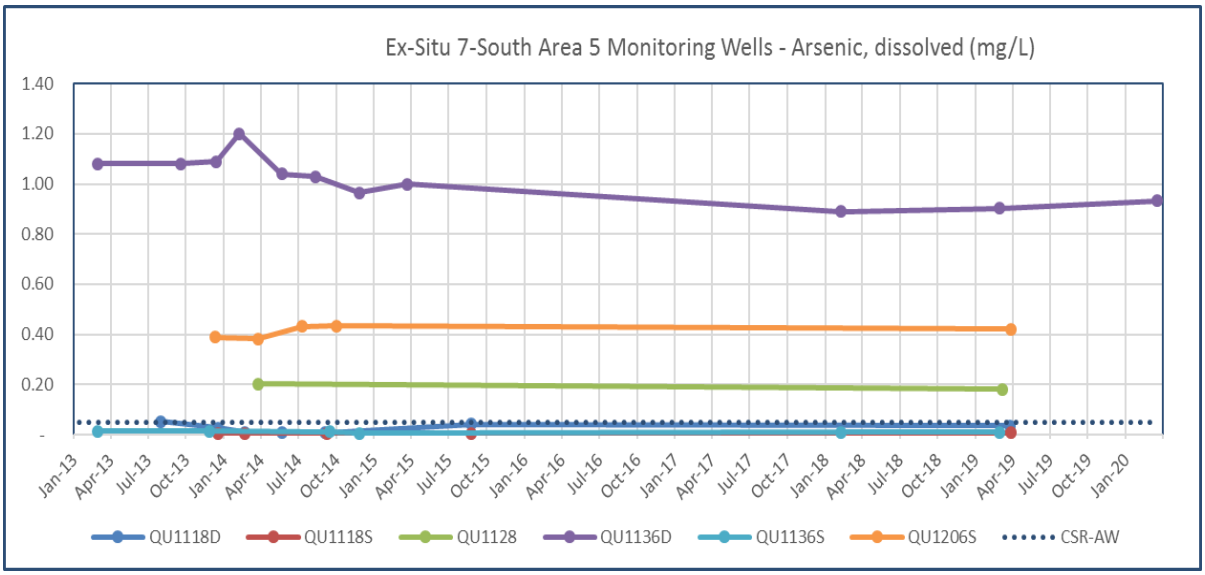



**Figure 43: Dissolved Arsenic in 7SA5**

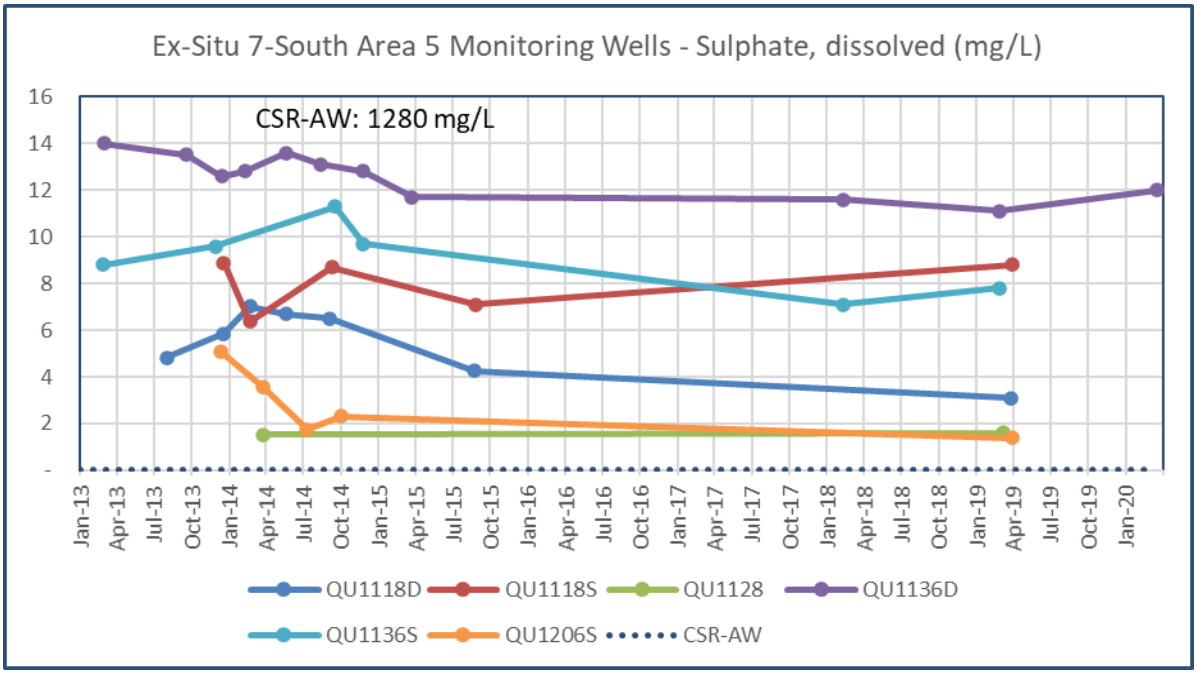



**Figure 44: Dissolved Sulphate in 7SA5**

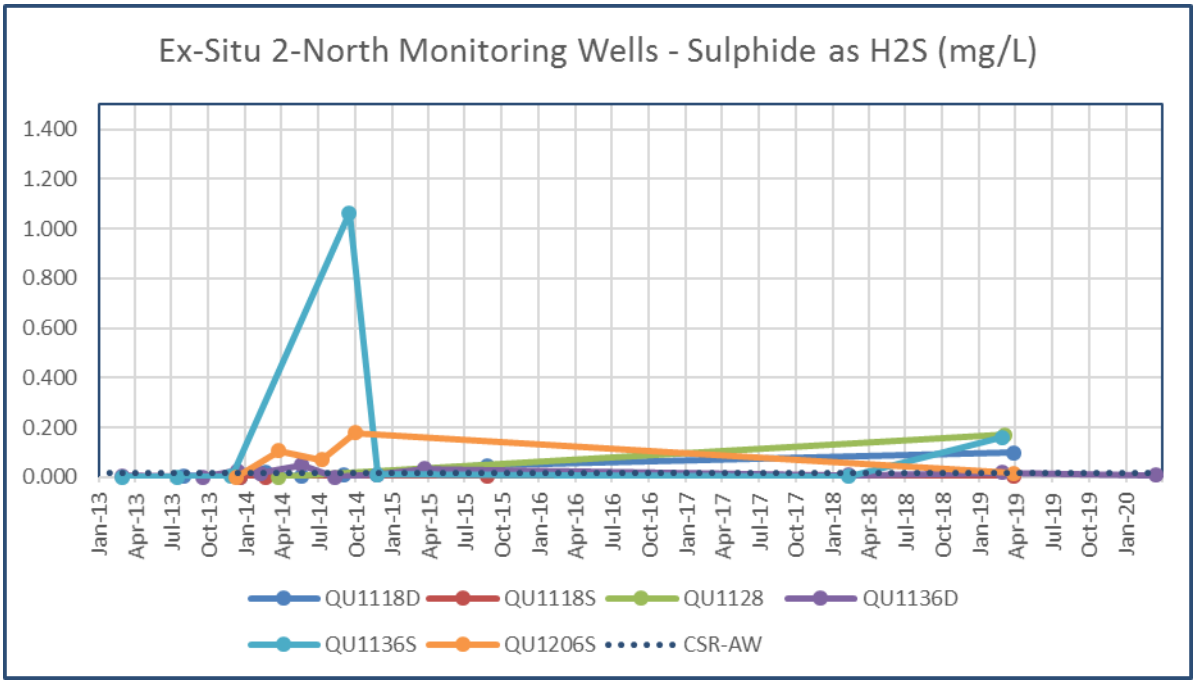



**Figure 45: Sulphide as $H_2S$ in 7SA5**

# 5 Summary

The groundwater monitoring program at Quinsam Coal has been established to capture the interaction between mine related surface and underground disturbance areas (contact water) with the receiving environment. The comprehensive nature of this program allows Quinsam to generate water quality predictions, strategically manage surplus water generated as a result of mining activities and create management plans with a focus on mitigating potential receiving environment impacts.

During the mine operations phase, the groundwater program provides critical information to ensure that plans and targets are being achieved. For example, in-situ wells provide the necessary information to validate water quality predictions (source terms) within a mining area. The program also provides opportunity to monitor water quality associated with three key operational waste management practices:

1) Subaqueous PAG-CCR disposal
2) Fine Tailings underground storage in 2 North mine void(s)
3) Backfilled and flooded underground PAG-CCR

The information attained from monitoring these unique and innovative disposal methods will inform future waste management plans and opportunities for Quinsam Coal.

Overall, in-situ groundwater at Quinsam Coal is generally within the water quality prediction scenarios and ex-situ groundwater typically trends below the CSR-AW standards. The two exceptions to the aforementioned is groundwater influenced by host geological formations (e.g. Dunsmuir Member sandstones, Cumberland Member No.1 Coal seam and mudstones) with naturally elevated concentrations of parameters of interest and by weathering processes (i.e. mine wall oxidation and flushing) of disturbed materials within the mine footprint.

The long-term groundwater quality trend(s) demonstrate that deeper formation groundwater systems are not substantially influenced by contact water at most locations (i.e. 2-North/5-South and 7-South), as moderate concentrations of dissolved metals and low concentrations of sulphate are typical. In contrast, the underground mine voids, flooded open pit mining areas, and those areas used for subaqueous PAG-CCR and tailings stowage have, in some cases, elevated concentrations of certain parameters. Sulphate is the primary parameters of interest within these mining areas, due to the fact that sulphate has a distinctive geochemical signature and the contact water flow path can be tracked.

The groundwater program will continue to evolve as mining advances into new areas, or retreats from existing areas, and information on existing mine developments is evaluated. Furthermore, the program will be adapted to encompass the progression of our waste management strategy and any well or area specific trending.

**References**


1. Lorax Environmental and Enterprise Geoscience Services Ltd. (2011). Appendix I 4 South Mine Groundwater Evaluation. In *Mine Permit (C-172) Amendment Appendices I-J* (Vol. Volume 3, pp. 3-1, 4-1, 4-10, 4-11, 4-16, 5-1,6-1-7-12, 5-1). Burnaby, B.C.

2. Lorax Environmental and Enterprise Geoscience Services Ltd. (2011). Appendix I 4 South Mine Groundwater Evaluation. In *Mine Permit (C-172) Amendment Appendices K-N* (Vol. Volume 4, pp. 4-1, 4-12, 4-13, 4-13, 4-35, 5.3,6-47, 6-55). Burnaby, B.C.

3. Lorax Environmental Ltd. (2013) *Quinsam Coal Corporation Groundwater Quality Sampling Guide, (*pp. 1-1 to 4-4). Burnaby, B.C.

4. Golder Associates Ltd. (2006) *Quarterly Groundwater Monitoring Assessment Fall (2006) Quinsam Mine*, (pp. 9-12). Victoria, B.C.

5. Ministry of Environment Province of British Columbia. (2013) *Ambient Water Quality Guidelines for Sulphate. Technical Appendix*. (pp. 7). Victoria, B.C.

6. Ministry of Environment (MOE). (2013) *The British Columbia Field Sampling Manual, For Continuous Monitoring and Collection of Air, Air-Emissions, Water, Wastewater, Soil, Sediment, and Biological Samples, 2013 Edition".* Victoria, B.C.

Enterprise Geoscience Services Ltd.

# Borehole Log of QU-78-161 (4 South)

| | | | |
|---|---|---|---|
| Date Started | : 1978 | Drilled By | : n/a |
| Date Completed | : 1978 | Northing Coord. | : 101068.3 |
| Hole Diameter | : 140 mm assumed | Easting Coord. | : 99409.0 |
| Drilling Method | : n/a | Survey By | : n/a |
| Sampling Method | : n/a | Logged By | : n/a |

Water Levels

QU-78-161: 305.14 m (12-Jan-2011)

Well: QU-78-161
Elev. m: 318.5

| Depth (m) | Elev. m 318.5 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 50 | 268.5 | SP | | |
| 55 | 263.5 | SS | | |
| 60 | 258.5 | SM | | |
| 65 | 253.5 | SS | | |
| 70 | 248.5 | | | |
| 75 | | | | |

4" PVC

Screen

EOH @ 71.7 m

**Notes:**

**Borehole terminated to drift at 86.4 m.**

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

03-09-2011 C:\Users\John Balfour\Documents\PROJECTS\2009 Projects\09010 Lorax\2010 Work\Borehole logs\QU-78-161.bor

PROJECT No.: 002-1065

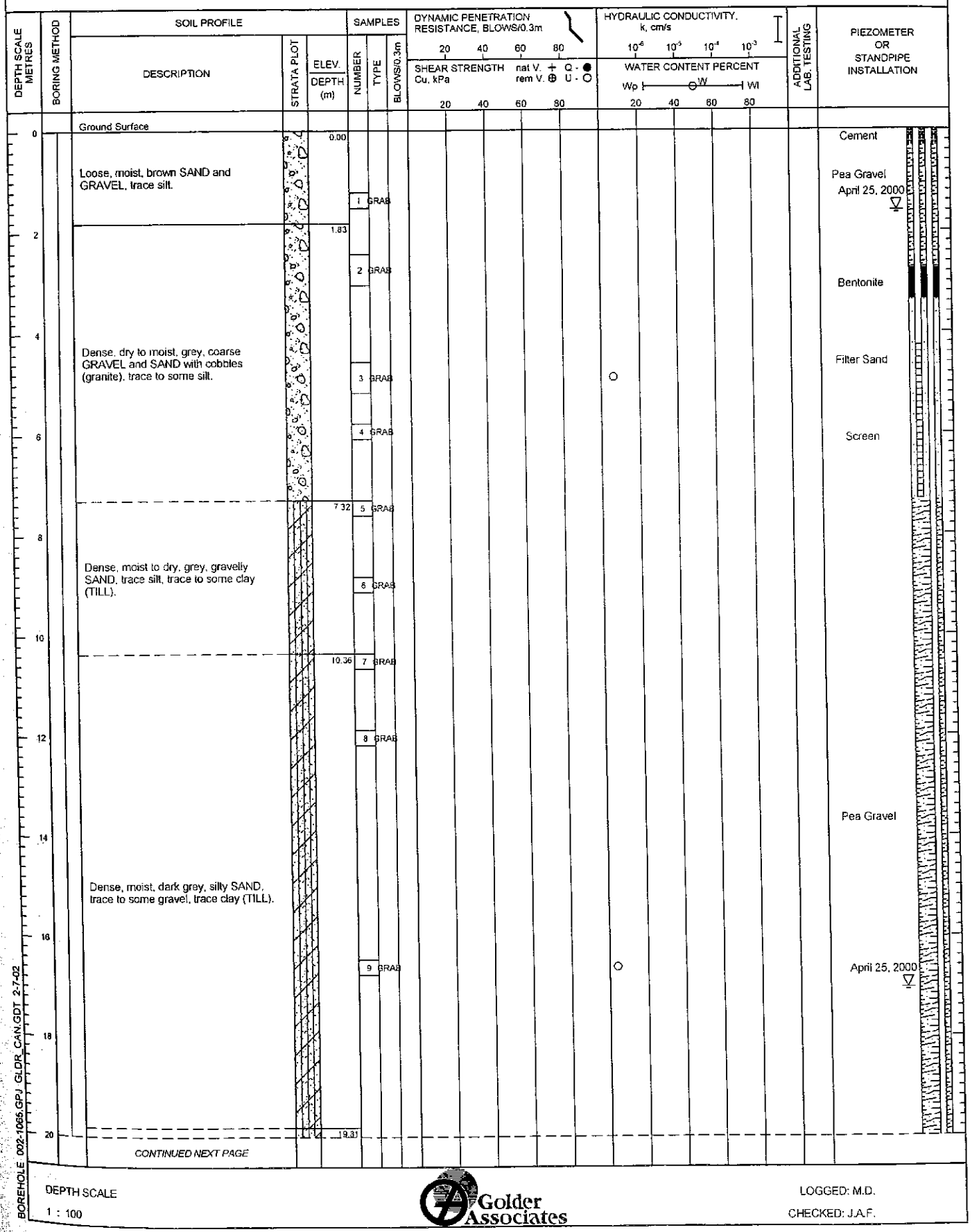
# RECORD OF MONITORING WELL: MW00-1(D&S)

SHEET 1 OF 2

LOCATION: Washplant Ditch, Quinsam Mine

BORING DATE: April 17-18, 2000

DATUM: Local




BOREHOLE 002-1065.GPJ GLDR_CAN.GDT 2-7-02

DEPTH SCALE
1 : 100

Golder Associates

LOGGED: M.D.

CHECKED: J.A.F.

PROJECT No.: 002-1065

# RECORD OF MONITORING WELL: MW00-1(D&S)

SHEET 2 OF 2

LOCATION: Washplant Ditch, Quinsam Mine

BORING DATE: April 17-18, 2000

DATUM: Local

| DEPTH SCALE METRES | BORING METHOD | SOIL PROFILE: DESCRIPTION | STRATA PLOT | ELEV. / DEPTH (m) | SAMPLES: NUMBER | SAMPLES: TYPE | SAMPLES: BLOWS/0.3m | DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. + Q - ● rem V. ⊕ U - ○) (20 40 60 80) | HYDRAULIC CONDUCTIVITY, k, cm/s ($10^{-6}$ $10^{-5}$ $10^{-4}$ $10^{-3}$) / WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80) | ADDITIONAL LAB. TESTING | PIEZOMETER OR STANDPIPE INSTALLATION |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | | | | | | | | | | |
| 22 | | Dense, dry, grey, gravelly SAND and GRAVEL, trace to some silt (TILL). *(continued)* | | | | | | | | | Pea Gravel |
| 24 | | | | 24.38 | | | | | | | Bentonite |
| 26 | | Dense, dry, gravelly SAND, some clay, trace silt (TILL). | | | 10 | GRAB | | | | | Screen / Filter Sand |
| 28 | | | | | | | | | | | |
| 30 | | | | | | | | | | | Drill Cuttings |
| 32 | | End of MONITORING WELL. | | 30.48 | | | | | | | |
| 34 | | | | | | | | | | | |
| 36 | | | | | | | | | | | |
| 38 | | | | | | | | | | | |
| 40 | | | | | | | | | | | |

BOREHOLE 002-1065.GPJ GLDR_CAN.GDT 2-7-02

DEPTH SCALE
1 : 100

Golder Associates

LOGGED: M.D

CHECKED: J.A.F.

PROJECT No.: 002-1065

# RECORD OF MONITORING WELL: MW00-2

SHEET 1 OF 1

LOCATION: Washplant Ditch, Quinsam Mine

BORING DATE: April 17-18, 2000

DATUM: Local

| DEPTH SCALE METRES | BORING METHOD | SOIL PROFILE: DESCRIPTION | STRATA PLOT | ELEV. / DEPTH (m) | SAMPLES: NUMBER | SAMPLES: TYPE | SAMPLES: BLOWS/0.3m | DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V ⊕, Q - ●, U - ○) (20 40 60 80) | HYDRAULIC CONDUCTIVITY, k, cm/s ($10^{-6}$ $10^{-5}$ $10^{-4}$ $10^{-3}$) / WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80) | ADDITIONAL LAB. TESTING | PIEZOMETER OR STANDPIPE INSTALLATION |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | Ground Surface | | | | | | | | | |
| | | Dry, grey SAND and GRAVEL (shale rock fragments) (Rock Fill). | | 0.00 | | | | | | | Cement; Bentonite; April 19, 2000; April 25, 2000 |
| 2 | | SHALE (bedrock). | | 1.52 | | | | | | | Filter Sand |
| 4 | | Coal and Shale. | | 3.96 | 1 | GRAB | | | | | |
| | | SHALE | | 4.88 | 2 | GRAB | | | | | Screen |
| | | Coal Seam. | | 5.49 | 3 | GRAB | | | | | |
| 6 | | SHALE | | 6.10 | | | | | | | |
| | | End of MONITORING WELL. | | 6.31 | | | | | | | |
| 8 | | | | | | | | | | | |
| 10 | | | | | | | | | | | |
| 12 | | | | | | | | | | | |
| 14 | | | | | | | | | | | |
| 16 | | | | | | | | | | | |
| 18 | | | | | | | | | | | |
| 20 | | | | | | | | | | | |

BOREHOLE 002-1065.GPJ GLOR_CAN.GDT 2-7-02

DEPTH SCALE 1 : 100

Golder Associates

LOGGED: M.D.

CHECKED: J.A.F.

PROJECT No.. 002-1065

# RECORD OF MONITORING WELL: MW00-4

SHEET 1 OF 3

LOCATION: 3S Pit, Quinsam Coal Mine

BORING DATE: Nov. 20,22&23, 2000

DATUM: Local

| DEPTH SCALE METRES | BORING METHOD | SOIL PROFILE: DESCRIPTION | STRATA PLOT | ELEV. / DEPTH (m) | SAMPLES: NUMBER | SAMPLES: TYPE | SAMPLES: BLOWS/0.3m | DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) | SHEAR STRENGTH Cu, kPa (nat V. +, rem V ⊕, Q -●, U -○) (20 40 60 80) | HYDRAULIC CONDUCTIVITY, k, cm/s ($10^{-6}$ $10^{-5}$ $10^{-4}$ $10^{-3}$) | WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80) | ADDITIONAL LAB. TESTING | PIEZOMETER OR STANDPIPE INSTALLATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | Ground Surface | | 0.00 | | | | | | | | | |
| | | Loose, moist, grey and brown ROCK FILL, some sand and silt. | | | | | | | | | | | Bentonite and Concrete |
| 2 | | | | | | | | | | | | | |
| | | | | 3.35 | 1 | CS | | | | | | | |
| 4 | | Dense, moist, light brown, silty SAND, some gravel (sub-angular). (Till). | | | | | | | | | | | |
| 6 | | | | 5.79 | | | | | | | | | |
| 8 | | | | | 2 | CS | | | | | | | |
| 10 | | | | | | | | | | | | | |
| 12 | | Medium strong, grey SANDSTONE. - grades to lighter grey @ 15.24m - trace black coal @ 24.38m | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 16 | | | | | 3 | CS | | | | | | | |
| 18 | | | | | | | | | | | | | |
| 20 | | | | | 4 | CS | | | | | | | |

CONTINUED NEXT PAGE

BOREHOLE 002-1065.GPJ GLDR.CAN.GDT 2-7-02

DEPTH SCALE 1 : 100

Golder Associates

LOGGED: W.H.

CHECKED: J.A.F.

PROJECT No.: 002-1065

# RECORD OF MONITORING WELL: MW00-4

SHEET 2 OF 3

LOCATION: 3S Pit, Quinsam Coal Mine

BORING DATE: Nov. 20,22&23, 2000

DATUM: Local

| DEPTH SCALE METRES | BORING METHOD | SOIL PROFILE: DESCRIPTION | STRATA PLOT | ELEV. / DEPTH (m) | SAMPLES: NUMBER | SAMPLES: TYPE | SAMPLES: BLOWS/0.3m | DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) | SHEAR STRENGTH Cu, kPa (20 40 60 80); nat V. +, rem V ⊕; Q - ●, U - ○ | HYDRAULIC CONDUCTIVITY, k, cm/s ($10^{-6}$ $10^{-5}$ $10^{-4}$ $10^{-3}$) | WATER CONTENT PERCENT (Wp, W, Wl; 20 40 60 80) | ADDITIONAL LAB. TESTING | PIEZOMETER OR STANDPIPE INSTALLATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 20 | | | | | 4 | CS | | | | | | | |
| 22 | | | | | | | | | | | | | |
| 24 | | | | | | | | | | | | | |
| 26 | | Medium strong, grey SANDSTONE.<br>- grades to lighter grey @ 15.24m<br>- trace black coal @ 24.38m *(continued)* | | | 5 | CS | | | | | | | |
| 28 | | | | | | | | | | | | | |
| 30 | | | | | | | | | | | | | |
| 32 | | | | | 6 | CS | | | | | | | |
| 34 | | | | 34.14 | | | | | | | | | |
| | | VOID - likely old mine workings, broken and caved in bedrock. | | | | | | | | | | | |
| 36 | | | | 35.66 | | | | | | | | | |
| 38 | | SANDSTONE. | | | | | | | | | | | |
| 40 | | *CONTINUED NEXT PAGE* | | | | | | | | | | | |

BOREHOLE 002-1065.GPJ GLDR_CAN.GDT 2-7-02

DEPTH SCALE

1 : 100

Golder Associates

LOGGED: W.H.

CHECKED: J.A.F.

PROJECT No.: 002-1065

# RECORD OF MONITORING WELL: MW00-4

SHEET 3 OF 3

LOCATION: 3S Pit, Quinsam Coal Mine

BORING DATE: Nov. 20,22&23, 2000

DATUM: Local

| DEPTH SCALE METRES | BORING METHOD | SOIL PROFILE: DESCRIPTION | STRATA PLOT | ELEV. / DEPTH (m) | SAMPLES: NUMBER | SAMPLES: TYPE | SAMPLES: BLOWS/0.3m | DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) / SHEAR STRENGTH Cu, kPa (nat V. +, rem V. ⊕, Q - ●, U - ○) (20 40 60 80) | HYDRAULIC CONDUCTIVITY, k, cm/s ($10^{-5}$ $10^{-5}$ $10^{-4}$ $10^{-3}$) / WATER CONTENT PERCENT (Wp, W, Wl) (20 40 60 80) | ADDITIONAL LAB. TESTING | PIEZOMETER OR STANDPIPE INSTALLATION |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 40 | | | | | | | | | | | |
| 42 | | SANDSTONE. *(continued)* | | | | | | | | | Nov. 24/00 ▽ |
| 44 | | VOID - likely old mine workings, broken and caved in bedrock. | | 44.51 | | | | | | | |
| 46 | | SANDSTONE. | | 45.72 | | | | | | | 50mm PVC Slotted Pipe |
| 48 | | VOID - likely old mine workings, broken and caved in bedrock. | | 48.77 | | | | | | | |
| 50 | | End of MONITORING WELL. | | 49.68 | | | | | | | |
| 52 | | | | | | | | | | | |
| 54 | | | | | | | | | | | |
| 56 | | | | | | | | | | | |
| 58 | | | | | | | | | | | |
| 60 | | | | | | | | | | | |

BOREHOLE 002-1065.GPJ GLDR_CAN.GDT 2-7-02

DEPTH SCALE
1 : 100

Golder Associates

LOGGED: W.H.

CHECKED: J.A.F.

PROJECT No.. 002-1065

# RECORD OF MONITORING WELL: MW00-6

SHEET 1 OF 1

LOCATION: 3S Pit, Quinsam Coal Mine

BORING DATE: Nov. 21-22, 2000

DATUM: Local

| DEPTH SCALE METRES | BORING METHOD | SOIL PROFILE: DESCRIPTION | STRATA PLOT | ELEV. / DEPTH (m) | SAMPLES: NUMBER | SAMPLES: TYPE | SAMPLES: BLOWS/0.3m | DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m (20 40 60 80) | SHEAR STRENGTH Cu, kPa (nat V. + Q - ● / rem V. ⊕ U - ○) (20 40 60 80) | HYDRAULIC CONDUCTIVITY, k, cm/s ($10^{-6}$ $10^{-5}$ $10^{-4}$ $10^{-3}$) | WATER CONTENT PERCENT (Wp — W — Wl) (20 40 60 80) | ADDITIONAL LAB. TESTING | PIEZOMETER OR STANDPIPE INSTALLATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 0 | | Ground Surface | | 0.00 | | | | | | | | | |
| 2 | | Compact, moist, light brown TILL (FILL) (boulders, cobbles, sandy silt). | | | 1 | CS | | | | | | | Slough<br>MW 6D Nov. 24/00 ▽ |
| 4 | | | | | 2 | CS | | | | | | | Bentonite Seal<br>Silica Sand |
| 6 | | | | 5.79 | 3 | CS | | | | | | | MW 6S Nov. 24/00 ▽<br>50mm Slotted PVC Pipe |
| 8 | | | | | | | | | | | | | |
| 10 | | | | | | | | | | | | | Bentonite Seal |
| 12 | | Dense, moist to wet, dark grey, sandy SILT (Native), some gravel, cobbles and boulders. (TILL). | | | | | | | | | | | |
| 14 | | | | | | | | | | | | | |
| 16 | | | | | | | | | | | | | 50mm Slotted PVC Pipe<br>Silica Sand |
| 18 | | | | | | | | | | | | | Slough |
| 20 | | End of MONITORING WELL. | | 18.59 | | | | | | | | | |

BOREHOLE 002-1065.GPJ GLDR_CAN.GDT 2-7-02

DEPTH SCALE
1 : 100

Golder Associates

LOGGED: W.H.

CHECKED: J.A.F.

**Lorax Environmental Services Ltd.**
2289 Burrard Street
Vancouver, BC, Canada, V6J 3H9
Phone: +1 (604) 688-7173
Fax: +1 (604) 688-7175
www.lorax.ca

# Borehole ID: QU08-10

**Project #:** 885-1
**Project:** Quinsam Coal Groundwater Monitoring
**Client:** Quinsam Coal/Hillsborough Resources
**Location:** 7 South

**Northing:** 5533856.79
**Easting:** 324464.06
**Ground Elevation:** 295.02m
**Steel Casing:** 6 inch

| Depth | Symbol | Description | Depth/Elev. | Well | Observations |
|---|---|---|---|---|---|
| ft / m | | Ground Surface | | | |
| 0 / 0 | | Overburden/ Glacial Till | 0.0 | Pea Gravel 0.0m-3.0m | |
| 2 / 6 | | | | Cement Grout 3.0m-17.37m | |
| 20 / 6 | | Sandstone | 21.3 | | |
| 58 / 16 | | | | Bentonite Pellets 17.37m-18.29m | |

**Drilled By:** Drillwell
**Drill Method:** Downhole Hammer
**Geologists:** M. Storey
**Drill Date:** March 10, 2008

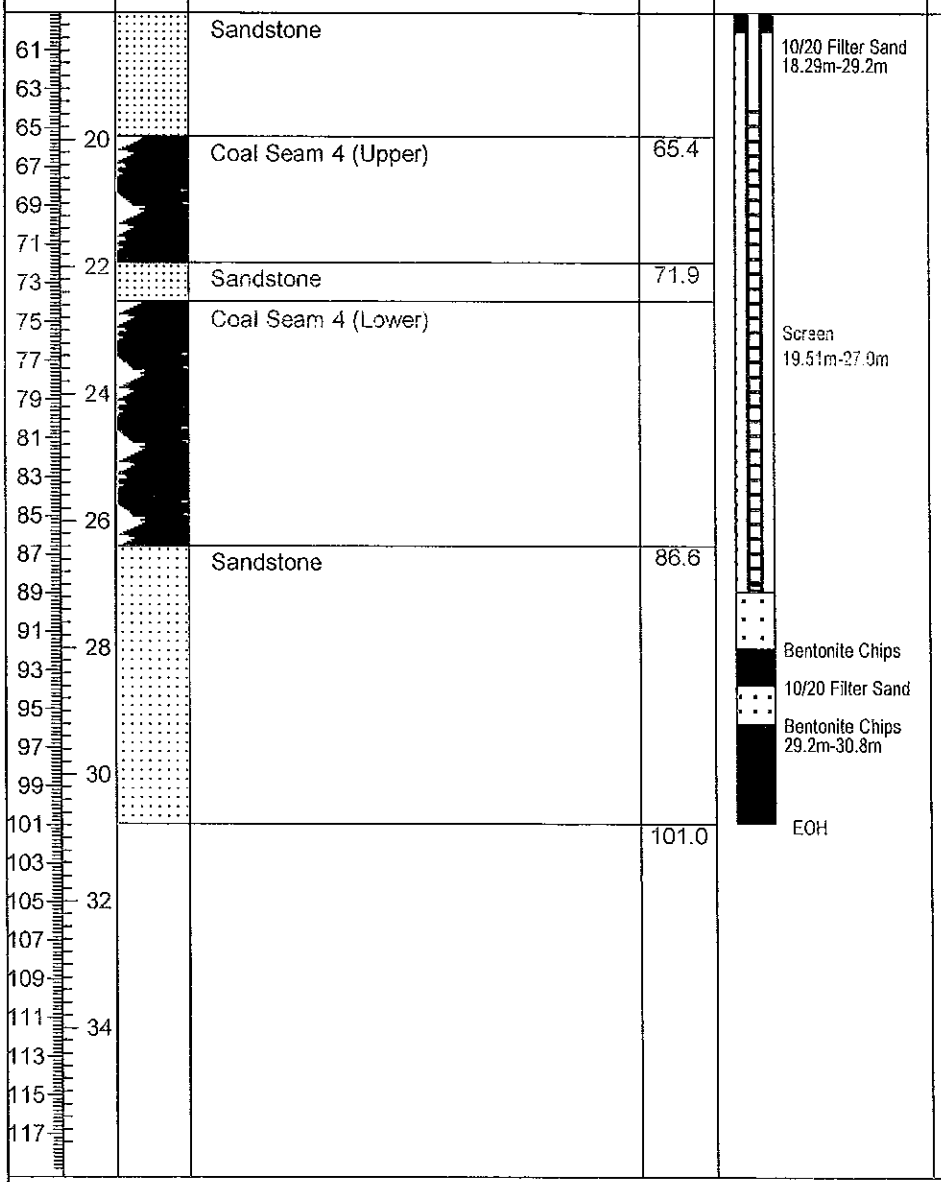
**Hole Size:** 7 in (0-6.5m), 6 in (6.5m-30.9m)
**PVC Casing:** 2 inch
**Well Installation Date:** April 20, 2010
**Sheet:** 1 of 2

**Lorax Environmental Services Ltd.**
2289 Burrard Street
Vancouver, BC, Canada, V6J 3H9
Phone: +1 (604) 688-7173
Fax: +1 (604) 688-7175
www.lorax.ca

# Borehole ID: QU08-10

**Project #:** 885-1
**Project:** Quinsam Coal Groundwater Monitoring
**Client:** Quinsam Coal/Hillsborough Resources
**Location:** 7 South

**Northing:** 5533856.79
**Easting:** 324464.06
**Ground Elevation:** 295.02m
**Steel Casing:** 6 inch




**Drilled By:** Drillwell
**Drill Method:** Downhole Hammer
**Geologists:** M. Storey
**Drill Date:** March 10, 2008

**Hole Size:** 7 in (0-6.5m), 6 in (6.5m-30.9m)
**PVC Casing:** 2 inch
**Well Installation Date:** April 20, 2010
**Sheet:** 2 of 2

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2289 Burrard Street
Vancouver, BC, Canada, V6J 3H9
Phone: +1 (604) 688-7173
Fax: +1 (604) 688-7175
www.lorax.ca

# Borehole ID: P08-13

**Project #:** 885-1
**Project:** Quinsam Coal Groundwater Monitoring
**Client:** Quinsam Coal/ Hillsborough Resources
**Location:** 7 South

**Northing:** 5535188
**Easting:** 323887
**Ground Elevation:** 220.40m
**Steel Casing:** 6 inch

| Depth (ft / m) | Symbol | Description | Depth/Elev. | Well A | Well B | Observations |
|---|---|---|---|---|---|---|
| 0 / 0 | | Ground Surface | | | | |
| | | Overburden Glacial Till | | | Pea Gravel 0-2.0m | |
| 6 / 2 | | | | | Cement Grout 2.0m-4.0m | |
| 12 / 4 | | | | | Pea Gravel 4.0m-6.9m | |
| 20 / 6 | | | | | Bentonite chips 6.9m-7.93m | |
| 26 / 8 | | | | | Pea Gravel 8.6m-13.72m | GW Elevation: 212.41m Well B (April 27, 2010) |
| 32 / 10 | | | | | | |
| 40 / 12 | | | | | | |
| 46 / 14 | | | | | Bentonite Pellets 13.72m-14.94m | GW Elevation: 207.21m Well A (April 27, 2010) |
| | | | | | Pea Gravel 14.94m-21.03m | |
| 52 / 16 | | | | | | |
| 58 / 18 | | | | | | |
| 66 / 20 | | | | | | |

**Drilled By:** Drillwell Enterprises
**Drill Method:** Downhole Hammer
**Geologists:** M. Storey
**Drill Date:** March 3, 2008

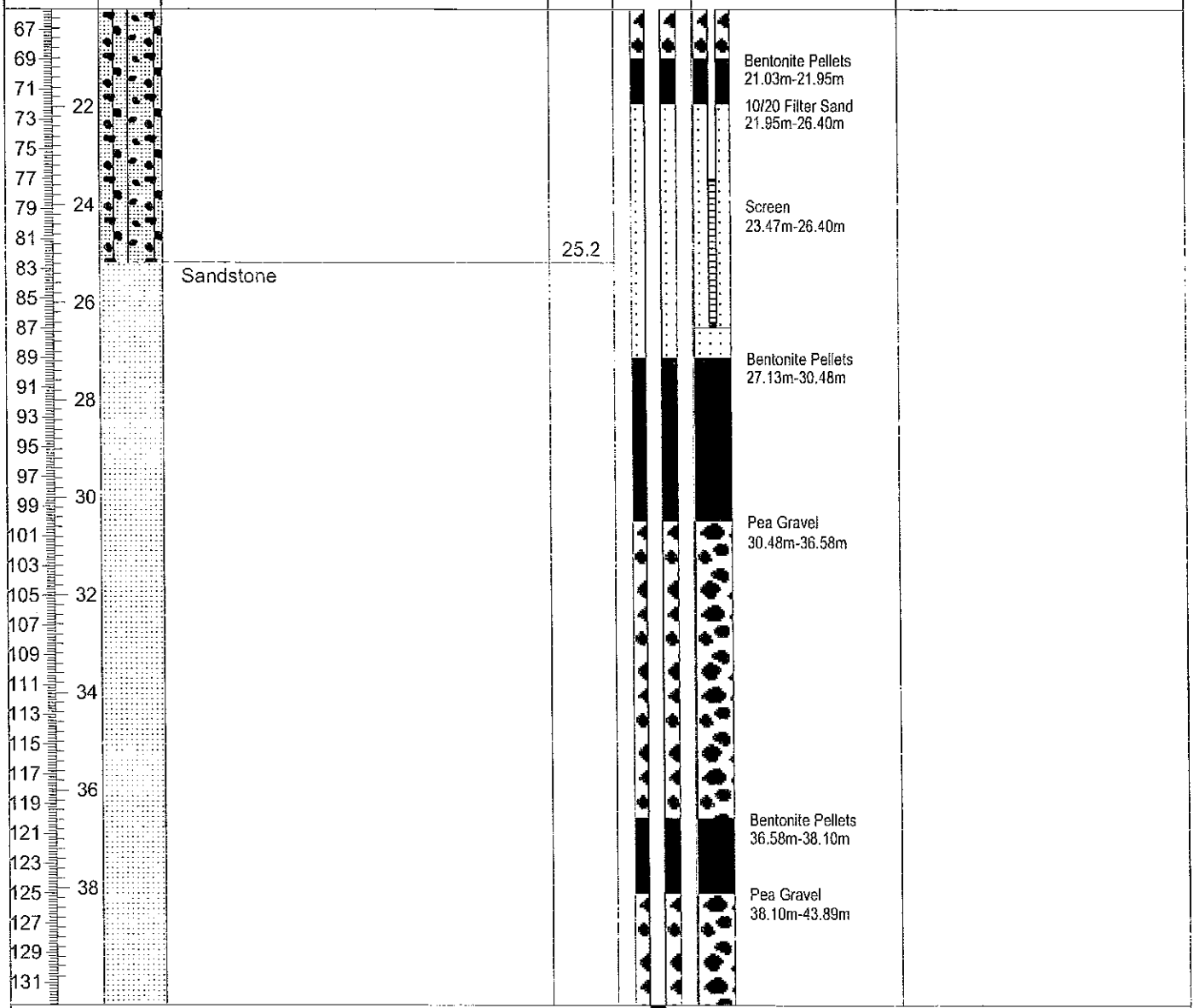
**Hole Size:** 7 in (0-25.5m), 5.5 in (25.5m-EOH)
**PVC Casing:** Well A: 2 inch,Well B: 1-1/4inch
**Well Installation Date:** April 20, 2010
**Sheet:** 1 of 3

**Lorax Environmental Services Ltd.**
2289 Burrard Street
Vancouver, BC, Canada, V6J 3H9
Phone: +1 (604) 688-7173
Fax: +1 (604) 688-7175
www.lorax.ca

# Borehole ID: P08-13

**Project #:** 885-1
**Project:** Quinsam Coal Groundwater Monitoring
**Client:** Quinsam Coal/ Hillsborough Resources
**Location:** 7 South

**Northing:** 5535188
**Easting:** 323887
**Ground Elevation:** 220.40m
**Steel Casing:** 6 inch




**Drilled By:** Drillwell Enterprises
**Drill Method:** Downhole Hammer
**Geologists:** M. Storey
**Drill Date:** March 3, 2008

**Hole Size:** 7 in (0-25.5m), 5.5 in (25.5m-EOH)
**PVC Casing:** Well A: 2 inch,Well B: 1-1/4inch
**Well Installation Date:** April 20, 2010
**Sheet:** 2 of 3

**Lorax Environmental Services Ltd.**
2289 Burrard Street
Vancouver, BC, Canada, V6J 3H9
Phone: +1 (604) 688-7173
Fax: +1 (604) 688-7175
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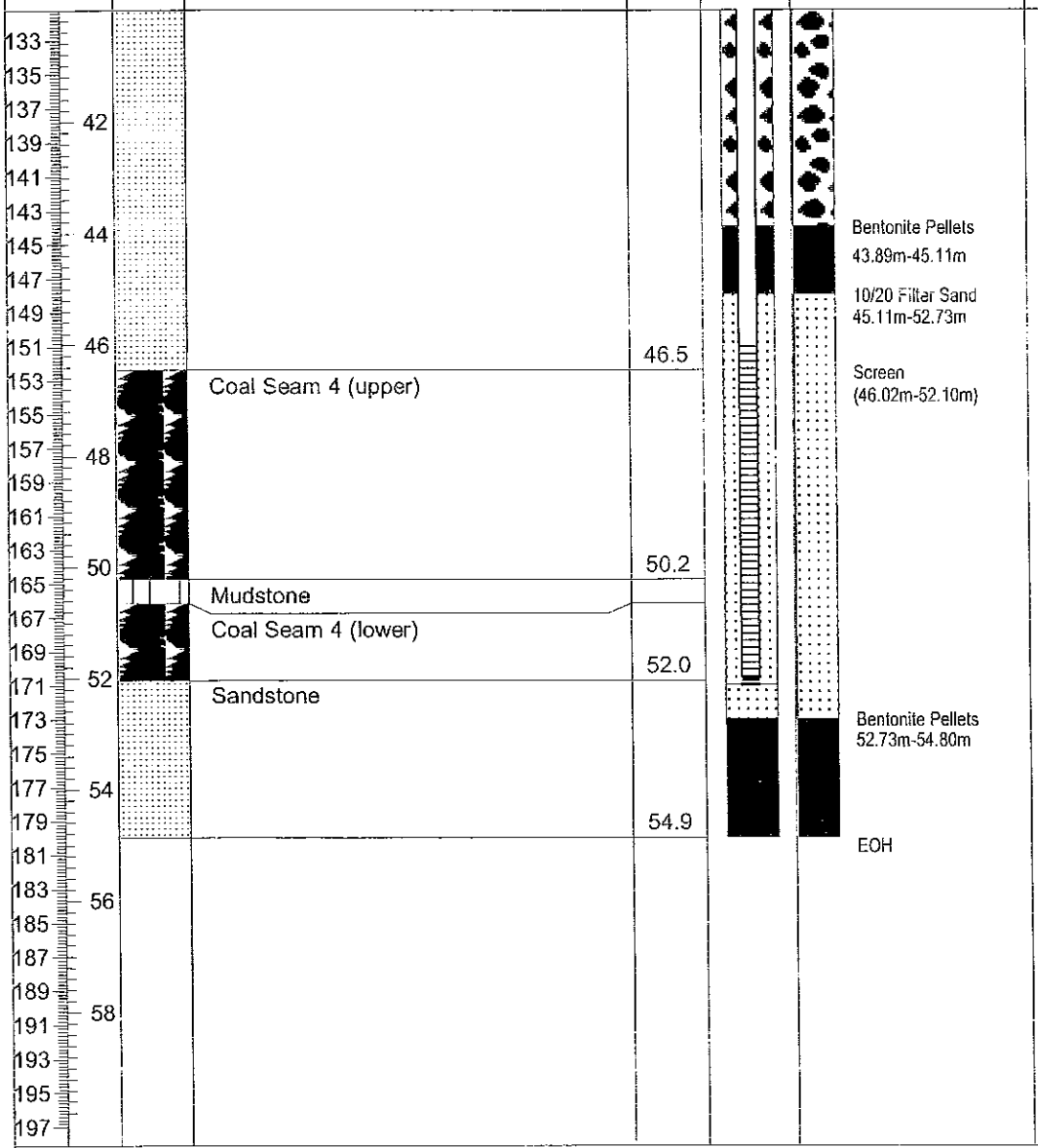
# Borehole ID: P08-13

**Project #:** 885-1
**Project:** Quinsam Coal Groundwater Monitoring
**Client:** Quinsam Coal/ Hillsborough Resources
**Location:** 7 South

**Northing:** 5535188
**Easting:** 323887
**Ground Elevation:** 220.40m
**Steel Casing:** 6 inch




**Drilled By:** Drillwell Enterprises
**Drill Method:** Downhole Hammer
**Geologists:** M. Storey
**Drill Date:** March 3, 2008

**Hole Size:** 7 in (0-25.5m), 5.5 in (25.5m-EOH)
**PVC Casing:** Well A: 2 inch,Well B: 1-1/4inch
**Well Installation Date:** April 20, 2010
**Sheet:** 3 of 3

Enterprise Geoscience Services Ltd.

# Borehole Log of QU-08-21G

| | | | |
|---|---|---|---|
| Date Started | : May 20, 2008 | Drilled by | : Drillwell Enterprises |
| Date Completed | : May 21, 2008 | Northing Coord. | : 102802 |
| Hole Diameter | : 140 mm | Easting Coord. | : 101917 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Core | Logged By | : C.G. Cathyl-Bickford |

Water Levels
- QU-08-21G-S 213.14 m (10-Nov-10)
- QU-08-21G-D 212.86 m (10-Nov-10)

Well1: QU-08-21G-S
Well2: QU-08-21G-D
Elev. m: 213.66

| Depth (m) | Elev. m | USCS | Material Description |
|---|---|---|---|
| 0 | 213.66 | | NOT CORED |
| 20 | 193 | SS | SANDSTONE - light grey to dark brown, medium to coarse grained, non-calcareous |
| | | SL | COAL SEAM 6- dull to bright, with siltstone/mudstone lenses |
| | | | SILTSTONE & MUDSTONE interbeds - medium brown to black, carbonaceous |
| 30 | 183 | SS | SANDSTONE - 26.7-34m: light to medium grey, medium to coarse grained, with conglomerate lenses. 34-52m: light to dark grey, fine to coarse grained. Top of Dunsmuir 'E' Sandstone at 34m |
| 50 | 163 | | |

Pea gravel
Bentonite chips
Pea gravel
PVC 2"/Schedule 40
Bentonite chips
PVC 1.25"/Schedule 40
Pea gravel
Bentonite chips
Pea gravel
Bentonite chips
Pea gravel
Bentonite chips
Pea gravel

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

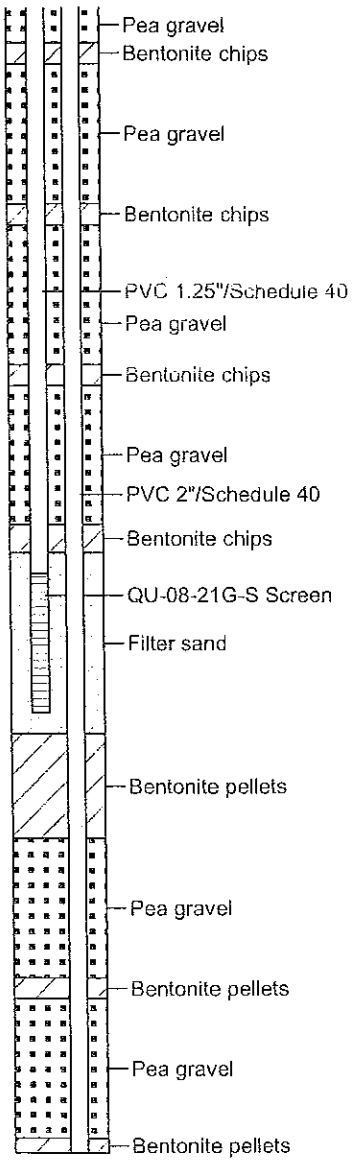
# Borehole Log of QU-08-21G

| | | | |
|---|---|---|---|
| Date Started | : May 20, 2008 | Drilled by | : Drillwell Enterprises |
| Date Completed | : May 21, 2008 | Northing Coord. | : 102802 |
| Hole Diameter | : 140 mm | Easting Coord. | : 101917 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Core | Logged By | : C.G. Cathyl-Bickford |

Water Levels
- QU-08-21G-S 213.14 m (10-Nov-10)
- QU-08-21G-D 212.86 m (10-Nov-10)

Well1: QU-08-21G-S
Well2: QU-08-21G-D
Elev. m: 213.66

| Depth (m) | Elev. m 213.66 | USCS | Material Description |
|---|---|---|---|
| 50 | 163 | SS | |
| | | | COAL SEAM 5 - 52-53.3m: bright to dull, minor sandstone lensing; 53.3-55.1m: bright ot dull, with pyrite and mudstone lenses. |
| 55 | 158 | | SANDSTONE - light grey to brown, fine to coarse grained |
| 60 | 153 | | |
| 65 | 148 | SS | |
| 70 | 143 | | |
| 75 | 138 | SL | COAL SEAM 4R - dull to bright. Top of Dunsmuir member middle division |
| | | | SILTSTONE - dark grey, with mudstone lenses |
| | | | COAL SEAM 4/4L - 76.9-8m: dull to bright, with mudstone beds; 79-80.4m: dull to bright, with sandstone and mudstone beds. |
| 80 | 133 | | SANDSTONE - 80.4-92.1m: light grey to black, fine to coarse grained; Top of Dunsmuir 'C' sandstone at 81.7m; Minor siltstone/mudstone interbeds at 86m, 92m depths |
| 85 | 128 | SS | |
| 90 | 123 | | |
| | | | COAL SEAM 4B- bright to dull with sandstone interbeds |
| 95 | 118 | SS | SANDSTONE - light grey to black, fine to coarse grained, carbonaceous |
| 100 | | | |




Quinsam Coal
Assessment of Underground Disposal of Coarse Coal Refuse

Campbell River, B.C.

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# Borehole Log of QU-08-21G

| | | | |
|---|---|---|---|
| Date Started | : May 20, 2008 | Drilled by | : Drillwell Enterprises |
| Date Completed | : May 21, 2008 | Northing Coord. | : 102802 |
| Hole Diameter | : 140 mm | Easting Coord. | : 101917 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Core | Logged By | : C.G. Cathyl-Bickford |

Water Levels
- QU-08-21G-S 213.14 m (10-Nov-10)
- QU-08-21G-D 212.86 m (10-Nov-10)

Well1: QU-08-21G-S
Well2: QU-08-21G-D
Elev. m: 213.66

| Depth (m) | Elev. m 213.66 | USCS | Material Description |
|---|---|---|---|
| 100 | 113 | | |
| | | SS | SANDSTONE - light grey to black, fine to coarse grained, carbonaceous |
| 105 | 108 | | |
| 110 | 103 | | |
| 115 | 98 | | |
| 120 | 93 | | |
| 125 | 88 | SL | COAL SEAM 3R - bright, with carbonaceous mudstone interbeds/at top of sequence. |
| | | SL | SILTSTONE & MUDSTONE - dark brown to grey, interbedded |
| 130 | 83 | SL | COAL SEAM 3 - bright to dull, with mudstone lenses at top and bottom of sequence. |
| | | | SILTSTONE - medium to dark brown, with mudstone interbeds |
| 135 | 78 | | COAL SEAM 3L - dull to bright, interlaminated with mudstone at top of sequence. |
| | | | SILTSTONE - 130-133m: dark brown, with dark brown mudstone beds - minor coal lenses at 131m and between 132.7 and 133m |
| 140 | 73 | SS | SANDSTONE - 133-154.6m: light to dark grey, fine to coarse grained, top of Dunsmuir 'A' sandstone at 133m. |
| 145 | 68 | | 147-149m: dark brown mudstone lenses |
| 150 | | | |

Well1: QU-08-21G-S / Well2: QU-08-21G-D

- Pea Gravel
- Bentonite Pellets
- Pea Gravel
- Bentonite Pellets
- Pea Gravel
- Bentonite Pellets
- Pea Gravel
- PVC 2"/Schedule 40
- Bentonite Pellets
- Pea Gravel
- Bentonite Pellets
- Pea Gravel
- Bentonite Pellets
- Pea Gravel

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

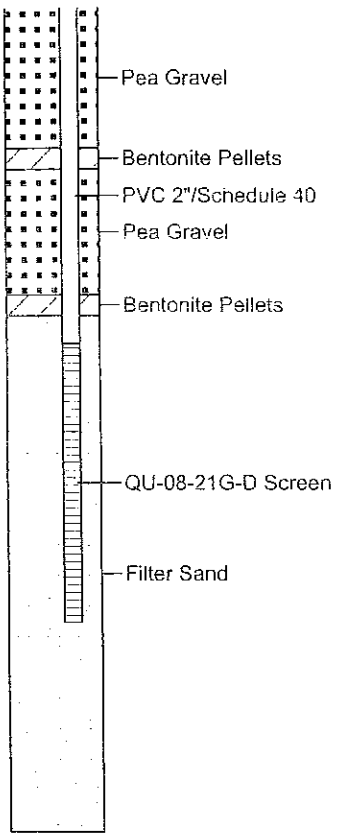
# Borehole Log of QU-08-21G

| | | | |
|---|---|---|---|
| Date Started | : May 20, 2008 | Drilled by | : Drillwell Enterprises |
| Date Completed | . May 21, 2008 | Northing Coord. | : 102802 |
| Hole Diameter | : 140 mm | Easting Coord. | : 101917 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Core | Logged By | : C.G. Cathyl-Bickford |

Water Levels
- QU-08-21G-S 213.14 m (10-Nov-10)
- QU-08-21G-D 212.86 m (10-Nov-10)

Well1: QU-08-21G-S
Well2: QU-08-21G-D
Elev. m: 213.66

| Depth (m) | Elev. m 213.66 | USCS | Material Description |
|---|---|---|---|
| 150 | 63 | SS | |
| 155 | 58 | MS / SL | MUDSTONE - grey brown, with siltstone lenses, medium brown, carbonaceous<br>COAL SEAM 2 - bright to dull, dirty at base (155 0-156.1m) |
| 160 | 53 | SS | SILTSTONE -<br>156-157.3m: dark grey, with dark brown mudstopbe interbeds<br>SANDSTONE, IRONSTONE and SILTSTONE interbeds - dark grey to brown. Possible fault at 157.3m |
| 165 | 48 | | |
| 170 | 43 | MS / SL | COAL SEAM 1 -<br>171.6-172.7m: dull to bright, dirty, with mudstone lensese at top and bottom of sequence (Quinsam No. 1 coal bed) |
| 175 | 38 | SL | MUDSTONE -<br>172.7-173.6m: medium brown with siltstone lense at top of sequence<br>-floor of upper bench/top of main parting at 172.9m<br>-interlaminated coal and mudstone between 173.4m and 173.6m<br>-base of main parting at 173.5m |
| 180 | 33 | | |
| 185 | 28 | | IRONSTONE, SILTSTONE and MUDSTONE - dark grey to brown<br>SANDY SILT, COALY ROCK (Coal Seam 1L).<br>SILTSTONE, IRONSTONE, SANDSTONE and MUDSTONE interbeds -<br>176.9-177.8m: bright coal bands<br>176.9-184m: dark grey to dark brown conglomerate with sandstone bed at base, dark green, coarse grained<br>EOH @ 185.8m |
| 190 | 23 | | |
| 195 | 18 | | |
| 200 | | | |




Quinsam Coal
Assessment of Underground Disposal of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

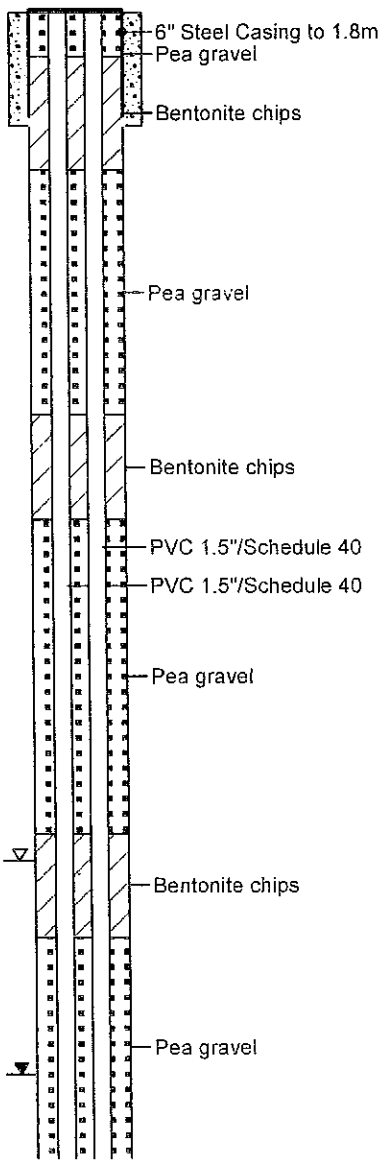
# Borehole Log of QU-10-07

| | | | |
|---|---|---|---|
| Date Started | : Sept 28, 2010 | Drilled by | : Drillwell Enterpirses |
| Date Completed | : Sept 29, 2010 | Northing Coord. | : 101137 |
| Hole Diameter | : 150mm/85mm core | Easting Coord. | : 99263 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-07-S 18.538m (11/19/2010)
- QU-10-07-D 14.805m (11/19/2010)

Well1: QU-10-07-S
Well2: QU-10-07-D
Elev. m: 317.61

| Depth (m) | Elev. m 317.61 | USCS | Material Description |
|---|---|---|---|
| 0 | 317 | | SANDY SILT (TILL) - red-brown, loose, moist. |
| | | | SANDSTONE - |
| | | | 0.1-3.1m light grey, weathered, fine to medium grained. |
| | | | 3.1-6.1m light grey, medium grained. |
| 5 | 312 | | No water at 6.0m. |
| | | | 6.1-9.1m medium grey, coarse-grained, moderately weathered with dark grey siltstone lens. |
| | | | 9.1-12.2m medium grey, medium-coarse grained, fresh. |
| 10 | 307 | SS | No water at 12.2m. |
| | | | 12.2-21.3m medium grey, fresh. |
| 15 | 302 | | |
| 20 | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

# Borehole Log of QU-10-07

| | | | |
|---|---|---|---|
| Date Started | : Sept 28, 2010 | Drilled by | : Drillwell Enterpirses |
| Date Completed | : Sept 29, 2010 | Northing Coord. | : 101137 |
| Hole Diameter | : 150mm/85mm core | Easting Coord. | : 99263 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

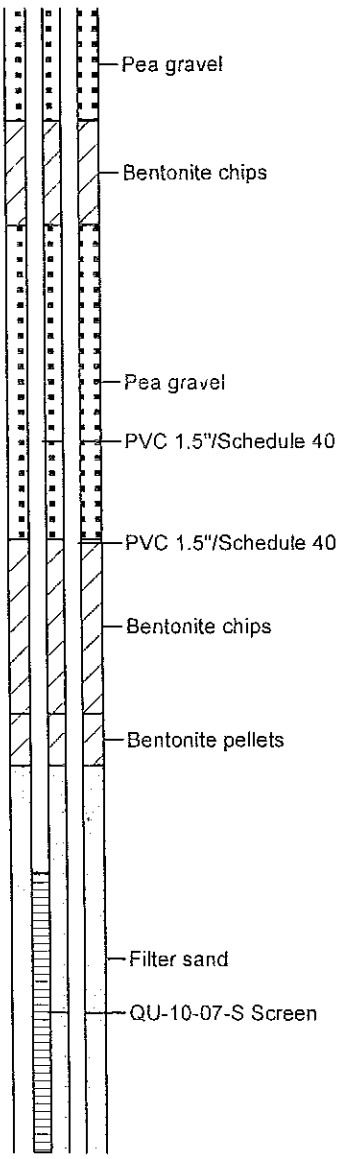
Water Levels

▼ QU-10-07-S 18.538m (11/19/2010)

▽ QU-10-07-D 14.805m (11/19/2010)

Well1: QU-10-07-S
Well2: QU-10-07-D
Elev. m: 317.61

| Depth (m) | Elev. m 317.61 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 20 | 297 | | | No water at 21.3m. 21.3-24.4m light grey, fine-medium grained, moderately weathered. |
| | | | | 24.4-30.5m light grey, fine-medium grained, fresh. |
| 25 | 292 | | | |
| 30 | 287 | SS | | 30.5-36.6m very light grey, fine-grained, fresh, siltstone lens. |
| 35 | 282 | | | 36.6-39.6m very light grey, fine-medium grained, moderately weathered. |
| 40 | | | | 39.6-48.8m very light grey, fine-medium grained, fresh. |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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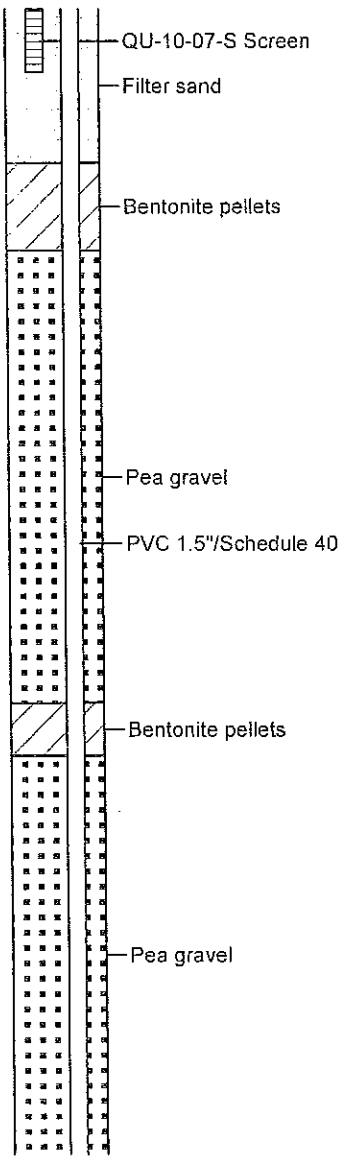
# Borehole Log of QU-10-07

| | | | |
|---|---|---|---|
| Date Started | : Sept 28, 2010 | Drilled by | : Drillwell Enterpirses |
| Date Completed | : Sept 29, 2010 | Northing Coord. | : 101137 |
| Hole Diameter | : 150mm/85mm core | Easting Coord. | : 99263 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-07-S 18.538m (11/19/2010)
- QU-10-07-D 14.805m (11/19/2010)

Well1: QU-10-07-S
Well2: QU-10-07-D
Elev. m: 317.61

| Depth (m) | Elev. m 317.61 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 40 | 277 | | | |
| 45 | 272 | | | |
| 50 | 267 | SS | | 48.8-54.9m medium grey, fine to medium grained, fresh. |
| 55 | 262 | | | No water at 54.9m.<br>54.9-57.9m medium grey, fine to medium grained, moderately weathered. |
| 60 | | | | 57.9-61.0m fine grained, dark grey, fresh. |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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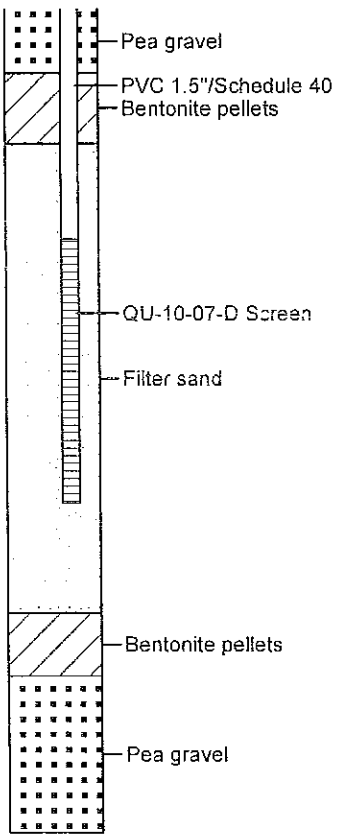
# Borehole Log of QU-10-07

| | | | |
|---|---|---|---|
| Date Started | : Sept 28, 2010 | Drilled by | : Drillwell Enterpirses |
| Date Completed | : Sept 29, 2010 | Northing Coord. | : 101137 |
| Hole Diameter | : 150mm/85mm core | Easting Coord. | : 99263 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-07-S 18.538m (11/19/2010)
- QU-10-07-D 14.805m (11/19/2010)

Well1: QU-10-07-S
Well2: QU-10-07-D
Elev. m: 317.61

| Depth (m) | Elev. m 317.61 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 60 | 257 | SS | | 61.0-64.9m medium-dark grey, fine-medium grained, fresh. |
| 65 | 252 | | | COAL - Rapid drill penetration. Water in coal seam ~0.5 US GPM. |
| | | MS | | COAL/MUDSTONE. Borehole cored from 67.7m to 74.4m (5.5inch diameter) |
| | | SS | | Heavily fractured 67.7-69.8m: (2.1m/ 0.6m rec'y). Lost remainder of core run to 69.8m. |
| 70 | 247 | SL | | SANDSTONE, medium grey. |
| | | | | SILTSTONE, |
| | | | | 69.8-70.4m fine grained, dark grey, fresh, heavily fractured 69.8-70.3m, then massive. |
| | | | | 69.8-71.3m: (1.52m/1.4m rec'y). |
| | | SS | | heavily fractured 71.3-72.5m. |
| | | | | 71.3-72.7m: (1.37m/1.2m rec'y). |
| | | | | 70.4-71.9m SILTSTONE/SANDSTONE, fine grained, dark grey, fresh. |
| 75 | 242 | | | grey, SANDSTONE, light grey, medium-coarse grained, fresh. -72.5 |
| | | | | minor fractures 72.5-73.9m. |
| | | | | Heavily fractured 73.9-74.4m. |
| | | | | 72.7-74.4m: (1.7m/1.75m rec'y). |
| | | | | Flow 0.75 GPM at 74.4m. |
| | | | | EOH @ 74.4m |
| 80 | | | | |




Quinsam Coal
Assessment of Underground Disposal of Coarse Coal Refuse

Campbell River, B.C.

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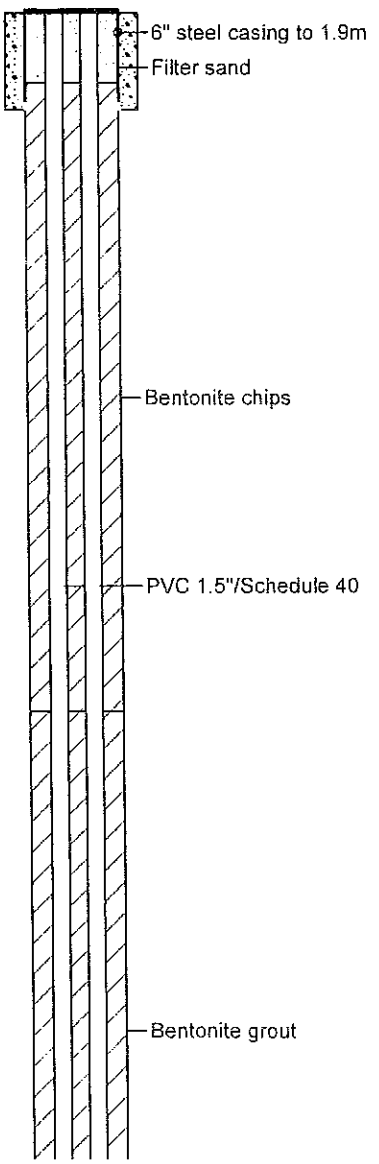
# Borehole Log of QU-10-08

| | | | |
|---|---|---|---|
| Date Started | : Sept 29, 2010 | Drilling Company | : Drillwell Enterpirses |
| Date Completed | : Sept 30, 2010 | Northing Coord. | : 100893 |
| Hole Diameter | : 150 mm/85 mm core | Easting Coord. | : 98905 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-08-S: 307.50m (11/19/2010)
- QU-10-08-D: 306.54m (11/19/2010)

Well1: QU-10-08-S
Well2: QU-10-08-D
Elev. m: 339.17

| Depth (m) | Elev. m 339.17 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 0 | 339 | | | SANDSTONE - 0-1.8m: green-grey, medium-coarse, fresh |
| | | | | 1.8-7.3m: medium-grey, fine grained, moderately weathered, non-carbonaceous |
| 5 | 334 | | | |
| | | | | 7.3-18.9m: dark grey, fine grained, fresh, non-carbonaceous |
| 10 | 329 | SS | | |
| 15 | 324 | | | |
| | | | | 18.9-21.3m: dark grey, fine-grained, slightly weathered, non-carbonaceous |
| 20 | 319 | | | |
| | | | | 21.3-37.2m: medium: grey, fine-medium: grained, fresh, non-carbonaceous |
| 25 | | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

# Borehole Log of QU-10-08

| | | | |
|---|---|---|---|
| Date Started | : Sept 29, 2010 | Drilling Company | : Drillwell Enterpirses |
| Date Completed | : Sept 30, 2010 | Northing Coord. | : 100893 |
| Hole Diameter | : 150 mm/85 mm core | Easting Coord. | : 98905 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels

▼ QU-10-08-S: 307.50m (11/19/2010)

▽ QU-10-08-D: 306.54m (11/19/2010)

Well1: QU-10-08-S
Well2: QU-10-08-D
Elev. m: 339.17

| Depth (m) | Elev. m 339.17 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 25 | 314 | | | |
| 30 | 309 | | | |
| 35 | 304 | SS | | 37.2-64.0m: light grey, coarse-grained, fresh, slightly carbonaceous. Hole dry at resumption of drilling next day (Sept 30/10) |
| 40 | 299 | | | |
| 45 | 294 | | | |
| 50 | | | | |

PVC 1.5"/Schedule 40

Bentonite grout

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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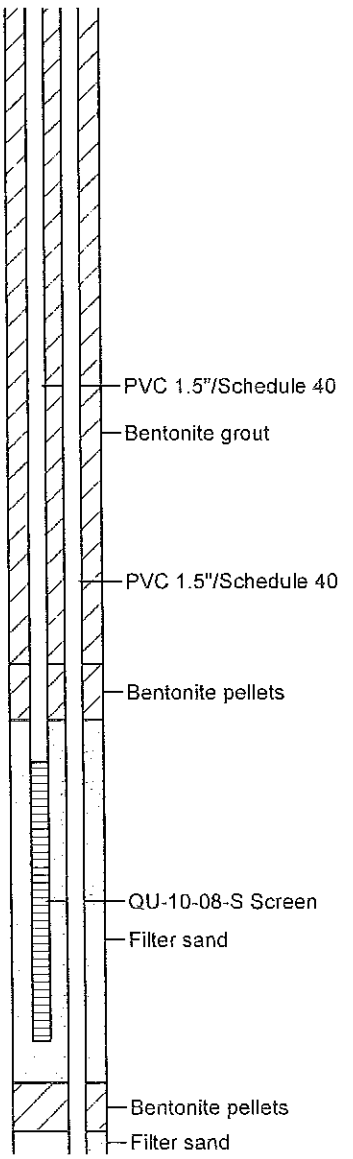
# Borehole Log of QU-10-08

| | | | |
|---|---|---|---|
| Date Started | : Sept 29, 2010 | Drilling Company | : Drillweil Enterpirses |
| Date Completed | : Sept 30, 2010 | Northing Coord. | : 100893 |
| Hole Diameter | : 150 mm/85 mm core | Easting Coord. | : 98905 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-08-S: 307.50m (11/19/2010)
- QU-10-08-D: 306.54m (11/19/2010)

Well1: QU-10-08-S
Well2: QU-10-08-D
Elev. m: 339.17

| Depth (m) | Elev. m 339.17 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 50 | 289 | | | |
| 55 | 284 | | | |
| 60 | 279 | SS | | 64.0-66.4m: light grey, coarse-grained, fresh, not carbonaceous |
| 65 | 274 | | | 66.4-71.5m: medium: grey, coarse grained, fresh, non-carbonaceous |
| 70 | 269 | | | Dry hole at 71.3m.<br>Borehole cored from 71.3m to EOH<br>71.5-73.6m: light grey, coarse grained, fresh, non-carbonaceous, moderately fractured. (2.13 m/2.06 rec'y)<br>73.6-75.7m: light grey, coarse grained, fresh, non-carbonaceous, massive fracture |
| 75 | | | | |




Quinsam Coal
Assessment of Underground Disposal of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

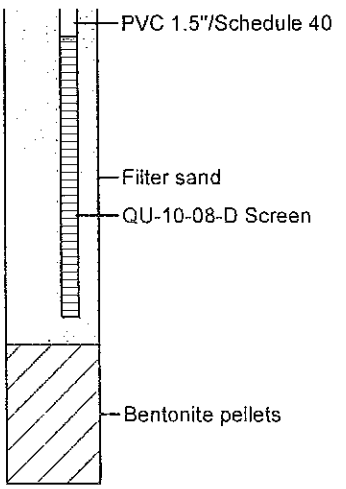
# Borehole Log of QU-10-08

| | | | |
|---|---|---|---|
| Date Started | : Sept 29, 2010 | Drilling Company | : Drillwell Enterpirses |
| Date Completed | : Sept 30, 2010 | Northing Coord. | : 100893 |
| Hole Diameter | : 150 mm/85 mm core | Easting Coord. | : 98905 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-08-S: 307.50m (11/19/2010)
- QU-10-08-D: 306.54m (11/19/2010)

Well1: QU-10-08-S
Well2: QU-10-08-D
Elev. m: 339.17

| Depth (m) | Elev. m 339.17 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 75 | 264 | SS | | |
| | | SL | | SILTSTONE/COAL Interface |
| | | | | COAL SEAM 3- heavily fractured |
| | | MS | | COAL SEAM 3 and MUDSTONE lenses - heavily fractured<br>76.4-79.1m: (2.74 m/2.74 rec'y) |
| 80 | 259 | | | COAL Seam 3 - minor pyrite, heavily fractured<br>79.1-81.1m: (1.98 m/0.71 rec'y) |
| | | SS | | SANDSTONE -<br>81.1-82.6m: (1.52 m/1.52 rec'y)<br>81.4-82.6m: dark grey, fine to medium: grained with thin coal stringers (1/8 to 1/2 inch), heavily fractured<br>82.6-82.9m: light grey, very coarse grained, fresh, minor fractures<br>82.6-84.1m: (1.52 m/1.42 rec'y)<br>82.9-85.3m: light-medium: grey, med-coarse grained, massive, fresh<br>84.1-85.6m: (1.52 m/1.52 rec'y) |
| 85 | 254 | | | EOH @ 85.3m |
| 90 | 249 | | | |
| 95 | 244 | | | |
| 100 | | | | |




Quinsam Coal
Assessment of Underground Disposal of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

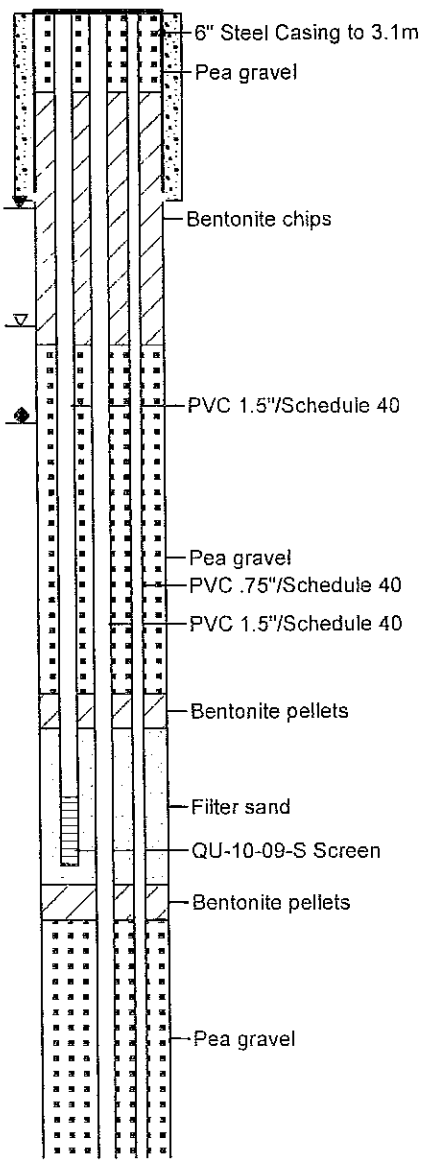
# Borehole Log of QU-10-09

| | | | |
|---|---|---|---|
| Date Started | : Oct 1, 2010 | Drilled By | : Drillwell Enterprises |
| Date Completed | : Oct 5, 2010 | Northing Coord. | : 101346 |
| Hole Diameter | : 150 mm | Easting Coord. | : 98931 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-09-S: 300.91m
- QU-10-09-D: 298.84m
- QU-10-09-P: 291.48m

Well1: QU-10-09-S
Well2: QU-10-09-D
Well3: QU-10-09-P
Elev. m: 304.31

| Depth (m) | Elev. m 304.31 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 0 | 304 | f42 | | Sandy SILT (TILL) - with boulders, red-brown |
| | | ss | | SANDSTONE - |
| | | | | 3.05-6.1m: light to dark grey, medium grained, fresh, non-carbonaceous |
| 5 | 299 | | | 6.1-9.14m: light to dark grey, medium-coarse grained |
| | | | | 8 thin coal stringers (3.18mm) between 6.55-6.71m in weathered siltstone lens |
| | | | | quartz vein at 7.3m |
| | | | | 9.1-12.2m: light grey, coarse grained |
| 10 | 294 | | | iron-stained quartz vein fracture zones at 11.1-11.6m |
| | | | | conglomerate inclusions between 11.7-11.9m |
| | | | | 12.2-15.2m: light grey, coarse grained |
| | | | | 15.2-18.3m: |
| | | | | interval. |
| | | | | conglomerate inclusions 13.3-14.0m and 14.5-14.8m |
| | | | | weathered zone at 14.3m |
| 15 | 289 | | | 18.3-22.6m: light grey, medium coarse grained |
| | | | | conglomerate lense at 17.7m |
| | | | | 22.6-23.5m: light grey, medium coarse grained |
| 20 | | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

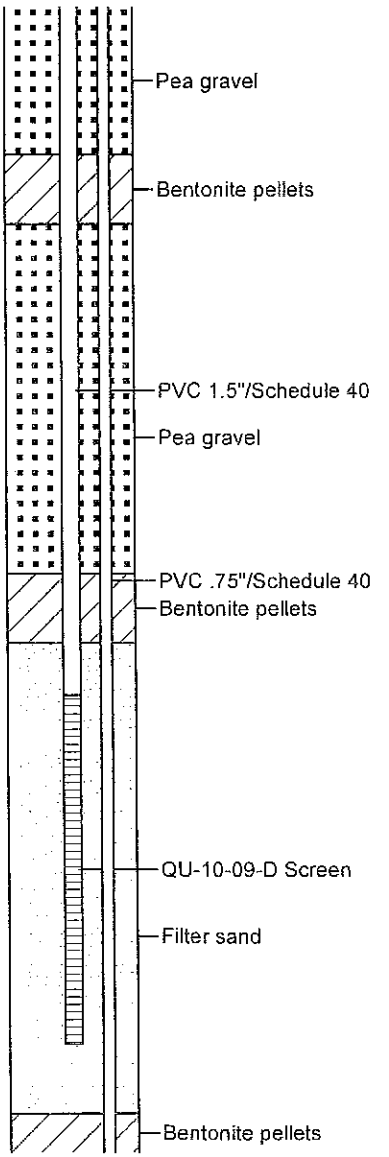
# Borehole Log of QU-10-09

| | | | |
|---|---|---|---|
| Date Started | : Oct 1, 2010 | Drilled By | : Drillwell Enterprises |
| Date Completed | : Oct 5, 2010 | Northing Coord. | : 101346 |
| Hole Diameter | : 150 mm | Easting Coord. | : 98931 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-09-S: 300.91m
- QU-10-09-D: 298.84m
- QU-10-09-P: 291.48m

Well1: QU-10-09-S
Well2: QU-10-09-D
Well3: QU-10-09-P
Elev. m: 304.31

| Depth (m) | Elev. m 304.31 | USCS | Material Description |
|---|---|---|---|
| 20 | 284 | SS | conglomerate lense 20.3-20.4m |
| | | | 23.5-27.4m: weathered |
| | | | 27.4-29.6m: medium grey, fine-medium grained, with thin shale stingers |
| 25 | 279 | | minor conglomerate inclusions @ 25.3m |
| | | | 29.6-32m: light to medium grey, fine to medium grained |
| 30 | 274 | | 32-33.5m: medium grey, medium grained with disseminated shale stringers |
| | | | 33.5-38.1m: light to medium grey, medium-coarse grained, fractures 32-33.2m<br>COAL seam (1" thick) at 32.2m |
| | | | 38.1-39.3m: light to medium grey, weathered mudstone lense @ 112 to 112.5 ft, fractures from 117.5 to 124 |
| 35 | 269 | | flow 9 GPM at 37.8m |
| | | MS | MUDSTONE - dark brown, multiple fractures |
| 40 | | SS | SANDSTONE -<br>39.3-42.7m: light to medium grey, medium grained |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

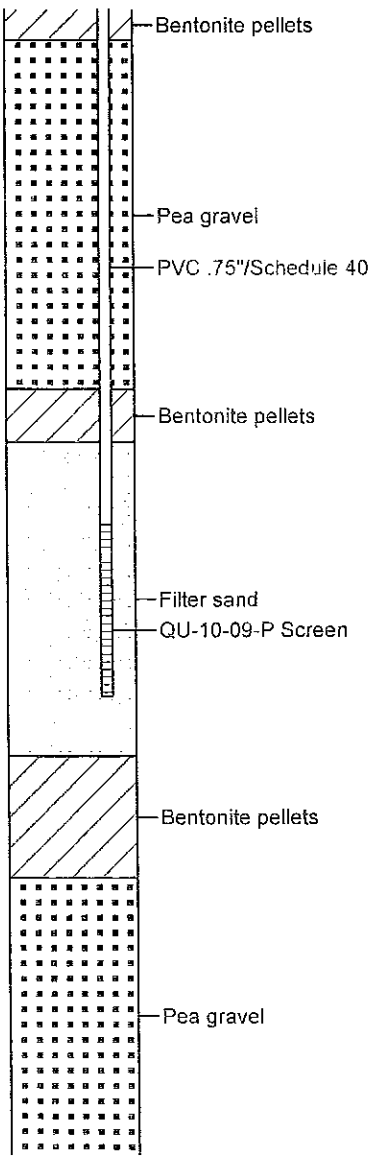
# Borehole Log of QU-10-09

| | | | |
|---|---|---|---|
| Date Started | : Oct 1, 2010 | Drilled By | : Drillwell Enterprises |
| Date Completed | : Oct 5, 2010 | Northing Coord. | : 101346 |
| Hole Diameter | : 150 mm | Easting Coord. | : 98931 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-09-S: 300.91m
- QU-10-09-D: 298.84m
- QU-10-09-P: 291.48m

Well1: QU-10-09-S
Well2: QU-10-09-D
Well3: QU-10-09-P
Elev. m: 304.31

| Depth (m) | Elev. m 304.31 | USCS | Material Description |
|---|---|---|---|
| 40 | 264 | | fractured at 40.2m |
| | | SS | 42.7-45.7m: light to medium grey, medium grained, heavily fractured, MUDSTONE bed (20 cm thick, dark brown)<br>thin COAL stringer @43.1m |
| 45 | 259 | | 45.7-49.2m: light grey, coarse grained, heavily fractured |
| | | | 47.6-47.8m: mudstone bed (dark brown) |
| 50 | 254 | | COAL SEAM 2, heavily fractured with mudstone and coal stringers at base<br>flow 12 GPM at 49.4m |
| | | MS | MUDSTONE - dark brown, heavily fractured, with coal stringers over 6" interval. Flow 16 GPM at 50.3m |
| 55 | 249 | SL | SILTSTONE -<br>54.9-57.3m: dark brown, heavily fractured. 6 inches of light grey unweathered SILTSTONE at base<br>coal stringers at 55.2m. Thin coal stringers in weathered mudstone between 55.2-56.1m |
| | | MS | MUDSTONE - dark brown, fractured on 15.24cm spacing, disseminated COAL stringers (1 ft interval) at base of 91.4m moderately fractured mudstone sequence, mudstone heavily fractured at base. Flow 28 GPM at 57.3m |
| 60 | | SL | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

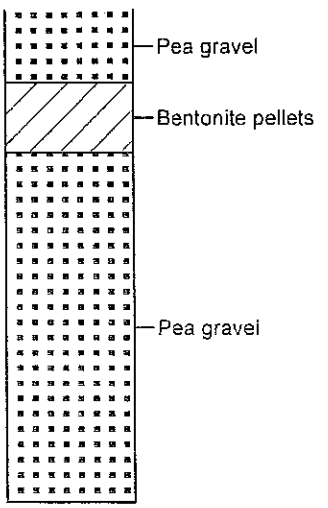
# Borehole Log of QU-10-09

| | | | |
|---|---|---|---|
| Date Started | : Oct 1, 2010 | Drilled By | : Drillwell Enterprises |
| Date Completed | : Oct 5, 2010 | Northing Coord. | : 101346 |
| Hole Diameter | : 150 mm | Easting Coord. | : 98931 |
| Drilling Method | : Air Rotary with wireline coring | Survey By | : McElhanney |
| Sampling Method | : Grab sample/core log | Logged By | : O. Quinn |

Water Levels
- QU-10-09-S: 300.91m
- QU-10-09-D: 298.84m
- QU-10-09-P: 291.48m

Well1: QU-10-09-S
Well2: QU-10-09-D
Well3: QU-10-09-P
Elev. m: 304.31

| Depth (m) | Elev. m 304.31 | USCS | Material Description |
|---|---|---|---|
| 60 | 244 | | SILTSTONE - |
| | | | 59.7-61.6m: grey-brown, heavily fractured. Flow 24 GPM at 196m |
| | | | fractured 60.3-60.5m |
| | | | coal lenses (61.0-91.4cm) between 60.8-61.6m |
| | | | 61.6-64.3m: light to dark brown |
| | | | moderately fractured between 61.7-62.6m with thin coal stringers in fracture zones |
| | | SL | heavily fractured to base at 64.3m |
| 65 | 239 | | 64.3-68.6m: grey-brown |
| | | | moderately fractured between 64.3-65.4m |
| | | | heavily fractured 65.4-65.7m |
| | | | moderately fractured 65.7-66.3m |
| | | | highly fractured 66.3-66.5m |
| | | | moderately fractured 66.5-67.1m |
| 70 | 234 | | EOH @ 68.6m. Flow 30 GPM at 68.6m. |
| 75 | 229 | | |
| 80 | | | |




Quinsam Coal
Assessment of Underground Disposal of Coarse Coal Refuse

Campbell River, B.C.

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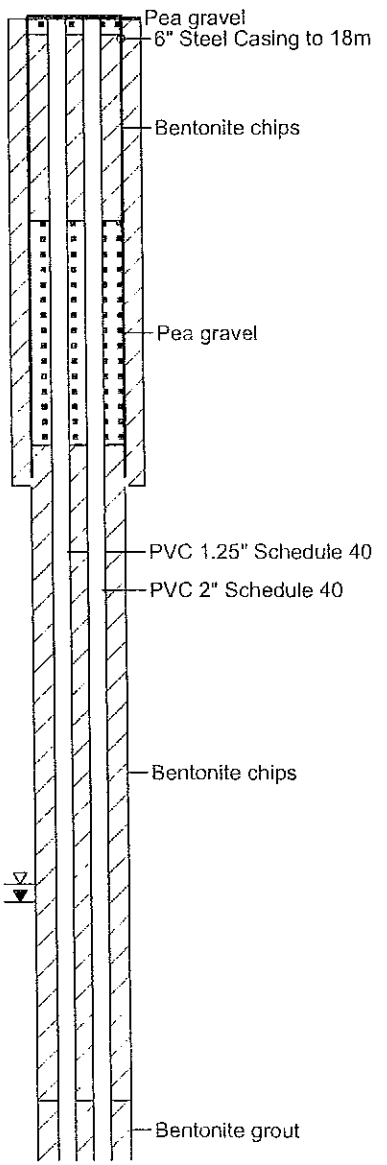
# Borehole Log of QU-10-10

| | | | |
|---|---|---|---|
| Date Started | : Oct 6, 2010 | Drilled by | : Drillwell Enterprises |
| Date Completed | : Oct 7, 2010 | Northing Coord. | : 102903 |
| Hole Diameter | : 150 mm | Easting Coord. | : 101506 |
| Drilling Method | : Air Rotary | Survey By | : McElhanney |
| Sampling Method | : Grab sample | Logged By | : O. Quinn |

Water Levels
- QU-10-10-S: 210.55M (11/19, 2010)
- QU-10-10-D: 210.44M (11/18/2010)

Well1: QU-10-10-S
Well2: QU-10-10-D
Elev. m: 244.26

| Depth (m) | Elev. m 244.26 | USCS | Material Description |
|---|---|---|---|
| 0 | 244 | | Silty, sandy TILL - with boulders, red-brown |
| 5 | 239 | | TILL - grey, with boulders |
| 10 | 234 | | |
| 15 | 229 | | |
| 20 | 224 | SS | SANDSTONE - 17.7-24.4m: light grey, fine-medium grained, slightly weathered, slighily carbonaceous to 21.3m |
| 25 | 219 | SS | 24.4-29.3m: medium grey, fined grained, fresh |
| 30 | 214 | SL | SILTSTONE - dark grey, fresh |
| 35 | 209 | SS | SANDSTONE - 31.1-34.8m: dark grey, fine grained, fresh; 34.8-38.1m: light grey, fine-medium grained, moderately weathered; flow 0.25 US GPM at 36.6m |
| 40 | 204 | SS | COAL SEAM 5 - shiny, with light grey/brown, coarse-grained sandstone; SANDSTONE - 38.4-42.7m: medium grey, fine-med grained, fresh; 42.7-57.9m: grey, medium-coarse grained, fresh; Flow 7.5 US GPM at 42.7m |
| 45 | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

# Borehole Log of QU-10-10

| | | | |
|---|---|---|---|
| Date Started | : Oct 6, 2010 | Drilled by | : Drillwell Enterprises |
| Date Completed | : Oct 7, 2010 | Northing Coord. | : 102903 |
| Hole Diameter | : 150 mm | Easting Coord. | : 101506 |
| Drilling Method | : Air Rotary | Survey By | : McElhanney |
| Sampling Method | : Grab sample | Logged By | : O. Quinn |

Water Levels
- QU-10-10-S: 210.55M (11/19, 2010)
- QU-10-10-D: 210.44M (11/18/2010)

Well1: QU-10-10-S
Well2: QU-10-10-D
Elev. m: 244.26

| Depth (m) | Elev. m 244.26 | USCS | Material Description |
|---|---|---|---|
| 45 | 199 | | |
| 50 | 194 | SS | Flow 10 US GPM at 48.8m |
| 55 | 189 | | |
| | | | COAL (No. 4 Seam). Flow 10 US GPM at 57.91m |
| 60 | 184 | | SANDSTONE - 58.2-63.1m: grey, fine-medium grained, fresh |
| | | | 63.1-80.8m: light grey, medium-coarse grained, fresh |
| 65 | 179 | | Flow 10 US GPM at 67.1m |
| 70 | 174 | SS | |
| 75 | 169 | | |
| 80 | 164 | MS | MUDSTONE - dark brown, weathered |
| | | | COAL (No. 4 B) - shiny, interbedded with dark grey MUDSTONE |
| | | MS | MUDSTONE - dark grey, fresh |
| 85 | 159 | | SANDSTONE - 84.73-105.77m: light grey, coarse grained, fresh |
| | | SS | |
| 90 | | | |

Bentonite grout
PVC 1.25" Schedule 40
Bentonite chips
Bentonite pellets
Filter sand
QU-10-10-S Screen
Bentonite pellets
PVC 2" Schedule 40
Pea gravel
Bentonite pellets
Pea gravel
Bentonite pellets
Pea gravel
Bentonite pellets
Pea gravel

Quinsam Coal
Assessment of Underground Disposal of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

# Borehole Log of QU-10-10

| | | | |
|---|---|---|---|
| Date Started | : Oct 6, 2010 | Drilled by | : Drillwell Enterprises |
| Date Completed | : Oct 7, 2010 | Northing Coord. | : 102903 |
| Hole Diameter | : 150 mm | Easting Coord. | : 101506 |
| Drilling Method | : Air Rotary | Survey By | : McElhanney |
| Sampling Method | : Grab sample | Logged By | : O. Quinn |

Water Levels
- QU-10-10-S: 210.55m (11/19, 2010)
- QU-10-10-D: 210.44m (11/18/2010)

Well1: QU-10-10-S
Well2: QU-10-10-D
Elev. m: 244.26

| Depth (m) | Elev. m 244.26 | USCS | Material Description |
|---|---|---|---|
| 90 | 154 | SS | SANDSTONE (cont'd) |
| 95 | 149 | SS | |
| 100 | 144 | SS | |
| 105 | 139 | SS | |
| | | | COAL - shiny, interbedded with dark brown MUDSTONE |
| 110 | 134 | SL | SILTSTONE - dark brown, fresh |
| | | | COAL SEAM 3R - dull to shiny with light brown, weathered mudstone |
| | | SL | SILTSTONE - dark brown, fresh |
| 115 | 129 | | COAL SEAM 3 - shiny |
| | | MS | MUDSTONE - dark brown, fresh |
| 120 | 124 | SS | SANDSTONE - 118.3-118.9m: light grey, coarse grained with dull COAL SEAM 3L. |
| | | MS | 118.9-120.1m: light grey, fine-medium grained, fresh |
| | | | MUDSTONE - dark brown, fresh |
| 125 | 119 | SS | SANDSTONE - 121.9-132.9m: light grey, medium grained, fresh, with interbedded dark brown, fresh, carbonaceous MUDSTONE |
| | | | Flow 10 US GPM at 128.0m |
| 130 | 114 | SS | 132.9-141.1m: light to medium grey. fine-coarse grained, fresh |
| 135 | | | |

Pea Gravel
Bentonite pellets
Pea Gravel
Bentonite pellets
Pea Gravel
Bentonite pellets
PVC 2" Schedule 40
Pea Gravel
Bentontie pellets
Pea Gravel
Bentonite pellets
Pea Gravel
Bentonite pellets
Pea Gravel
Bentonite pellets

Quinsam Coal
Assessment of Underground Disposal of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

# Borehole Log of QU-10-10

| | | | |
|---|---|---|---|
| Date Started | : Oct 6, 2010 | Drilled by | : Drillwell Enterprises |
| Date Completed | : Oct 7, 2010 | Northing Coord. | : 102903 |
| Hole Diameter | : 150 mm | Easting Coord. | : 101506 |
| Drilling Method | : Air Rotary | Survey By | : McElhanney |
| Sampling Method | : Grab sample | Logged By | : O. Quinn |

Water Levels
- QU-10-10-S: 210.55m (11/19, 2010)
- QU-10-10-D: 210.44m (11/18/2010)

Well1: QU-10-10-S
Well2: QU-10-10-D
Elev. m: 244.26

| Depth (m) | Elev. m 244.26 | USCS | Material Description | Well |
|---|---|---|---|---|
| 135 | 109 | SS | | Bentonite pellets |
| | | | | Pea Gravel |
| 140 | 104 | | Flow 12 US GPM at 140.2m | |
| | | MS | MUDSTONE - dark brown, fresh | Bentonite pellets |
| | | | COAL SEAM 2 - shiny, with dark brown, fresh MUDSTONE | |
| 145 | 99 | | MUDSTONE - | Pea Gravel |
| | | | 144.3-148.7m: medium brown, fresh | PVC 2" Schedule 40 |
| | | | 148.7-149.0m: COAL lens | Bentonite pellets |
| | | | 148.7-150.3m: dark brown | |
| 150 | 94 | MS | 150.3-156.7m: dark brown, with grey-green, fine-medium grained SILTSTONE, fresh | Pea Gravel |
| 155 | 89 | | 156.7-160.9m: dark brown, fresh | Bentonite pellets |
| | | | Flow 12 US GPM at 158.5m | |
| 160 | 84 | | COAL SEAM 2L/1R - shiny, with light brown, fresh MUDSTONE | Pea Gravel |
| | | MS | MUDSTONE - | Bentonite pellets |
| | | | 162.5-165.4m: light brown, fresh | |
| 165 | 79 | | Flow 12 US GPM at 164.6m | |
| | | MS | COAL SEAM 1- shiny | QU-10-10-D Screen |
| | | | MUDSTONE - grey-brown, fresh | Sand Pack |
| | | MS | COAL SEAM 1 - shiny, with medium-brown, fresh, MUDSTONE | |
| 170 | 74 | MS | MUDSTONE - dark brown-grey, fresh | |
| | | | COAL - shiny, with medium-brown, fresh, MUDSTONE | |
| | | | MUDSTONE - dark brown-grey, fresh | |
| 175 | 69 | SL | COAL SEAM 1L - shiny with medium-brown. fresh MUDSTONE | Bentonite pellets |
| | | | SILTSTONE - | Pea Gravel. |
| | | | 173.1-177.7m: green-grey, fresh | |
| 180 | | | EOH @ 179.83m (Flow 12 US GPM) | |

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

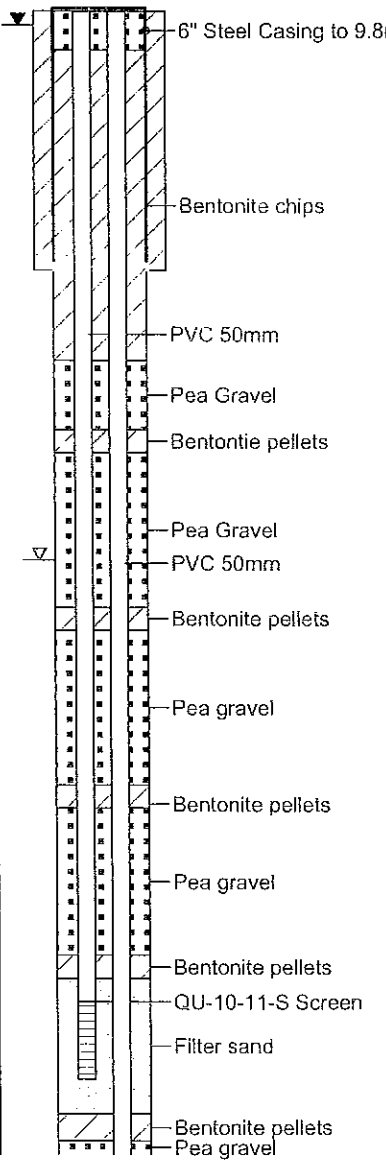
# Borehole Log of QU-10-11

| | | | |
|---|---|---|---|
| Date Started | : Oct 8, 2010 | Drilled by | : Drillwell Enterprises |
| Date Completed | : Oct 13, 2010 | Northing Coord. | : 103177 |
| Hole Diameter | : 150 mm | Easting Coord. | : 101451 |
| Drilling Method | : Air Rotary | Survey By | : McElhanney |
| Sampling Method | : Grab sample | Logged By | : O. Quinn |

Water Levels
- QU-10-11-S 248.939 m (21/01/2011)
- QU-10-11-D 227.892 m (08/02/2011)

Well1: QU-10-11-S
Well2: QU-10-11-D
Elev. m: 249.5

| Depth (m) | Elev. m 249.5 | USCS | Graphic Symbol | Material Description |
|---|---|---|---|---|
| 0 | 249 | f42 | | sandy SILT TILL - with boulders<br>0-3.7m red brown<br>3.7-9.1m grey-brown |
| 5 | 244 | | | |
| 10 | 239 | ss | | SANDSTONE -<br>9.1-17.4m light grey, coarse-grained, highly weathered |
| 15 | 234 | | | 17.4-18.9m greenish grey, medium grained |
| 20 | 229 | | | 18.9-25.9m light grey, medium grained |
| 25 | 224 | | | 25.9-34.4m light grey, medium grained, moderately weathered |
| 30 | 219 | | | Hole dry at 33.5m |
| 35 | 214 | | | 34.1-45.7m light-medium grey, medium to coarse grained, fresh |
| 40 | 209 | | | flow at fracture (40.8m) 30 US GPM |
| 45 | | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

05-19-201 ers\John Balfour\Documents\PROJECTS\2009 Projects\09010 Larax\2010 Work\Borehole logs\QU-10-11a.b

Enterprise Geoscience Services Ltd.

# Borehole Log of QU-10-11

| | | | |
|---|---|---|---|
| Date Started | : Oct 8, 2010 | Drilled by | : Drillwell Enterprises |
| Date Completed | : Oct 13, 2010 | Northing Coord. | : 103177 |
| Hole Diameter | : 150 mm | Easting Coord. | : 101451 |
| Drilling Method | : Air Rotary | Survey By | : McElhanney |
| Sampling Method | : Grab sample | Logged By | : O. Quinn |

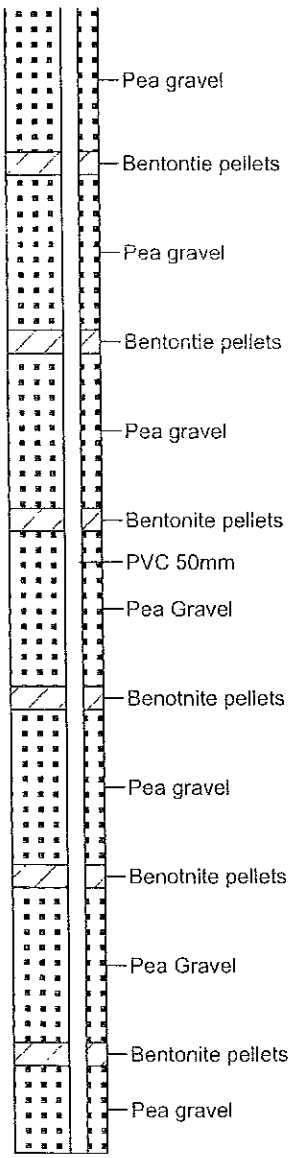
Water Levels

▼ QU-10-11-S 248.939 m (21/01/2011)

▽ QU-10-11-D 227.892 m (08/02/2011)

Well1: QU-10-11-S
Well2: QU-10-11-D
Elev. m: 249.5

| Depth (m) | Elev. m 249.5 | USCS | Material Description |
|---|---|---|---|
| 45 | 204 | SS | 45.7-47.5m dark grey, fine-medium grained, fresh, carbonaceous |
| | | | COAL SEAM - dirty |
| 50 | 199 | | SANDSTONE - 47.8-71.3m grey to grey-brown, medium-coarse to medium grained, fresh<br>flow 30 US GPM at 48.8m |
| 55 | 194 | | flow 30 US GPM at 54.9m |
| 60 | 189 | SS | |
| 65 | 184 | | flow 20 US GPM at 67.1m (water was flowing out of adjacent exploration hole, QU-05-10 during this measurement) |
| 70 | 179 | MS | COAL SEAM 4B- with SILTSTONE/MUDSTONE |
| | | | MUDSTONE - dark brown, fresh |
| | | | COAL (No. 4 B Seam) - with SILTSTONE/MUDSTONE |
| 75 | 174 | | SANDSTONE - 72.85-86.26m grey brown to grey, medium to coarse grained, fresh |
| 80 | 169 | SS | flow 15 US GPM at 79.25m |
| 85 | 164 | | 86.26-91.44m dark brown, fine grained, fresh |
| 90 | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

# Borehole Log of QU-10-11

| | | | |
|---|---|---|---|
| Date Started | : Oct 8, 2010 | Drilled by | : Drillwell Enterprises |
| Date Completed | : Oct 13, 2010 | Northing Coord. | : 103177 |
| Hole Diameter | : 150 mm | Easting Coord. | : 101451 |
| Drilling Method | : Air Rotary | Survey By | : McElhanney |
| Sampling Method | : Grab sample | Logged By | : O. Quinn |

Water Levels

▼ QU-10-11-S 248.939 m (21/01/2011)

▽ QU-10-11-D 227.892 m (08/02/2011)

Well1: QU-10-11-S
Well2: QU-10-11-D
Elev. m: 249.5

| Depth (m) | Elev. m 249.5 | USCS | Material Description |
|---|---|---|---|
| 90 | 159 | SS | SANDSTONE (cont'd) - 91.44-94.49m dark grey, medium grained, fresh. flow 12 US GPM at 91.44m. (QU-10-05 flowing during measurement). |
| 95 | 154 | SS | COAL SEAM 3R - shiny, with dark brown, fresh MUDSTONE |
| | | | SANDSTONE - medium grey |
| | | MS | MUDSTONE - 96.93-102.11m dark brown, fresh |
| 100 | 149 | | flow 30 US GPM at 97.54m (QU-10-05 flowing during measurement). |
| | | | COAL SEAM 3L - shiny, with dark brown, fresh MUDSTONE |
| | | MS | MUDSTONE - 103.02-106.07m dark brown, fresh |
| 105 | 144 | SS | flow 18 US GPM at 103.63m (QU-10-05 flowing during measurement). |
| | | MS | SANDSTONE - light grey, fine-medium grained with dark brown mudstone |
| 110 | 139 | | MUDSTONE - 108.21-109.73m dark brown, fresh, with minor COAL seams |
| | | | flow 30 US GPM at 109.73m (QU-10-05 flowing during measurement). |
| 115 | 134 | | SANDSTONE - 109.73-115.21m grey, fine to medium grey, with dark brown MUDSTONE lenses |
| | | | 115.21-130.45m grey, fine to medium grained, fresh |
| 120 | 129 | SS | flow 12 US GPM at 115.82m (QU-10-05 flowing during measurement). |
| | | | COAL stringers at 118.87m and 121.62-121.92m |
| | | | flow 7 US GPM at 121.92m (QU-10-05 flowing during measurement). |
| 125 | 124 | | flow 9 US GPM at 128.02m (QU-10-05 flowing during measurement). |
| 130 | 119 | SL | SILTSTONE - 130.45-132.89m dark brown, fresh |
| | | | flow 6 US GPM at 132.59m (QU-10-05 flowing during measurement). |
| | | MS | MUDSTONE - dark brown |
| 135 | | | |

Pea gravel
Bentonite pellets
Pea gravel
Bentonite pellets
Pea gravel
Bentonite pellets
PVC 2"/Schedule 40
Pea gravel
Bentonite pellets
Pea gravel
Bentonite pellets
Pea gravel
Bentonite pellets
Pea gravel
Bentonite pellets

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd

# Borehole Log of QU-10-11

| | | | |
|---|---|---|---|
| Date Started | : Oct 8, 2010 | Drilled by | : Drillwell Enterprises |
| Date Completed | : Oct 13, 2010 | Northing Coord. | : 103177 |
| Hole Diameter | : 150 mm | Easting Coord. | : 101451 |
| Drilling Method | : Air Rotary | Survey By | : McElhanney |
| Sampling Method | : Grab sample | Logged By | . O. Quinn |

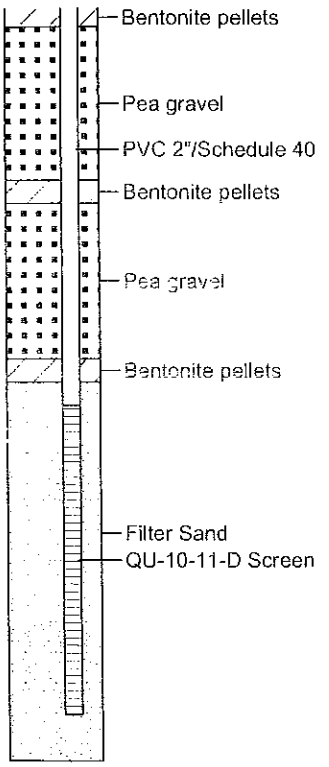
Water Levels

▼ QU-10-11-S 248.939 m (21/01/2011)

▽ QU-10-11-D 227.892 m (08/02/2011)

Well1: QU-10-11-S
Well2: QU-10-11-D
Elev. m: 249.5

| Depth (m) | Elev. m 249.5 | USCS | Material Description |
|---|---|---|---|
| 135 | 114 | MS | coal beds at 134.11, 136.25 and 138.07m |
| 140 | 109 | MS | COAL SEAM 2 - shiny, with MUDSTONE |
| | | | MUDSTONE - flow 4 US GPM at 140.21m (QU-10-05 flowing during measurement). |
| | | MS | COAL SEAM 2- shiny, with MUDSTONE |
| 145 | 104 | | MUDSTONE - fresh |
| | | | COAL SEAM 2L/1U |
| | | MS | MUDSTONE - medium grey-brown, with shiny COAL stringers |
| 150 | 99 | | flow 16 US GPM at 146.3m (QU-10-05 flowing during measurement). |
| | | | COAL SEAM 1 - shiny with MUDSTONE flow 4 US GPM at 152.4m (QU-10-05 flowing during measurement). |
| 155 | 94 | MS | MUDSTONE - light brown to green/grey |
| | | | COAL SEAM 1L - shiny with MUDSTONE |
| 160 | 89 | SS | SANDSTONE - greenish grey, fine-medium grained, fresh |
| | | | flow 11 GPM at 158.5m (QU-10-05 flowing during measurement). |
| | | SH | SHALE - red-brown, fresh |
| 165 | 84 | | EOH @ 164.59m, flow 11 GPM |
| 170 | 79 | | |
| 175 | 74 | | |
| 180 | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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LOG FOR DRILLHOLE #: Qu10-13 Page: 1 of 5

**Client:** Hillsborough Resources
**Project:** 7S Permit
**Drilling Method:** Rotary
**Drilling Contractor:** DrillWell
**Engineer:** M Cullen, L Fletcher
**Date Started:** Nov 5, 2011

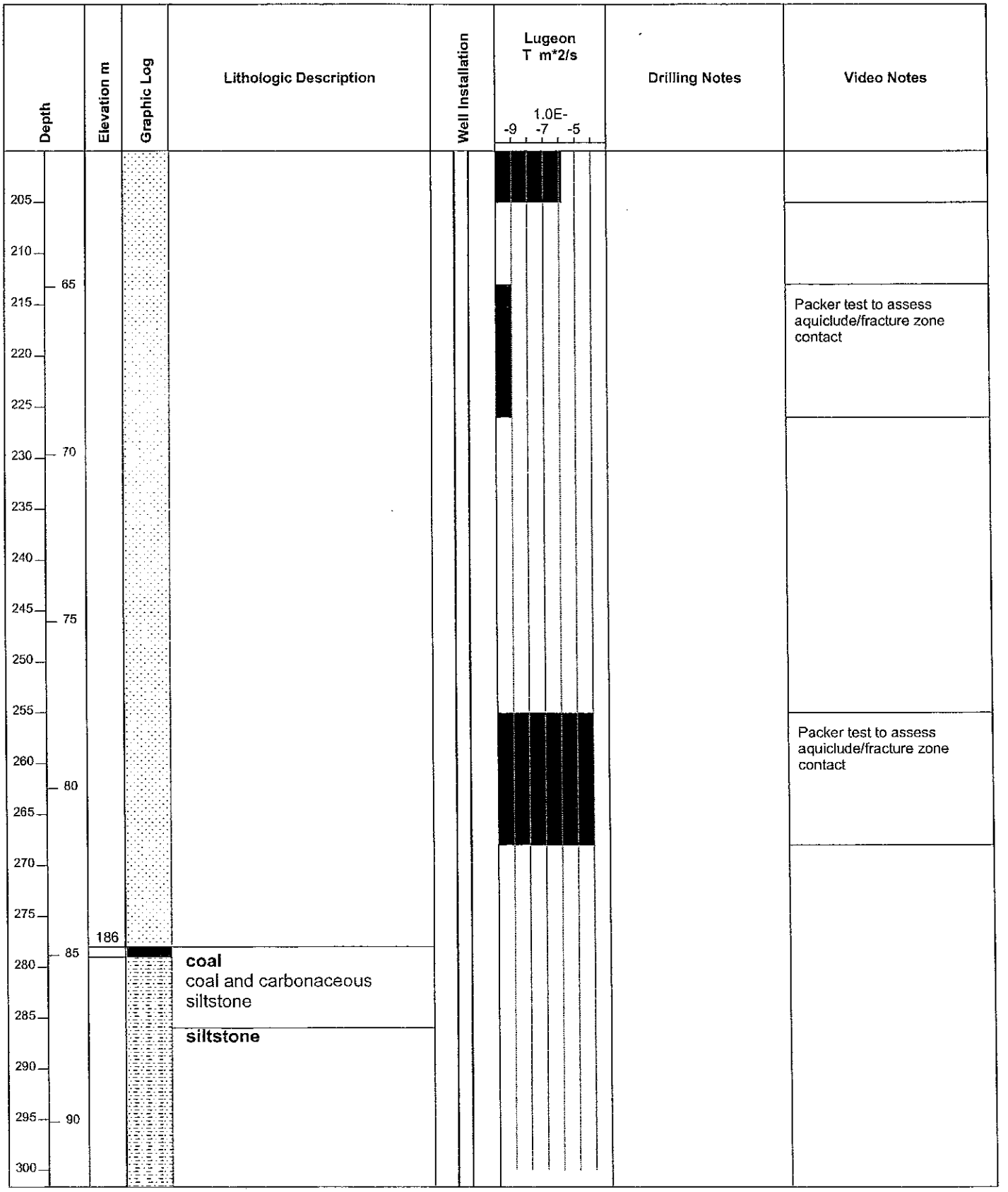
**Co-ordinates:**
**Collar Elev.:** 270.68
**Dip/Dip direction:** vert
**Total Depth:** 483
**Casing Depth:** 5
**Hole dia:**

| Depth (ft / m) | Elevation m | Graphic Log | Lithologic Description | Well Installation | Lugeon T m*2/s (1.0E-9 … 1.0E-5) | Drilling Notes | Video Notes |
|---|---|---|---|---|---|---|---|
| 0 ft / 0 m | 271 | | Ground Surface | | | | |
| | | | **overburden** | | | | |
| 5 | 269 | | **sedimentary sequence**<br>Dunsmuir Formation | | | | |
| 10 | | | | | | | |
| 15 / 5 | | | | | | | |
| 20 | | | | | | | |
| 25 | | | | | | | |
| 30 / 10 | | | | | | | |
| 35 | | | | | | | |
| 40 | | | | | | | horiz fractures: staining, pre-existing, possible open |
| 45 | | | | | | | |
| 50 / 15 | | | | | | | |
| 55 | | | | | | | |
| 60 | | | | | | | |
| 65 / 20 | | | | | | | |
| 70 | | | | | | | |
| 75 | | | | | | | |
| 80 / 25 | | | | | | | |
| 85 | | | | | | | |
| 90 | | | | | | | , no fractures evident |
| 95 | | | | | | | |
| 100 / 30 | | | | | | | |

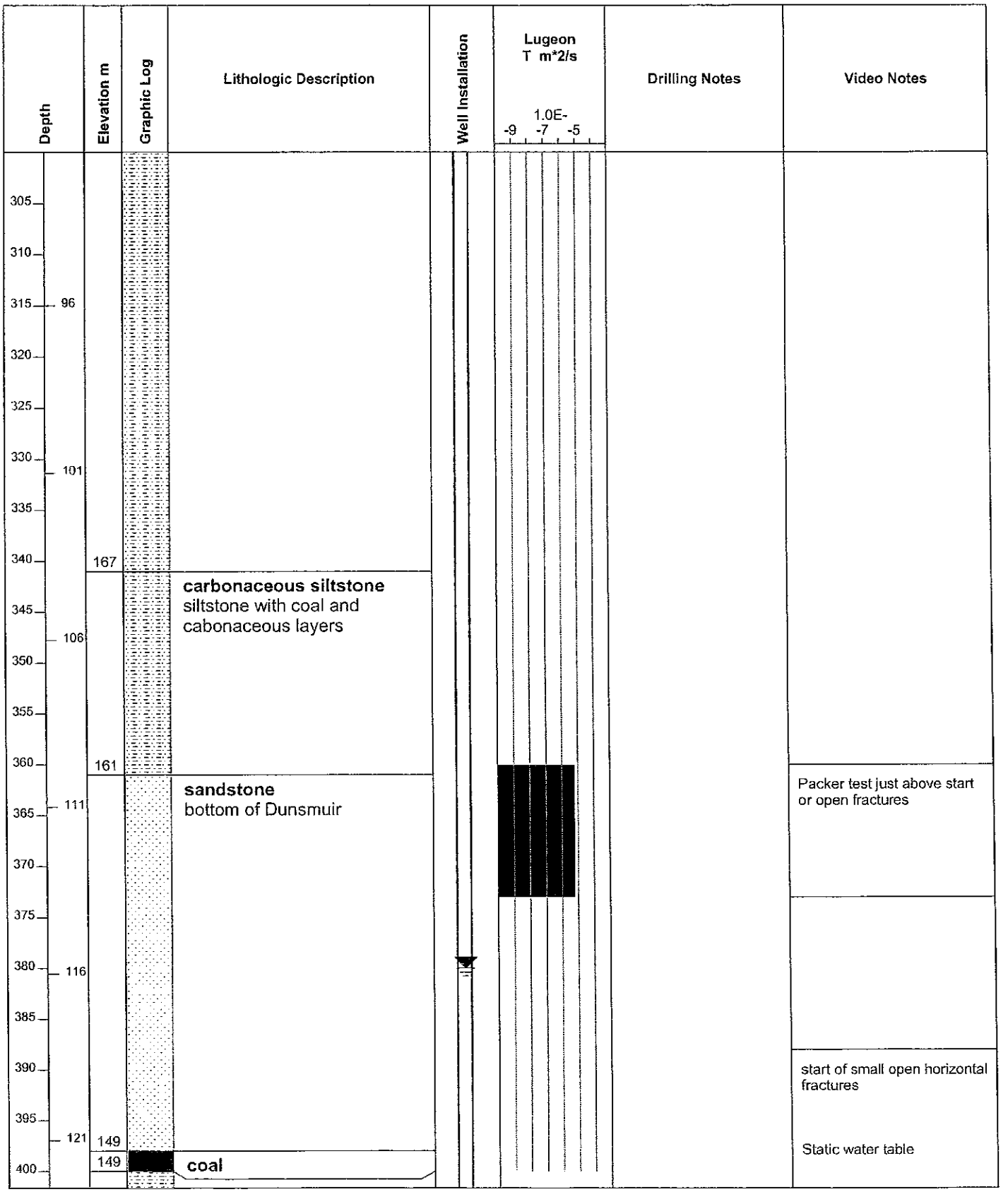
**LOG FOR DRILLHOLE #: Qu10-13** **Page: 2 of 5**

| Depth | Elevation m | Graphic Log | Lithologic Description | Well Installation | Lugeon T m*2/s (1.0E-9 -7 -5) | Drilling Notes | Video Notes |
|---|---|---|---|---|---|---|---|
| 105 | | | | | | | |
| 110 | | | | | | | |
| 115 — 35 | | | | | | | |
| 120 | | | | | | | sections of rough drill hole wall from 120 to 234 ft |
| 125 | | | | | | | |
| 130 — 40 | | | | | | | |
| 135 | | | | | | | |
| 140 | | | | | | | |
| 145 | | | | | | | |
| 150 — 45 | | | | | | | Packer testing over sections of rough DH wall to test for aquiclude |
| 155 | | | | | | | |
| 160 | | | | | | | |
| 165 — 50 | | | | | | | |
| 170 | | | | | | | Packer testing over piezometer location and dilated zone |
| 175 | | | | | | | |
| 180 — 55 | | | | | | | small open fractures; possible new |
| 185 | | | | | | | |
| 190 | | | | | | | |
| 195 | | | | | | | Packer testing over dilated zone |
| 200 — 60 | | | | | | | |

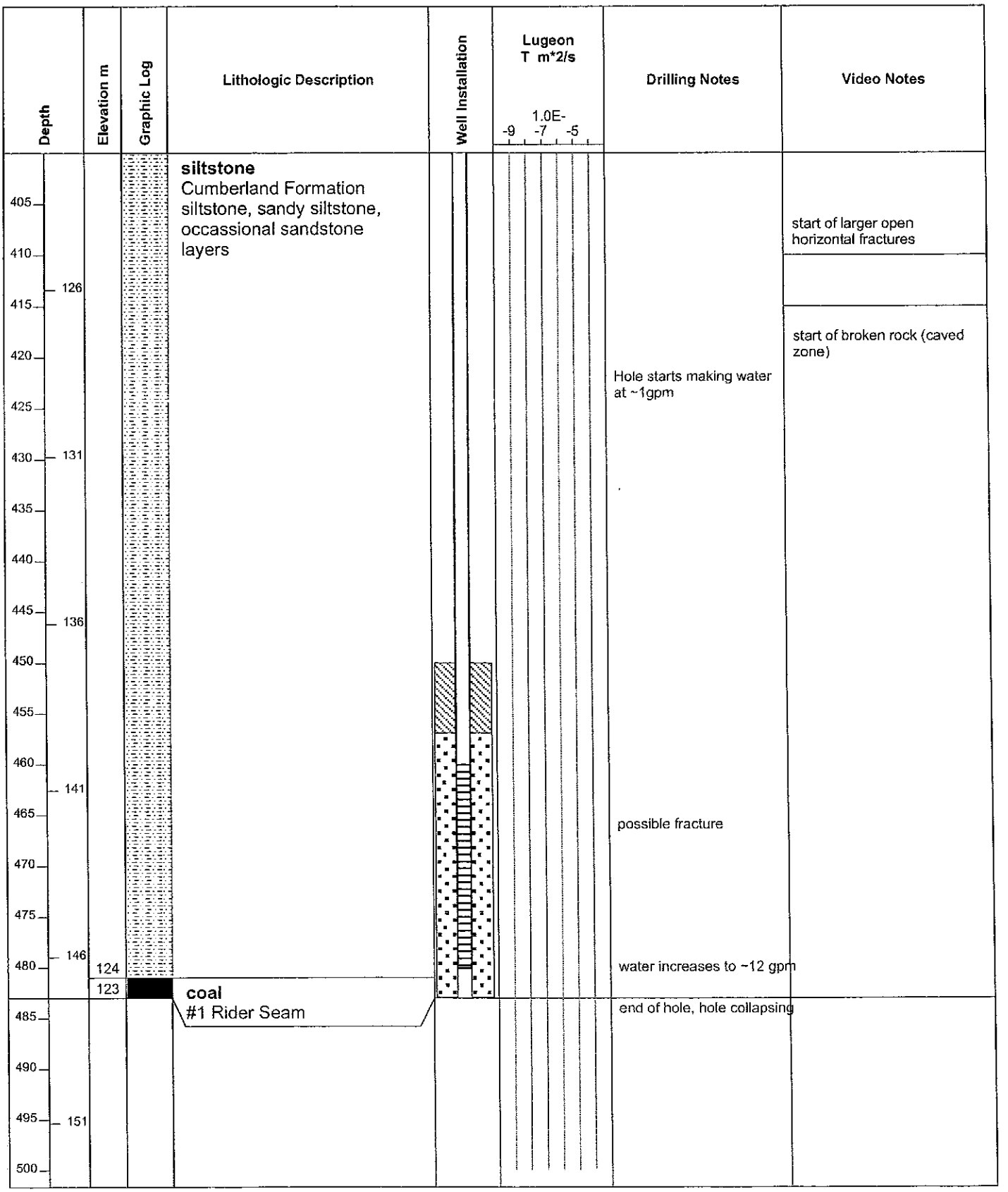
**LOG FOR DRILLHOLE #: Qu10-13** **Page: 3 of 5**



**LOG FOR DRILLHOLE #: Qu10-13** **Page: 4 of 5**



**LOG FOR DRILLHOLE #: Qu10-13** **Page: 5 of 5**



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# Borehole Log of QU-11-01 (4 South)

| | | | |
|---|---|---|---|
| Date Started | : 4 Jan 2011 | Drilled By | : Dirtiwell Enterprises |
| Date Completed | : 6 Jan 2011 | Northing Coord. | : 101056.7 |
| Hole Diameter | : 140 mm | Easting Coord. | : 99134.6 |
| Drilling Method | : Air rotary with wireline coring | Survey By | : Quinsam |
| Sampling Method | : Core | Logged By | : N. Bazowski |

Water Levels

▼ QU-11-01: 290 01 m (19-Feb-11)

▽

Well: QU-11-01
Elev. m: 316.368

| Depth (m) | Elev. m 316.368 | USCS | Graphic Symbol | Material Description | Remarks |
|---|---|---|---|---|---|
| 65 | 251.37 | | | | |
| | | SP | | | |
| 70 | 246.37 | | | | |
| | | SS | | | + Shale traps at 73 m. |
| 75 | 241.37 | | | | + Shale traps at 76 m. |
| | | | | | |
| 80 | 236.37 | SM | | | |
| | | SS | | | + Hole intersects minedrift at 85.2 m. |
| 85 | 231.37 | | | EOH @ 85.2 m | |
| 90 | | | | | |

4" PVC

Screen

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

# Borehole Log of QU-11-03 (2 North)

| | | | |
|---|---|---|---|
| Date Started | : Jan 12, 2011 | Drilled By | : Drillwell Enterprises |
| Date Completed | : | Northing Coord. | : n/a |
| Hole Diameter | : 150 mm / 140 mm core | Easting Coord. | : n/a |
| Drilling Method | : Air rotary with wireline coring | Survey By | : |
| Sampling Method | : Grab sample / Core | Logged By | : N. Bazowski |

Water Levels

▼ QU-11-03: 42.21 m bTOC (18-Jan-2011)

▽

Well: QU-11-03
Elev. m: xxx

| Depth (m) | Elev. m 304 | USCS | Graphic Symbol | Material Description | Remarks |
|---|---|---|---|---|---|
| 65 | 239 | | | | |
| | | | | From 0 - 69.34 m not logged<br><br>SANDSTONE, zone of silty sandstone, from:<br>71.52 - 73.64 m and 74.18 - 75.44 m<br><br>Conglomerate at base from:<br>81.58 - 81.75 m | + Completion details to follow. |
| 70 | 234 | | | | |
| | | SP | | | |
| 75 | 229 | | | | |
| | | | | | 4" PVC |
| 80 | 224 | | | | |
| | | SS | | SILTSTONE | |
| 85 | 219 | | | | |
| | | SM | | SILTSTONE, Coaly siltstone and coal,<br><br>Coal layers from:<br>86.48-86.54 m<br>86.66-87.57 m<br>87.67-87.98 m<br>89.71-90.08 m | |
| 90 | | | | | |

Quinsam Coal
Assessment of Underground Disposal of Coarse Coal Refuse

Campbell River, B.C.

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03-09-201

Enterprise Geoscience Services Ltd

# Borehole Log of QU-11-03 (2 North)

| | | | |
|---|---|---|---|
| Date Started | : Jan 12, 2011 | Drilled By | : Drillwell Enterprises |
| Date Completed | . | Northing Coord. | : n/a |
| Hole Diameter | : 150 mm / 140 mm core | Easting Coord. | : n/a |
| Drilling Method | : Air rotary with wireline coring | Survey By | : |
| Sampling Method | : Grab sample / Core | Logged By | : N. Bazowski |

Water Levels

▼ QU-11-03: 42.21 m bTOC (18-Jan-2011)

▽

Well: QU-11-03
Elev. m: xxx

| Depth (m) | Elev. m 304 | USCS | Graphic Symbol | Material Description | Remarks |
|---|---|---|---|---|---|
| 90 | 214 | SM | | SILTSTONE, Sandstone and Conglomerate | |
| 95 | 209 | | | | |
| 100 | 204 | SS | | | |
| 105 | 199 | | | | |
| 110 | 194 | CO | | Coaly siltstone | + Hole intersetcs mine void. |
| 115 | | | | EOH @ 110.64 m | |

4" PVC

Screen

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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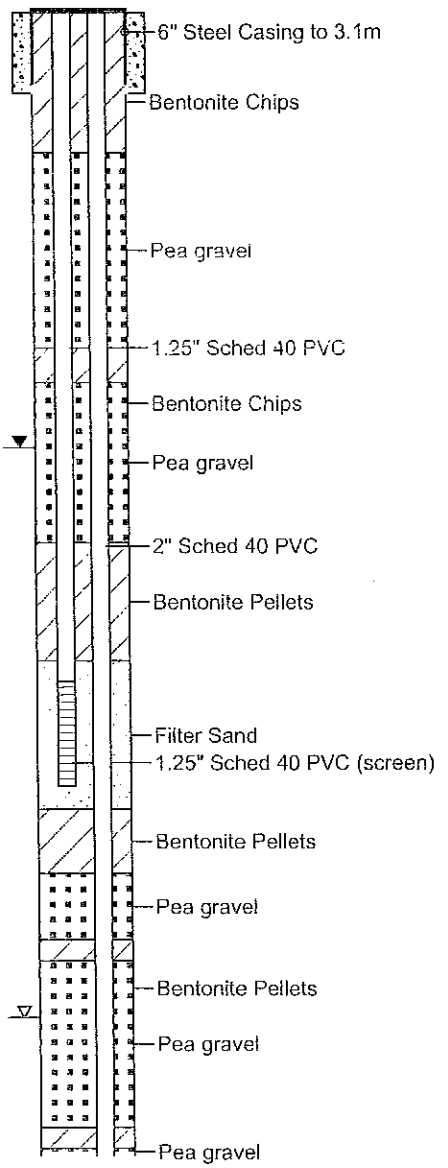
# Borehole Log of QU-11-05

| | | | |
|---|---|---|---|
| Date Started | : Feb 15, 2011 | Drilled By | : Drillwell Enterprise |
| Date Completed | : Feb 18, 2011 | Northing Coord. | : 102648.3 |
| Hole Diameter | : 140 mm | Easting Coord. | : 101075.9 |
| Drilling Method | : Air rotary with wireline coring | Survey By | : QCC |
| Sampling Method | : Core | Logged By | : N. Bazowski |

Water Levels
- QU-11-05-S: 19.00 m (8-Mar-11)
- QU-11-05-D: 43.95 m (8-Mar-11)

Well1: QU-11-05-S
Well2: QU-11-05-D
Elev. m: 228.39

| Depth (m) | Elev. m 228.39 | USCS | Material Description |
|---|---|---|---|
| 0 | 228 | | NOT CORED |
| 5 | 223 | SW | SANDSTONE |
| 10 | 218 | | 10-10.06 m: Coaly Siltstone |
| | | | 10.14-10.31m: Coaly Siltstone |
| 15 | 213 | | 10.31-10.57m: Siltstone |
| 20 | 208 | | |
| 25 | 203 | | 23.55-23.72m: Conglomerate |
| | | | 24.54-24.73m: Conglomerate |
| | | | 24.9-24.97m: Conglomerate |
| 30 | 198 | | 25.47-25.55m: Conglomerate |
| | | SW | 30.45-30.51m: Coaly Siltstone (fractured) |
| | | | COAL |
| 35 | 193 | | SANDSTONE |
| | | | COAL - 4B Coal Seam |
| | | | SANDSTONE |
| 40 | 188 | SW | 32.75-33.04 m: Silty Coaly Sandstone |
| 45 | 183 | | |
| 50 | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

Bentonite Pellets

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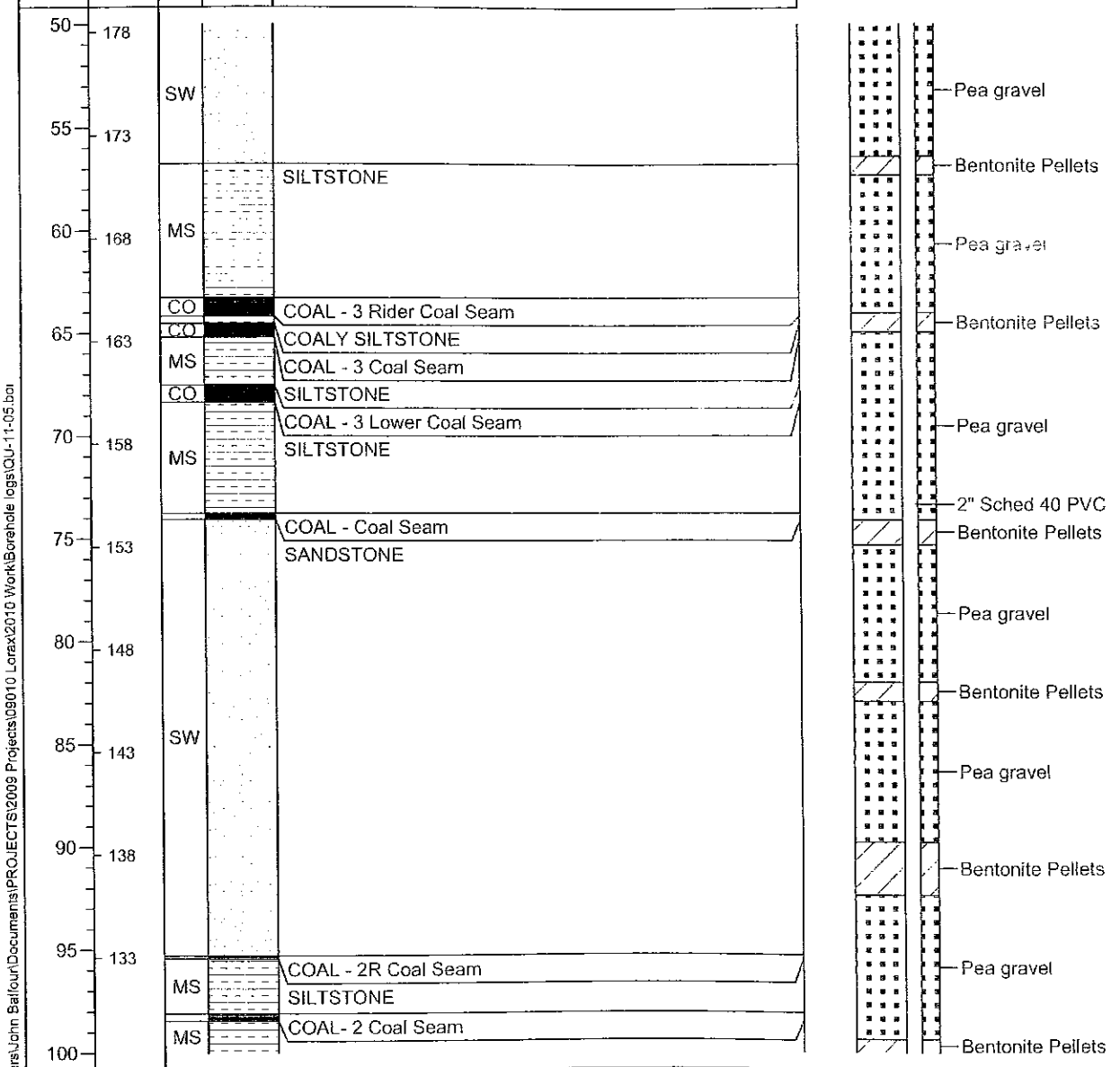
Enterprise Geoscience Services Ltd.

# Borehole Log of QU-11-05

| | | | |
|---|---|---|---|
| Date Started | : Feb 15, 2011 | Drilled By | : Drillwell Enterprise |
| Date Completed | : Feb 18, 2011 | Northing Coord. | : 102648.3 |
| Hole Diameter | : 140 mm | Easting Coord. | : 101075.9 |
| Drilling Method | : Air rotary with wireline coring | Survey By | : QCC |
| Sampling Method | : Core | Logged By | : N. Bazowski |

Water Levels
- QU-11-05-S: 19.00 m (8-Mar-11)
- QU-11-05-D: 43.95 m (8-Mar-11)

Well1: QU-11-05-S
Well2: QU-11-05-D
Elev. m: 228.39




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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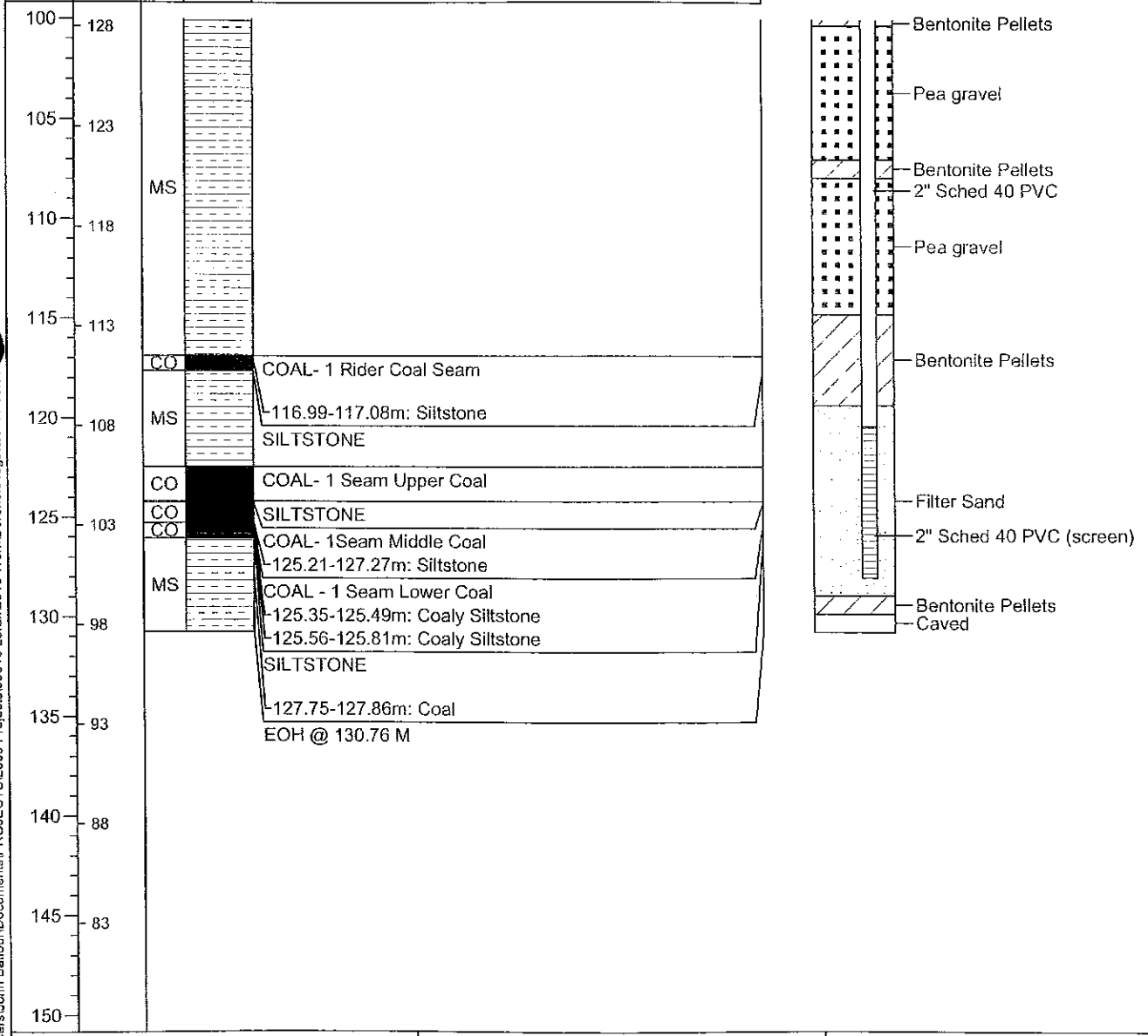
Enterprise Geoscience Services Ltd.

# Borehole Log of QU-11-05

| | | | |
|---|---|---|---|
| Date Started | : Feb 15, 2011 | Drilled By | : Drillwell Enterprise |
| Date Completed | : Feb 18, 2011 | Northing Coord. | : 102648.3 |
| Hole Diameter | : 140 mm | Easting Coord. | : 101075.9 |
| Drilling Method | : Air rotary with wireline coring | Survey By | : QCC |
| Sampling Method | : Core | Logged By | : N. Bazowski |

Water Levels
- QU-11-05-S: 19.00 m (8-Mar-11)
- QU-11-05-D: 43.95 m (8-Mar-11)

Well1: QU-11-05-S
Well2: QU-11-05-D
Elev. m: 228.39




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd.

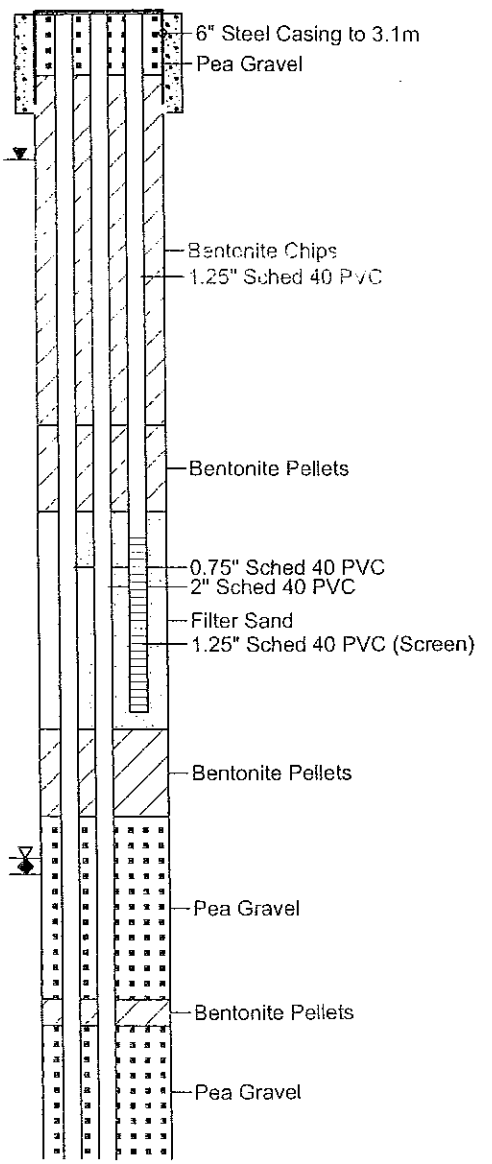
# Borehole Log of QU-11-09

| | | | |
|---|---|---|---|
| Date Started | : | Drilled By | : Drillwell Enterprise |
| Date Completed | : March 8, 2011 | Northing Coord. | : 102561.8 |
| Hole Diameter | : 152 mm / 140 mm | Easting Coord. | : 100736 |
| Drilling Method | : Air rotary with wireline coring | Survey By | : QCC |
| Sampling Method | : Grab sample and core | Logged By | : N. Bazowski |

Water Levels
- QU-10-09-S: 5.05 m
- QU-10-09-D: 29.52 m
- QU-10-09-P: 30.08 m

Well1: QU-10-09-S
Well2: QU-10-09-D
Well3: QU-10-09-P
Elev. m: 226.297

| Depth (m) | Elev. m | USCS | Material Description |
|---|---|---|---|
| 0 | 226 | | OVERBURDEN |
| 5 | 221 | | |
| 10 | 216 | | |
| 15 | 211 | MS | SILTSTONE |
| | | | SANDSTONE |
| 20 | 206 | | |
| 25 | 201 | SW | |
| 30 | 196 | | |
| 35 | 191 | | |
| 40 | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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Enterprise Geoscience Services Ltd

# Borehole Log of QU-11-09

| | | | |
|---|---|---|---|
| Date Started | : | Drilled By | : Drillwell Enterprise |
| Date Completed | : March 8, 2011 | Northing Coord. | : 102561.8 |
| Hole Diameter | : 152 mm / 140 mm | Easting Coord. | : 100736 |
| Drilling Method | : Air rotary with wireline coring | Survey By | : QCC |
| Sampling Method | : Grab sample and core | Logged By | : N. Bazowski |

Water Levels
- QU-10-09-S: 5.05 m
- QU-10-09-D: 29.52 m
- QU-10-09-P: 30.08 m

Well1: QU-10-09-S
Well2: QU-10-09-D
Well3: QU-10-09-P
Elev. m: 226.297

| Depth (m) | Elev. m 226.297 | USCS | Material Description |
|---|---|---|---|
| 40 | 186 | SW | |
| 45 | 181 | MS | SILTSTONE |
| 50 | 176 | SW | SANDSTONE |
| 55 | 171 | | |
| 60 | 166 | | |
| 65 | 161 | | at 67.16 m coring starts |
| 70 | 156 | | |
| 75 | 151 | MS | SILTSTONE |
| | | CO | COAL - 1 RiderSeam |
| | | MS | SILTSTONE |
| 80 | | CO | COAL - 1 Seam Upper |

Pea Gravel
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Pea Gravel
Bentonite Pellets
2" Sched 40 PVC
0.75" Sched 40 PVC
Pea Gravel
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Filter Sand
2" Sched 40 PVC (Screen)

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

05-05-201 ers\John Balfour\Documents\PROJECTS\2009 Projects\09010 Lorax\2010 Work\Borehole logs\QU-11-09.bo

Enterprise Geoscience Services Ltd.

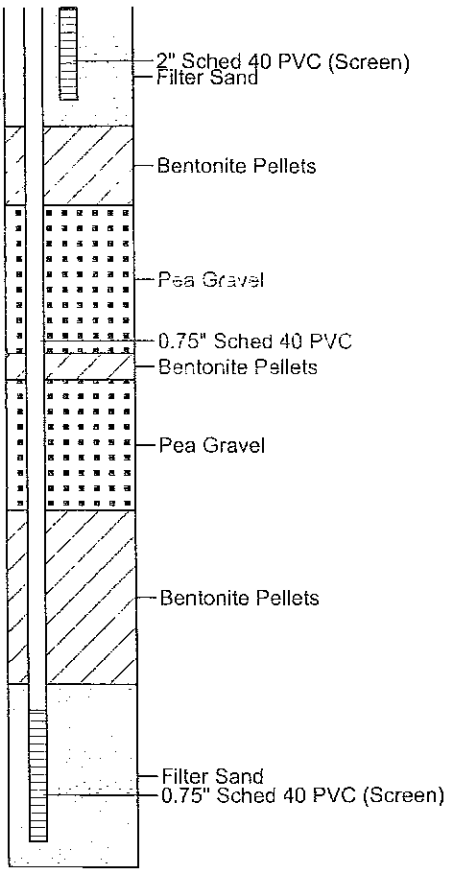
# Borehole Log of QU-11-09

| | | | |
|---|---|---|---|
| Date Started | : | Drilled By | : Drillwell Enterprise |
| Date Completed | : March 8, 2011 | Northing Coord. | : 102561.8 |
| Hole Diameter | : 152 mm / 140 mm | Easting Coord. | : 100736 |
| Drilling Method | : Air rotary with wireline coring | Survey By | : QCC |
| Sampling Method | : Grab sample and core | Logged By | : N. Bazowski |

Water Levels
- QU-10-09-S: 5.05 m
- QU-10-09-D: 29.52 m
- QU-10-09-P: 30.08 m

Well1: QU-10-09-S
Well2: QU-10-09-D
Well3: QU-10-09-P
Elev. m: 226.297

| Depth (m) | Elev. m 226.297 | USCS | Material Description |
|---|---|---|---|
| 80 | 146 | CO | |
| | | MS | SILTSTONE |
| | | | COAL- 1 Seam Lower |
| | | | SILTSTONE |
| 85 | 141 | | |
| | | MS | |
| 90 | 136 | | |
| 95 | 131 | | |
| | | GC | CONGLOGERATE<br>96.2-96.64 m: Very Coarse Grained Sandstone<br>97.08-967.45 m: Very Coarse Grained Sandstone |
| 100 | 126 | MS | SILTSTONE |
| | | SW | SANDSTONE |
| 105 | 121 | GC | COGLOMERATE |
| 110 | 116 | | EOH @ 110.19 |
| 115 | 111 | | |
| 120 | | | |




Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

05-05-2011 C:\Users\John Balfour\Documents\PROJECTS\2009 Projects\09010 Lorax\2010 Work\Borehole logs\QU-11-09.bor

# Borehole Log of QU11-18



HILLSBOROUGH Resources Limited

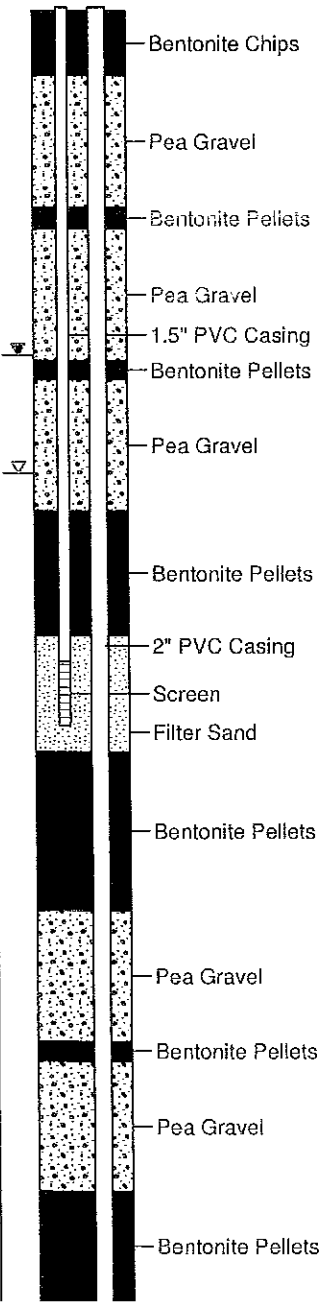
Quinsam Coal Corporation
Project #: J885-7

| | | | |
|---|---|---|---|
| Date Drilled | : August 2011 | Mine Grid Northing (m) | : 100690.81 |
| Date Installed | : Dec 12, 2011 | Mine Grid Easting (m) | : 100542.84 |
| Hole Diameter | : 150 mm/ 85 mm core | Logged By | : N. Bazowski (QCC) |
| Drilling Method | : Air Rotary w/ wireline coring | Surveyed By | : QCC |
| Drilling Company | : Drillwell Enterprises | Installed By | : M. Storey (Lorax) |

Water Levels
- QU11-18S: 283.59 m (Mar 19, 2012)
- QU11-18D: 278.09 m (Mar 19, 2012)

Well1: MW11-18S PVC Stickup 0.16m
Well2: MW11-18D PVC Stickup 0.16m
Elev.: 299.71 m (ground surface)

| Depth (m) | Elev. (m asl) 299.71 | Cored Interval | GRAPHIC | DESCRIPTION |
|---|---|---|---|---|
| 0 | 299 | | | TILL (not logged) |
| 5 | 294 | | | |
| 10 | 289 | | | |
| 15 | 284 | | | |
| 20 | 279 | | | |
| 25 | 274 | | | |
| 30 | 269 | | | |
| 35 | 264 | | | Drilled with casing, not logged |
| 40 | 259 | | | SANDSTONE, grey, fine to medium grained<br>Fault zone 37.2-37.7 m with fractures infilled with rusty clays, little water flow inferred |
| 45 | 254 | | | Coal (4 Seam) with some calcite, few surfaces display powdery orange mineral (realgar) in minor amounts<br>SILTSTONE<br>COAL (4L Seam), dirty dull to bright clean, pyrite noted in limited intervals<br>SILTSTONE, medium grey |
| 50 | 249 | | | |
| 55 | 244 | | | COAL (4B Seam)<br>SILTSTONE, medium grey |
| 60 | | | | |

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# Borehole Log of QU11-18



HILLSBOROUGH Resources Limited

Quinsam Coal Corporation
Project #: J885-7

| | | | |
|---|---|---|---|
| Date Drilled | : August 2011 | Mine Grid Northing (m) | : 100690.81 |
| Date Installed | : Dec 12, 2011 | Mine Grid Easting (m) | : 100542.84 |
| Hole Diameter | : 150 mm/ 85 mm core | Logged By | : N. Bazowski (QCC) |
| Drilling Method | : Air Rotary w/ wireline coring | Surveyed By | : QCC |
| Drilling Company | : Drillwell Enterprises | Installed By | : M. Storey (Lorax) |

Water Levels
- QU11-18S: 283.59 m (Mar 19, 2012)
- QU11-18D: 278.09 m (Mar 19, 2012)

Well1: MW11-18S PVC Stickup 0.16m
Well2: MW11-18D PVC Stickup 0.16m
Elev.: 299.71 m (ground surface)

| Depth (m) | Elev. (m asl) 299.71 | Cored Interval | GRAPHIC | DESCRIPTION |
|---|---|---|---|---|
| 60 | 239 | | | |
| | | | | SANDSTONE, medium grey, fine grained, tight |
| 65 | 234 | | | SILSTONE, medium to dark grey, trace coal |
| | | | | Airlift yield increased 12 GPM at 66.8 m |
| 70 | 229 | | | COAL (3 Zone) |
| 75 | 224 | | | Discrepancy between geophysical log and chip log |
| 80 | 219 | | | SILTSTONE, mostly grey interbedded with some brown, 5% calcite, 5% coal, fault zone |
| 85 | 214 | | | SILTSTONE, fractures noted 88-88.5 m and 94.3 m |
| 90 | 209 | | | |
| 95 | 204 | | | |
| 100 | 199 | | | SANDSTONE, greenish grey, fine to medium grained |
| | | | | CONGLOMERATE |
| 105 | 194 | | | SILSTONE, with minor mudstone, some fractures |
| | | | | BENSON CONGLOMERATE, both clast and matrix supported |
| 110 | 189 | | | SILSTONE, hematitic and dark green, 20 cm fault zone at 111.7 m |
| | | | | CONGLOMERATE |
| 115 | 184 | | | EOH 115.2 m. |
| 120 | | | | |

Bentonite Pellets
PVC Casing
Screen
Filter Sand
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Pea Gravel

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# Borehole Log of QU11-36D



HILLSBOROUGH Resources Limited

Quinsam Coal Corporation
Project #: J885-7

| | | | |
|---|---|---|---|
| Date Drilled | : December 2011 | Mine Grid Northing (m) | : 100111.42 |
| Date Installed | : Dec 20, 2011 | Mine Grid Easting (m) | : 100322.46 |
| Hole Diameter | : 150 mm/ 85 mm core | Logged By | : N. Bazowski (QCC) |
| Drilling Method | : Air Rotary w/ wireline coring | Surveyed By | : QCC |
| Drilling Company | : Drillwell Enterprises | Installed By | : M. Storey (Lorax) |

Water Levels
▼ QU11-36D: Water level 260.86 m (Mar 19, 2012)
▽

Well: MW11-36D PVC Stickup 0.22 m
Elev.: 285.89 m (ground surface)

| Depth (m) | Elev. (m asl) 285.89 | Cored Interval | GRAPHIC | DESCRIPTION |
|---|---|---|---|---|
| 0 | 285 | | | TILL (not logged) |
| 5 | 280 | | | |
| 10 | 275 | | | BR (drilled) |
| 15 | 270 | | | |
| 20 | 265 | | | |
| | | | | COAL (5 Seam) |
| 25 | 260 | | | BR |
| 30 | 255 | | | SANDSTONE, medium to coarse grained, fractured with oxidation surfaces throughout<br><br>Possible fault at ~33.6 m |
| 35 | 250 | | | |
| 40 | 245 | | | |
| | | | | SANDSTONE, fine to medium grained, with overlying pyritic SILSTONE (top 5 cm) |
| 45 | | | | |

Bentonite Chips
Pea Gravel
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Pea Gravel
2" PVC Casing
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Pea Gravel
Bentonite Pellets
Pea Gravel

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# Borehole Log of QU11-36D



HILLSBOROUGH Resources Limited

Quinsam Coal Corporation
Project #: J885-7

| | | | |
|---|---|---|---|
| Date Drilled | : December 2011 | Mine Grid Northing (m) | : 100111.42 |
| Date Installed | : Dec 20, 2011 | Mine Grid Easting (m) | : 100322.46 |
| Hole Diameter | : 150 mm/ 85 mm core | Logged By | : N. Bazowski (QCC) |
| Drilling Method | : Air Rotary w/ wireline coring | Surveyed By | : QCC |
| Drilling Company | : Drillwell Enterprises | Installed By | : M. Storey (Lorax) |

Water Levels
▼ QU11-36D: Water level 260.86 m (Mar 19, 2012)
▽

Well: MW11-36D PVC Stickup 0.22 m
Elev.: 285.89 m (ground surface)

| Depth (m) | Elev. (m asl) 285.89 | Cored Interval | GRAPHIC | DESCRIPTION |
|---|---|---|---|---|
| 45 | 240 | | | |
| 50 | 235 | | | SANDSTONE |
| | | | | COAL (4L Seam) |
| 55 | 230 | | | BR (drilled) |
| 60 | 225 | | | COAL (4B Seam) |
| | | | | BR (drilled) |
| 65 | 220 | | | |
| 70 | 215 | | | |
| 75 | 210 | | | |
| 80 | 205 | | | BENSON CONGLOMERATE |
| | | | | EOH 80.0 m |
| 85 | 200 | | | |
| 90 | | | | |

Pea Gravel
Bentonite Pellets
Pea Gravel
2" PVC Casing
Bentonite Pellets
filter sand
Screen
Bentonite Pellets
Pea Gravel

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LORAX ENVIRONMENTAL

# Borehole Log of MW12-23



HILLSBOROUGH Resources Limited

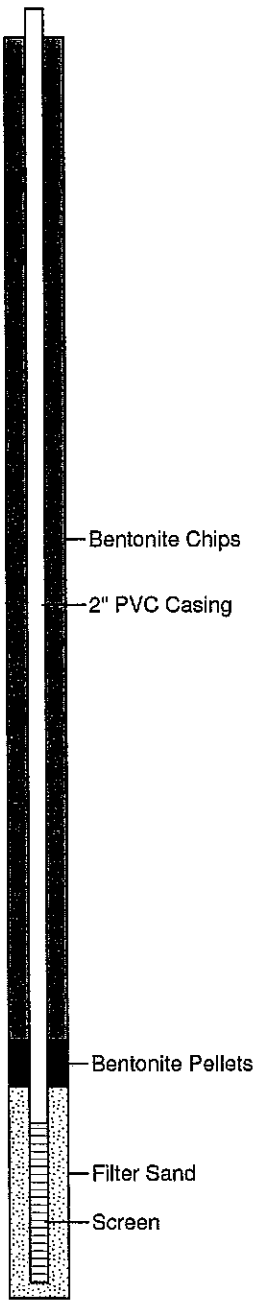
Quinsam Coal Corporation
Project #: A305-3

| | | | |
|---|---|---|---|
| Date Drilled | : Oct 3, 2012 | Mine Grid Northing (m) | : 101584.912 |
| Date Installed | : Oct 4, 2012 | Mine Grid Easting (m) | : 97205.970 |
| Hole Diameter | : 150 mm | Logged By | : L.Findlater |
| Drilling Method | : Air rotary | Surveyed By | : QCC |
| Drilling Company | : Drillwell Enterprises | Installed By | : L. Findlater |

Water Levels
▼ MW12-23: dry (Oct 23, 2012)
▽

Well: MW12-23 PVC Stickup 0.55 m
Elev.: 334.299 m (ground surface).

| Depth (m) | Elev. (m asl) 334.299 | GRAPHIC | DESCRIPTION |
|---|---|---|---|
| 0 | 334 | | FILL and OVERBURDEN (not logged) |
| | | | SILTSTONE, brownish grey, slightly weathered |
| | | | SILTSTONE, as above, fresh |
| 5 | 329 | | SILTSTONE, dark grey, fresh |
| | | | SILTSTONE, medium grey with pink flecks, sandy |
| | | | SILTSTONE, medium grey, interbedded with light grey, fine SANDSTONE |
| | | | SILTSTONE, medium brownish grey |
| 10 | 324 | | SILTSTONE, interbedded tan-grey, fine sandy and dark grey |
| | | | SILTSTONE, interbedded reddish brown and greenish grey fine sandy siltstone layers, greenish grey layer trending to silty fine sandstone |
| 15 | 319 | | |
| 20 | 314 | | Hole drilled with water; no noticeable fractures or water bearing zones encountered during drilling. Drilling dusty throughout. |
| 25 | | | EOH at 24.4 m |

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LORAX ENVIRONMENTAL

# Borehole Log of MW12-24



HILLSBOROUGH Resources Limited

Quinsam Coal Corporation
Project #: A305-3

| | | | |
|---|---|---|---|
| Date Drilled | : Oct 3, 2012 | Mine Grid Northing (m) | : 101583.676 |
| Date Installed | : Oct 4, 2012 | Mine Grid Easting (m) | : 97207.129 |
| Hole Diameter | : 150 mm | Logged By | : L.Findlater |
| Drilling Method | : Air rotary | Surveyed By | : QCC |
| Drilling Company | : Drillwell Enterprises | Installed By | : L. Findlater |

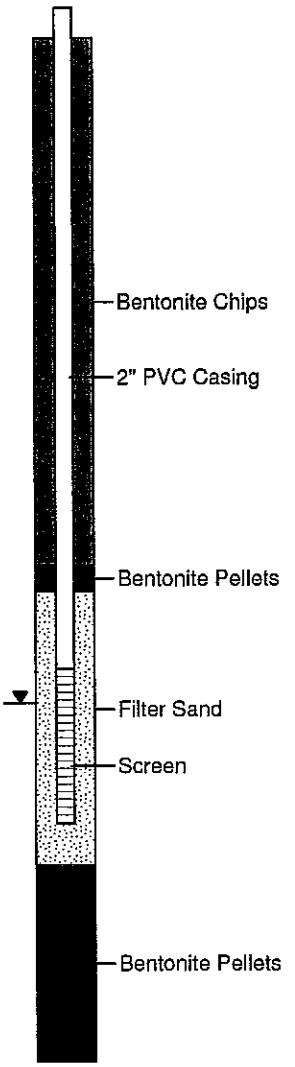
Water Levels

▼ MW12-24: 13.448 m bTOC (Oct 23, 2012).

▽

Well: MW12-24 PVC Stickup 0.58 m
Elev.: 334.354 m (ground surface).

| Depth (m) | Elev. (m asl) 334.354 | GRAPHIC | DESCRIPTION |
|---|---|---|---|
| 0 | 334 | | FILL and OVERBURDEN (not logged) |
| | | | SILTSTONE, dark brown-grey, slightly weathered |
| 5 | 329 | | SILTSTONE, dark grey, fresh |
| | | | SILTSTONE, light tan-grey, fine sandy |
| | | | SILTSTONE, as above, with pink flecks and trending towards silty fine sandstone |
| | | | SILTSTONE, grey |
| 10 | 324 | | SILTSTONE, greenish grey, fine sandy |
| | | | SILTSTONE, interbedded reddish brown and greenish grey fine sandy siltstone layers, greenish grey layer somewhat trending to silty fine sandstone |
| 15 | 319 | | Hole drilled with air only, dusty drilling throughout with no noticeable fractures. Some water dripping at collar at 60 ft rod change,however no water at end of discharge pipe |
| 20 | 314 | | EOH at 19.8 m |
| 25 | | | |



# Appendix VII

**To:** EnvironmentalNonCompliance@gov.bc.ca

**Date:** January 20, 2020

**Subject:** Permit non-compliance report for Settling Pond #1 (SPD), EMS # E218582 and authorization #7008.

***Attention:*** *Quinsam Coal Corporation dissolved iron exceedance at Settling Pond #1, EMS #E218582. Non-compliance for 1 dissolved iron, monthly sample required from discharge #E218582 occurring on 2019-12-04. Provincial Emergency Program (PEP) was informed with a spill report number generated (*DGI-193640*).*

**Date of Non-compliance:** *2019-12-04 (24-hour period).*

**Location of Non-compliance: [5800 Argonaut Main, Quinsam Coal Mine Site]**

**Nature of Non-compliance:** The dissolved iron exceedance was thought to be attributed to high inflows of water causing turbidity due to the mixing of bottom, iron rich sediment. The pond water level had been extremely low for the summer exposing the bottom sediment in the pond. This would have oxidized any of the iron in the sediment which may have been released once water levels increased. The dissolved iron resulted in a concentration of 0.517 mg/L on December 4$^{th}$, 2019 at SPD permit limit is 0.5 mg/L, therefore the result was 0.017 mg/L above the permit limit. The flow rate at the pond was measured as 3826 $m^3$/day.

Discharge did not commence until early November for this site due to beaver activity blocking the decant structure. Pumping occurred from 3-South Pit periodically. Elevated iron concentrations were not observed entering 3-South pit at location 2SC resulting in 0.0112 mg/L.

The decant from the pond had been plugged by a beaver dam since spring and the water was finally released, this may have caused the iron rich sediment on the bottom of the wetland to be stirred up and released. The most recent results for SPD were collected on January 6th, 2020 resulted in Fe-D as 0.122 mg/L.

**Initial Response/Actions Taken & Monitoring Conducted:**

The reason for the delay in reporting was due to several compounding issues such as:

- Shipping the samples to the analytical laboratory
- Laboratory processing samples, reviewing results, submitting the jobs for payment
- Job confirmation reports confirmed for payment through Receiver and QCC
- Receiver requires confirmation from EMPR
- Statutory Holidays (Christmas day, Boxing day and New Year's Day)
- Analytical Laboratory released report on Friday January 10th at 4:30 pm
- QCC reviewed results on Wednesday January 13$^{th}$ and requested to rerun the results

Following the request to rerun the results the Laboratory responded saying they had already rerun the sample and confirmed the result prior to the report being distributed. Due to the weather conditions most QCC employees, including myself, have not been on site since Wednesday January 15th.

Due to the delay in reporting an email was sent out to confirm PEP needed to be been notified on January 20, 2020. MOE confirmed that PEP needed to be notified and this has occurred.

However, the risk to aquatic receptors downstream is deemed as low. The sampling location immediately downstream of SPD referred to as SPC, did not display elevated iron concentrations on December 4th, 2019 resulting in 0.107 mg/L but elevated iron was observed at LLE resulting in 0.513 mg/L. The increased flow rates with the initial flush indicates these sites may be experiencing the same type of oxidation and release of iron from the sediment with increased flow rates as both sites are wetland locations and both had beaver dams blocking the culverts. Further data collected from SPD on January 6, 2020 confirmed low dissolved iron results (0.122 mg/L). Please refer to the attached analytical results for December 4th, 2019 sampling data.

The settling pond discharge flows through a serious of wetlands to the downstream monitoring station LLE and then continues through another small wetland prior to entering Long Lake near the outlet. As displayed in the Google earth image Figure 1 below, the flow path from SPD to Long Lake is approximately 1.88 km.

**Figure 1: South Water Management Flow Path from SPD to LLO**

**Future Action Items:** Further observations with respect to metal concentrations, pond turbidity, climate & precipitation will be recorded and used to develop and employ best practices.
Quinsam Environmental Department makes every attempt to lower the risk to aquatic receptors in the receiving environment from mine water and will continue to employ best practices to ensure compliance in the future. If there are any further inquiries into these events please contact myself at the below contact information.

**Contact information:**

**Kathleen Russell BSc.**
**Environmental Coordinator**
QUINSAM COAL
Quinsam Coal
**Ph: (250) 286-3224 ext. 225**
**E-mail: kathleen.russell@quinsam.com**

# Appendix VIII

Annual Statu

AUTHORIZATION NUMBER: 7008
AUTHORIZATION TYPE: Effluent, Permit
LEGAL AUTHORIZATION HOLDER NAME: Quinsam Coal Corporation

AUTHORIZED PERSON NAME: Kathleen Russell

AUTHORIZED PERSON SIGNAT: KR
SIGNATURE DATE: June 30, 2020

*I understand that it is an offense to mislead a government official, and I declare that all of the information presented is accurate and true.*
*I have been given the authority by the authorization holder to sign this form.*

| CONDITION NUMBER | CONDITION DESCRIPTION | COMPLIANT? (Yes/No/ND) | ACTION TAKEN |
|---|---|---|---|
| Section 1 | AUTHORISED DISCHARGES | | |
| Section 1.1 | This subsection applies to the discharge of effluent from the NORTH COAL MINING OPERATION AND COAL PREPARATION PLANT. The site reference number for this discharge is E207409 | | |
| Section 1.1.1 | The maximum and average authorized rates of discharge are 0.32 $m^3$/s and 0.08 $m^3$/s respectively. The authorized discharge period is 365 d/a. The maximum flow rate observed was 0.238 $m^3$/s. The average annual flow rate was calculated as 0.0921, above the average authorized discharge rate of 0.080 $m^3$/s by 15%. | No | The average rate of discharge was 0.1203 $m^3$/s. Refer to the Annual Report, Section (6.1.1), page 30, Figure 4. This clause relates to permit fee calculations. The average directly related to amount of preciptition the site recieves. |
| Section 1.1.2 | The characteristics of the discharge shall not exceed the specified permit limits (See 1.1.2 of PE7008). | Yes | All results remained within permit limits. Refer to the Annual Report, Appendix I, Table 2. |
| Section 1.1.5 | The location of the facilities from which the discharge originates is Block 26, Block 120 and Block 148, Comox Land District. | Yes | N/A |
| Section 1.1.6 | The location of the point of discharge is Block 120, Comox Land District. | Yes | N/A |
| Section 1.2 | This subsection applies to the discharge of effluent from the SOUTH COAL MINING OPERATION. The site reference number for this discharge is E218582. | | |
| Section 1.2.1 | The maximum and average authorized rates of discharge are 0.46 $m^3$/s and 0.10 $m^3$/s, respectively. The authorized discharge period is 365 d/a. The maximum flow rate observed was 0.339m3/s. The average annual flow rate was calculated as 0.0312m3/s. | Yes | Refer to the Annual Report, Section (6.2), page 32, Figure 5. |
| Section 1.2.2 | Discharge from the South Mining Operation shall not exceed the specified permit limits. | No | Total suspended soilids (TSS) and dissolved iron (Fe-D) measured above the permit limits. TSS resulted from beaver activity damming the decant riser where water is released. The TSS sample was not considered a permit non-compliance. Non-compliance for 1 dissolved iron, monthly sample required from discharge #E218582 occurring on 2019-12-04. Provincial Emergency Program (PEP) was informed with a spill report number generated (DGI-193640). Annual Report, Appendix VI. |
| Section 1.2.3 | The authorized works are surface runoff collection and diversion ditches, flocculation facilities, settling pond, 3 pit sumps (1S, 2S and 3S Pits), an adit sump (4S Adit), pumping facilities, and related appurtenances approximately located. | ND | Permit amendment needs to occur to remove 1S , 4S audit sump. The flocculation facilities include the treatment system cells Aeration lagoon and Settling pond. |
| Section 1.2.5 | The location of the facilities from which the discharge originates is Block 98 and Block 149, Comox Land District. | Yes | N/A |
| Section 1.2.6 | The location of the point of discharge is Block 149,Comox Land District. | Yes | N/A |
| Section 1.3-1.3.6 | This subsection applies to the discharge of effluent from the BLOCK 242 COAL MINING OPERATION as shown on attached Site Plan C. The site reference number for this discharge is E225796. | Yes | No discharge occurred from this site during 2019-2020. Site is non-operational and reclaimed. November 1, 2019 permit amendment authorized removing monitoring from the permit. |
| Section 1.4 | This subsection applies to the discharge of effluent from the 7 SOUTH MINING OPERATION. The site reference number for this discharge is E292069. | Yes | N/A |
| Section 1.4.1 | The maximum authorized rate of discharge is 0.005 $m^3$/s. The authorized discharge period is 365 d/a. Discharge did not occur in 2019/2020. | Yes | |
| Section 1.4.2 | The characteristics of the discharge from the 7 South Mining Operation shall not exceed the specified permit limits. | Yes | |
| Section 1.4.5 | The location of the facilities and point of discharge is Block 120, Comox Land District, except part in plan 12164, 13574, 13641, VIP53617 and VIP64817. | Yes | N/A |
| Section 2 | Specific Requirements | | |
| Section 2.1 | North Coal Mining and Coal Preparation Plant Operation (Settling Pond #4) | | |
| Section 2.1.1 | Rate of Discharge: The maximum flow of 0.32 $m^3$/s is the peak routed outflow from the settling pond resulting from the following inputs: a) The assumed response of the gravity fed catchment area defined in Subsection 2.1.3 up to a 1 in 10 year return period rainfall of 24 hour duration; and b) The maximum combined pumping rate from the 2-North portal sump, 2-North underground workings, and the tailings facility, as specified in Subsection 2.1.2. The Director may from time to time redefine the maximum outflow based upon actual on-site measurements. | Yes | N/A |
| Section 2.1.2 | Pumping Rate: The combined rate at which effluent may be pumped from the 2-North portal sump, 2-North underground workings and the tailings facility to the settling pond shall not exceed 0.32 $m^3$/s unless authorization has been obtained from the Director. Pumping rates shall be decreased as necessary to accommodate flows as defined in Subsection 2.1.1 (a). | Yes | N/A |
| Section 2.1.3 | Catchment Area: The gravity drained settling pond catchment area shall not exceed 4 hectares unless authorization has been obtained from the Director. | Yes | N/A |
| Section 2.1.4 | Wash Plant Effluent: Wash plant effluent shall not be conveyed to the 2-North pit sump via the wash plant ditch. The Permittee shall keep records of the date, duration and estimated volume of any overflow from the wash plant effluent sump. Subject to review of this data, the Director may request changes to the works. | Yes | All fine tailing are directed to the tailings empoundment or underground 2-North Mine. |
| Section 2.1.5 | Settling Pond Solids and Storage Volume: Settled solids which have accumulated in the settling pond shall be removed as required to maintain a minimum water depth below the pond decant of 1.0 m and a minimum water storage volume of 2,300 $m^3$. The removed solids shall be disposed of in a manner approved by the Director. | Yes | Settled solids have not accumulated to a point that requires them to be removed at this time. |
| Section 2.1.6 | Discharge Routing: The discharge from the settling pond shall be conveyed to Middle Quinsam Lake in a manner acceptable to the Director. | Yes | N/A |
| Section 2.1.7 | Effluent Characteristics (for Total Suspended Solids): The characteristics of the effluent with respect to total suspended solids shall be equivalent to or less than the levels specified in Subsection 1.1.2 for discharge rates of up to 0.32 $m^3$/s (or as may be redefined by the Director according to Subsection 2.1.1). Variances may be allowed by the Director for higher discharge rates. The Director may as well, in the future, establish a maximum level for total suspended solids during extreme storm events. | No | All results remained within permit limits. |
| Section 2.2 | South Coal Mining Operation (Settling Pond #1) | | |
| Section 2.2.1 | Rate of Discharge: The maximum flow of 0.46 $m^3$/s is the peak routed outflow from the settling pond resulting from an assumed response of the maximum equivalent catchment area as defined in Subsection 2.2.2 to a design 1 in 10 year return period rainfall of 24 hour duration. The Director may from time to time redefine the maximum routed outflow based upon actual on-site measurements. | Yes | N/A |
| Section 2.2.2 | Catchment Area: The maximum equivalent settling pond catchment area shall not exceed 68.4 hectares as defined in the South Pit Water Management. Settling Pond 1, Quinsam Coal Project. Ker, Priestman and Associates Limited, March 1990 unless authorization has been obtained from the Director. | Yes | N/A |

Authorized Person Initial:_____ Date:_____

| CONDITION NUMBER | CONDITION DESCRIPTION | COMPLIANT? (Yes/No/ND) | ACTION TAKEN |
|---|---|---|---|
| Section 2.2.3 | Settling Pond Solids and Storage Volume: Settled solids which have accumulated in the settling pond shall be removed as required to maintain a minimum water depth below the pond decant of 1.0 m and a minimum water storage volume of 1400 $m^3$. The removed solids shall be disposed of in a manner approved by the Director. | Yes | Settled solids have not accumulated to a point that requires them to be removed at this time. |
| Section 2.2.4 | Discharge Routing: The discharge from the settling pond shall be conveyed to Long Lake through the adjacent wetlands as specified in Figure 1, South Pit Water Management. Settling Pond 1, Quinsam Coal Project, Ker, Priestman and Associates Limited, March 1990. | Yes | N/A |
| Section 2.2.5 | Effluent Characteristics (for Total Suspended Solids): The characteristics of the effluent with respect to total suspended solids shall be equivalent to or less than the levels specified in Subsection 1.2.2 for discharge rates up to 0.46 $m^3/s$ (or as may be redefined by the Director according to Section 2.2.1). Variances may be allowed by the Director for higher discharge rates. The Director may as well, in the future, establish a maximum level for total suspended solids during extreme storm events. | Yes | There was one TSS above the pemit limit related to beaver activlity. This was not related to mining. Refer to the Annual Report, Appendix I, Table 26. |
| Section 2.3 - 2.3.4 | Block 242 Coal Mining Operation | | This site is non-operational and reclamation efforts are establishing. |
| Section 2.4 | 7-South Mining Operation Settling Pond | | |
| Section 2.4.1 | Rate of Discharge : The maximum flow of 0.005 $m^3/s$ is the peak routed outflow from the settling pond resulting from an assumed response of the maximum equivalent catchment area as defined in subsection 2.4.3 to a design I in 10 year return period of 24 hour duration. Additional flow from the 7S adit sump pump must not cause the settling pond to overflow or exceed the maximum flow. The Director may from time to time redefine the maximum routed outflow based upon actual on-site measurements. | Yes | N/A |
| Section 2.4.2 | Pumping Rate: The Permittee shall keep records of the date, duration and estimated volume when water from the 7 South Adit Sump (7S Portal Sump) is pumped to the settling pond and submit the records to the Regional Waste Manager upon request. | Yes | To date, no water has ever been routed from the 7S-Sump to 7SSD. Therefore no records exist. All water from 7-South (Adit)Portal Sump (7SPS) is pumped underground to 5S mine pool. |
| Section 2.4.3 | Catchment Area: The maximum settling pond catchment area shall not exceed 3.14 hectares as defined in the Surface Water Management Plan -7 South Development Quinsam Mine, Golder Associates, April 12, 2012 (Appendix B) unless authorization has been obtained from the Director. | Yes | N/A |
| Section 2.4.4 | Settling Pond Solids and Storage Volume: Settled solids which have accumulated in the settling pond shall be removed as required to maintain a minimum water depth below the pond decant of 1.0 m and a minimum water storage volume of 340 $m^3$. The removed solids shall be disposed of in a manner approved by the Director. | ND | Settled solids have not accumulated to a point that requires them to be removed at this time. A minimum water cover of 1.0m is not sustained at all times as water management practices have changed to have minimal water discharged from the pond. Based on experience, it is difficult to maintain a 1.0m cover and discharge at appropriate levels. There has been far less TSS exceedances with the new practice. |
| Section 2.4.5 | Discharge Routing: The discharge from the settling pond shall be conveyed to the Quinsam River via an ephemeral stream (Stream I) and a wetland (Lower Wetland) adjacent the Quinsam River in a manner acceptable to the Director. | Yes | Refer to the Annual Report, Appendix I, Table 31 (No discharge occurred). |
| Section 2.4.6 | Settling Pond Discharge Dilution Ratio: The 7-South settling pond must not discharge unless a minimum flow is measured in Stream 1 (7S monitoring site). The minimum Stream 1 to discharge ratio shall be documented to the satisfaction of the Director in the Environmental Procedures Manual required in Section 3.2. | Yes | Refer to the Annual Report, Appendix I, Table 31 (No discharge occurred). |
| Section 2.4.7 | Settling Pond Discharge Effluent Quality Model Validation: The Permittee shall report on the settling pond performance in the annual report. The purpose of the report is to validate the effluent water quality prediction model using actual flow and water quality data. The Director may amend the permit, if required, or request an amendment of the permit for environmental protection based on the report findings. | Yes | Refer to the Annual Report, Section 6.3 and Appendix I, Table 33 (No discharge occurred). Previous Annual reports (where discharge occurred) validated the model. |
| Section 2.4.8 | Contingency Measures: In the event of a 7-South settling pond discharge permit limit exceedance, the settling pond discharge valve must be closed immediately and the effluent must temporarily be diverted to the 5S mine or 7S mine underground workings, or to another area acceptable to the Director. Details of the contingency measures shall be documented in the Environmental Procedures Manual required under Section 3.2. Additionally, the Permittee shall follow Section 3.9 requirements. | Yes | The 7-South settling pond water is directed to 7-S Sump via pumping. Refer to the Annual Report Section 2.1.3 and Figure 4. Details of the contingency measures are documented in the Environmental Procedures Manual (EPM). |
| Section 2.4.9 | Toxicity Failure Monitoring and Reporting Procedures | Yes | There have been no toxicity failures in the past. Toxicity samples were not collected due to zero discharge. |
| Section 3.2 | Environmental Procedures Manual (EPM) | Yes | The EPM was submitted on March 31, 2019 to the ENV compliance review website. |
| Section 3.3 | Acid Generation Control | Yes | N/A |
| Section 3.4 | Water Quality Objectives | Yes | N/A |
| Section 3.5 | Nutrient Control | Yes | N/A |
| Section 3.6 | Chemical Storage Containment Works | Yes | N/A |
| Section 3.7 | Spill Reporting | Yes | See Annual Report (Appendix VII). |
| Section 3.8 | Additional Works | Yes | Long Lake Seep Treatment System cells BCR-EFF, SPC-EFF, AL-EFF, SP-EFF, 7-South Containment Pond (7SCP) and 2-North PAG CCR Pond (WP) are additional works that can be used as facilities for the removal of nutrients and metals from the effluent or the provision of additional settling pond capacity as well as flocculation facilities, if required. |
| Section 3.9 (3.9.1-3.9.2) | Maintenance of Works, Non-Compliances and Emergency Procedures | Yes | Refer to Annual Report, Section 2 and 6, Figures 1 - 4, Appendix I (Table 2) and Appendix VII. |
| Section 3.10 | Bypasses | No | Long Lake Seep bypasses the works. |
| Section 3.11 | Environmental Review Procedure - An Environmental Technical Review Committee of six members has been formed. This Committee is composed of technical representatives from the Department of Fisheries and Oceans; Environment Canada; the Ministry of Environment; the Ministry of Energy, Mines and Natural Gas; the City of Campbell River; and the Permittee for the purpose of coordinating and reviewing the construction and operational monitoring results. **Based on the recommendations of the Committee, the Director may revise the monitoring requirements in Section 4.** | YES | |
| Section 3.12 | **Future Monitoring** **Based on the results** of the Effluent and In Mine Releases monitoring program specified in Subsection 4.1 **and / or** data obtained from the Receiving Environment monitoring program specified in Subsection 4.2, **the Director may revise the monitoring requirements in Section 4.** | YES | |
| Section 4.0 | MONITORING AND REPORTING REQUIREMENTS | Yes | |
| Section 4.1.1 | Effluent and In-Mine Release | Yes | |

Authorized Person Initial:_____ Date:_____

| CONDITION NUMBER | CONDITION DESCRIPTION | COMPLIANT? (Yes/No/ND) | ACTION TAKEN |
|---|---|---|---|
| Section 4.1.1 | North Coal Mining and Coal Preparation Plant Operation | Yes | |
| Section 4.1.1 i) | Decant WD (EMS # E207409). Permit ammendment November 1st, 2019. Missing (1/52) required weekly samples TSS/SO4, Annual rate of discharge by 15% greater than authorized | No | Refer to Annual report, Appendix 1, Table 2 for missing samples due to bankruptcy/ manditory employee holidays. Refer to Annual report, Appendix 1, Table 2 for un authorized discharge. |
| Section 4.1.1 ii) | Culvert, at Middle Quinsam Lake Road - WC (EMS # E207411) Missing weekly pH/Conductivity. Missing TSS samples. | No | Missing due to bankruptcy/mandatory holidays for all employees. Refer to Annual report, Apendix 1, Table 2 for non-compliance. |
| Section 4.1.1 iii) | 2-North Portal Sump Effluent - 2N-P-Sump (EMS # E283433). Missing weekly pH/Conductivity. | No | Missing due to bankruptcy/mandatory holidays for all employees. Refer to Annual report, Apendix 1, Table 2 for non-compliance. |
| Section 4.1.1 iv) | Additional Sites Monitoring Schedule : 2-North Pit Sump CCR Cover (WP) EMS # E207412, South Dyke Sump (SDS) EMS # E292126 Missing weekly pH/Conductivity. | No | Missing due to bankruptcy/manditory holidays for all employees. Site South Dyke Sump (SDS) EMS #E292126 removed. Permit ammendent November 1st, 2019. |
| Section 4.1.2 | South Coal Mining Operation | | |
| Section 4.1.2 (i) | Decant - SPD (EMS # E218582) TSS exceedence (27.6mg/L), Fe-D exceedence (0.517mg/L) resulting in spill report, No. DGI: 193640. Missing continuous flow data December 6-9, 2019. | No | Refer to annual report, Appendix 1, Table 2 for exceedences. Spill report No. DGI 193640 submitted to the Enviromental Compliance website at environmentalcompliance@gov.bc.ca |
| Section 4.1.2 (ii) | Culvert, Downstream End of Access Road - SPC (EMS # E217014) | Yes | Permit ammendment November 1st, 2019 |
| Section 4.1.2 (iii) | South Pit Main Sump Water- 3S (EMS # E217015) Missing weekly pH/Conductivity. | No | Missing due to bankruptcy / mandatory holidays for all employees. Refer to Annual report, Appendix 1, Table 2. |
| Section 4.1.2 (iv) | Additional Monitoring Sites Schedule: 2-South Pit In Pit Water Cover (2S) EMS # E292127, 1977 Bulk Pit Sample (3S77) EMS # E292128, Culvert Downstream of the 4 South Access Road (4S-Lo) EMS # E292129 Missing pH/Conductivity. Missing 7 days of continous data. | No | Missing due to bankruptcy / mandatory holidays for all employees. Flow meter was replaced. Refer to Annual report, Appendix 1, Table 2 for non-compliance. Permit ammendent November 1st, 2019, sites 1977 Bulk Pit Sample (3S77) EMS # E292128, Culvert Downstream of the 4 South Access Road (4S-Lo) EMS # E292129 have been removed. |
| Section 4.3 | Block 242 Coal Mining Operation | Yes | NA - Area is non-operational and reclaimed. |
| Section 4.1.4 | 7 South Mining Operation | | |
| Section 4.1.4 (i) | Decant - 7SSD ( EMS # E292069) | Yes | Refer to the Annual Report, Appendix I, Table 33 |
| Section 4.1.4 (ii) | 7-South Adit Sump EMS # E292110 | Yes | NA - This pond is never pumped to 7S Settling Pond. |
| Section 4.2 | Receiving Environment Monitoring Sites and Monitoring Requirements | | |
| Section 4.2.1 (i) | Initial Dilution Zone Monitoring Sites - Long Lake Entrance- LLE (EMS # E292130) Missed one required monthly metals (total and dissolved), nutrients, TSS, sulphate, alkalinity and acidity. As well weekly dissolved sulphate sample. | No | Refer to the Annual Report, Appendix I, Table 2. Work was being preformed on culvert to remove the beaver dam and samples were not collected monthly during September. Bankruptcy / mandatory holidays for all employees prevented weekly samples. |
| Section 4.2.1 (ii) | Road Crossing bridge on Stream 1 above the Lower Wetland -7S (EMS # E292109). | Yes | Refer to the Annual Report, Appendix I, Table 2 |
| Section 4.2.2 | Seep Monitoring Sites | | N/A |
| Section 4.2.2 (i) | Long Lake Seep- LLS / LLSM (EMS # E292131) | Yes | Refer to the Annual Report, Appendix I, Tables 21- 22. |
| Section 4.2.3 | Receiving Water (Stream and Lakes) Monitoring Sites.<br>**7-South Mining Operation (Areas 1 to 4):** Quinsam River downstream of 7 South Mining Operation (7SQR) (EMS # E292113), **7-South Area 5 Mining Operation:** Stream- Iron River upstream of mining operations (IR1) (EMS #E297230), Iron River upstream of 7SA5 (IR6) (EMS # E297231), Iron River downstream of 7SA5 and 242 inputs (IR8) (EMS # E297232), Quinsam River downstream of confluence with Iron River (IRQR) (EMS # E299256). | No | Refer to the Annual Report, Appendix I, Table 2 for con compliance. Samples were collected and submitted to the analytical laboratory, following bankruptcy and no payment from the Trustee (PWC) the results were not released. |
| Section 4.2.4 | Sediment and Benthic Monitoring Sites | NA | N/A |
| Section 4.2.4 (i) | 7-South Area 5 sediment proposal | Yes | Proposed the sediment and benthic site for 2019 |
| Section 4.2.5 | Stream Monitoring Requirements | | |
| Section 4.2.5 (i) | General Requirements Applicable to All Sites Defined Under Section 4.2.3 (E292112)- Lower Wetland Outlet (LWO). | Yes | Refer to Annual report, Apendix 1, Tables 75-140 |
| Section 4.2.6 | Lake Monitoring Requirements | | |
| Section 4.2.6 (i) | General Requirements Applicable to All Sites Defined Under Section 4.2.3. | Yes | All samples were obtained in accordance with the permit. Permit amendment November 1st, 2019. |
| Section 4.2.7 | Sediment Benthic Monitoring Requirements | N/A | Scheduled for 2020 |
| Section 4.2.7 (i) | General Requirements Applicable to All Sites Defined Under Section 4.2.4 | N/A | N/A |
| Section 4.3 | Additional Monitoring Requirements | | |
| Section 4.3.1 | Composite sampling | No | Equipment is established and routinely inspected. Refer to Non-compliance list for information on missed samples. Appendix I, Table 2. Composite sample tables, Appendix I, Tables 27-30 |
| Section 4.3.2 | Continuous Flow Recording | No | Missing 3 days of out flow at SP1, refer to Annual Report, Appendix I, Tables 2, 29-30 and Appendix II Graph 63. As well 2S missing 7 days of out flow refer to Annual report, Appendix 1, Table 2 and Appendix II, Graph 69. |
| Section 4.3.3 | Iron River Flow Monitoring | Yes | Annual Report, Appendix II, Graph 62 |
| Section 4.3.4 | pH and Conductivity Monitoring | No | Annual Report, Appendix I, Tables 34 to 36. Refer for non-compliance to Annual report, Appendix II, Table 2. Permit amendment occurred November 1st, 2019 reducing weekly pH/Conductivity monitoring. |
| Section 4.3.5 | Monitoring of Seeps | Yes | Annual Report Appendix I , Tables 9, 23 and 24. |
| Section 4.3.6 | Groundwater Observation Wells | Yes | Groundwater results and discussion is integrated into the Annual Report, Refer to Appendix II, Tables 158 to 211 and Appendix VI. |
| Section 4.3.7 | Monitoring of Drainage Ditches and Water Channels | Yes | Operations are checked daily by either the environmental technician or shift bosses. |
| Section 4.3.8 | Precipitation Monitoring | Yes | Annual Report, Appendix I, Table 42 |
| Section 4.3.9 | Block 242 Monitoring | Yes | Not operational, area has been reclaimed |
| Section 4.4 | Monitoring Procedures | Yes | N/A |
| Section 4.4.1 | Sampling and Analytical Procedures | Yes | N/A |
| Section 4.5 | Reporting | Yes | N/A |
| Section 4.5.1 | 7 South Area 5 Reporting | Yes | Refer to Annual Report Section 8.8.1 to 8.1.3. |

Authorized Person Initial:_____ Date:_____

# Appendix IX

MINE GRID NORTH

TRUE NORTH

53°

106,000N

104,000N

102,000N

100,000N

98,000N

96,000E

98,000E

100,000E

102,000E

104,000E

106,000E

QUINSAM RIVER

Settling Pond #4

MW00-1S & 1D
MW00-6S & 6D

Brinco Brook

5M#2
(Dewatering Well)

2-North

3M2N

QU-10-11S & 11D

QU-10-10S &10D

Tailings
Disposal
Facility

Middle
Quinsam
Lake

1M2N
(Dewatering Well)

QU-10-13D

Quinsam Syncline

QU-08-21GS & 21GD

QU-11-05S & 05D

QU-11-09S & 09M

QUINSAM RIVER

QU-08-13A & 13B

Overlook Fault

QU-14-10

QU-05-13S

No-Name Lake

Long Lake

MW00-2

MW12-23
MW12-24

3-South Pit

MW00-4

2-South Underground

INF (QU11-11)

2-South Pit

5SDUV
(Dewatering Well)

5-South

7-South

1M7S(sump)

Long Lake Fault

Ridgeway Fault

7-South Portal

QU-10-09S & 09D

QU-10-07D

QU-78-161

QU-11-01

4-South

QU-10-08D

QU-11-28

QU-08-10

7SA5

QU-11-21

7-South
Area 5

Future Mining Area

QU-11-18S & 18D

QU-12-06

242NW

QU-11-36D

Unnamed Fault 1

Unnamed Fault 2

Long Lake Seep
Treatment System

Settling Pond #1

QUINSAM RIVER

QUINSAM RIVER

QUINSAM RIVER

Lower
Quinsam
Lake

METERS
0 20 40 60 80 100

Groundwater Monitoring Well

Groundwater Flow (mine impacted water)

Groundwater Flow (non-mine impacted water)

Pumping (mine impacted water)

Underground PAG-CCR Disposal

Underground Tailings Disposal

QUINSAM COAL

| | | | | |
|---|---|---|---|---|
| Updated Water Monitoring Map | | 24/06/20 | SCALE: | 1:10,000 |
| | | | DESIGNED: | |
| | | | UPDATED: | SS |
| | | | CHECKED: | |
| | | | APPROVED: | |

2019-2020 SITE PLAN
GROUND WATER MONITORING

2019-2020 Annual Water Quality Report

\\QCC-CAMDC1\Environmental\Annual Reports\2019-2020\Map\Environmental_Groundwater_Overview.dwg

MINE GRID NORTH

TRUE NORTH

53°

106,000N

104,000N

102,000N

100,000N

98,000N

96,000E

98,000E

100,000E

102,000E

104,000E

106,000E

QUINSAM RIVER

E0126402,WA

E207411,WC

Settling Pond #4

E207409,WD

E207412,WP

Brinco Weir

PDSR

5MW2

(Dewatering Well)

2-North

E283433,2NPS

3M2N

Tailings Disposal Facility

Middle Quinsam Lake

1M2N

(Dewatering Well)

E286930,QRDS1

QUINSAM RIVER

Quinsam Syncline

MW77-78

MW2010

E292126,SDS

E206618,MQL

QUINSAM RIVER

E0900504,WB

5SMW

(Dewatering Well)

5-South

7-South

Overlook Fault

Boundary Fault

QUINSAM RIVER

Q05-13

No-Name Lake

Long Lake

E217018,NNL

E217017,NNO

3-South Pit

E292131,LLS & LLSM

E217015,3S

2SC

E206619,LLM

E219412,LLO

2-South Pit

2-South Underground

E292127,2S

2SI

INF-(QU11-11)

E292129,4S-Lo

E292130,LLE

E217014,SPC

E292128,3STT

E218582,SPD

BCR-EFF

SPC-EFF

Long Lake Seep Treatment System

Settling Pond #1 (SPD)

4-South

Long Lake Fault

7-South Portal

E292110,7SPS

E292069,7SSD

E292109,7S

E292112,LWO

E292113,7SQR

7-South Area 5

Future Mining Area

Boundary Fault

Unnamed Fault 1

Unnamed Fault 2

E297232,IR8

E297231,IR6

E299256,IRQR

QUINSAM RIVER

E297230,IR1

QUINSAM RIVER

E292118,LQL

Lower Quinsam Lake

METERS

0 20 40 60 80 100

Underground PAG-CCR Disposal

Underground Tailings Disposal

EMS ID #, Station Code

Surface Water Flow

Pumped Water Flow

QUINSAM COAL

| | | | |
|---|---|---|---|
| Updated Water Monitoring Map | 24/06/20 | SCALE: | 1:10,000 |
| | | DESIGNED: | |
| | | UPDATED: | SS |
| | | CHECKED: | |
| | | APPROVED: | |

2019-2020 SITE PLAN

SURFACE WATER MONITORING

2019-2020 Annual Water Quality Report

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# Appendix X

November 1, 2019 File: 7008

**Sent Via Email**
Quinsam Coal Corporation
Suite 2600 – 595 Burrard St.
Three Bentall center
PO Box 49314
Vancouver BC V7X 1L3

Dear Kathleen Russel,

We have reviewed your application titled "PE:7008 Monitoring Program Reduction Request" (the Application), and dated October 17, 2019. The Application was submitted to support your request to amend the Quinsam Coal Corporation (QCC) mine water quality monitoring requirements while the mine site is in care and maintenance. Our review considered whether monitoring locations and/or frequency are adding value to environmental effects information. Based on the information provided in the Application and Pursuant to section 16 of the *Environmental Management Act*, the following amendments to authorization 7008, Section 4 are approved:

**Section 4.1 Effluent and In-Mine Sites:** the following monitoring sites are **removed** from the monitoring program:

> E292126 (south dyke sump) – this monitoring site captures seepage that is pumped underground into 2-north mine pool, and does not discharge directly to the receiving environment.
>
> E292128 (1977 bulk sample pit) – data show results here have been stable over time; also, the water from this site is captured at other monitoring sites (4S-Lo, SPC and LLE).
>
> E292129 (culvert downstream of 4 south access road) – data show results here have been stable over time; also, the water from this site is captured at LLE.
>
> E225796 – Block 242 decant and E225797 – Block 242 underground settling pond effluent
> The above two monitoring sites are in an area that has been reclaimed, and they no longer represent effluent from the Block 242 area. The most effective way to monitor for any impacts here is in the groundwater, which will continue to be sampled.

**Ministry of Environment and Climate Change Strategy**
Omineca Region
BC Parks and Conservation Officer Service Division
Mailing Address:
325-1011 4th Avenue
Prince George BC
V2L 3H9
Telephone: 250 565-6135
Facsimile: 250 565-6427
Website: www.gov.bc.ca/env

**Section 4.1 Effluent and In-Mine Sites:** the following monitoring sites have **changes** to their monitoring frequency or parameters:

E207412 (north pit sump water),
E283433 (2-north portal sump effluent),
E217015 (3-south pit main sump water) and
E292127 (2-south pit water)
For the above four monitoring sites, the frequency of pH and conductivity monitoring is amended from weekly to monthly reduce. Results from 2013-2019 at these sites have been stable over time, and the monthly rolling averages were similar to the weekly rolling averages. This reduction will continue to provide adequate information on effluent.

E207411 (culvert at Middle Quinsam Lake Road)
E217014 (downstream discharge from settling pond 1)
For the above two monitoring sites the frequency of pH and conductivity monitoring is amended from weekly to monthly. Results from 2013-2019 for pH and conductivity have been stable over time, and the monthly rolling averages were similar to the weekly rolling averages. Additionally, the bi-weekly TSS monitoring requirement for the above sites is removed. The bi-weekly TSS is not necessary, as TSS is sampled upstream in the settling ponds that discharge to these sites. These changes will continue to provide adequate information on effluent.

E292069 (7-south surface decant) - The monitoring frequency at this location is reduced from monthly to quarterly when no discharge is occurring. This monitoring site does not receive any effluent unless the 7-South area is discharging. This reduction would not compromise any information on effects of effluent on the receiving environment.

E207409 (settling pond 4 discharge) – The monitoring frequency for Total Suspended Solids (TSS) at this location is reduced from daily to weekly for decant flow conditions exceeding 0.054 $m^3/s$. Dissolved metals analysis must be undertaken monthly. A weekly TSS sample will provide enough information to initiate mitigating action if necessary, and the addition of monthly dissolved metals will strengthen the understanding of the data collected.

E218582 (settling pond 1 discharge) – The monitoring frequency for Total Suspended Solids at this location is reduced from daily to weekly for decant flow conditions exceeding 0.046 $m^3/s$. Dissolved metals analysis must be undertaken monthly. A weekly TSS sample will provide enough information to initiate mitigating action if necessary, and the addition of monthly dissolved metals will strengthen the understanding of the data collected.

**4.2 Receiving Environment Monitoring Sites and Monitoring Requirements:** the following sites are **removed** from the monitoring program:

E286930 (Quinsam River downstream Site 1, upstream 7S operation) – this site is in between two other monitoring sites (WB and QRDS1) and there are no mine effluent inputs in between these monitoring locations, so the results here do not provide any information not already provided.

E292112 (lower wetland outlet, at confluence of Quinsam River) – this site is downstream of the 7-South mining area, but does not represent the cumulative water quality at this location because it is downstream of a wetland and reflects the wetland's processes instead. Site 7S is upstream, and reflects the impacts of the 7-South effluent discharge; site 7SQR is downstream and represents the Quinsam River downstream of input from the 7-South mining area. With the lower wetland outlet site removed, sites 7S and 7SQR provide sufficient information for this area.

E297230 (Iron River upstream of mining operations) – this site was established to capture a baseline dataset for the Iron River; it has been sampled monthly from 2014 to 2018, so the data collected are adequate to represent baseline conditions, and monitoring does not need to continue.

**4.2 Receiving Environment Monitoring Sites and Monitoring Requirements:** the following monitoring sites have amendments to their monitoring frequency or parameters:

E217018 (No Name Lake, centre) – monitoring requirements are reduced to five samples collected within a 30-day time frame ("5-in-30 sampling") in the spring only. This is the reference lake site. It has been sampled for many years and the dataset now contains enough year-to-year variation to be compared to in the future. The spring 5-in-30 sampling will represent the fully-mixed state of the water column and should therefore show any regional influences (for example, from forest harvesting) that may affect water chemistry at receiving environment lakes.

E292118 (Lower Quinsam Lake, centre) – monitoring requirements are reduced to 5-in-30 sampling in the spring only. This lake is the far-field receiving environment site for all mine inputs. Upstream river sites capture what might flow into the lake, and the spring 5-in-30 sampling will represent the fully-mixed state of the water column, and will be used to track any potential changes.

E219412 (Long Lake outlet) – monitoring requirements are reduced at this site from weekly to 5-in-30 three times per year (spring, summer and fall). The weekly sulphate monitoring was designed to capture an unauthorized discharge from the treatment system; this unauthorized discharge is now directed to 2-South Pit and into Settling Pond 1, so the increased frequency is no longer necessary. Aligning the sampling with the

other receiving environment sampling (5-in-30 3x/yr) will allow for data comparisons between sites.

E297231 (Iron River upstream of 7SA5) and
E297232 (Iron River downstream of 7SA5 and 242 inputs)
The monitoring frequency at the above two sites are reduced from monthly and 5-in-30 three times per year to 5-in-30 two times per year (summer and fall). Monthly sampling has occurred at these sites since 2014 and a strong dataset is now available. The two seasons of worst water quality are summer and fall, so this reduction will provide the information necessary to compare to baseline data and to conditions at other sites.

All other conditions of permit 7008 remain in effect, including all monitoring requirements not specifically amended herein. The Ministry of Environment and Climate Change Strategy must be notified within 30 days of any changes to the operational status of the mine. If you require any further information, please do not hesitate to contact me.

Sincerely,

E. Freyman

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