

Quinsam Coal Annual Water Quality Monitoring Report 2019-2020

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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 1st, 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 m³/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 Settling Pond #4 ($0.08 \text{ m}^3/\text{s}$) was exceeded by 9% with an annual average discharge rate of $0.09209 \text{ m}^3/\text{s}$. For 2019-2020 the cumulative discharge was calculated as $2,912,065 \text{ m}^3$ lower compared to last year's ($3,793,971 \text{ m}^3$). 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/L , 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 are 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 stage¹.

Quinsam was not able to collect all the required parameters to input into the BLM database for this reporting year. Therefore, the previous 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 (H₂S) 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 Initial 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 m³. 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.

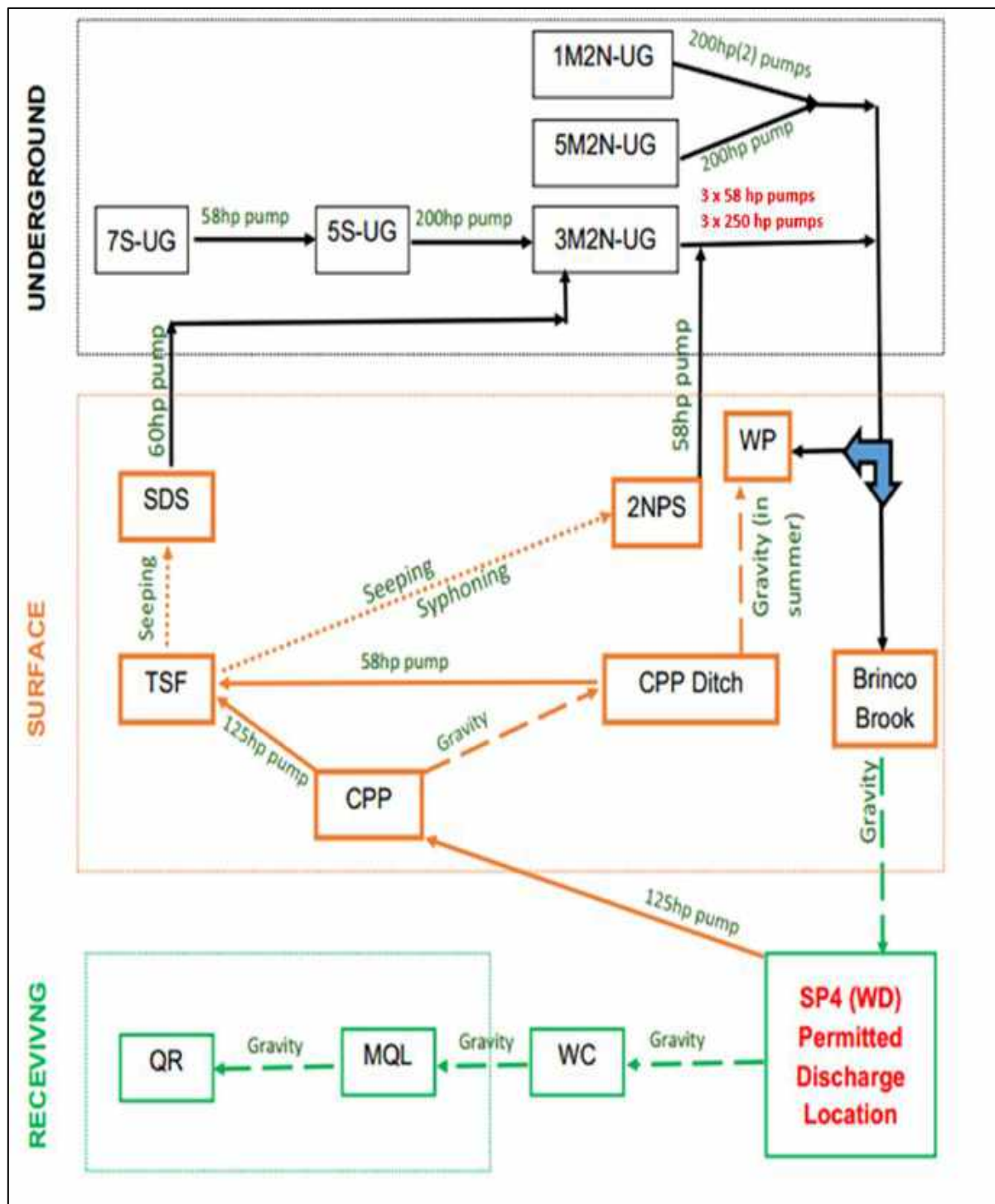


Figure 1: Water Movement and Flow Path in the North Management System

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.

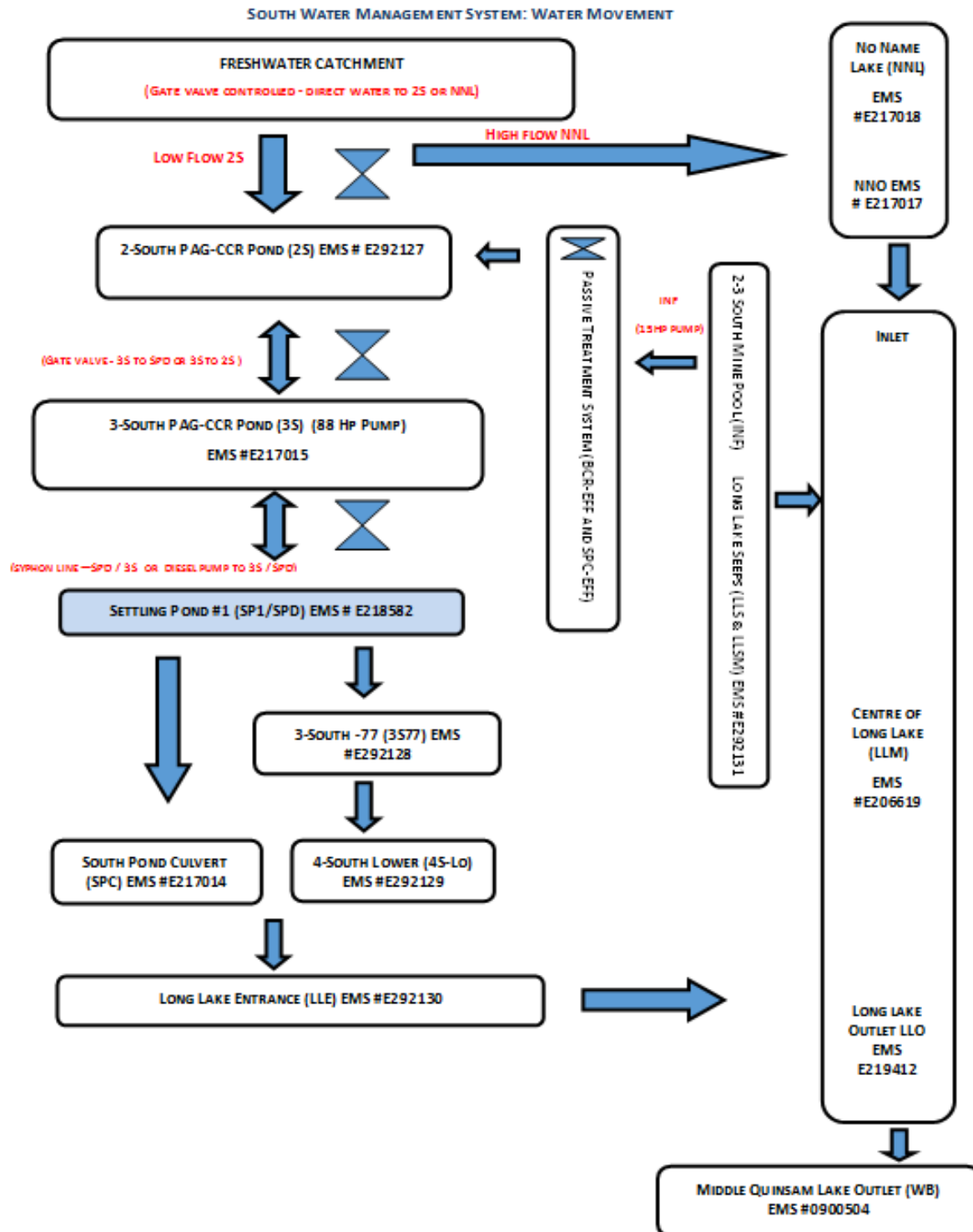


Figure 2: Water Movement & Flow Path in the South Water Management System

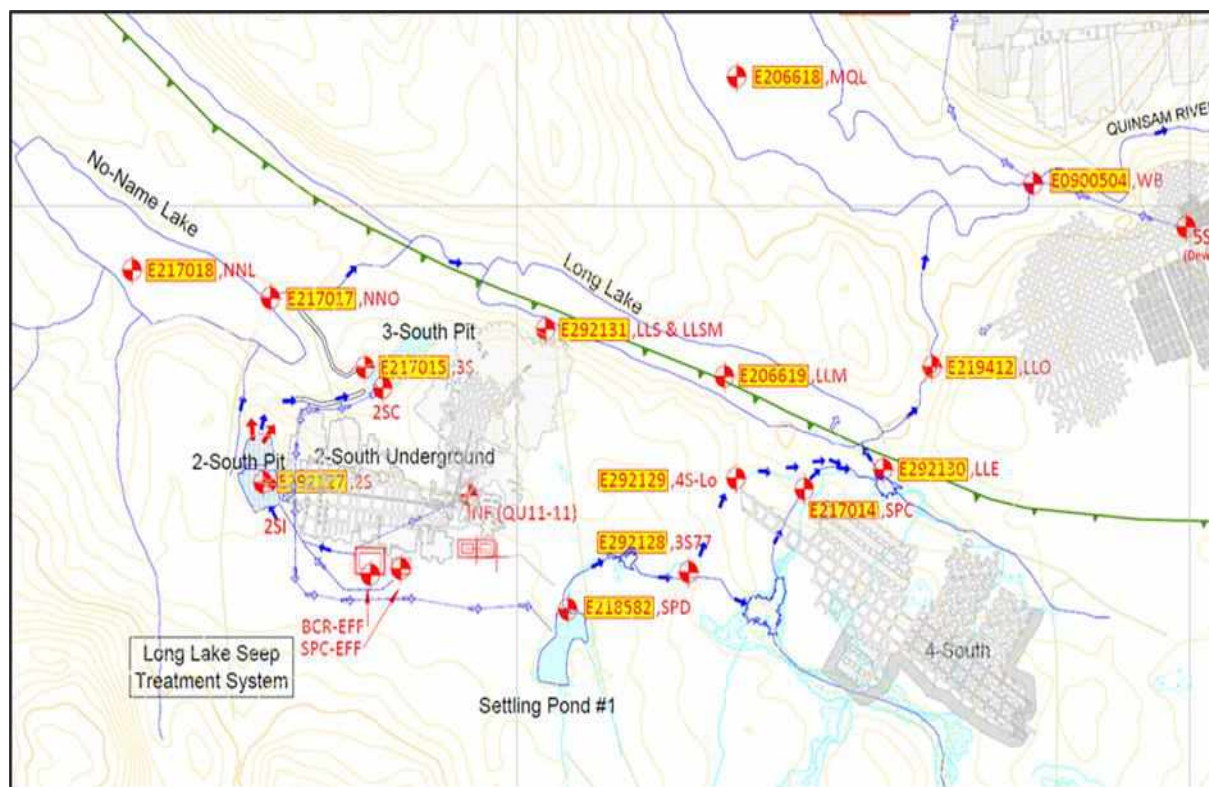


Figure 3: South Water Management System with Underground Workings

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

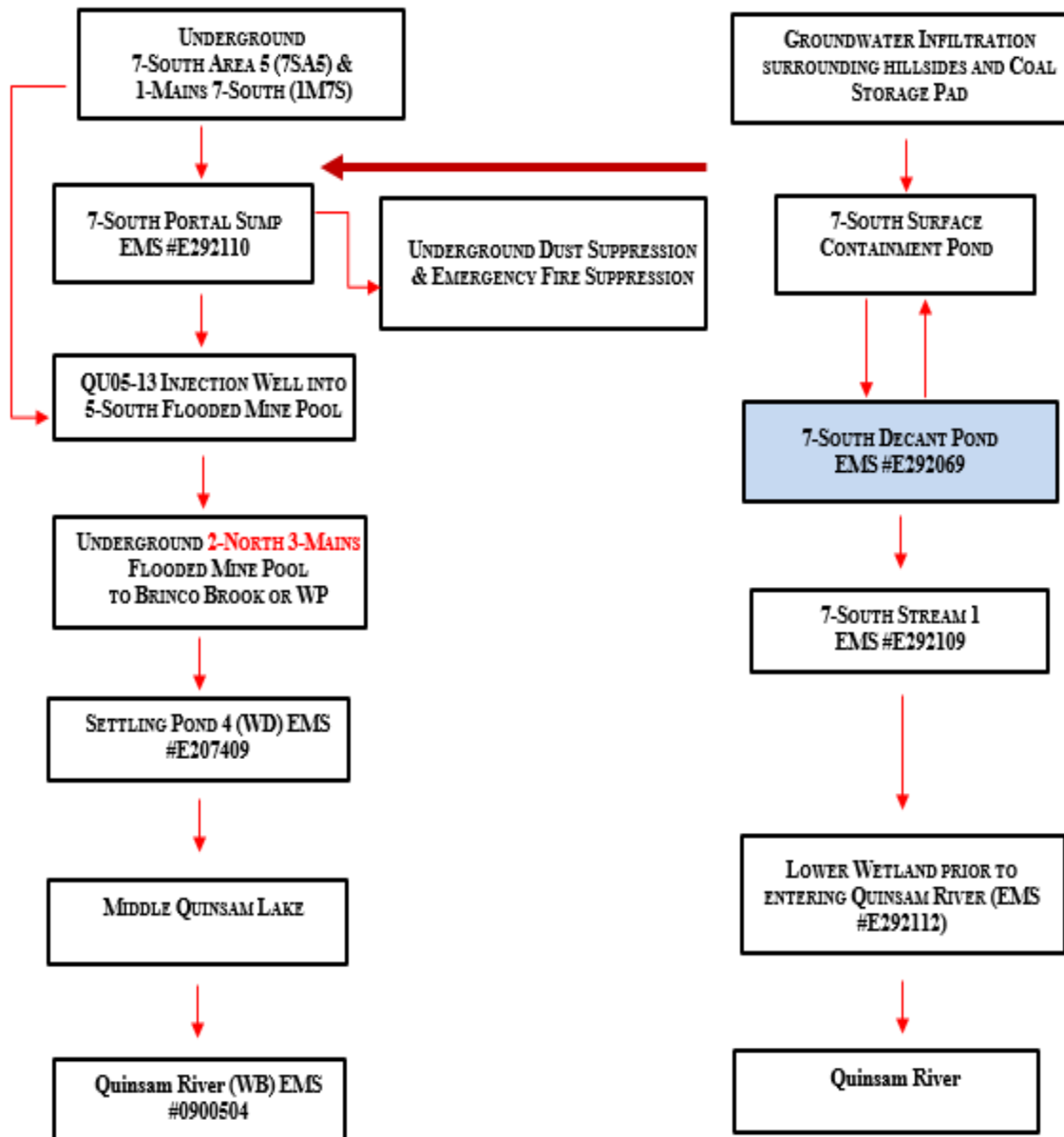
storage capacity, excess water is pumped into the 5-South mine pool. From there water mixes with the 5-South water where it is pumped into the 2-North mine at 3-Mains. 3-Mains discharges into Brinco brook which is gravity fed to Settling Pond #4 and discharges into Middle Quinsam Lake. 7SCP collects 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.

7-SOUTH WATER MANAGEMENT SYSTEMS: WATER MOVEMENT**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)	Middle Quinsam Lake Centre (EMS # 206618)
Outflow from Middle Quinsam Lake (WB) (EMS # 0900504)	
South Mining Operation	
Long Lake Outlet (LLO) (EMS # E219412)	Long Lake at Centre (LLM) (EMS #E206619) No Name Lake (NNL) (EMS # E217018)
No Name Lake Outlet (NNO) (EMS # E217017)	
7-South Mining Operation (Areas 1 to 4)	
Quinsam River upstream of 7 South Mining Operation (QRDS1) (EMS # E286930)	Lower Quinsam Lake (LQL) (EMS #E292118)
Quinsam River downstream of 7 South Mining Operation (7SQR) (EMS # E292113)	
Lower Wetland Outlet at the confluence of Quinsam River (LWO) (EMS # E292112)	
7-South Area 5 Mining Operation	
Iron River upstream of mining operations (IR1) (EMS #E297230)	Lower Quinsam Lake (LQL) (EMS # E292118)
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)	

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 m³/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 m³/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 SO₄
- 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	NO. 4 Seam and 4L	Upgradient 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 margin 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 data 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) No Name Lake Deep, NNLD (EMS # E217018) No Name Lake Near Seep (EMS # E292114) No Name Lake Outlet (EMS # E217017)
	Middle Quinsam Lake (MQL)	Middle Quinsam Lake Inlet (EMS # E206901) Middle Quinsam Lake Deep (EMS # E292115) Middle Quinsam Lake Near Seep (EMS # E292116) Middle Quinsam Lake Outlet (EMS # 0900504)
	Lower Quinsam Lake (LQL)	Lower Quinsam Lake Inlet (EMS # E292117) Lower Quinsam Lake Deep 1 (EMS # E29118) Lower Quinsam Lake Deep 2 (EMS # E292119) Lower Quinsam Lake Outlet (EMS # E292120)
	Long Lake (LL)	Long Lake Inlet (EMS # E292121) Long Lake Deep (EMS # E292122) Long Lake Near Seep (EMS # E292123) Long Lake Outlet (EMS # E219412)
	Gooseneck Lake (GNL)	Middle Gooseneck Lake (EMS # 1132502)
Wetland	Lower Wetland	Lower Wetland Inlet (EMS # E292124) Lower Wetland Middle (EMS # E292125) 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		Sample #	Project #	COC#	Date Received	Company Responsible for Payment
			Report	Job #					
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		N/A	2019-05-09	
E292118	LQL1	LQL1-8May19-M	B935390	N/A	N/A	Biological Monitoring (Species Composition / Chlorophyll A)	N/A	2019-05-09	PwC Inc. trustee of the estate of Quinsam Coal Corp
N/A	INF	INF-25JUL19-M		B962440	WF0026	WEEKLY-SURFACE	8471969	2019-07-31	
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 CaCO₃)
- Hardness (mg/L as CaCO₃)
- 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 *Ceriodaphnia 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:

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

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 $0.32\text{m}^3/\text{s}$ (instantaneous) and $0.08\text{m}^3/\text{s}$ (annual average) or $2,522,880\text{ m}^3$ over a period of 365 days. Maximum discharge rates were below $0.32\text{m}^3/\text{s}$ 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 $2,912,065\text{ m}^3$ lower compared to last year $3,793,971\text{m}^3$. This is equivalent to an annual average discharge rate of $0.092\text{ m}^3/\text{s}$; higher than the authorized average rate of discharge by 9.0% ($0.08\text{ m}^3/\text{s}$ or $2,522,880\text{ m}^3$). Figure 4 displays cumulative annual average discharge rate and daily discharge rates compared to the average annual authorized rate of discharge.

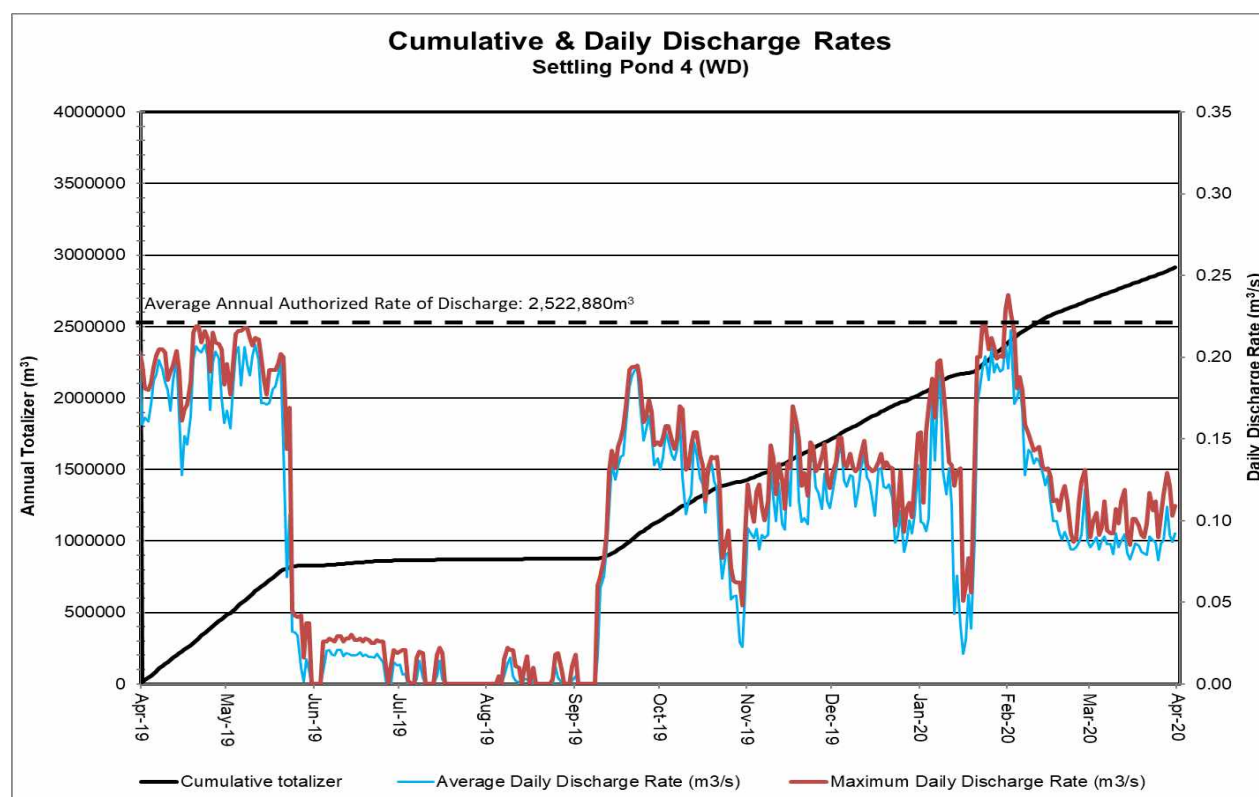


Figure 5: Settling Pond #4 Cumulative Annual Average Discharge Rate and Daily Discharge Rates

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 $0.46\text{m}^3/\text{s}$ (instantaneous) and $0.10\text{m}^3/\text{s}$ (annual average) or $3,153,600\text{m}^3$ over a period of 365 days. Both annual maximum flow ($0.339\text{m}^3/\text{s}$) and annual average flow ($0.0312\text{m}^3/\text{s}$) were well below the permitted rates.

SPD was not discharging from May 14th through to September 12th due to low flow rates and beaver activity, which occurred until November 12th. 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 (6th through 8th) and was replaced on December 11th 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).

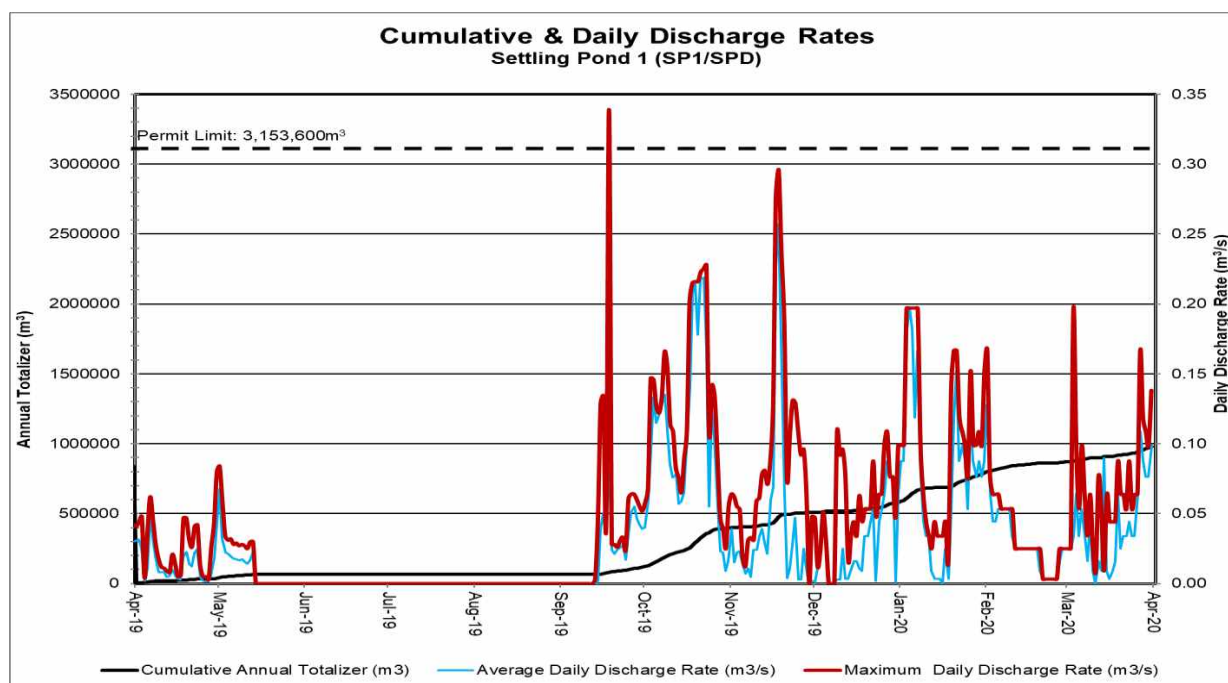


Figure 6: Settling Pond #1 Cumulative Annual Average Discharge Rate and Daily Discharge Rates

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.

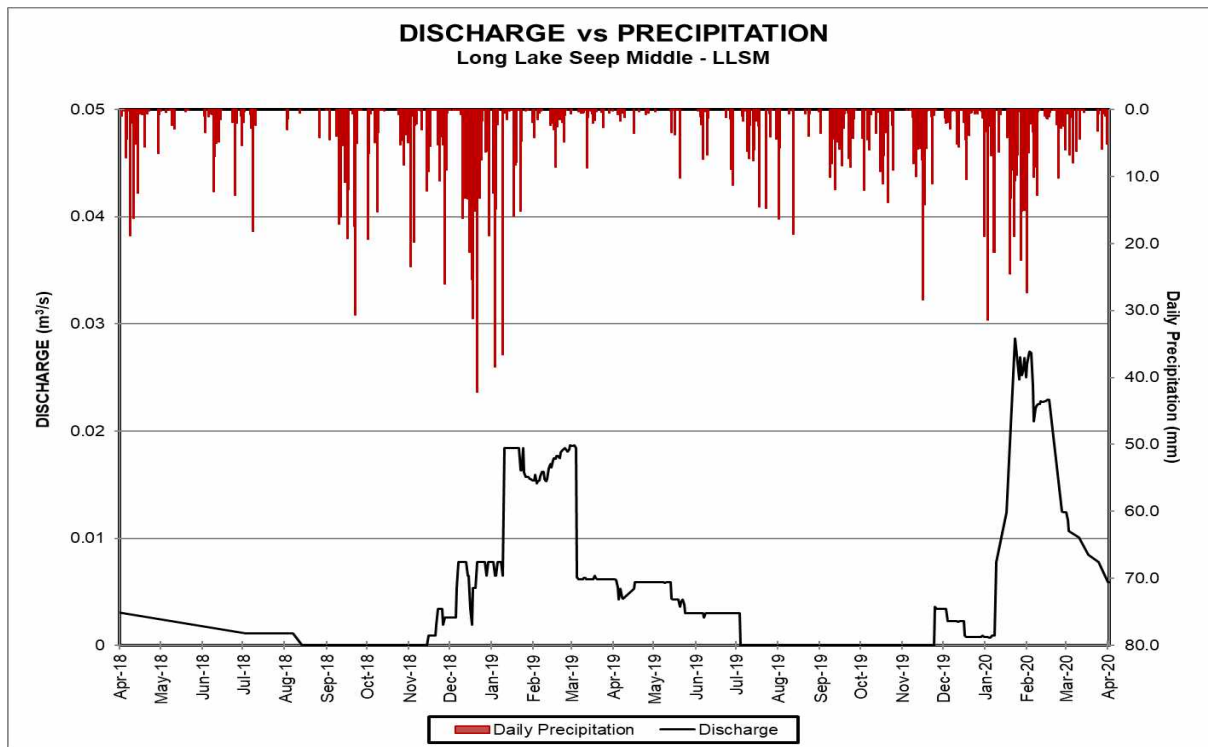


Figure 7: Discharge vs Precipitation Long Lake Seep Middle (LLSM)

6.3 7-SOUTH MINING OPERATION DECANT (7SSD) - E292069

The maximum authorized discharge from settling pond 7SSD is 0.005m³/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.

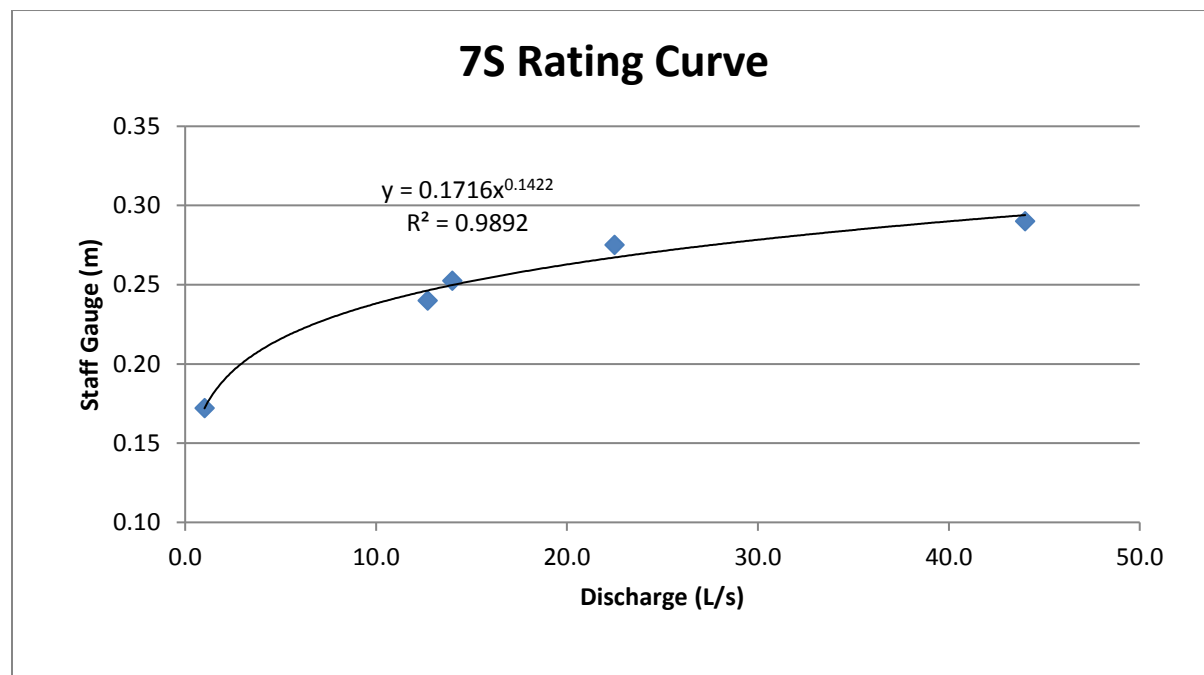


Figure 8: Monitoring Site 7S Stage Discharge Curve

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 (SO ₄ -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-NO _{2,3})
Copper (Cu-D)	Nickel (Ni-D)	Ammonia Nitrate (N-NH ₃)
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 (<i>Oncorhynchus mykiss</i>)	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 develop 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 SO₄. 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 Assessment⁴

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 m³ 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.

²Lorax. 2013. “7-South Area 5 Water Quality Effects Assessment”.

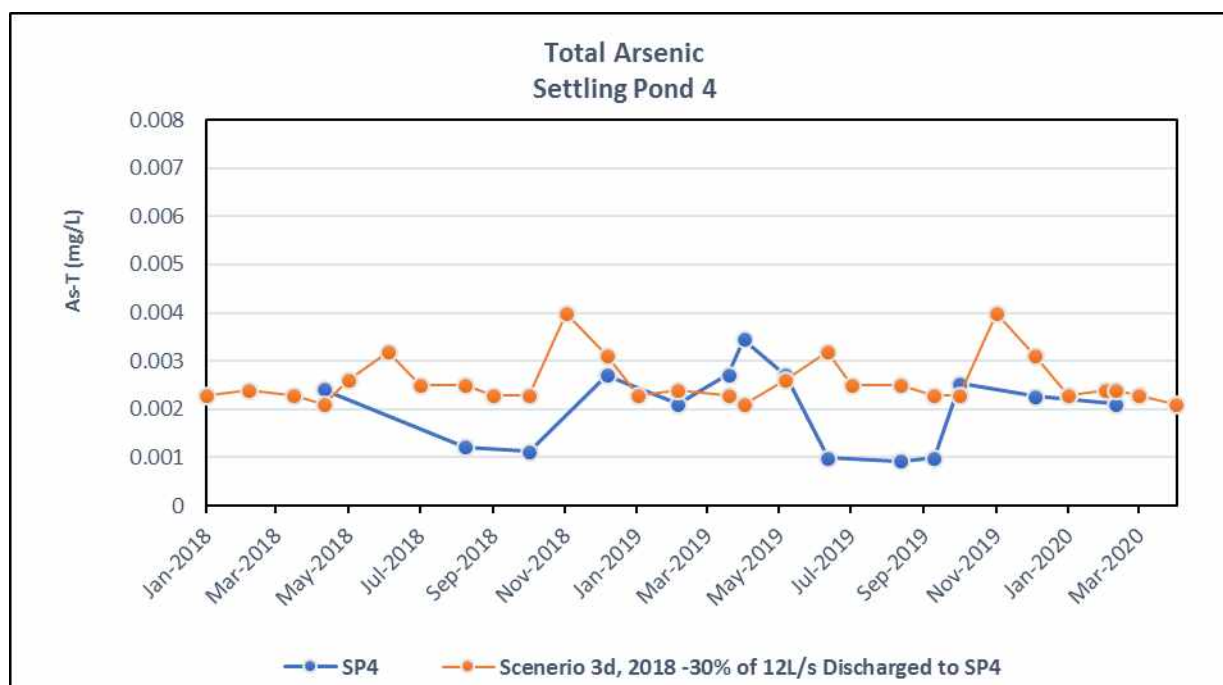


Figure 9: Total Arsenic at SP4 compared to predicted values

Iron speciation from ferrous iron to ferric iron occurs when waters are alkaline to pH neutral and exposed to oxygen. Ferric hydroxide ($\text{Fe}(\text{OH})_3$) 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.

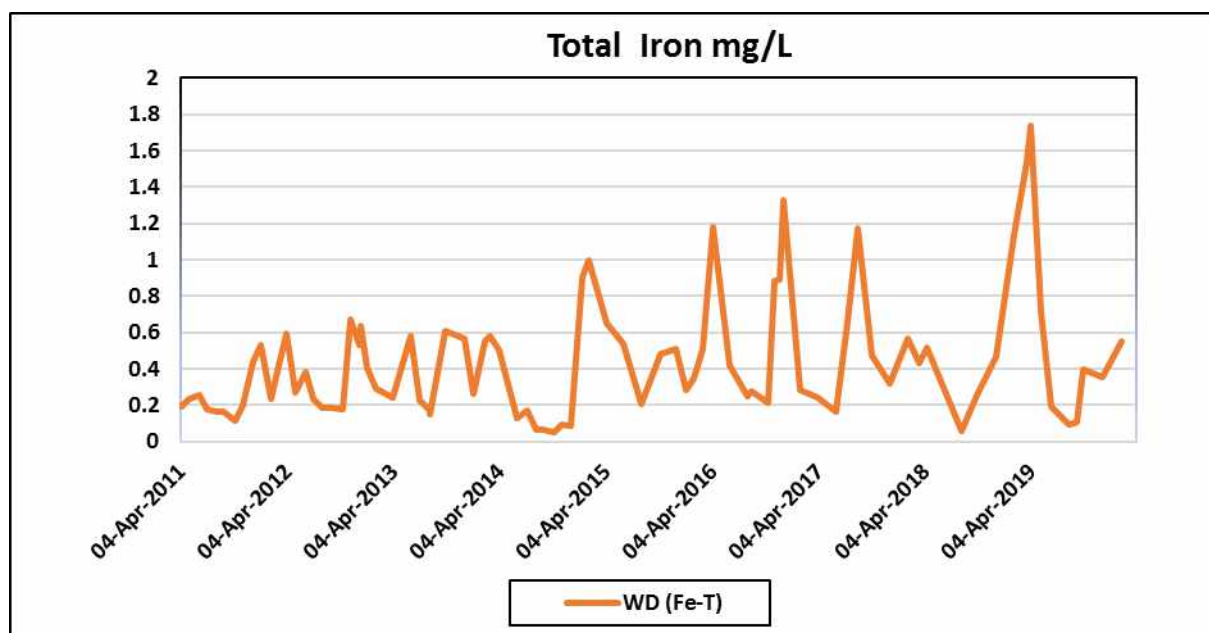


Figure 10: Total Iron at SP4

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.

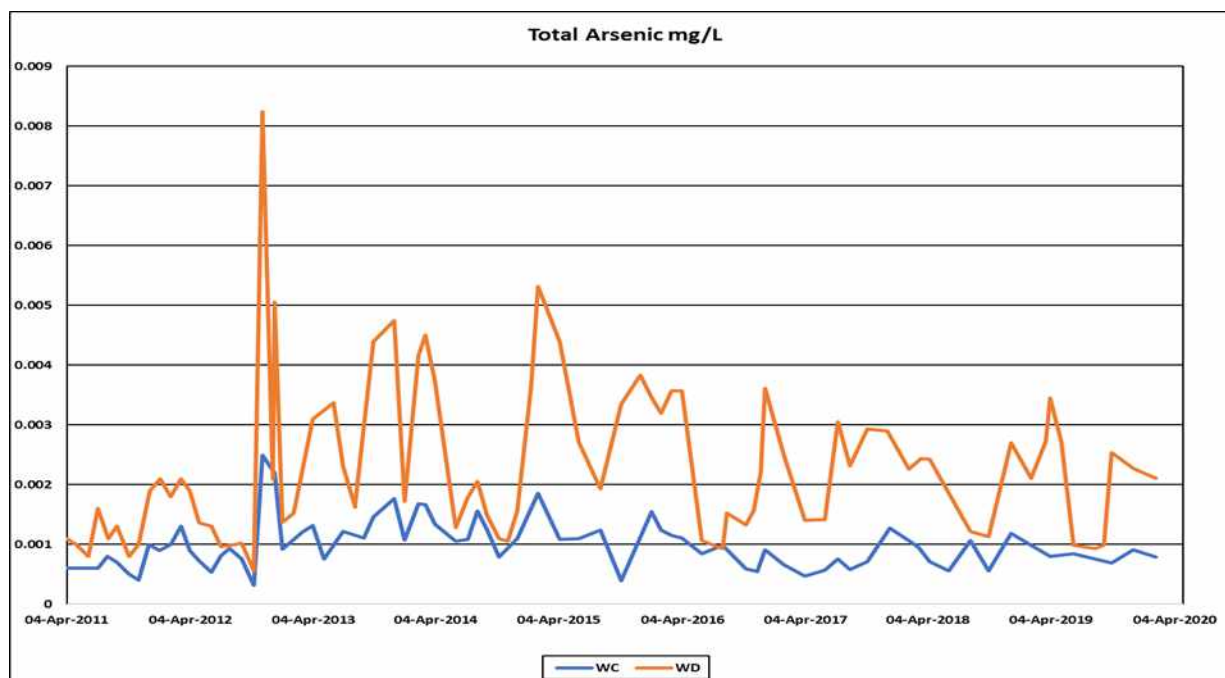


Figure 11: Total Arsenic Comparison at WC and WD

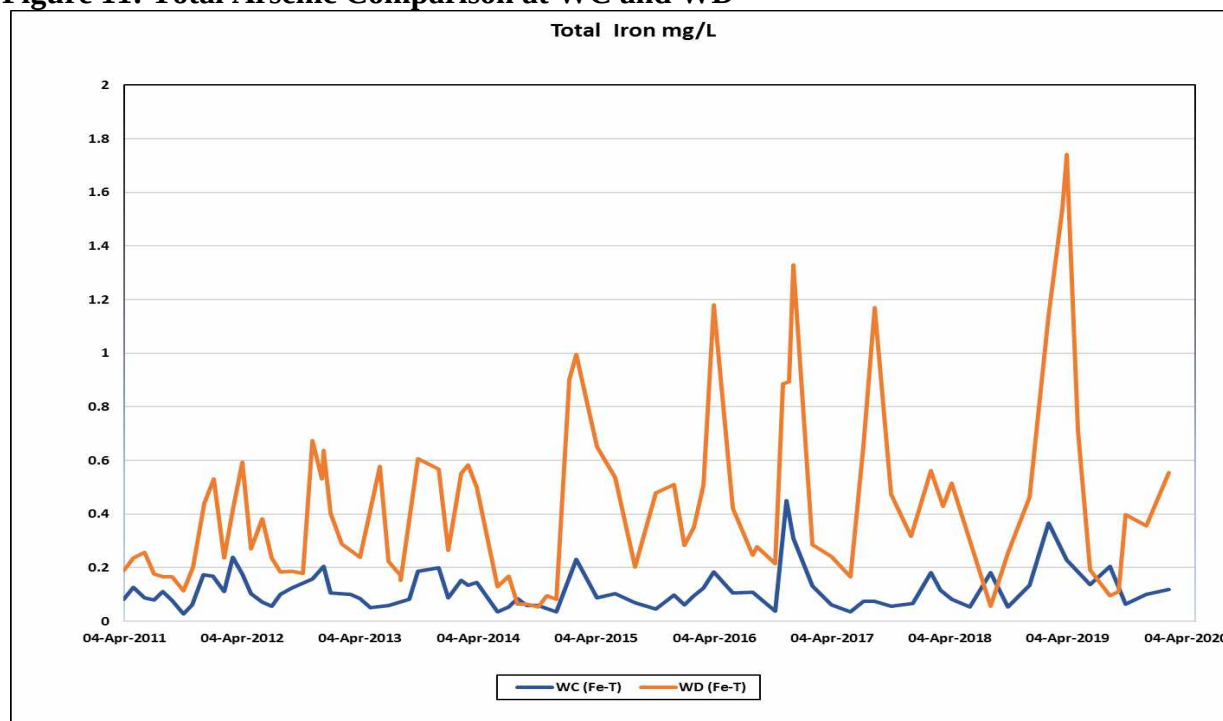


Figure 12: Total Iron Comparison at WC and WD

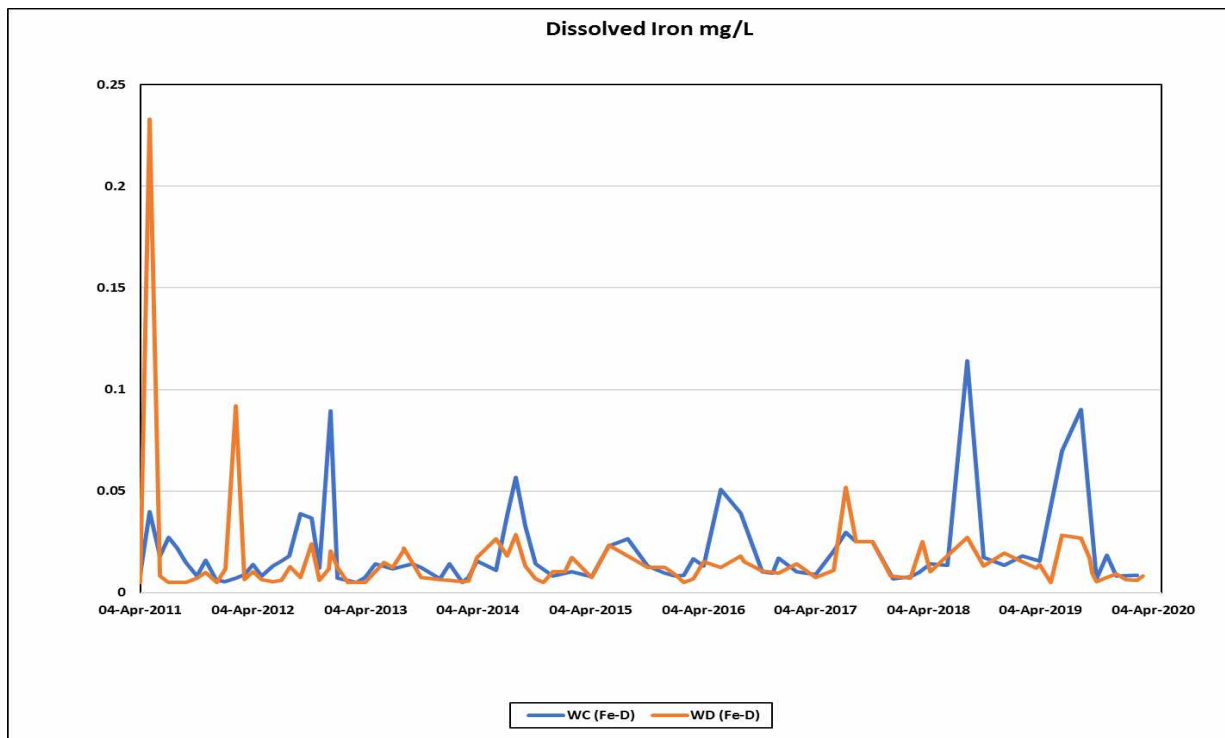


Figure 13: Dissolved Iron Comparison at WC and WD

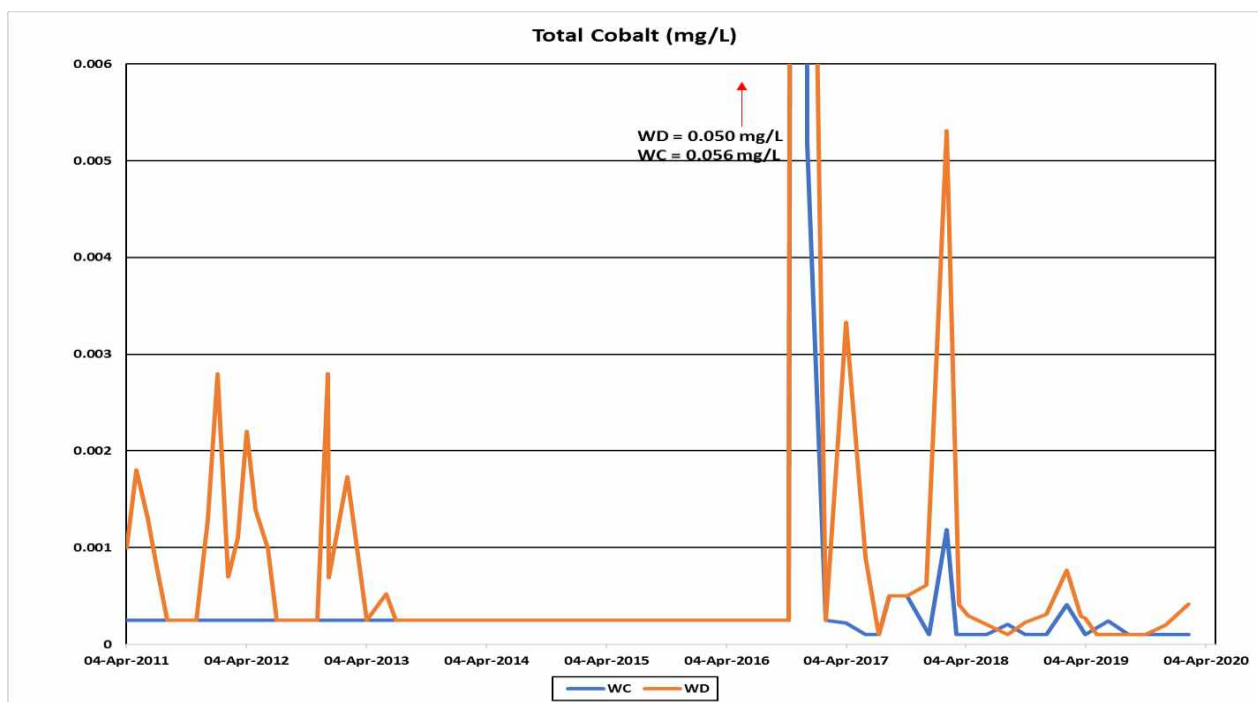


Figure 14: Total Cobalt Comparison at WC and WD

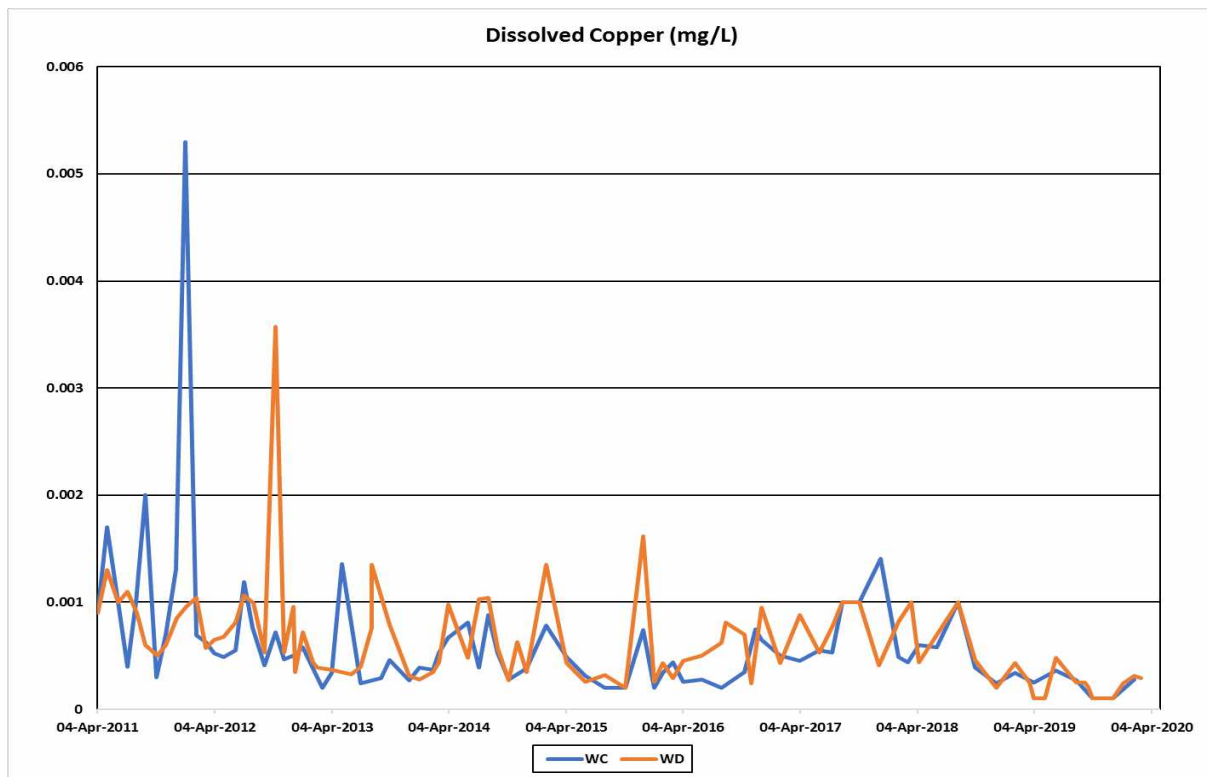


Figure 15: Dissolved Copper Comparison at WC and WD

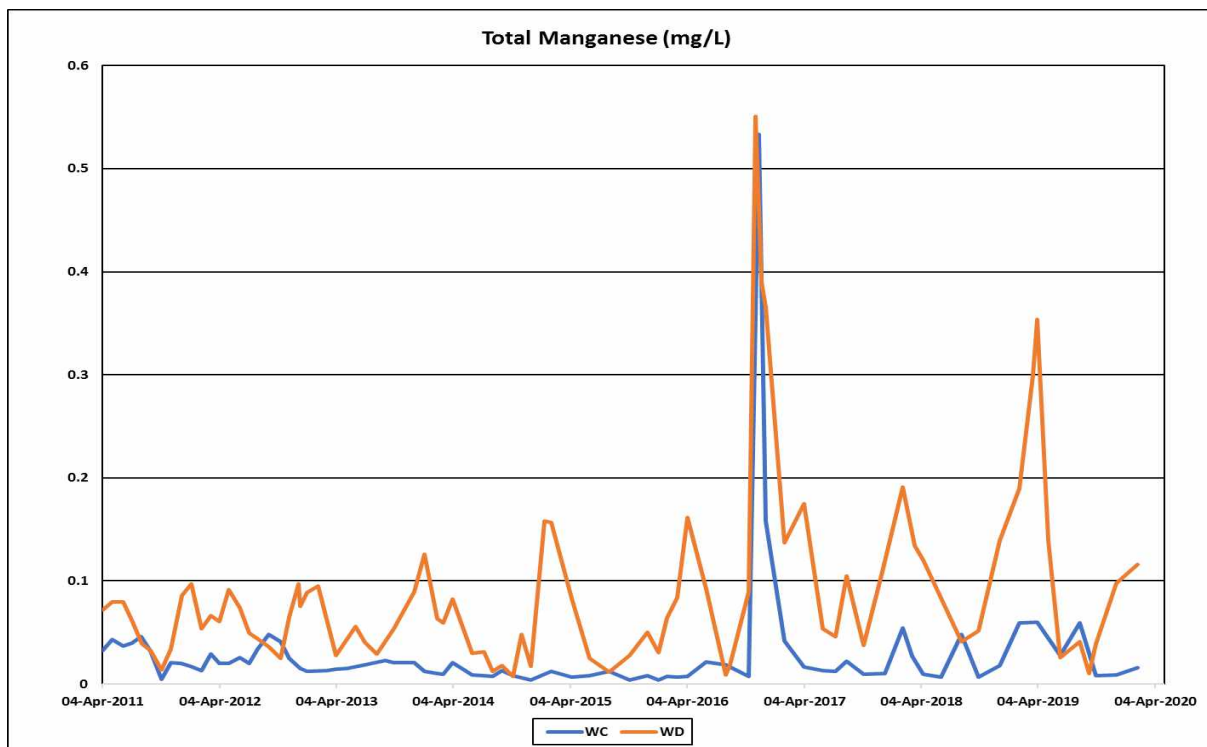


Figure 16: Total Manganese Comparison at WC and WD

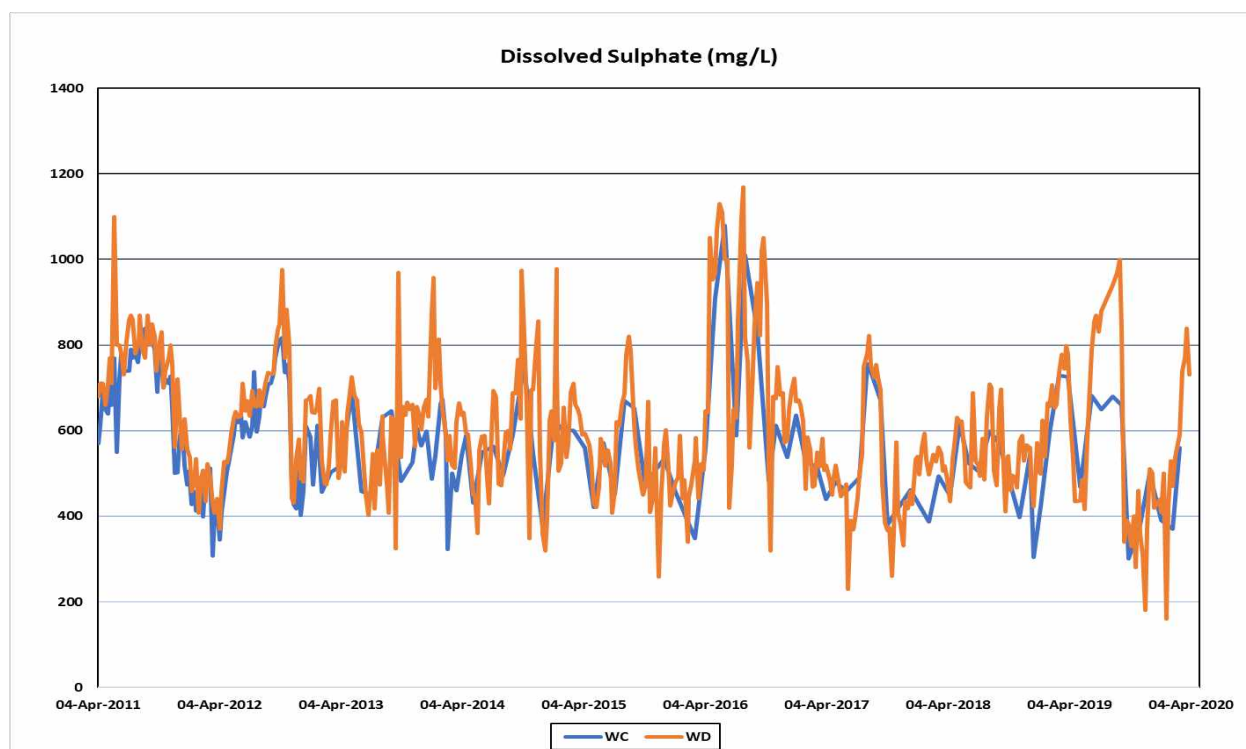


Figure 17: Dissolved Sulphate Comparison at WC and WD

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 4th, 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 (<i>Oncorhynchus mykiss</i>)	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 14th through September 12th. With beaver activity continually blocking the decant until November 12th. 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 remained 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 (0.880 mg/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.

⁵R. 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

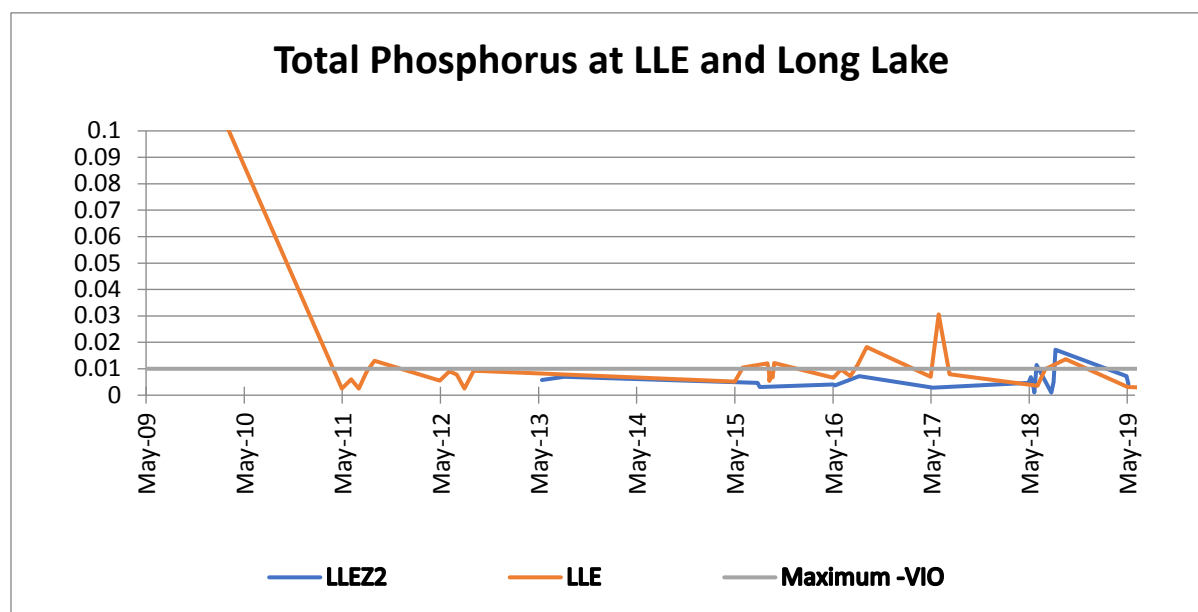


Figure 18: Total Phosphorus at LLE and Long Lake May through September 2011- 2019

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 Fe^{3+} , which is stored within the wetland. Under typical conditions, the particulate Fe^{3+} 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. LLSM 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 ultrasonic depth sensor and a flow metre. With the expectation of a few interruptions the seep flow has been captured 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 Fe^{2+} or $\text{Fe}(\text{OH})^+$) or complexed form like the ferric iron (trivalent iron: Fe^{3+} or precipitated as $\text{Fe}(\text{OH})_3$). 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 (<i>Oncorhynchus mykiss</i>)	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 LC₅₀ 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*) LC₅₀ 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 LC₅₀ 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 objective⁷). 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)	SO ₄ -D	128	132	Summer 5 in 30	A	(4/4 weeks) average for summer
E206619 - Long Lake Middle (LLM) 1 metre from bottom (1MB)	Hypolimnetic DO	Minimum 3 mg/L June - August	0.55 - 2.96	Summer 5 in 30	Min	> 13m depths
	SO ₄ -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)	Hypolimnetic 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 4°C, and during winter, the surface water (epilimnion) is typically colder than 4°C and the deeper water (hypolimnion) is at about 4°C (displaying inverse stratification). Spring turnover occurs when the surface water warms to 4°C 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 (4°C) 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 °C. 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 °C to 15 °C in the upper water column, (1m below surface) for>NNL, MQL and LLM and in LQL temperatures reached 13 °C.

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.

⁸Wetzel, 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.pdf

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 decrease at surface would be attributed to decreased 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 0.397 mg/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 Manganese¹⁰ 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 (CO₂) 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 of 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 Guideline (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 1st) 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	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 Associates¹⁵ 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	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	Zn-T
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	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	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	-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, CO₂, 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 <i>a</i> (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>

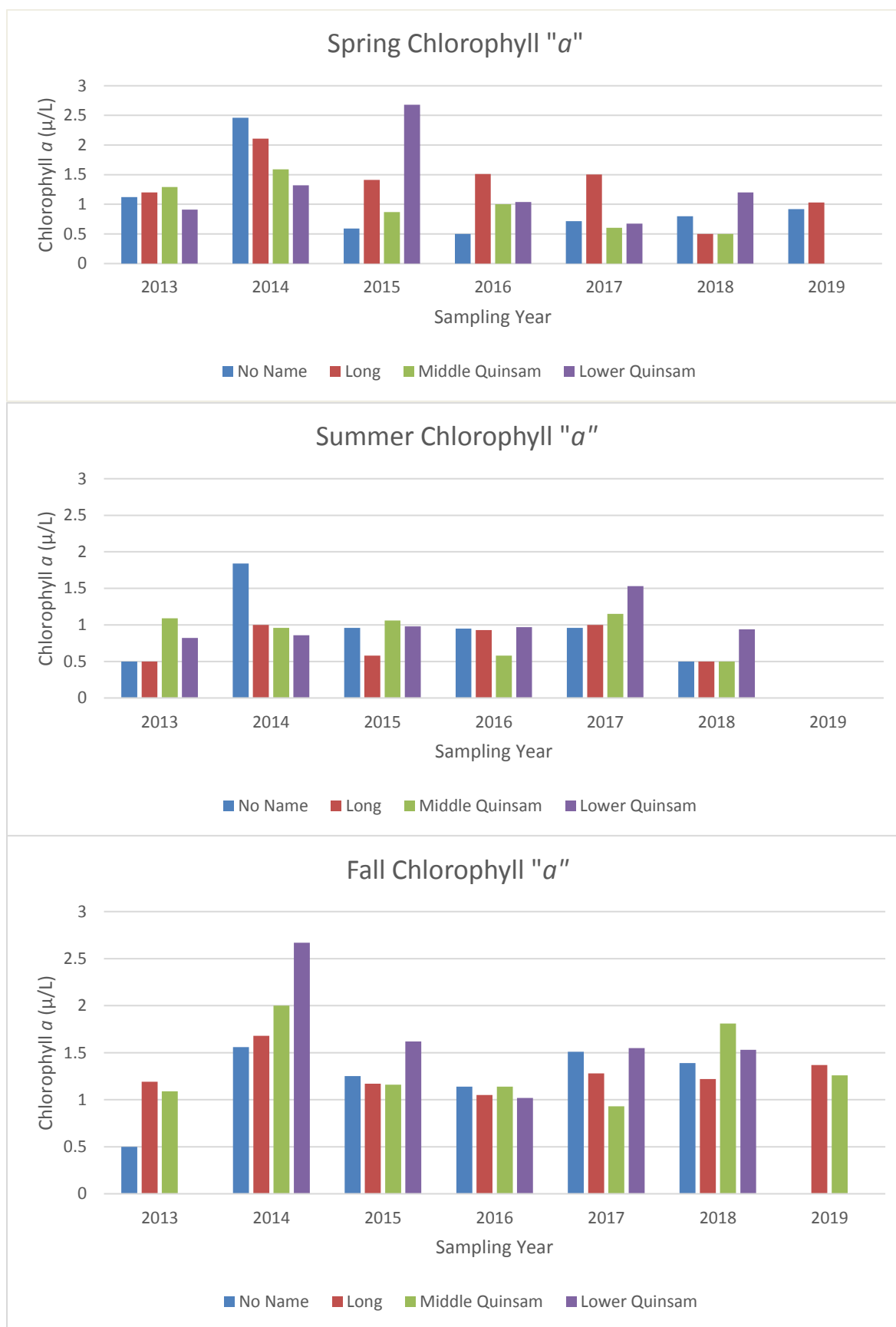


Figure 19: Chlorophyll a (µg/L) at 1 m Depth, Quinsam Lakes System, 2013 – 2019

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 1st and May 8th) for graphing purposes only May 8th 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.

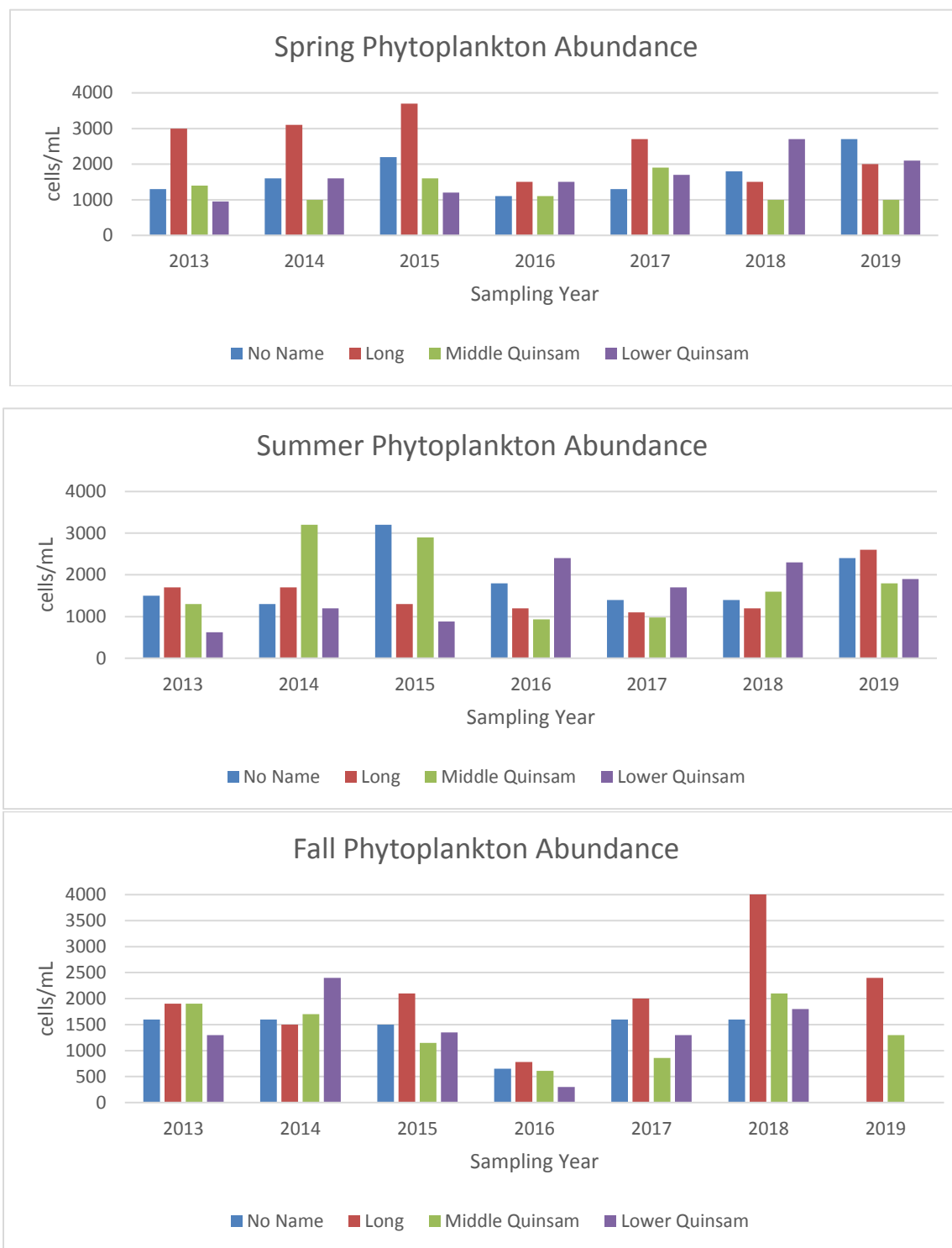


Figure 20: Total Phytoplankton Abundance, 1 m Depth, Quinsam Lakes System, 2013 – 2019

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 2001¹⁷).

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

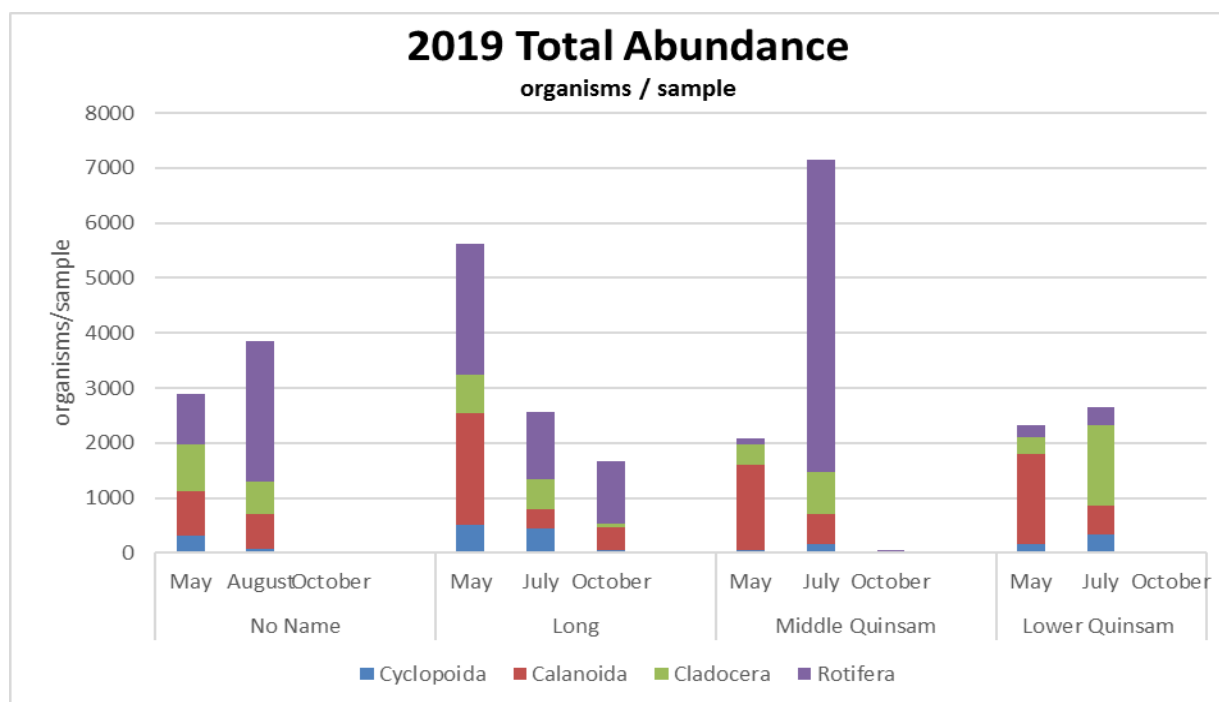


Figure 21: 2019 Total Abundance

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.

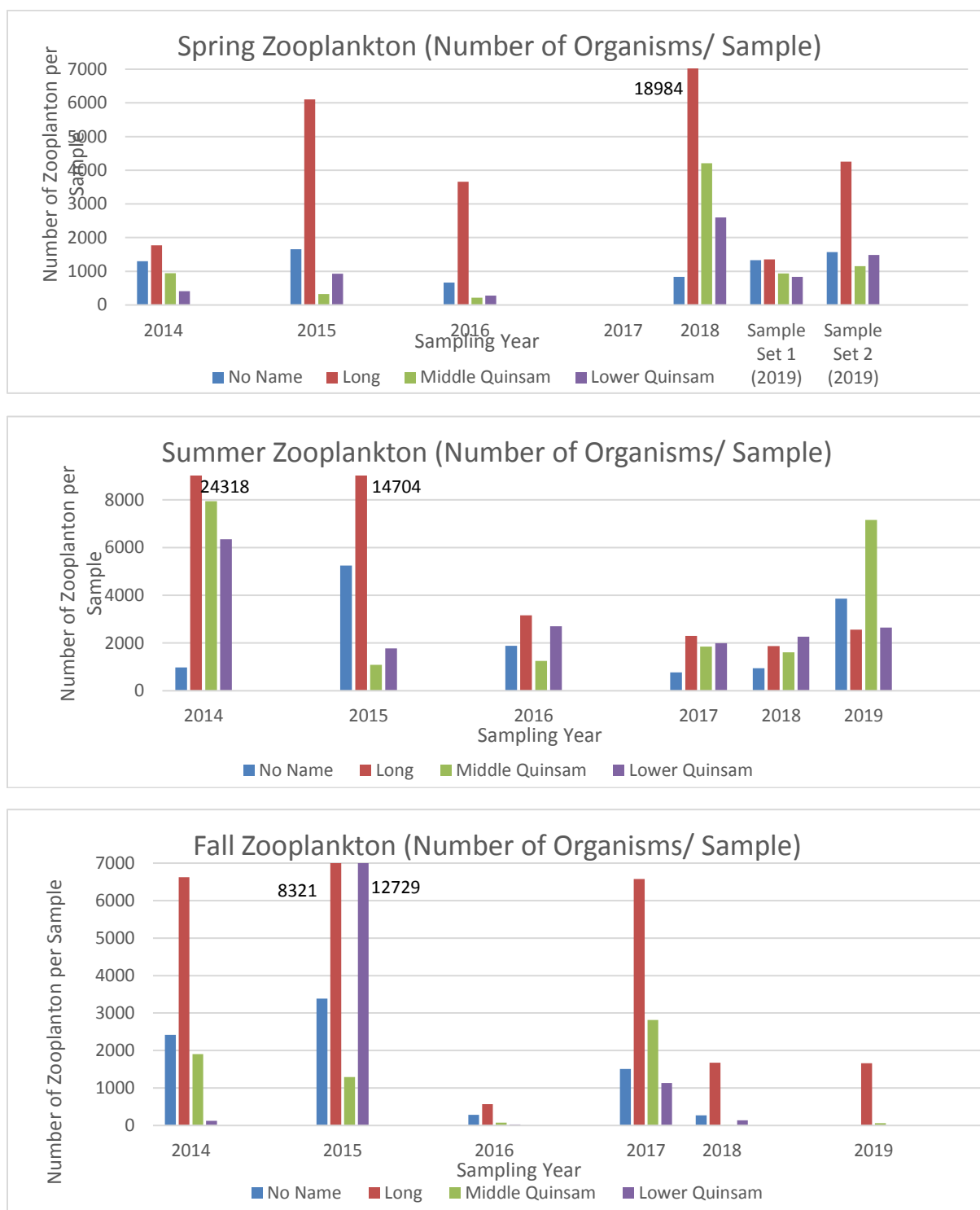


Figure 22: Total Zooplankton Abundance (0 to 10 m Vertical Tows), Quinsam Lakes System, 2014 – 2019

(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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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)			
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 Initial 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 m³	Authorized annual average rate of discharge is 0.08m³/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-ZNPS, E218582-SPD, E217015-3S, E292127-2S, E292128-3577 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-ZNPS, E218582-SPD, E217015-3S, E292127-2S, E292128-3577 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: B932613, B962481 - No Name 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 composition 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 Composition 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, E292113-75QR, 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	Laboratory 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 continuous flow required

Permit Noncompliance (PNC)
Not Determined (ND)
Permit Limit Exceedance (P)

Table 3
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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)	Hypolimnetic 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)	Hypolimnetic 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 Guideline (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
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EMS ID		E207409												Permit Limit
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	
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
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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
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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

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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	

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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

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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

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EMS ID		E218582												Permit Limit-South	
Site Description		Settling Pond # 1 - Authorized Discharge Location for South Mining Operation													
Site Name		SPD (SPD was not discharging from May 14 through to September 12 with beaver activity until November 12)													
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	

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Site Description		Long Lake Seep Passive Treatment System (PTS) Influent for Treatment 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

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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	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<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	<0.000050	<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	<0.000020	<0.000040	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020
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

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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 251)								
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

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Site Description		2 South Inflow for Pit Water Cover - from LLSPTS									
Site Name		ZSI									
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		

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[illegible]

Table 16
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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

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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
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EMS ID		E292129		
Site Description		4 South Lower- Culvert Downstream 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
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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
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EMS ID		E292130												WQG-Max	
Site Description		Long Lake Entrance- Last wetland prior to entering Long Lake, near the outlet													
Site Name		LLE													
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
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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
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EMS ID.		E292131									WQO-Max
Site Description		Middle Seep into Long Lake									
Site Name		LLSM									
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
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EMS ID		E292109								WQG-Max
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	
Parameter	Unit			No Flow						
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		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							Permit Limits
Site Description		Settling Pond at 7S - Permitted discharge location for the 7-South Mining Operation							
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	
Parameter	Unit								7SSD
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 < 0.054m³/s & (until November 1st 2019) daily when max daily flow > 0.054m³/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 < 0.046m³/s & (until November 1st 2019) daily when max daily flow > 0.046m³/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

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 < 0.054m ³ /s & when max daily flow > 0.054m ³ /s												
PNC = Permit Non-compliance												

Table 28
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E207409												
DISCHARGE FROM SETTLING POND # 4 (WD)												
Date	October Max. (m3/s)	October Daily (m3/s)	November Max. (m3/s)	November Daily (m3/s)	December Max. (m3/s)	December Daily (m3/s)	January Max. (m3/s)	January Daily (m3/s)	February Max. (m3/s)	February Daily (m3/s)	March Max. (m3/s)	March 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 < 0.054m ³ /s & (until November 1st 2019) when max daily flow > 0.054m ³ /s												
PNC = Permit Non-compliance												

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[illegible]

Table 30
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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 < 0.046m³/s & (until November 1st 2019) daily when max daily flow > 0.046m³/s												
No Flow= NF												

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EMS ID E292069												
DISCHARGE FROM 7-SOUTH SURFACE DECANT (7SSD)												
	April	May	June	July	August	September	October	November	December	January	February	March
Date	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 (m³/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

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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
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Field Conductivity (uS/cm) & pH (North Mine Area & 7-South)																		
EMS ID Site Name Site Code	E283433 2-N-Portal Sump 2NPS		E207409 Settling Pond #4 WD		E207412 2 North Pit Sump WP		E207411 North Pit Culvert WC		7 South Portal Sump 7SPS		E292069 Settling Pond at 7S 7SSD		E292109 Stream 1 -7S 7S		GW and SW from 2N Area at Road PDSR		E292126 South Dyke Sump 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

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Field Conductivity (uS/cm) & pH (South Mine Area)																			
EMS ID	E292127			E217015			E218582			E292128		E292129		E217014		E292130		E292131	
Site Name	2 South Pit CCR Water Cover			3 South Pit CCR Water			LLSTS Settling Pond			Settling Pond # 1		4 South Lower		South Pit Culvert		Long Lake Entry		Seep into Long Lake	
Site Code	2S (2SS)			3S			SPEFF			SPD		4SLO		SPC		LLE		LLS	
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
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
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
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

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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 (75)		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

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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	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

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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
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	TI-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00

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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	Ti-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 Sulphide	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	TI-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00
5M#2	27-Jan-20	TI-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

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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

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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

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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	Ti-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00
IRT3	25-Apr-19	Ti-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

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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	Ti-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00
IRT4	7-May-19	Ti-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

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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	Ti-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00
LLMB	24-Oct-19	Ti-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	Ti-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00
LLO	4-Nov-19	Ti-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

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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	Ti-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00
MQL4	28-Aug-19	Ti-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 Sulphide	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 Sulphide	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

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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

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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

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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

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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	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

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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	Ti-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	Ti-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

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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	Ti-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	Ti-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

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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	Ti-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	Ti-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

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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

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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	TI-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	TI-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	TI-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00

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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 Sulphid	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 Sulphid	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

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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

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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	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	Ti-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00
WA	17-Oct-19	Ti-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	Ti-D	0.00001	0.00001	<0.000010	<0.000010	0.0	1.00
WA	12-Nov-19	Ti-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

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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

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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

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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

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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

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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
75QR	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 Sulphid	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	Bicarbonat	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

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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

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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

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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
75QR	26-Aug-19	As-T	0.0001	0.0001	0.00042	0.00043	2.4	0.98
75QR	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

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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

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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 Sulphid	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 Sulphid	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

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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

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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

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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

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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
75QR	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

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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 Sulphid	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 Sulphid	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

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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 Sulphid	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 Sulphid	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
75QR	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

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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
75QR	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 Sulphid	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 Sulphid	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
75QR	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 Sulphid	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
350	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

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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 Sulphid	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	Ti-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

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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							

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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							

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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
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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	mg/L
E0126402			Average	0.00014	0.000153	0.025	0.0215	20	0.00000732	0.00001318	0.000889	0.000075	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	
		Quinsam River at Argonaut Road Upstream of Mining Operation.	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	0.0000001	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	0.00000756	0.00003216	0.000434	0.0003	0.013	0.0053	0.00058	0.000035	0.00000032	0	3.6	0	0.00000	0.0000000	0.0000000	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			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	0.0000001	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	0.0000001	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	0.00000000	43	0.00028	0.00042	0.000000	0.0000000	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	<0.00020	<0.00020	<0.00020	582	<0.0050	<0.0050	0.0038		<0.020	0.03060	
MW001D			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		
		Ex-situ 2-North deep groundwater well below the coal wash plant (TII)	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		0.001790																			

Table 42
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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	
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	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				
		Average	0.00025	0.00022	0.0335	0.0274	11.4	0.0000005	0.00000025	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				
	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					
NNL6	No Name Lake 1 metre from bottom	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				
E217018		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	0.0000005	0.00000025	0.000368	0.00051	0.164	0.0896	0.0161	0.0087	0.00000100	0.00000100	16.7	0.00050000	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	0.000000000	1.1	0	0.00000000	0	0	0.46	4E-11	0.0000000	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				
		Average	0.00026	0.00026	0.0358	0.0302	12.36	0.00000555	0.000000275	0.0007	0.00073	0.061	0.0386	0.006	0.00432	0.00000010	0.00000013	14.5	0.0005	0.00050	0.000100	0.000100	1.8	0.00324	0.0025	0.00274	0.0028	0.0122	0.009	
NNO		No Name Lake Outlet	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
E217017	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	<0.0020	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	0.0000004	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	0.000000268	0.000543	0.0006	0.059	0.0352	0.0048	0.0024	0.000001	0.000000115	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	10	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	0.000000079	0.000542	0.00067	0.0190	0.0181	0.0045	0.00448	0	0.00000095	1.5	0	0.000000	0.0000000	0.0000000	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	<0.0020	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	<0.0020	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	<0.0020	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	0.00000010	0.00000010	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	12				
		Minimum	0.00078	0.00037	<0.0030	<0.0030	159	<0.000010	<0.0000050	<0.00050	<0.00020	0.271	<0.0050	0.																

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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	
MW002	Ex-situ 2-3 South shallow groundwater well beside 3-South Pit (1 Seam)	Average	mg/L	0.0005	mg/L	0.0032	200	mg/L	0.0000074	mg/L	0.000997	mg/L	mg/L	mg/L	mg/L	2.56	0.0000032	mg/L	mg/L	0.0026	mg/L	mg/L	0.000100	1195	mg/L	0.0025	mg/L	mg/L	0.00330	mg/L
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				
QU10090		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		0.0000000		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				
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		0.0857		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		Settling Pond # 1	Average	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
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		
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	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	0.000000	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	0.00889	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	0.003535					

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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
LUM8	Long Lake Middle 1 metre From Bottom	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				
		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	Long Lake Outlet	Average	0.00044	0.0004	0.0179	0.0117	32.7	0.00000048	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	0.04005	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	0.00059	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	
		Geometric Mean	0.00044	0.00039	0.0145	0.0098	32.1	0.00000048	0.00000225	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	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	0.00000006	1E-13	0.001364	0.00025	0.0294	0.01226	0.00059	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	0.00034	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	0.00000049	0.00000028	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	Middle Quinsam Lake Outlet	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	
		Geometric Mean	0.00023	0.000210	0.0175	0.0143	38.3	0.000000483	0.000000268	0.000599	0.00056	0.042	0.0185	0.009	0.00073	0.0000001	0.0000001	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	0.000000071	0.000000116	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							

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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
QU08216D	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	mg/L	0.161	mg/L	0.0116	206.0	mg/L	0.000006	mg/L	0.000133	mg/L	1.075	mg/L	0.171	mg/L	0.0000021	mg/L	0.00067	mg/L	0.000133	0.25	mg/L	0.00333	mg/L	0.049	mg/L		
		Count		3		3	3		3		3		3		3		3		3		3		3		3		3		
		Minimum		0.0034		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		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			
QU08216S		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		0		
	Standard Deviation			0.069		0.0059	5.4		0.0000018		0		0.326		0.0491		0.0000017		0.0000000		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			
QU10100	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			
QU10105		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		0.000000		0		0.061		0.0035		0.000000		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 Forjan 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					

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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
QU11055		Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone)	Average	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
			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		0.736		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			
QU11095		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		0.000000		0.0000000	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			
75QR		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																								

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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			Quinsam River at Argonaut Road Upstream of Mining Operation.		mg/L		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	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					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	0.0000014	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	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	<0.000002	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	0.00000055	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	0.0000001	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	0.00000048	0.00147	0.00054	0.506	0.0129	0.1103	0.02302	0.0000001	0.0000001	390	0.0031	0.0011	0.000100	0.000100	703	0.00701	0.00291							
					Count <DL		0	0	0	1	0	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	0.0000006	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		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	0	1		0		0		0		0		2		2	0	2		0			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			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																																	

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2016-17 Statistics																														
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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	0.0000004	0.00000025	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	0.00000025	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	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	0.00000025	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	0.0025	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	0.00000021	0.00000023	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	0.00000025	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	<0.00000020	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	<0.00000020	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	0.000000283	0.000591	0.00054	0.091	0.0582	0.006	0.00256	0.00000024	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	<0.0000002	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	0.00000074	0.00000033	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	0.000000274	0.000484	0.00052	0.082	0.0546	0.0054	0.00203	0.000000169	0.000000117	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	0.000000229	0.000000079	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	<0.00000020	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	<0.00000020	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	0.000000315	<0.00000020	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																								

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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		<0.000050		<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			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 Dunsuir 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			
		Minimum		0.098		<0.0030	184		<0.000050		<0.00020		0.346		0.115		<0.0000020			<0.0010		<0.00020	84.8		<0.0050		0.0338			
		Maximum		0.1		<0.0030	188		<0.000050		<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		<0.000050		<0.00020		0.445		0.123		0.00000188			<0.0010		<0.00020	87		<0.0050		0.037			
		Median		0.0988		<0.0030	186		<0.000050		<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		<0.000050		<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			
		Minimum		0.0829		<0.0030	132		<0.000050		<0.00020		5.07		0.354		0.0000033			<0.0010		<0.00020	109		<0.0050		0.0232			
		Maximum		0.0907		<0.0030	157		<0.000050		<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		<0.000050		<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		<0.000050		<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		<0.000050		<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	<0.000050	<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	0.0103	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	0.000636																											

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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	mg/L	mg/L	mg/L	
LIM8			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	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
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	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	15	15	15	15	15	15	15	15	15	15
			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			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	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	0.0037					
			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	5	12	11	0	15	15	15	15	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			Average	0.00021	0.00021	0.0265	0.0202	30.9	0.000005																								

Table 51
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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		0.0000003			<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 Forjan 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																									

Table 52
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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	
QU11055	Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone)	Average	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Count			4		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		0.0000000		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						
QU11095	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		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		4	0		4		1				
Standard Deviation			0.013		0.0025	45.1		0.0000058		0.00000		0.0560		0.00170		0.0000009		0.00000		0.0000000	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						
7SOR	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	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	<0.0000002	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	0.00028	<0.0000002	<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																			

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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	mg/L
E0126402			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	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					
		Quinsam River at Argonaut Road Upstream of Mining Operation.	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			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	0.0000001	0.0000001	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	<0.000025	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			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		0.00029		<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</							

Table 54
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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	
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	0.00000025	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	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 E217018	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				
		Count	15	15	15	15	8	15	15	15	15	15	15	15	15	15	14	14	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	0.00000034	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	0.00000000	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	0.00000014	0.00000012	13.17	0.0005	0.00050	0.000100	0.000100	1.633	0.00288	0.0025	0.0058	0.00519	0.0349	0.01655	
		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	0.00000170	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	0.000409	0.000000125	0.000000112	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 E292131	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	0.00000010	0.00000010	526	0.00155	0.00146	0.000133	0.000133	470	0.00333	0.00333	0.0031	0.0025	0.01	0.021	
		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	0.0.																

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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	
MW002	Ex-situ 2-3 South shallow groundwater well beside 3-South Pit (1 Seam)	Average	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
		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 Dunsuir 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		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			
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		0.0838		0.00150	137.5		0.00000025		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		0.00000025		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																														
E218582	Settling Pond # 1	Average	0.00109	0.00072	0.0599	0.02083	103.30	0.0000076	0.00000538	0.000991	0.00058	6.638	0.1611	0.0668	0.05851	0.00000121	0.000000117	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	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															

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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	mg/L
LUMB	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	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	0.0160	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	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	Average	0.00019	0.00018	0.0184	0.0159	41.2	0.0000005	0.000000294	0.000564	0.00063	0.036	0.0256	0.0068	0.0024	0.00000012	0.00000010	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	Middle Quinsam Lake Outlet	Count	16	16	16	16	16	16	16	16	16	16	16	16	16	16	15	16	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	0.000094	0.00144	0.051	0.0387	0.0120	0.0056	0.0000004	<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	0.0000005	0.000000279	0.000539	0.00059	0.036	0.0252	0.0064	0.0022	0.00000109	0.0000001	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	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	0.00000012	0.000016	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.																				

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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				
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	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		0.0141		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				
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 Forjan 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																		

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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
QU11055	Ex-situ River Barrier Pillar (RBP) shallow groundwater well. Monitors water quality & gradients above the RBP & 2-North Mine. (Sandstone)	Average	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
		Count		4		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		4	0		4		0		
		Standard Deviation		0.0204		0.00269	147.6		0.0000033		0.000070		0.519		0.0681		0.0000000		0.0000000		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				
QU11095	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		<0.000025		<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	4		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		<0.000025		<0.0010		0.3515		0.0483		<0.0000020		<0.0050		<0.0010	431		<0.025		0.0619				
		3rd Quartile		0.124		<0.015	478		<0.000025		<0.0010		0.3818		0.0518		<0.0000020		<0.0050		<0.0010	445.2		<0.025		0.068				
75QR		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	7-South Quinsam River downstream of 7-South Mining Operation	Count	22	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	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	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	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	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																									

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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	mg/L
E0126402			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	0.0000016	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	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					
		Quinsam River at Argonaut Road Upstream of Mining Operation.	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			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	<0.0000025	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	0.038	0.038	0.13	
			Geometric Mean	0.00126	0.00193	0.0139	0.00437	363	0.0000057	0.00000033	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	0.000435	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	0.000455	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	
			Average	0.0214			0.0326	92.2		0.00000025		0.001		0.0074		0.0139		0.00000033			0.0005		0.0001	27.3		0.0025		0.173			
			Count	2			2	2		2		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		0.00000025		0.00099		0.0073		0.0115		0.00000024			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	0				
			Standard Deviation	0.0002			0.0039	2.6		0		0.00025		0.0023		0.011000		0.00000032		0		0	0.7		0		0				
			1st Quartile	0.0213			0.0313	91.2		<0.0000050		0.00092		0.0066		0.01		0.000000212		<0.0010		<0.00020	27		<0.0050		0.173				
			Median	0.0214			0.0326	92.2		<0.0000050		0.001		0.0074		0.0139		0.000000325		<0.0010		<0.00020	27.3		<0.0050		0.173				
			3rd Quartile																												

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2018 -19 Statistics																														
Stn.Code	Site Name & Description	Statistics																												
EMS. ID			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	No Name Lake 1 metre below surface		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	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		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	<0.000050	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																												
E217018	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	
	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	0.00000000	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																													
E217017		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					
		Count	15	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	<0.000050	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	0.00000297	0.000615	0.00057	0.071	0.051	0.0089	0.00073	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	0.000000	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																												
E292131	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	0.00000010	0.00000011	577	0.00345	0.0032	0.000138	0.0001	534	0.00489	0.00284					

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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		
MW002	Ex-situ 2-3 South shallow groundwater well beside 3-South Pit (1 Seam)		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L		
		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	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 Dunsuir 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			0.0000000		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		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	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	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	0.0000020	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	0.00000041	0.0000868	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.										

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2018 -19 Statistics																														
Stn.Code	Site Name & Description	Statistics																												
EMS. ID			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	mg/L
LIMB	Long Lake Middle 1 metre From Bottom	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	0.000000	0.0000100	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	15
		Minimum	0.00016	0.0002	0.0064	0.0048	54	<0.000010	<0.000050	<0.00050	0.00032	0.012	<0.0050	0.0387	<0.0010	<0.000020	<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	<0.000050	0.00103	0.00136	0.053	0.0214	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		
		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	<0.000050	<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	<0.000050	<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	<0.000050	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	Long Lake Outlet	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	15	15	15					
		Minimum	0.00036	0.00035	0.0109	0.0054	15.9	<0.000010	<0.000050	<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					
		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	<0.000050	<0.00038	0.0068	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	<0.000050	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	<0.000050	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	Middle Quinsam Lake Outlet	Average	0.00019	0.0002	0.0450	0.0161	35.3	0.000005	0.00000028	0.00083	0.0006	0.059	0.0262	0.0077	0.00028	0.00000020	0.00000015	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	<0.000050	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	0.00000075	0.00000031	48.1	<0.0010	<0.0010	<0.00020	<0.00020	38.5	<0.0050	<0.0050					
		Geometric Mean	0.00019	0.000200	0.0278	0.0156	35.2	0.000005	0.000000268	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	0.000025	0.0001	0.0770	0.0033	0.0024	0.0012	0.000000207	0.000000077	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	<0.000050	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	<0.0000500																					

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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	
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)		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
		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		0.0000018		0.000071		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		0.00000156		0.000062		8.82		0.346		<0.0000020			0.00312		0.00062	<1.0		0.0156		0.0639			
		Median	0.0138			0.1135	89.3		0.00000188		0.000075		8.82		0.347		<0.0000020			0.00375		0.00075	<1.0		0.0188		0.0758			
		3rd Quartile	0.014			0.1628	90.8		0.00000219		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 Forjan Fault (Fractured sandstone).	Average	0.00712			0.0075	350		0.00000125		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		0.00000125		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																								

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2018-19 Statistics																														
Stn. Code	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	
EMS. ID			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
QU11055	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			
QU11095	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		<0.0000020			<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			0.00035		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			
7SOR	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	0.00047	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	0	17	17	0	20	20	19	20	0	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	0.00056	<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		<0.020	<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	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	<0.00.																						

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2019 - 20 Statistics Stn.Code 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	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						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		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		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		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	2-North Pit Culvert discharge into Middle Quinsam Lake		Average	344	0.00082	0.00077	0.000100	0.000100	530	0.00250	0.00250						
E207411			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	<0.0030	<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	0.00050	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				

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2019 - 20 Statistics															
Stn.Code															
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		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	
NNL8		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		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
ULS		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	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	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		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	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	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															

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2019 -20 Statistics															
Stn.Code															
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 Dumsuir 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	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	
			Count	11	11	11	11	11	45	11	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	<0.020	<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															

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2019-20 Statistics Stn. Code 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	
75SD		Settling Pond at 75- Discharge to Stream 1- 75	Average	147.5	0.00050	0.00050	0.000100	0.000100	34.7	0.00250	0.00250	0.021		0.0100	0.041	
E292069			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	
75		Stream 1-75 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																

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2019-20 Statistics														
Stn.Code														
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 Forjan 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 Forjan 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														

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2019 -20 Statistics Stn.Code 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		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		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		
PSOR	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	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	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	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	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	
LQL8	LQL8 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	9	5	8	5	
		Minimum	34.6	<0.0010	<0.0010	<0.00020	<0.00020		21	<0.0050	<0.0050	<0.0030	<0.020	<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	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
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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

Site ID: E206619																															
Site NAME: LONG LAKE (LLM)																															
LONG LAKE DEPTH PROFILING SPRING																															
Sample Date Parameter Sample Depth (m)		09-Apr					18-Apr					24-Apr					01-May					08-May									
		TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP 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 Parameter Sample Depth (m)		29-Jul					07-Aug					14-Aug					21-Aug					28-Aug									
		TEMP. Celsius	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. Celsius	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. Celsius	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. Celsius	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. Celsius	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP 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	1.7							

Table 73

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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)	°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	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)	Celsius		µS/cm		mg/L	mV	Celsius		µS/cm		mg/L	mV	Celsius		µS/cm		mg/L	mV	Celsius		µS/cm		mg/L	mV	Celsius		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	104.3	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)	°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	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</																				

Table 74
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EMS ID E292118

LOWER QUINSAM LAKE DEPTH PROFILING SPRING

Site NAME: LOWER QUINSAM LAKE (LQL)

Sample Date Parameter Sample Depth (m)		09-Apr						18-Apr						24-Apr						02-May						09-May					
		TEMP. °C	pH	C µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	C µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. 9.11	pH 7.44	C 136	% Sat. 96.7	D.O. 11.15	ORP 168.2	TEMP. °C	pH	C µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. °C	pH	C µS/cm	% Sat.	D.O. mg/L	ORP 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	93.00	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	179.70
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 Parameter Sample Depth (m)		29-Jul						07-Aug						14-Aug						21-Aug						28-Aug					
		TEMP. Celsius	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. Celsius	pH	COND. µS/cm	% Sat. 101.1	D.O. 8.64	ORP mV	TEMP. Celsius	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. Celsius	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP mV	TEMP. Celsius	pH	COND. µS/cm	% Sat.	D.O. mg/L	ORP 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 5 in 30 Weekly Samples							
Site Name	NNL1							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
2019-2020 Annual Report

EMS ID		E217018					4x30 Average	Water Quality Guidelines	
Site Name		No Name Lake 1 Metre Depth							
Date		5 in 30 Weekly Samples							
Parameter	Units	29-Jul-19	7-Aug-19	14-Aug-19	21-Aug-19	28-Aug-19			
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					5x30 Average	Water Quality Guidelines	
Site Name	NNL1	5 in 30 Weekly Samples							
Date		24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19		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
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		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	-	-

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EMS ID	E217018						4x30 Average	Water Quality Guidelines	
No Name Lake 4 Metre Depth									
Site Name	NNL4	5 in 30 Weekly Samples							
Date		29-Jul-19	7-Aug-19	14-Aug-19	21-Aug-19	28-Aug-19			
Parameter	Units							Average	Max
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	-	-

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EMS ID		E217018					5x30 Average	Water Quality Guidelines	
No Name Lake 4 Metre Depth									
Site Name		NNL4							
Date		24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19		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							-	-

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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	-	-

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EMS ID	E217018						4x30 Average	Water Quality Guidelines	
No Name Lake 9 Metre Depth									
Site Name	NNL9	5 in 30 Weekly Samples							
Date		29-Jul-19	7-Aug-19	14-Aug-19	21-Aug-19	28-Aug-19			
Parameter	Units							Average	Max
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	-	-

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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		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							-	-

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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	-	-

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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	-	-

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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							-	-

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EMS ID	E206619						5x30 Average	Water Quality Guidelines	
Site Name	LLM1	Long Lake Middle 1 Metre Depth 5 in 30 Weekly Samples							
Date		9-Apr-19	17-Apr-19	24-Apr-19	1-May-19	8-May-19			
Parameter	Unit							Average	Max
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	-	-

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EMS ID	E206619	Long Lake Middle 1 Metre Depth 5 in 30 Weekly Samples						Water Quality Guidelines	
Site Name	LLM1							Average	Max
Date		29-Jul-19	7-Aug-19	14-Aug-19	21-Aug-19	28-Aug-19	4x30 Average		
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	-	-

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EMS ID	E206619								
Site Name	LLM1	Long Lake Middle 1 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	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	-	-

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EMS ID	E206619	Long Lake Middle 4 Metre Depth 5 in 30 Weekly Samples						Water Quality Guidelines	
Site Name	LLM4								
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	-	-

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EMS ID	E206619						4x30 Average	Water Quality Guidelines	
Site Name	Long Lake Middle 4 Metre Depth 5 in 30 Weekly Samples								
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	-	-

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EMS ID	E206619	Long Lake Middle 4 Metre Depth 5 in 30 Weekly Samples							
Site Name	LLM4							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	-	-

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EMS ID	E206619	Long Lake Middle 9 Metre Depth 5 in 30 Weekly Samples						Water Quality Guidelines	
Site Name	LLM9	9-Apr-19	17-Apr-19	24-Apr-19	1-May-19	8-May-19	5x30 Average	Average	Max
Date									
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	-	-

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EMS ID	E206619						4x30 Average	Water Quality Guidelines	
Site Name	Long Lake Middle 9 Metre Depth 5 in 30 Weekly Samples								
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	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	-	-

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EMS ID	E206619	Long Lake Middle 9 Metre Depth 5 in 30 Weekly Samples						Water Quality Guidelines	
Site Name	LLM9	24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19	5x30 Average	Average	Max
Date	Unit								
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	-	-

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EMS ID	E206619	Long Lake Middle 1 Metre From Bottom Depth 5 in 30 Weekly Samples						Water Quality Guidelines	
Site Name	LLMB	9-Apr-19	17-Apr-19	24-Apr-19	1-May-19	8-May-19	5x30 Average	Average	Max
Date	Unit								
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	-	-

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EMS ID	E206619	Long Lake Middle 1 Metre From Bottom Depth 5 in 30 Weekly Samples							
Site Name	LLMB							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	-	-

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EMS ID	E206619	Long Lake Middle 1 Metre From Bottom Depth 5 in 30 Weekly Samples						Water Quality Guidelines	
Site Name	LLMB	24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19	5x30 Average	Average	Max
Date	Unit						-		
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	-	-

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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
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EMS ID	E206618						4x30 Average	Water Quality Guidelines	
Site Description	Middle Quinsam Lake 1 Metre Depth 5 in 30 Weekly Samples								
Site Name									
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	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	-	-

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EMS ID	E206618	Middle Quinsam Lake 1 Metre Depth 5 in 30 Weekly Samples							
Site Description Site Name	MQL1							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	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	-	-

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EMS ID	E206618						5x30 Average	Water Quality Guidelines	
Site Description	Middle Quinsam Lake 4 Metre Depth								
Site Name	5 in 30 Weekly Samples								
Date		10-Apr-19	18-Apr-19	24-Apr-19	2-May-19	8-May-19		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						4x30 Average	Water Quality Guidelines	
Site Description	Middle Quinsam Lake 4 Metre Depth								
Site Name	5 in 30 Weekly Samples								
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	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
2019-2020 Annual Report

EMS ID	E206618						5x30 Average	Water Quality Guidelines	
Site Description	Middle Quinsam Lake 4 Metre Depth								
Site Name	5 in 30 Weekly Samples								
Date		24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19		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
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EMS ID	E206618						5x30 Average	Water Quality Guidelines	
Site Description	Middle Quinsam Lake 9 Metre Depth								
Site Name	5 in 30 Weekly Samples								
Date		10-Apr-19	18-Apr-19	24-Apr-19	2-May-19	8-May-19	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
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EMS ID	E206618						4x30 Average	Water Quality Guidelines	
Site Description	Middle Quinsam Lake 9 Metre Depth								
Site Name	5 in 30 Weekly Samples								
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	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
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EMS ID	E206618						5x30 Average	Water Quality Guidelines	
Site Description	Middle Quinsam Lake 9 Metre Depth								
Site Name	5 in 30 Weekly Samples								
Date		24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19		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	-	-

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EMS ID	E206618								
Site Description	Middle Quinsam Lake 1 Metre from Bottom Depth								
Site Name	MLQB	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		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
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EMS ID	E206618						4x30 Average	Water Quality Guidelines	
Site Description	Middle Quinsam Lake 1 Metre from Bottom Depth								
Site Name	5 in 30 Weekly Samples								
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	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	-	-

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EMS ID	E206618						5x30 Average	Water Quality Guidelines	
Site Description	Middle Quinsam Lake 1 Metre from Bottom Depth								
Site Name	5 in 30 Weekly Samples								
Date		24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19		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	-	-

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EMS ID	E292118						5x30 Average	Water Quality Guidelines Average Max	
Site Description	Lower Quinsam Lake 1 Metre Depth 5 in 30 Weekly Samples								
Site Name	LQL1	9-Apr-19	18-Apr-19	25-Apr-19	9-May-19	30-May-18			
Date	Unit	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	33.4	34.6	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	-	-

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EMS ID	E292118						4x30 Average	Water Quality Guidelines	
Site Description	Lower Quinsam Lake 1 Metre Depth 5 in 30 Weekly Samples								
Site Name	LQL1							Average	Max
Date		29-Jul-19	7-Aug-19	14-Aug-19	21-Aug-19	28-Aug-19			
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	-	-

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EMS ID	E292118	Lower Quinsam Lake 1 Metre Depth 5 in 30 Weekly Samples						Water Quality Guidelines	
Site Description	LQL1							Average	Max
Date		24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19	5x30 Average		
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
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EMS ID	E292118						5x30 Average	Water Quality Guidelines	
Site Description	Lower Quinsam Lake 4 Metre Depth								
Site Name	5 in 30 Weekly Samples								
Date		9-Apr-19	18-Apr-19	25-Apr-19	9-May-19	30-May-18	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
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EMS ID	E292118						4x30 Average	Water Quality Guidelines	
Site Description	Lower Quinsam Lake 4 Metre Depth								
Site Name	5 in 30 Weekly Samples								
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	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
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EMS ID	E292118						5x30 Average	Water Quality Guidelines	
Site Description	Lower Quinsam Lake 4 Metre Depth								
Site Name	LQL4								
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	-
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							-	-

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EMS ID	E292118						5x30 Average	Water Quality Guidelines	
Site Description	Lower Quinsam Lake 9 Metre Depth								
Site Name	5 in 30 Weekly Samples								
Date		9-Apr-19	18-Apr-19	25-Apr-19	2-May-19	9-May-19	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	-	-

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EMS ID		E292118					4x30 Average	Water Quality Guidelines	
Site Description		Lower Quinsam Lake 9 Metre Depth 5 in 30 Weekly Samples							
Site Name									
Date		29-Jul-19	7-Aug-19	14-Aug-19	21-Aug-19	28-Aug-19		Average	Average
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	-	-

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EMS ID	E292118	Lower Quinsam Lake 9 Metre Depth 5 in 30 Weekly Samples						Water Quality Guidelines	
Site Description	LQL9	24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19	5x30 Average	Average	Max
Date	Unit								
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
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EMS ID		E292118					5x30 Average	Water Quality Guidelines	
Site Description		Lower Quinsam Lake 1 Metre from Bottom 5 in 30 Weekly Samples							
Site Name									
Date	LQLB	9-Apr-19	18-Apr-19	25-Apr-19	2-May-19	9-May-19		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
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EMS ID		E292118					4x30 Average	Water Quality Guidelines	
Site Description		Lower Quinsam Lake 1 Metre from Bottom 5 in 30 Weekly Samples							
Site Name									
Date	LQLB	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
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EMS ID	E292118	Lower Quinsam Lake 1 Metre from Bottom 5 in 30 Weekly Samples						Water Quality Guidelines	
Site Description	LQLB	24-Oct-19	30-Oct-19	6-Nov-19	13-Nov-19	20-Nov-19	5x30 Average	Average	Max
Date	Unit								
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
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EMS ID	E0126402						5x30 Average	Water Quality Guidelines Average Max	
Site Description	Quinsam River at Argonaut Bridge - Upstream of mine influence								
Site Name	WA	5 in 30 Weekly Samples							
Date		4-Apr-19	11-Apr-19	18-Apr-19	23-Apr-19	30-Apr-19			
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
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EMS ID		E0126402					4x30 Average	Water Quality Guidelines	
Site Description		Quinsam River at Argonaut Bridge - Upstream of mine influence 5 in 30 Weekly Samples							
Site Name									
Date	WA	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	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	-	-

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EMS ID	E0126402							Water Quality Guidelines	
Site Description	Quinsam River at Argonaut Bridge - Upstream of mine influence								
Site Name	WA	5 in 30 Weekly Samples							
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	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	-	-

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EMS ID	E0900504							Water Quality Guidelines	
Site Description	Middle Quinsam Lake Outlet								
Site Name	5 in 30 Weekly Samples								
Date	WB	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	-	-

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EMS ID		E0900504					4x30 Average	Water Quality Guidelines	
Site Description		Middle Quinsam Lake Outlet 5 in 30 Weekly Samples							
Site Name									
Date	WB	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	-	-

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EMS ID		E0900504					5x30 Average	Water Quality Guidelines	
Site Description		Middle Quinsam Lake Outlet 5 in 30 Weekly Samples							
Site Name	WB								
Date		17-Oct-19	22-Oct-19	29-Oct-19	4-Nov-19	12-Nov-19		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	-	-

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EMS ID	E219412						5x30 Average	Water Quality Guidelines	
Site Description	Long Lake Outlet								
Site Name	LLO	5 in 30 Weekly Samples							
Date		4-Apr-19	11-Apr-19	18-Apr-19	23-Apr-19	30-Apr-19		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	-	-

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2019-2020 Annual Report

EMS ID		E219412					4x30 Average	Water Quality Guidelines	
Site Description		Long Lake Outlet 5 in 30 Weekly Samples							
Site Name									
Date	LLO	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	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	-	-

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EMS ID	E219412						5x30 Average	Water Quality Guidelines	
Site Description	Long Lake Outlet								
Site Name	LLO								
Date	15-Oct-19	22-Oct-19	29-Oct-19	4-Nov-19	12-Nov-19	Average		Max	
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	-	-

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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	-	-

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EMS ID		E217017					4x30 Average	Water Quality Guidelines	
Site Description		No Name Lake Outlet 5 in 30 Weekly Samples							
Site Name									
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	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	-	-

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EMS ID	E217017						5x30 Average	Water Quality Guidelines	
Site Description	No Name Lake Outlet								
Site Name	NNO	5 in 30 Weekly Samples						Average	Max
Date		15-Oct-19	22-Oct-19	29-Oct-19	4-Nov-19	12-Nov-19			
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	-	-

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EMS ID	E286930						5x30 Average	Water Quality Guidelines	
Site Description	Quinsam River Upstream of 7 South Mining Operation								
Site Name	QRDS1 5 in 30 Weekly Samples								
Date		4-Apr-19	11-Apr-19	18-Apr-19	23-Apr-19	30-Apr-19		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	-	-

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EMS ID	E286930	Quinsam River Upstream of 7 South Mining Operation					4x30 Average	Water Quality Guidelines	
Site Description		5 in 30 Weekly Samples							
Site Name	QRDS1							Average	Max
Date		29-Jul-19	6-Aug-19	12-Aug-19	19-Aug-19	26-Aug-19			
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	-	-

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EMS ID	E286930	Quinsam River Upstream of 7 South Mining Operation 5 in 30 Weekly Samples		5x30 Average	Water Quality Guidelines		
Site Description					Average	Max	
Site Name	QRDS1						
Date							
Parameter	Unit	Authorization was received from ENV to suspend monitoring from this site.					
SO4-D	mg/L						
Alk-T	mg/L						
Acidity 8.3	mg/L						
TSS	mg/L						
Al-T	mg/L						
As-T	mg/L						
Ba-T	mg/L						
B-T	mg/L						
Cd-T	mg/L						
Ca-T	mg/L						
Cr-T	mg/L						
Co-T	mg/L						
Cu-T	mg/L						
Hard-T	mg/L						
Fe-T	mg/L						
Pb-T	mg/L						
Mg-T	mg/L						
Mn-T	mg/L						
Hg-T	mg/L						
Mo-T	mg/L						
Ni-T	mg/L						
K-T	mg/L						
S-T	mg/L						
Se-T	mg/L						
Ag-T	mg/L						
Na-T	mg/L						
Sr-T	mg/L						
Zn-T	mg/L						
Al-D	mg/L						
As-D	mg/L						
Ba-D	mg/L						
B-D	mg/L						
Cd-D	mg/L						
Ca-D	mg/L						
Cr-D	mg/L						
Co-D	mg/L						
Cu-D	mg/L						
Hard-D	mg/L						
Fe-D	mg/L						
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						

	128	-
	-	-
	-	-
	5	25
	-	-
	-	0.005
	-	-
	-	-
	-	-
	-	-
	-	-
	-	0.05
	0.002	0.007
	-	-
	-	1
	0.003	0.005
	-	-
	0.7	0.8
	-	0.0001
	-	-
	-	0.025
	-	-
	-	-
	-	0.0001
	-	-
	-	-
	0.0075	0.033
	0.05	0.1
	-	-
	-	-
	-	-
	0.000088	0.00017
	-	-
	-	-
	-	-
	-	-
	-	-
	-	0.35
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EMS ID	E292112								
Site Description	Lower Wetland Outlet at the Confluence of the Quinsam River								
Site Name	LWO	5 in 30 Weekly Samples						Water Quality Guidelines	
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	-	-

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EMS ID	E292112	Lower Wetland Outlet at the Confluence of the Quinsam River 5 in 30 Weekly Samples		4x30 Average	Water Quality Guidelines	
Site Description					Average	Max
Site Name	LWO					
Date						
Parameter	Unit					
SO4-D	mg/L	Dry No Flow			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				-	-
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			-	-	

Dry No Flow

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EMS ID		E292112		Lower Wetland Outlet at the Confluence of the Quinsam River 5 in 30 Weekly Samples		5x30 Average	Water Quality Guidelines	
Site Description							Average	Max
Site Name		LWO						
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						-	-
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						-	-

Authorization was received from ENV to suspend monitoring from this site.

Authorization was received from ENV to suspend monitoring from this site.

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EMS ID Site Description		Quinsam River Downstream of 7 South Mine Operation								
Site Name		5 in 30 Weekly Samples					Monthly		Water Quality Guidelines	
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	-	-

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EMS ID	E292113	Quinsam River Downstream of 7 South Mine Operation								
Site Description		5 in 30 Weekly Samples					Monthly		Water Quality Guidelines	
Site Name	75QR	29-Jul-19	6-Aug-19	12-Aug-19	19-Aug-19	26-Aug-19	18-Sep-19	4x30 Average	Average	Max
Date										
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	-	-

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EMS ID		Quinsam River Downstream of 7 South Mine Operation							
Site Description		5 in 30 Weekly Samples							
Site Name								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	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	-	-

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EMS ID		E297230		Iron River Upstream of Mining Operations 5 in 30 Weekly Samples					Monthly	5x30 Average	Water Quality Guidelines	
Site Description		IR1										
Site Name												
Date		10-Apr-19	18-Apr-19	25-Apr-19	2-May-19	7-May-19	20-Jun-19		Average	Max		
Parameter	Unit											
S04-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	-	-		

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EMS ID		E297230		Quinsam River Downstream of 7 South Mine Operation								
Site Description												
Site Name												
IR1		5 in 30 Weekly Samples					Monthly	4x30 Average	Water Quality Guidelines			
Date		29-Jul-19	6-Aug-19	12-Aug-19	19-Aug-19	26-Aug-19	18-Sep-19		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	-	-	

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EMS ID E297230		Iron River Upstream of Mining Operations 5 in 30 Weekly Samples					5x30 Average	Water Quality Guidelines	
Site Description									
Site Name	IR1								
Date		22-Oct-19	29-Oct-19	4-Nov-19	12-Nov-19	18-Nov-19		Average	Max
Parameter	Unit	Authorization was received from ENV to suspend monitoring from this site.							
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							-	-
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		-	-					

Authorization was received from ENV to suspend monitoring from this site.

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[illegible]

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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		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	-	-

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EMS ID E297231		Iron River Upstream of 7SA5 & Upstream of Reclaimed 242 Mine							
Site Description Site Name IR6		5 in 30 Weekly Samples						Water Quality Guidelines	
Date	Unit	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	-	-

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EMS ID		Iron River Downstream of 7 South Mine Operation								
Site Description		5 in 30 Weekly Samples								
Site Name	IR8						Monthly		Water Quality Guidelines	
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	-	-

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EMS ID E297232		Iron River Downstream of 7 South Mine Operation								
Site Description		5 in 30 Weekly Samples							Water Quality Guidelines	
Site Name	IR8	29-Jul-19	6-Aug-19	12-Aug-19	19-Aug-19	26-Aug-19	18-Sep-19	4x30 Average	Average	Max
Date										
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	-	-

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EMS ID		E297232		Iron River Downstream of 7 South Mine Operation 5 in 30 Weekly Samples					Water Quality Guidelines	
Site Description		IR8								
Site Name		IR8								
Date		17-Oct-19	22-Oct-19	29-Oct-19	4-Nov-19	12-Nov-19	5x30 Average	Average	Max	
Parameter										
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	-	-	

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[illegible]

Table 154
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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	29-Jul-19	6-Aug-19	12-Aug-19	19-Aug-19	26-Aug-19	18-Sep-19	4x30 Average	Average	Max
Date										
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	-	-

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EMS ID E299256		Quinsam River Downstream of the Confluence with Iron River					5x30 Average	Water Quality Guidelines	
Site Description		5 in 30 Weekly Samples							
Site Name	IRQR	17-Oct-19	22-Oct-19	29-Oct-19	4-Nov-19	12-Nov-19			
Date								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	-	-

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EMS ID		E292127																							
Site Description:		2 South Pit Continuous 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																						

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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

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BC CSR Aquatic Life 2019 - Lowest Level Exceedances for Ex-situ Groundwater

<i>Sample No.</i>	<i>Sample ID</i>	<i>BV Labs Sample ID</i>	<i>BV Labs Job ID</i>	<i>Class</i>	<i>Parameter</i>	<i>Criteria</i>	<i>Result</i>	<i>DL</i>	<i>Units</i>
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

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BC CSR Aquatic Life 2019 - Lowest Level Exceedances for Ex-situ Groundwater

<i>Sample No.</i>	<i>Sample ID</i>	<i>BV Labs Sample ID</i>	<i>BV Labs Job ID</i>	<i>Class</i>	<i>Parameter</i>	<i>Criteria</i>	<i>Result</i>	<i>DL</i>	<i>Units</i>
<i>Sample ID</i>	<i>Sample ID</i>	<i>BV Labs Sample ID</i>	<i>BV Labs Job ID</i>		<i>Parameter</i>	<i>Criteria</i>	<i>Result</i>	<i>DL</i>	<i>Units</i>
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

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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)	0.09	2060	mg/L
QU1011D-24MAR20-M	XP1218	C021848	Dissolved Aluminum (Al)		0.233	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Antimony (Sb)		<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)	12	<0.010	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Boron (B)		3.41	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Cadmium (Cd)		<0.00010	mg/L
QU1010D-11DEC19-M	XC5935	B9A6860	Dissolved Calcium (Ca)	0.0005	632	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Chromium (Cr)	0.04	<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)	0.004	16.2	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Lead (Pb)		<0.0020	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Lithium (Li)		0.212	mg/L
QU1410-20NOV19-R	WZ3619	B9A0774	Dissolved Magnesium (Mg)	0.0005	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)	0.02	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)	0.0005	<0.0010	mg/L
QU1009D-5SEPT19-M	WL1744	B974802	Dissolved Silicon (Si)		9.64	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Silver (Ag)		<0.00020	mg/L
QU1010D-30SEPT19-M	WP8750	B984272	Dissolved Sodium (Na)	0.003	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)	1	<0.00010	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Tin (Sn)		<0.050	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Titanium (Ti)		<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)	0.075	<0.050	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Zinc (Zn)		<0.050	mg/L
QU0821S-3SEPT19-M	WL1628	B974776	Dissolved Zirconium (Zr)		<0.0010	mg/L
1M2N-03APR19-M	VM3019	B925186	Total Hardness (CaCO3)	0.0015	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)	0.0015	0.526	mg/L
QU0810-10-DEC19-M	XC5932	B9A6860	Total Beryllium (Be)		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)	0.02	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)	0.0005	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	
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)	0.02	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)		0.0003	mg/L	
QU0810-10-DEC19-M	XC5932	B9A6860	Total Silicon (Si)	0.0005	12.1	mg/L	
QU0810-10-DEC19-M	XC5932	B9A6860	Total Silver (Ag)		0.000124	mg/L	
1M2N-03APR19-M	VM3019	B925186	Total Sodium (Na)		421	mg/L	
1M2N-03APR19-M	VM3019	B925186	Total Strontium (Sr)	0.003	1.73	mg/L	
1M2N-03APR19-M	VM3019	B925186	Total Sulphur (S)		326	mg/L	
QU0810-10-DEC19-M	XC5932	B9A6860	Total Thallium (Tl)		0.000117	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	0.02	15	mg/L	
QU1105D-16DEC19-M	XD4475	B9A8419	Sulphide (as H2S)		16	mg/L	
QU0821D-19FEB20-R	XK6352	C012293	Total Sulphide (as H2S)		0.086	mg/L	
7SA5-8APR19-M	VM8336	B926344	Dissolved Phosphorus (P)		0.0213	mg/L	
QU1000S-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)						

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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	In-Situ
		Sample Number	Lab Report / Lab Sample	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
				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
				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	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)														

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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	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	5-South Mine Pool	5-South Mine Pool	7-South Sump	7-South Sump
		Sample Number		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	5SMW-10DEC19-M	5SMW-27JAN20-M	7SA5-8APR19-M	7SA5-6MAY19-M
		Lab Report / Lab Sample		5M#2	5M#2	5M#2	5M#2	5M#2	QU1013D	QU1013D	QU1013D	QU1013D	5SMW	5SMW	7SA5	7SA5
		Date		B977214 / WM2951	B9A0774 / WZ3621	B9A5254 / XB7444	C006011 / XH4199	C006011 / XH4201	B981435 / W05274	B981435 / W05275	C001911 / XF3656	C018589 / XN6759	B9A6860 / XC5936	C006011 / XH4202	B926344 / VM8336	B934686 / VQ5917
Parameter	Criteria ¹		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
		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)															

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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	In-Situ
		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	
		Sample Number		7SA5-6MAY19-M	7SA5-28JAN20-M	7SA5-4MAR20-M	MW002-15MAY19-M	MW002-15MAY19-R	MW002-27AUG19-M	MW002-5DEC19-M	MW002-5DEC19-R	MW002-25FEB20-M	MW004-15MAY19-M	MW004-27AUG19-M	MW004-27AUG19-R	MW004-5DEC19-M
		Lab Report / Lab Sample		7SA5	7SA5	7SA5	MW002	MW002	MW002	MW002	MW002	MW002	MW004	MW004	MW004	MW004
		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	0.00000068	0.00000056	0.00000022	<0.0000020	0.00000024	<0.0000019	<0.0000020	<0.0000020	0.00000021	-
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)														

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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-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	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	
			MW004	QU1101	QU1101	QU1109M	QU1109M	QU1410	QU1410	QU1410	QU1410	QU1410	QU1410	QU1410	
			Lab Report / Lab Sample	C013628 / XL3506	B9A9931 / XE3098	B9A9931 / XE3099	B968040 / WH7273	B9A9201 / XD8444	B935103 / VQ7678	B977217 / WM2963	B977217 / WM2964	B9A0774 / WZ3618	B9A0774 / WZ3619	C006018 / XH4261	C006018 / XH4262
Parameter	Criteria ¹	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	
				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)													

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Dissolved Metals	BC CSR Aquatic Life 2019- LOW LEVEL	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
		Sample Number	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	2-North Plant Area	7-South	7-South	7-South	7-South
			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	
			QU1410	QU1410	QU1410	MW001D	MW001S	MW006D	MW006D	MW006S	MW006S	QU0810	QU0810	QU0813A	QU0813A	
			Lab Report / Lab Sample	C013626 / XL3498	C013626 / XL3499	C020553 / XO6010	C006723 / XH7507	C006723 / XH7508	B966017 / WG8048	C010630 / XJ8602	B966017 / WG8047	C006723 / XH7509	B9A6860 / XCS932	C014792 / XL8496	B963465 / WF4676	B9A2391 / XA2672
Parameter	Criteria ¹	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	
		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)														

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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
				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
		Sample Number		QU0821GS-27NOV19-M	QU0821GS-27NOV19-R	QU0821GS-19FEB20-M	QU1009D-27MAY19-M	QU1009S-27MAY19-M	QU1009S-27MAY19-R	QU1008D-18MAR20-M	QU1008D-18MAR20-R	QU1009D-5SEPT19-M	QU1009D-5SEPT19-R	QU1009S-5SEPT19-M	QU1010D-30SEPT19-M	QU1010D-11DEC19-M
		Lab Report / Lab Sample		QU0821GS	QU0821GS	QU0821GS	QU1009D	QU1009S	QU1009S	QU1008D	QU1008D	QU1009D	QU1009D	QU1009S	QU1010D	QU1010D
Parameter	Criteria ¹	Date		B9A2391 / XA2669	B9A2391 / XA2670	C012293 / XK6351	B940757 / VT5252	B940757 / VT5251	B940757 / VT5253	C020554 / XO6011	C020554 / XO6012	B974802 / WL1744	B974802 / WL1745	B974802 / WL1743	B984272 / WP8750	B9A6860 / XCS935
		units		2019-11-27	2019-11-27	2020-02-19	2019-05-27	2019-05-27	2019-05-27	2020-03-18	2020-03-18	2019-09-05	2019-09-05	2019-09-05	2019-09-30	2019-12-11
		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)														

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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	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	River Barrier Pillar	7-South Area 5
			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	
			QU1010S	QU1010S	QU1010S	QU1010S	QU1011D	QU1105D	QU1105S	QU1105S	QU1105S	QU1109S	QU1109S	QU1109S	QU1136D	
			Lab Report / Lab Sample	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
Parameter	Criteria ¹	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	
		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
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Dissolved Metals	BC CSR Aquatic Life 2019- LOW LEVEL	Area		Ex-Situ
		Sample Number		2-South
		Lab Report / Lab Sample		MW1223-16MAY19-M
				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
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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

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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

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[illegible]

TABLE 175
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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

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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

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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater														

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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater														

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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														

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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater														

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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater														

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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater														

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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater														

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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater														

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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater														

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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater														

TABLE 187
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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 1BC CSR Aquatic Life 2019 - Lowest Level Applies only to Ex-Situ Groundwater												

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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	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	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)														

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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 / XS5930
		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)													

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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)													

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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)													

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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)													

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Inorganics - Groundwater	BC CSR Aquatic Life 2019 - LOW LEVEL	Sample Number		MW004-27AUG19-M	MW004-27AUG19-R	MW004-SDEC19-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 / X87477	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)													

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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)													

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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 / X06011	C020554 / X06012	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)													

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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)													

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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 / W05274	B981435 / W05275	B981435 / W05275	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)													

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Inorganics - Groundwater	BC CSR Aquatic Life 2019 - LOW LEVEL	Sample Number		QU11095-15AUG19-19-M	QU11095-18DEC19-M	QU11095-18DEC19-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	RD1							
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)									

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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	RD L											
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)													

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Station Description Stn.Code		1 Mains 7-South 1M7S 03-Apr-2019	1 Mains 7-South 1M7S 21-May-2019	1 Mains 7-South 1M7S 10-Sep-2019	1 Mains 7-South 1M7S 04-Dec-2019	1 Mains 7-South 1M7S 27-Jan-2020	1 Mains 7-South 1M7S 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

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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	21
TSS	mg/L	100	9.6	<4.0	7.2	<4.0	12
Alk-T	mg/L	164	155	190	170	180	170
Acidity83	mg/L	<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
As-T	mg/L	0.221	0.334	0.291	0.0370	0.301	0.270
Ba-T	mg/L	0.202	0.173	0.650	0.276	0.709	0.408
B-T	mg/L	0.585	0.459	0.457	0.537	0.507	0.476
Cd-T	mg/L	<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
Cr-T	mg/L	<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
Cu-T	mg/L	0.00219	0.00054	<0.00050	0.00066	<0.00050	<0.00050
Hard-T	mg/L	154	114	135	216	148	138
Fe-T	mg/L	0.908	0.400	0.193	0.445	0.220	0.099
Pb-T	mg/L	0.00024	<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
Mn-T	mg/L	0.0518	0.0232	0.0342	0.0631	0.0370	0.0216
Hg-T	mg/L	<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
Ni-T	mg/L	0.0021	<0.0010	<0.0010	0.0037	<0.0010	<0.0010
K-T	mg/L	2.96	2.14	2.35	2.45	2.37	2.18
S-T	mg/L	17.0	<3.0	<3.0	39.3	<3.0	6.4
Se-T	mg/L	0.00012	<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
Ag-T	mg/L	<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
Sr-T	mg/L	0.513	0.468	0.475	0.618	0.503	0.500
Zn-T	mg/L	0.0065	<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
As-D	mg/L	0.169	0.309	0.279	0.0176	0.280	0.246
Ba-D	mg/L	0.140	0.170	0.691	0.263	0.705	0.436
B-D	mg/L	0.502	0.472	0.492	0.521	0.512	0.473
Cd-D	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.000010	<0.000010	<0.000010
Ca-D	mg/L	38.2	34.3	43.0	62.4	46.6	41.5
Cr-D	mg/L	<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
Cu-D	mg/L	<0.00020	<0.00020	<0.00020	0.00046	<0.00020	<0.00020
DOC	mg/L	1.1	0.58				1.3
Hard-D	mg/L	124	113	139	217	150	135
Fe-D	mg/L	<0.0050	0.0165	0.0813	0.0799	0.108	0.0086
Pb-D	mg/L	<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
Mn-D	mg/L	0.0360	0.0189	0.0360	0.0598	0.0374	0.0214
Hg-D	mg/L	<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
Ni-D	mg/L	0.0012	<0.0010	<0.0010	0.0037	<0.0010	<0.0010
K-D	mg/L	2.29	2.10	2.35	2.45	2.45	2.21
S-D	mg/L	13.2	4.7	<3.0	39.9	<3.0	6.7
Se-D	mg/L	<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
Na-D	mg/L	22.1	21.7	20.5	22.1	21.4	20.4
Sr-D	mg/L	0.458	0.464	0.490	0.643	0.511	0.543
Zn-D	mg/L	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
N-D	mg/L	0.334	0.31				0.275
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
P-T	mg/L				0.0054		
Cl-D	mg/L	3.4	<1.0				1.2
F-D	mg/L	0.570	0.590				0.50

TABLE 203
2019-20 Annual Report

Station Description	1-Mains 75 and Area 5 1M7SA5	1Mains 75 and Area 5 1M7SA5	1Mains 75 and Area 5 1M7SA5	1Mains 75 and Area 5 1M7SA5	1Mains 75 and Area 5 1M7SA5	1Mains 75 and Area 5 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	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020
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

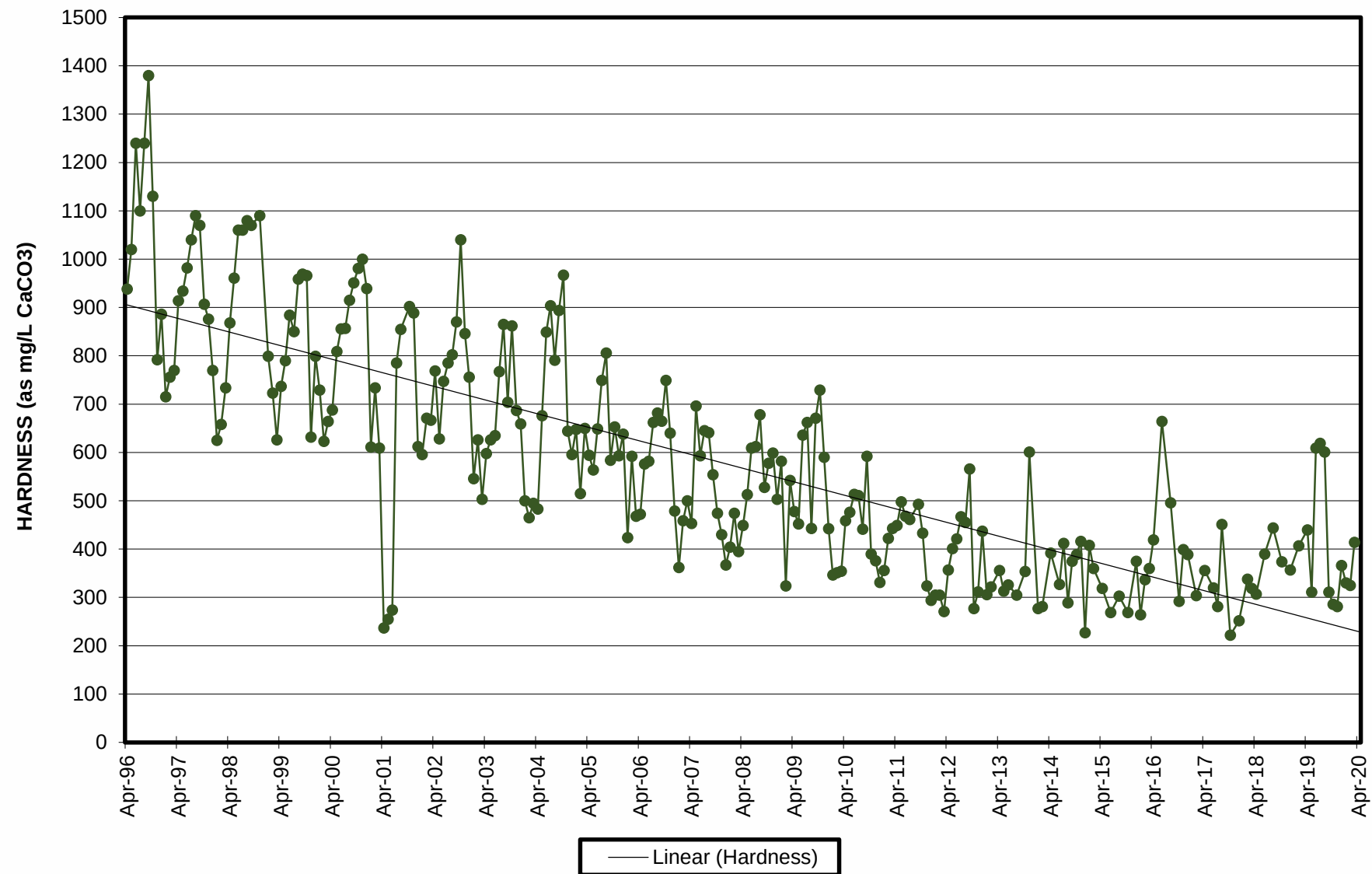
EMS ID	E292110													
Site Description	Sump that collects surface runoff from coal pad and mine water from underground. Water is pumped to 55 mine pool then to 2N.													
Site Name	7-South Adit / Portal Sump (7SPS)													
Date	1-Apr-19	6-May-19	21-May-19	11-Jun-19	15-Jul-19	12-Aug-19	9-Sep-19	1-Oct-19	6-Nov-19	4-Dec-19	9-Jan-20	26-Feb-20	2-Mar-20	
Parameter	Units													
SQ4-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

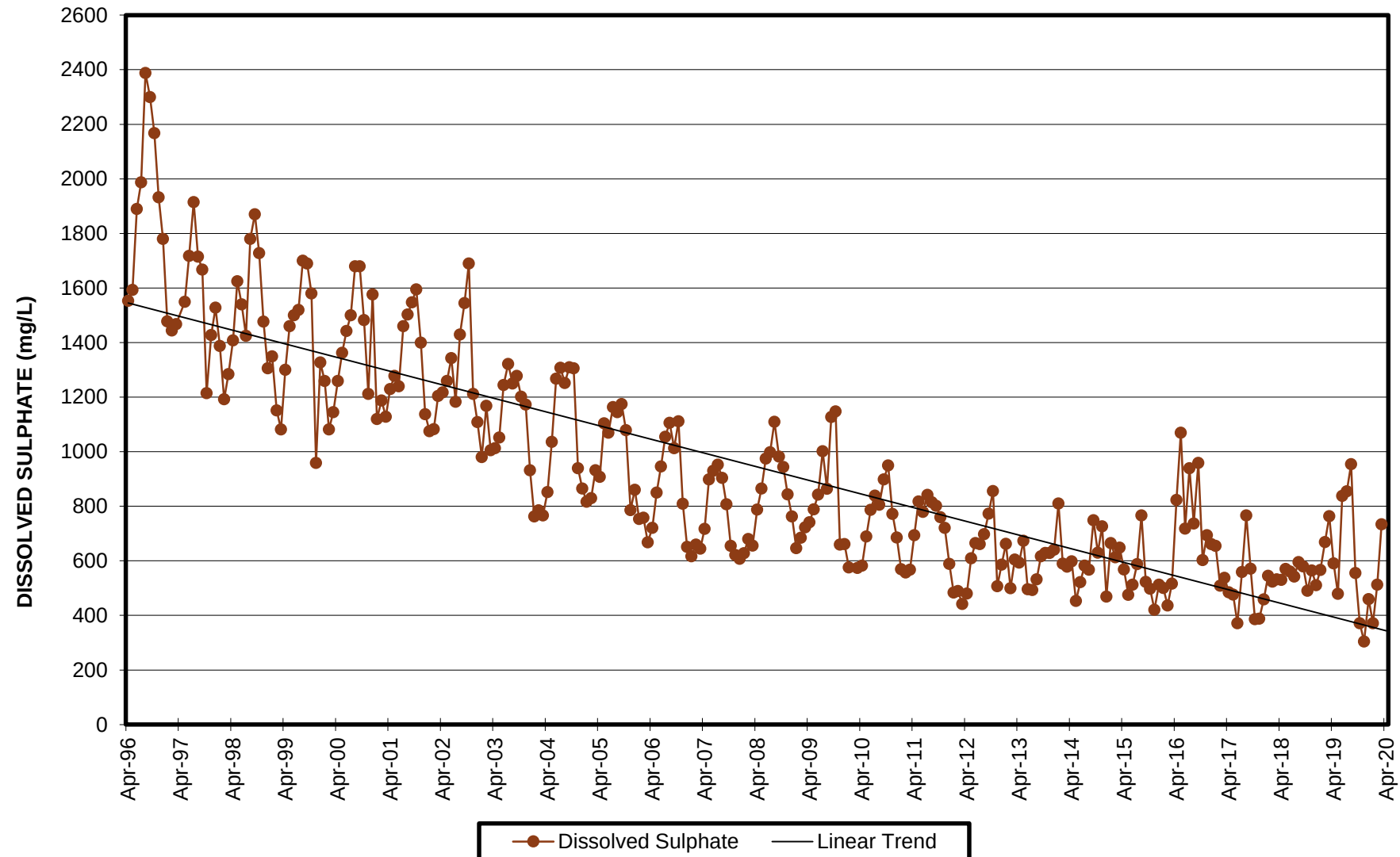
Graph 1	Hardness Settling Pond 4
Graph 2	Average Monthly Dissolved Sulphate Settling Pond 4
Graph 3	Weekly pH Settling Pond 4
Graph 4	Total Suspended Solids Settling Pond 4 & WC
Graph 5	Dissolved Arsenic Settling Pond 4
Graph 6	Dissolved Iron Settling Pond 4
Graph 7	Total Iron at Settling Pond 4
Graph 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° V-notch Weir vs Staff Gauge 2-South Inflow
Graph 68	Flow Rate (L/s) @ 90° V-notch Weir vs Precipitation (mm) 2-South Inflow
Graph 69	Flow & Precipitation 2-South Outflow / 2-South Culvert Entering 3-South Pit (2SC)

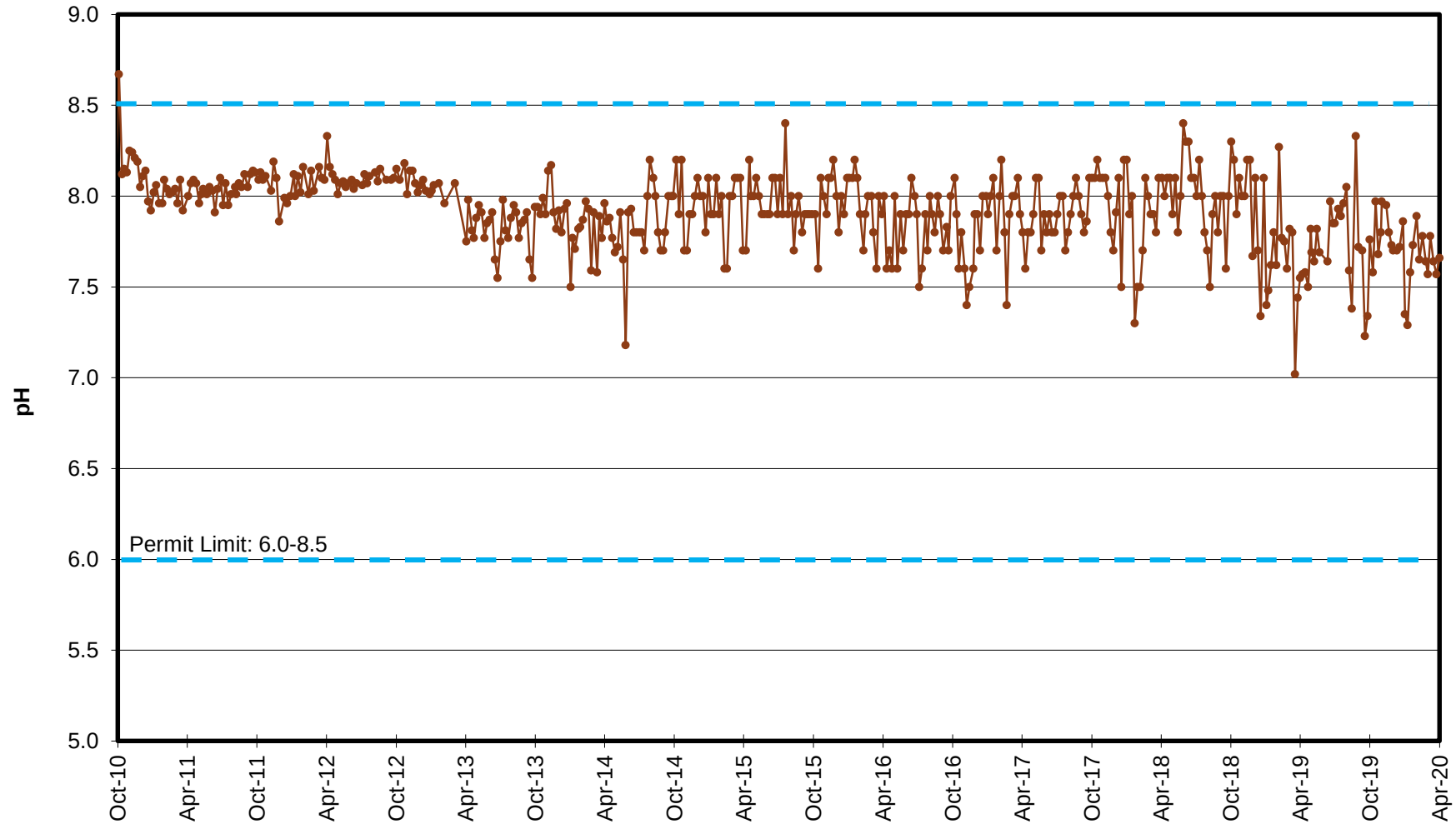
GRAPH 1
HARDNESS
SETTLING POND 4



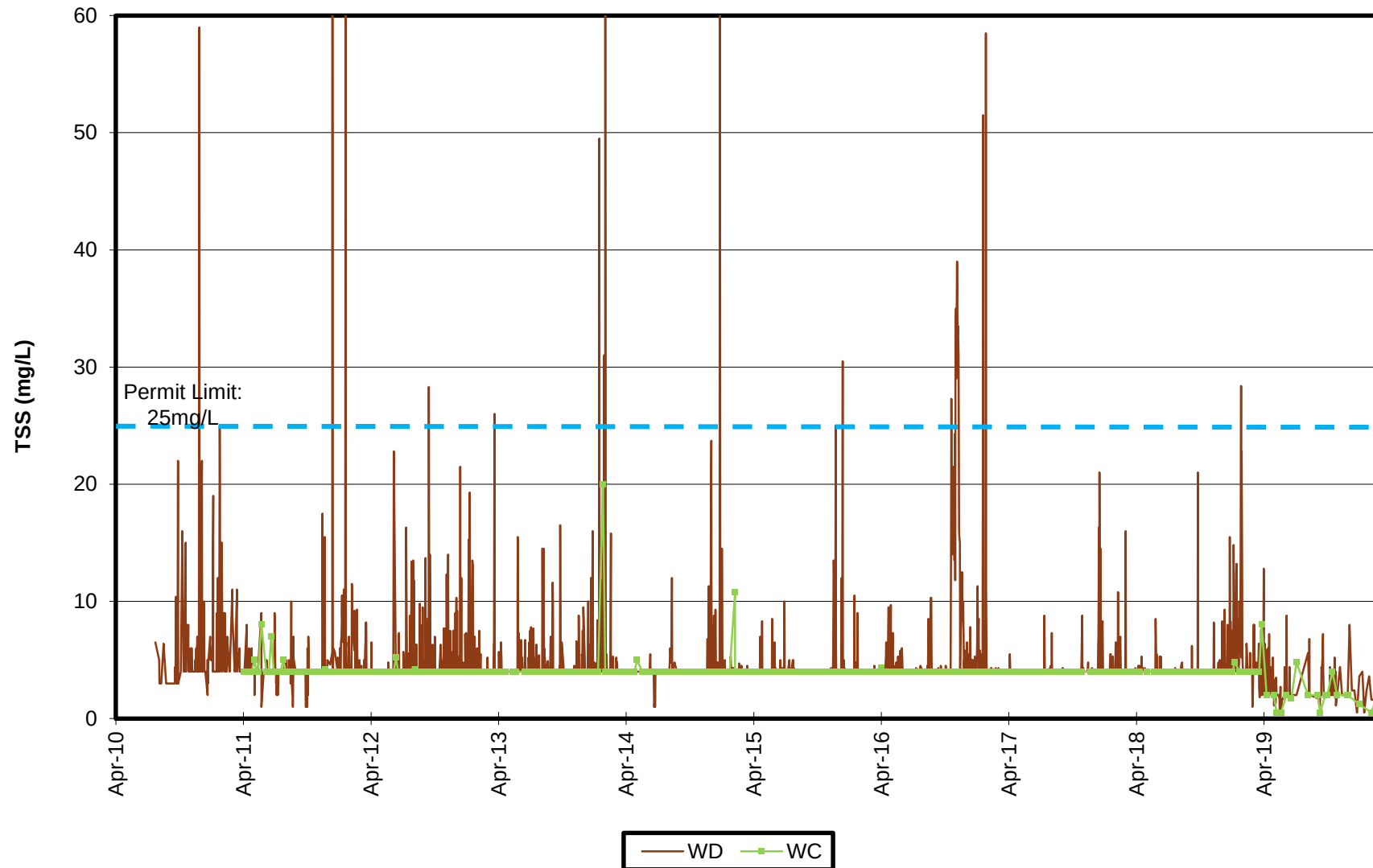
GRAPH 2
AVERAGE MONTHLY DISSOLVED SULPHATE
SETTLING POND 4



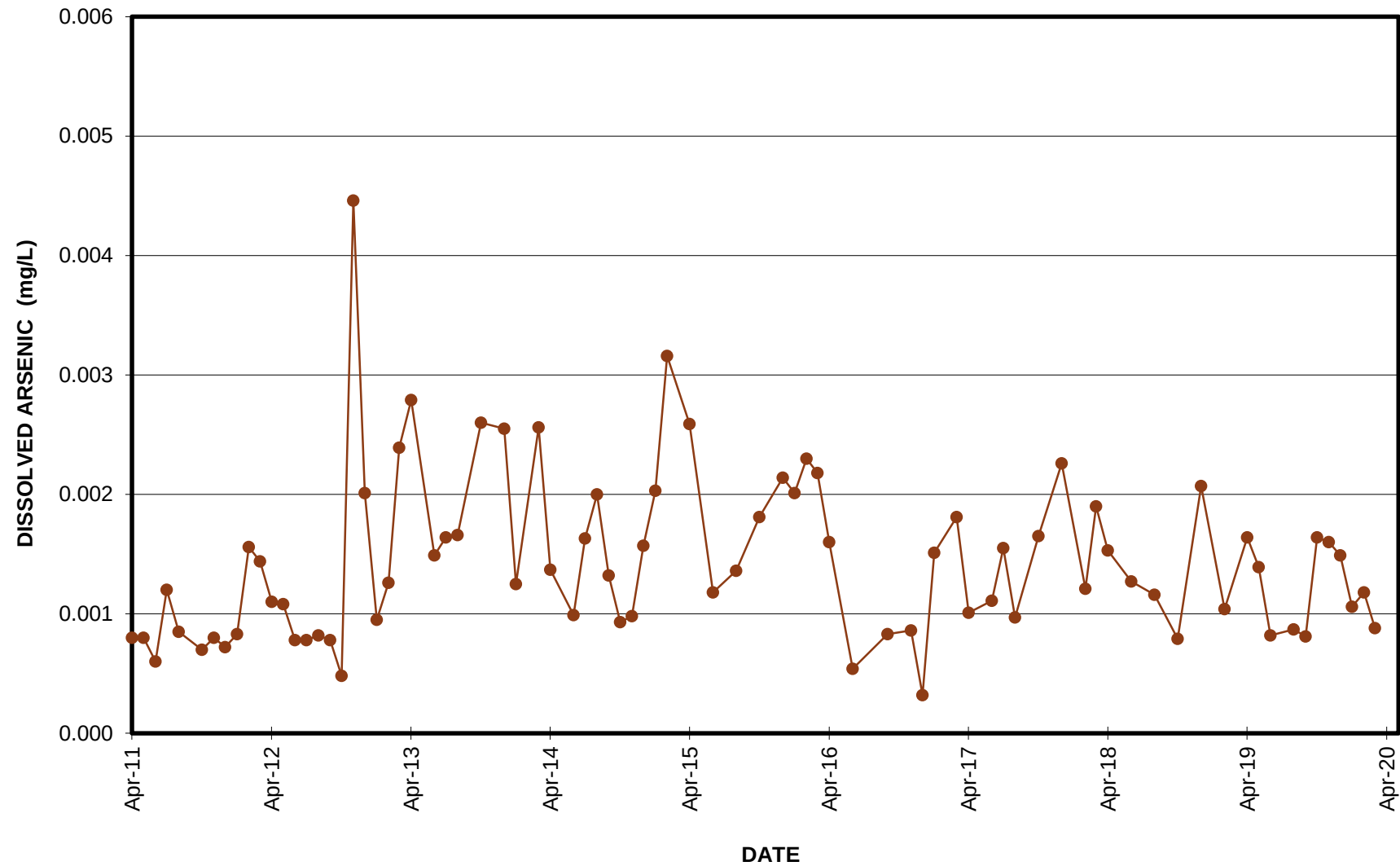
GRAPH 3
WEEKLY pH
SETTLING POND 4



GRAPH 4
TOTAL SUSPENDED SOLIDS
SETTLING POND 4 & WC

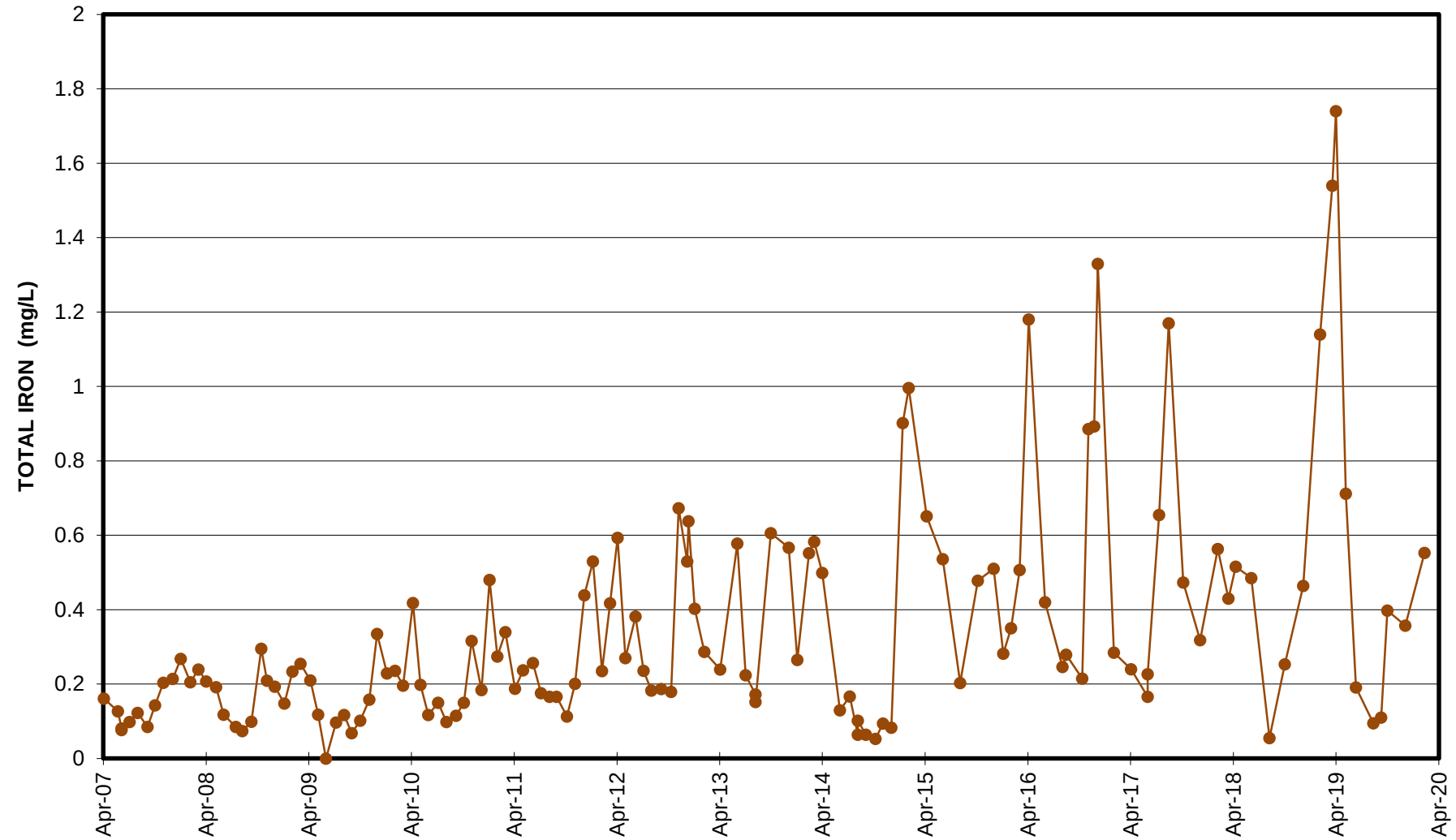


GRAPH 5
DISSOLVED ARSENIC
SETTLING POND 4

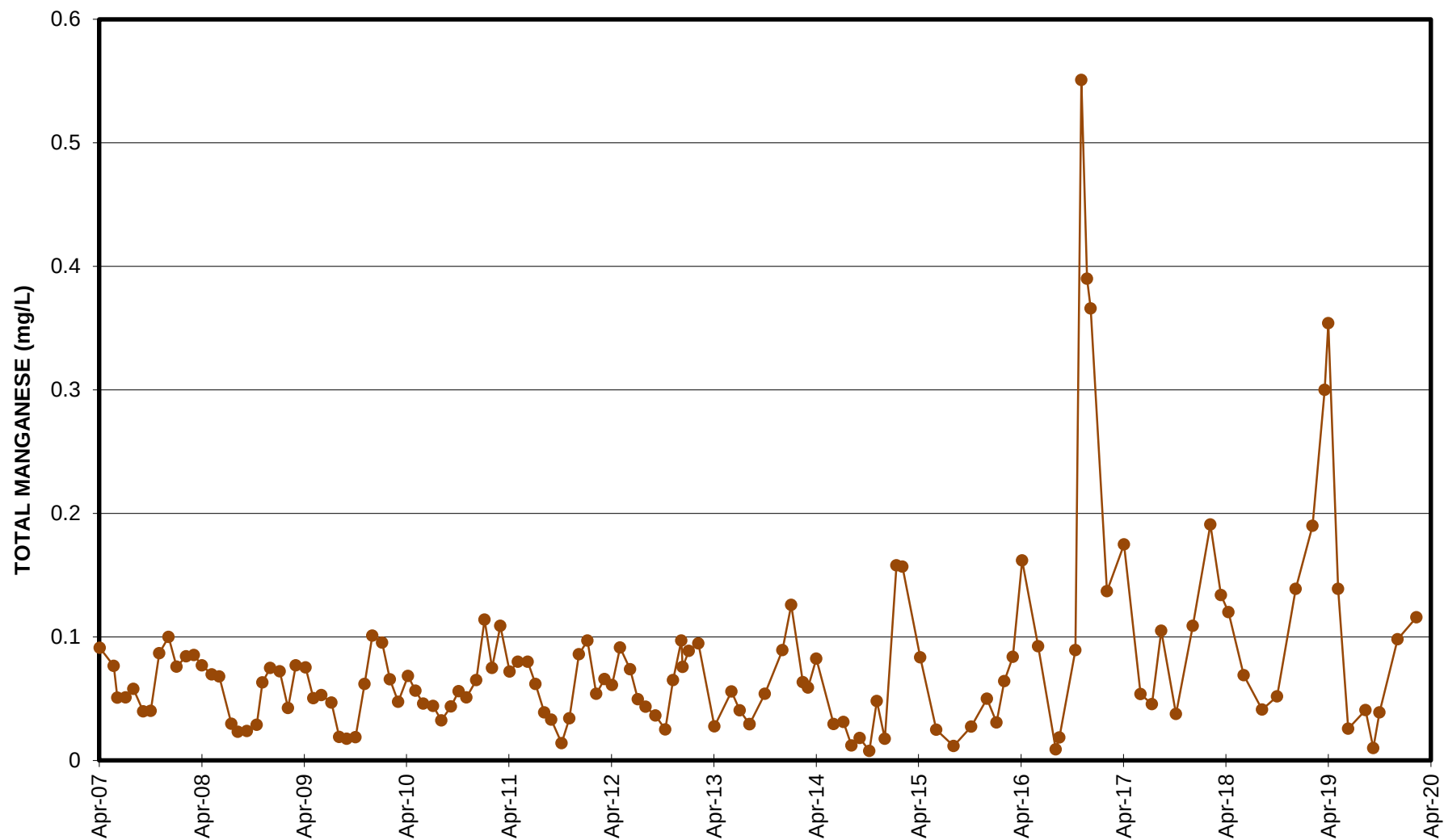




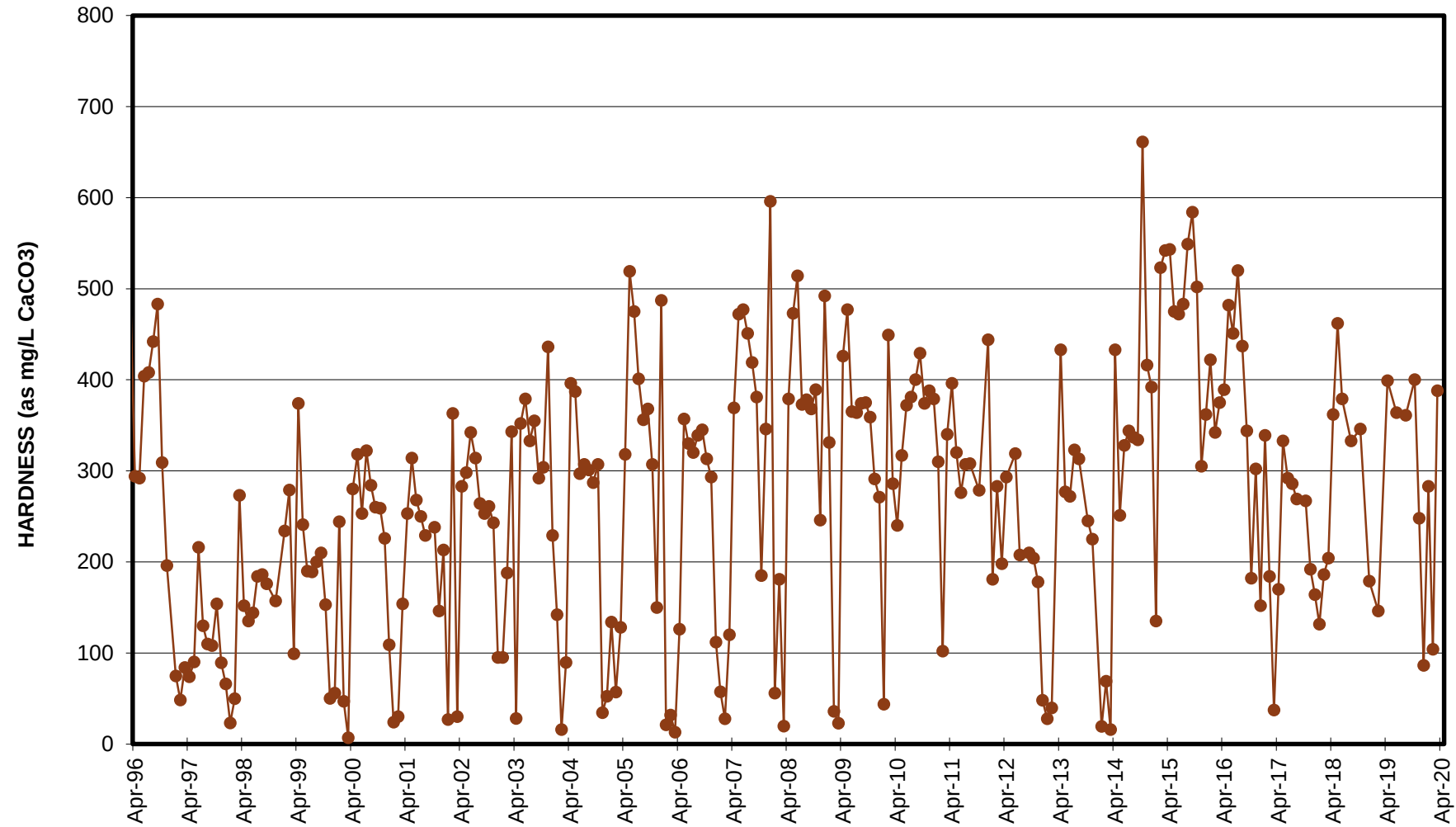
GRAPH 7
TOTAL IRON
SETTLING POND 4



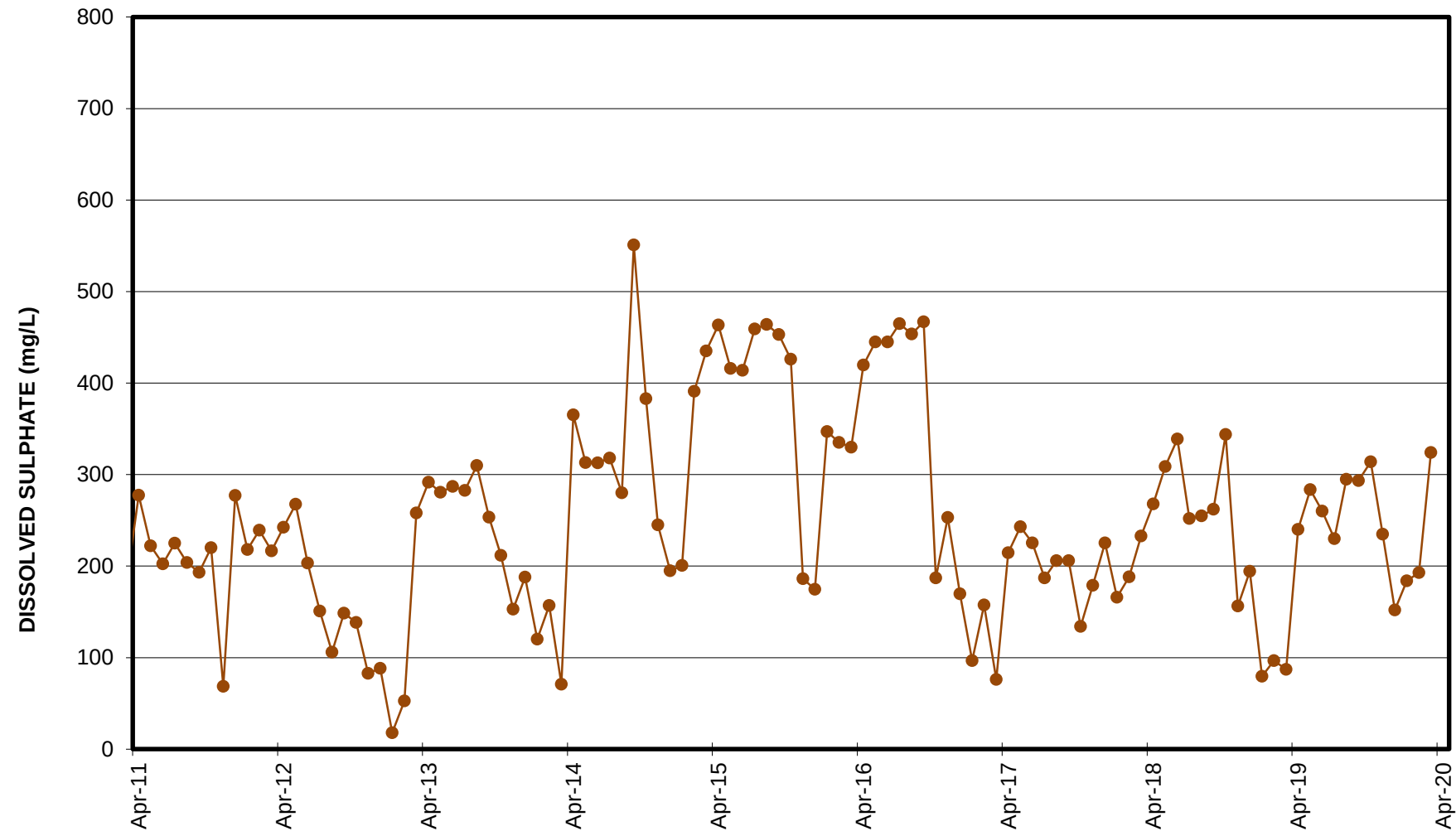
GRAPH 8
TOTAL MANGANESE
SETTLING POND 4



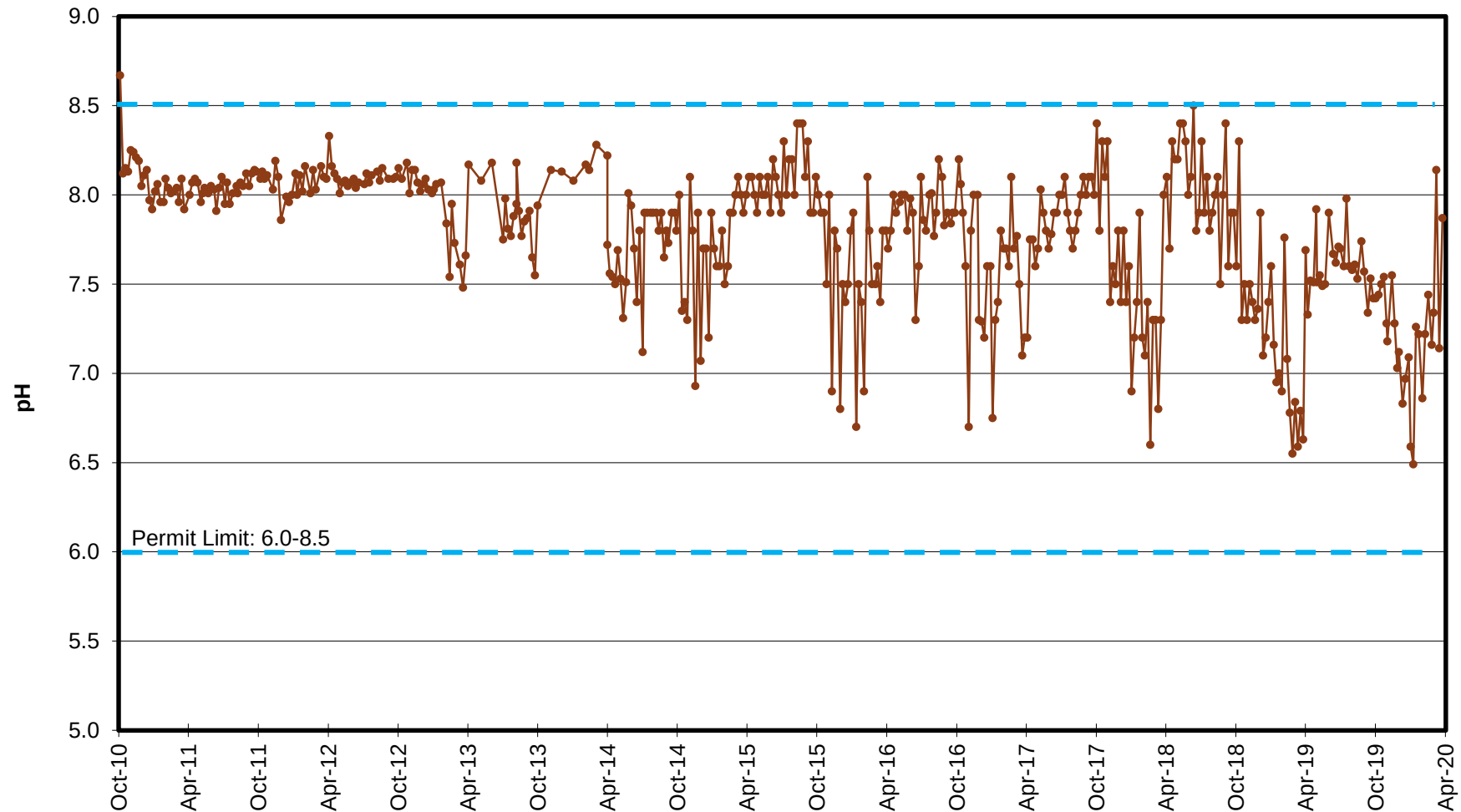
GRAPH 9
HARDNESS
SETTLING POND 1



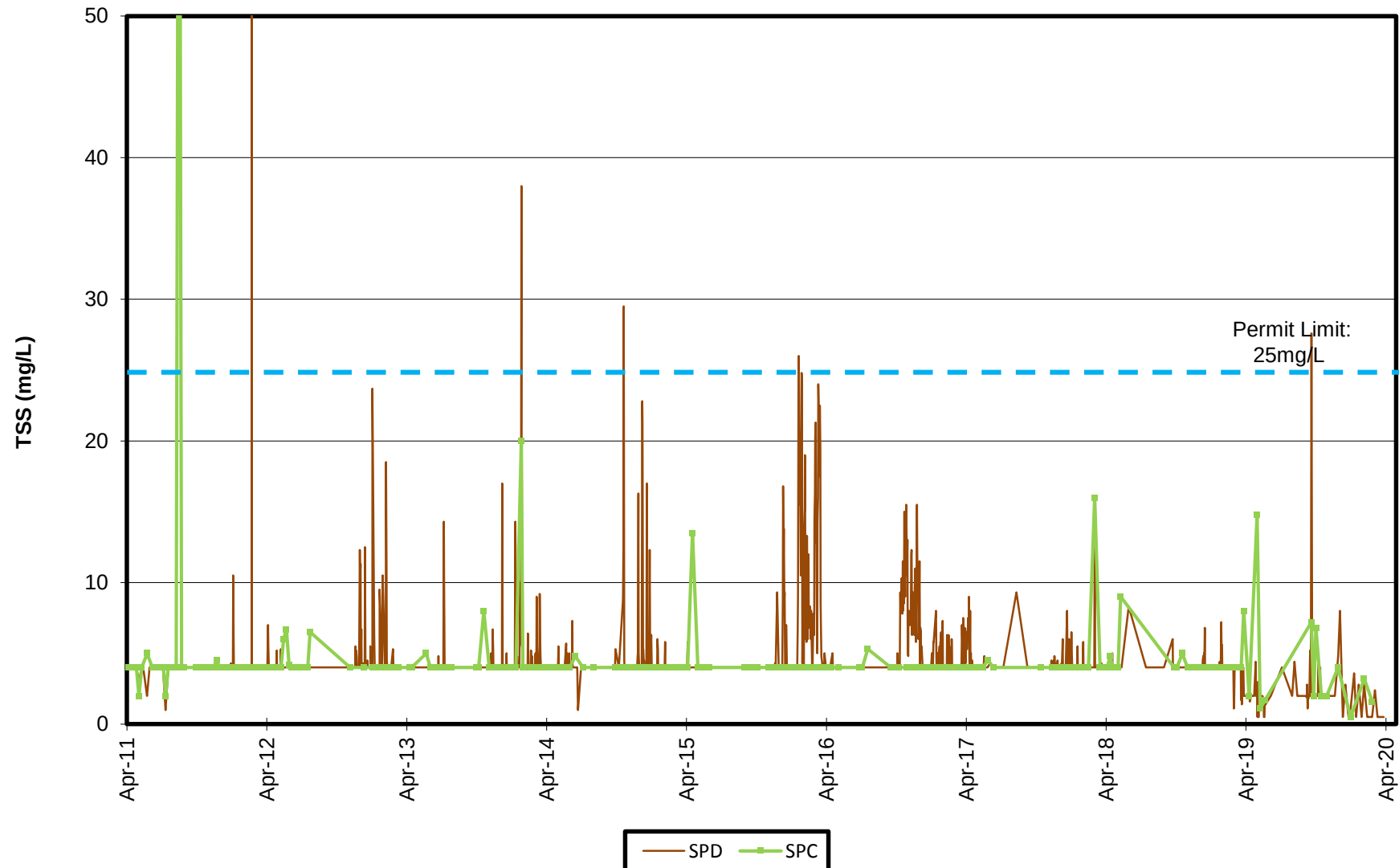
GRAPH 10
AVERAGE MONTHLY DISSOLVED SULPHATE
SETTLING POND 1



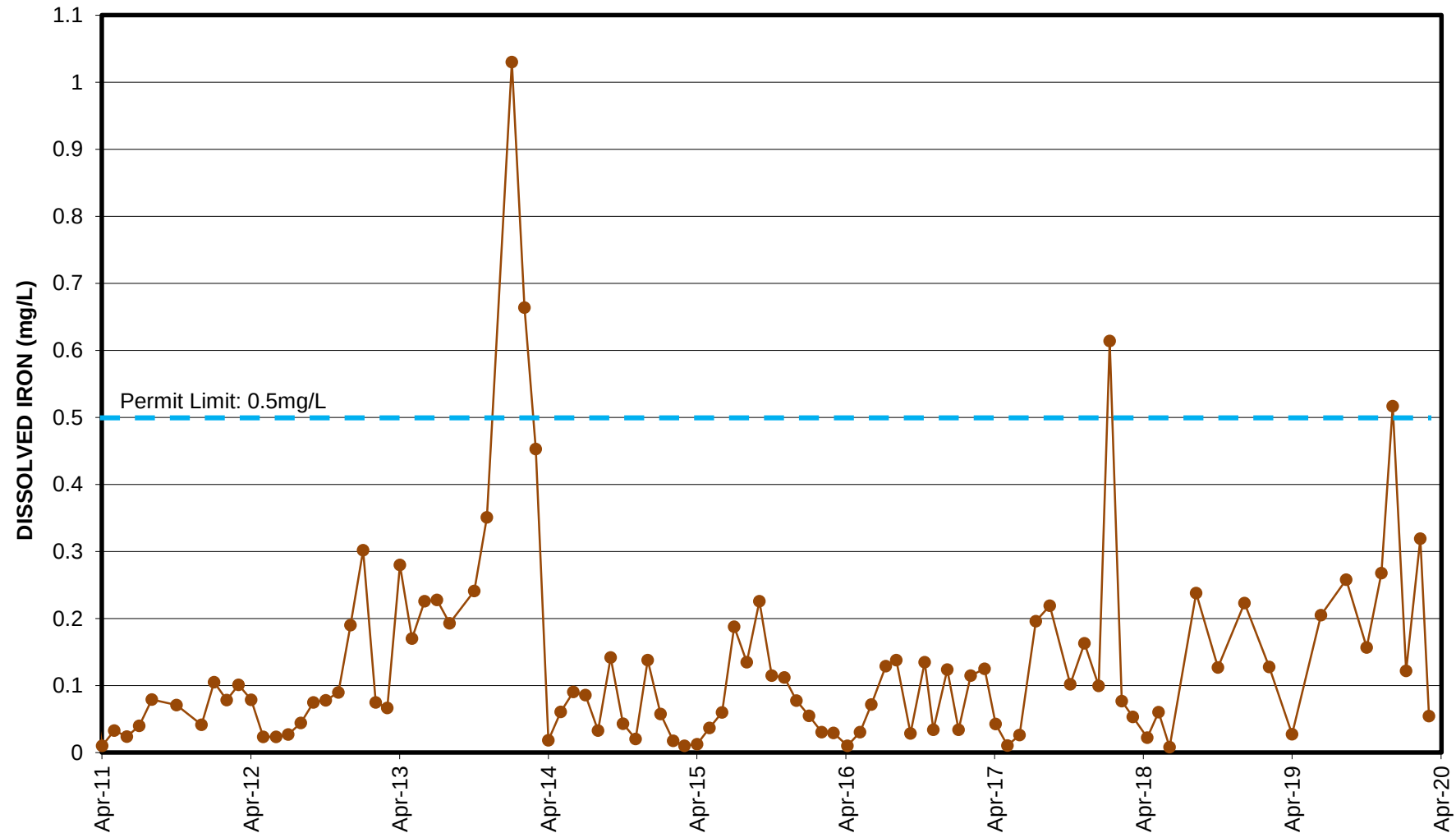
GRAPH 11
WEEKLY FIELD pH
SETTLING POND 1



GRAPH 12
TOTAL SUSPENDED SOLIDS
SETTLING POND 1 and SPC



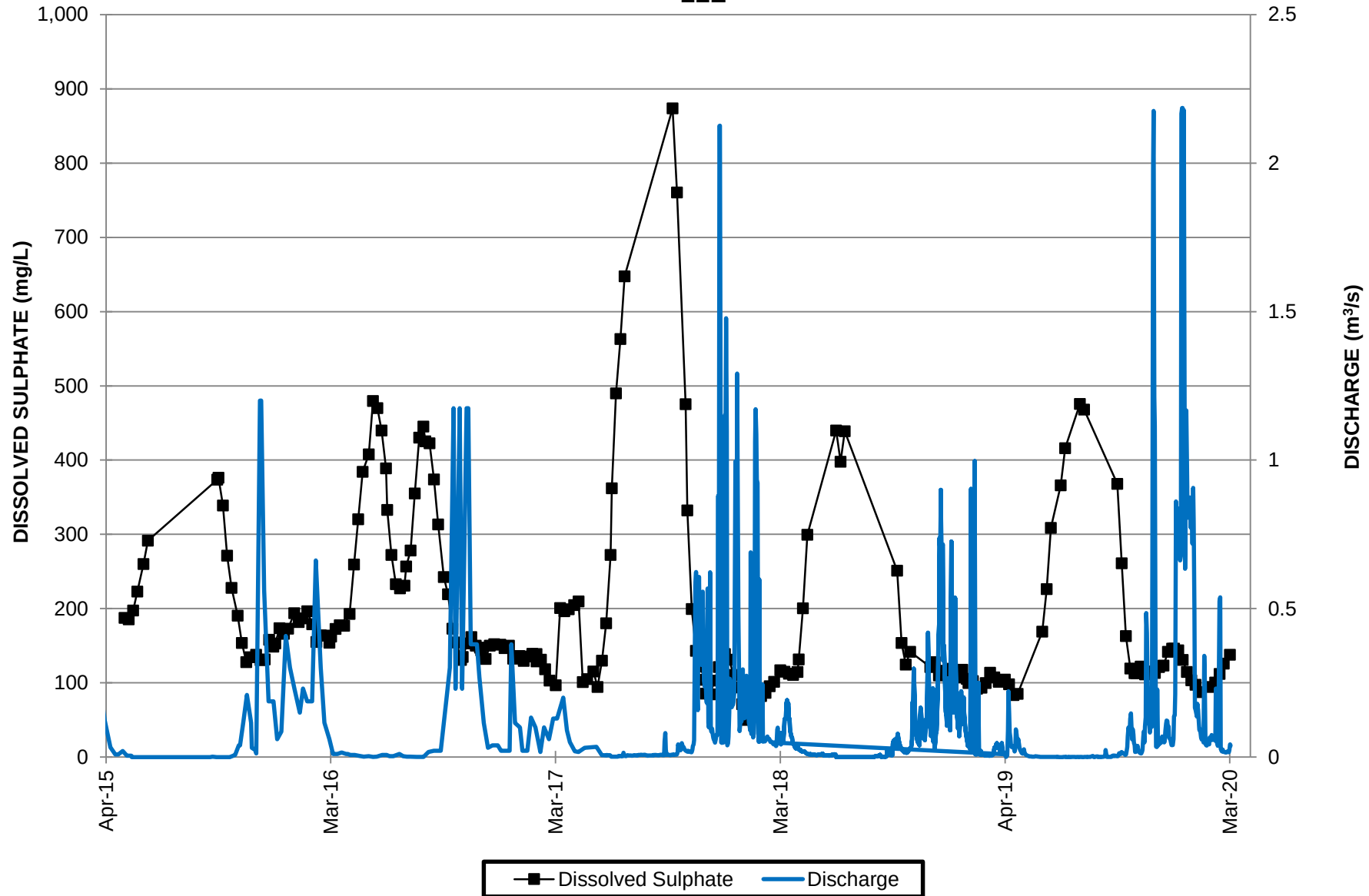
GRAPH 13
DISSOLVED IRON
SETTLING POND 1



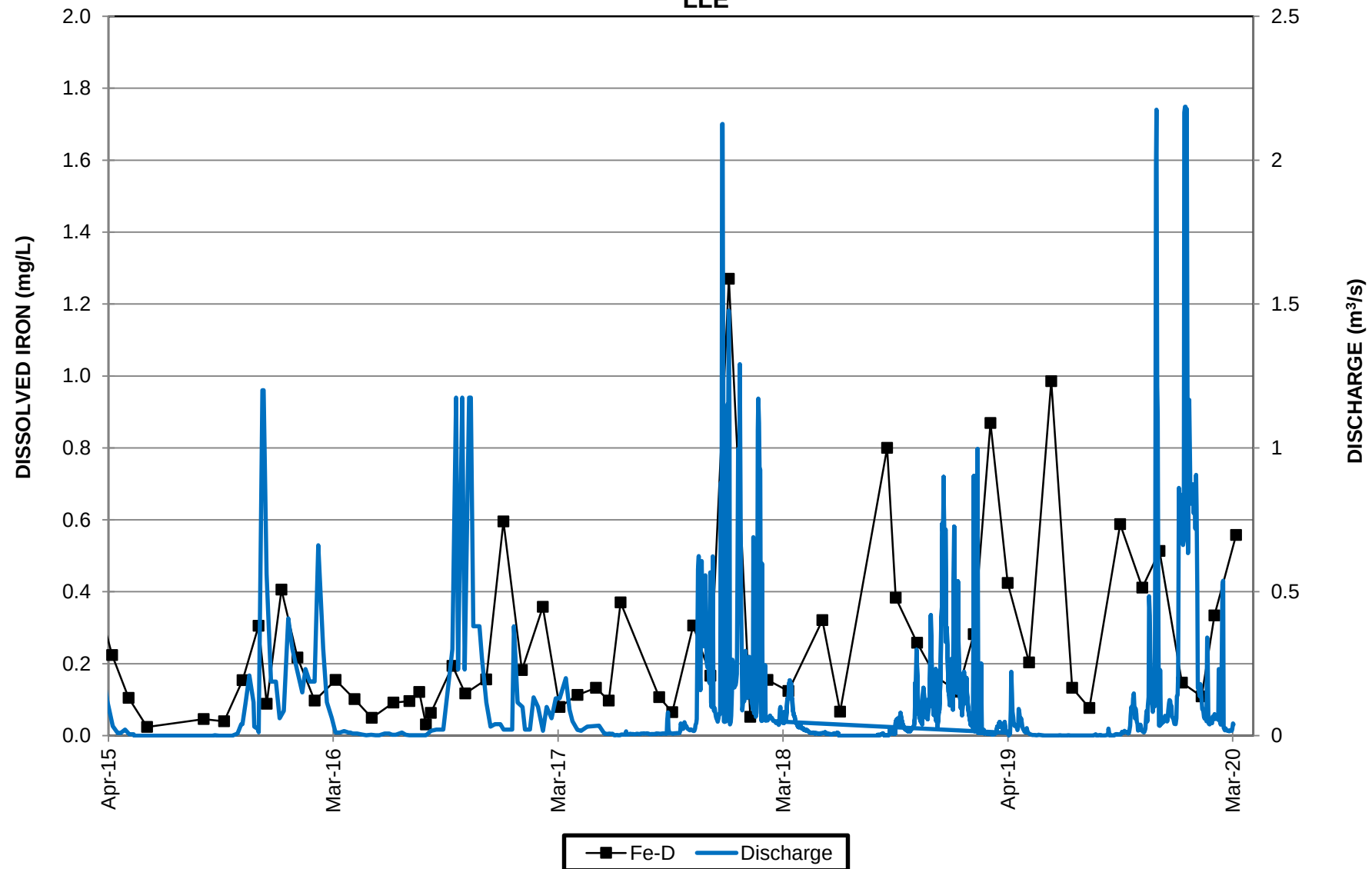
QUINSAM
COAL



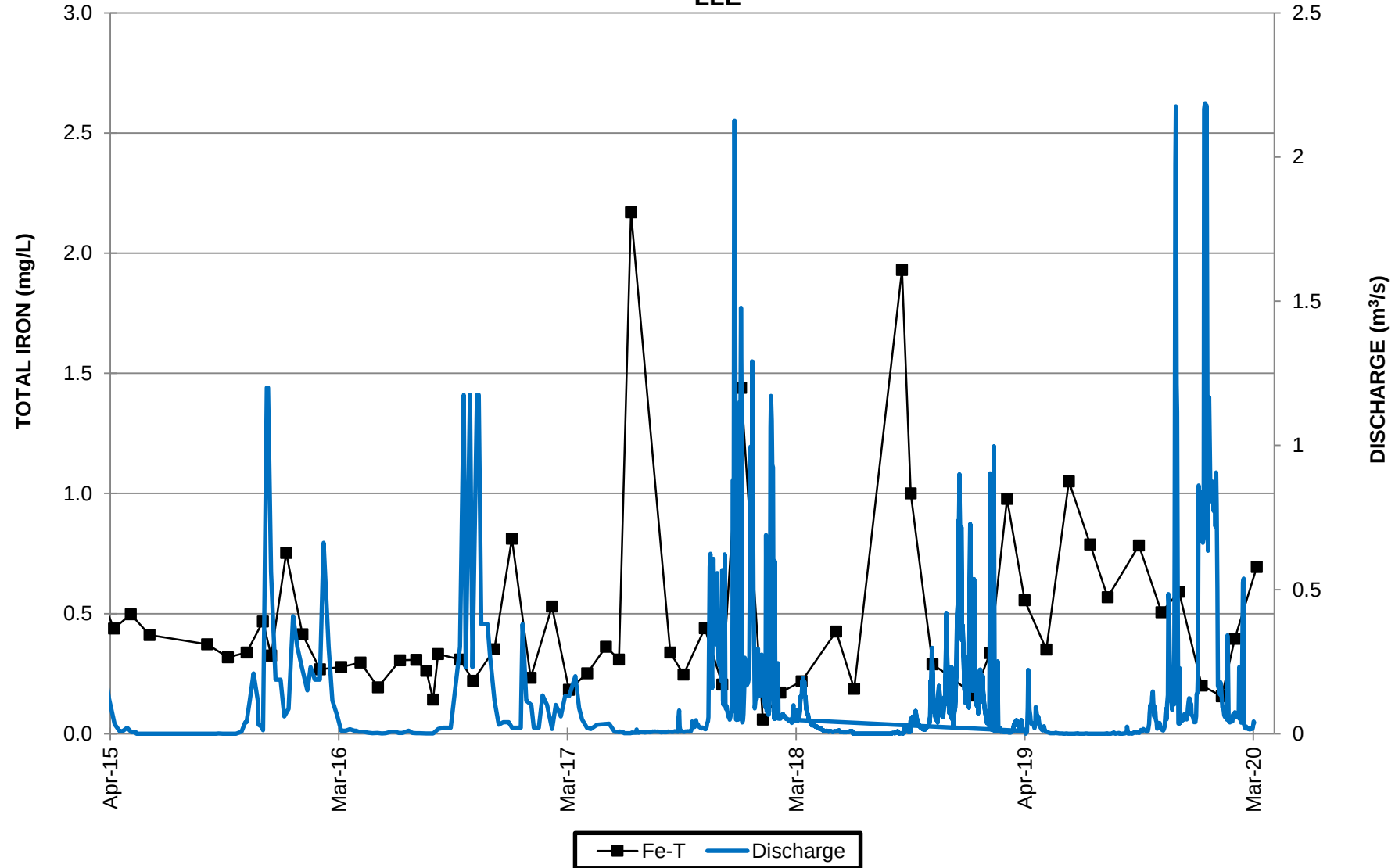
GRAPH 15
ROLLING AVERAGE DISSOLVED SULPHATE VS DISCHARGE
LLE



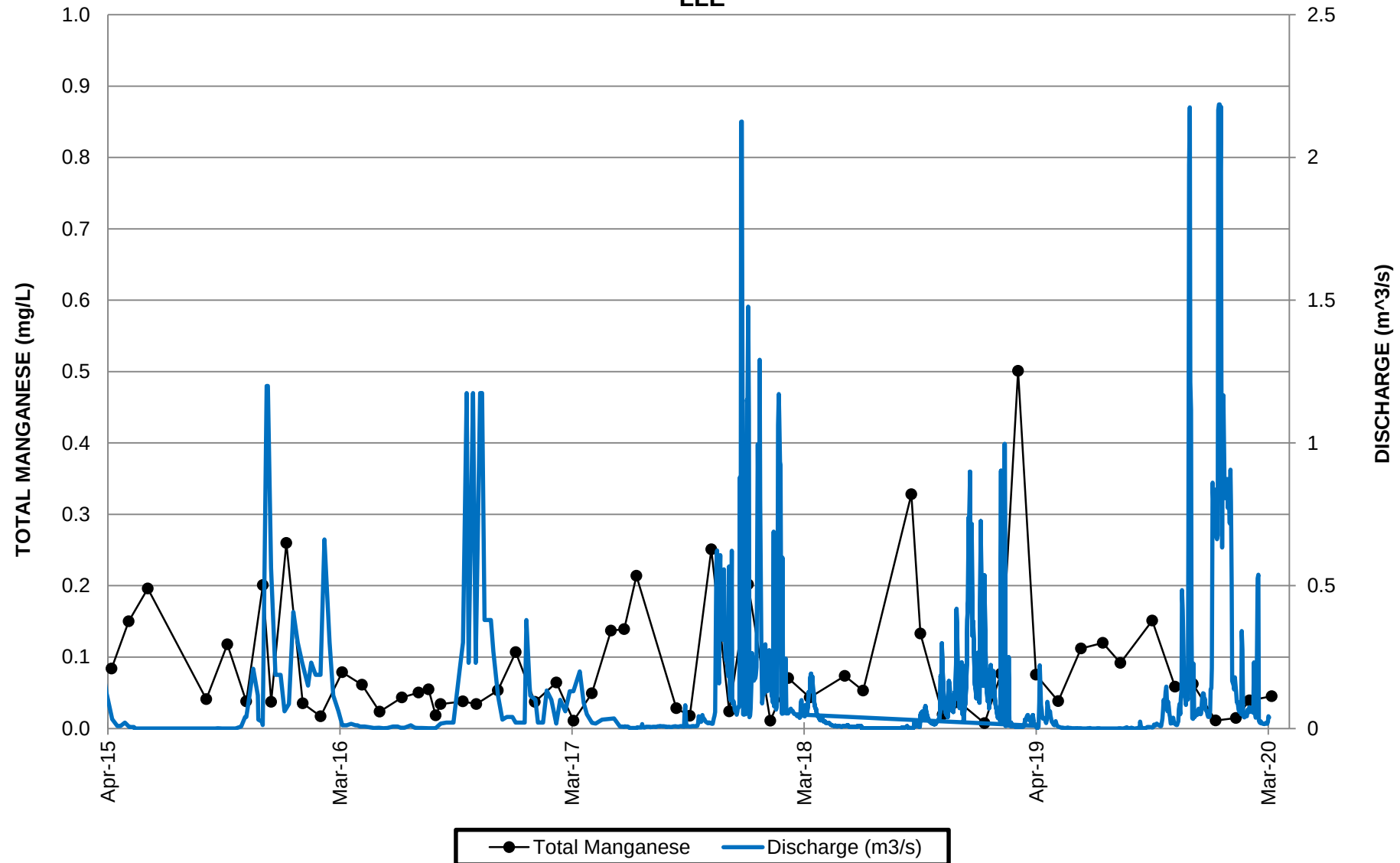
GRAPH 16
DISSOLVED IRON VS DISCHARGE
LLE



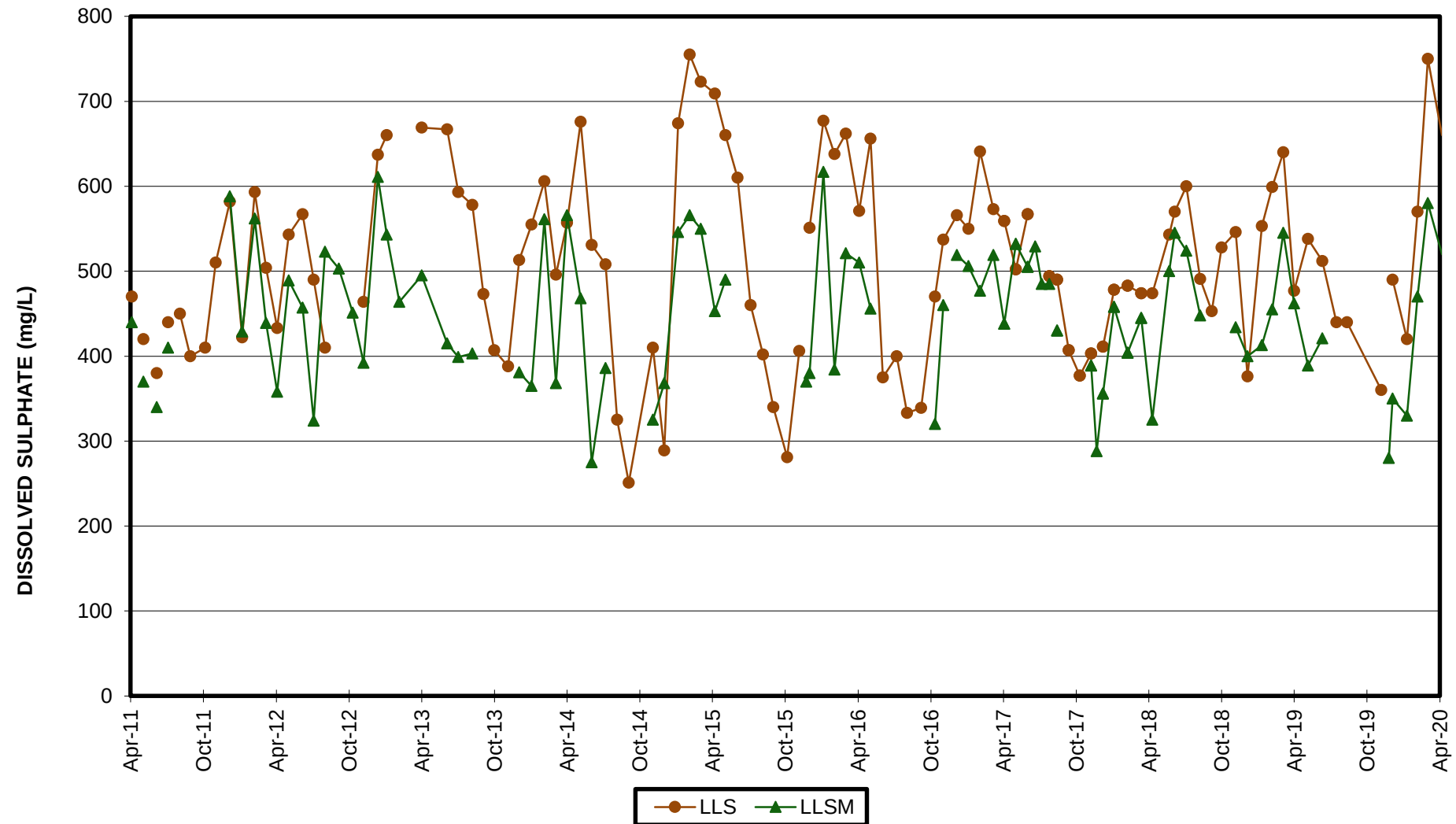
GRAPH 17
TOTAL IRON VS DISCHARGE
LLE



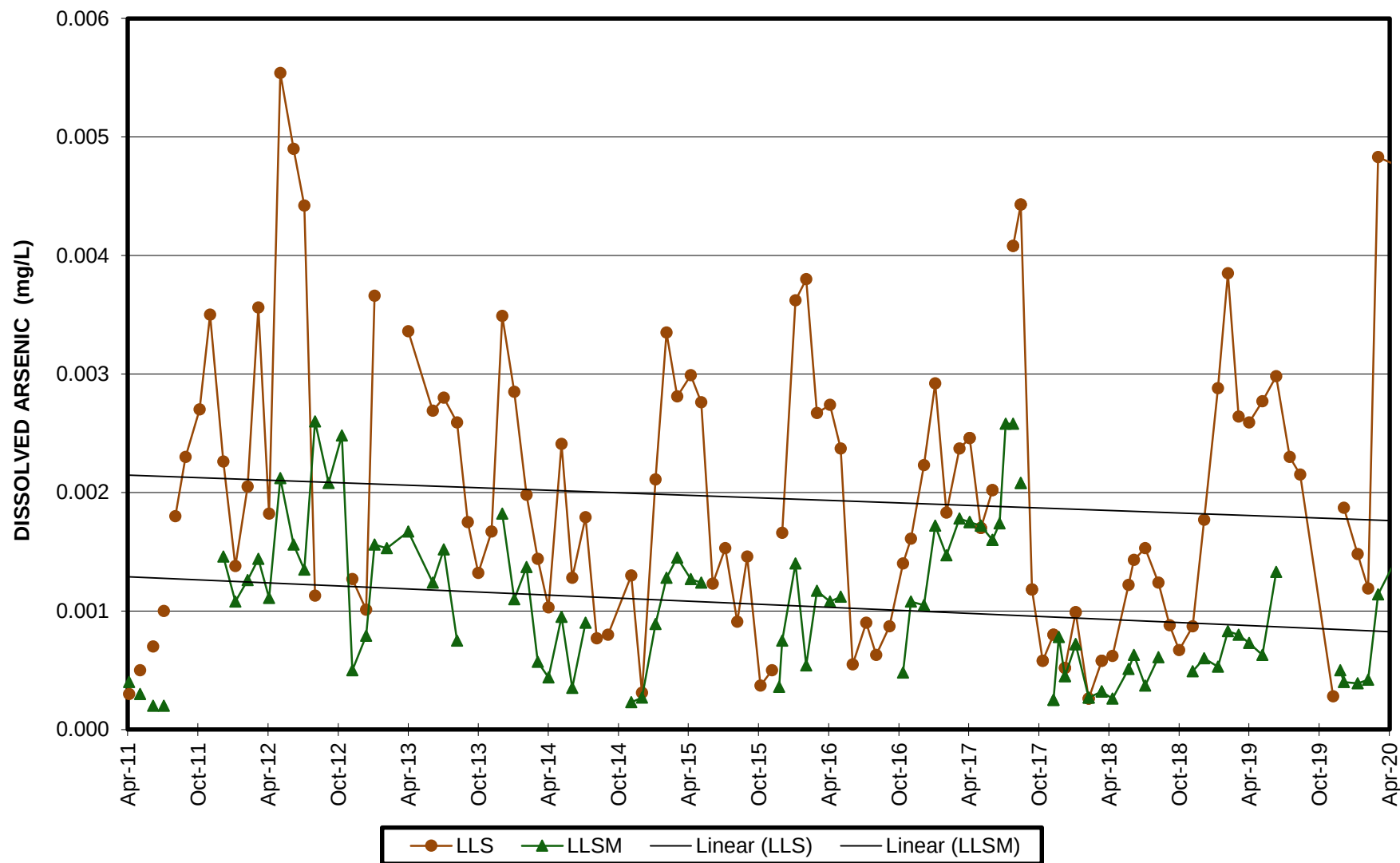
GRAPH 18
TOTAL MANGANESE VS DISCHARGE
LLE



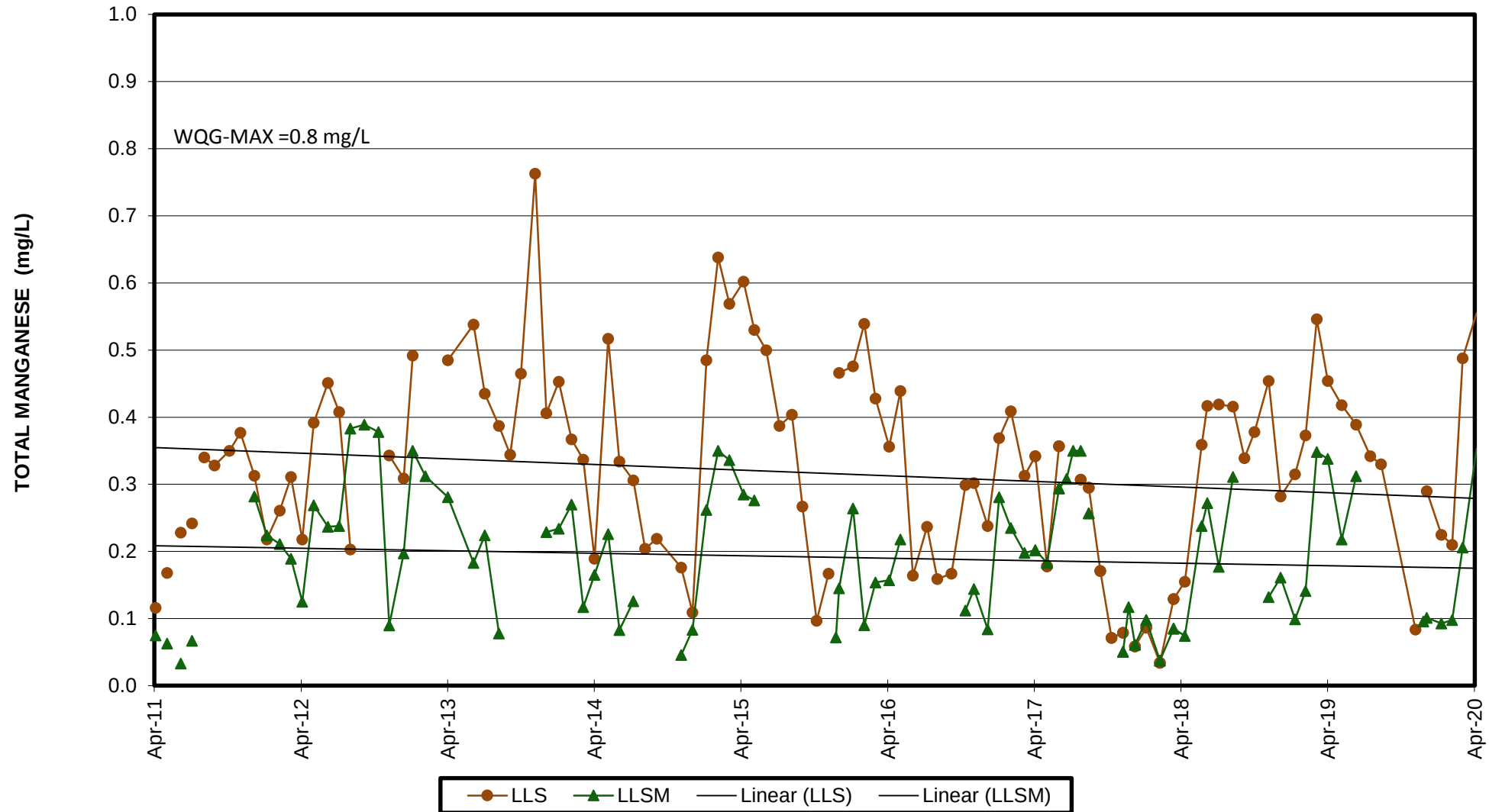
GRAPH 19
DISSOLVED SULPHATE
SEEPS INTO LONG LAKE



GRAPH 20
DISSOLVED ARSENIC
SEEPS INTO LONG LAKE



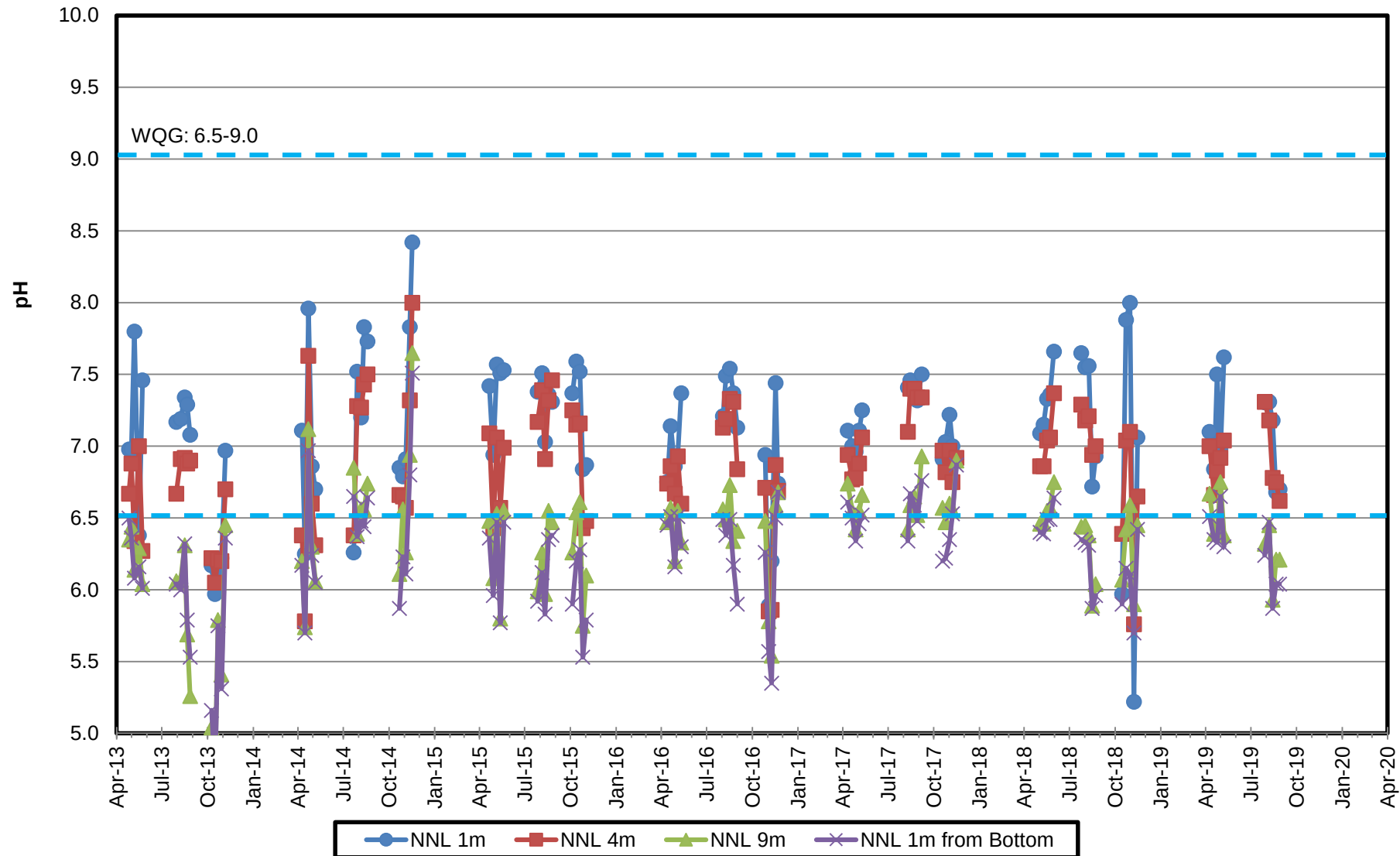
GRAPH 21
TOTAL MANGANESE
SEEPS INTO LONG LAKE



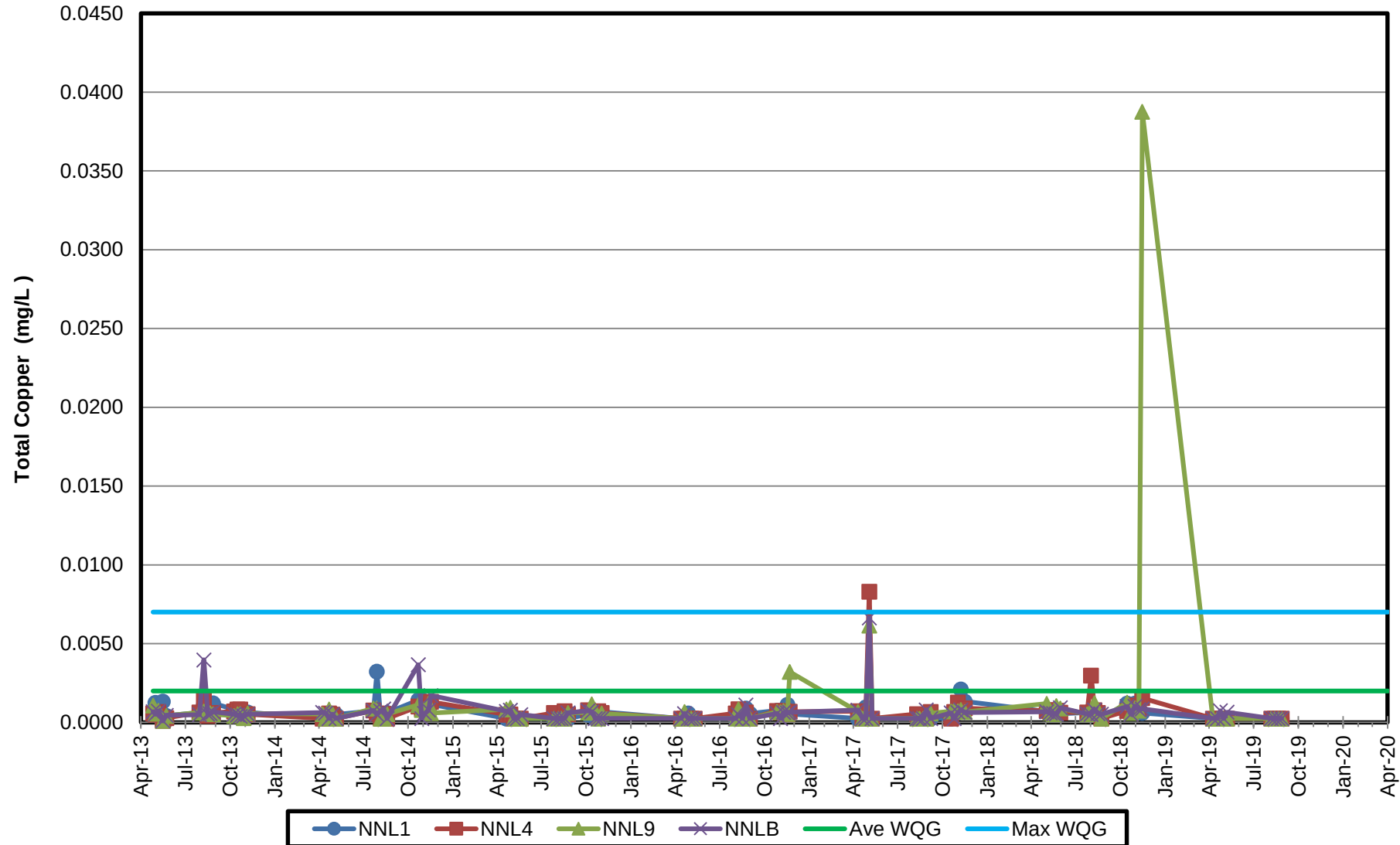
QUINSAM
COAL



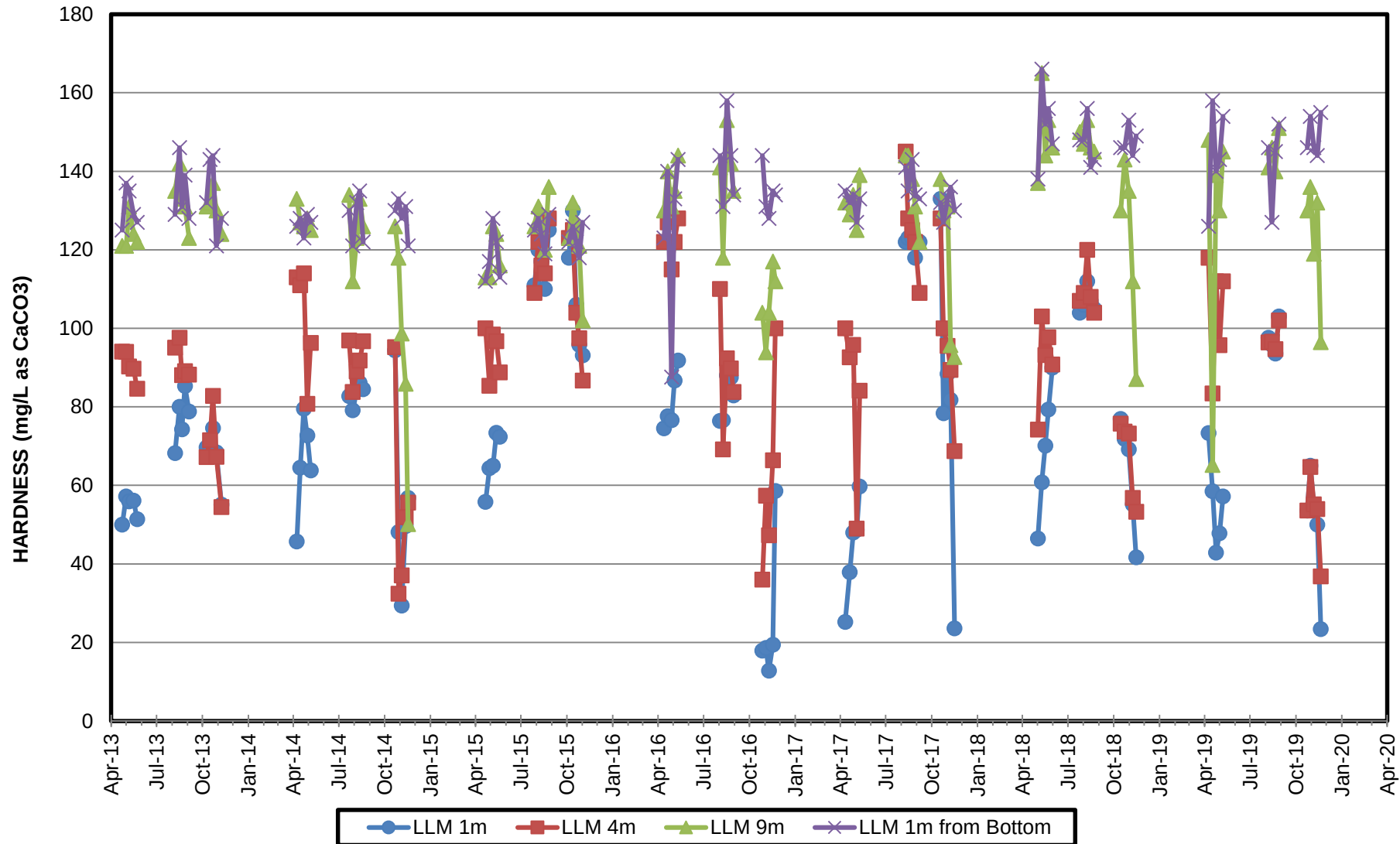
GRAPH 23
5 in 30 PH
NO NAME LAKE



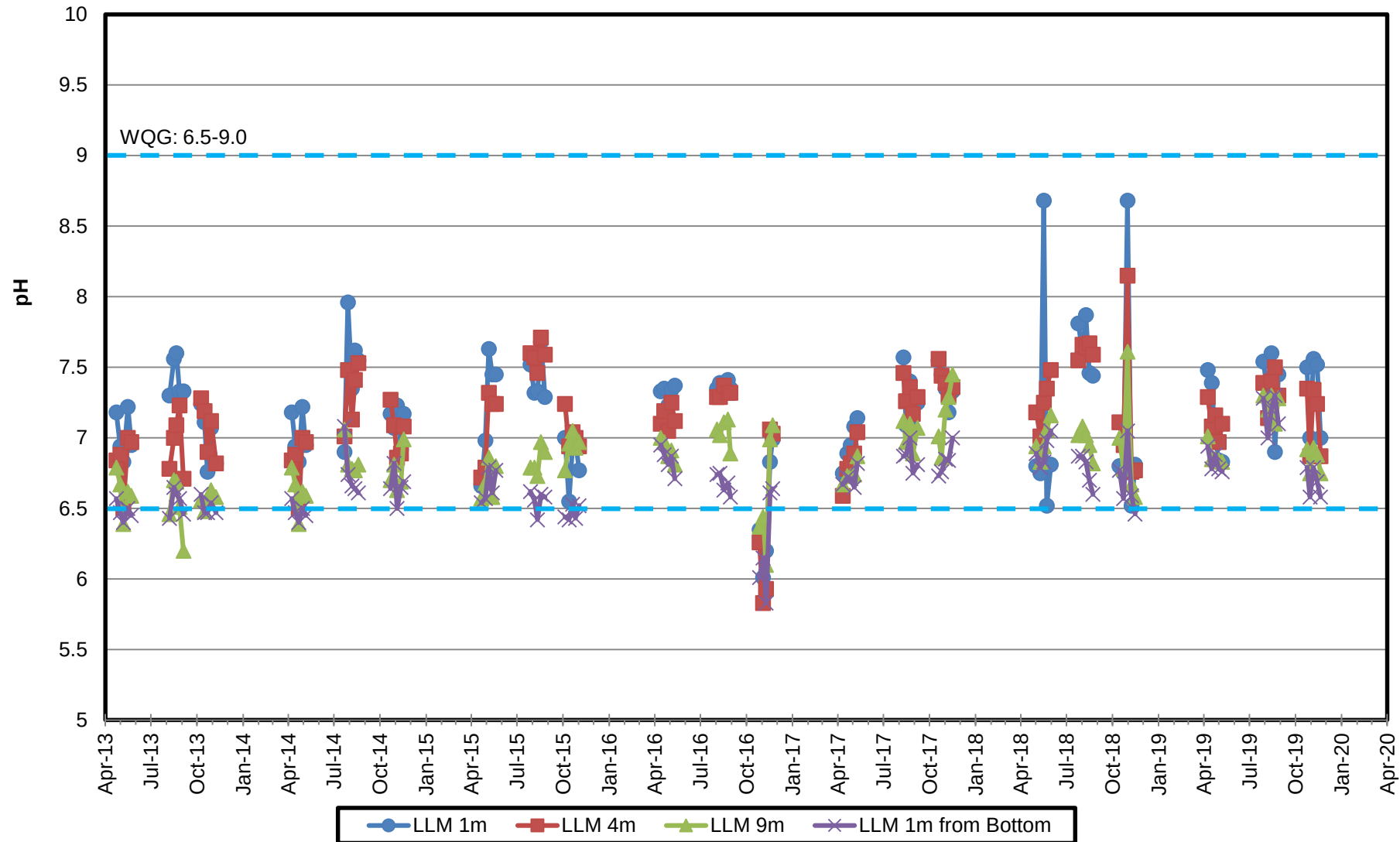
GRAPH 24
5 in 30 AVERAGE TOTAL COPPER
NO NAME LAKE



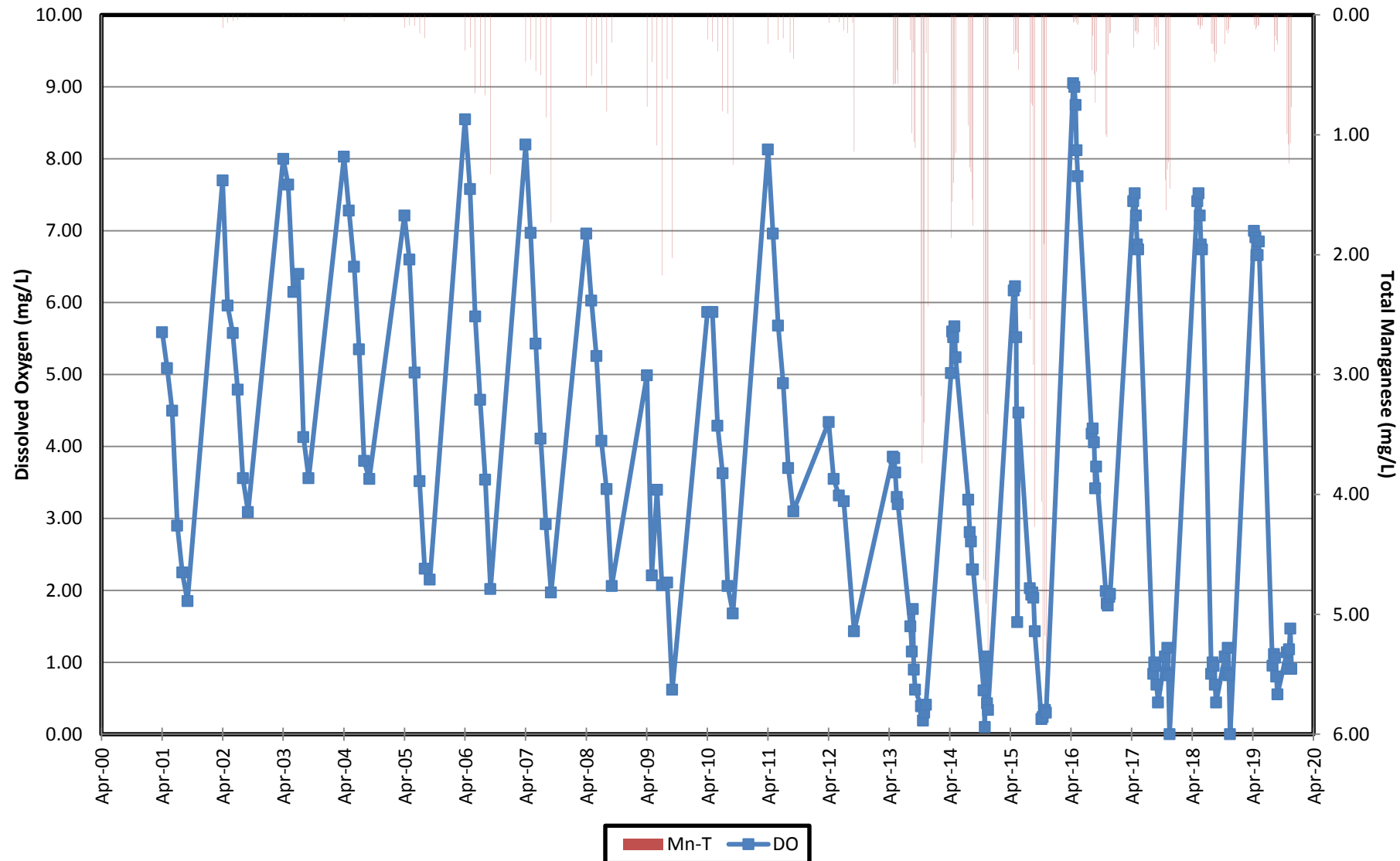
GRAPH 25
5 in 30 HARDNESS
LONG LAKE



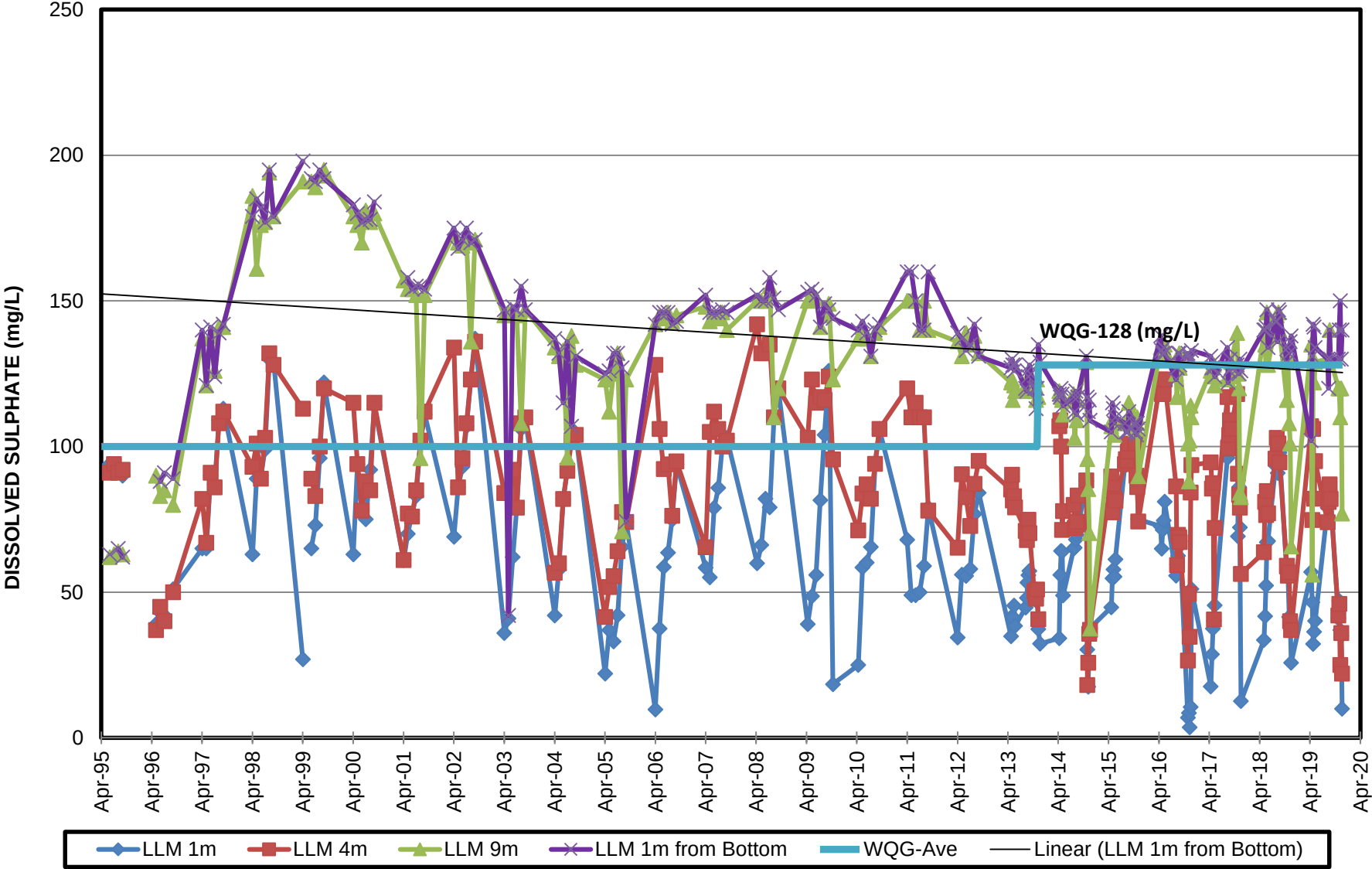
GRAPH 26
5 in 30 PH
LONG LAKE



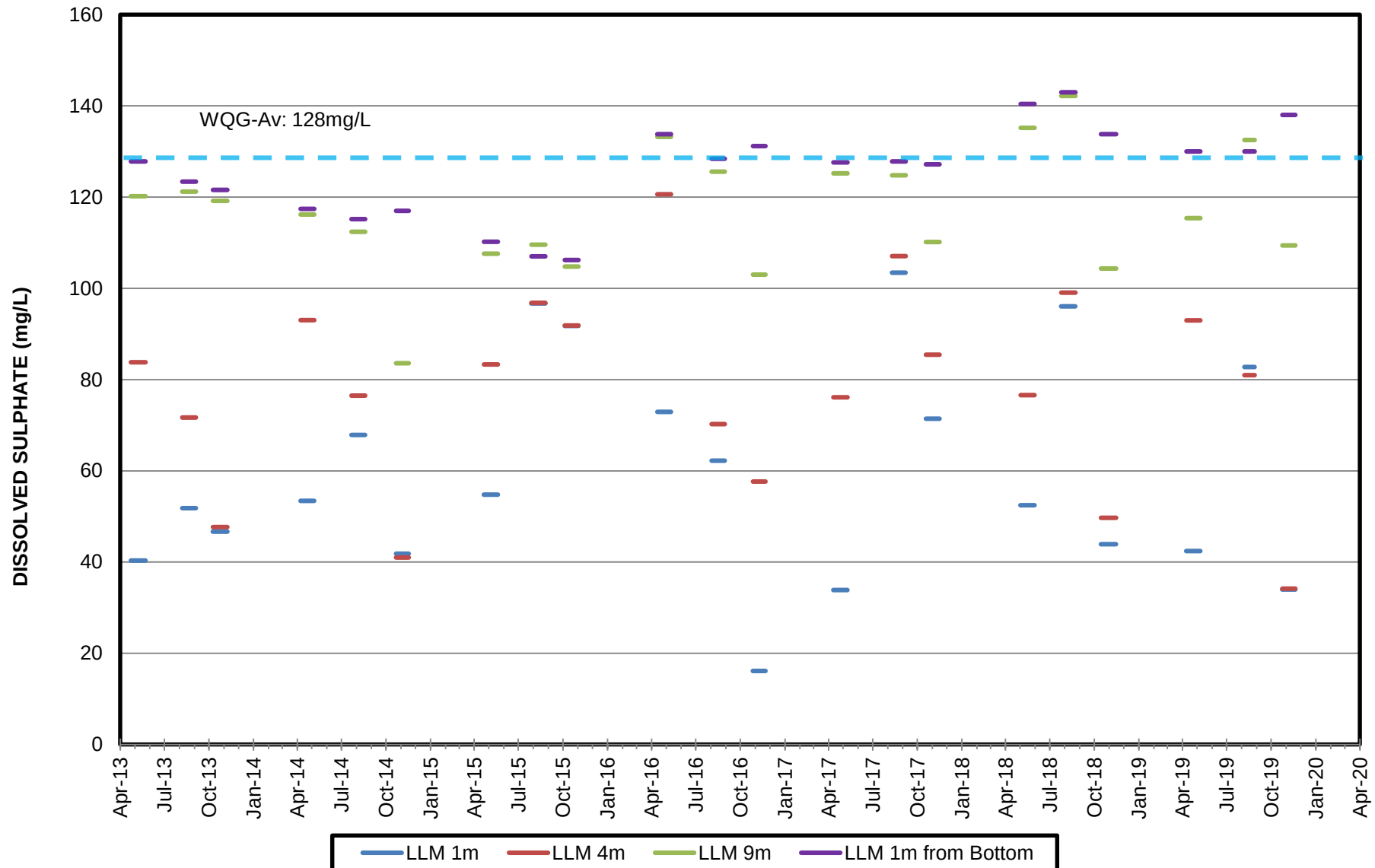
GRAPH 27
DO vs Mn-T - Long Lake 1 Metre From Bottom
2000-2019



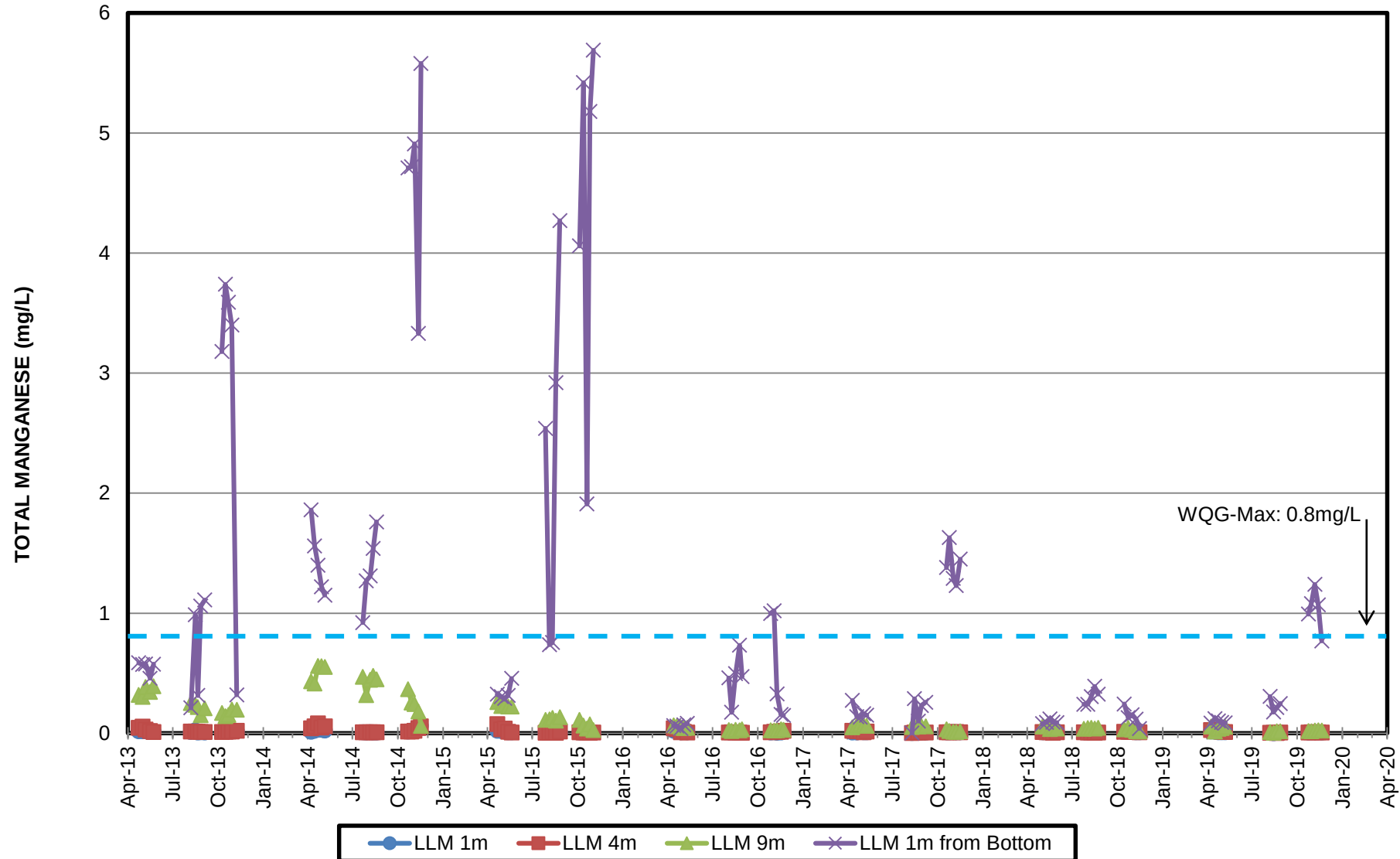
GRAPH 28
HISTORIC DISSOLVED SULPHATE
LONG LAKE



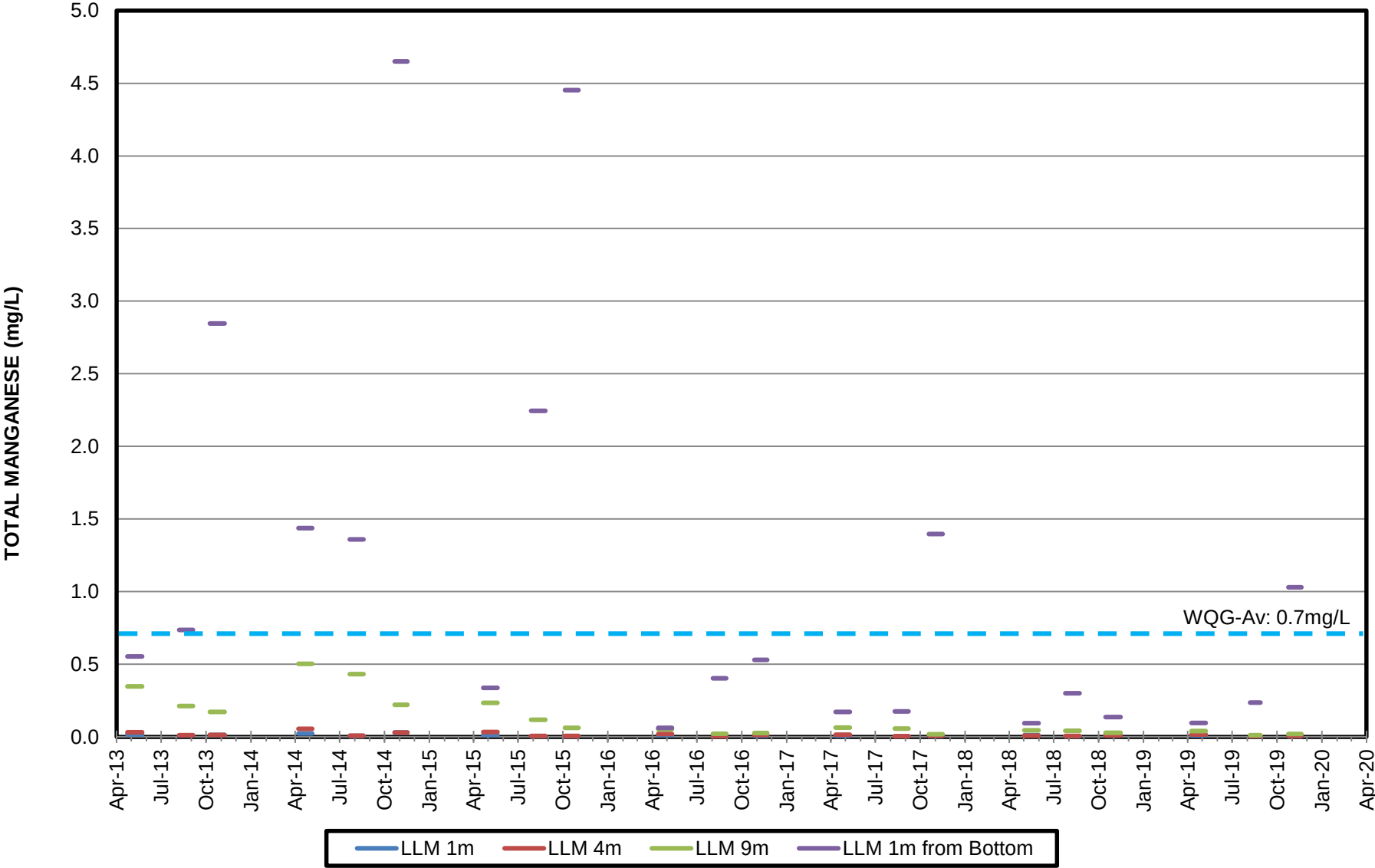
GRAPH 29
5 in 30 AVERAGE DISSOLVED SULPHATE
LONG LAKE



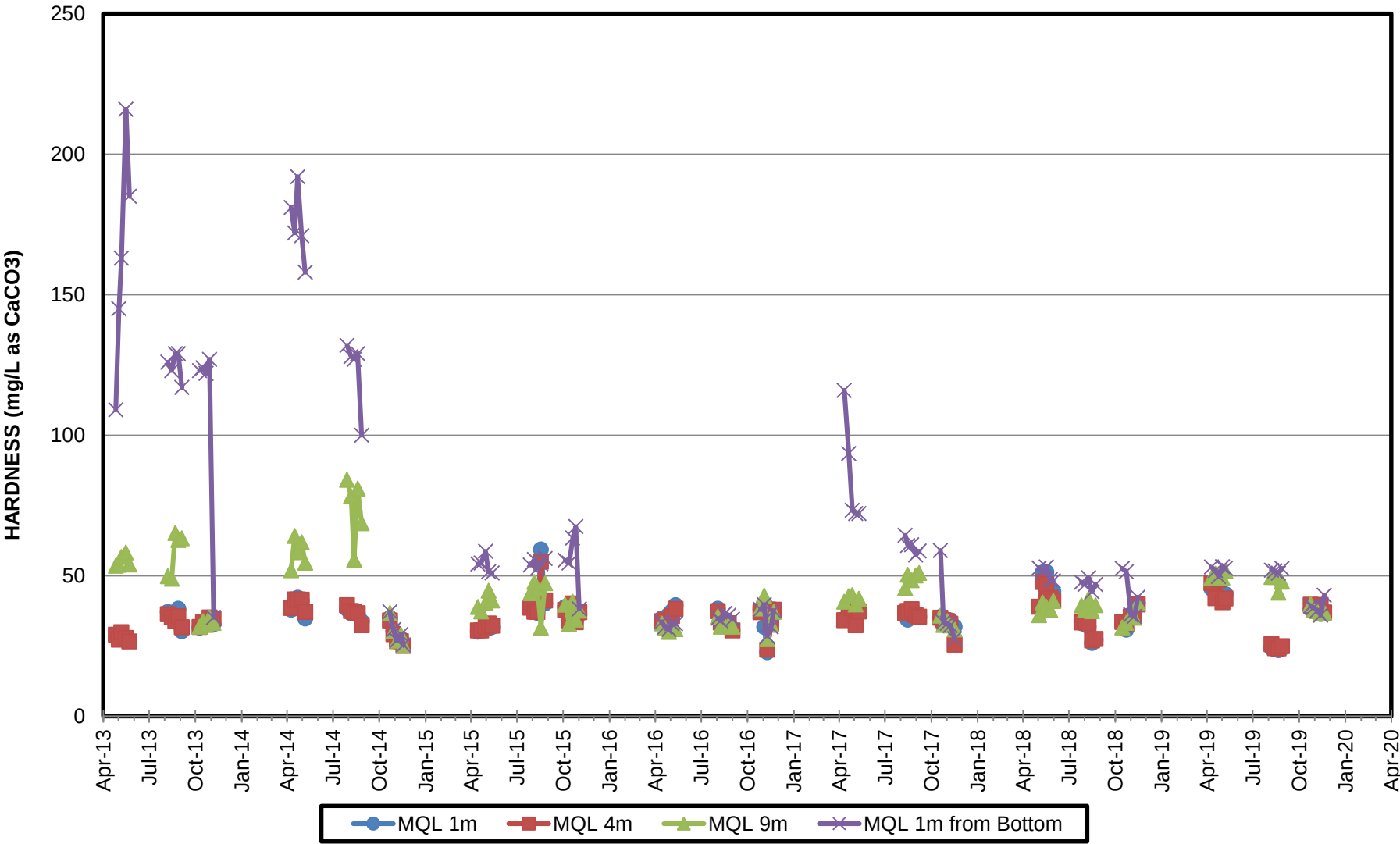
GRAPH 30
5 in 30 TOTAL MANGANESE
LONG LAKE



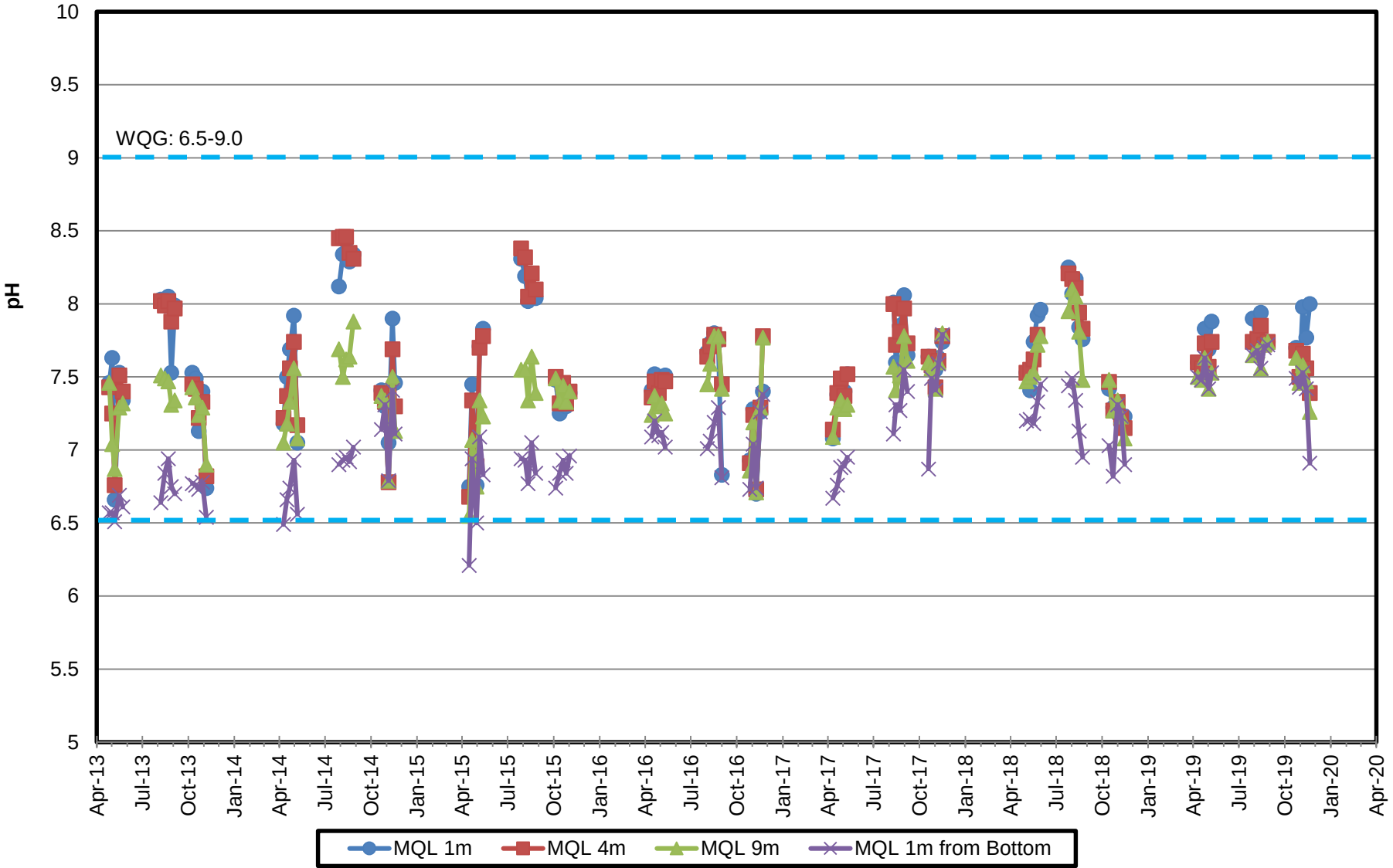
GRAPH 31
5 in 30 AVERAGE TOTAL MANGANESE
LONG LAKE



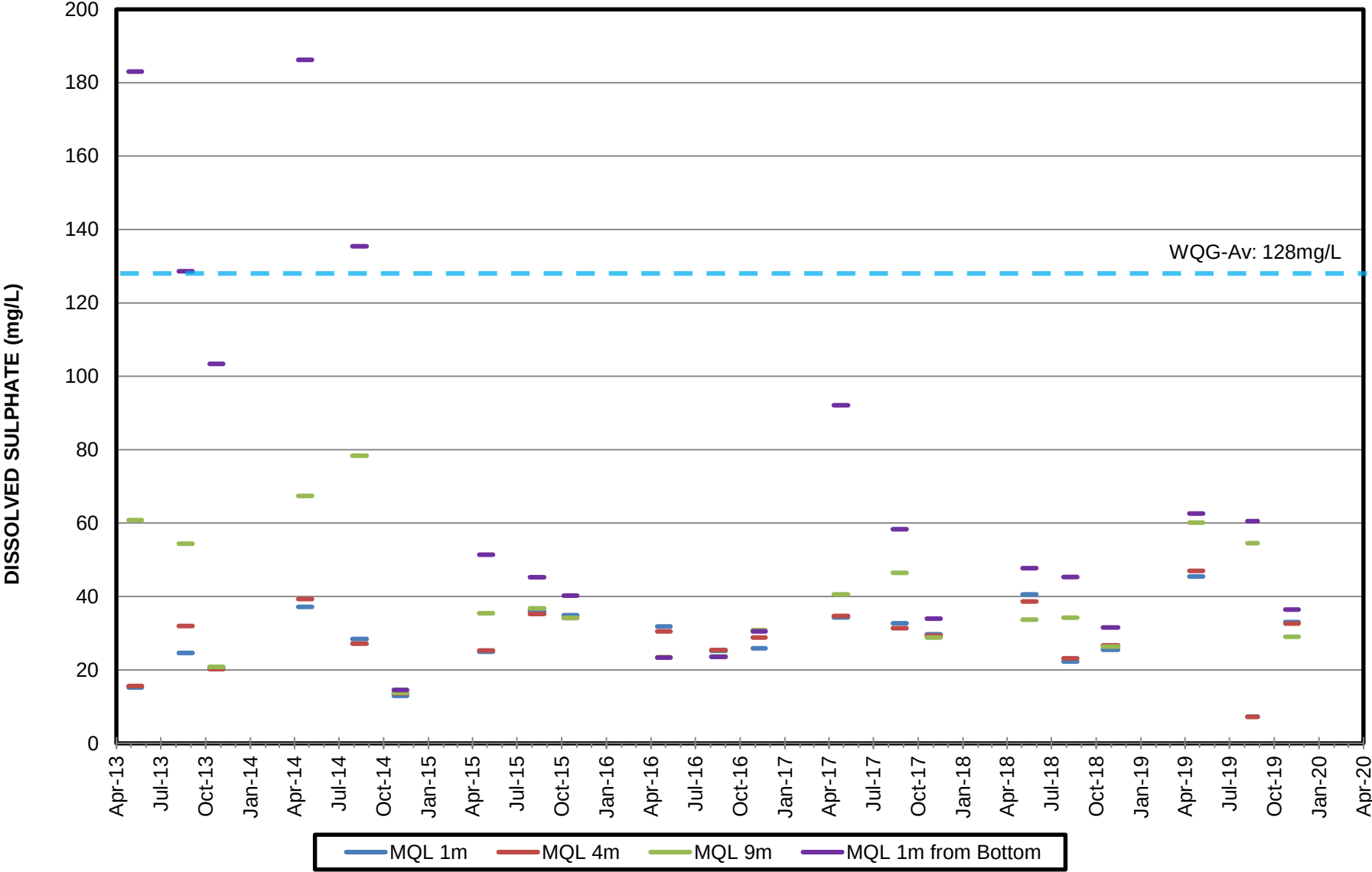
GRAPH 32
5 in 30 HARDNESS
MIDDLE QUINSAM LAKE



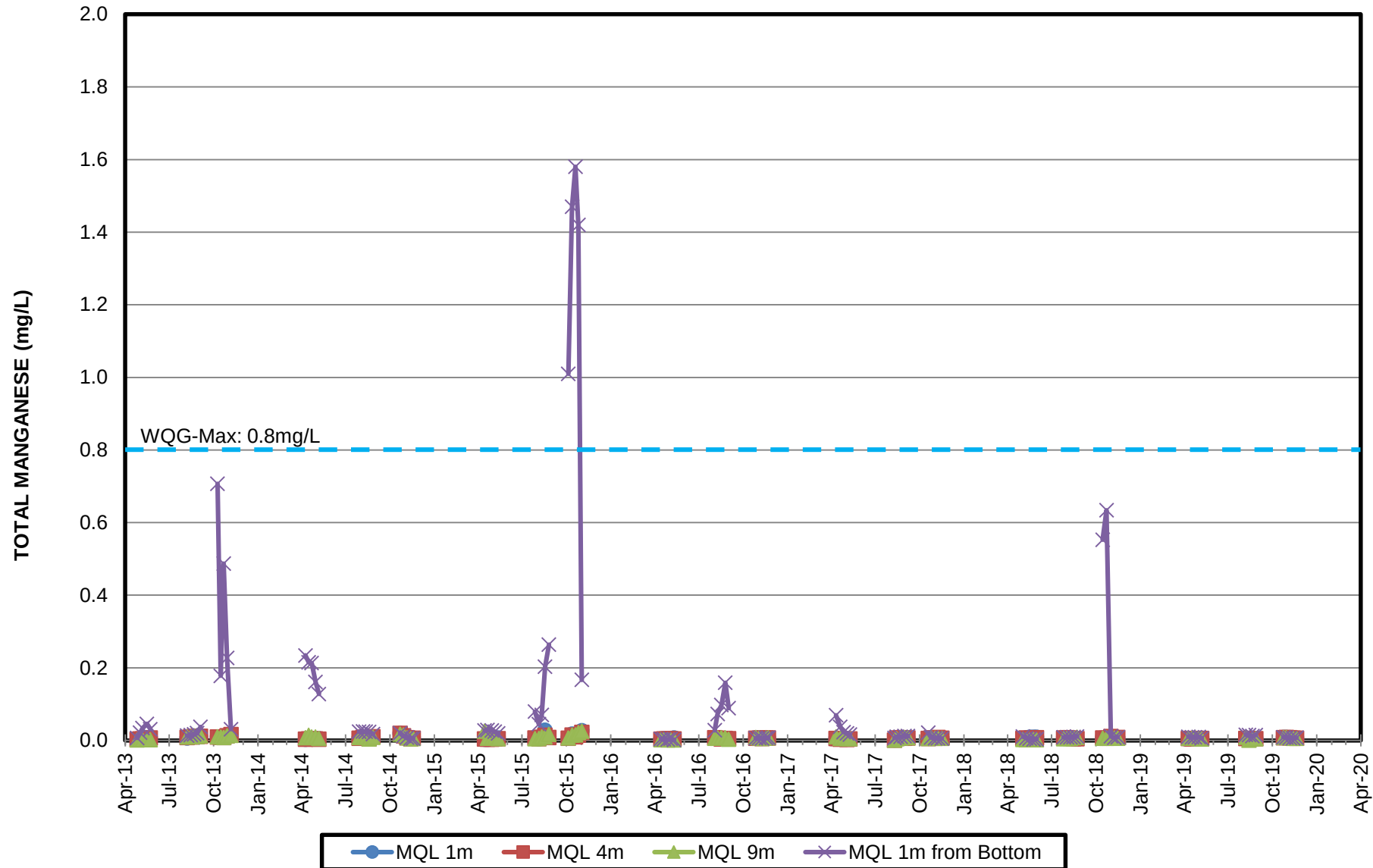
GRAPH 33
5 in 30 PH
MIDDLE QUINSAM LAKE



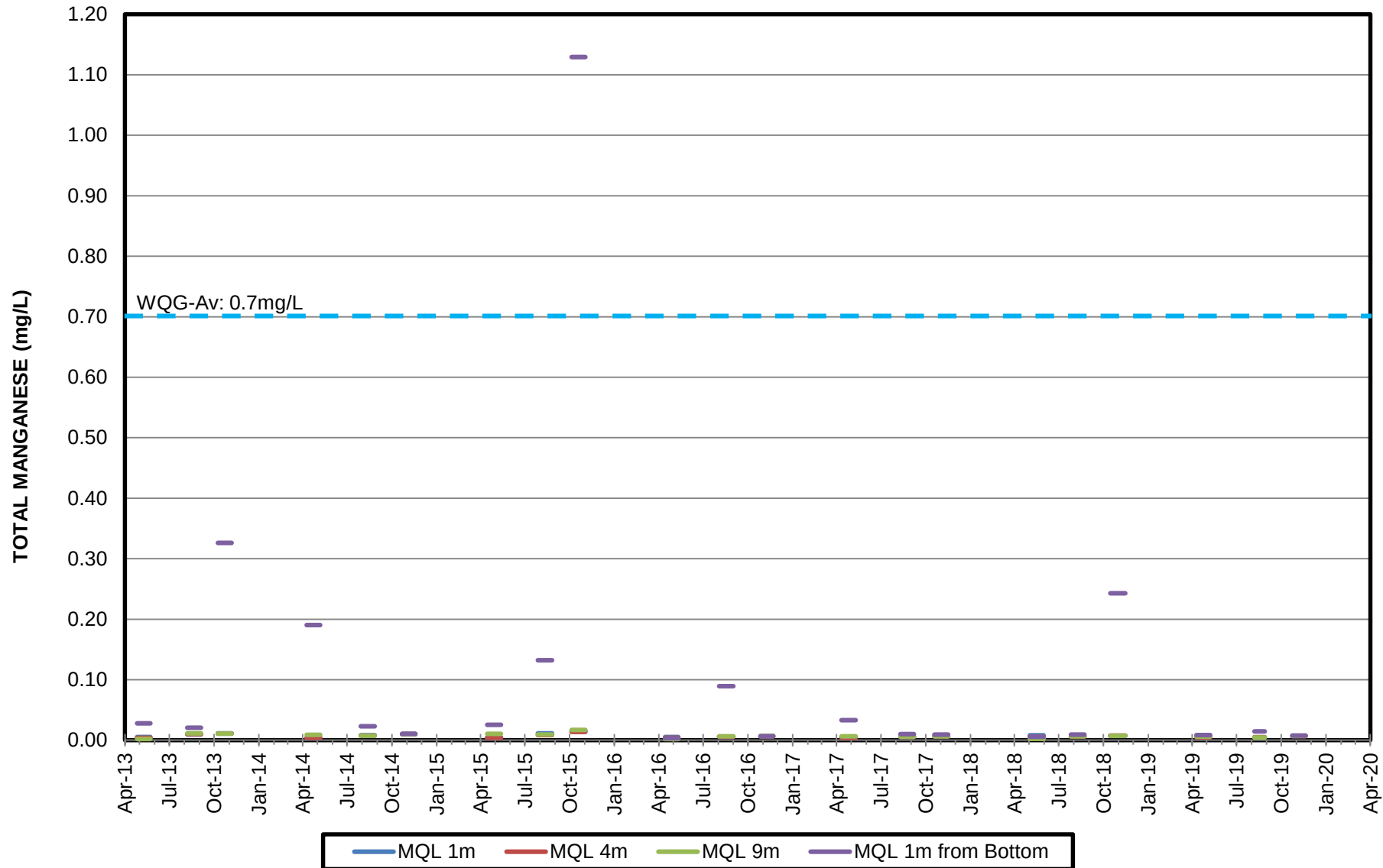
GRAPH 34
5 in 30 AVERAGE DISSOLVED SULPHATE
MIDDLE QUINSAM LAKE



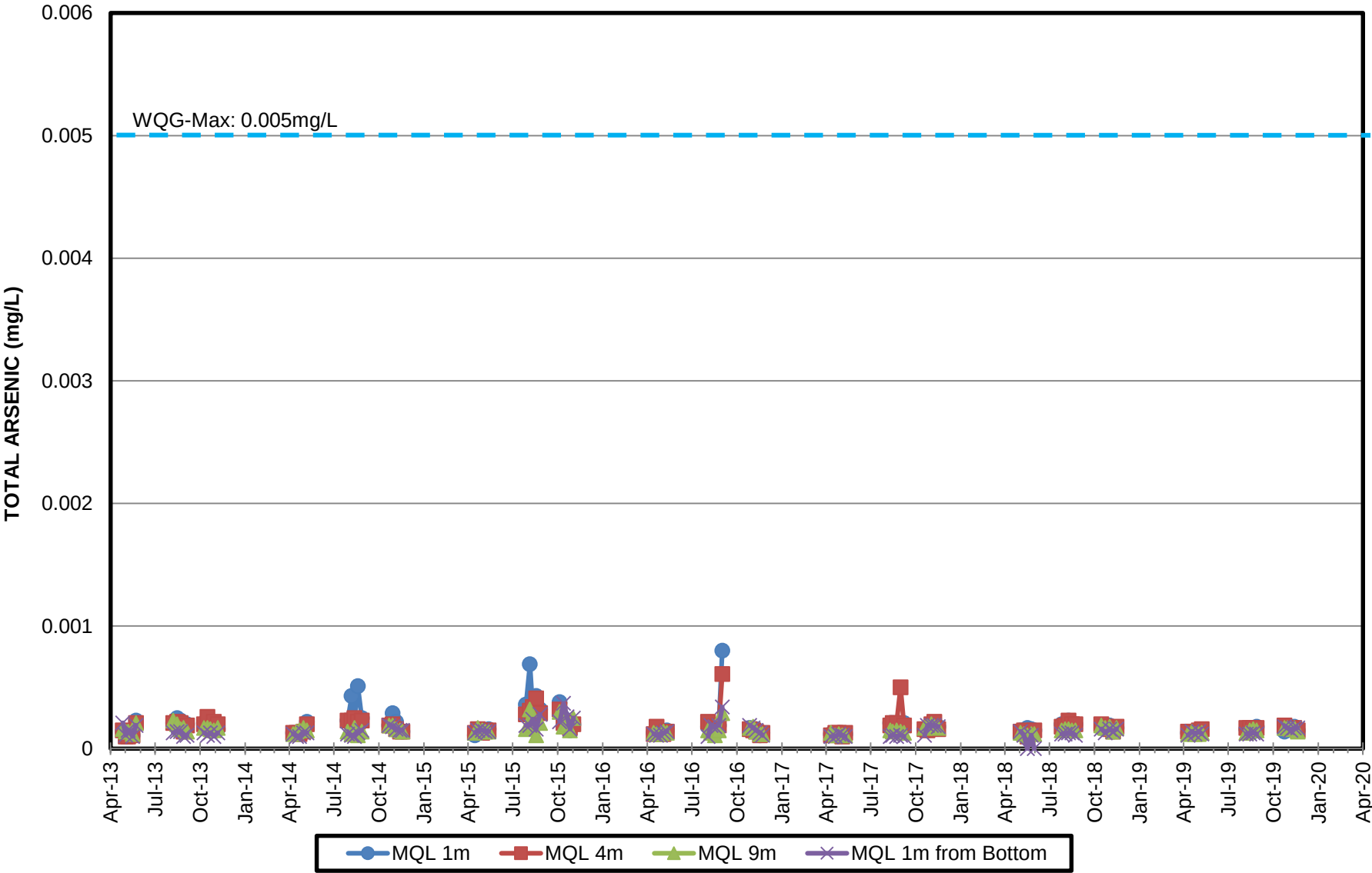
GRAPH 35
5 in 30 TOTAL MANGANESE
MIDDLE QUINSAM LAKE



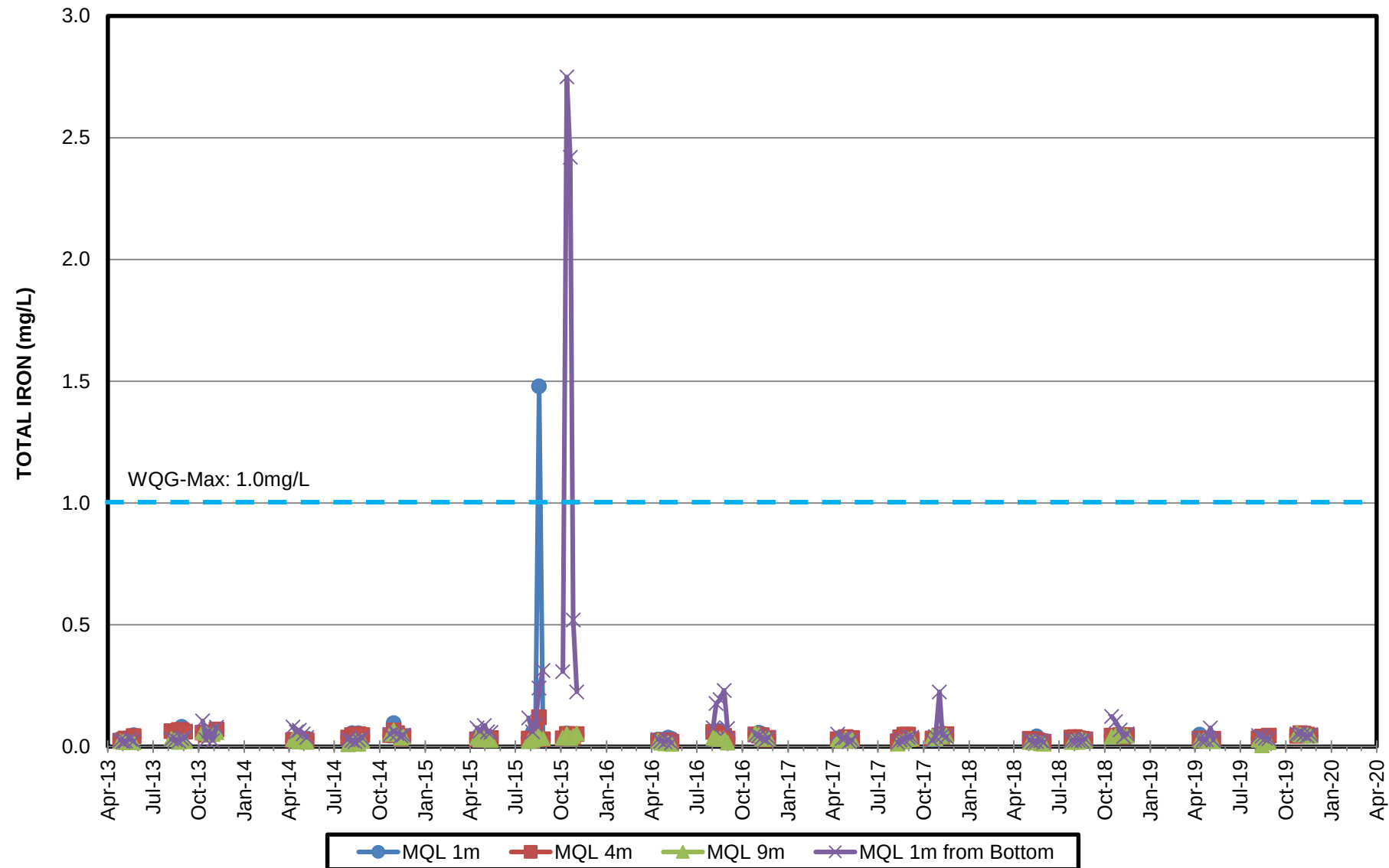
GRAPH 36
5 in 30 AVERAGE TOTAL MANGANESE
MIDDLE QUINSAM LAKE



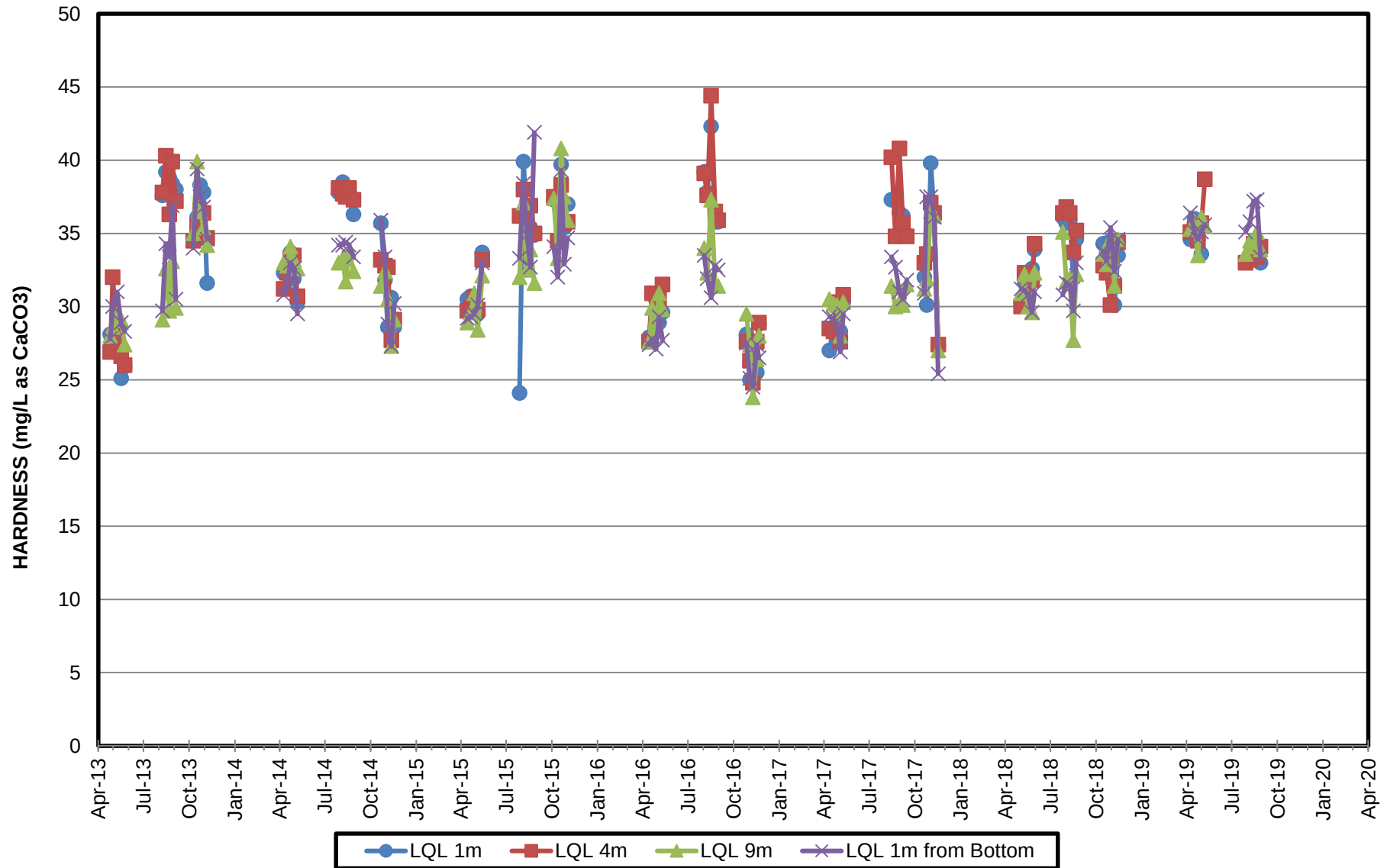
GRAPH 37
5 in 30 TOTAL ARSENIC
MIDDLE QUINSAM LAKE



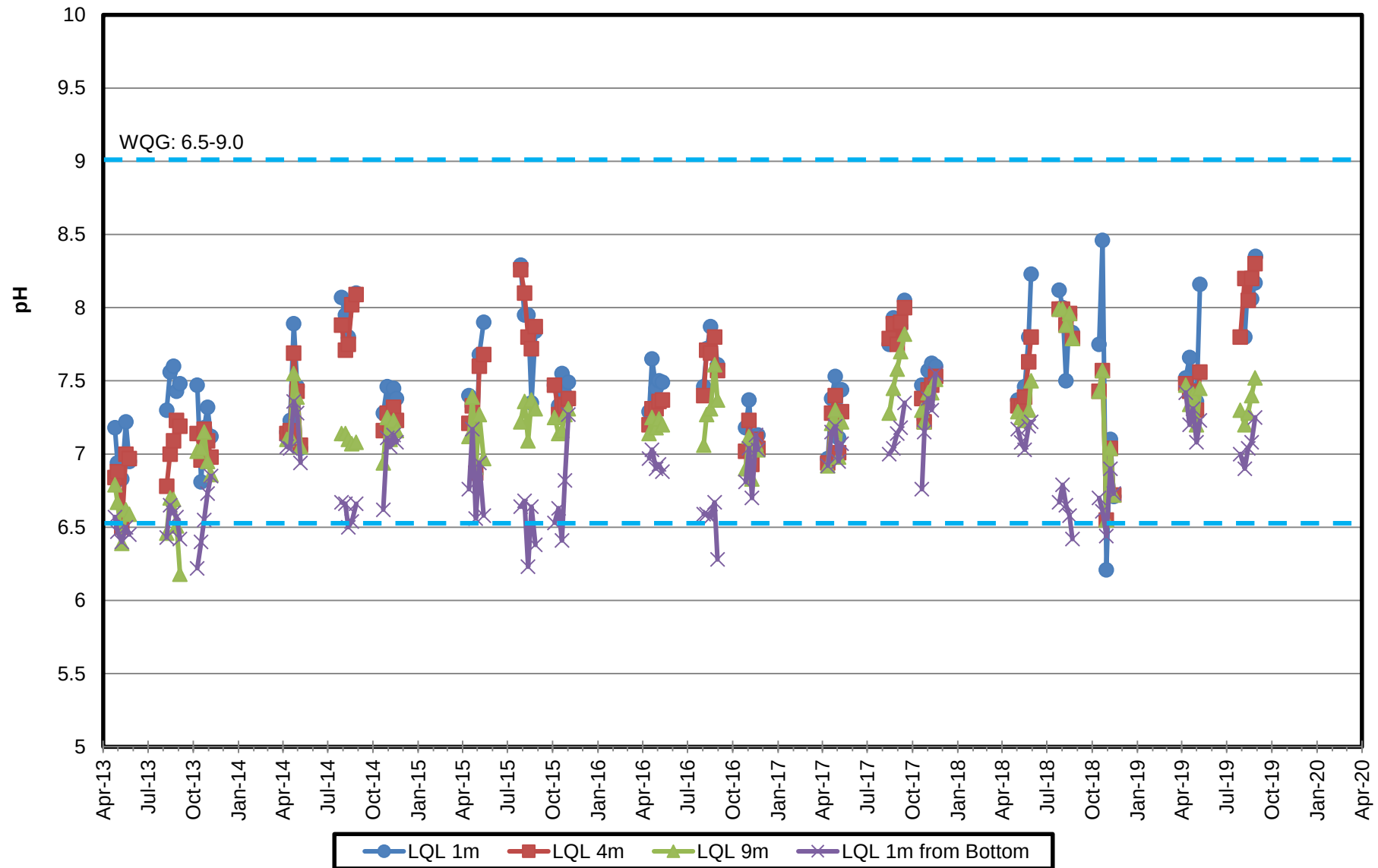
GRAPH 38
5 in 30 TOTAL IRON
MIDDLE QUINSAM LAKE



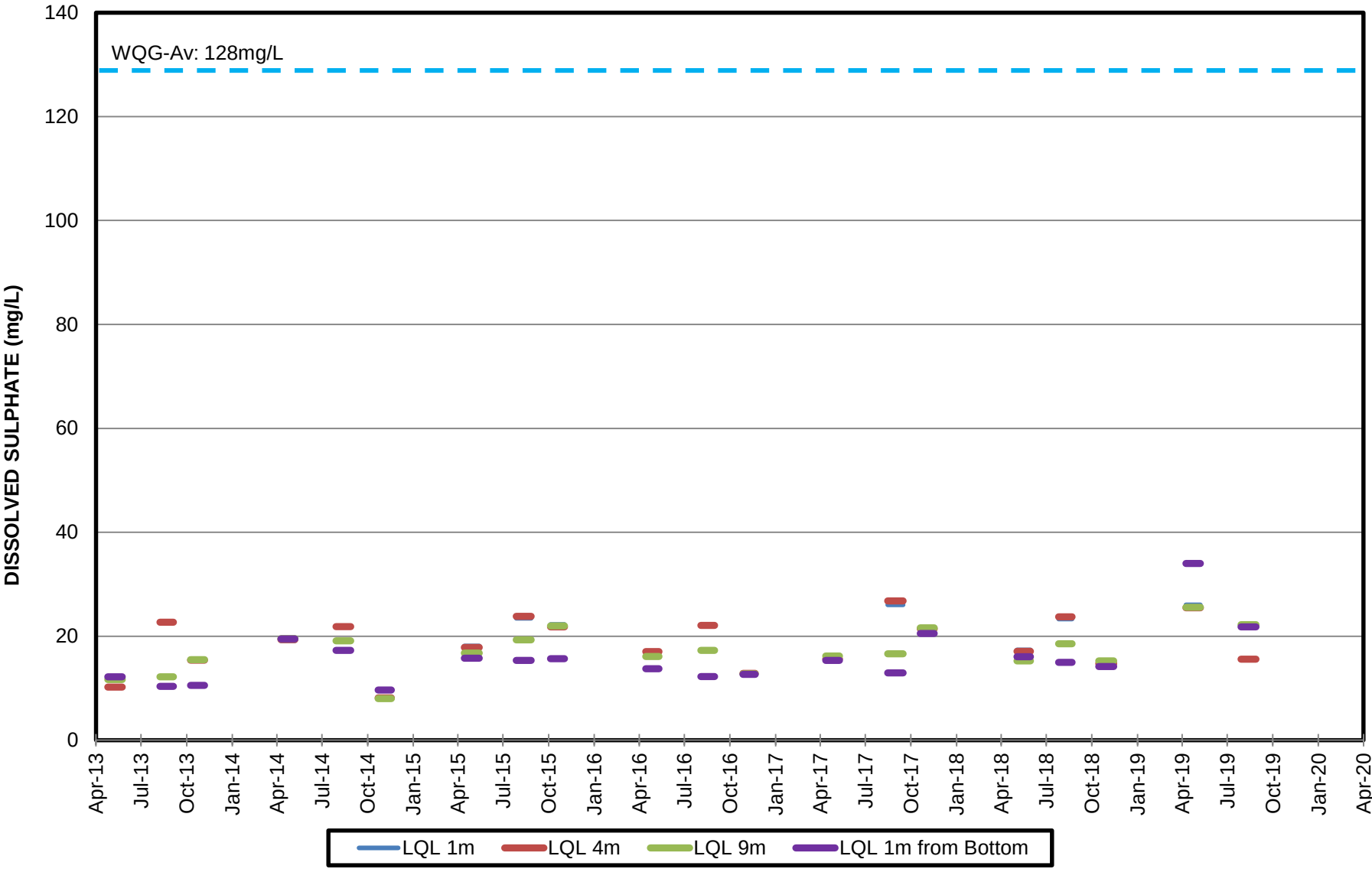
GRAPH 39
5 in 30 HARDNESS
LOWER QUINSAM LAKE



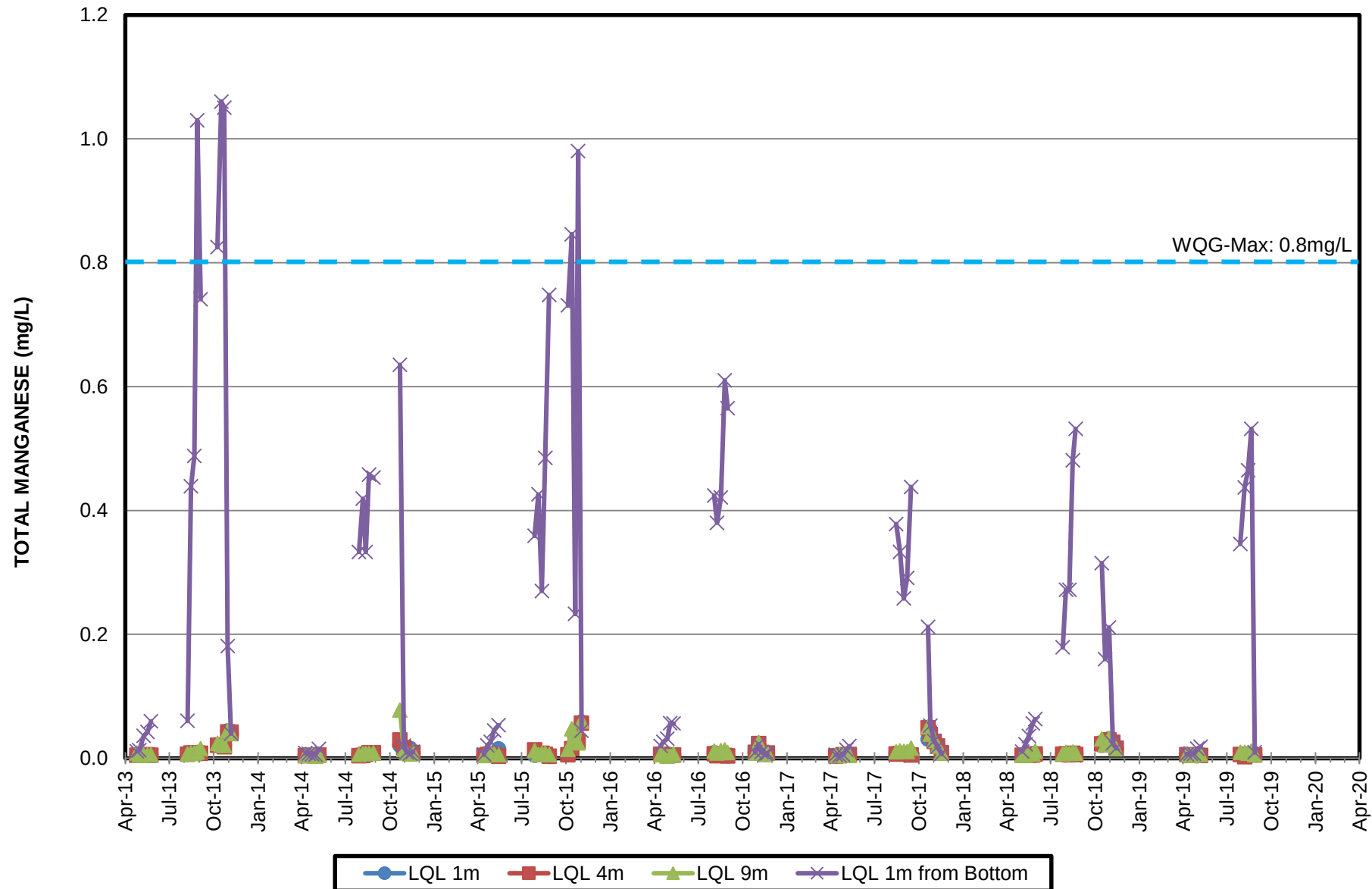
GRAPH 40
5 in 30 PH
LOWER QUINSAM LAKE



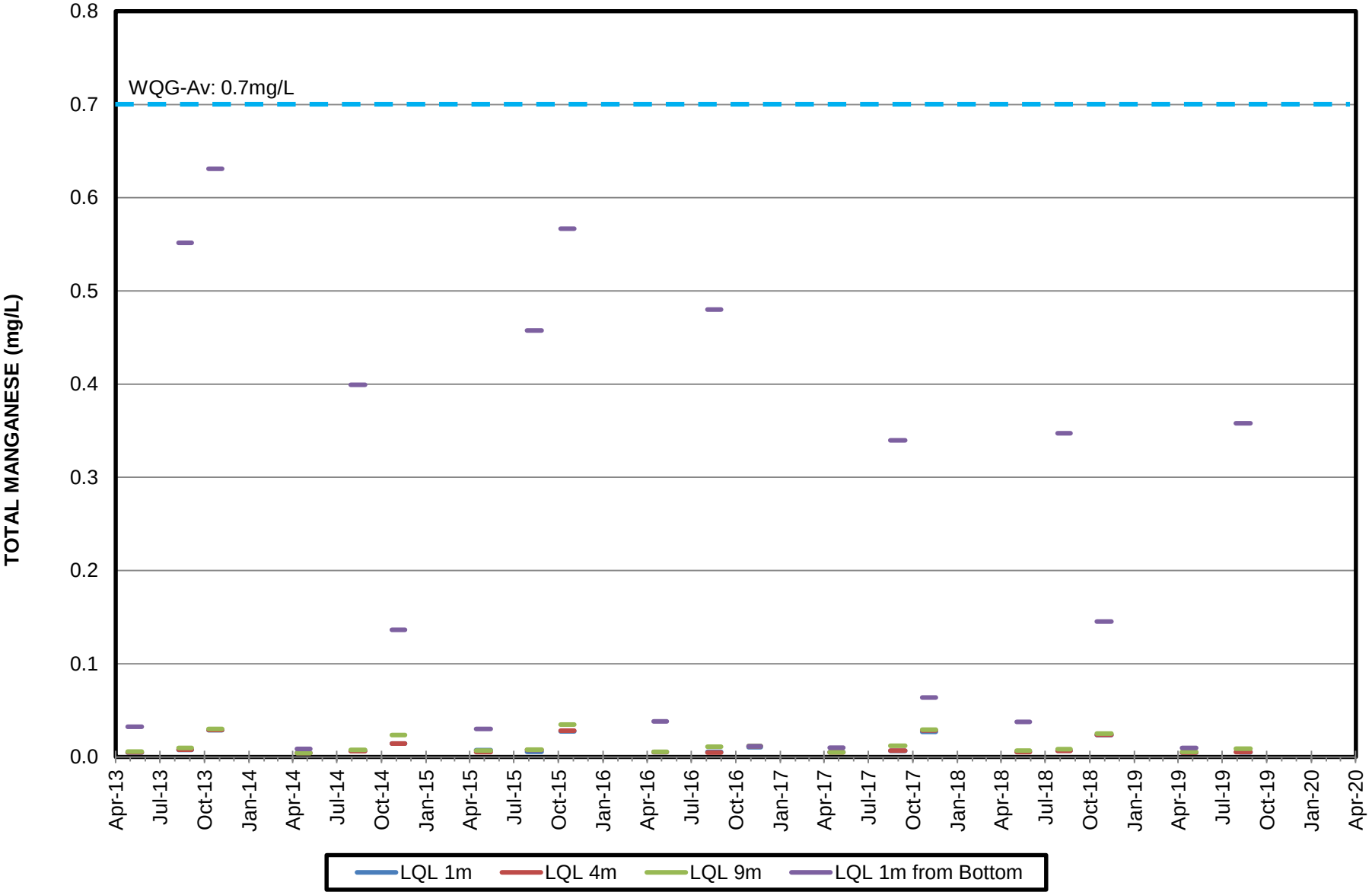
Graph 41
5 in 30 AVERAGE DISSOLVED SULPHATE
LOWER QUINSAM LAKE



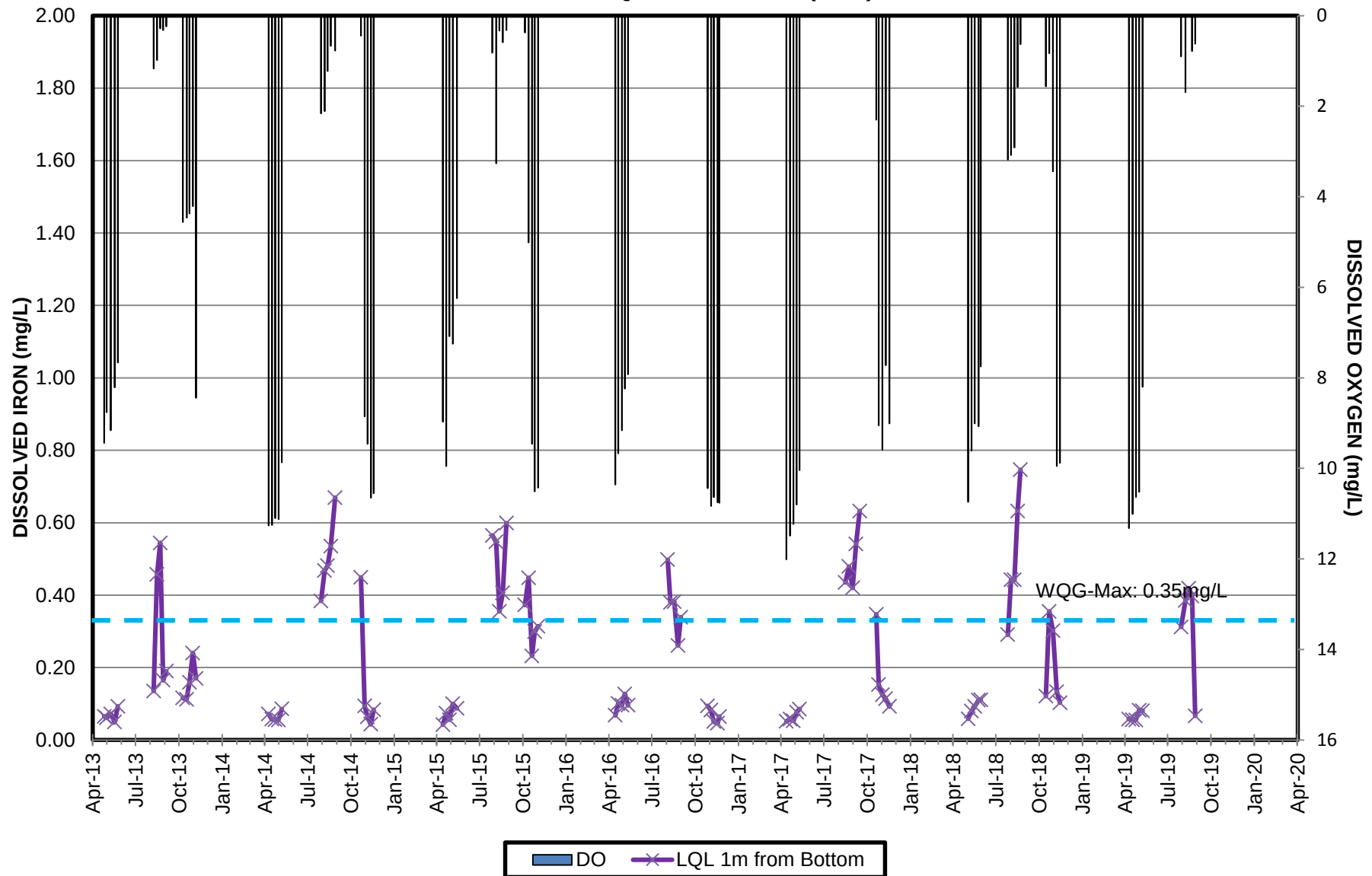
GRAPH 42
5 in 30 TOTAL MANGANESE
LOWER QUINSAM LAKE



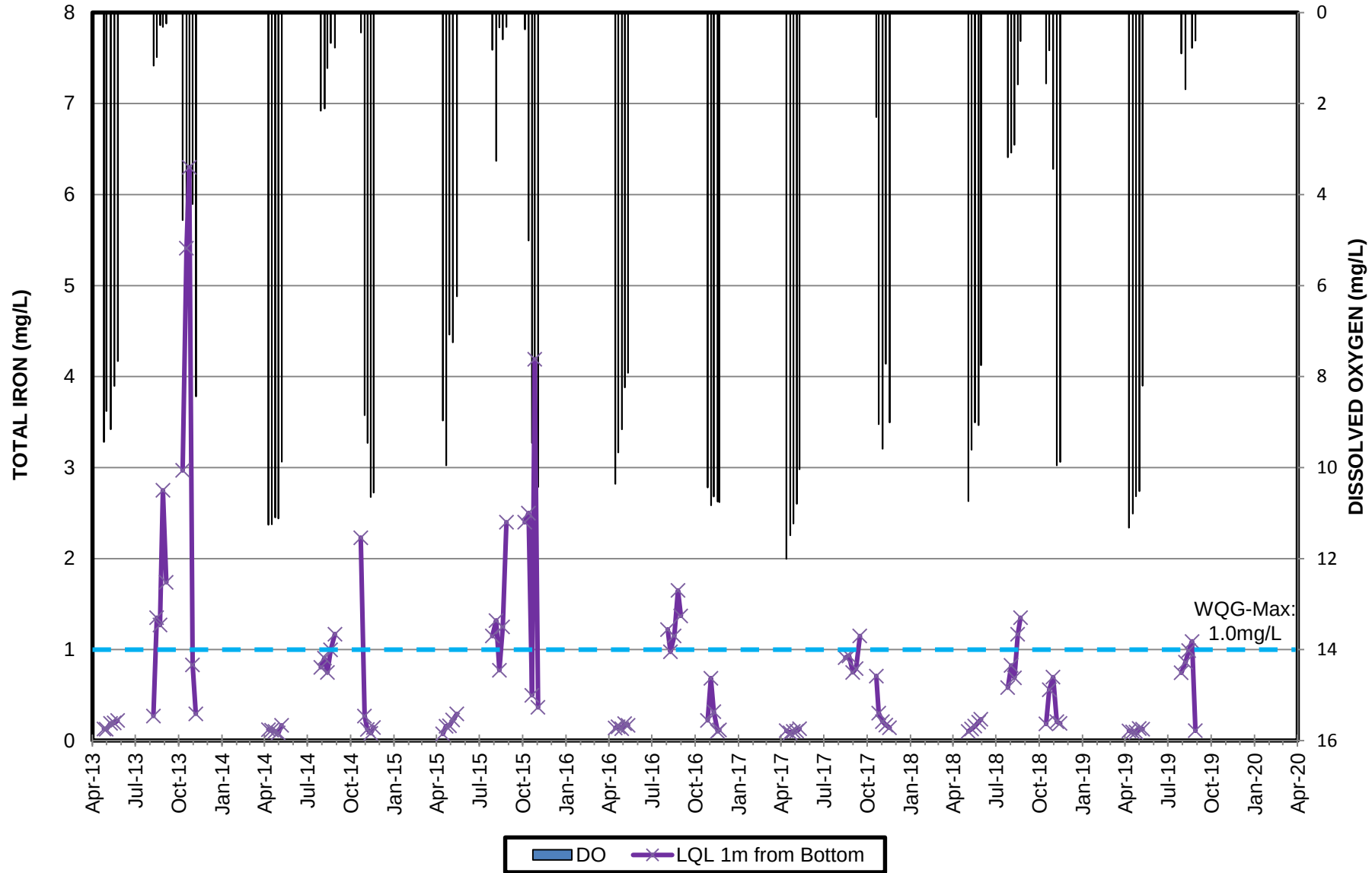
GRAPH 43
5 in 30 AVERAGE TOTAL MANGANESE
LOWER QUINSAM LAKE



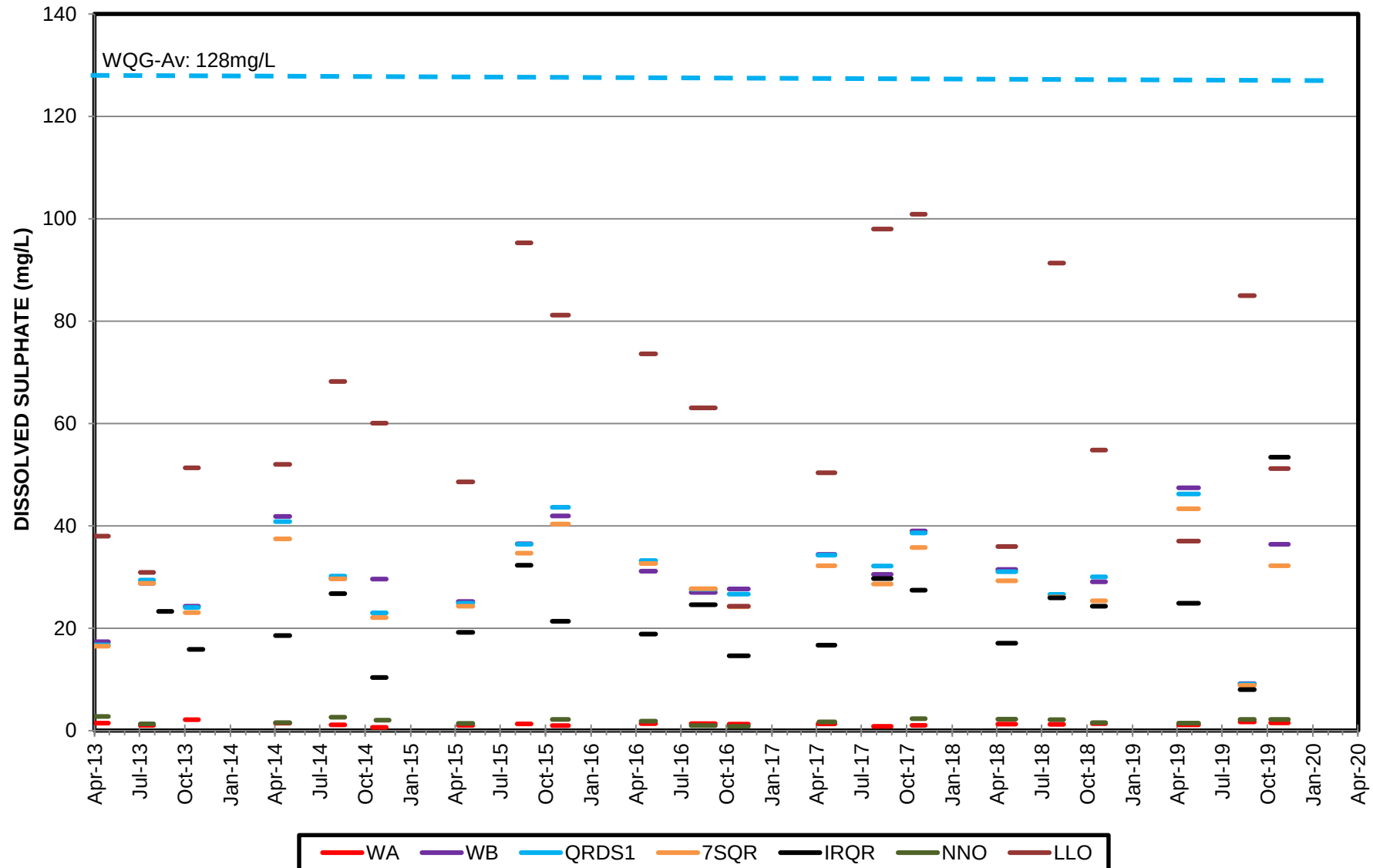
GRAPH 44
5 in 30 DISSOLVED IRON VS DISSOLVED OXYGEN
 LOWER QUINSAM LAKE (1mb)



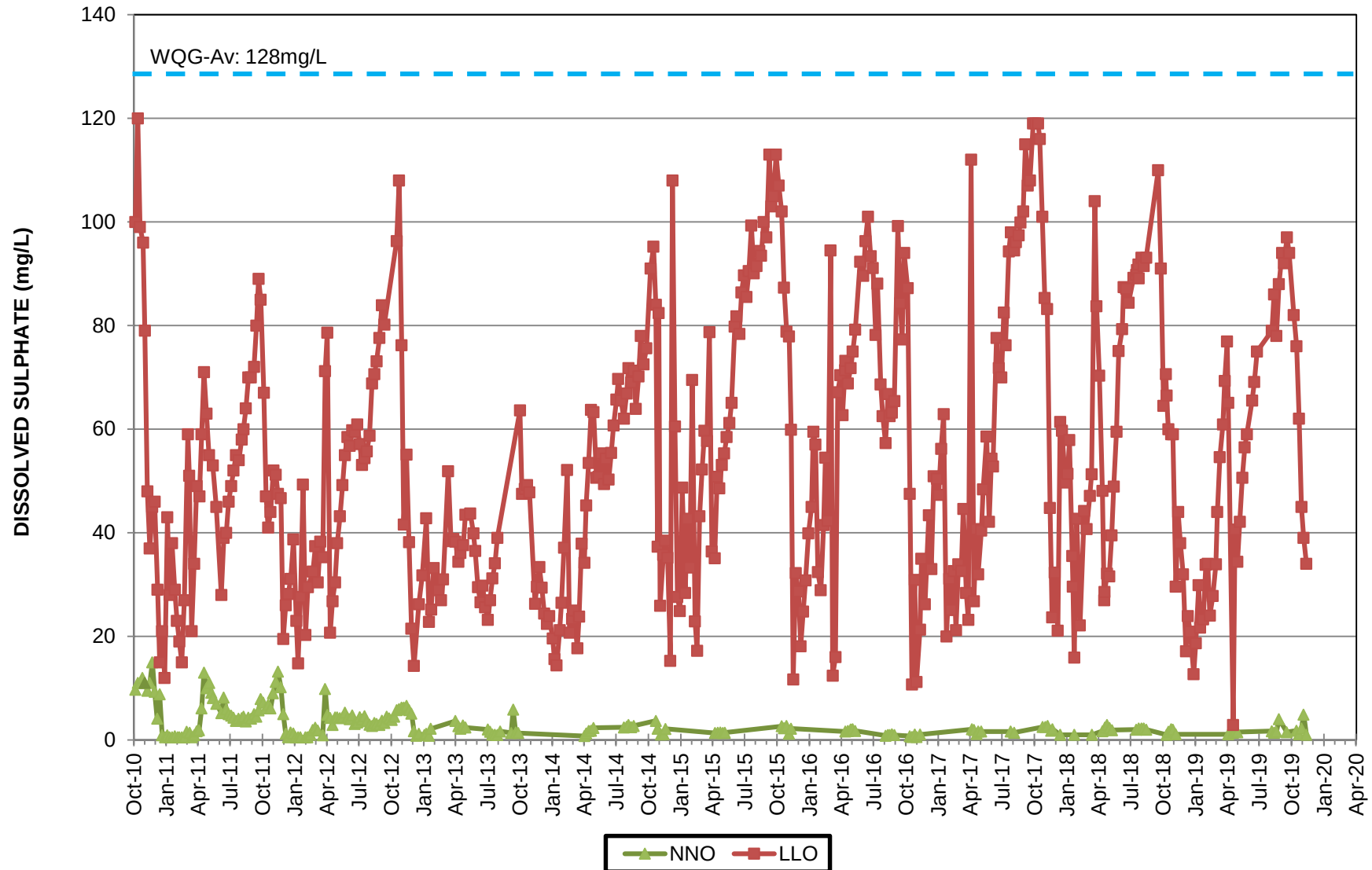
GRAPH 45
5 in 30 TOTAL IRON VS DISSOLVED OXYGEN
LOWER QUINSAM LAKE (1mb)



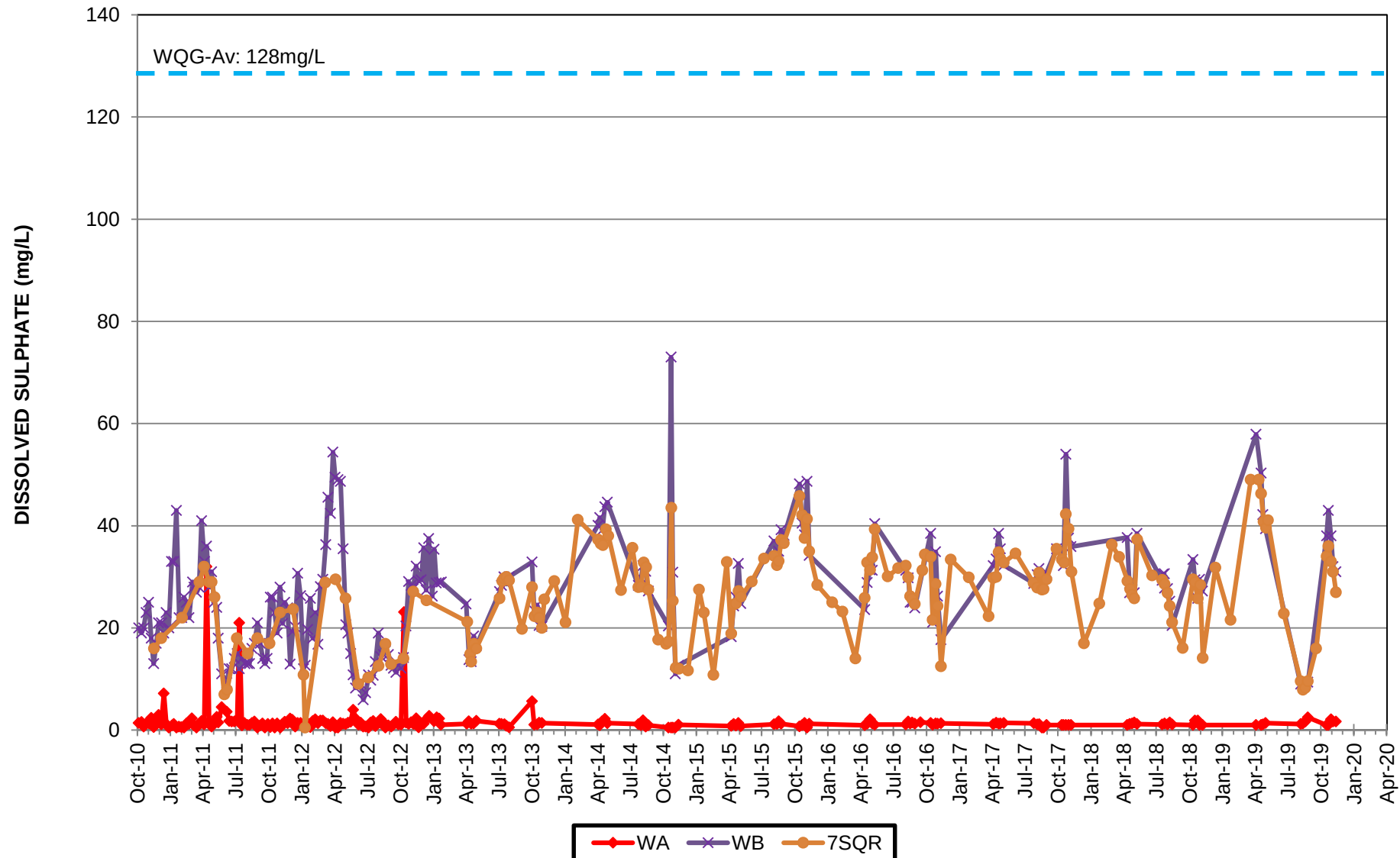
GRAPH 46
5 IN 30 AVERAGE DISSOLVED SULPHATE
QUINSAM SUB BASIN: RIVERS AND STREAMS



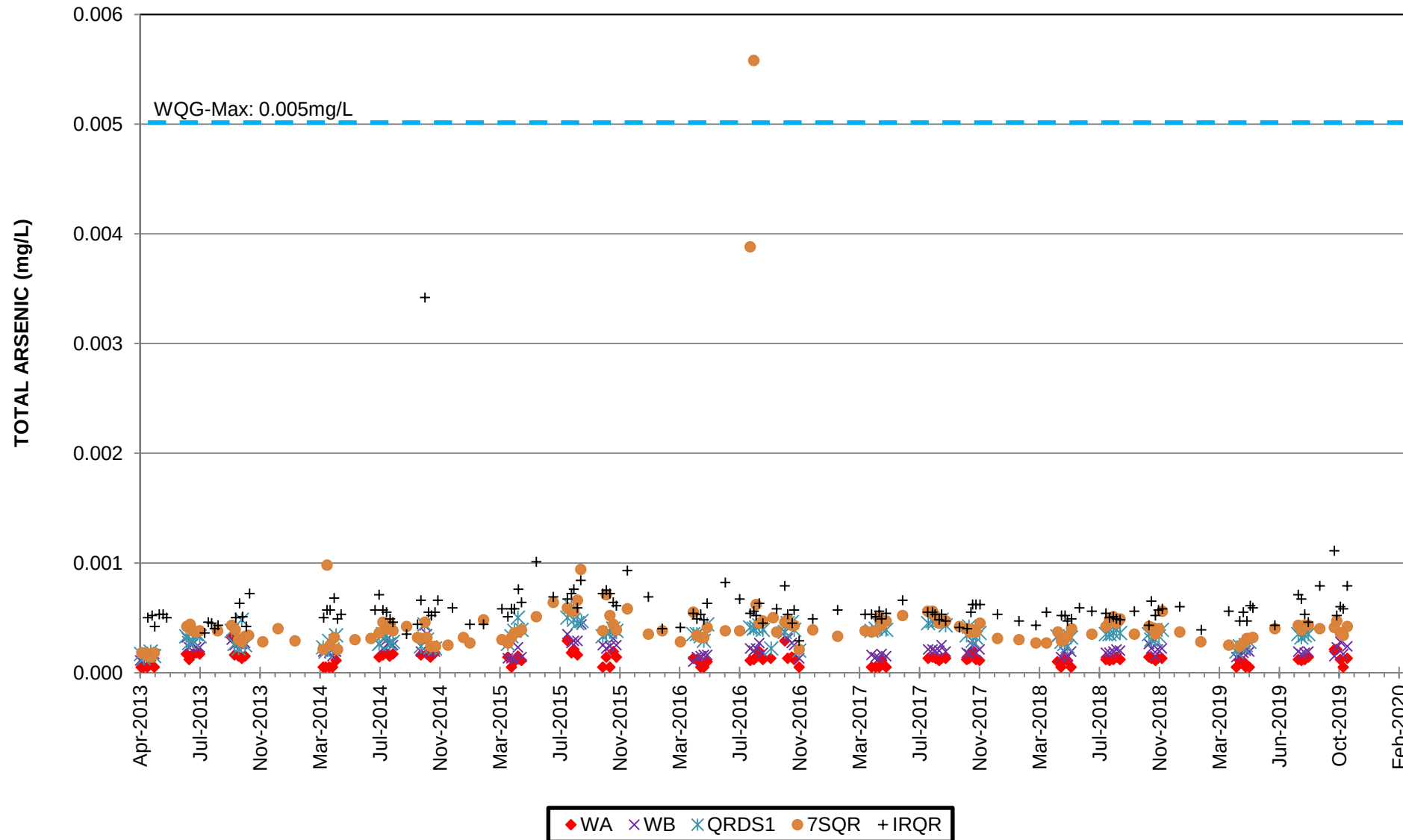
GRAPH 47
DISSOLVED SULPHATE
QUINSAM SUB BASIN: RIVERS AND STREAMS



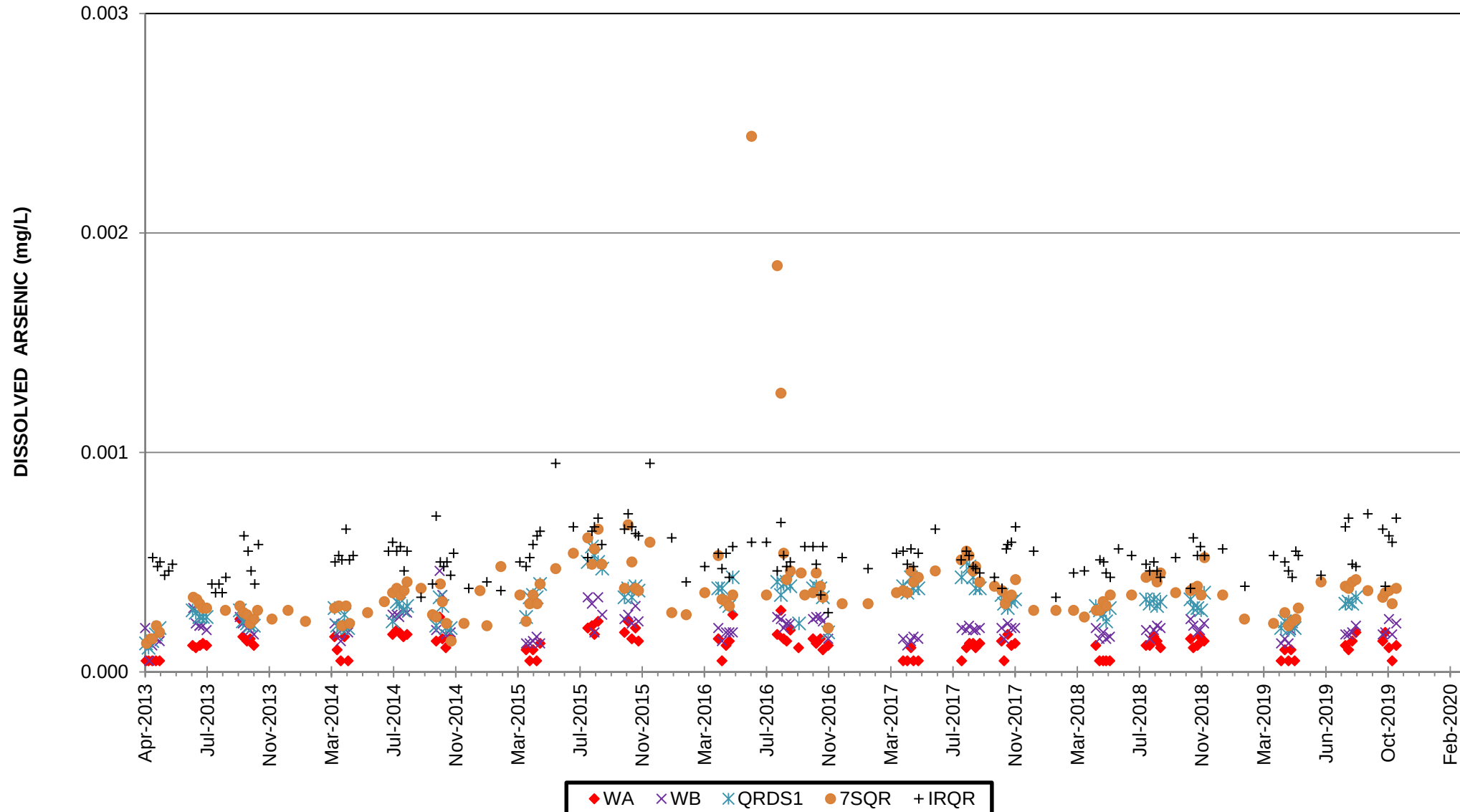
GRAPH 48
DISSOLVED SULPHATE
QUINSAM RIVER SITES (WA, WB to 7SQR)



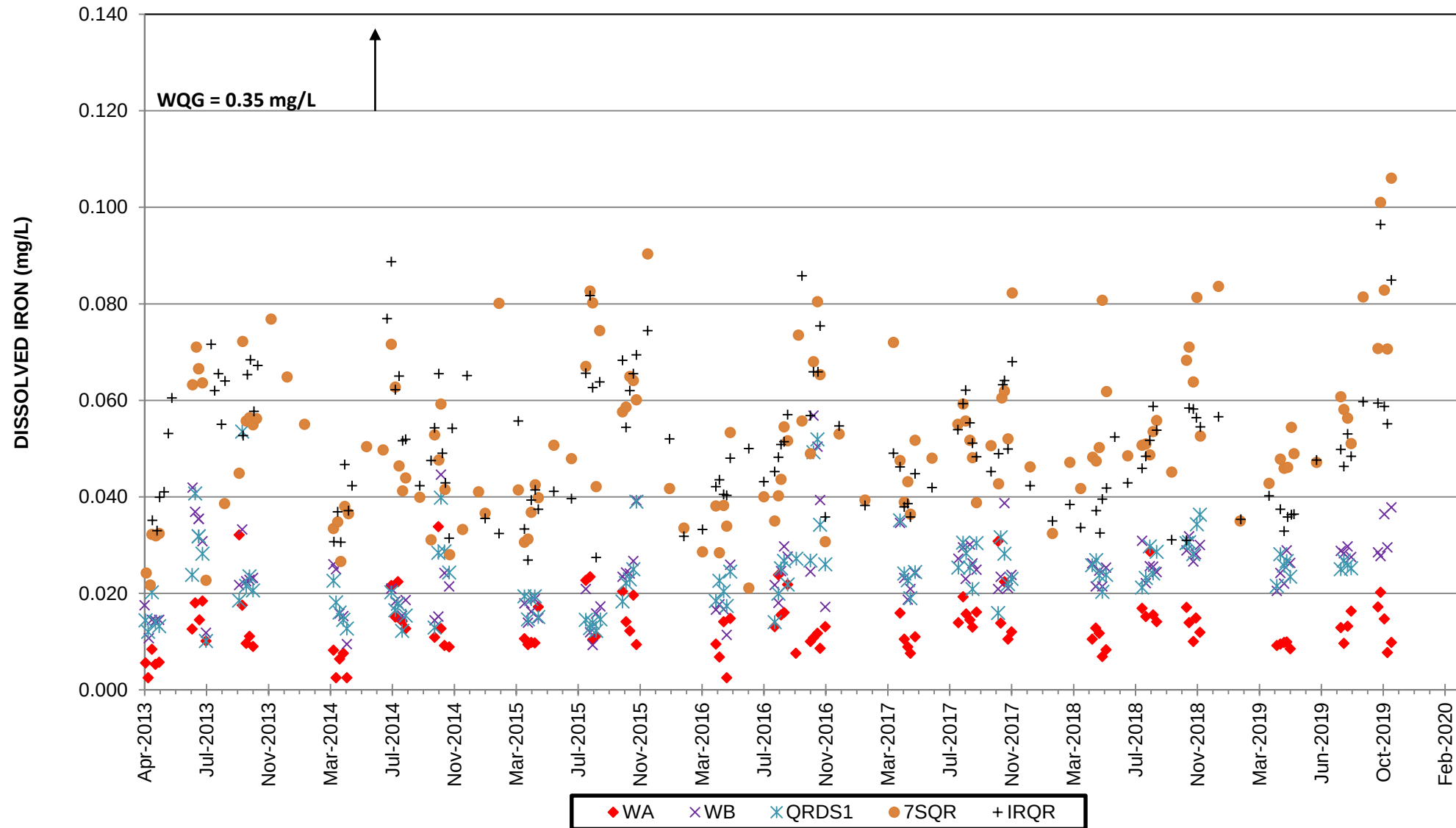
GRAPH 49
TOTAL ARSENIC
QUINSAM RIVER



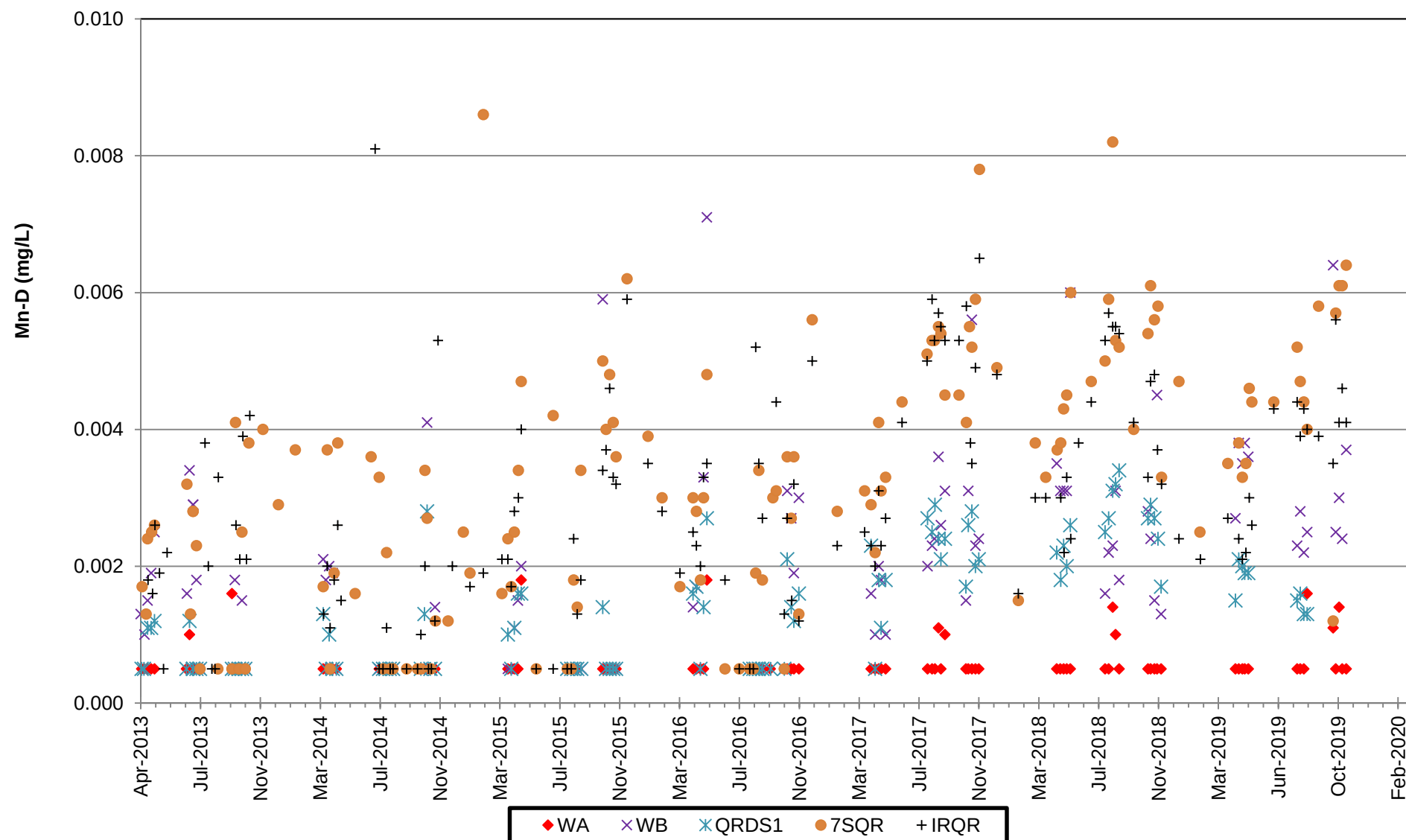
GRAPH 50
DISSOLVED ARSENIC
QUINSAM RIVER



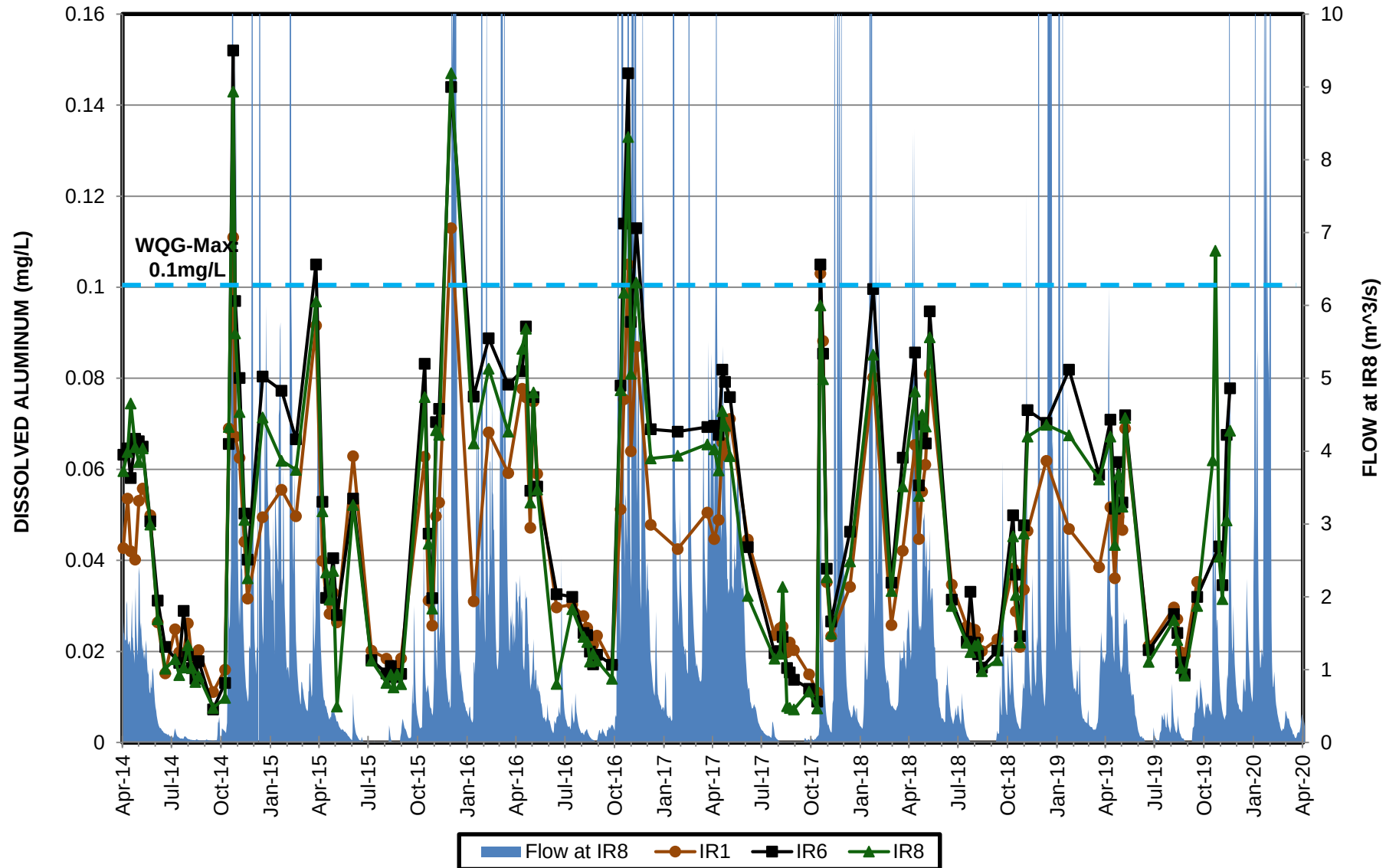
GRAPH 51
DISSOLVED IRON
QUINSAM RIVER



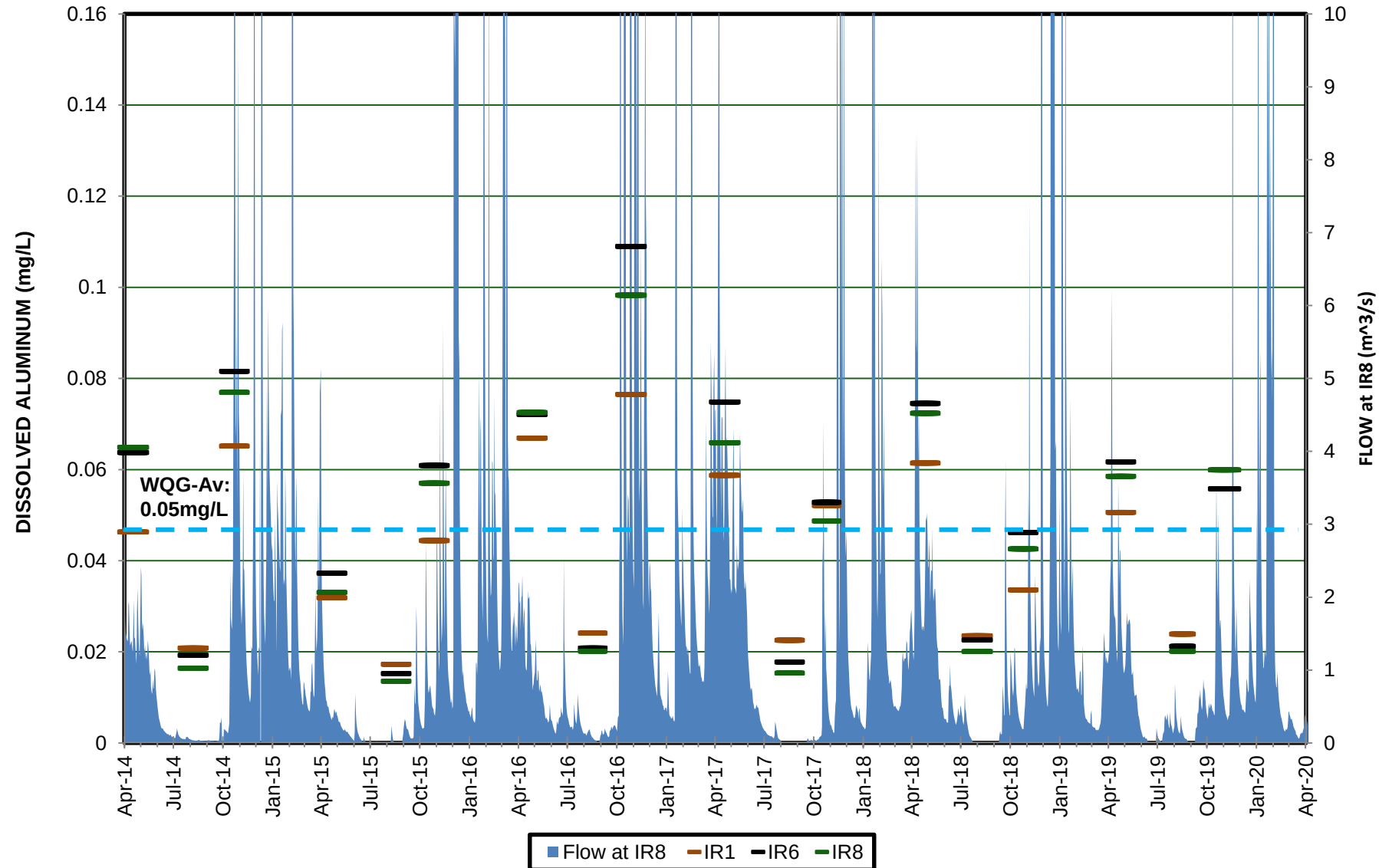
GRAPH 52
DISSOLVED MANGANESE
QUINSAM RIVER



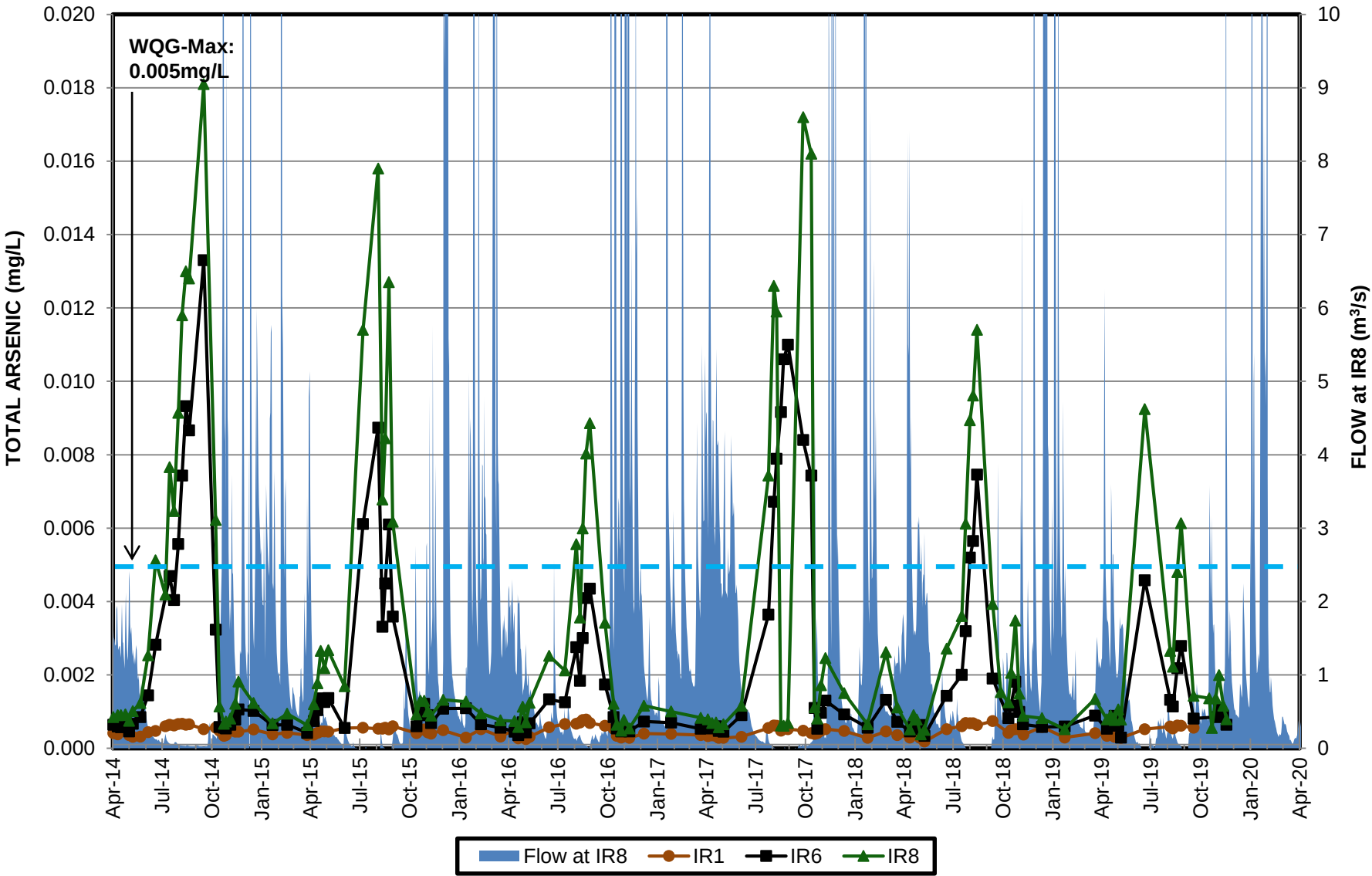
GRAPH 53
DISSOLVED ALUMINUM vs FLOW
IRON RIVER

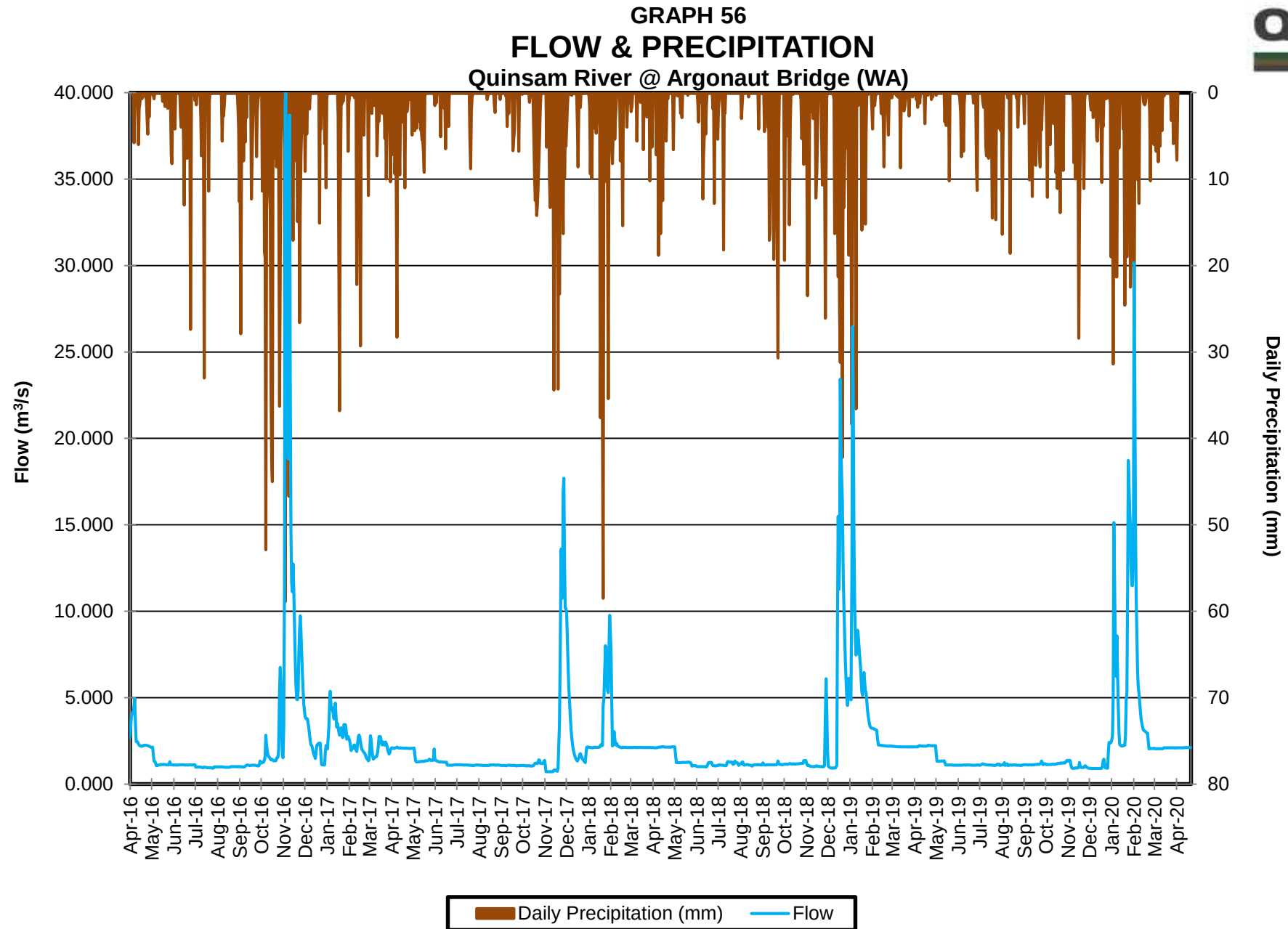


GRAPH 54
5 in 30 AVERAGE DISSOLVED ALUMINUM vs FLOW
IRON RIVER

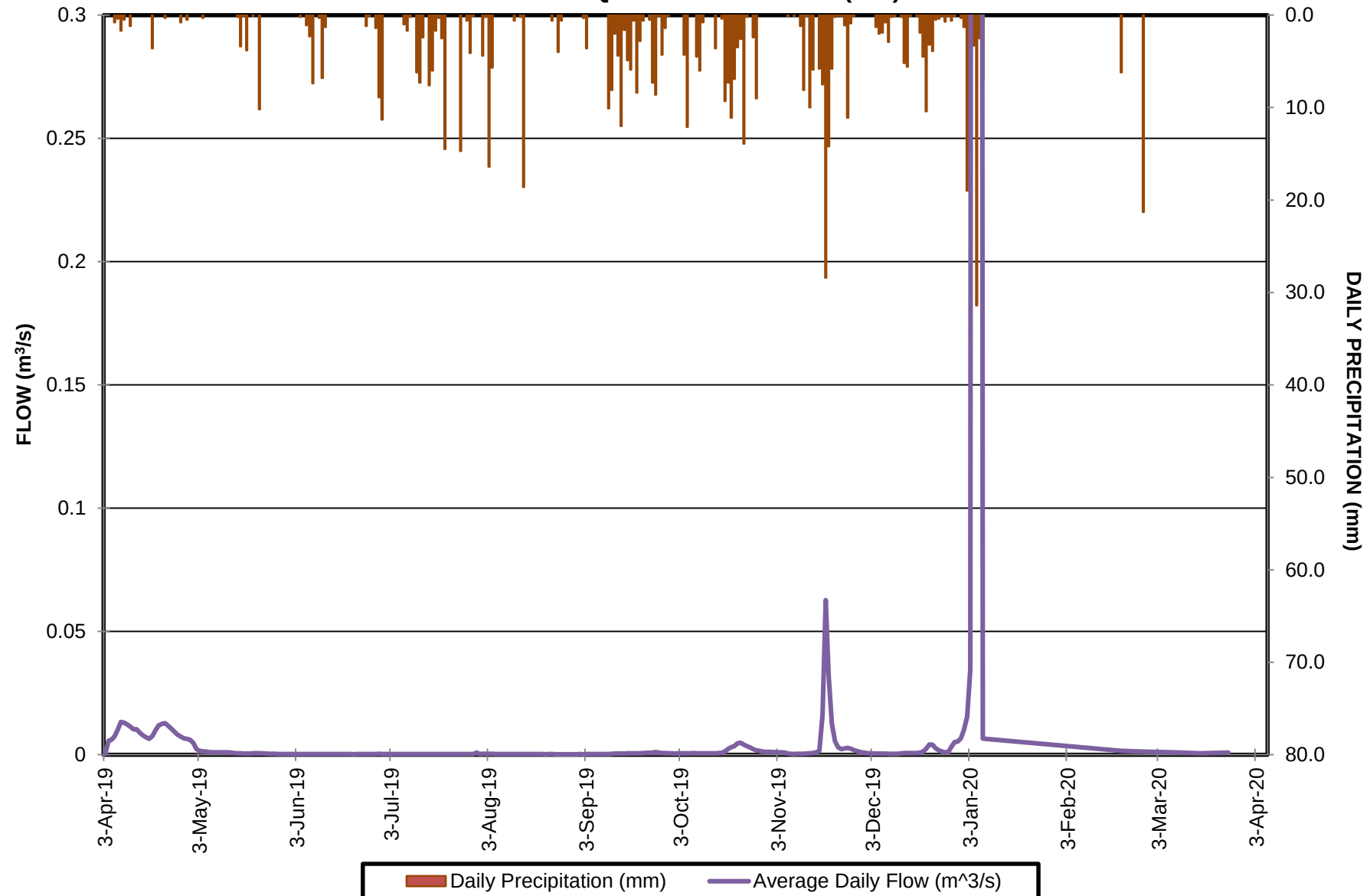


GRAPH 55
TOTAL ARSENIC vs FLOW
IRON RIVER

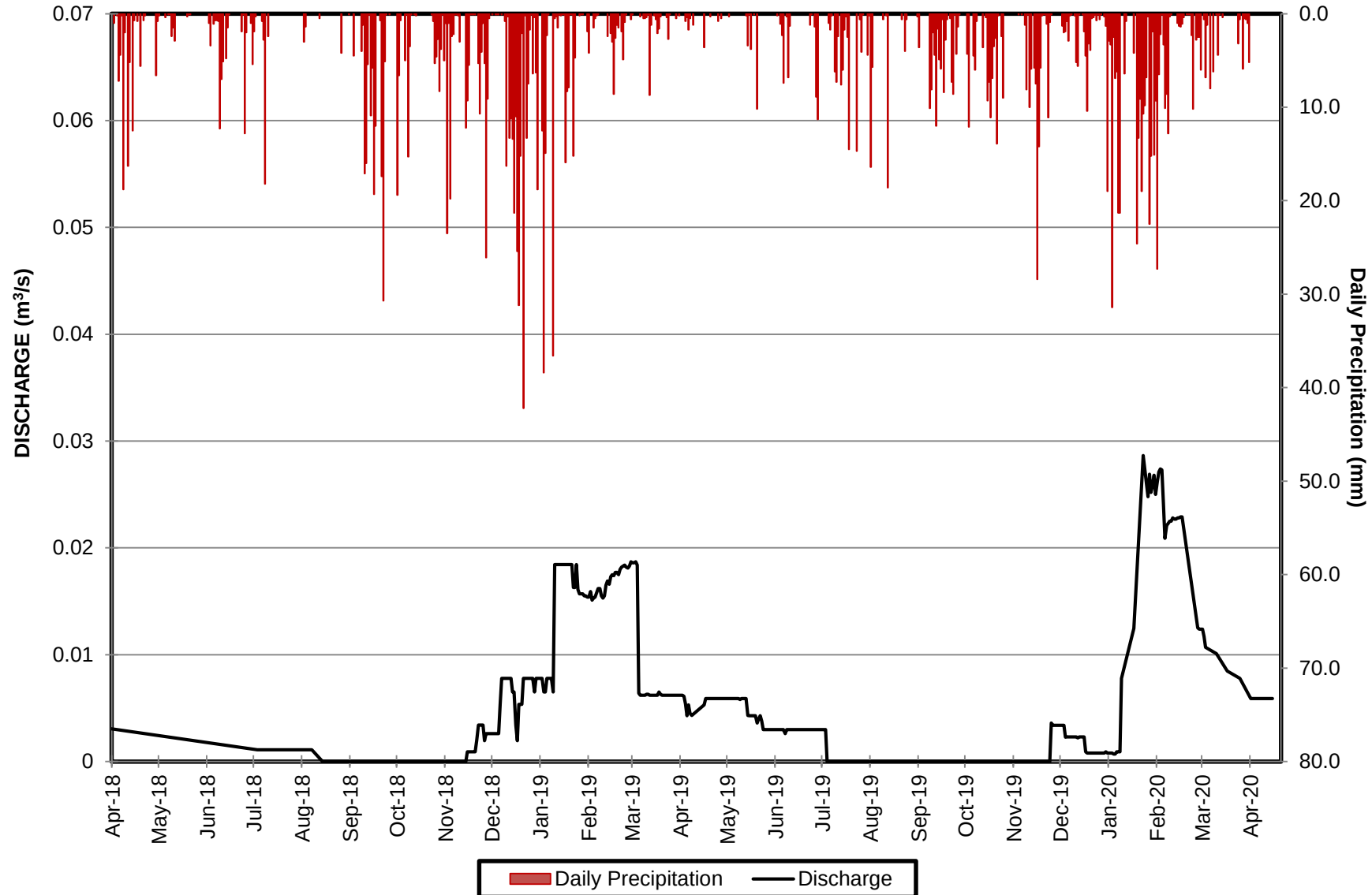




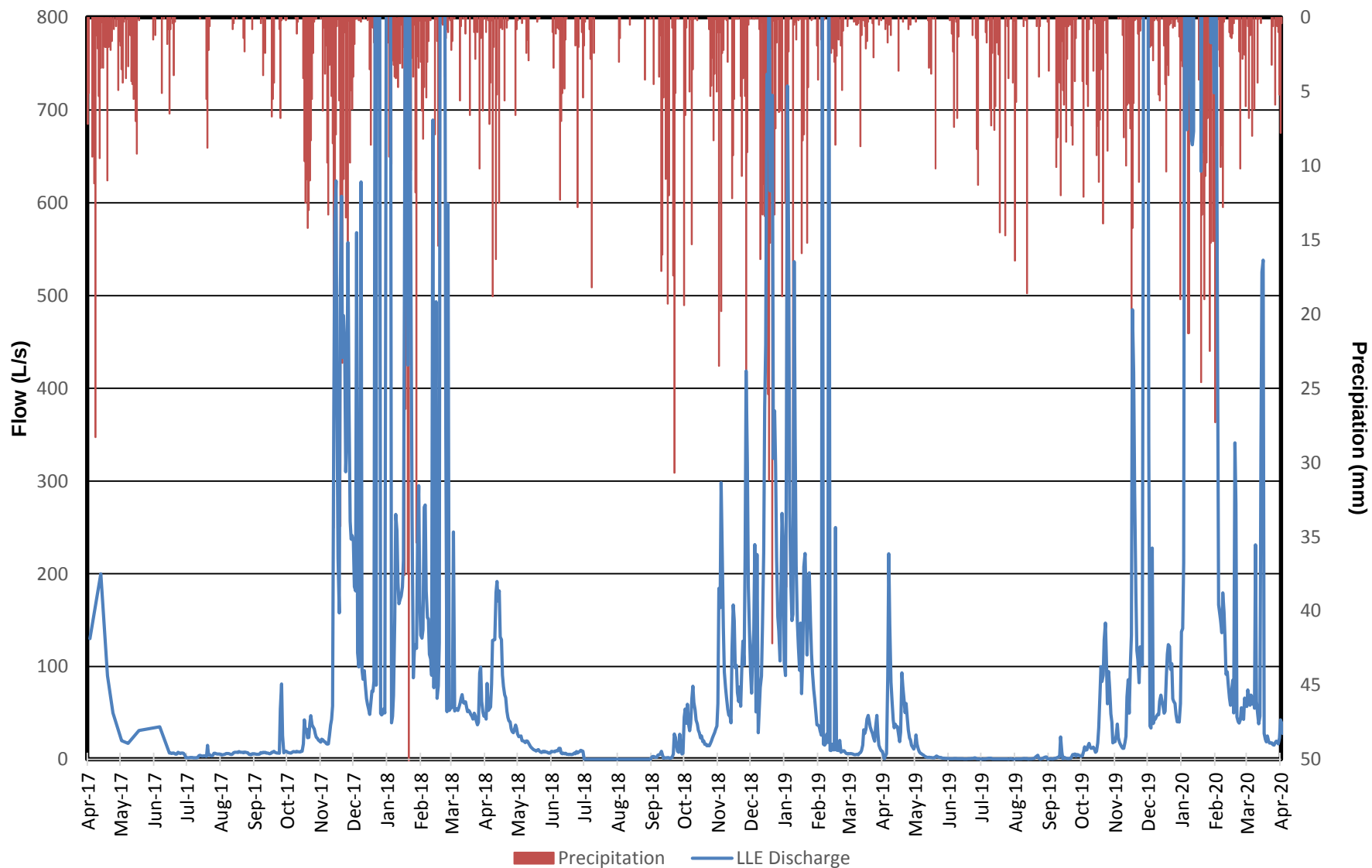
GRAPH 57
FLOW VS PRECIPITATION
Middle Quinsam Lake Outlet (WB)



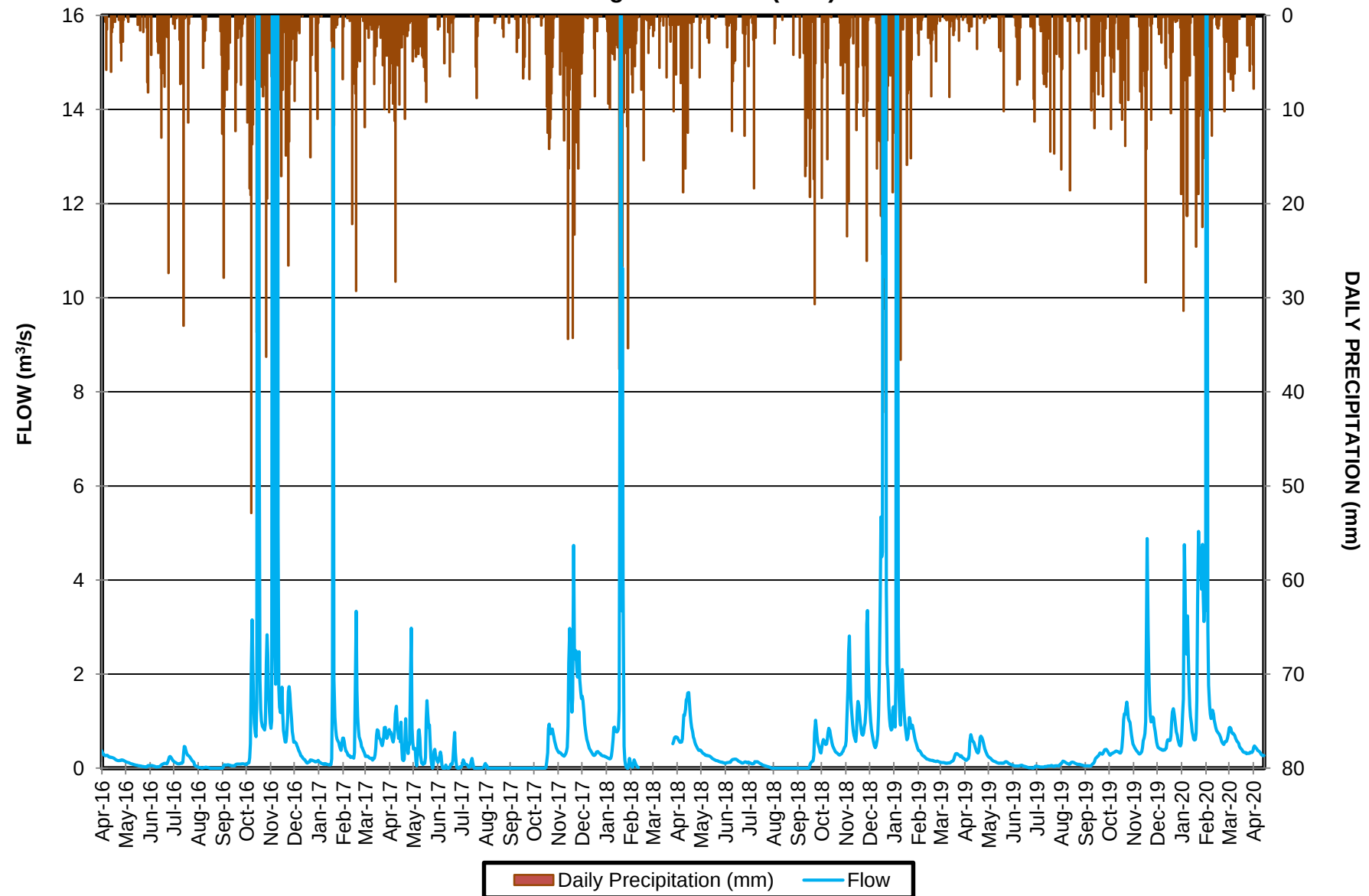
GRAPH 58
DISCHARGE vs PRECIPITATION
Long Lake Seep Middle (LLSM)



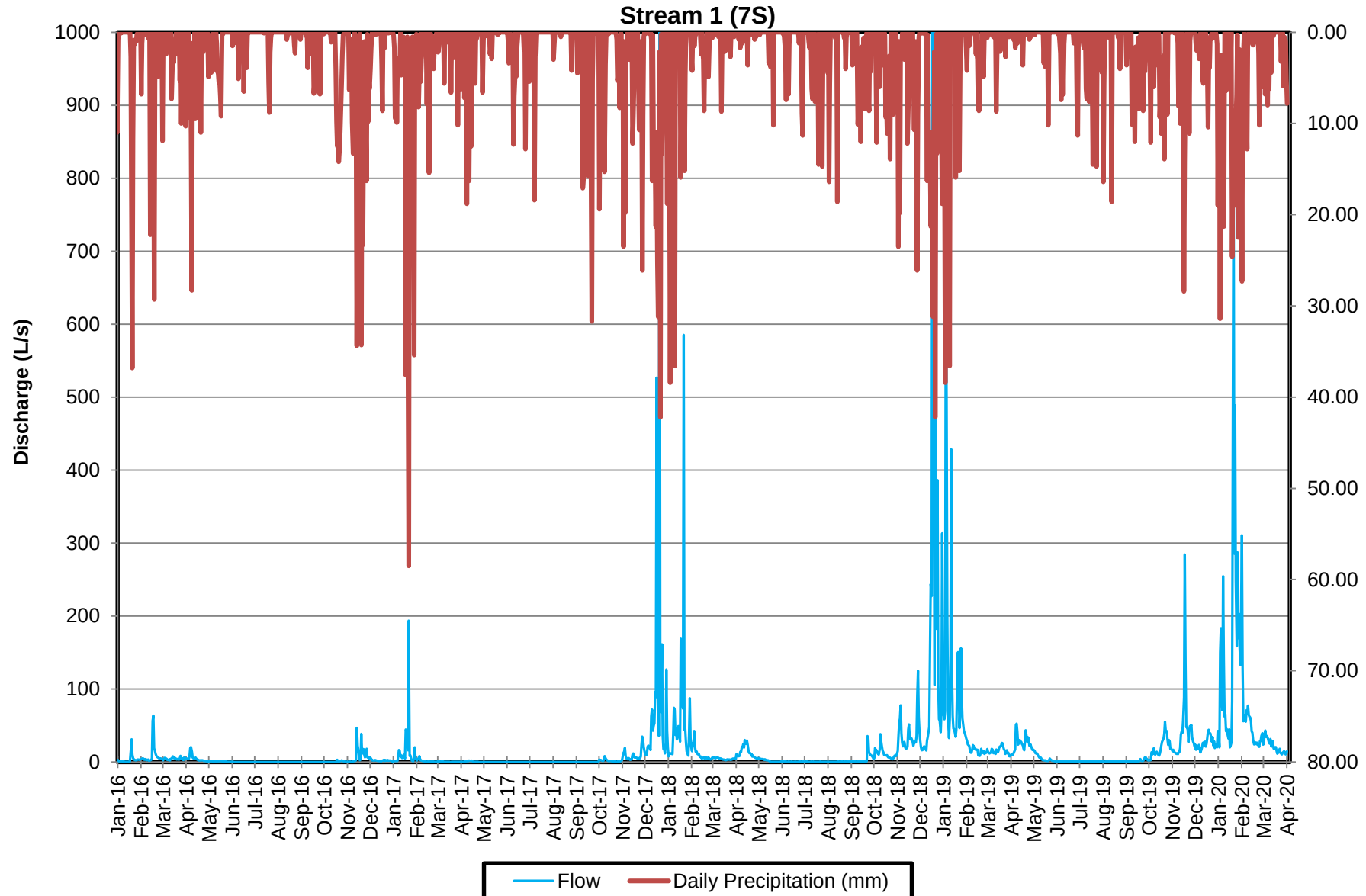
GRAPH 59
DISCHARGE vs PRECIPITATION
Long Lake Entry (LLE)



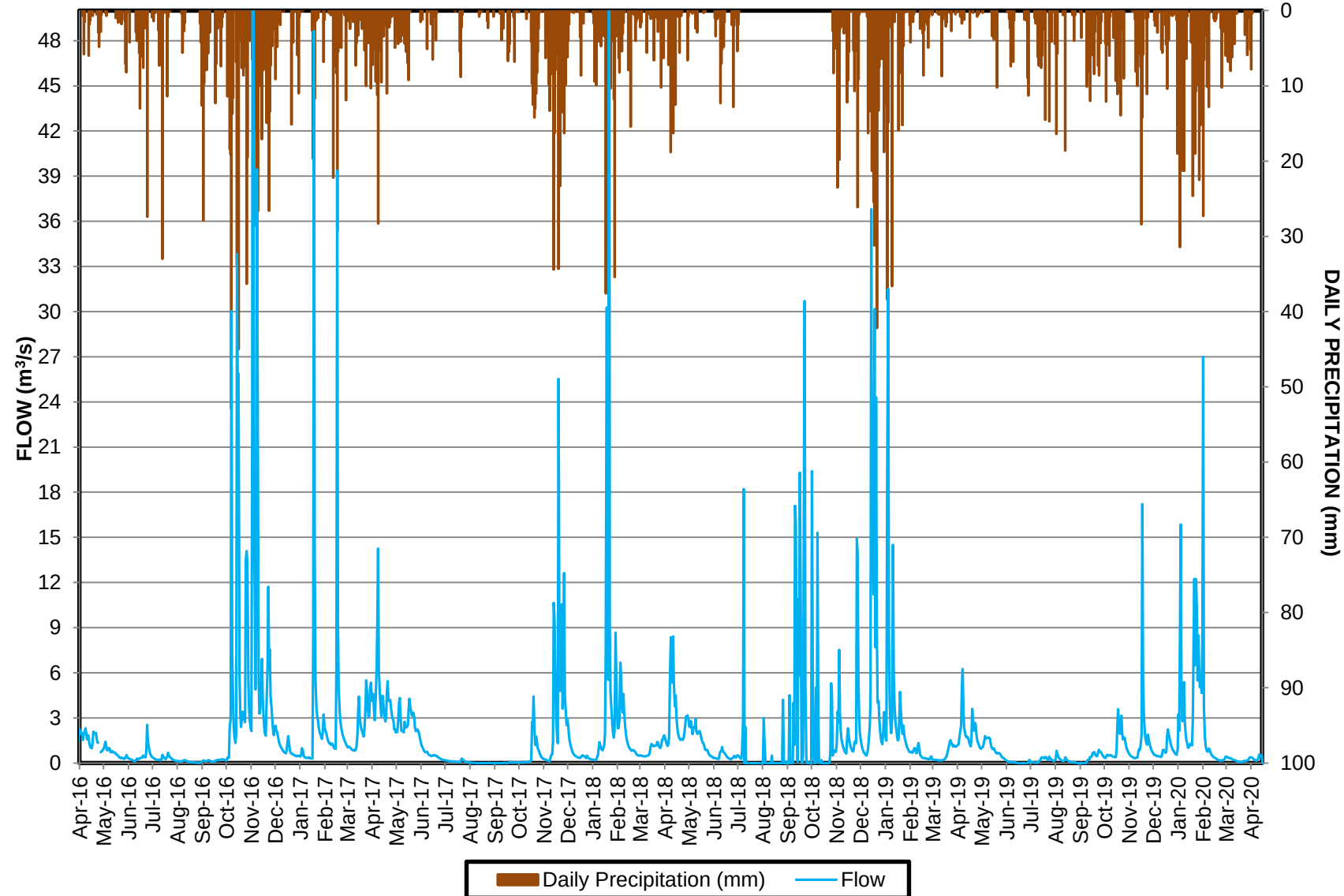
GRAPH 60
FLOW vs PRECIPITATION
Long Lake Outlet (LLO)



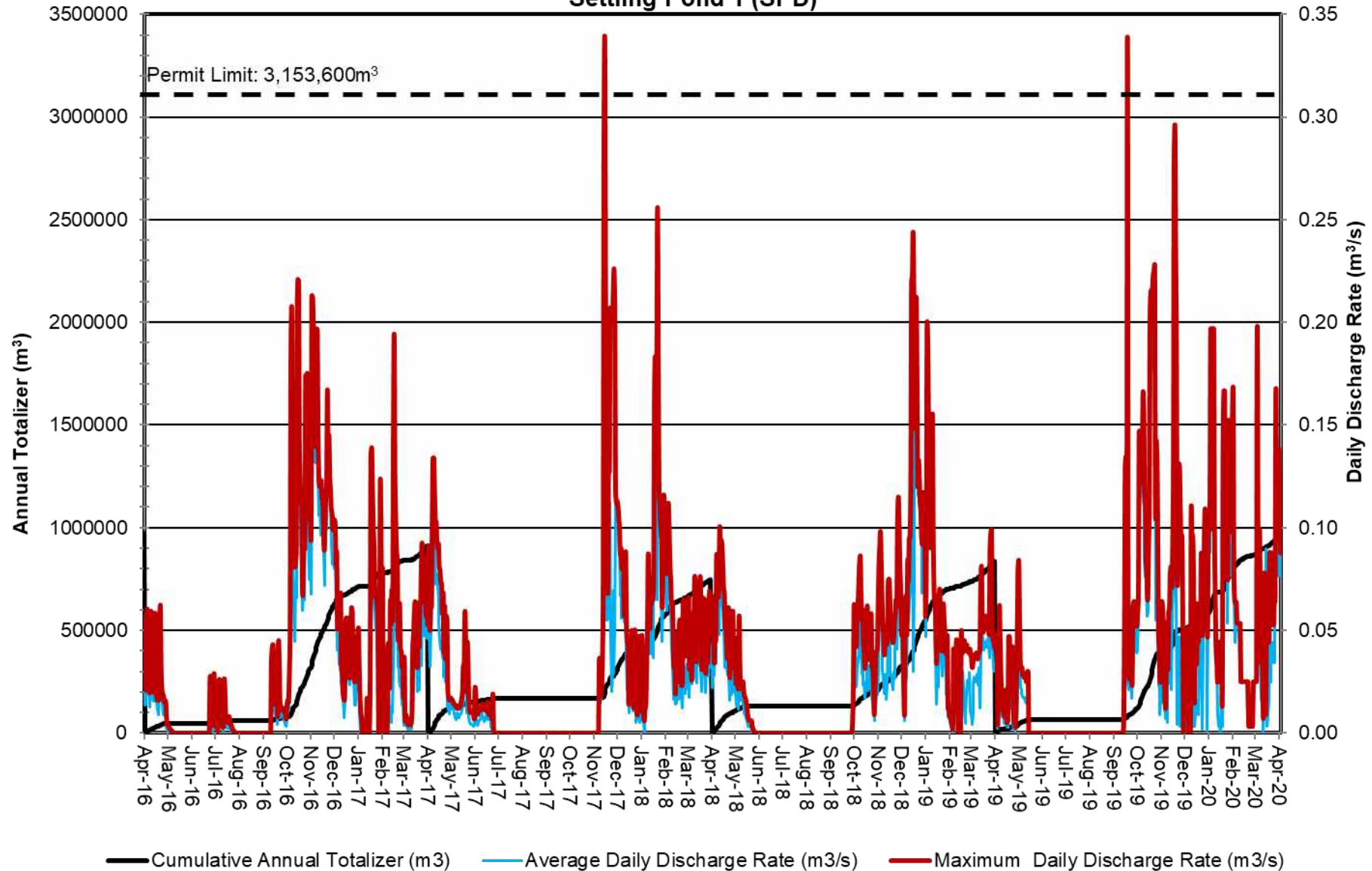
GRAPH 61
FLOW vs PRECIPITATION



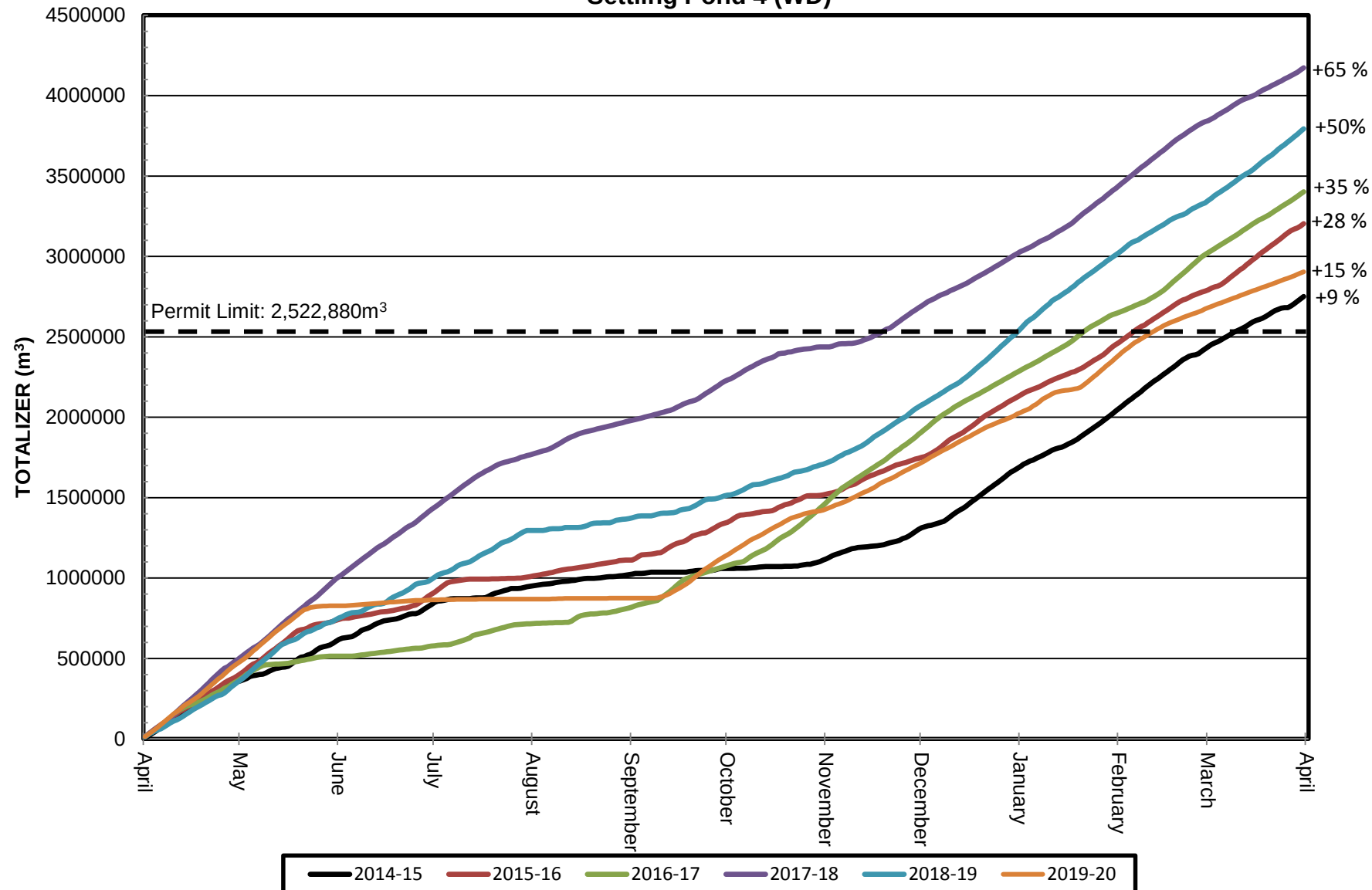
GRAPH 62
FLOW vs PRECIPITATION
Iron River (IR8)



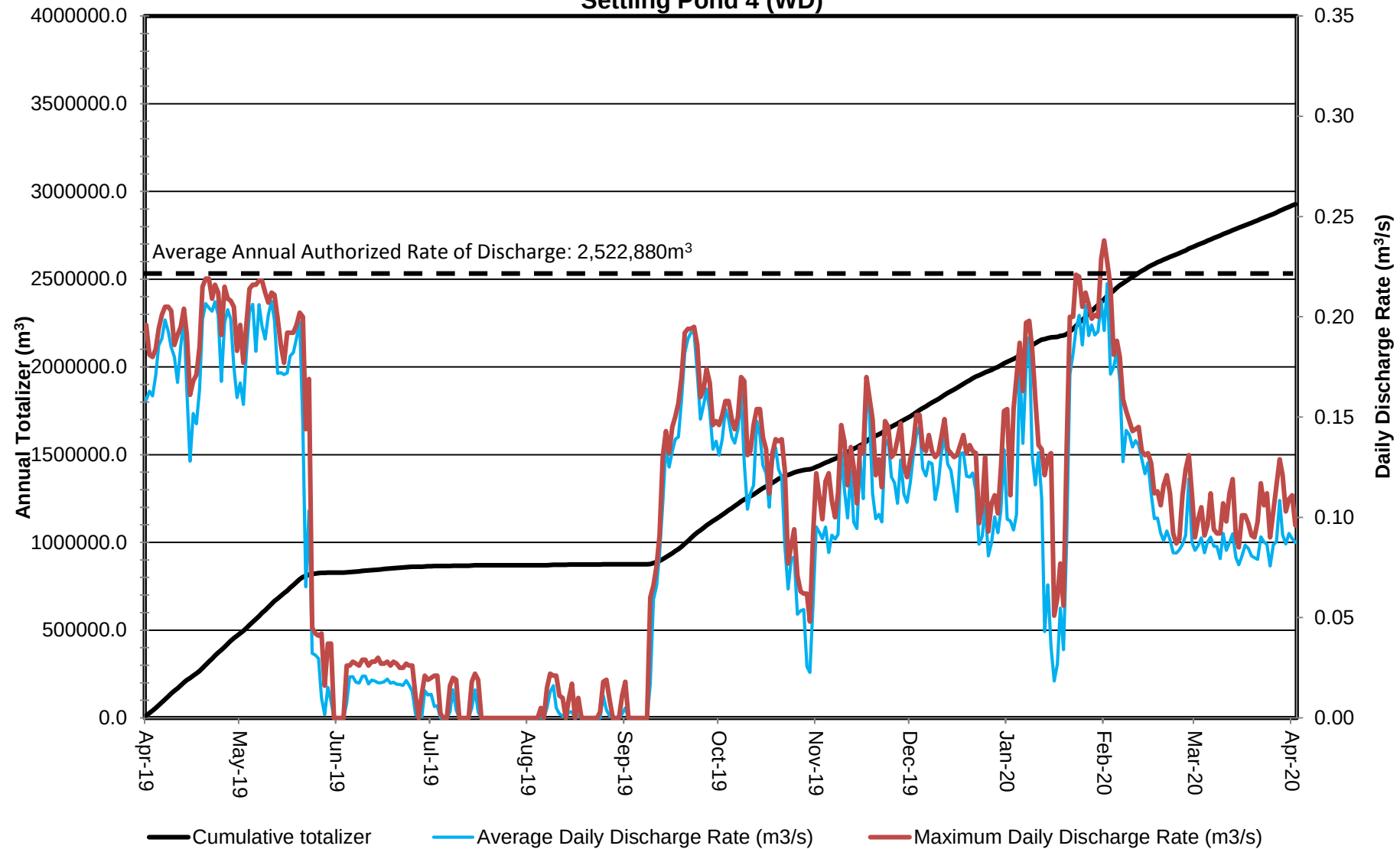
GRAPH 63
Cumulative & Daily Discharge Rates
 Settling Pond 1 (SPD)



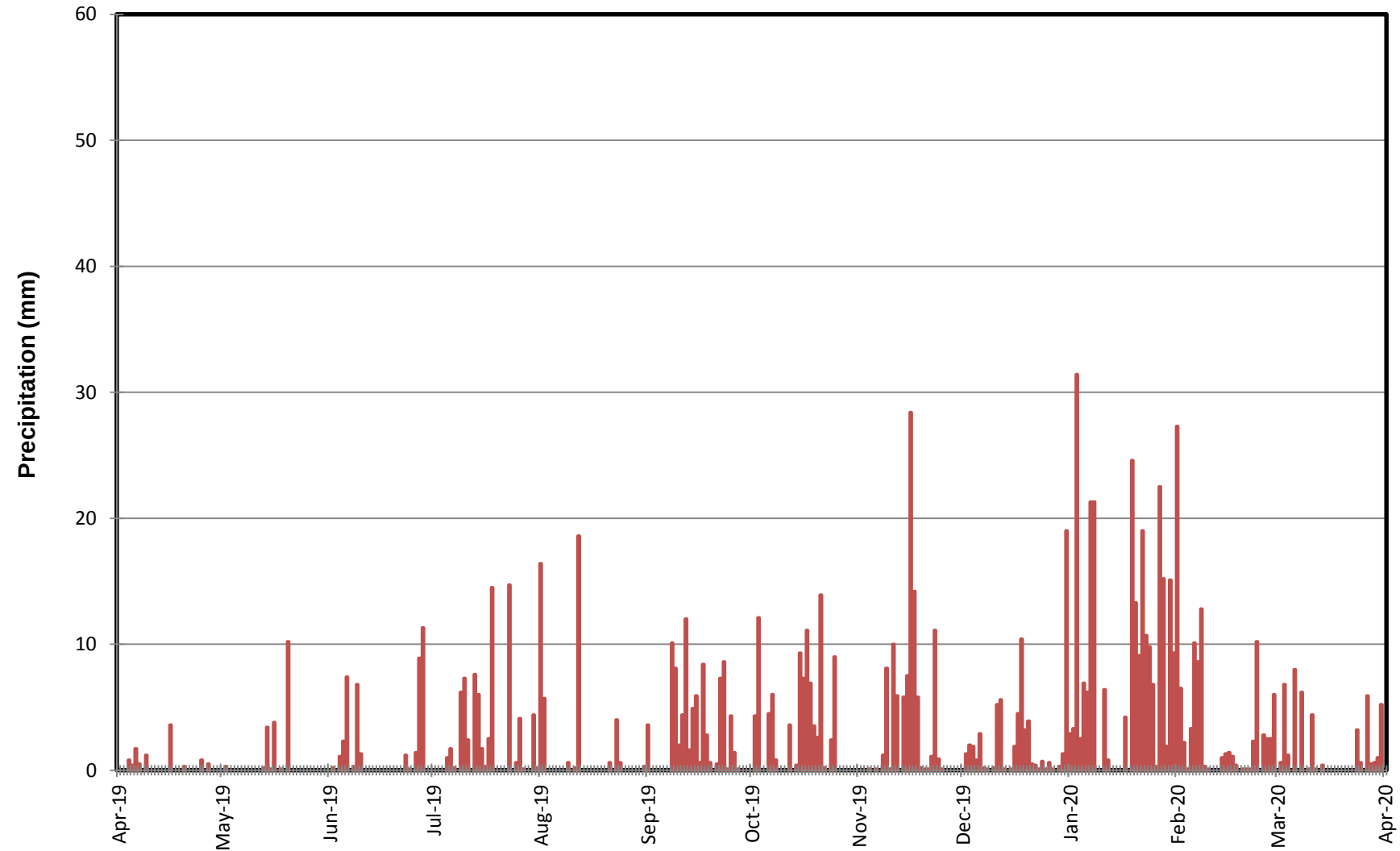
GRAPH 64
Comparison of Cumulative Annual Discharges
Settling Pond 4 (WD)



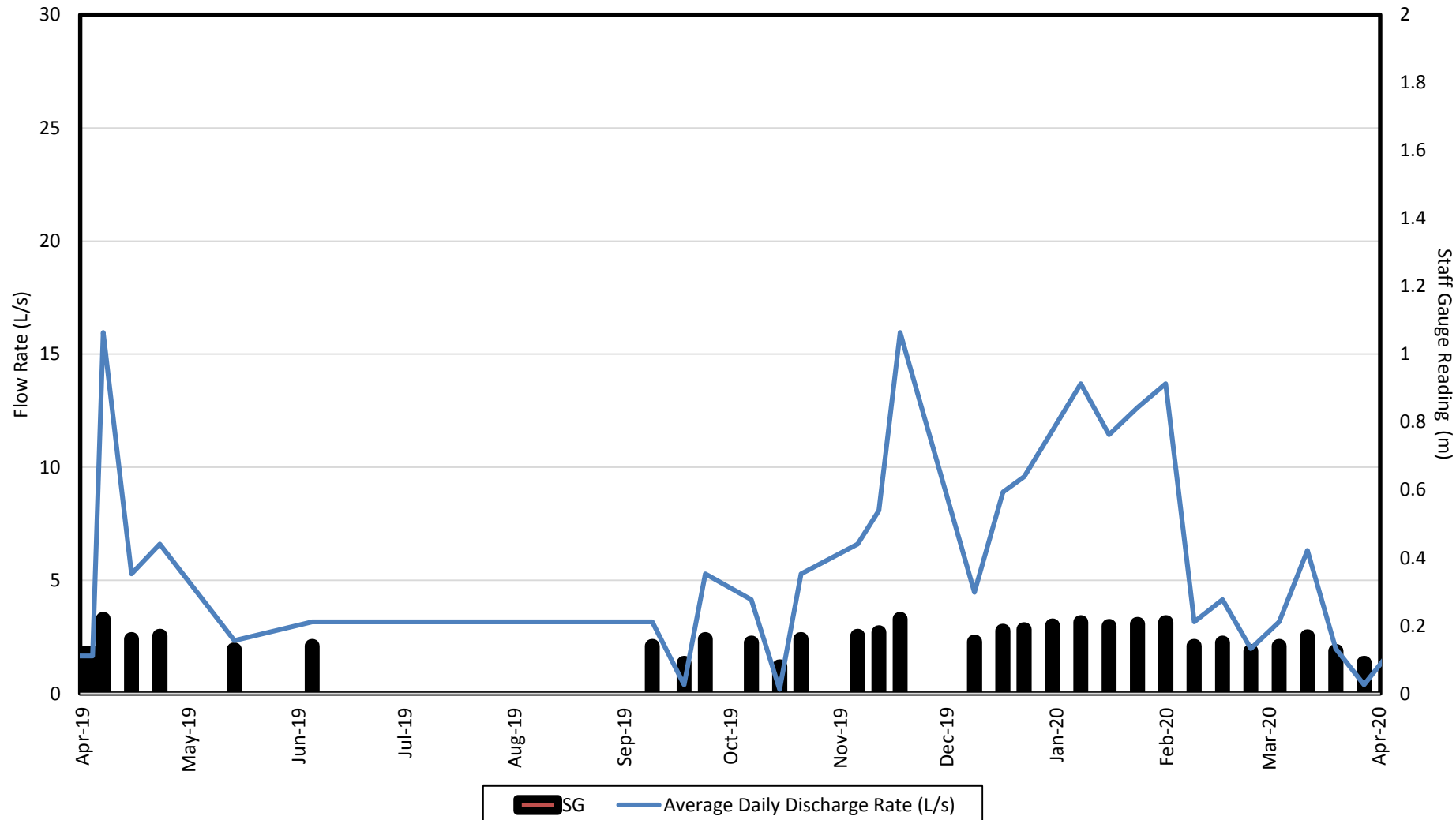
GRAPH 65
Cumulative & Daily Discharge Rates
Settling Pond 4 (WD)



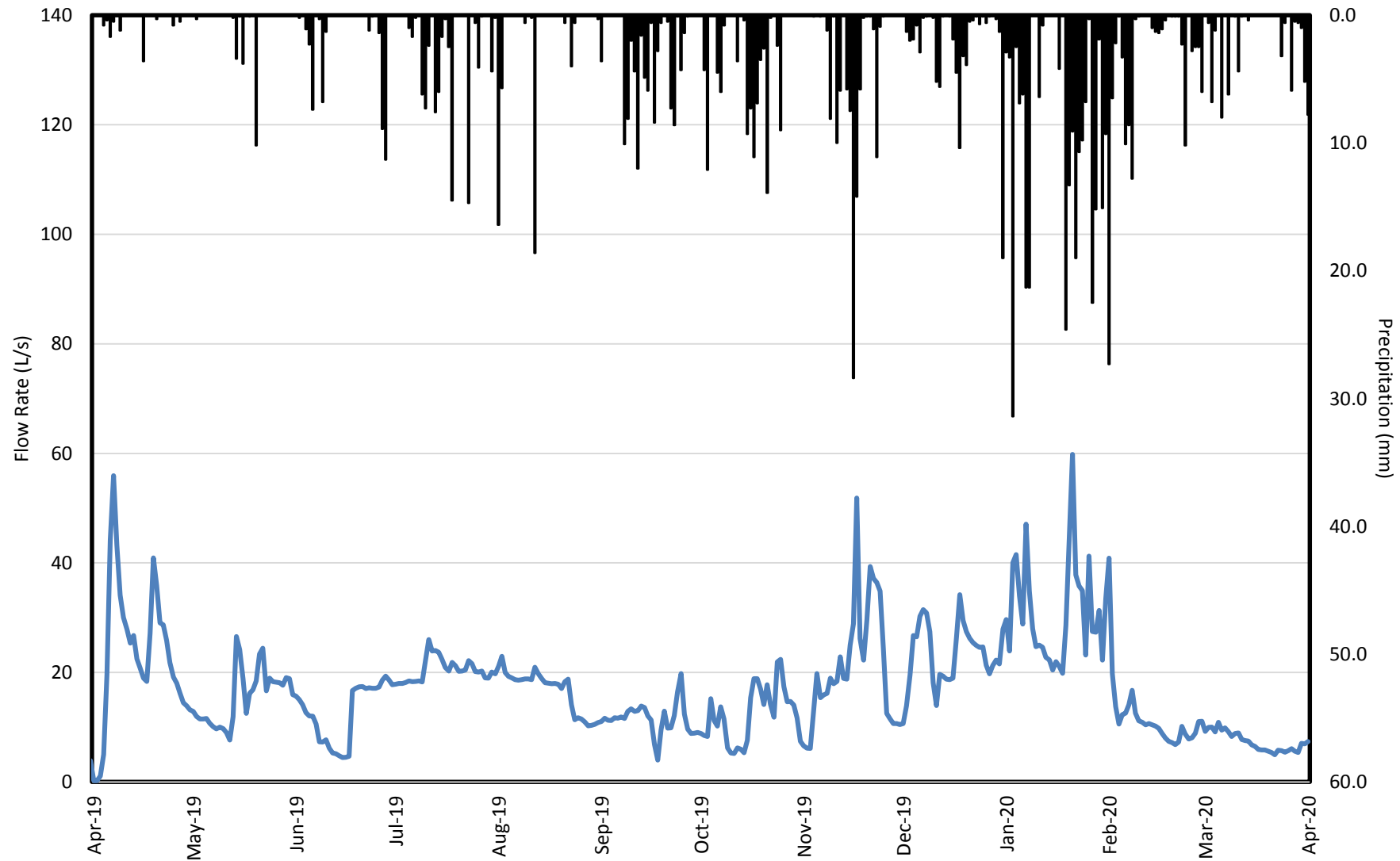
GRAPH 66
Daily Precipitation Accumulation (mm)
2-South Pit Area



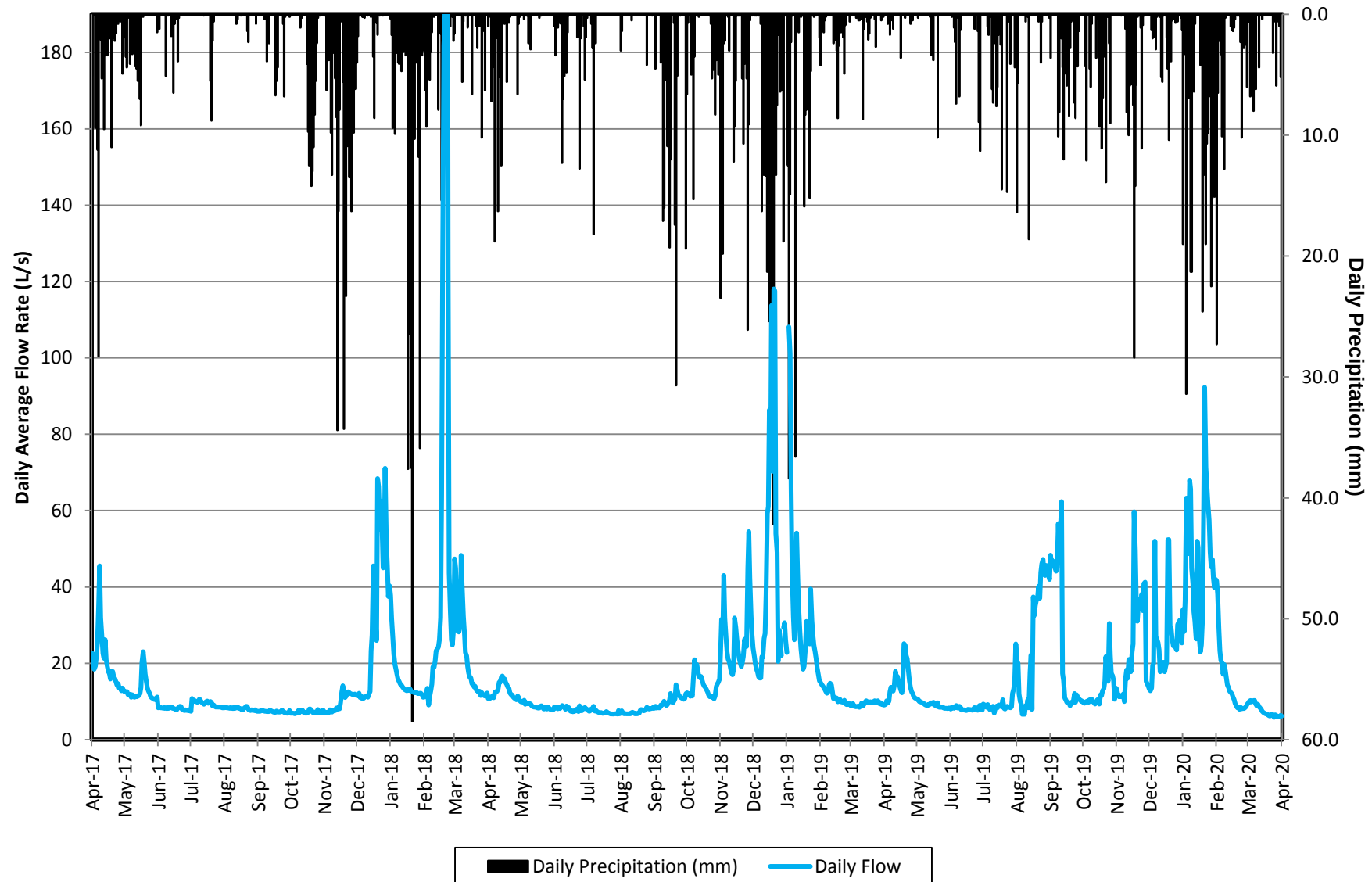
GRAPH 67
Flow Rate (L/s) @ 90° V-notch Weir vs Staff Gauge
2-South Inflow



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, Job Number: B979156
****COD****

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 CaCO₃ 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 : Mustafa 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, Job Number: B979146
****COD****

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 CaCO₃ 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 : Mustafa 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'

Karen Munro M.Sc., R.P.Bio.
Principal, Senior Aquatic Scientist
Phone: 604-436-3014
Karen.Munro@stantec.com


Digitally signed by Sandra
Webster
Date: 2020.02.14
17:15:19 -08'00'

Sandra Webster Ph.D., R.P.Bio.
Principal
Phone: 604-412-2986
Sandra.Webster@stantec.com

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 <i>Synedra radians</i> at 400X rather than 100X 2. Recalculated counting <i>Synedra radians</i> at 400X rather than 100X & <i>Cyclotella glomerata</i> 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 <i>Synedra radians</i> 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 <i>Cyclotella bodanica</i> 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 100X2. 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:					
* = <i>Cyclotella bodanica</i> 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:					
* <i>Cyclotella bodanica</i> (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:					
* <i>Synedra radians</i> (diatom) counted at 400X rather than 100X, due to high numbers					
** <i>Asterionella formosa</i> (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	1,440	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		
CHRYSTOPHYCEAE		
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		
CHRYSTOPHYCEAE		
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
Nephrocystium sp. (cells)	13	22
Tetraedron sp.	2	3
DINOPHYCEAE		
Peridinium sp.	1	2
CRYPTOPHYCEAE		
Cryptomonas spp.	22	37
Rhodomonas minuta	91	155
CYANOPHYCEAE		
Dactylococcopsis acicularis (cols)	5	9
Merismopedia sp. (cols)	2	3
TOTAL	265	451
100X magnification - whole sample		
BACILLARIOPHYCEAE		
Synedra radians	15	0.6
CYANOPHYCEAE		
Chroococcus cf. Prescottii (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		
CHRYSTOPHYCEAE		
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
Pseudoekephyrion sp.	3	54
CHLOROPHYCEAE		
Oocystis sp. (5x3 um)	1	18
TOTAL	59	1062
400X magnification - 2 strips		
CHRYSTOPHYCEAE		
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 acicularis (cols)	8	7
TOTAL	244	207
100X magnification - whole sample		
CHLOROPHYCEAE		
Botryococcus braunii (cols)	1	0.04
TOTAL	1	0.04

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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					
<u>Cryptocyclops bicolor</u>	adult	111		54	20
<u>Diacyclops thomasi</u>	adult		50		13
<u>Ectocyclops phaleratus</u>	adult				
<u>Microcyclops varicans</u>	adult	27			
<u>Orthocyclops modestus</u>	adult	28			
UID	copepodid	162	11	380	119
Order : Calanoida					
Family : Diaptomidae					
<u>Hesperodiaptomus novemdecimus</u>	adult	69	97		16
<u>Skistodiaptomus oregonensis</u>	adult			107	208
UID	copepodid	35	36	16	88
UID Calanoida / Cyclopoida	nauplii	417	517	242	239
Order : Cladocera					
<u>Bosmina longirostris</u>	adult	100	25	63	11
<u>Bosmina longirostris</u>	juvenile	62			
<u>Daphnia longiremis</u>	adult			8	
<u>Daphnia pulicaria</u>	adult		6		
<u>Daphnia rosea</u>	adult	317	320	55	362
<u>Daphnia sp.</u>	juvenile	228	80	4	102
<u>Diaphanosoma brachyurum</u>	adult	753	105	281	181
<u>Diaphanosoma brachyurum</u>	juvenile			123	115
<u>Holopedium gibberum</u>	adult		25		
<u>Leptodora kindtii</u>	adult		6		
<u>Polyphemus pediculus</u>	adult	4	9	8	
<u>Sida crystallina</u>	adult		17		
Phylum : Rotifera					
<u>Asplanchna sp.</u>				337	
<u>Conochilus sp.</u>	colonies	193			9
<u>Conochilus sp.</u>	individual		721		5,569
<u>Kellicottia longispina</u>		50	1,551	586	24
<u>Keratella cochlearis</u>		58		293	4
<u>Polyarthra sp.</u>		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.					

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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			
<u>Diacyclops thomasi</u>	adult	10	
<u>Microcyclops varicans</u>	adult	30	1
UID	copepodid	20	1
Order : Calanoida			
Family : Diaptomidae			
<u>Skistodiaptomus oregonensis</u>	adult	34	9
UID	copepodid	20	3
UID Calanoida / Cyclopoida	nauplii	348	10
Order : Cladocera			
<u>Bosmina longirostris</u>	adult	24	
<u>Bosmina longirostris</u>	juvenile		1
<u>Daphnia longiremis</u>	adult	18	
<u>Daphnia pulicaria</u>	adult		
<u>Daphnia rosea</u>	adult	8	13
<u>Daphnia sp.</u>	juvenile	6	
<u>Diaphanosoma brachyurum</u>	adult	6	
Phylum : Rotifera			
<u>Kellicottia longispina</u>		690	9
<u>Keratella cochlearis</u>		414	1
<u>Keratella quadrata</u>		6	
<u>Polyarthra sp.</u>		28	12
<u>Testudinella sp.</u>		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 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.

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. Present during the inspection was Kathleen Russell (Environmental Coordinator, Quinsam Coal Corporation). The inspection period for this report is from April 01, 2018 to September 19, 2018 and included a review of the following documents; - Quinsam Coal Annual Water Quality Monitoring Report 2018-2019 (April 2018 - March 2019) submitted September 11, 2019 - Ministry Temporary Amendment letter to monitoring requirements dated October 31, 2018 for Lower Wetland Outlet (LWO) when 7SSD is not discharging - 2018 ENVIRONMENTAL PROCEDURES MANUAL, submitted April 02, 2019 - 2019 Q1 Report (data April 1st to June 30th 2019) submitted July 31, 2019 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". 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 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.

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. All other parameters, including the Rainbow Trout Bioassay's, were compliant during the inspection period. 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. 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 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". 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

Requirement Description:	1. AUTHORISED DISCHARGES, 1.2, 1.2.2 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. 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. 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 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.

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. 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. 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 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. 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. The Annual Report confirmed that "no discharge occurred during 2018-2019".
Compliance:	Not Applicable

Requirement Description:	2. SPECIFIC REQUIREMENTS, 2.4.7 South Mining Operation Settling Pond, 2.4.9 Toxicity Failure Monitoring and Reporting Procedures 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. 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 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. 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. 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

Requirement Description:	3. GENERAL REQUIREMENTS, 3.2 Environmental Procedures Manual 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. 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 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.

Details/Findings:	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. As such, these potentially acid generating materials have not been identified and subjected to special handling techniques (subaqueous disposal) as required by this section. 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. 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.
Actions to be taken:	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 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 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.

Details/Findings:	Ms. Russell informed Officer Stewart that nutrient discharges from Quinsam have not resulted in excessive algal growth or biomass accumulation. 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. 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 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. Flocculating agents are not stored on site.
Compliance:	In
Requirement Description:	3. GENERAL REQUIREMENTS, 3.7 Spill Reporting 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

Requirement Description:	3. GENERAL REQUIREMENTS, 3.8 Additional Works 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. 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 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. Officer Stewart observed the authorized works to be maintained in good working order during the on site inspection. 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. 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

Requirement Description:	3. GENERAL REQUIREMENTS, 3.9 Maintenance of Works, Non-Compliances and Emergency Procedures, 3.9.2 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. 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 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. The 2018/2019 Annual Status Form also confirms under section 3.10 that the "Long Lake Seep bypasses the works". 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. 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.

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 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 (ETRC) is no longer accurate, as Department of Fisheries and Oceans and Environment Canada no longer attend. 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". The members and actions of the ETRC 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 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.

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. 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) Decant - WD (EMS # E207409) 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). Decant WD (EMS # E207409) - 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. - June 03, 2019 dissolved sulphate, pH and conductivity was missed 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) 4.1.2 (i): See Attached Document for Section 4.1.2 (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). Decant SPD (EMS# E218582) - 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. - June 03, 2019 dissolved sulphate, pH and conductivity was missed at sample location Outflow to 2-South Pit (E292127) - 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) 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) 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. Decant 7SSD (EMS #E292069) - There were no discharges from 7SSD during the inspection period; therefore, samples of the discharge and compliance was not applicable. 7-South Adit Sump (EMS #292110) - 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.

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 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). Long Lake Entrance (LLE), EMS # E292130 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. 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) 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 4.2.5: See Attached Document for Section 4.2.5

Details/Findings:	This section details the monitoring requirements for Receiving Water (Streams) Monitoring Sites listed in subsection 4.2.3, encompassing 13 distinct locations. 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. 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. All other 5 in 30 weekly samples and monthly samples were collected for all parameters as required by the receiving environment monitoring program. 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 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. The Quinsam 2018/2019 Annual Report confirms that all samples were obtained in accordance with the permit. 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 4.2.7: See Attached Document for Section 4.2.7

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. 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 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. 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. 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. 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. 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.

Compliance:	Out
Requirement Description:	4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.2 Continuous Flow Recording 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). A continuous record of the rate at which the effluent is discharged from the settling ponds is submitted in the quarterly and annual reports. 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 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". Iron River flow rates versus precipitation amounts are contained in Graph 62 of the 2018/2019 Annual Report.
Compliance:	In

Requirement Description:	4. MONITORING AND REPORTING REQUIREMENTS, 4.3 Additional Monitoring Requirements, 4.3.4 pH and Conductivity Monitoring 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 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. 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. 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 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.

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. No areas of concern regarding soil erosion were observed; therefore, compliance with this requirement was not applicable. 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 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 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

Requirement Description:	4. MONITORING AND REPORTING REQUIREMENTS, 4.4 Monitoring Procedures, 4.4.1 Sampling and Analytical Procedures 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. Sample analysis is carried out by an accredited lab, Maxxam Laboratories.
Compliance:	In
Requirement Description:	4. MONITORING AND REPORTING REQUIREMENTS, 4.5 Reporting 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.

Details/Findings:	Q2 2018 Quarterly Report (July 1st, 2018 through September 31st, 2018) was submitted on November 02, 2018. Q3 2018 Quarterly Report (October 1st, 2018 through December 31st, 2018) was submitted on February 01, 2019. Q4 2018 Quarterly Report (January 1st to March 31st 2019) was submitted on May 01, 2019. 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. 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 4.5.1 Through the duration of mining in 7-South Area 5, quarterly and annual reports shall include a summary of: i. Quality and quantity of water pumped from the 7-South Area 5 development with potential to reach Settling Pond 4. 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". 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. 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. 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**

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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 (<i>Oncorhynchus mykiss</i>)	-	1 time/year (conducted during fall first flush event)	

ii) Culvert, at Middle Quinsam Lake Road – WC (EMS # E207411)

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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
<u>Sulphate</u> (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), <u>sulphate</u> (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
<u>Sulphate</u> (d)	monthly	quarterly

Date issued: December 23, 1987
Date amended: June 23, 2015
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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 (<i>Oncorhynchus mykiss</i>)	-	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

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Date amended: June 23, 2015
(most recent)


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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)

Date issued: December 23, 1987
Date amended: June 23, 2015
(most recent)


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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 (<i>Oncorhynchus mykiss</i>)	-	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

Date issued: December 23, 1987
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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 (<i>Oncorhynchus mykiss</i>)	-	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

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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 j), 4.2.1 j), 4.3.1 j) and Subsection 4.4.1 j) 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

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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 table 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

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- 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 <i>Ceriodaphnia dubia</i> 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

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4.2.3 Receiving Water (Streams and Lakes) Monitoring Sites



Streams	Lakes
North Mining Operation	
Quinsam River at Argonaut Road (WA) (EMS # 0126402) Outflow from Middle Quinsam Lake (WB) (EMS # 0900504)	Middle Quinsam Lake Centre (EMS # E206618)
South Mining Operation	
Long Lake Outlet (LLO) (EMS # E219412) No Name Lake Outlet (NNO) (EMS # E217017)	Long Lake at Centre (LLM) (EMS # E206619) No Name Lake (NNL) (EMS # E217018)
Block 242 Mining Operation	
Iron River upstream of 242 influence (EMS #E225798) Iron River downstream of 242 influence (EMS # E225808)	Lower Quinsam Lake (LQL) (EMS # E292118)
7-South Mining Operation (Areas 1 to 4)	
Quinsam River upstream of 7 South Mining Operation (QRDS1) (EMS # E286930) Quinsam River downstream of 7 South Mining Operation (7SQR) (EMS # E292113) 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) 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)	Lower Quinsam Lake (LQL) (EMS # E292118)

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4.2.4 Sediment and Benthic Monitoring Sites

Lake and Wetland Monitoring Sites	
No Name Lake (NNL)	No Name Lake Inlet, NNLI (EMS # E224246) No Name Lake Deep, NNLD (EMS # E217018) No Name Lake Near Seep (EMS # E292114) No Name Lake Outlet (EMS # E217017)
Middle Quinsam Lake (MQL)	Middle Quinsam Lake Inlet (EMS # E206901) Middle Quinsam Lake Deep (EMS # E292115) Middle Quinsam Lake Near Seep (EMS # E292116) Middle Quinsam Lake Outlet (EMS # 0900504)
Lower Quinsam Lake (LQL)	Lower Quinsam Lake Inlet (EMS # E292117) Lower Quinsam Lake Deep 1 (EMS # E29118) Lower Quinsam Lake Deep 2 (EMS # E292119) Lower Quinsam Lake Outlet (EMS # E292120)
Long Lake (LL)	Long Lake Inlet (EMS # E292121) Long Lake Deep (EMS # E292122) Long Lake Near Seep (EMS # E292123) Long Lake Outlet (EMS # E219412)
Gooseneck Lake (GNL)	Middle Gooseneck Lake (EMS # 1132502)
Lower Wetland	Lower Wetland Inlet (EMS # E292124) Lower Wetland Middle (EMS # E292125) 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.

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Date amended: June 23, 2015
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- 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

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(most recent)


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i) General Requirements Applicable to All Sites Defined Under Section 4.2.3

Parameters	Annual Schedule
(1) 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) Turbidity	5 in 30* (3 times/year, spring turnover, stratification period and fall turnover)
(2) Phosphorus (t), alkalinity	One sampling event concurrent to a 5 in 30* event (3 times/year, spring turnover, stratification period and fall turnover)
(2) Hardness, total and dissolved metals, sulphate (d)	5 in 30* (3 times/year, spring turnover, stratification period and fall turnover)
BIOLOGICAL MONITORING	
(3) chlorophyll "a"	One sampling event concurrent to a 5 in 30* event (3 times/year, spring turnover, stratification period and fall turnover)
(4) Phytoplankton	
(5) Zooplankton	

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-

Date issued: December 23, 1987

Date amended: June 23, 2015

(most recent)


Luc Lachance, P.Eng.

for Director, Environmental Management Act
Permit Number: 7008

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
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
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.

Date issued: December 23, 1987
Date amended: June 23, 2015
(most recent)


Luc Lachance, P.Eng.
for Director, Environmental Management Act
Permit Number: 7008

Authorization: 7008	Client Name: Quinsam Coal Corporation
NRIS IR #: 139588	Site Inspection Date: September 19, 2009

Photo 1

Decant riser
of Settling
Pond #4 (WD).

E207409



Photo 2

Settling Pond
#1 (SPD).
E218582.



Authorization: 7008	Client Name: Quinsam Coal Corporation
NRIS IR #: 139588	Site Inspection Date: September 19, 2009

Photo 3

Coal pad.

Coal storage
on left.Exposed PAG
pile on right,

Photo 4.

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

Run off from
the PAG
stockpile on
the coal pad



Photo 8

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 Client: CL
Information: EMS ID: E207409
Project: N/A

Dean Watt, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID				
		Description				
		Sampled Date				
		Sampled Time				
		Client ID				
Grouping	Analyte					
WATER						
Physical Tests	Hardness (as CaCO ₃) (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				

		Sample ID Description Sampled Date Sampled Time Client ID	L2351088-1 Water 19-SEP-19 12:29 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 Client: CL
Information: EMS ID: E218582
Project: N/A

Dean Watt, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L2351087-1 Water 19-SEP-19 13:15 E218582_REG				
Grouping	Analyte					
WATER						
Physical Tests	Hardness (as CaCO ₃) (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				

		Sample ID Description Sampled Date Sampled Time Client ID	L2351087-1 Water 19-SEP-19 13:15 E218582_REG				
Grouping	Analyte						
WATER							
Dissolved Metals	Zinc (Zn)-Dissolved (mg/L)	<0.0010					
Aggregate Organics	Mineral Oil & Grease (mg/L)	<5.0					



FILE COPY

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

7030 3017
Gary Gould
Vice President
Hillsborough Resources Ltd

- 2 -

December 1, 2010

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 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 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 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**](mailto: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 Middlepoint barge terminal pursuant to the Receivership Order. The Receiver has retained qualified employees of Quinsam Coal Corporation who are responsible for the day to day duties under care and maintenance. Additional activities of the Receiver include: 1. Completion of the sale of the existing coal inventory; and 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 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. 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) 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 (SO₄), sulphide (as H₂S) 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 5M#2 QU10-13 D	QU08-21G S QU10-10 S	QU08-21G D QU10-10 D QU10-11 D
River Barrier Pillar		QU11-09 M	QU11-05 S QU11-09 S	QU11-05 D
2-North Plant			MW00-1 S MW00-6 S	MW00-1 D MW00-6 D
7-South	1M7S 1M7SA5 7SA5A 7SA5B	QU14-10	QU08-13 A	QU08-13 B QU08-10
242		242MP		QU11-36 D
4-South			QU10-09 S	QU10-09 D QU10-08 D
5-South		5SMW		
2/3 South		QU11-11 (INF) MW00-4 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 1st, 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.

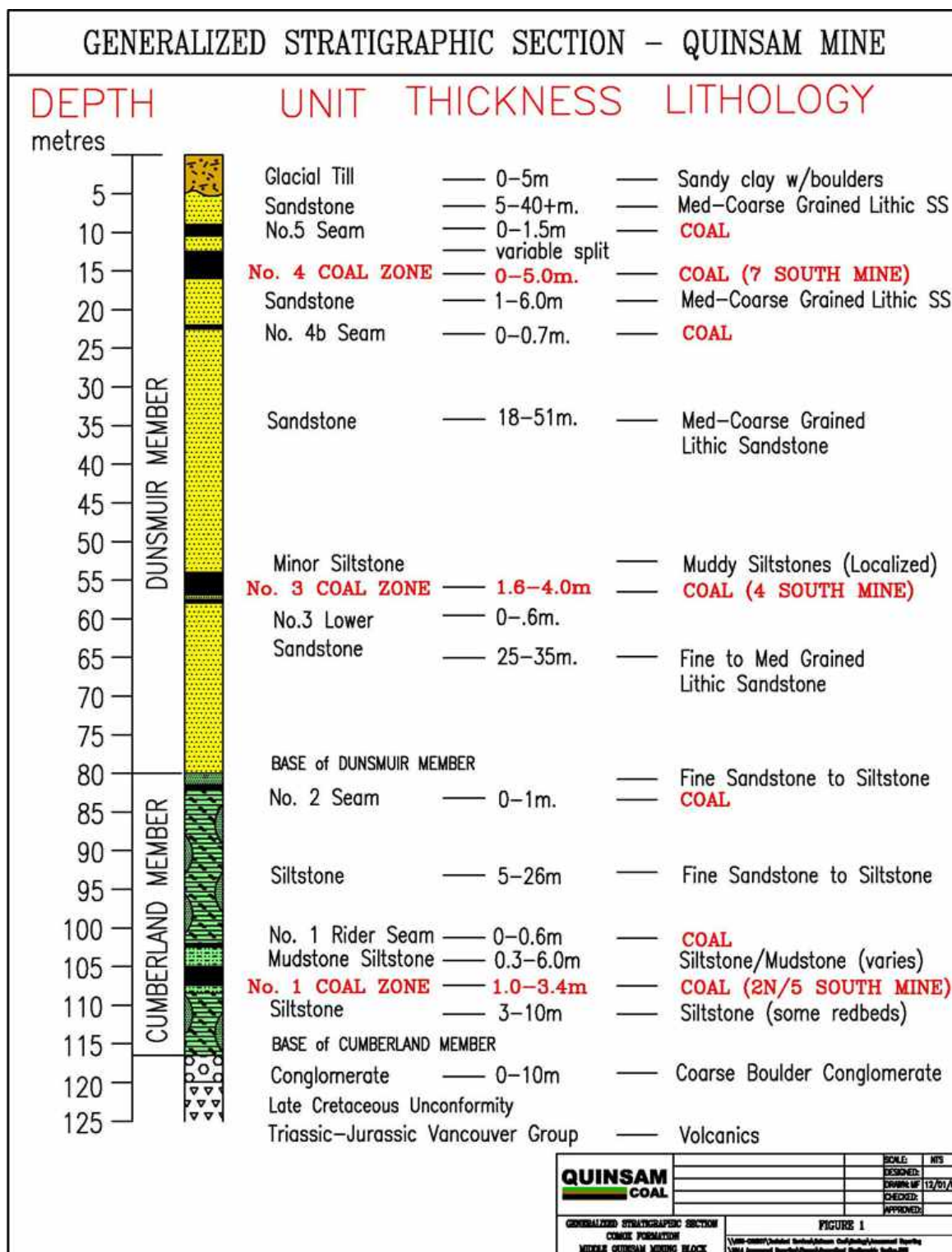


Figure 1: General Stratigraphic Column - Quinsam Mine

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 ontop 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 m³/day) of the 1.4 m³/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 50m³ 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 H₂S 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:

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

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	CSR-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 ₂ S*	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
H ₂ S	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 oxidizing 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 (CaCO ₃)	450	-	390	Below Expected
Fluoride (F)	0.29	0.3	0.14	Below Expected
Sulphate (SO ₄)	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 (CaCO ₃)	450	-	458	Above Expected
Fluoride (F)	1.1	1.2	0.146	Below Expected
Sulfate (SO ₄)	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 (CaCO ₃)	450	-	518	Above Expected
Fluoride (F)	1.1	1.2	0.069	Below Expected
Sulfate (SO ₄)	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.

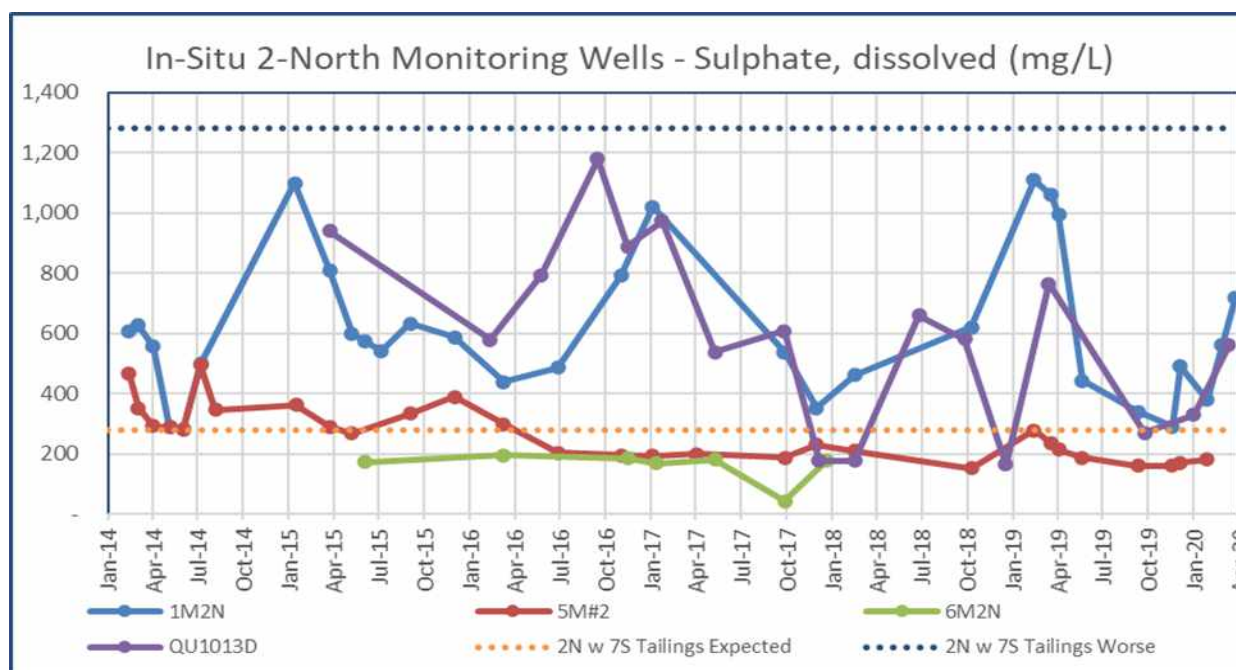


Figure 2: In-Situ 2N Monitoring Wells - Dissolved Sulphate

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 intersecting 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
- H₂S 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 it 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.

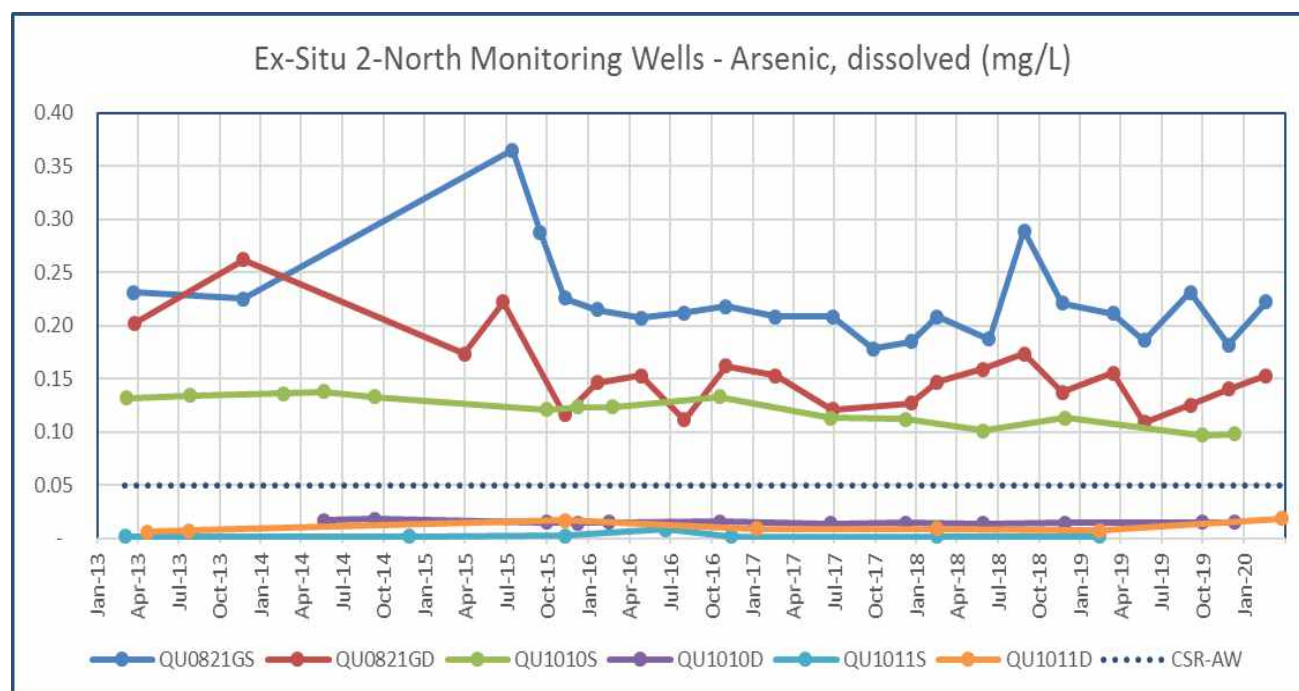


Figure 3: Ex-Situ 2-North Monitoring Wells Dissolved Arsenic

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.

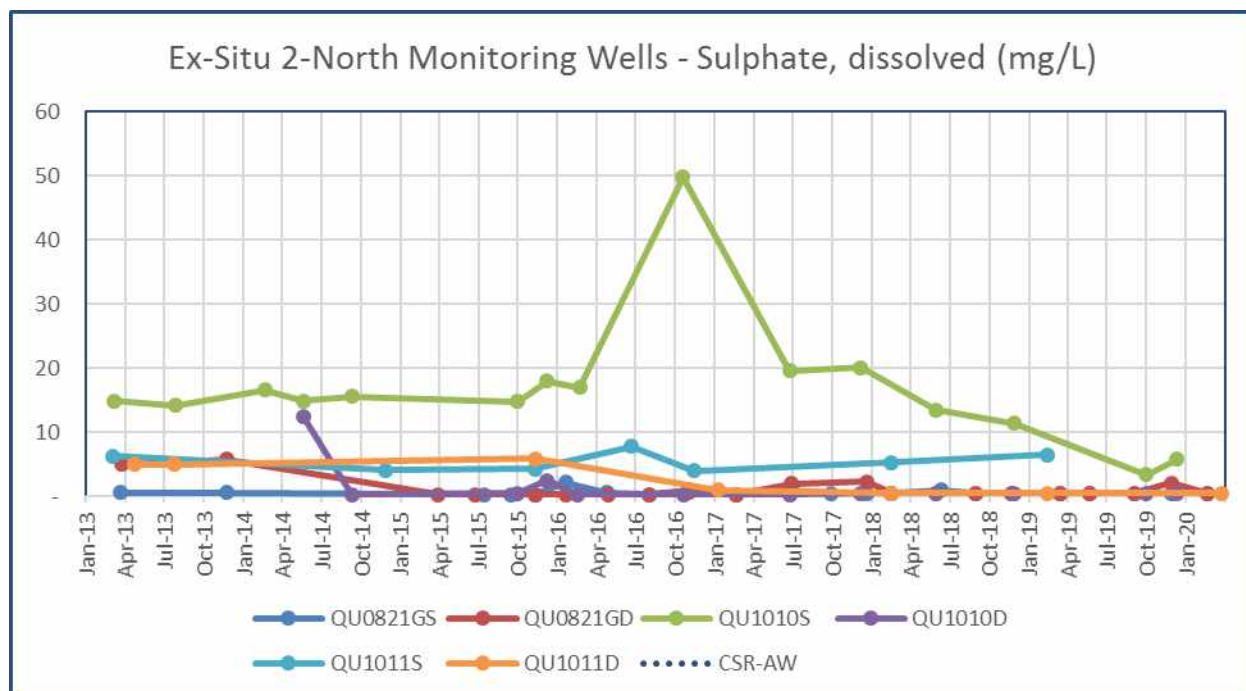


Figure 4: Ex-Situ 2N Monitoring Wells – Dissolved Sulphate

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 typically 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.

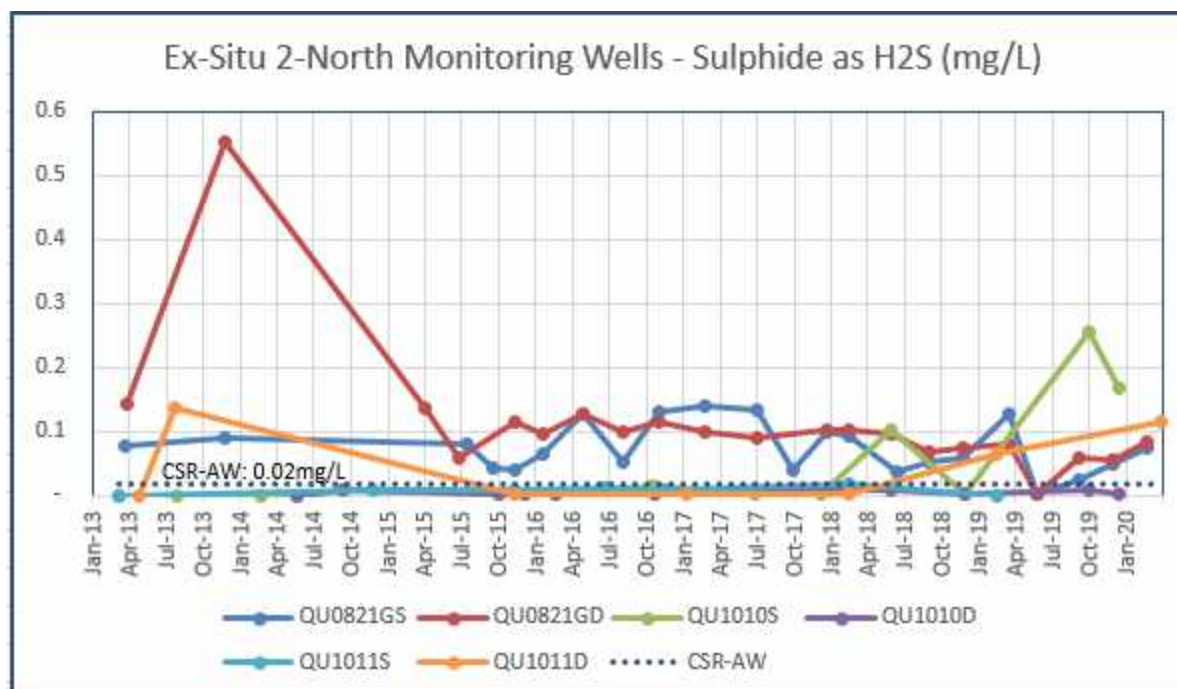


Figure 5: Ex-Situ 2N Monitoring Wells - Sulphide as H₂S

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.

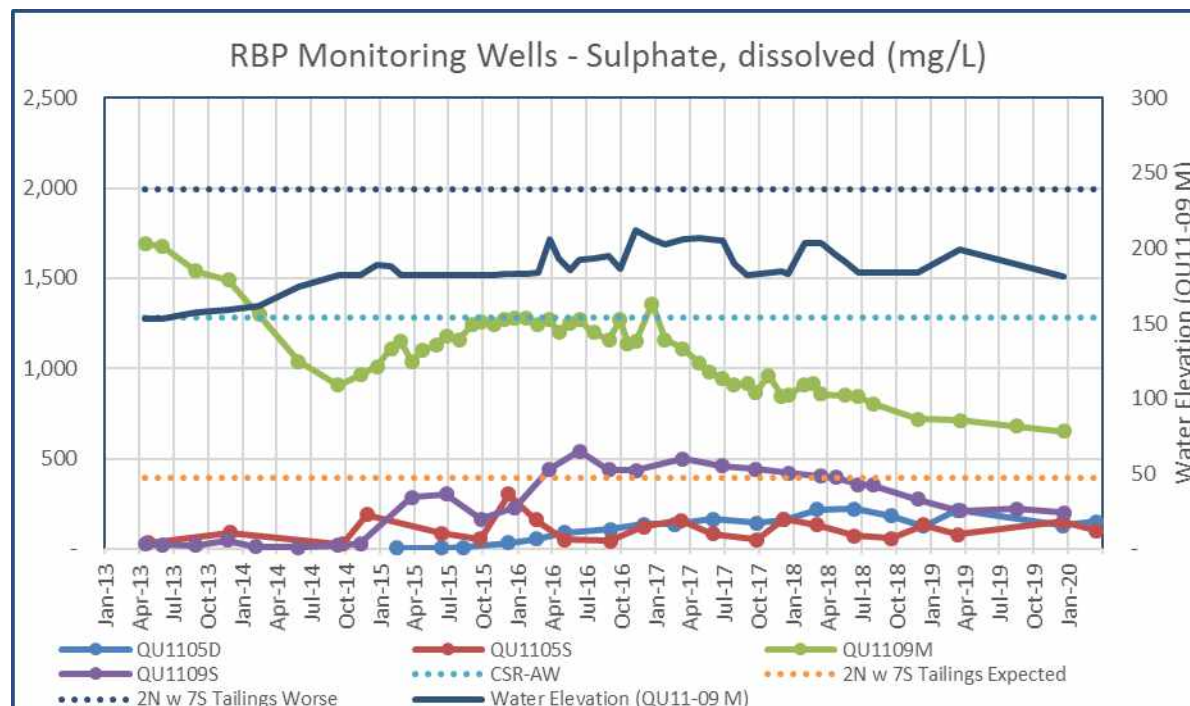


Figure 6: Ex-Situ River Barrier Pillar Monitoring - Dissolved Sulphate vs Water Elevation

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.

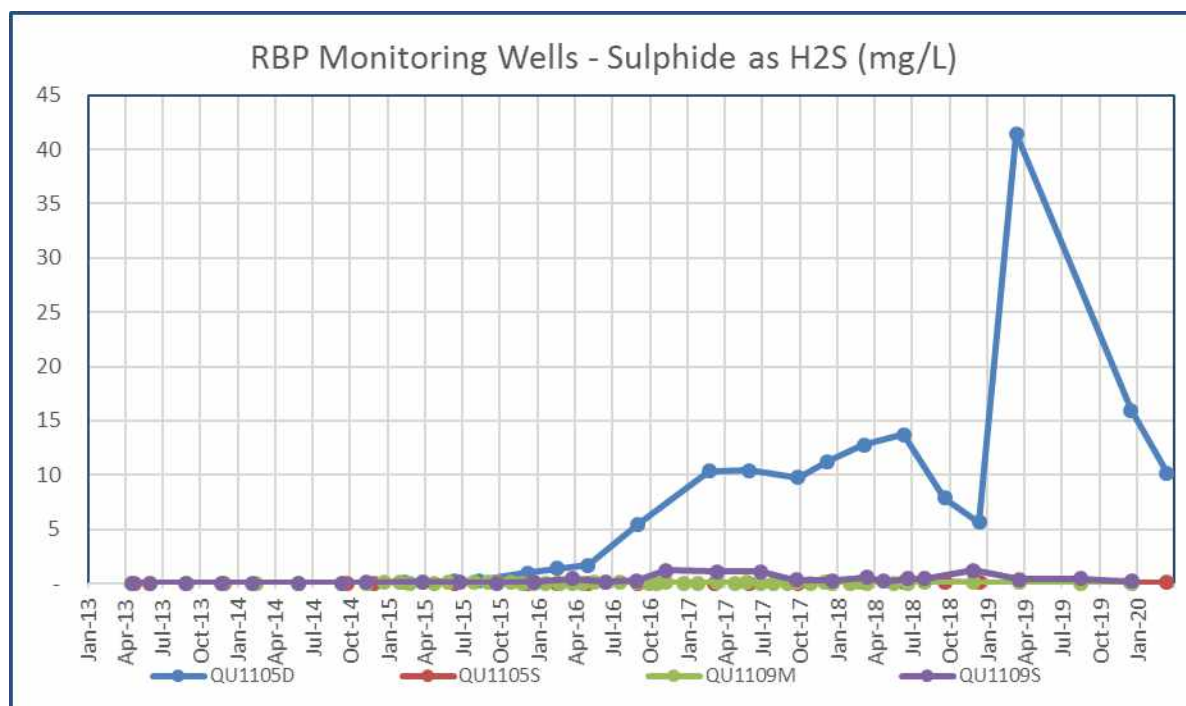


Figure 7: Sulphide as H₂S in RBP

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 trends 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).

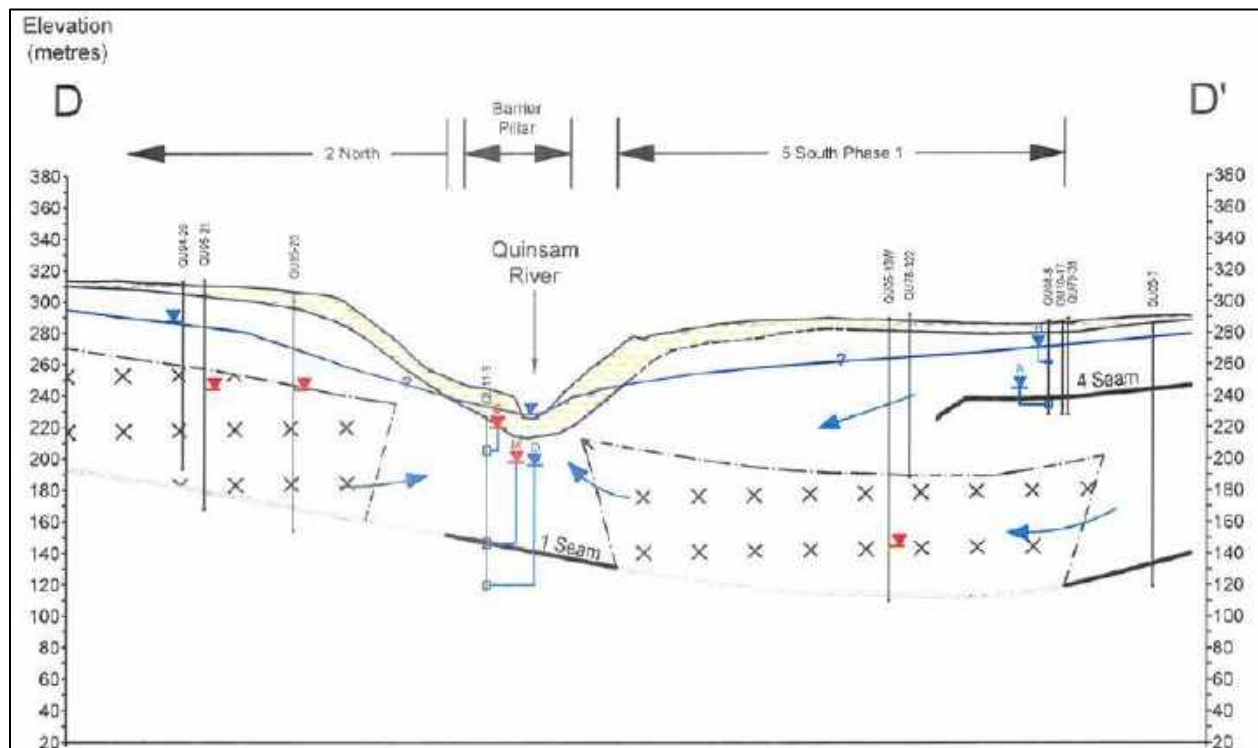


Figure 8: Groundwater Transport in RBP and Vicinity

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.

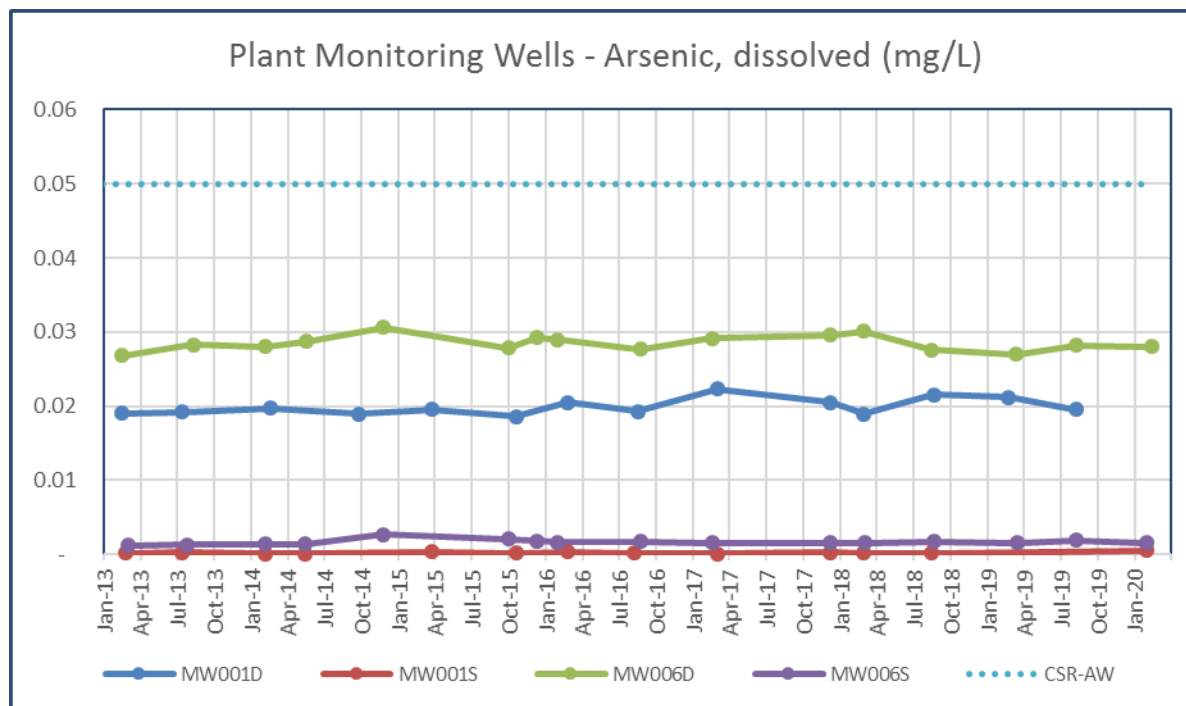


Figure 9: Plant Monitoring Wells - Dissolved Arsenic

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.

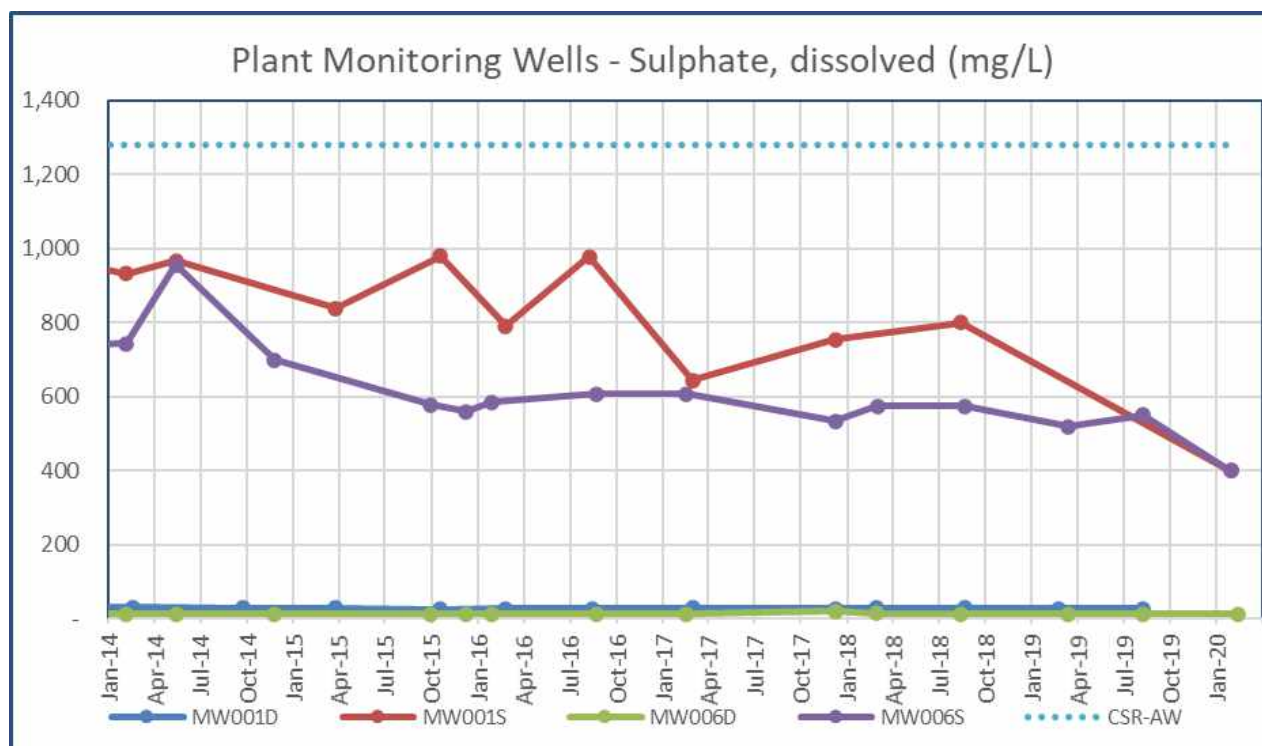


Figure 10: Plant Monitoring Wells - Dissolved Sulphate

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)

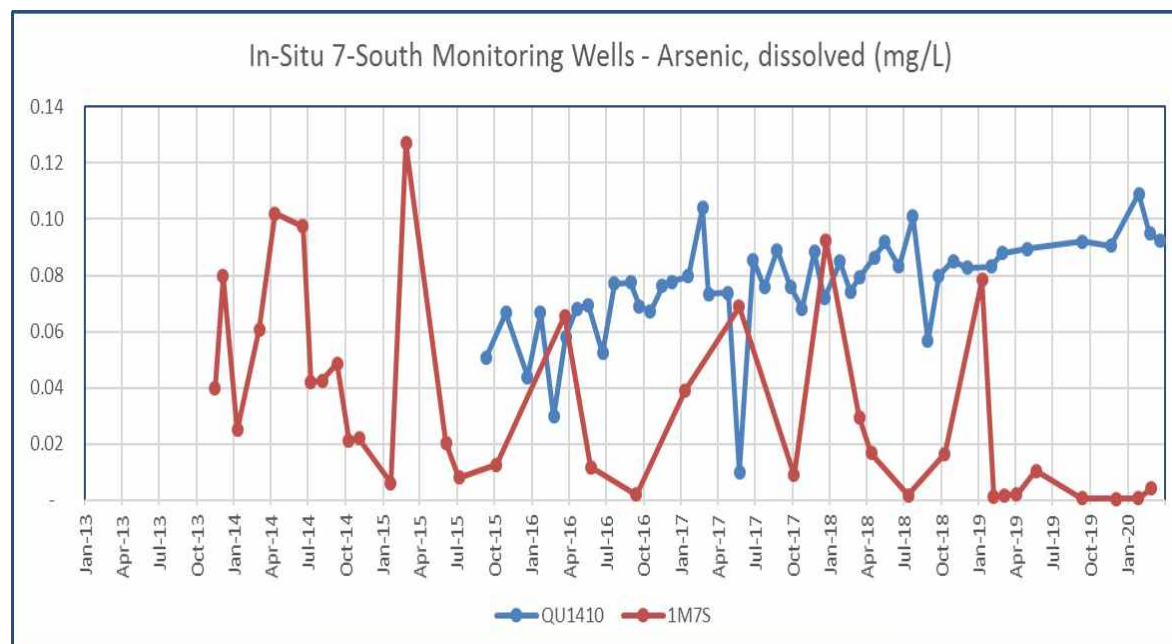


Figure 11: 7-South In-Situ Monitoring Wells - Dissolved Arsenic

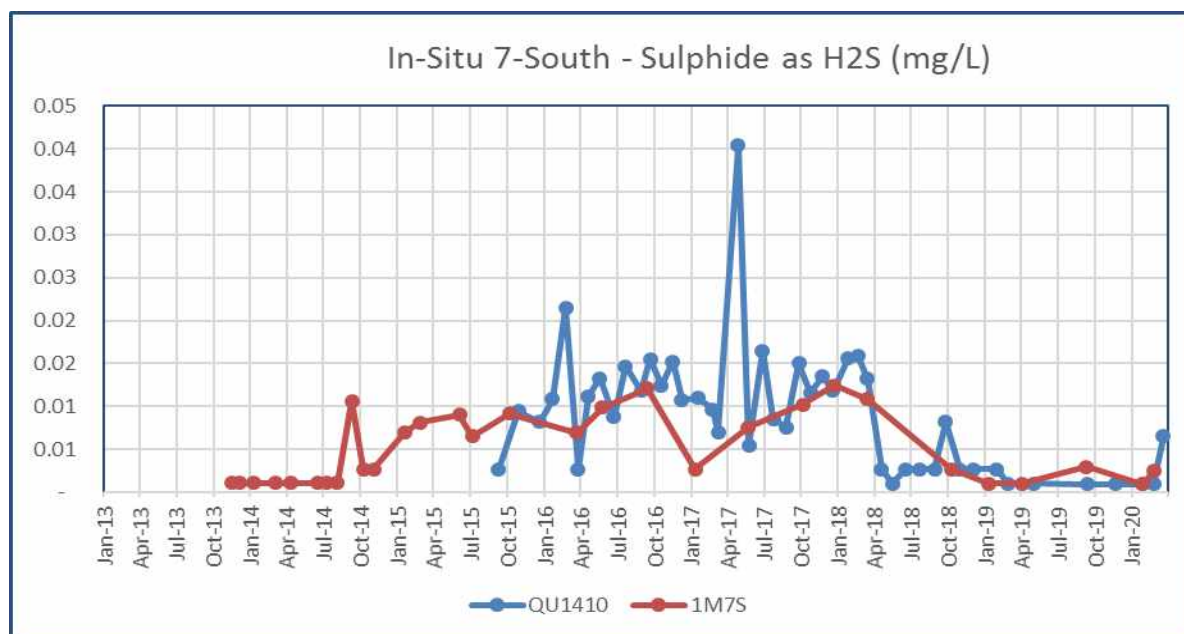


Figure 12: 7-South In-Situ Monitoring Wells – Sulphide as H₂S

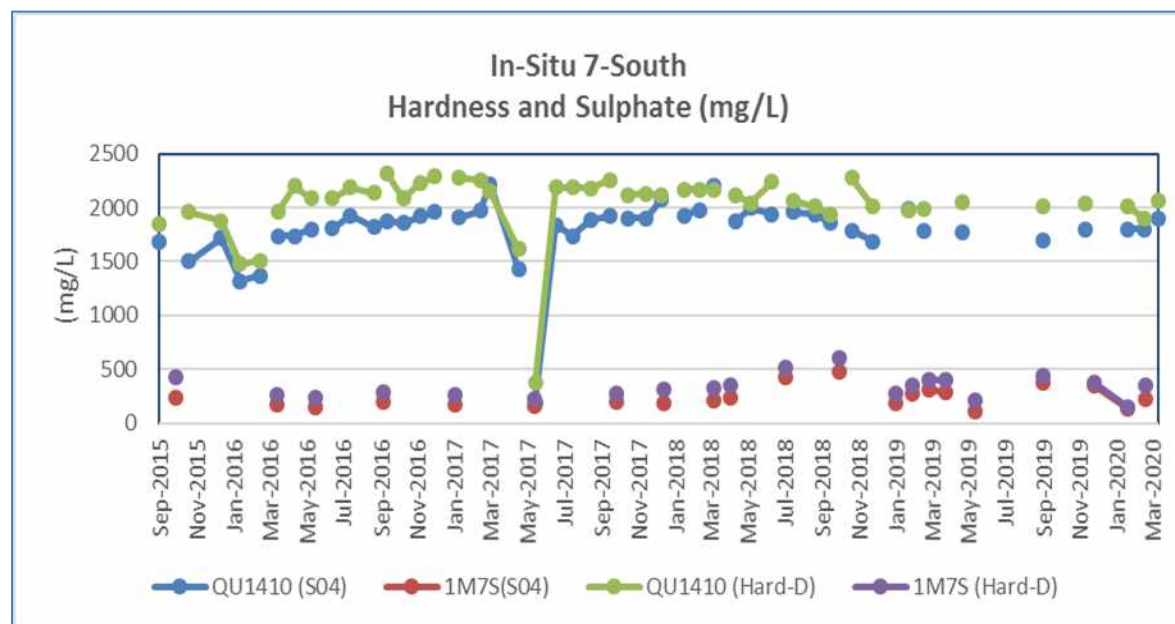


Figure 13: 7-South In-Situ – Dissolved Hardness and Sulphate

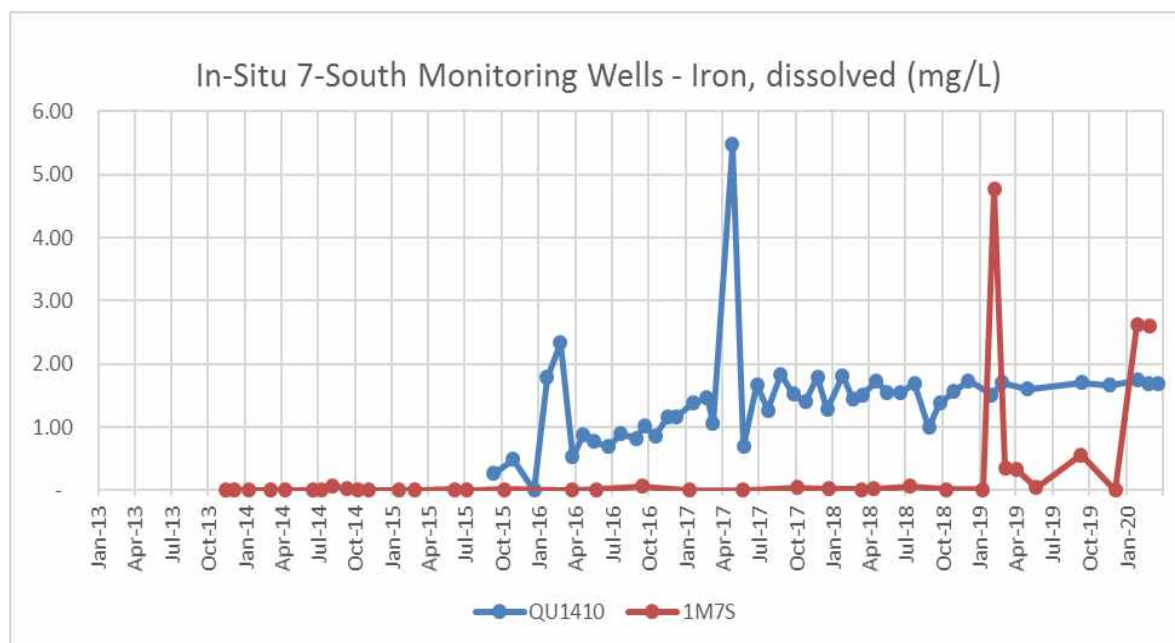
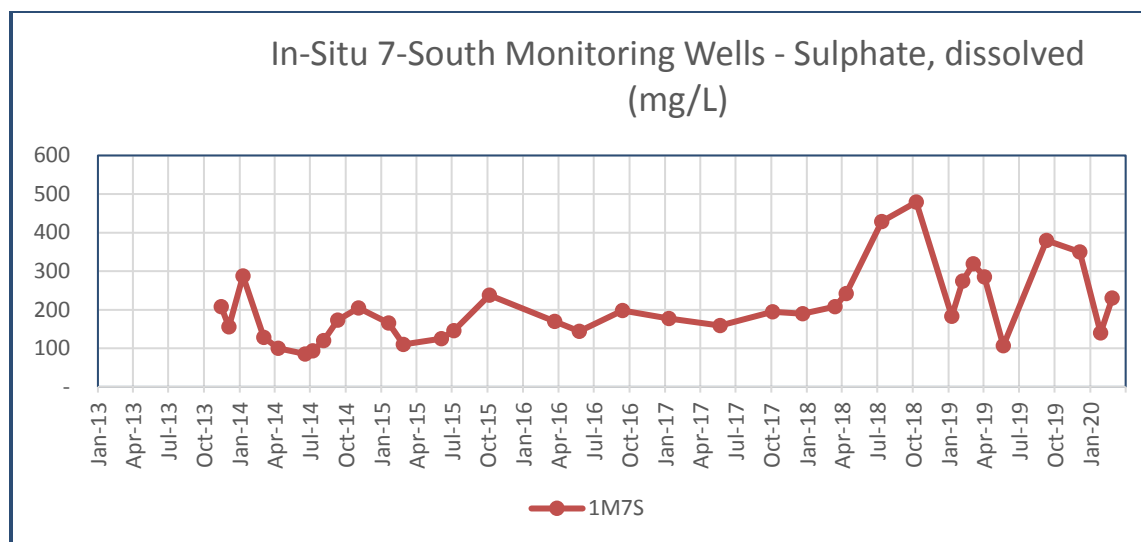


Figure 14: 7-South In-Situ Monitoring Wells - Dissolved Iron

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.

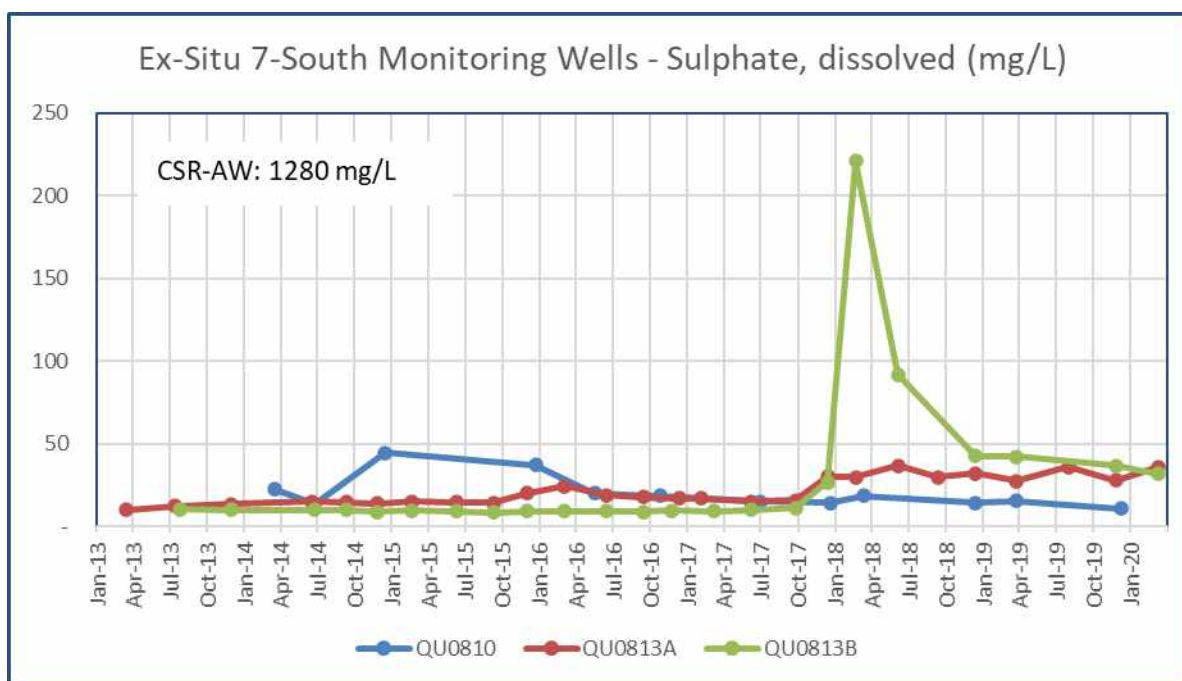


Figure 15: 7-South Ex-Situ Monitoring Wells - Dissolved Sulphate

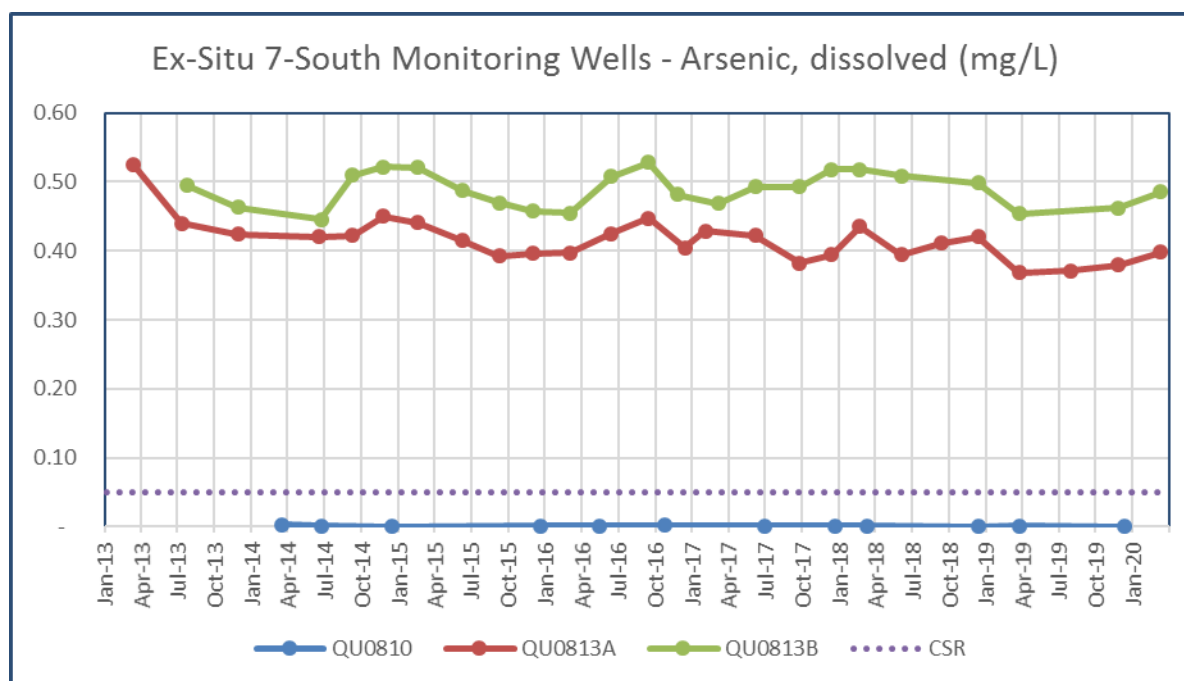


Figure 16: 7-South Ex-Situ Monitoring Wells - Dissolved Arsenic

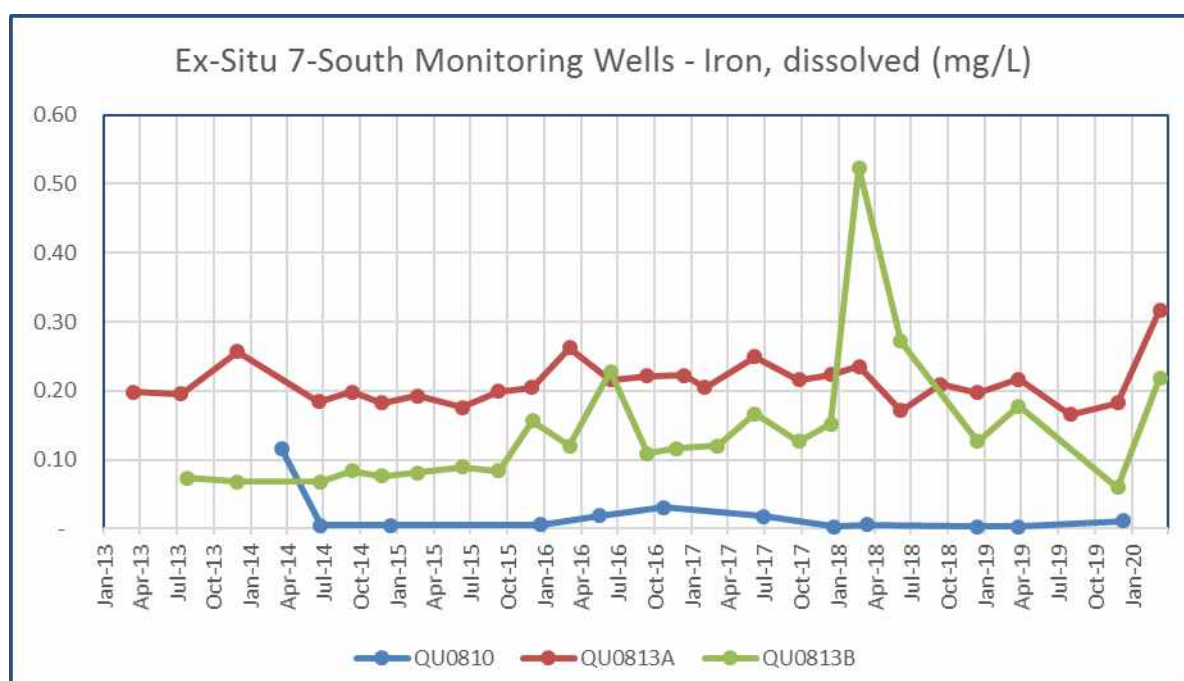


Figure 17: 7S Ex-Situ Monitoring Wells - Dissolved Iron

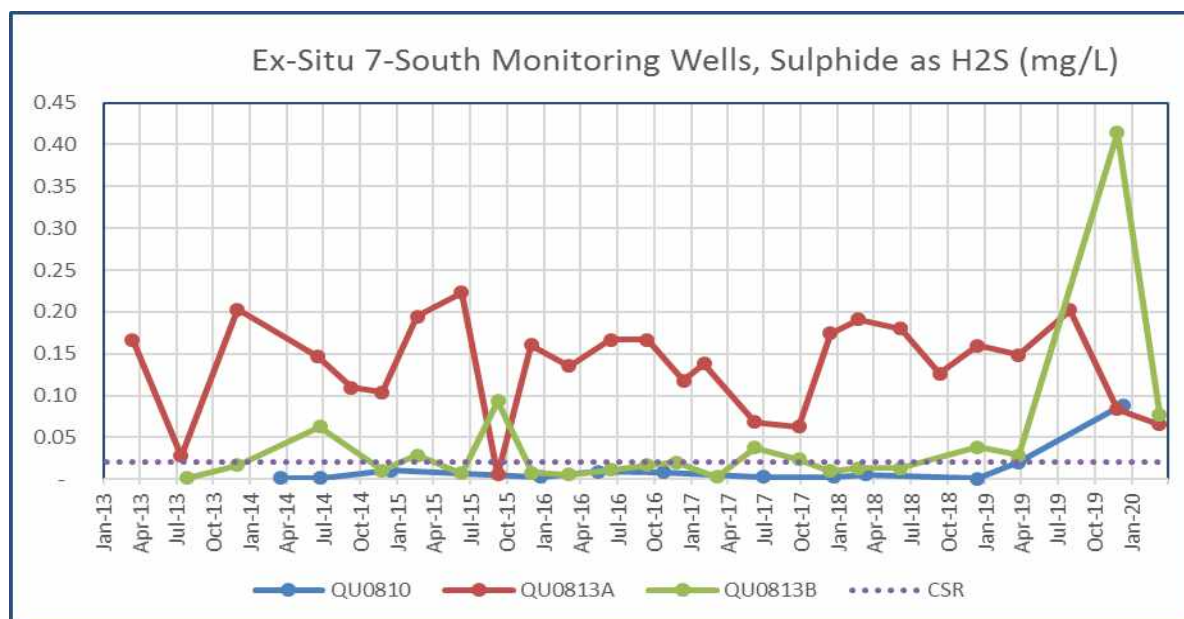


Figure 18: 7S Ex-Situ Monitoring Wells – Sulphide as Hydrogen Sulphide (H₂S)

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.

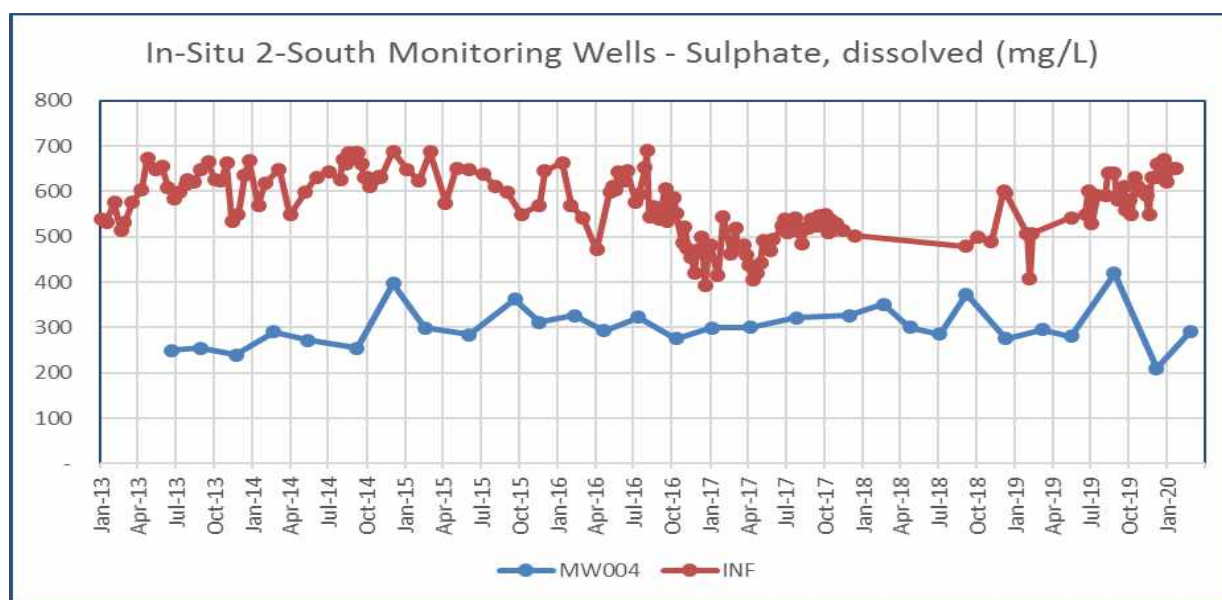


Figure 19: In-Situ 2S Monitoring Wells - Dissolved Sulphate

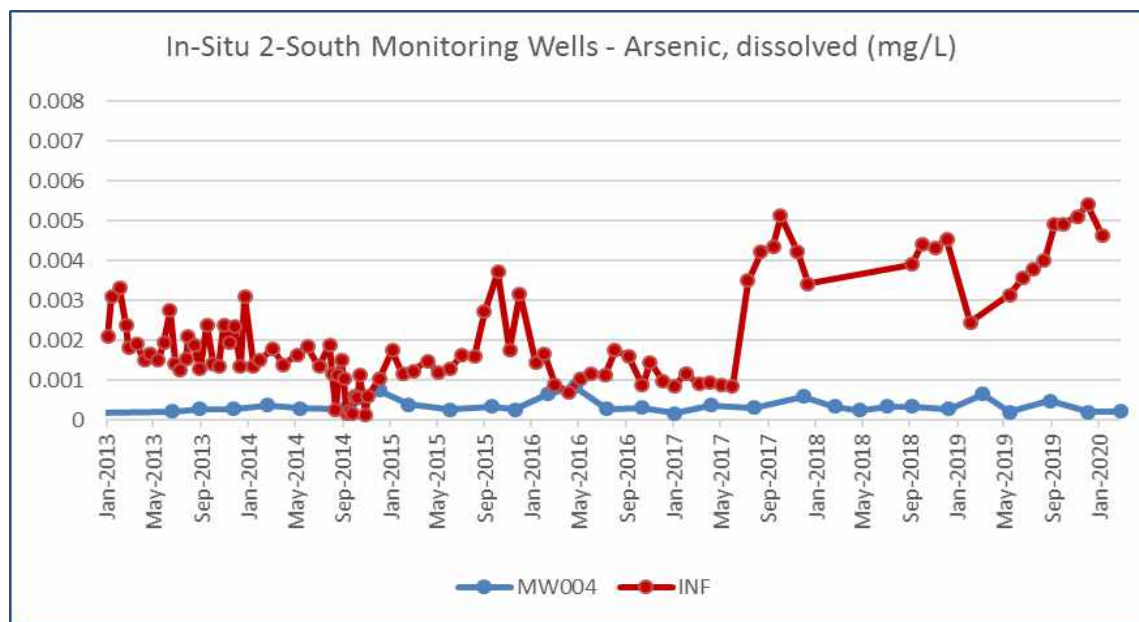


Figure 20: In-Situ 2-South Monitoring Wells - Dissolved Arsenic

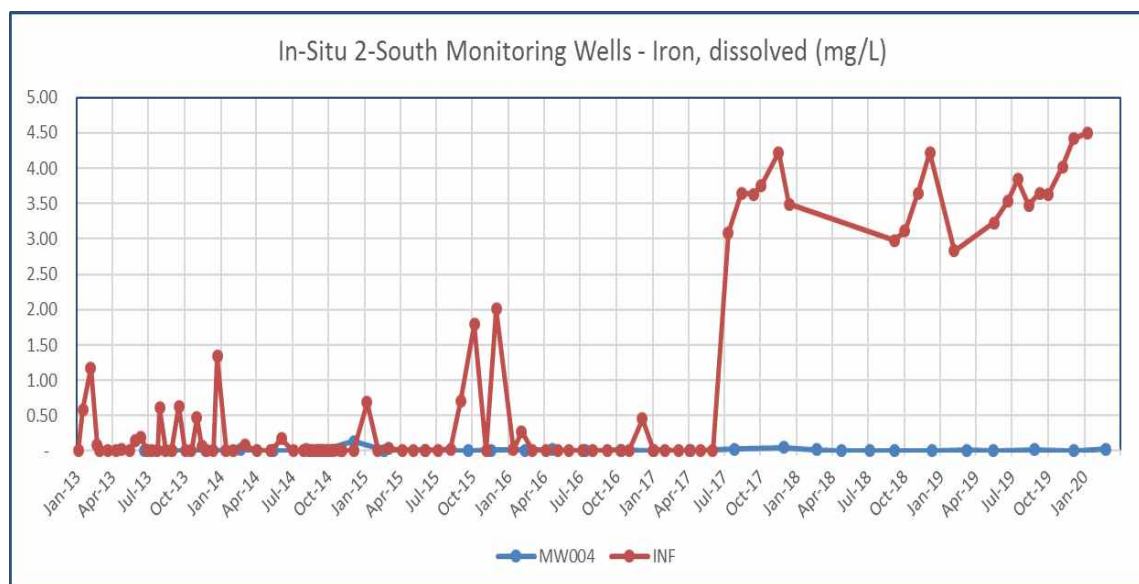


Figure 21: In-Situ 2-South Monitoring Wells - Dissolved Iron

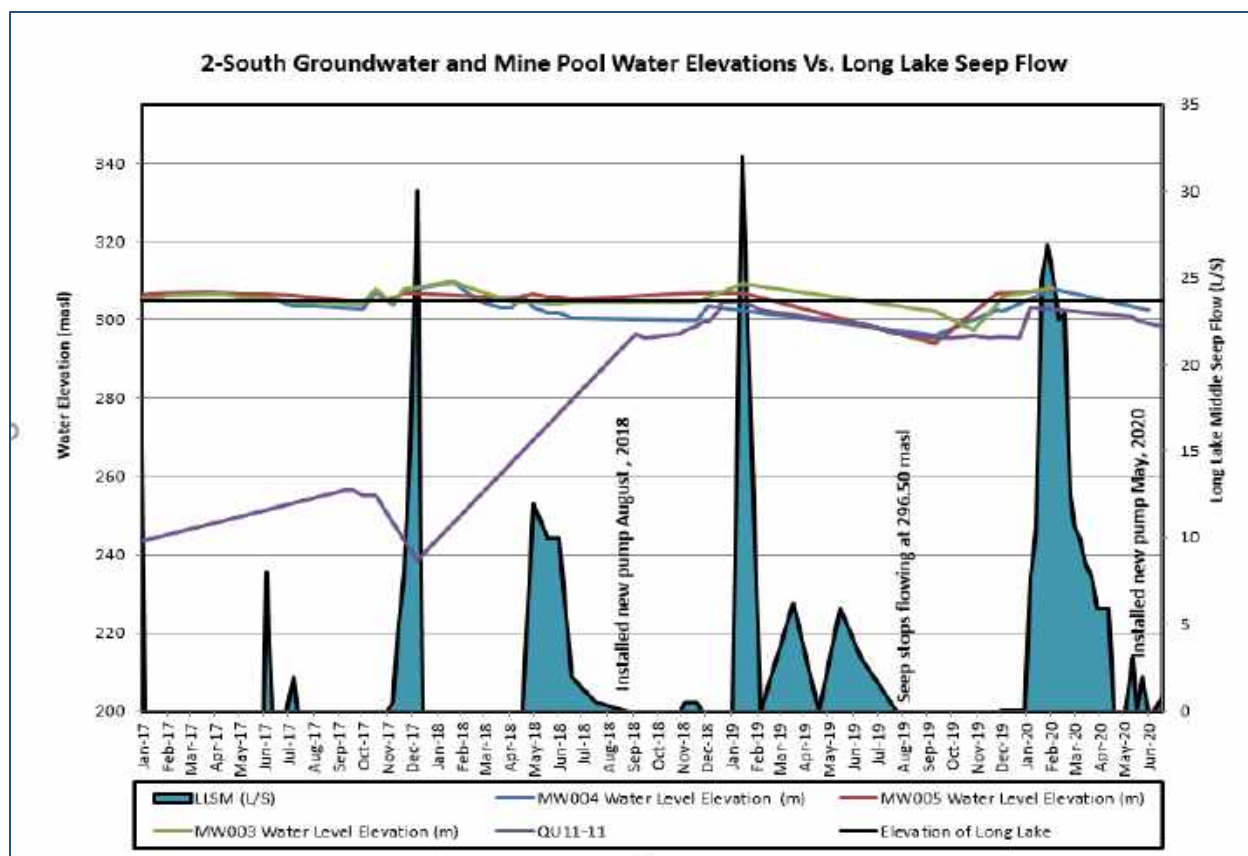


Figure 22: 2-South Groundwater and Mine Pool Water Elevations

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

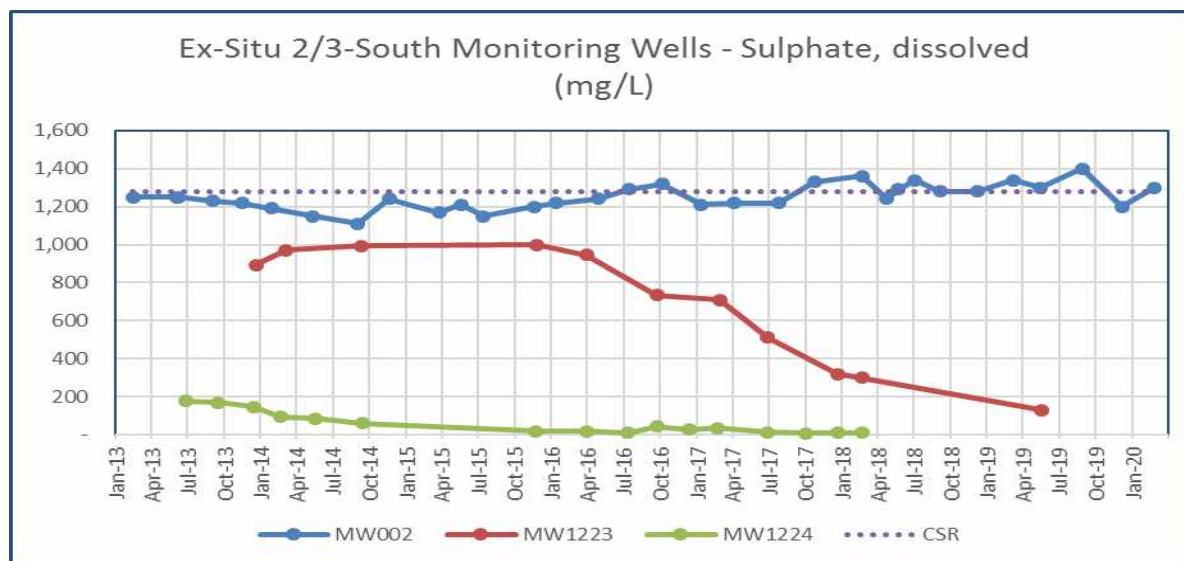


Figure 23: Ex-Situ/ In-Situ 2/3 South Monitoring Wells - Dissolved Sulphate

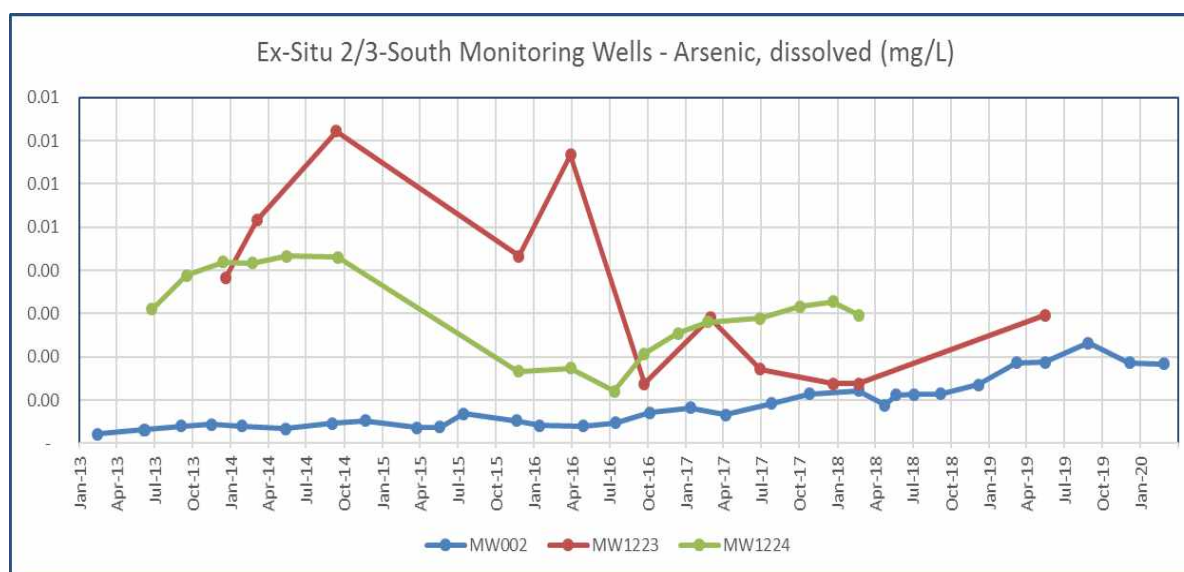


Figure 24: Ex-Situ/ In-Situ 2/3 South Monitoring Wells - Dissolved Arsenic

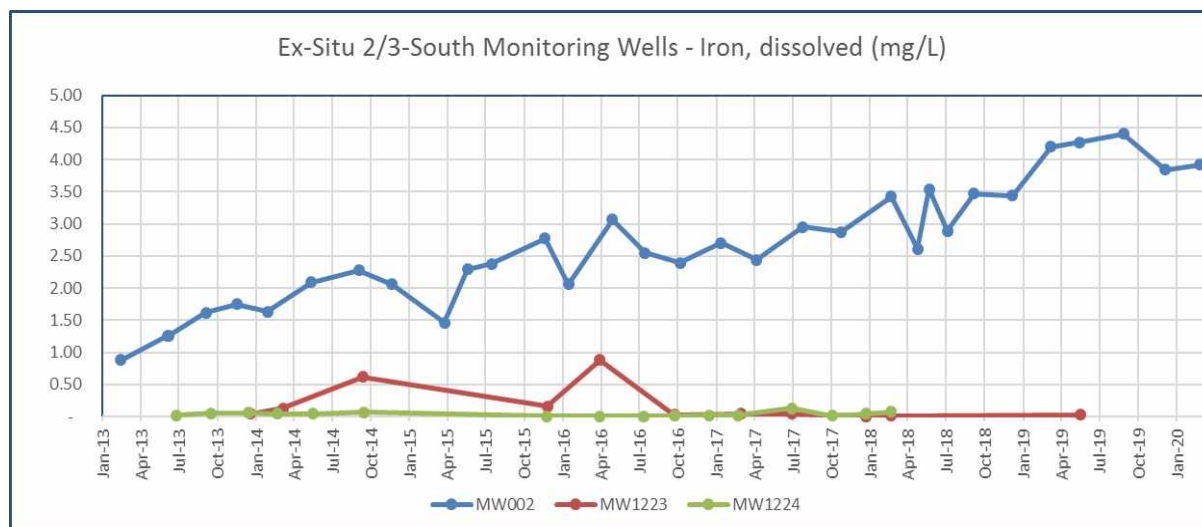


Figure 25: Ex-Situ/ In-Situ 2/3 South Monitoring Wells - Dissolved Iron

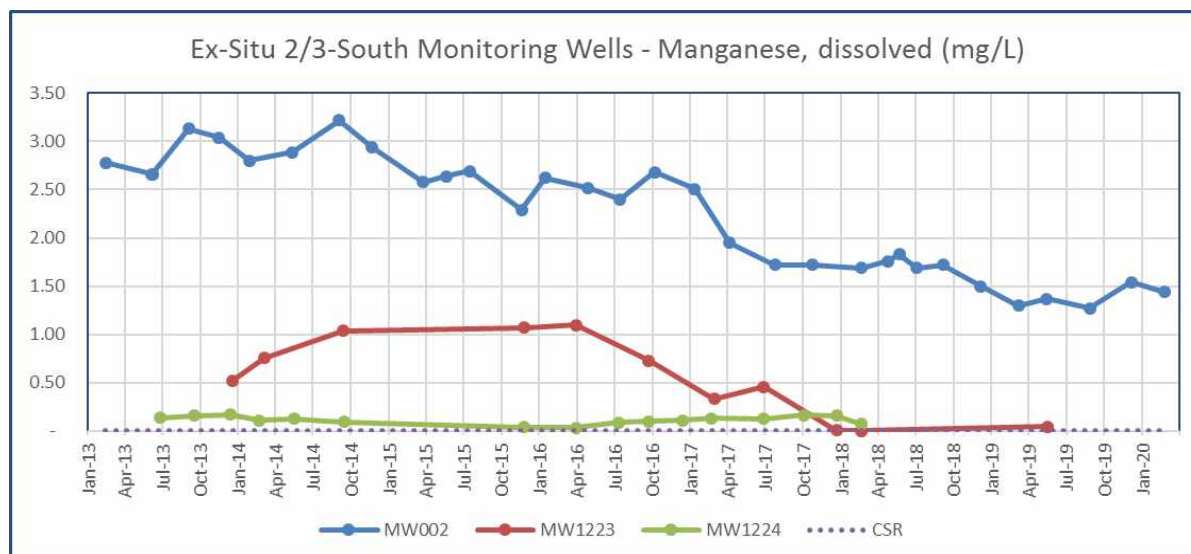


Figure 26: Ex-Situ/ In-Situ 2/3 South Monitoring Wells - Dissolved Manganese

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.

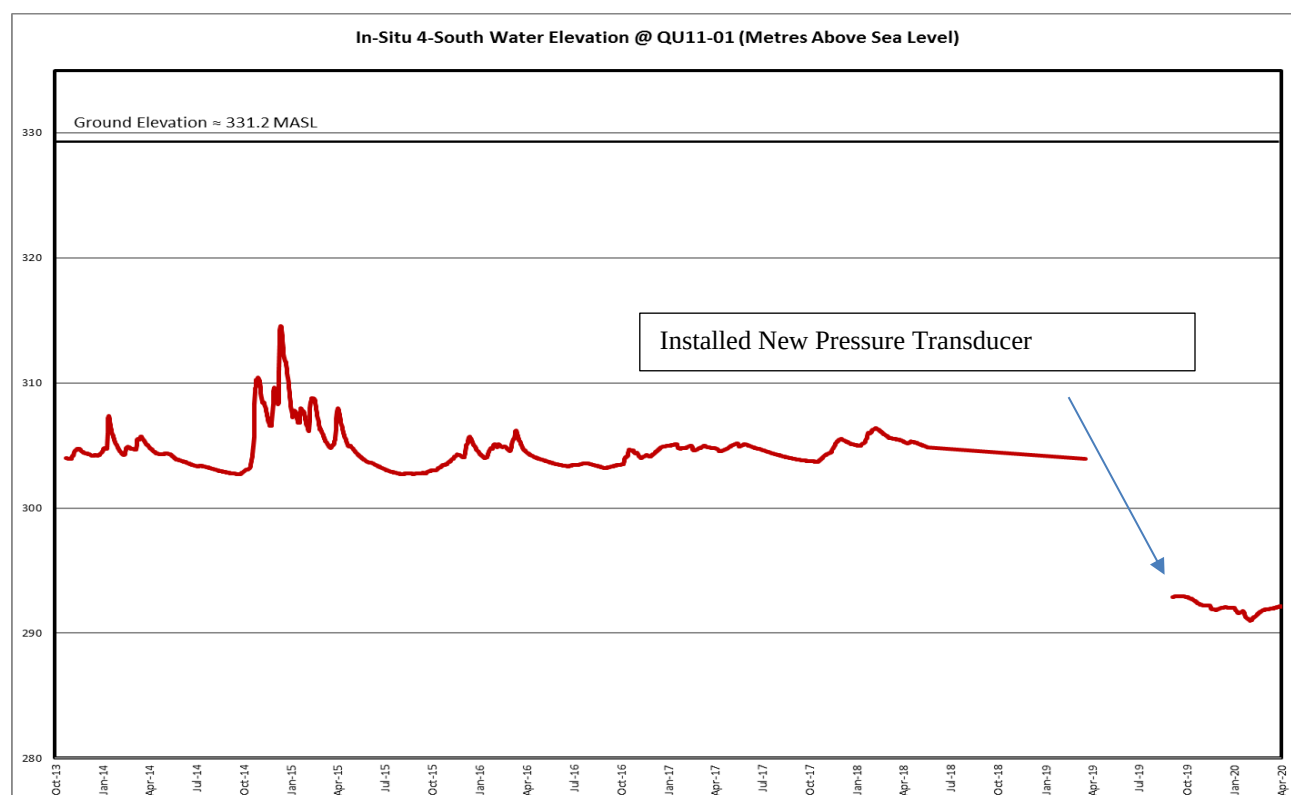


Figure 27: 4-South Mine Pool Water Elevation at QU11-01

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).

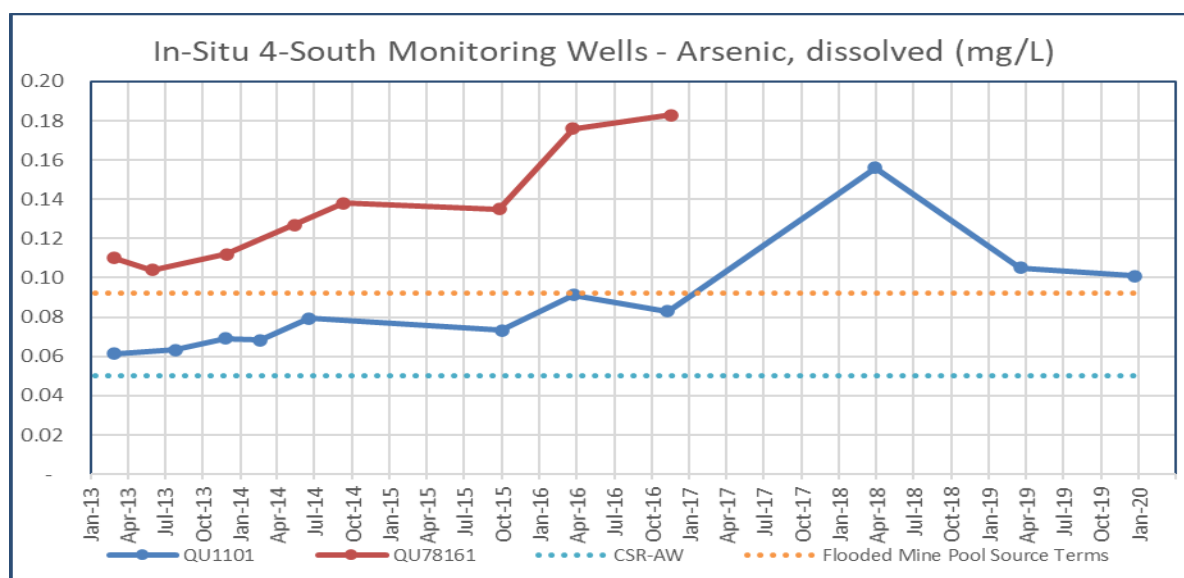


Figure 28: In-Situ 4-South Monitoring Wells - Dissolved Arsenic

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.

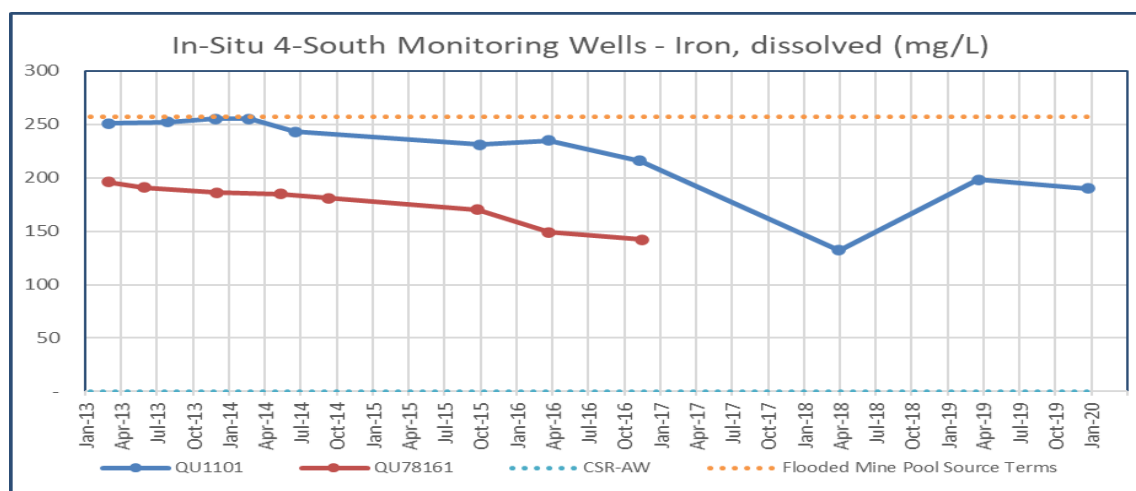


Figure 29: In-Situ 4-South Monitoring Wells - Dissolved Iron

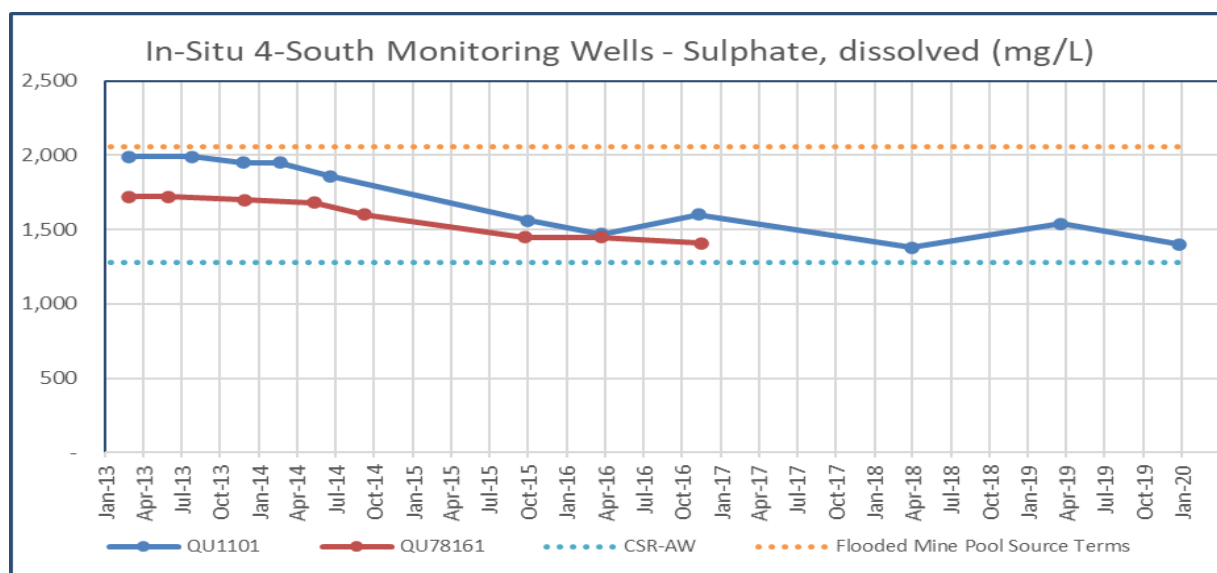


Figure 30: In-Situ 4-South Monitoring Wells - Dissolved Sulphate

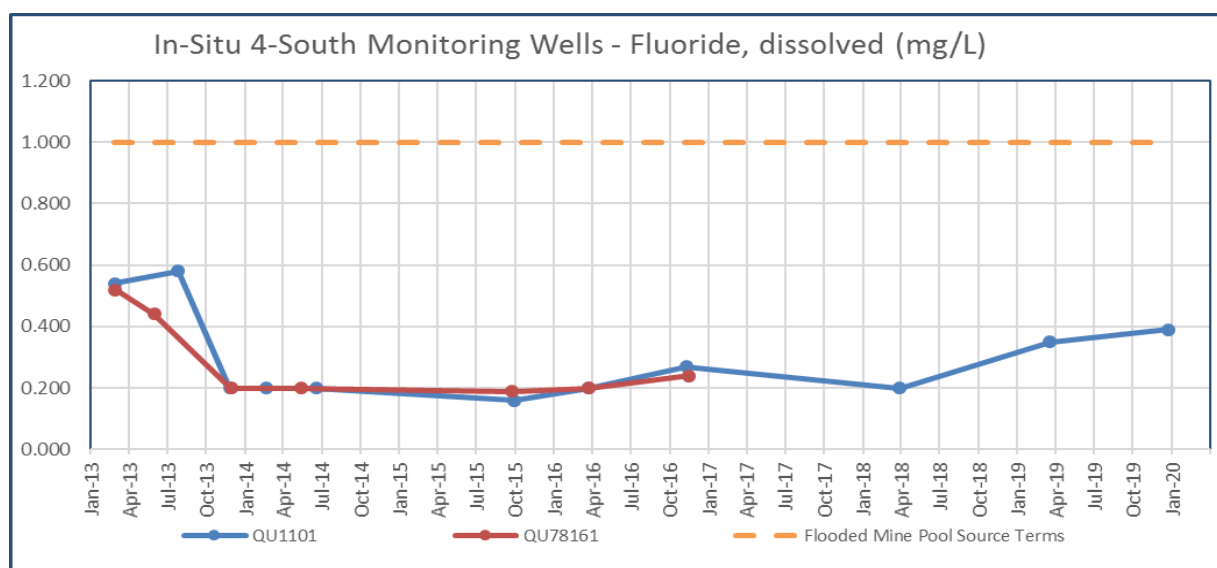


Figure 31: In-Situ 4-South Monitoring Wells - Dissolved Fluoride

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.

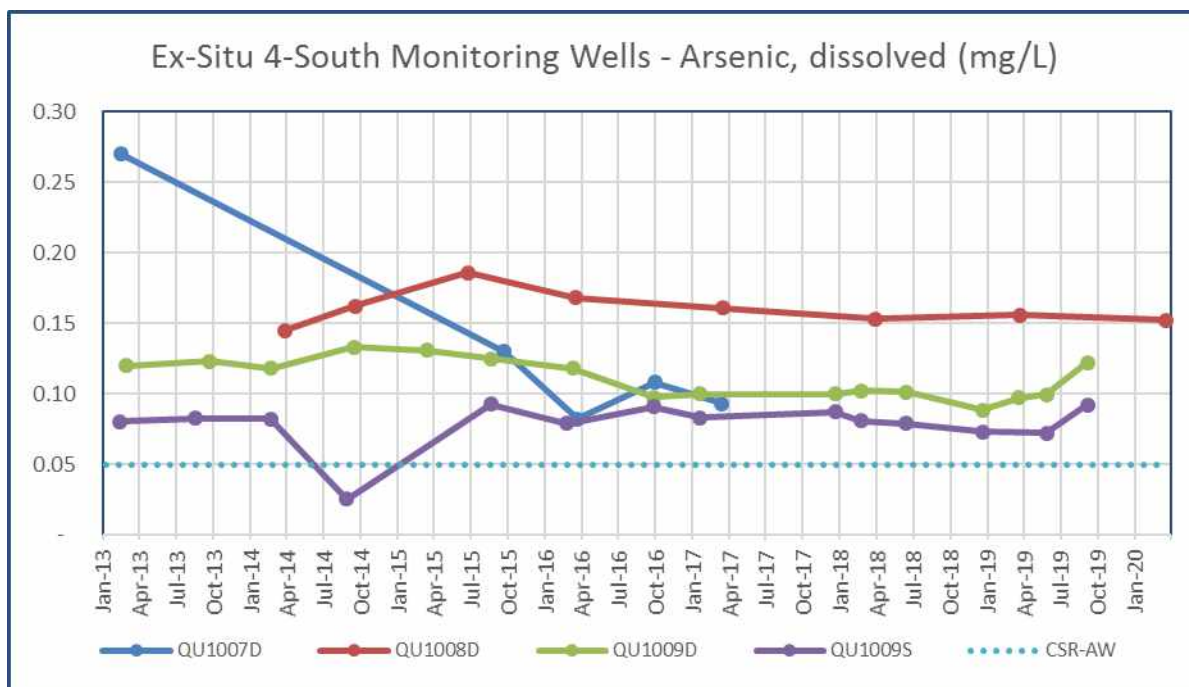


Figure 32: Ex-Situ 4-South Monitoring Wells - Dissolved Arsenic

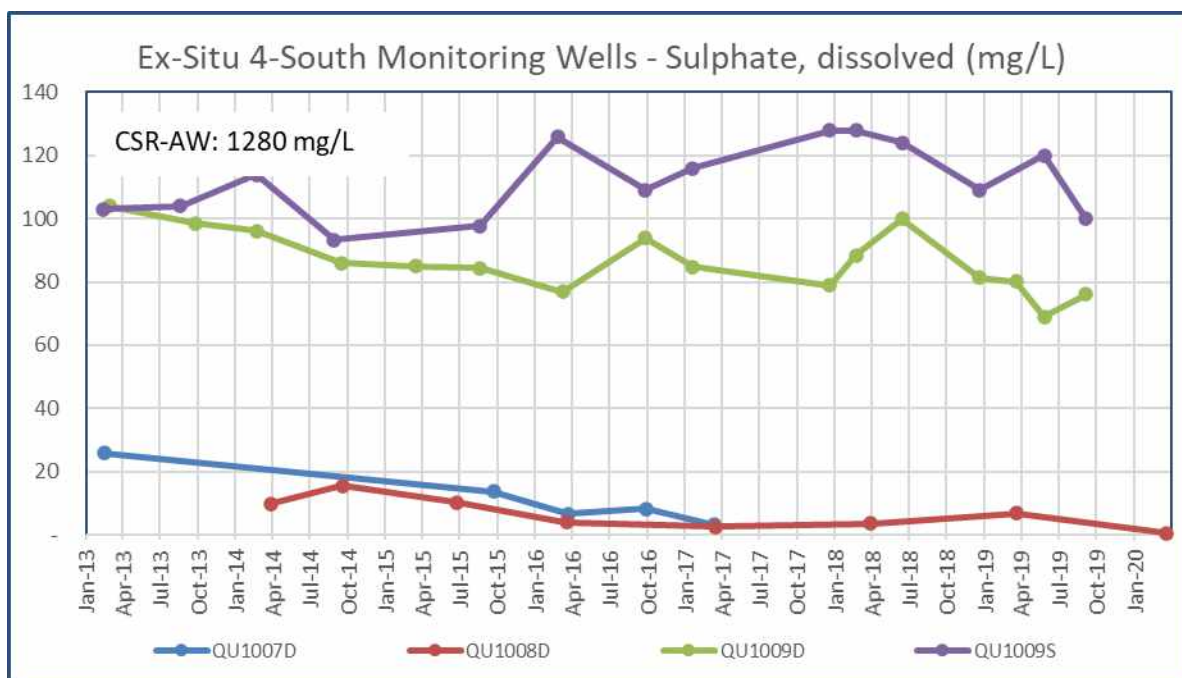


Figure 33: Ex-Situ 4S Monitoring Wells - Dissolved Sulphate

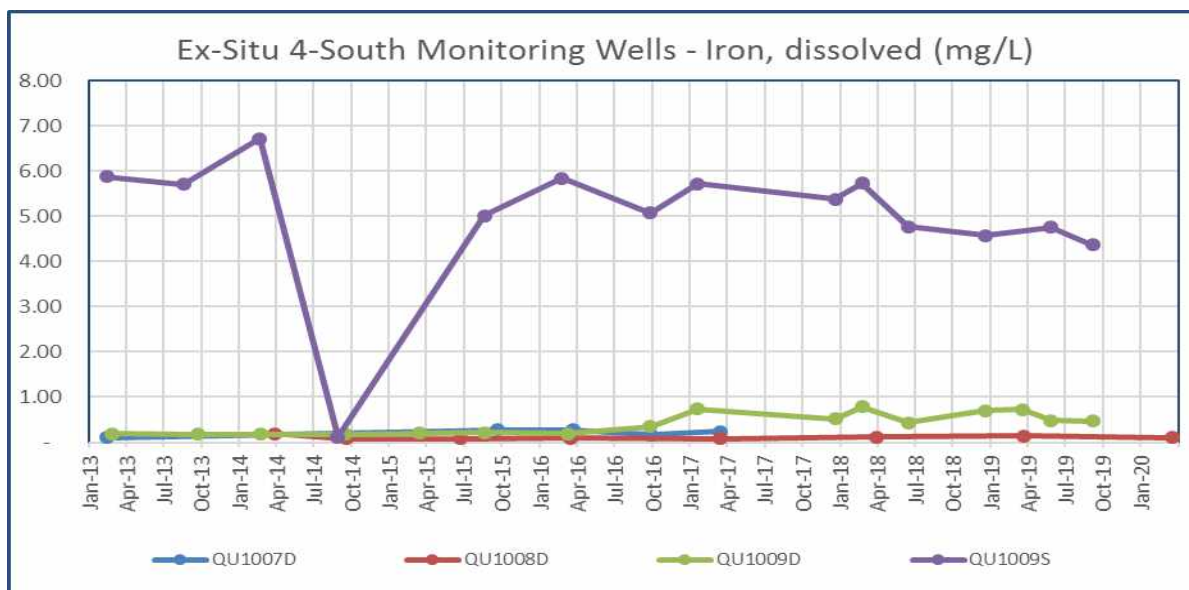


Figure 34: Ex-situ 4S Monitoring Wells - Iron dissolved

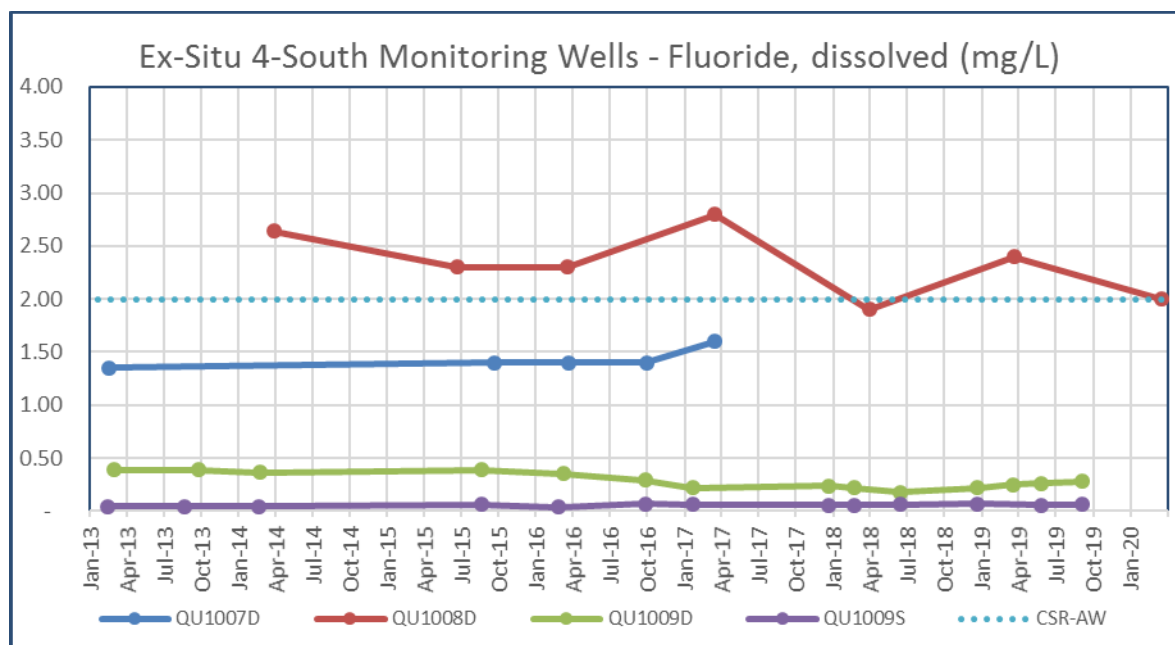


Figure 35: Ex-situ 4S Monitoring Wells – Fluoride dissolved

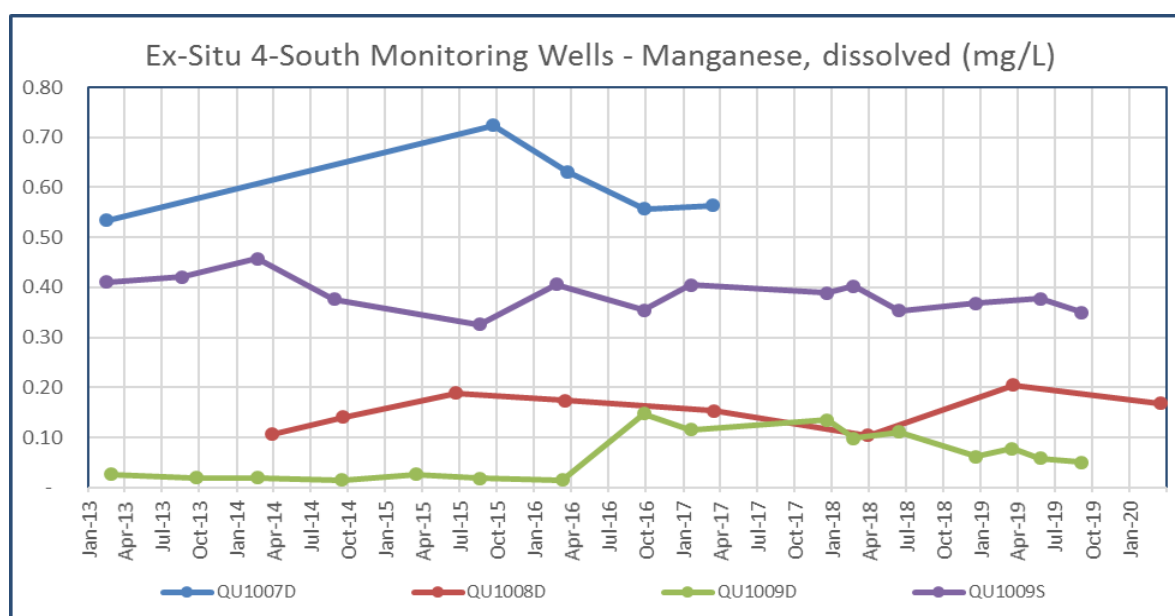


Figure 36: Ex-situ 4S Monitoring Wells – Manganese dissolved

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.

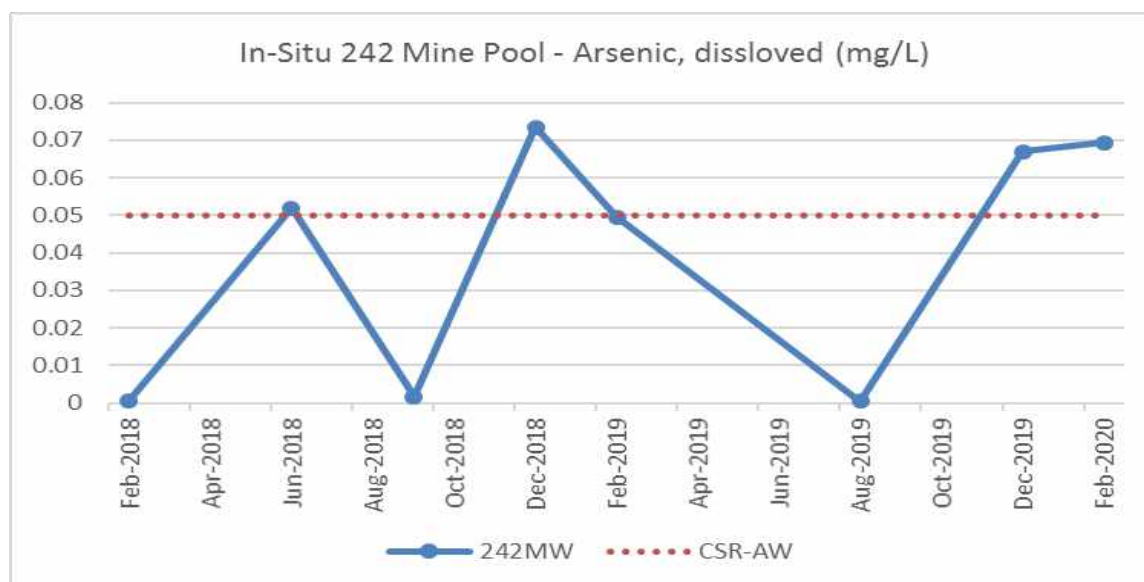


Figure 37: In-situ 242 Mine Pool – Arsenic, dissolved

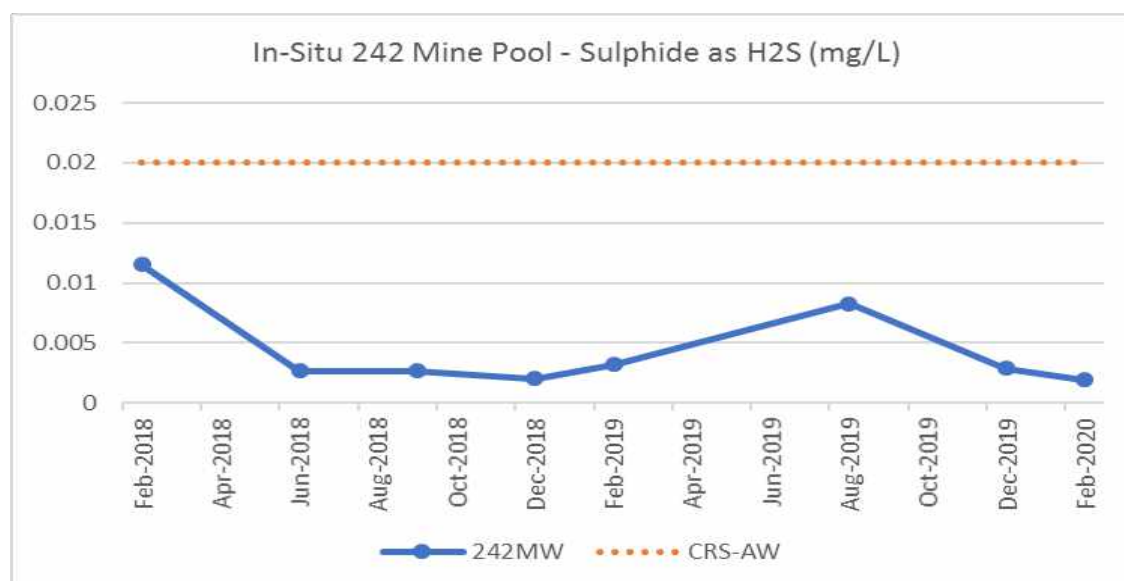


Figure 38: In-situ 242 Mine Pool – Sulphide as H₂S

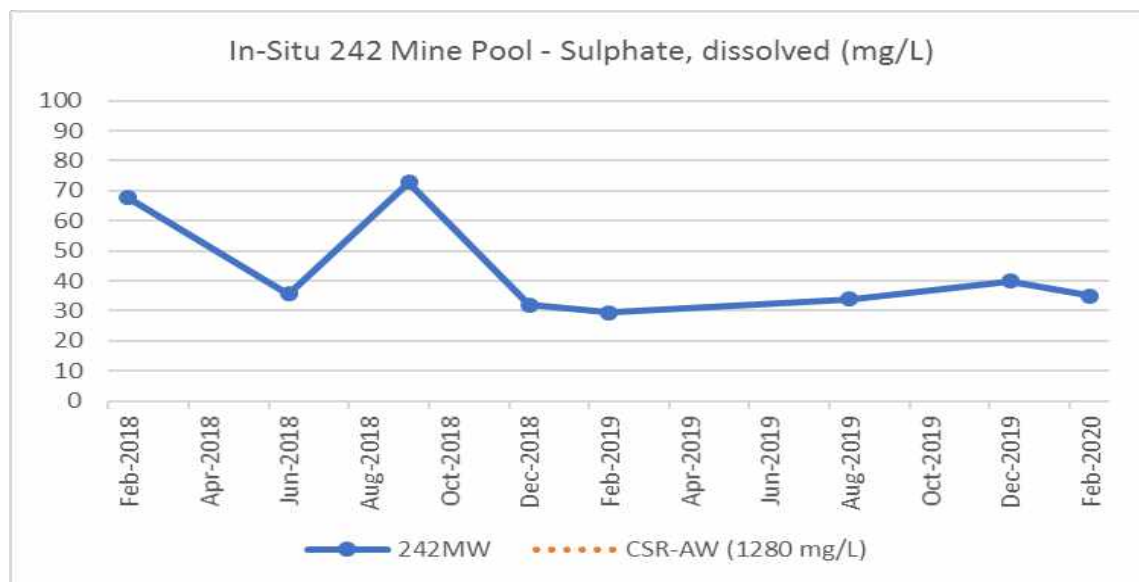


Figure 39: In-situ 242 Mine Pool – Sulphate, dissolved

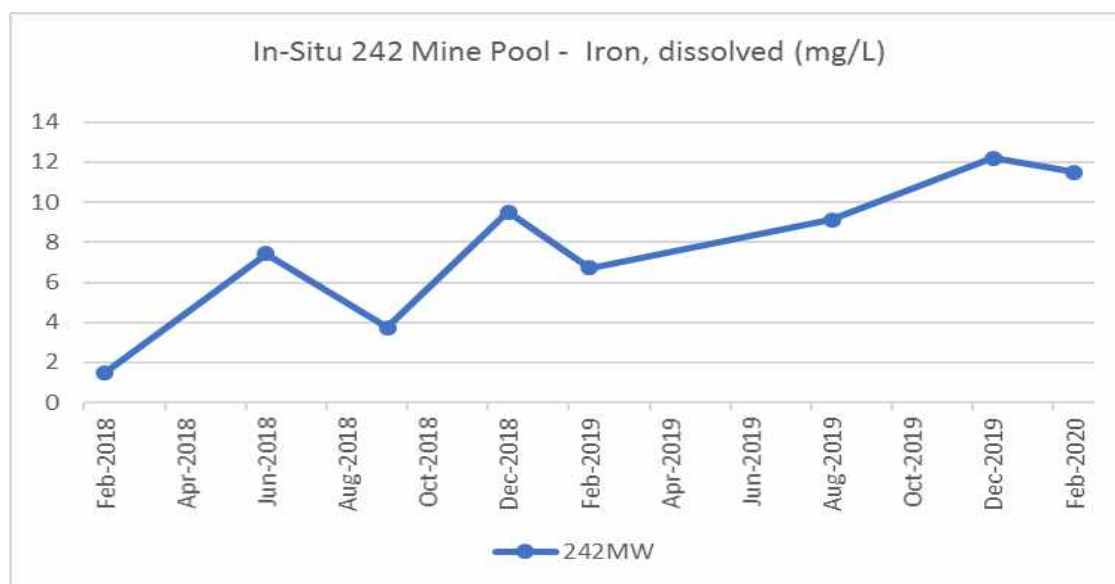


Figure 40: In-situ 242 Mine Pool – Iron, dissolved

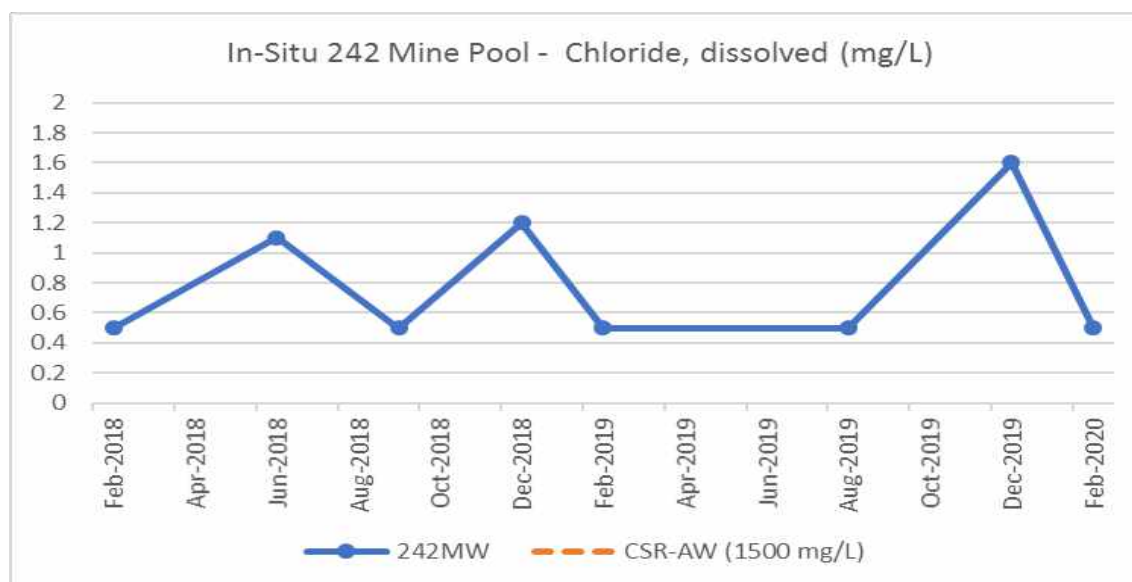


Figure 41: In-situ 242 Mine Pool –Chloride, dissolved

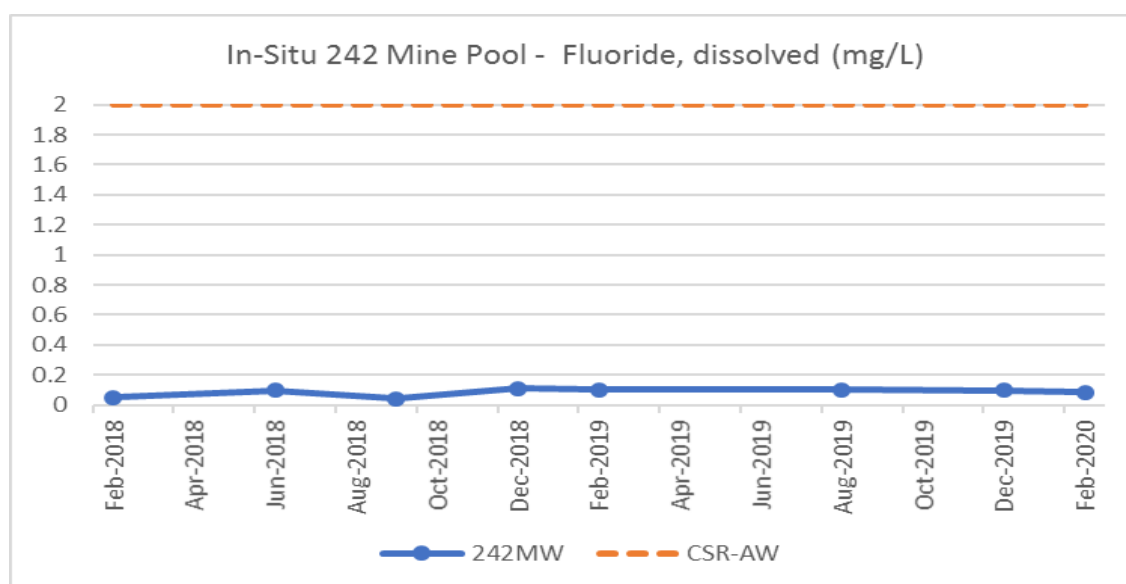


Figure 42: In-situ 242 Mine Pool –Fluoride, dissolved

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.

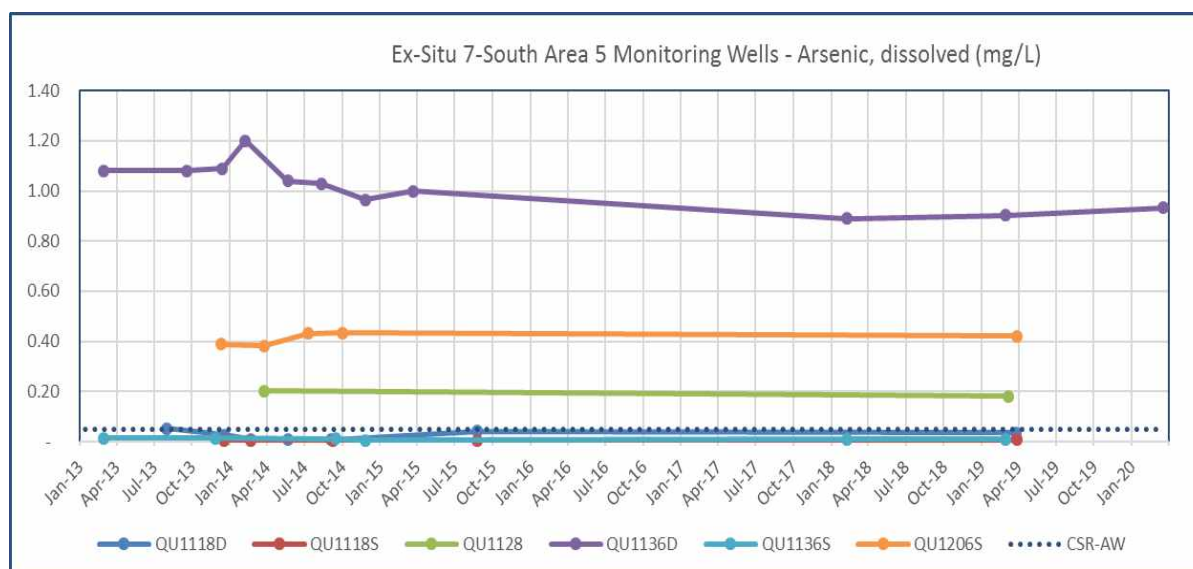


Figure 43: Dissolved Arsenic in 7SA5

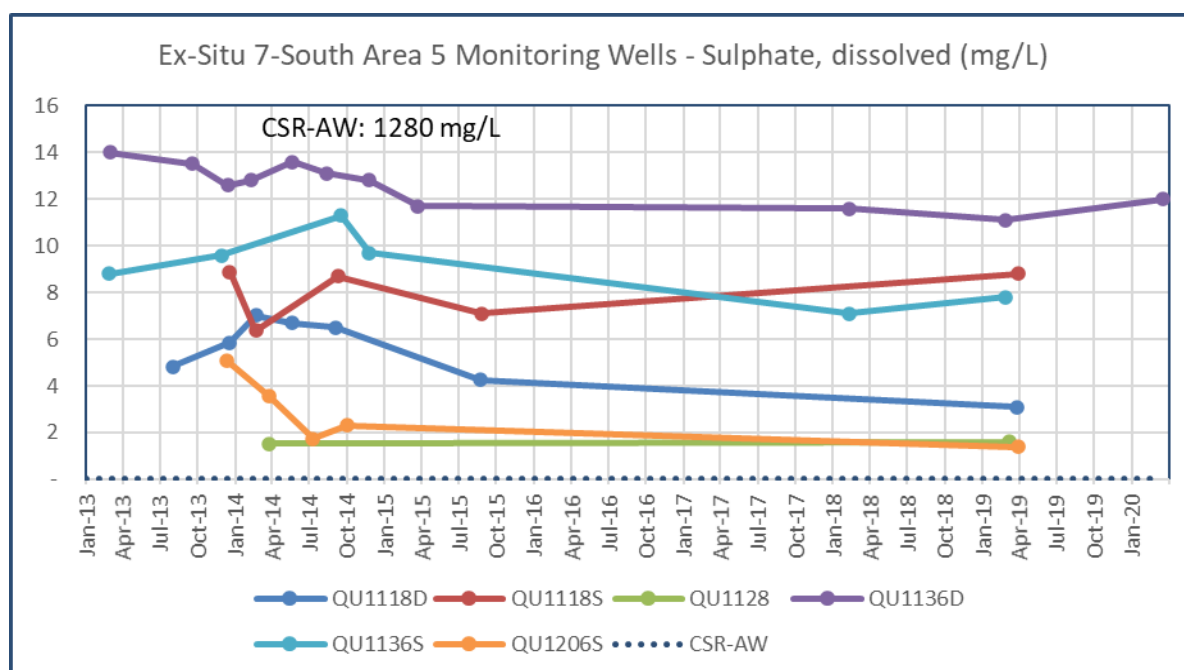


Figure 44: Dissolved Sulphate in 7SA5

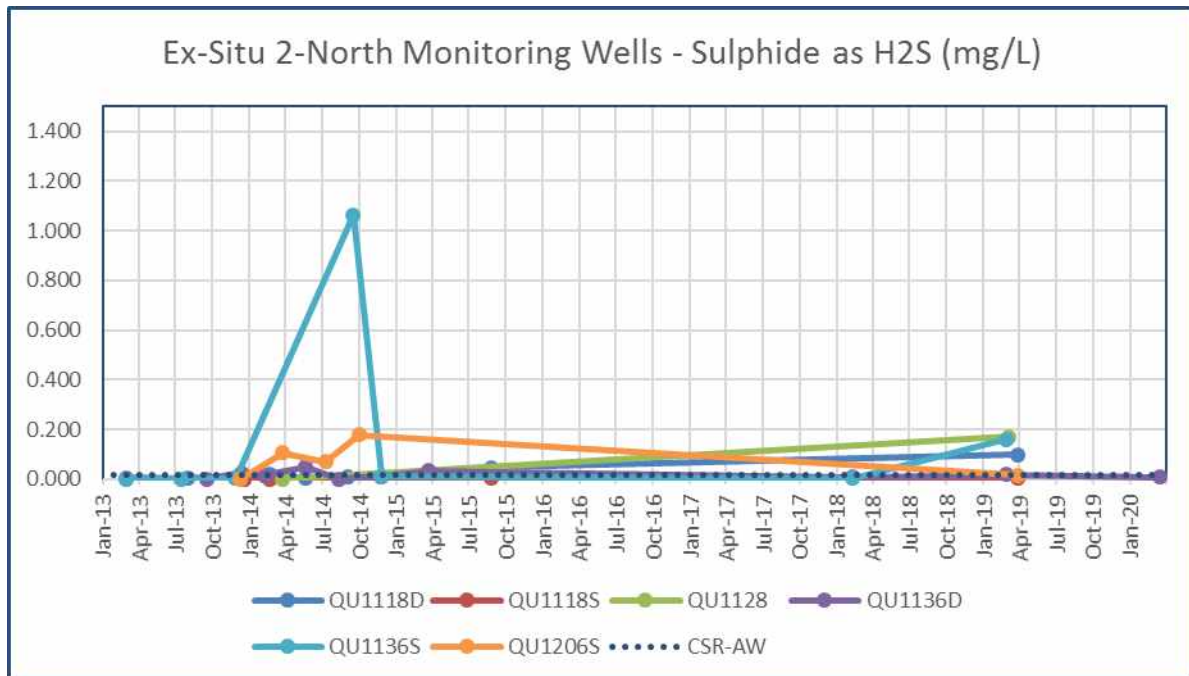


Figure 45: Sulphide as H₂S in 7SA5

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.

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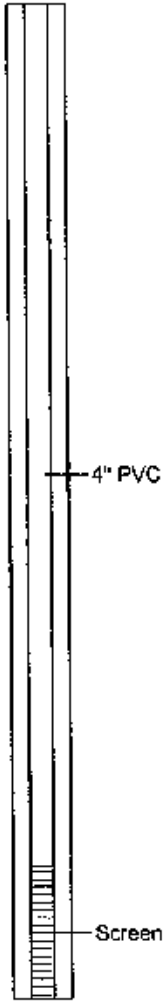
Enterprise Geoscience Services Ltd.



Borehole Log of QU-78-161 (4 South)

Date Started : 1978
 Date Completed : 1978
 Hole Diameter : 140 mm assumed
 Drilling Method : n/a
 Sampling Method : n/a

Drilled By : n/a
 Northing Coord. : 101068.3
 Easting Coord. : 99409.0
 Survey By : n/a
 Logged By : n/a

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description	
				▼ QU-78-161: 305.14 m (12-Jan-2011) ▽		
50	268.5		SP			
55	263.5		SS			
60	258.5		SM			
65	253.5		SS			
70	248.5					
75						
				EOH @ 71.7 m		
				Notes:		
				Borehole terminated to drift at 86.4 m.		
				Well: QU-78-161 Elev. m: 318.5		
						
				Quinsam Coal Assessment of Underground Disposal of Coarse Coal Refuse Campbell River, B.C.		

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

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, L/cms		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION	
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	20	40	60	80			10 ⁻⁶
0		Ground Surface	0.00									Cement
		Loose, moist, brown SAND and GRAVEL, trace silt.		1	GRAB							Pea Gravel April 25, 2000
2			1.83	2	GRAB							Bentonite
4		Dense, dry to moist, grey, coarse GRAVEL and SAND with cobbles (granite), trace to some silt.		3	GRAB							Filter Sand
6				4	GRAB							Screen
8			7.32	5	GRAB							
10		Dense, moist to dry, grey, gravelly SAND, trace silt, trace to some clay (TILL).		6	GRAB							
12			10.36	7	GRAB							
14				8	GRAB							Pea Gravel
16		Dense, moist, dark grey, silty SAND, trace to some gravel, trace clay (TILL).		9	GRAB							April 25, 2000
18												
20			19.21									

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 100



LOGGED: M.D.

CHECKED: J.A.F.

BOREHOLE 002-1065 (GP) BLDR CANADIAN 2-2-02

PROJECT No.: 002-1065

RECORD OF MONITORING WELL: MW00-1(D&S)

SHEET 2 OF 2

LOCATION: Washplant Ditch, Guinsam Mine

BORING DATE: April 17-18, 2000

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, K, cm/s				PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH		WATER CONTENT PERCENT		ADDITIONAL LAB. TESTING			
							Cu, kPa	nat V. rem V	+	-		Wp	WL	
20														
22		Dense, dry, grey, gravelly SAND and GRAVEL, trace to some silt (TILL). (continued)												Pea Gravel
24														Bentonite
26			24.56											
28		Dense, dry, gravelly SAND, some clay, trace silt (TILL)			10	GRAB								Screen Filter Sand
30														Drill Cuttings
32		End of MONITORING WELL.	20.48											
34														
36														
38														
40														

BOREHOLE 002-1065 (D&S) CAN GO TO 27.02

DEPTH SCALE

1 : 100



LOGGED: M.D.

CHECKED: J.A.P.

PROJECT No.: 002-1085

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 METERS	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH		WATER CONTENT PERCENT					
								Cu, kPa	rem V	Wp	W				
0		Ground Surface		0.00											
		Dry, grey SAND and GRAVEL (shale rock fragments) (Rock Fill)		1.32											
2		SHALE (bedrock).													
4		Coal and Shale.		3.96	1	GRAB									
		SHALE		4.80	2	GRAB									
		Coal Seam.		5.40	3	GRAB									
6		SHALE		6.10											
		End of MONITORING WELL.		6.31											
8															
10															
12															
14															
16															
18															
20															

DEPTH SCALE

1 : 100



LOGGED: M.D.

CHECKED: J.A.F.

PROJECT No. 002-1065

RECORD OF MONITORING WELL: MW00-4

SHEET 1 OF 3

LOCATION: 3S Pit, Quinsarn Coal Mine

BORING DATE: Nov. 20, 22 & 23, 2000

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOW/30 cm		HYDRAULIC CONDUCTIVITY, K, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT ELEV. DEPTH (m)	NUMBER	TYPE	BLOW/30 cm	SHEAR STRENGTH C _u , kPa	WATER CONTENT PERCENT W _p			
									20		
0		Ground Surface									
2		Loose, moist, gray and brown ROCK FILL, some sand and silt.									
4		Dense, moist, light brown, silty SAND some gravel (sub-angular). (Till).	3.35	1	CS						
6			5.70								
8				2	CS						
10											
12											
14		Medium strong, gray SANDSTONE. - grades to lighter gray @ 15.24m - trace black coal @ 24.38m									
16				3	CS						
18											
20				4	CS						

CONTINUED NEXT PAGE

DEPTH SCALE
1:100

PROJECT No: 002-1065

RECORD OF MONITORING WELL: MW00-4

SHEET 2 OF 3

LOCATION: 3S Pit, Quineam Coal Mine

BORING DATE: Nov. 20, 22&23, 2000

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, $\text{blows}/30\text{cm}$		HYDRAULIC CONDUCTIVITY, cm/s		ADDITIONAL LAB TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLAT DEPTH (m)	NUMBER	TYPE	BLOWS/30cm	SHEAR STRENGTH Cu, kPa	REL. V. $\pm$ rem V $\oplus$ U $\circ$	WATER CONTENT PERCENT W_p — W_L — W_i		
20				4	CS						
22											
24											
26				5	CS						
28		Medium strong, grey SANDSTONE. - grades to lighter grey @ 15.24m - trace black coal @ 24.38m (continued)									
30											
32				8	CS						
34											
36		VOID - likely old mine workings, broken and caved in bedrock.	34.14								
38		SANDSTONE.	36.68								
40											
42											
44											
46											

CONTINUED NEXT PAGE

DEPTH SCALE

1 : 100



LOGGED: WH

CHECKED: J.A.F.

BOREHOLE 002-1065 GPJ CLDR CAN GD1 2-7-02

PROJECT No 002-1065

RECORD OF MONITORING WELL: MW00-4

SHEET 3 OF 3

LOCATION: 35 PIL Quinsam Coal Mine

BORING DATE: Nov. 20, 22 & 23, 2000

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOW/30.3m		HYDRAULIC CONDUCTIVITY, s. cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION		
		DESCRIPTION	STRATA PLAT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOW/30.3m	SHEAR STRENGTH				WATER CONTENT PERCENT	
								CU. KPa	CU. KPa			Wp	Yw
40													
42		SANDSTONE. (continued)											
44													
46		VOID - likely old mine workings, broken and caved in bedrock.		44.91									
48		SANDSTONE		45.72									
50		VOID - likely old mine workings, broken and caved in bedrock.		46.77									
52		End of MONITORING WELL		49.58									
54													
56													
58													
60													

Nov. 24/00
▽50mm PVC
Slotted Pipe

DEPTH SCALE

1 : 100



LOGGED: W.H.

CHECKED: J.A.F.

BOREHOLE 002-1065.GPJ OLDR CAN.GDT 2-7-02

PROJECT No. 002-1065

RECORD OF MONITORING WELL: MW00-6

SHEET 1 OF 1

LOCATION: 35 PM, Quinsam Coal Mine

BORING DATE: Nov. 21-22, 2000

DATUM: Local

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/30 cm				HYDRAULIC CONDUCTIVITY, k, cm/s				ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLAT ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/30 cm	SHEAR STRENGTH		WATER CONTENT PERCENT		WATER CONTENT PERCENT				
							Cu, MPa	nat V rem V	+ @	- O	Wp	W	Wp		
0		Ground Surface	0.00												
2		Compact, moist, light brown TILL (FILL) (boulders, cobbles, sandy silt)		1	CS										Slough MW 6D Nov. 24/00
			2	CS											
4															Bentonite Seal Silica Sand MW 6S Nov. 24/00 50mm Slotted PVC Pipe
6			5.76	1	CS										
8															
10															
12		Dense, moist to wet, dark grey, sandy SILT (Native), some gravel, cobbles and boulders. (TILL).													Bentonite Seal 50mm Slotted PVC Pipe Silica Sand Slough
14															
16															
18															
20		End of MONITORING WELL.	18.59												

BOREHOLE 002-1065 GPJ GLOR CAM GDT 2-7-02

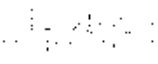
DEPTH SCALE

1 : 100



LOGGED: W.H.

CHECKED: J.A.F.



www.lorax.ca

Steel Casing: 6 inch

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

Northing: 5533856.79

Project: Quinsam Coal Groundwater Monitoring

Easting: 324464.08

Client: Quinsam Coal/Hillborough Resources

Ground Elevation: 295.02m

Location: 7 South

Steel Casing: 6 inch

Depth	Symbol	Description	Depth/Elev.	Well	Observations
61		Sandstone		10/20 Filter Sand 18.23m-29.2m	GW Elevation: 273.38m (May 17, 2010)
63					
65	20	Coal Seam 4 (Upper)	65.4		
67					
69					
71	22	Sandstone	71.9		
73					
75		Coal Seam 4 (Lower)		Screen 19.51m-27.0m	
77					
79	24				
81					
83					
85	26				
87		Sandstone	86.6		
89					
91	28			Bentonite Chips	
93				10/20 Filter Sand	
95				Bentonite Chips 29.2m-30.8m	
97					
99	30				
101			101.0	EOH	
103					
105	32				
107					
109					
111	34				
113					
115					
117					

Drilled By: Drillwell

Hole Size: 7 in (0-6.5m), 6 in (6.5m-30.9m)

Drill Method: Downhole Hammer

PVC Casing: 2 inch

Geologists: M. Storey

Well Installation Date: April 20, 2010

Drill Date: March 10, 2008

Sheet: 2 of 2



Lorax Environmental Services Ltd.
 2289 Burrard Street
 Vancouver, BC, Canada, V6J 3H9
 Phone: +1 (604) 688-7173
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Borehole ID: P08-13

Project #: 885-1

Northing: 5535188

Project: Quinsam Coal Groundwater Monitoring

Easting: 323887

Client: Quinsam Coal/ Hillsborough Resources

Ground Elevation: 220.40m

Location: 7 South

Steel Casing: 6 inch

Depth	Symbol	Description	Depth/Elev.	Well A	Well B	Observations
0 ft 0 m		Ground Surface				
2 0.2		Overburden Glacial Till			Pea Gravel 0-2.0m	
4 1.2					Cement Grout 2.0m-4.0m	
6 1.8					Pea Gravel 4.0m-6.9m	
8 2.4						
10 3.0						
12 3.6					Bentonite chips 6.9m-7.93m	
14 4.2						
16 4.8					Pea Gravel 8.6m-13.72m	
18 5.4						
20 6.0						
22 6.6						
24 7.2						
26 7.8						
28 8.4						
30 9.0						
32 9.6						
34 10.2						
36 10.8						
38 11.4						
40 12.0						
42 12.6						
44 13.2						
46 13.8						
48 14.4					Bentonite Pellets 13.72m-14.94m	
50 15.0						
52 15.6					Pea Gravel 14.94m-21.03m	
54 16.2						
56 16.8						
58 17.4						
60 18.0						
62 18.6						
64 19.2						
66 19.8						

GW Elevation: 212.41m Well B
(April 27, 2010)

GW Elevation: 207.21m Well A
(April 27, 2010)

Drilled By: Drillwell Enterprises

Drill Method: Downhole Hammer

Geologists: M. Storey

Drill Date: March 3, 2008

Hole Size: 7 in (0-26.5m), 5.5 in (26.5m-EOH)

PVC Casing: Well A: 2 inch, Well B: 1-1/4 inch

Well Installation Date: April 20, 2010

Sheet: 1 of 3



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Borehole ID: P08-13

Project #: 885-1

Northing: 5535188

Project: Quinsam Coal Groundwater Monitoring

Easting: 323887

Client: Quinsam Coal/ Hillsborough Resources

Ground Elevation: 220.40m

Location: 7 South

Steel Casing: 6 inch

Depth	Symbol	Description	Depth/Elev.	Well A	Well B	Observations
67						
69						
71	22				Bentonite Pellets 21.03m-21.95m	
73					10/20 Filter Sand 21.95m-26.40m	
75						
77						
79	24				Screen 23.47m-26.40m	
81			25.2			
83		Sandstone				
85	26					
87						
89					Bentonite Pellets 27.13m-30.48m	
91	28					
93						
95						
97						
99	30					
101					Pea Gravel 30.48m-36.58m	
103						
105	32					
107						
109						
111	34					
113						
115						
117						
119	36					
121					Bentonite Pellets 36.58m-38.10m	
123						
125	38					
127					Pea Gravel 38.10m-43.89m	
129						
131						

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: 1-1/4 inch
Well Installation Date: April 20, 2010
Sheet: 2 of 3



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Borehole ID: P08-13

Project #: 885-1

Northing: 5535188

Project: Quinsam Coal Groundwater Monitoring

Easting: 323887

Client: Quinsam Coal/ Hillsborough Resources

Ground Elevation: 220.40m

Location: 7 South

Steel Casing: 6 inch

Depth	Symbol	Description	Depth/Elev.	Well A	Well B	Observations
133						
135						
137	42					
139						
141						
143						
145	44				Bentonite Pellets 43.89m-45.11m	
147					10/20 Filter Sand 45.11m-52.73m	
149						
151	46		46.5		Screen (46.02m-52.10m)	
153		Coal Seam 4 (upper)				
155						
157	48					
159						
161						
163	50		50.2			
165		Mudstone				
167		Coal Seam 4 (lower)				
169			52.0			
171	52	Sandstone				
173					Bentonite Pellets 52.73m-54.80m	
175						
177	54					
179			54.9			
181					EOH	
183	56					
185						
187						
189						
191	58					
193						
195						
197						

Drilled By: Drillwell Enterprises

Hole Size: 7 in (0-25.5m), 5.5 in (25.5m-EOH)

Drill Method: Downhole Hammer

PVC Casing: Well A: 2 inch, Well B: 1-1/4 inch

Geologists: M. Storey

Well Installation Date: April 20, 2010

Drill Date: March 3, 2008

Sheet: 3 of 3



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	: McElhenney
Sampling Method	: Core	Logged By	: C.G. Cathyl-Bickford

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description
	213.66			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
0	213				NOT CORED
5	208				
10	203				
15	198				
20	193				
25	188	SS			SANDSTONE - light grey to dark brown, medium to coarse grained, non-calcareous
30	183	SL			COAL SEAM 6 - dull to bright, with siltstone/mudstone lenses
35	178				SILTSTONE & MUDSTONE interbeds - medium brown to black, carbonaceous
40	173				SANDSTONE - 26.7-34m; light to medium grey, medium to coarse grained, with conglomerate lenses.
45	168				34-52m; light to dark grey, fine to coarse grained. Top of Dunsmuir 'E' Sandstone at 34m
50					

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.



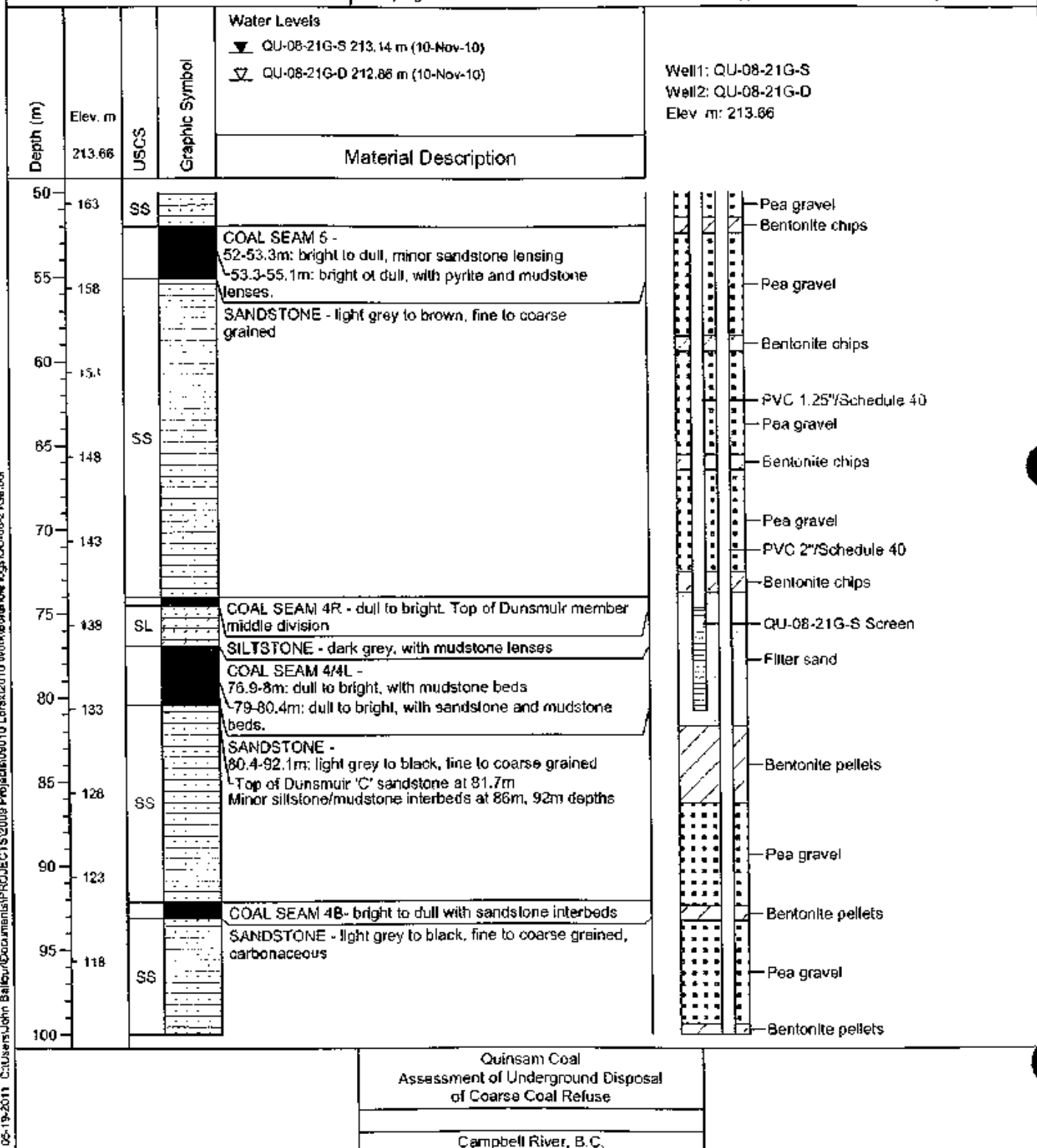
Enterprise Geoscience Services Ltd.



Borehole Log of QU-08-21G

Date Started : May 20, 2008
 Date Completed : May 21, 2008
 Hole Diameter : 140 mm
 Drilling Method : Air Rotary with wireline coring
 Sampling Method : Core

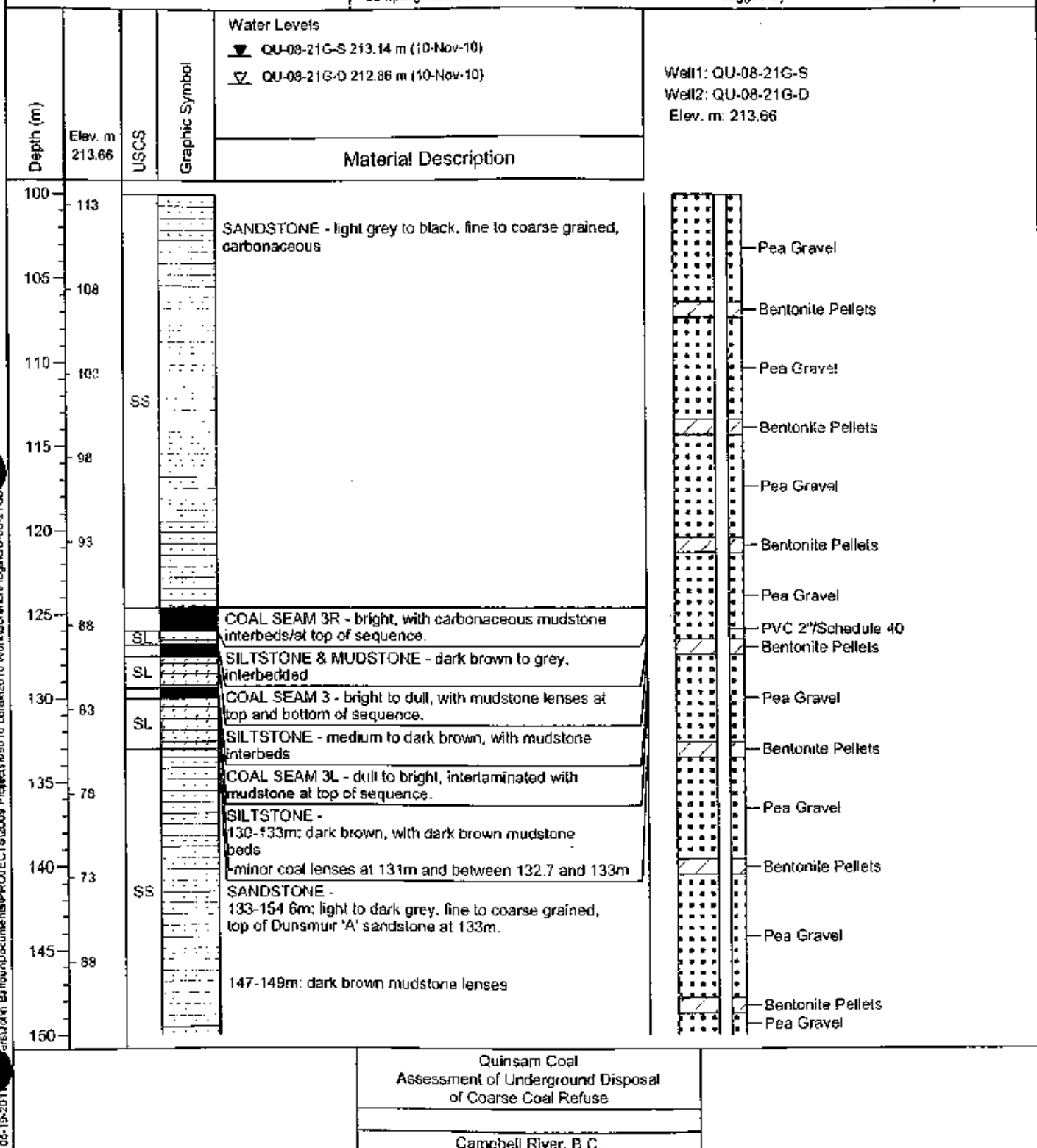
Drilled by : Drillwell Enterprises
 Northing Coord. : 102802
 Easting Coord. : 101917
 Survey By : McElhanney
 Logged By : C.G. Cathyl-Bickford





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. Calhoun-Bickford



Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.



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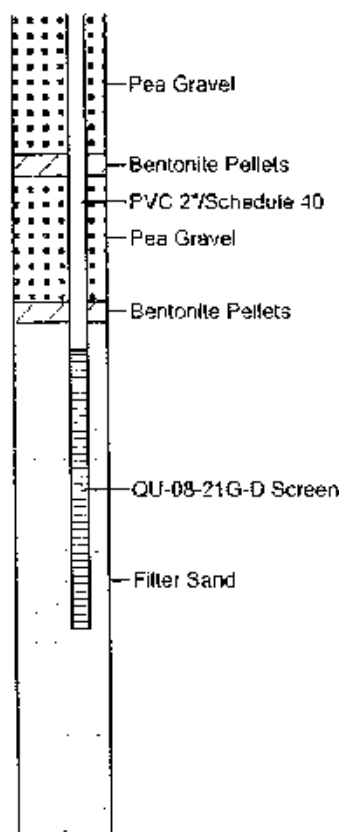


Borehole Log of QU-08-21G

Date Started	: May 20, 2008	Drilled by	: Onitwell 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

Depth (m)	Elev. m 213.66	USCS	Graphic Symbol	Water Levels
				Material Description
				Water Levels ▽ QU-08-21G-S 213.14 m (10-Nov-10) ▽ QU-08-21G-D 212.86 m (10-Nov-10)
150	63	SS		
155	58	MS		MUDSTONE - grey brown, with siltstone lenses, medium brown, carbonaceous
		SL		COAL SEAM 2 - bright to dull, dirty at base (155.0-156.1m)
160	53			SILTSTONE - 156-157.3m: dark grey, with dark brown mudstoppe interbeds
		SS		SANDSTONE, IRONSTONE and SILTSTONE interbeds - dark grey to brown. Possible fault at 157.3m
165	48			
170	43			
		MS		COAL SEAM 1 - 171.6-172.7m: dull to bright, dirty, with mudstone lenses at top and bottom of sequence (Quinsam No. 1 coal bed)
175	38	SL		
				MUDSTONE - 172.7-173.6m: medium brown with siltstone lense at top of sequence
180	33	SL		floor of upper bench/top of main parting at 172.9m
				Interlaminated coal and mudstone between 173.4m and 173.6m
				base of main parting at 173.5m
185	28			IRONSTONE, SILTSTONE and MUDSTONE - dark grey to brown
				SANDY SILT, COALY ROCK (Coal Seam 1L)
190	23			SILTSTONE, IRONSTONE, SANDSTONE and MUDSTONE interbeds - 176.9-177.8m: bright coal bands
				176.9-184m: dark grey to dark brown conglomerate with sandstone bed at base, dark green, coarse grained
195	18			EOH @ 185.8m
200				

Well1: QU-08-21G-S
Well2: QU-08-21G-D
Elev m: 213.66



05-19-2011 C:\Users\John.Bell\Documents\PROJECTS\2009 Project\080310 Lora\2010 Mof\Borehole logs\QU-08-21G.bol

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

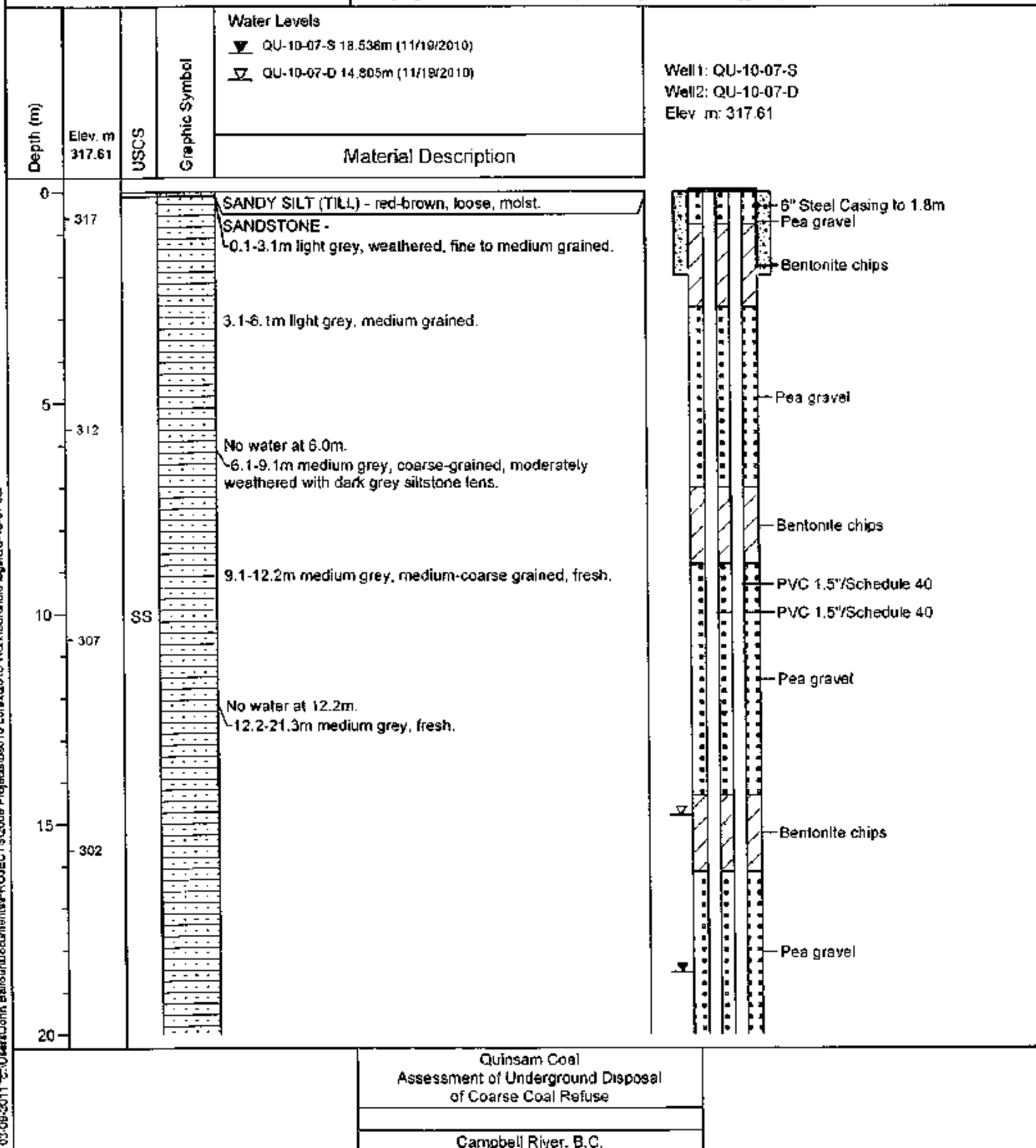


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Borehole Log of QU-10-07

Date Started	: Sept 28, 2010	Drilled by	: Drillwell Enterprises
Date Completed	: Sept 29, 2010	Northing Coord.	: 101137
Hole Diameter	: 150mm/85mm core	Easting Coord.	: 99283
Drilling Method	: Air Rotary with wireline coring	Survey By	: McElhanney
Sampling Method	: Grab sample/core log	Logged By	: O. Quinn



Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

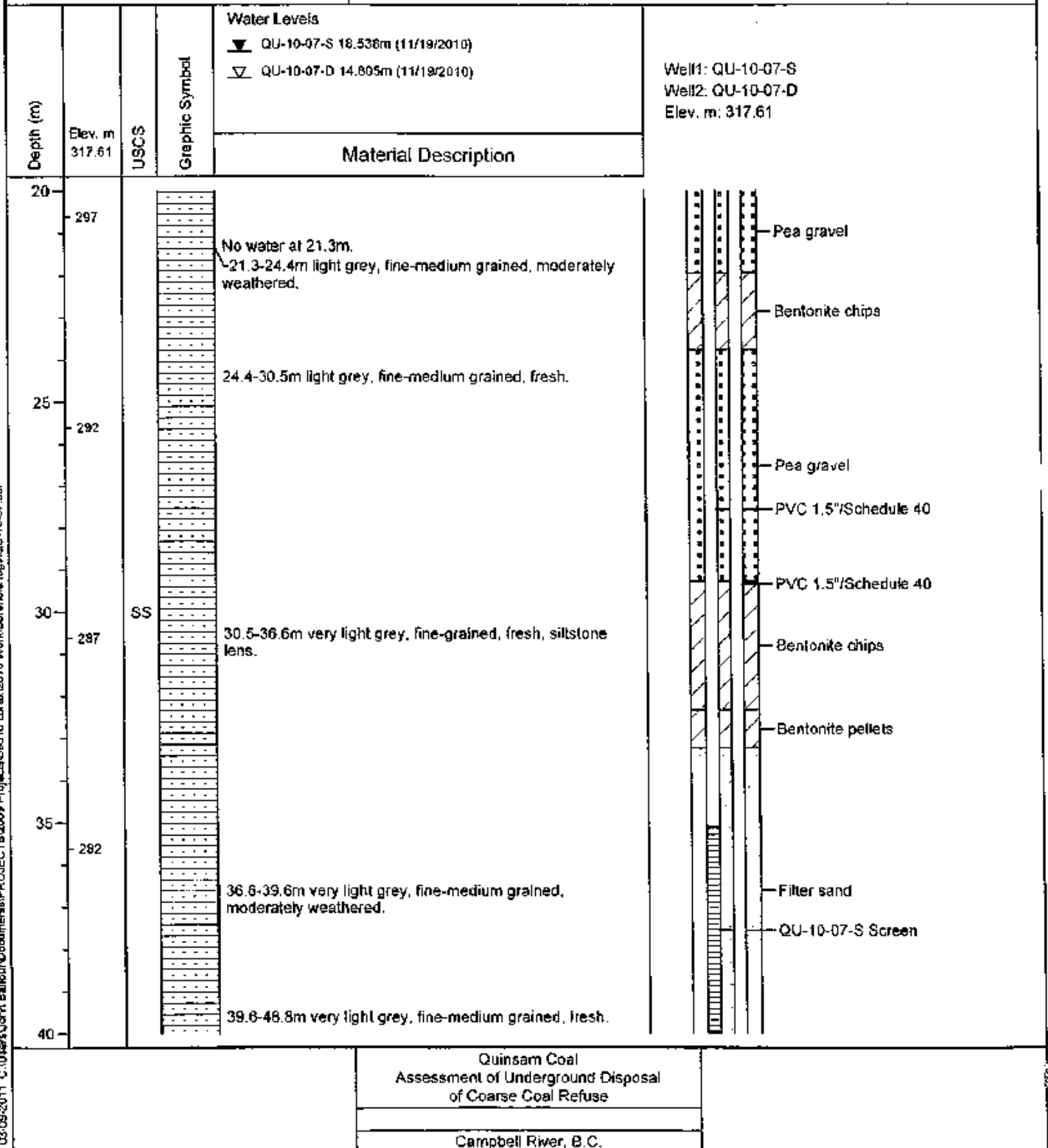


Enterprise Geoscience Services Ltd.



Borehole Log of QU-10-07

Date Started	: Sept 28, 2010	Drilled by	: Drillwell Enterprises
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



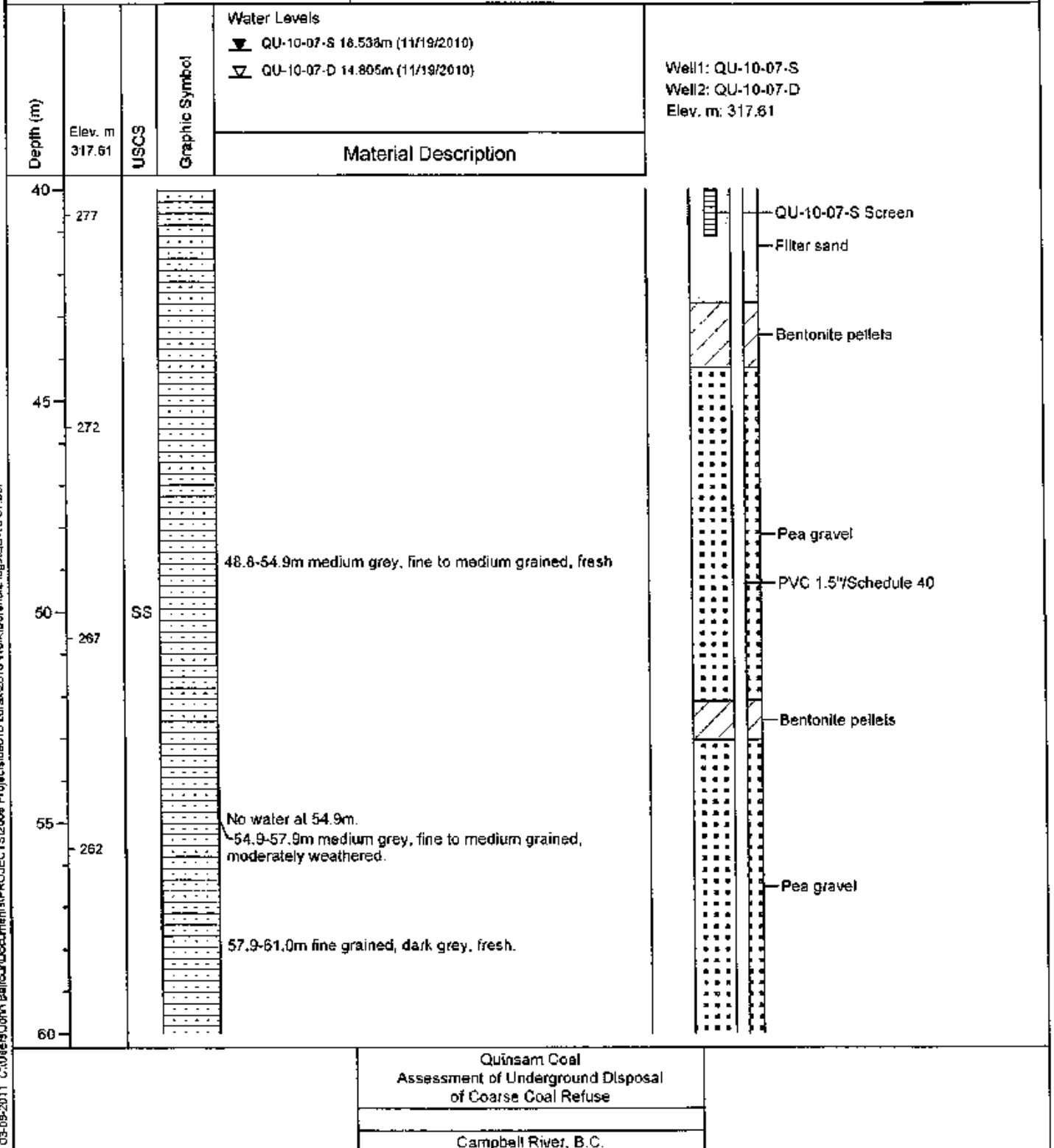


Enterprise Geoscience Services Ltd.



Borehole Log of QU-10-07

Date Started	: Sept 28, 2010	Drilled by	: Drillwell Enterprises
Date Completed	: Sept 28, 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



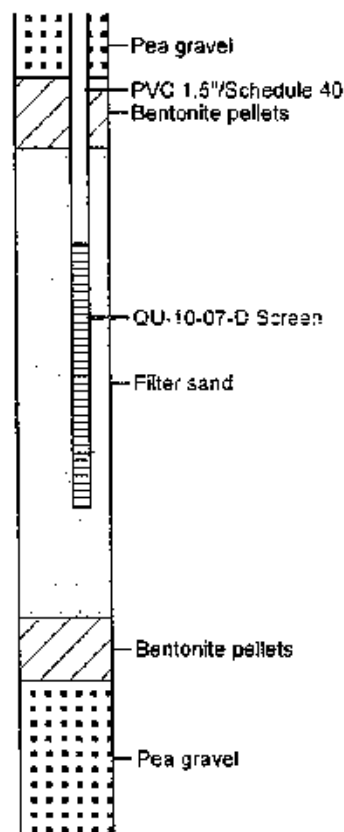


Borehole Log of QU-10-07

Date Started	: Sept 28, 2010	Drilled by	: Drillwell Enterprises
Date Completed	: Sept 28, 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

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description
	317.61			QU-10-07-S 18.538m (11/19/2010) QU-10-07-D 14.805m (11/19/2010)	
60	257	SS			61.0-64.9m medium-dark grey, fine-medium grained, fresh.
65	252	MS			COAL - Rapid drill penetration. Water in coal seam ~0.5 US GPM.
		SS			COAL/MUDSTONE. Borehole cored from 67.7m to 74.4m (5.5 inch diameter) -Heavily fractured 67.7-69.8m: (2.1m/0.6m rec'y). Lost remainder of core run to 69.8m.
		SS			SANDSTONE, medium grey.
70	247	SL			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).
		SS			-70.4-71.9m SILTSTONE/SANDSTONE, fine grained, dark grey, fresh.
					grey, SANDSTONE, light grey, medium-coarse grained, fresh. -72.5
75	242				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					

Well1: QU-10-07-S
Well2: QU-10-07-D
Elev. m: 317.61



Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

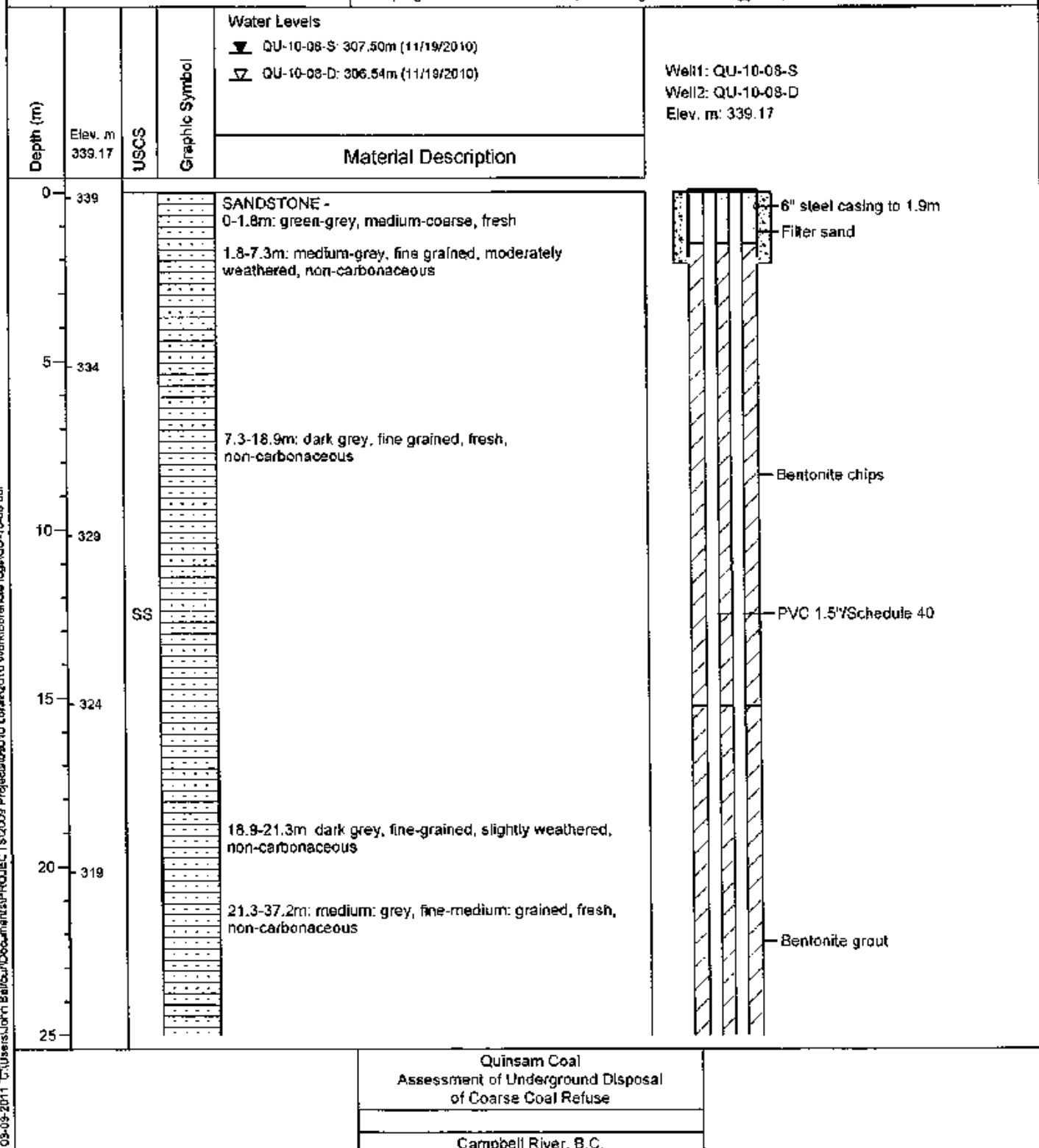


Enterprise Geoscience Services Ltd.



Borehole Log of QU-10-08

Date Started	: Sept 29, 2010	Drilling Company	: Drillwell Enterprises
Date Completed	: Sept 30, 2010	Nothing Coord.	: 100893
Hole Diameter	: 150 mm/65 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





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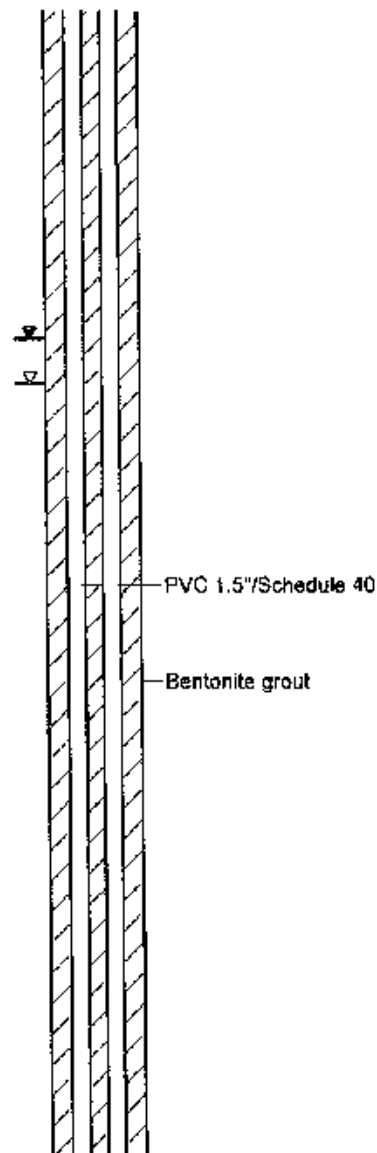


Borehole Log of QU-10-08

Date Started	: Sept 28, 2010	Drilling Company	: Drillwell Enterprises
Date Completed	: Sept 30, 2010	Northing Coord.	: 100893
Hole Diameter	: 150 mm/86 mm core	Easting Coord.	: 98805
Drilling Method	: Air Rotary with wireline coring	Survey By	: McElhanney
Sampling Method	: Grab sample/core log	Logged By	: O. Quinn

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description	
				QU-10-08-S: 307.50m (11/19/2010) QU-10-08-D: 306.54m (11/19/2010)		
25	314					
30	309					
35	304					
40	299	SS			37.2-64.0m: light grey, coarse-grained, fresh, slightly carbonaceous. Hole dry at resumption of drilling next day (Sept 30/10)	
45	294					
50						

Well1: QU-10-08-S
Well2: QU-10-08-D
Elev. m: 339.17





Enterprise Geoscience Services Ltd.



Borehole Log of QU-10-08

Date Started	: Sept 28, 2010	Drilling Company	: Drillwell Enterprises
Date Completed	: Sept 30, 2010	Northing Coord.	: 100893
Hole Diameter	: 160 mm/85 mm core	Easting Coord.	: 98905
Drilling Method	: Air Rotary with wireline coring	Survey By	: McElhenney
Sampling Method	: Grab sample/core log	Logged By	: O. Quinn

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description	Well1: QU-10-08-S Well2: QU-10-08-D Elev. m: 339.17
				▼ QU-10-08-S: 307.50m (11/19/2010) ▽ QU-10-08-D: 306.54m (11/19/2010)		
50	289					
55	284					
60	279					
65	274	SS			64.0-65.4m: light grey, coarse-grained, fresh, not carbonaceous 66.4-71.5m: medium grey, coarse grained, fresh, non-carbonaceous Dry hole at 71.3m. Borehole cored from 71.3m to EOH 71.5-73.6m: light grey, coarse grained, fresh, non-carbonaceous, moderately fractured. (2.13 m/2.06 rec'y) 73.6-75.7m: light grey, coarse grained, fresh, non-carbonaceous, massive fracture	PVC 1.5"/Schedule 40 Bentonite grout PVC 1.5"/Schedule 40 Bentonite pellets QU-10-08-S Screen Filter sand Bentonite pellets Filter sand
70	269					
75						
				Quinsam Coal Assessment of Underground Disposal of Coarse Coal Refuse Campbell River, B C		



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Borehole Log of QU-10-08

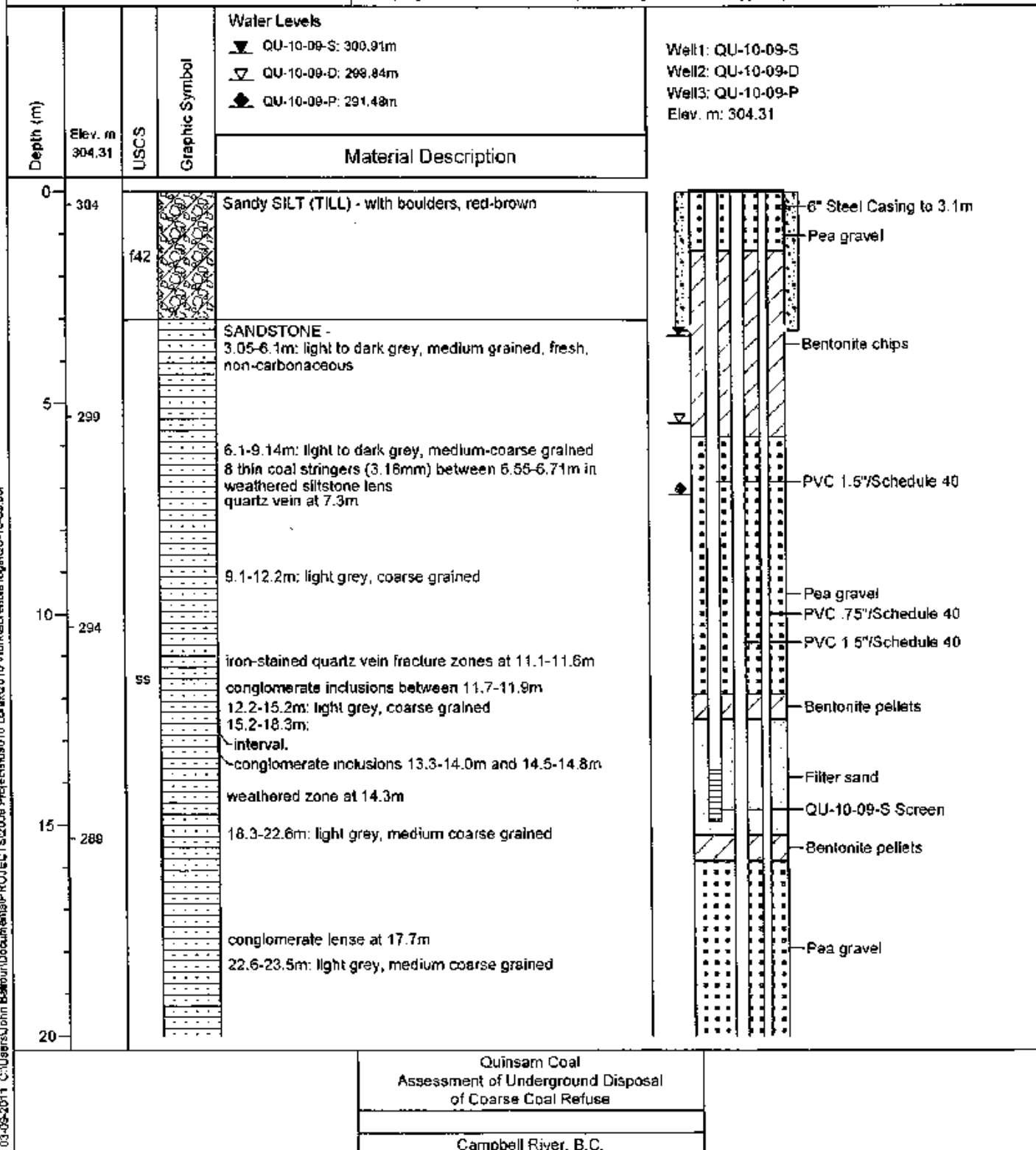
Date Started	: Sept 29, 2010	Drilling Company	: Drillwell Enterprises
Date Completed	: Sept 30, 2010	Northing Coord	: 100693
Hole Diameter	: 150 mm/85 mm core	Easting Coord	: 98905
Drilling Method	: Air Rotary with wireline coring	Survey By	: McElhanney
Sampling Method	: Grab sample/core log	Logged By	: O. Quinn

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description	Well1: QU-10-08-S Well2: QU-10-08-D Elev. m: 339.17
				QU-10-08-S: 307.50m (11/19/2010) QU-10-08-D: 306.54m (11/19/2010)		
75	264	SS			SILTSTONE/COAL Interface	
		MS			COAL SEAM 3- heavily fractured	
		MS			COAL SEAM 3 and MUDSTONE lenses - heavily fractured	
					76.4-79.1m: (2.74 m/2.74 rec'y)	
80	259				COAL Seam 3 - minor pyrite, heavily fractured	
					79.1-81.1m: (1.98 m/0.71 rec'y)	
		SS			SANDSTONE -	
					81.1-82.6m: (1.52 m/1.52 rec'y)	
					81.4-82.6m: dark grey, fine to medium; grained with thin coal stringers (1/8 to 1/2 inch), heavily fractured	
					82.6-82.9m: light grey, very coarse grained, fresh, minor fractures	
85	254				82.6-84.1m: (1.52 m/1.42 rec'y)	
					82.9-85.3m, light-medium, grey, med-coarse grained, massive, fresh	
					84.1-85.6m: (1.52 m/1.52 rec'y)	
					EOH @ 85.3m	
90	240					
95	244					
100						
				Quinsam Coal Assessment of Underground Disposal of Coarse Coal Refuse		
				Campbell River, B.C.		



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.	: 98031
Drilling Method	: Air Rotary with wireline coring	Survey By	: McElhanney
Sampling Method	: Grab sample/core log	Logged By	: O. Quinn



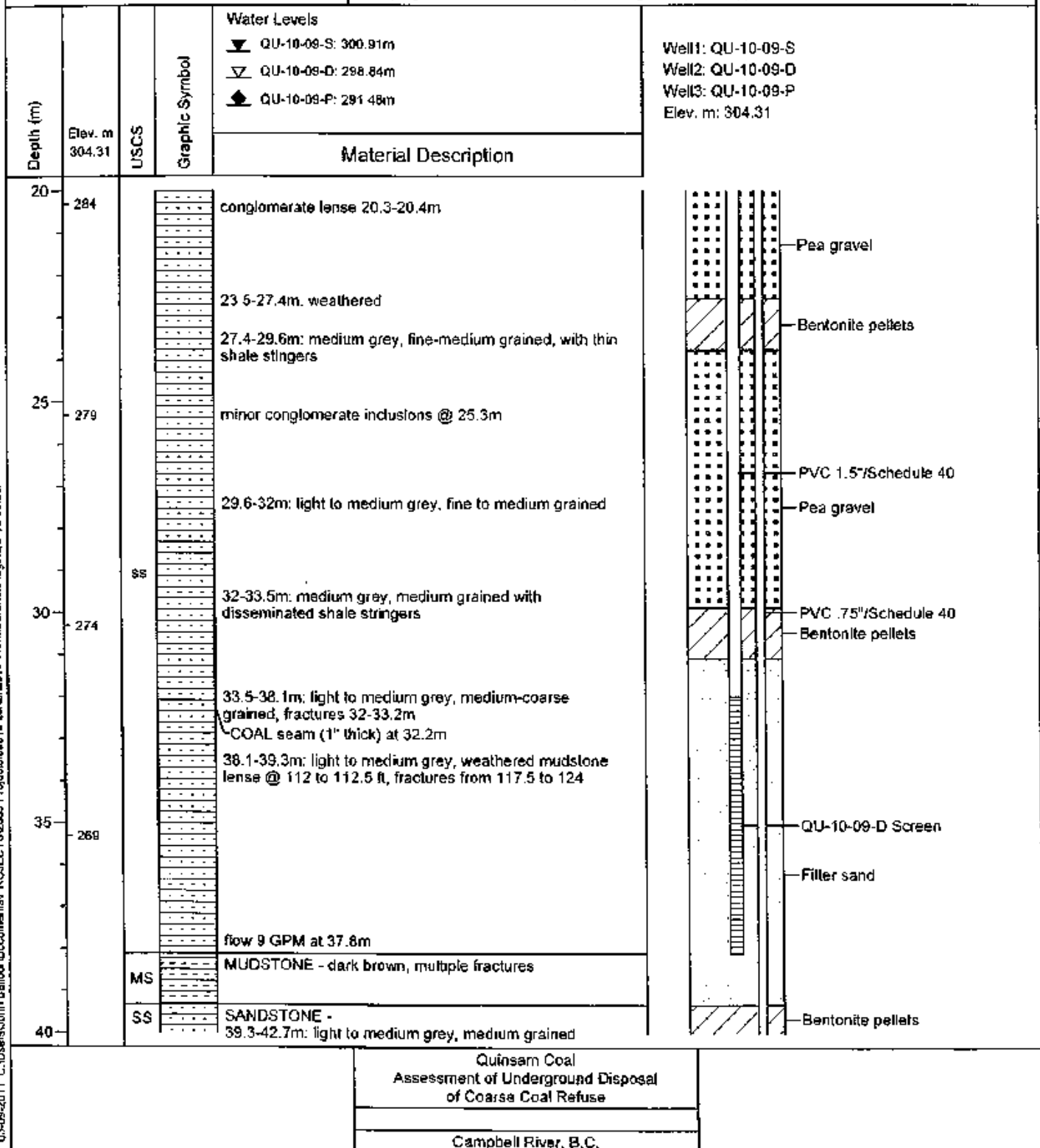


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Borehole Log of QU-10-09

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





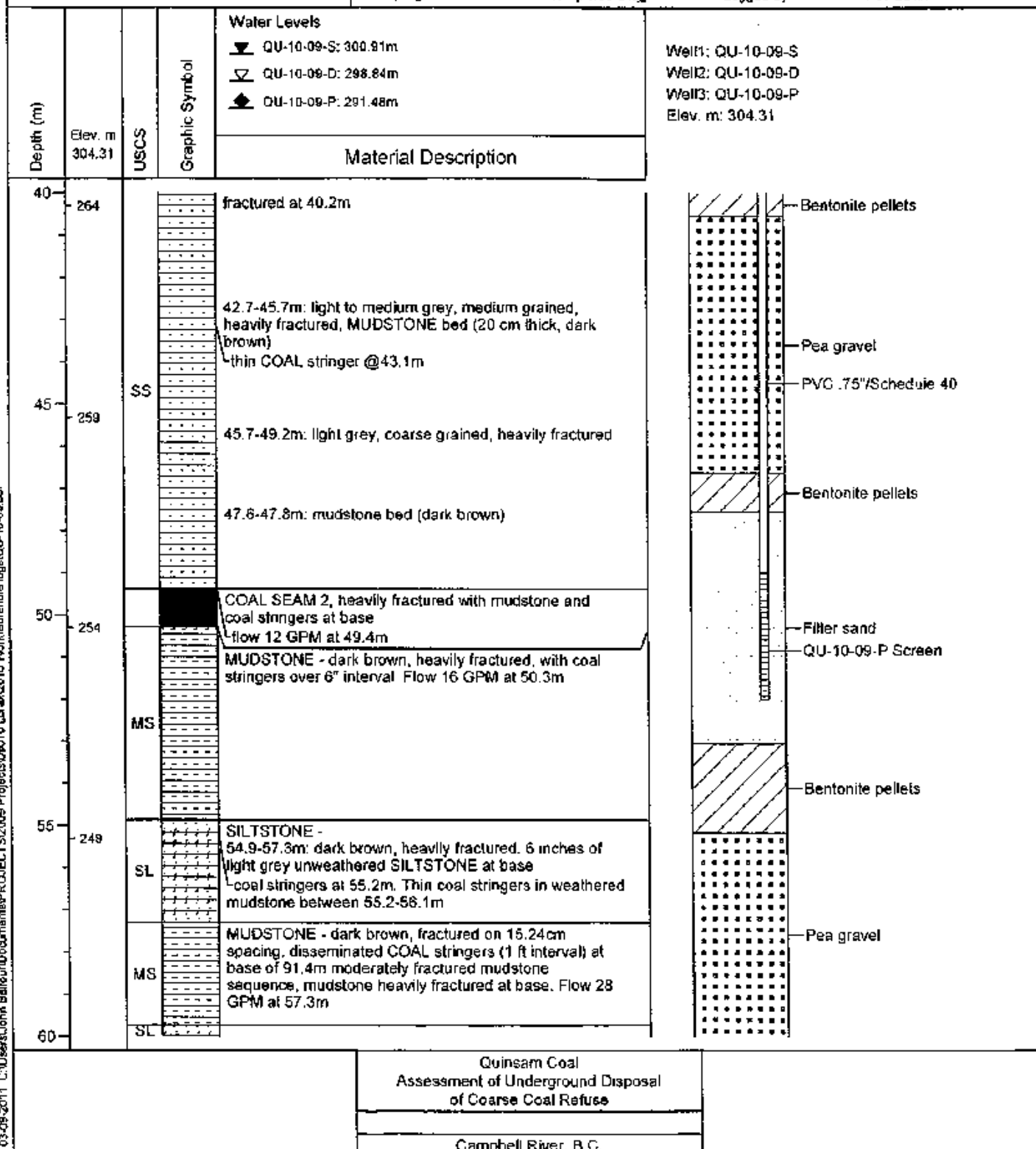
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Geological
Services Ltd.

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



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Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

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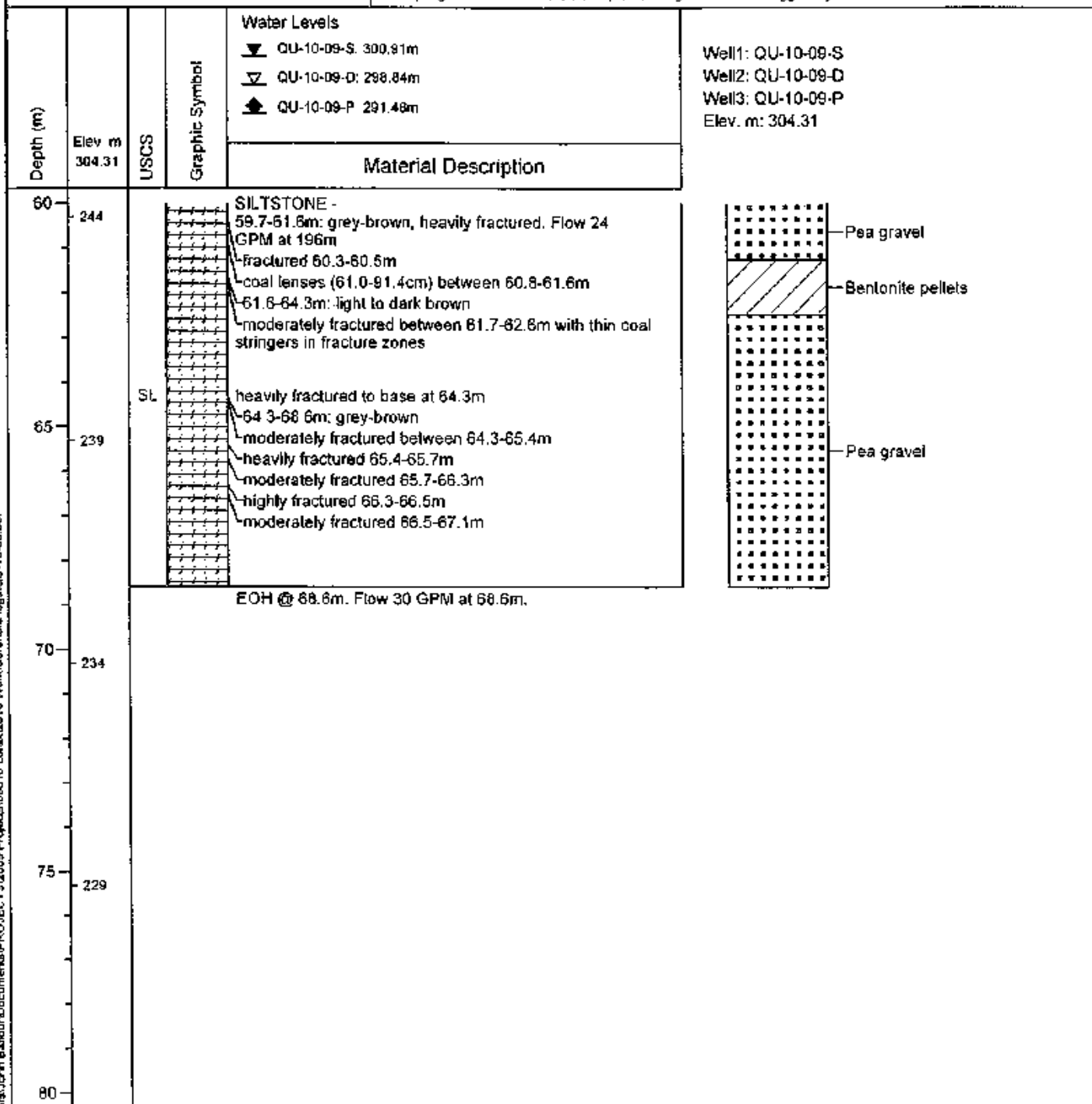


Enterprise Geoscience Services Ltd.



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



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of Coarse Coal Refuse

Campbell River, B.C.



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Borehole Log of QU-10-10

Date Started : Oct 6, 2010
 Date Completed : Oct 7, 2010
 Hole Diameter : 150 mm
 Drilling Method : Air Rotary
 Sampling Method : Grab sample

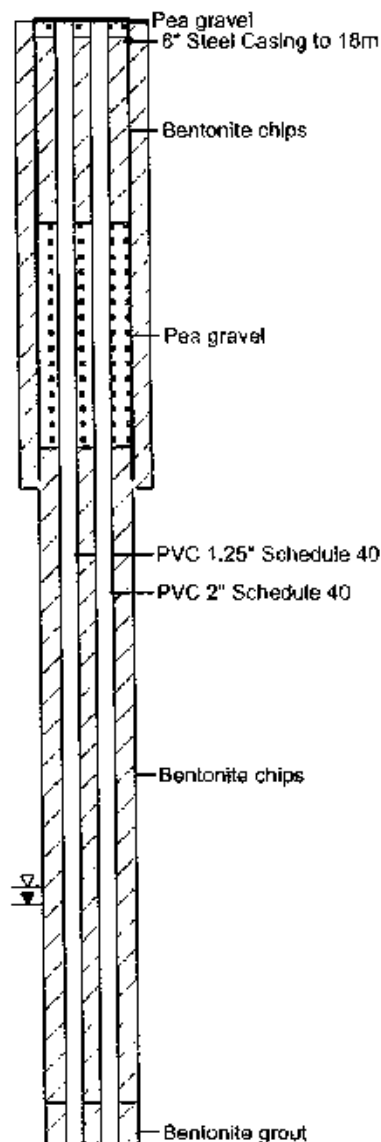
Drilled by : Drillwell Enterprises
 Northing Coord. : 102903
 Easting Coord. : 101506
 Survey By : McElhannay
 Logged By : O. Quinn

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	USCS	Graphic Symbol	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, slightly carbonaceous to 21.3m
25	219	SS		24.4-29.3m: medium grey, fine grained, fresh
30	214	SL		SILTSTONE - dark grey, fresh
35	209	SS		SANDSTONE - 31.1-34.8m: dark grey, fine grained, fresh
		SS		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
		SS		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
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Campbell River, B.C.

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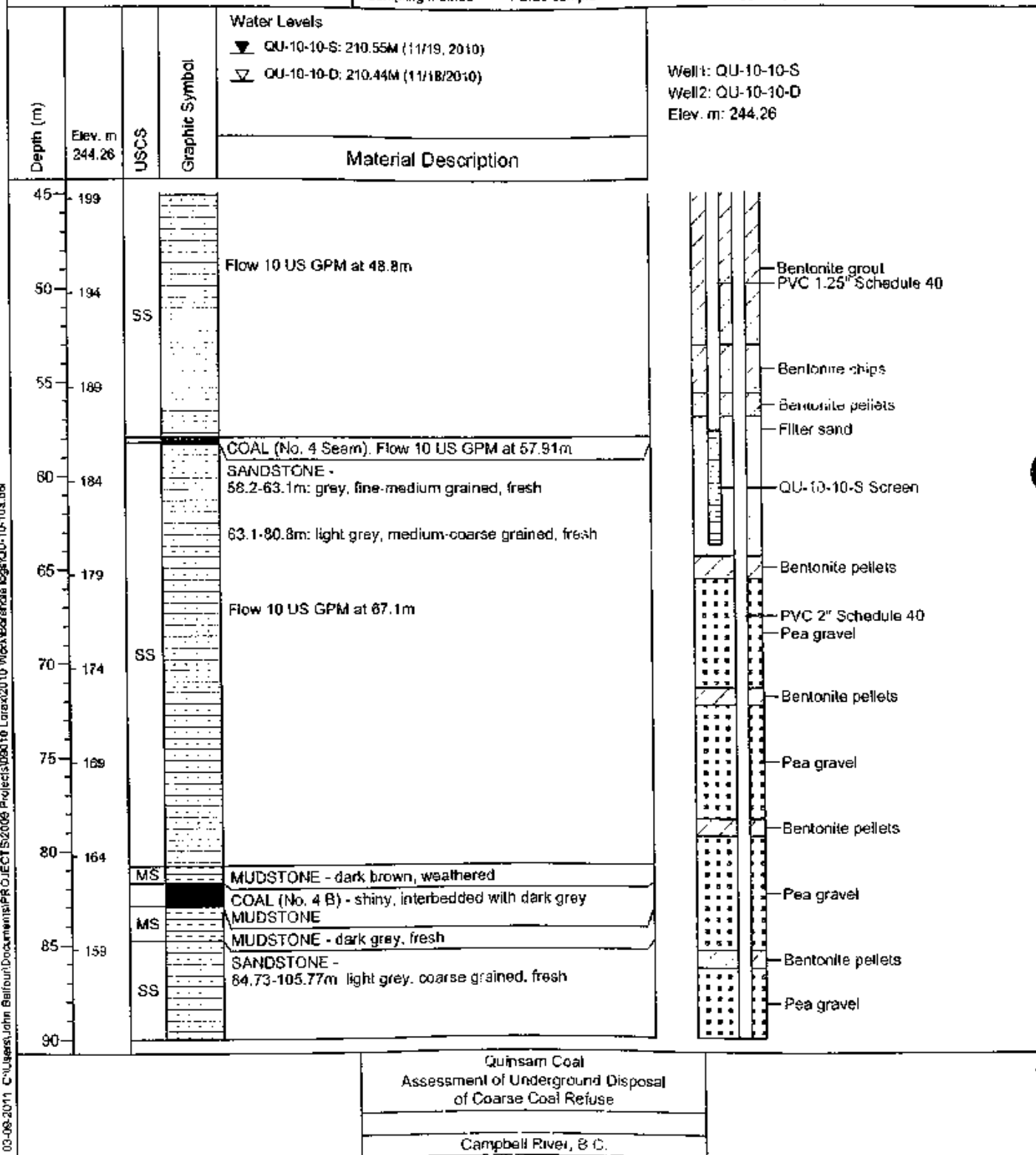
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Borehole Log of QU-10-10

Date Started : Oct 6, 2010
 Date Completed : Oct 7, 2010
 Hole Diameter : 150 mm
 Drilling Method : Air Rotary
 Sampling Method : Grab sample

Drilled by : Drillwell Enterprises
 Northing Coord. : 102903
 Easting Coord. : 101506
 Survey By : McElhanney
 Logged By : O. Quinn





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Borehole Log of QU-10-10

Date Started : Oct 6, 2010
 Date Completed : Oct 7, 2010
 Hole Diameter : 150 mm
 Drilling Method : Air Rotary
 Sampling Method : Grab sample

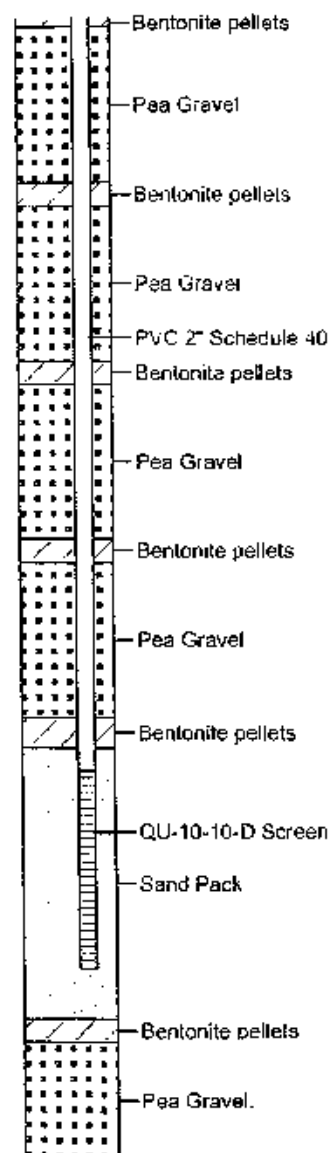
Drilled by : Drillwell Enterprises
 Northing Coord. : 102903
 Easting Coord. : 101506
 Survey By : McElhanney
 Logged By : O. Quinn

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	USCS	Graphic Symbol	Material Description
135	109	SS		Flow 12 US GPM at 140.2m
140	104	MS		MUDSTONE - dark brown, fresh
145	99	MS		COAL SEAM 2 - shiny, with dark brown, fresh MUDSTONE - 144.3-148.7m: medium brown, fresh 148.7-149.0m: COAL lens 148.7-150.3m: dark brown
150	94	MS		150.3-156.7m: dark brown, with grey-green, fine-medium grained SILTSTONE, fresh
155	89	MS		156.7-160.9m: dark brown, fresh Flow 12 US GPM at 158.6m
160	84	MS		COAL SEAM 2L/1R - shiny, with light brown, fresh MUDSTONE - 162.5-165.4m: light brown, fresh
165	79	MS		Flow 12 US GPM at 164.6m
170	74	MS		COAL SEAM 1 - shiny MUDSTONE - grey-brown, fresh
175	69	MS		COAL SEAM 1 - shiny, with medium-brown, fresh, MUDSTONE
180		MS		MUDSTONE - dark brown-grey, fresh
		SL		COAL - shiny, with medium-brown, fresh, MUDSTONE MUDSTONE - dark brown-grey, fresh COAL SEAM 1L - shiny with medium-brown, fresh MUDSTONE SILTSTONE - 173.1-177.7m: green-grey, fresh EOH @ 179.83m (Flow 12 US GPM)



Quinsam Coal
 Assessment of Underground Disposal
 of Coarse Coal Refuse

Campbell River, B.C.



Borehole Log of QU-10-11

Date Started : Oct 8, 2010
 Date Completed : Oct 13, 2010
 Hole Diameter : 150 mm
 Drilling Method : Air Rotary
 Sampling Method : Grab sample

Drilled by : Drillwell Enterprises
 Northing Coord. : 103177
 Easting Coord. : 101451
 Survey By : McElhanney
 Logged By : O. Quinn

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description	
				▼ QU-10-11-S 248.939 m (21/01/2011) ▼ QU-10-11-D 227.892 m (08/02/2011)		
0	249				sandy SILT TILL - with boulders 0-3.7m red brown	6" Steel Casing to 9.8m Bentonite chips PVC 50mm Pea Gravel Bentonite pellets Pea Gravel PVC 50mm Bentonite pellets Pea gravel Bentonite pellets Pea gravel Bentonite pellets QU-10-11-S Screen Filter sand Bentonite pellets Pea gravel
5	244				3.7-9.1m grey-brown	
10	239				SANDSTONE - 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.						



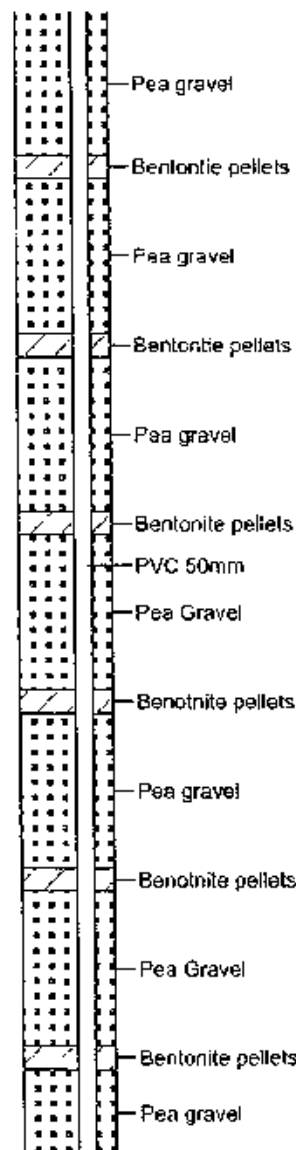
Borehole Log of QU-10-11

Date Started : Oct 8, 2010
 Date Completed : Oct 13, 2010
 Hole Diameter : 150 mm
 Drilling Method : Air Rotary
 Sampling Method : Grab sample

Drilled By : Drillwell Enterprises
 Northing Coord : 103177
 Easting Coord : 101451
 Survey By : McElhanney
 Logged By : O. Quinn

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description	
				▼ QU-10-11-S 248.939 m (21/01/2011) ▽ QU-10-11-D 227.892 m (08/02/2011)		
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	Pea gravel
					flow 30 US GPM at 48.8m	Bentonite pellets
55	194				flow 30 US GPM at 54.9m	Pea gravel
						Bentonite pellets
60	189	SS				Pea gravel
65	184				flow 20 US GPM at 67.1m (water was flowing out of adjacent exploration hole, QU-05-10 during this measurement)	Bentonite pellets
						PVC 50mm
70	179					Pea Gravel
		MS			COAL SEAM 4B- with SILTSTONE/MUDSTONE	Bentonite pellets
					MUDSTONE - dark brown, fresh	
75	174				COAL (No. 4 B Seam) - with SILTSTONE/MUDSTONE	Pea gravel
					SANDSTONE - 72.85-86.26m grey brown to grey, medium to coarse grained, fresh	Bentonite pellets
80	169	SS			flow 15 US GPM at 79.25m	Pea Gravel
85	164				86.26-91.44m dark brown, fine grained, fresh	Bentonite pellets
90						Pea gravel

Well1: QU-10-11-S
 Well2: QU-10-11-D
 Elev. m: 248.6



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 Assessment of Underground Disposal
 of Coarse Coal Refuse

Campbell River, B.C.

Enterprise Geoscience Services Ltd.



Borehole Log of QU-10-11

Date Started : Oct 8, 2010
 Date Completed : Oct 13, 2010
 Hole Diameter : 150 mm
 Drilling Method : Air Rotary
 Sampling Method : Grab sample

Drilled by : Drillwell Enterprises
 Northing Coord. : 103177
 Easting Coord. : 101451
 Survey By : McElhannay
 Logged By : O. Quinn

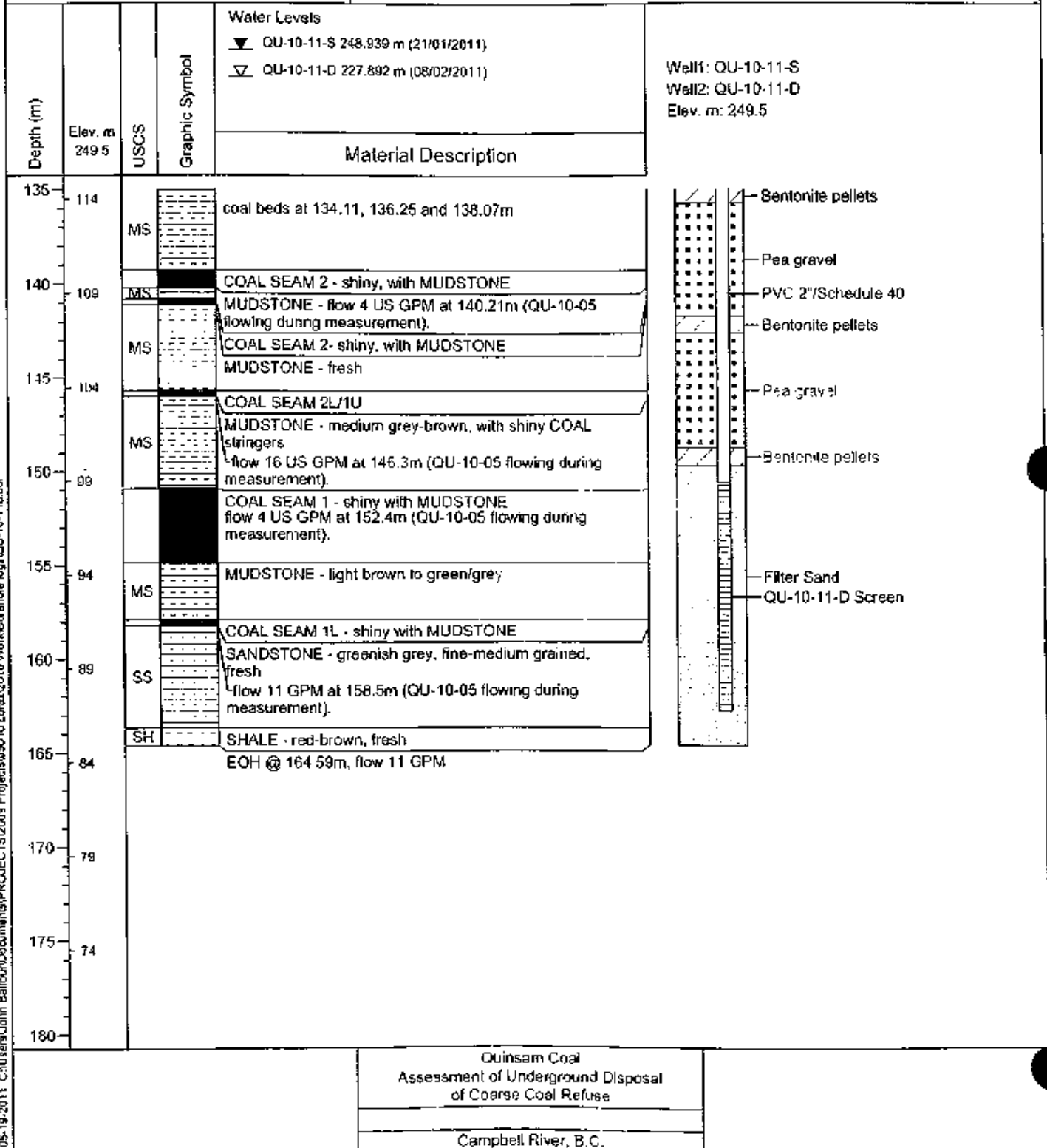
Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description	
				▼ QU-10-11-S 248.939 m (21/01/2011) ▽ QU-10-11-D 227.892 m (08/02/2011)		
	249.5					Well1: QU-10-11-S Well2: QU-10-11-D Elev. m: 249.5
90	159	SS			SANDSTONE (cont'd) - 91.44-94.49m dark grey, medium grained, fresh. flow 12 US GPM at 91.44m. (QU-10-05 flowing during measurement).	Pea gravel
95	154	SS			COAL SEAM 3R - shiny, with dark brown, fresh MUDSTONE	Bentonite pellets
					SANDSTONE - medium grey	Pea gravel
		MS			MUDSTONE - 96.93-102.11m dark brown, fresh flow 30 US GPM at 97.54m (QU-10-05 flowing during measurement).	Bentonite pellets
100	149				COAL SEAM 3L - shiny, with dark brown, fresh MUDSTONE	Pea gravel
		MS			MUDSTONE - 103.02-105.07m dark brown, fresh flow 18 US GPM at 103.63m (QU-10-05 flowing during measurement).	Bentonite pellets
		SS			SANDSTONE - light grey, fine-medium grained with dark brown mudstone	PVC 2"/Schedule 40
110	139	MS			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).	Pea gravel
					SANDSTONE - 109.73-115.21m grey, fine to medium grey, with dark brown MUDSTONE lenses	Bentonite pellets
		SS			115.21-130.45m grey, fine to medium grained, fresh flow 12 US GPM at 115.82m (QU-10-05 flowing during measurement).	Pea gravel
120	129				COAL stringers at 118.87m and 121.62-121.92m flow 7 US GPM at 121.92m (QU-10-05 flowing during measurement).	Bentonite pellets
					flow 9 US GPM at 128.02m (QU-10-05 flowing during measurement).	Pea gravel
125	124					Bentonite pellets
		SL			SILTSTONE - 130.45-132.89m dark brown, fresh flow 6 US GPM at 132.59m (QU-10-05 flowing during measurement).	Pea gravel
130	119	MS			MUDSTONE - dark brown	Bentonite pellets
135						
				Quinsam Coal Assessment of Underground Disposal of Coarse Coal Refuse Campbell River, B.C		



Borehole Log of QU-10-11

Date Started : Oct 8, 2010
 Date Completed : Oct 13, 2010
 Hole Diameter : 150 mm
 Drilling Method : Air Rotary
 Sampling Method : Grab sample

Drilled by : Drillwell Enterprises
 Northing Coord. : 103177
 Easting Coord. : 101451
 Survey By : McElhanney
 Logged By : O. Quinn



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	Elevation m	Graphic Log	Lithologic Description	Well Installation	Lugeon T m ² /s 1.0E- -9 -7 -5	Drilling Notes	Video Notes
0 ft m	271		Ground Surface				
5	269		overburden				
10			sedimentary sequence Dunsmuir Formation				
15							
20							
25							
30							
35							
40							horiz fractures: staining. pre-existing, possible open
45							
50							
55							
60							
65							
70							
75							
80							
85							
90							no fractures evident
95							
100							

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						
155							Packer testing over sections of rough DH wall to test for aquiclude
160							
165	50						
170							
175							Packer testing over piezometer location and dilated zone
180	55						small open fractures; possible new
185							
190							
195	60						Packer testing over dilated zone
200							

LOG FOR DRILLHOLE #: Qu10-13

Page: 3 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
205							
210							
215	66						Packer test to assess aquiclude/fracture zone contact
220							
225							
230	70						
235							
240							
245	75						
250							
255							
260	80						Packer test to assess aquiclude/fracture zone contact
265							
270							
275							
280	85		coal				
285			coal and carbonaceous siltstone				
290			siltstone				
295	90						
300							

LOG FOR DRILLHOLE #: Qu10-13

Page: 4 of 5

Depth	Elevation m	Graphic Log	Lithologic Description	Well Installation	Lugeon T m ² /s -9 -7 -5	Drilling Notes	Video Notes
305							
310							
315	96						
320							
325							
330	101						
335							
340	167						
345			carbonaceous siltstone siltstone with coal and carbonaceous layers				
350	106						
355							
360	161						
365	111		sandstone bottom of Dunsmuir				Packer test just above start or open fractures
370							
375							
380	116						
385							
390							start of small open horizontal fractures
395	121						
400	149						Static water table
	149		coal				

LOG FOR DRILLHOLE #: Qu10-13

Page: 5 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
405			siltstone Cumberland Formation siltstone, sandy siltstone, occasional sandstone layers			Hole starts making water at ~1gpm	start of larger open horizontal fractures
410							
415	126						
420							start of broken rock (caved zone)
425							
430	131						
435							
440							
445	136						
450							
455			coal #1 Rider Seam			possible fracture	
460							
465	141						
470							
475							
480	146						
485	124						water increases to ~12 gpm
490	123						end of hole, hole collapsing
495	151						
500							



Enterprise Geoscience Services Ltd.



Borehole Log of QU-11-01 (4 South)

Date Started	: 4 Jan 2011	Drilled By	: Drilwell Enterprises
Date Completed	: 6 Jan 2011	Northng 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

Depth (m)	Elev. m 316.368	USCS	Graphic Symbol	Water Levels	Material Description	Remarks
				▼ QU-11-01: 290.01 m (19-Feb-11) ▽		
65	251.37					
70	246.37	SP				
75	241.37	SS				+ Shale traps at 73 m.
80	236.37	SM				+ Shale traps at 76 m.
85	231.37	SS				+ Hole intersects mined pit at 85.2 m.
				EOH @ 85.2 m		
90						

4" PVC

Screen

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.

Enterprise Guidance Services Ltd.



Borehole Log of QU-11-03 (2 North)

Date Started : Jan 12, 2011

Date Completed

Hole Diameter : 150 mm / 140 mm core

Drilling Method : Air rotary with wireline coring

Sampling Method : Grab sample / Core

Drilled By

Northing Coord.

Easting Coord.

Survey By

Logged By

: Drillwell Enterprises

: လူအ

: n/a

•

•

; N. Bazowski

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Well: QU-11-03 Elev. m: xxx	Remarks
				QU-11-03, 42.21 m bTOC (18-Jan-2011) 		
				Material Description		
65	239					+ Completion details to follow.
				From 0 - 69.34 m not logged		
				SANDSTONE, zone of silty sandstone, from: 71.52 - 73.64 m and 74.18 - 75.44 m		
70	234			Conglomerate at base from: 81.58 - 81.75 m		
		SP				
75	229					
80	224					
		SS		SILTSTONE		
85	219					
		SM		SILTSTONE, Coaly siltstone and coal.		
				Coal layers from: 86.48-86.54 m 86.66-87.57 m 87.67-87.98 m 89.71-90.08 m		
90						



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

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description	Well: QU-11-03 Elev. m: xxx	Remarks
				▼ QU-11-03: 42.21 m bTOC (18-Jan-2011) ▽			
90	214	SM			SILTSTONE, Sandstone and Conglomerate		
95	209						
100	204	SS					
105	199						
110	194	CO			Coaly siltstone		+ Hole intersects mine void.
					EOH @ 110.64 m		
115							

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C



Enterprise Geoscience Services Ltd

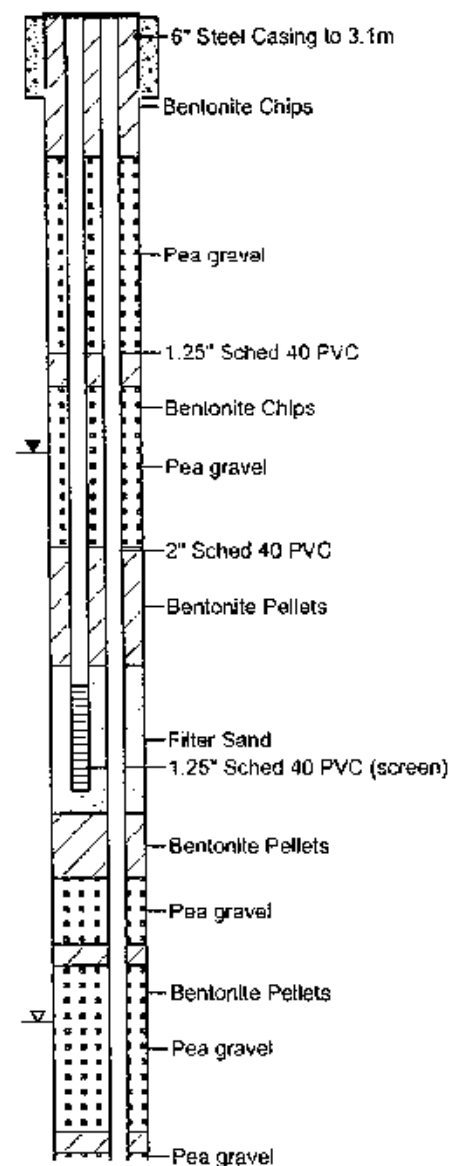


Borehole Log of QU-11-05

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

Well1: QU-11-05-S
Well2: QU-11-05-D
Elev. m: 228.39

Depth (m)	Elev. m	USCS	Graphic Symbol	Material Description
0	228			Water Levels ▽ QU-11-05-S: 19.00 m (8-Mar-11) ▽ QU-11-05-D: 43.95 m (8-Mar-11)
5	223			NOT CORED
10	218			SANDSTONE
15	213			10-10.06 m: Coaly Siltstone 10.14-10.31m: Coaly Siltstone 10.31-10.57m: Siltstone
20	208	SW		23.55-23.72m: Conglomerate 24.54-24.73m: Conglomerate 24.9-24.97m: Conglomerate 25.47-25.55m: Conglomerate
25	203			30.45-30.51m: Coaly Siltstone (fractured)
30	198	SW		COAL
35	193			SANDSTONE COAL - 48 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



Borehole Log of QU-11-05

Date Started : Feb 15, 2011
 Date Completed : Feb 18, 2011
 Hole Diameter : 140 mm
 Drilling Method : Air rotary with wireline coring
 Sampling Method : Core

Drilled By : Drilwell Enterprise
 Northing Coord. : 102648.3
 Easting Coord. : 101075.9
 Survey By : QCC
 Logged By : N. Bazowski

Depth (m)	Elev. m 228.39	USCS	Graphic Symbol	Water Levels	Material Description	
				▼ QU-11-05-S: 19.00 m (8-Mar-11) ▼ QU-11-05-D: 43.95 m (8-Mar-11)		
50	178	SW				
55	173					
60	168	MS			SILTSTONE	
65	163	CO			COAL - 3 Rider Coal Seam	
		CO			COALY SILTSTONE	
		MS			COAL - 3 Coal Seam	
		CO			SILTSTONE	
		MS			COAL - 3 Lower Coal Seam	
70	158	MS			SILTSTONE	
75	153				COAL - Coal Seam	
80	148	SW			SANDSTONE	
85	143					
90	138					
95	133					
		MS			COAL - 2R Coal Seam	
					SILTSTONE	
		MS			COAL - 2 Coal Seam	
100						

Well1: QU-11-05-S
 Well2: QU-11-05-D
 Elev. m: 228.39

Pea gravel
 Bentonite Pellets
 Pea gravel
 Bentonite Pellets
 Pea gravel
 2" Sched 40 PVC
 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.

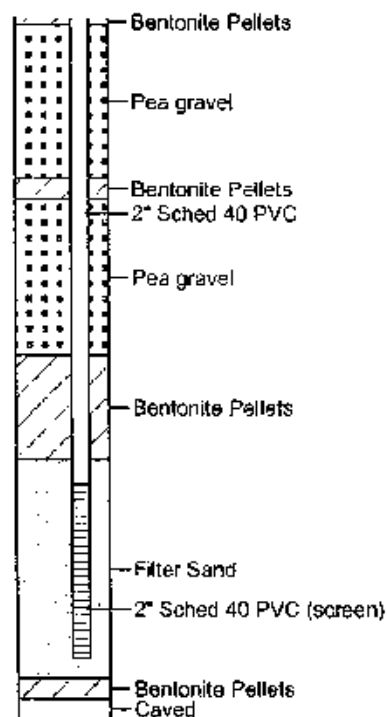


Borehole Log of QU-11-05

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

Depth (m)	Elev. m 228.39	USCS	Graphic Symbol	Water Levels
				Material Description
				▼ QU-11-05-S: 19.00 m (8-Mar-11) ▽ QU-11-05-D: 43.95 m (8-Mar-11)
100	128			
105	123			
110	118	MS		
115	113			
120	108	CO		COAL- 1 Rider Coal Seam
		MS		-116.99-117.08m: Siltstone
				SILTSTONE
125	103	CO		COAL- 1 Seam Upper Coal
		CO		SILTSTONE
		CO		COAL- 1 Seam Middle Coal
		MS		-125.21-127.27m: Siltstone
				COAL - 1 Seam Lower Coal
130	98			-125.35-125.49m: Coaly Siltstone
				-125.56-125.81m: Coaly Siltstone
				SILTSTONE
135	93			-127.75-127.86m: Coal
				EOH @ 130.76 M
140	88			
145	83			
150				

Well1: QU-11-05-S
Well2: QU-11-05-D
Elev. m: 228.39



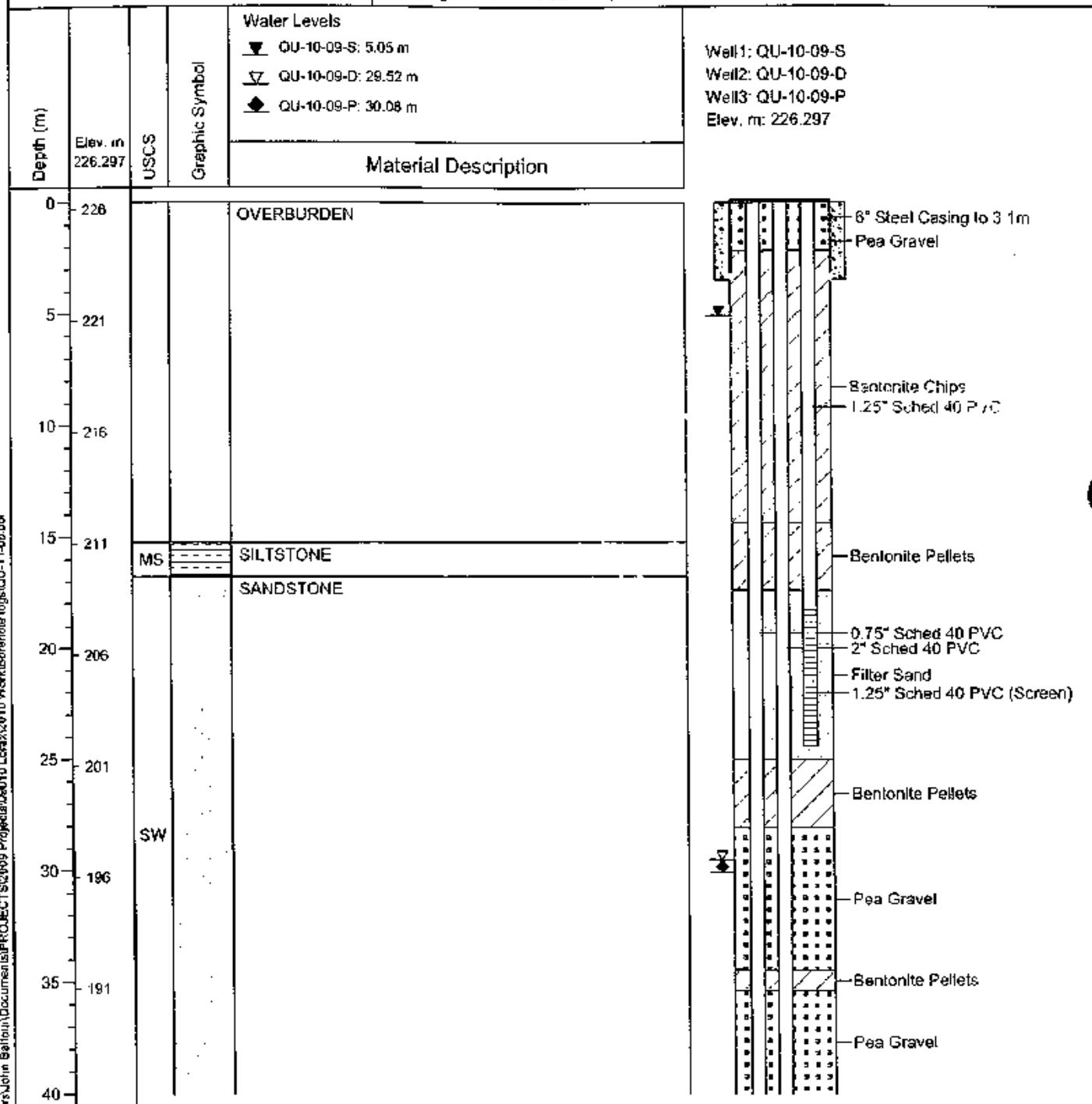
Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.



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.	:	100738
Drilling Method	:	Air rotary with wireline coring	Survey By	:	QCC
Sampling Method	:	Grab sample and core	Logged By	:	N. Bazowski



05-05-2011 C:\Users\John Balfou\Documents\PROJECTS\2009 Projects\2010 Work\Borehole logs\QU-11-09.bor

Quinsam Coal
Assessment of Underground Disposal
of Coarse Coal Refuse

Campbell River, B.C.



Enterprise Geoscience Services Ltd



Borehole Log of QU-11-09

Date Started :
 Date Completed : March 8, 2011
 Hole Diameter : 152 mm / 140 mm
 Drilling Method : Air rotary with wireline coring
 Sampling Method : Grab sample and core

Drilled By : Drillwell Enterprise
 Northing Coord. : 102561.8
 Easting Coord. : 100736
 Survey By : QCC
 Logged By : N. Bazowski

Depth (m)	Elev. m	USCS	Graphic Symbol	Water Levels	Material Description	
				▽ QU-10-09-S: 5.05 m ▽ QU-10-09-D: 29.52 m ● QU-10-09-P: 30.08 m		
40	186	SW				Well1: QU-10-09-S Well2: QU-10-09-D Well3: QU-10-09-P Elev. m: 226.297
45	181					
50	176	MS			SILTSTONE	Pea Gravel Bentonite Pellets
55	171	SW			SANDSTONE	Pea Gravel Bentonite Pellets
60	166					2" Sched 40 PVC 0.75" Sched 40 PVC Pea Gravel
65	161				at 67.16 m coring starts	Bentonite Pellets
70	156					Pea Gravel
75	151	MS			SILTSTONE	Bentonite Pellets
		CO			COAL - 1 Rider Seam	
		MS			SILTSTONE	
		CO			COAL - 1 Seam Upper	Filter Sand 2" Sched 40 PVC (Screen)
80						

Quinsam Coal
 Assessment of Underground Disposal
 of Coarse Coal Refuse

Campbell River, B.C.

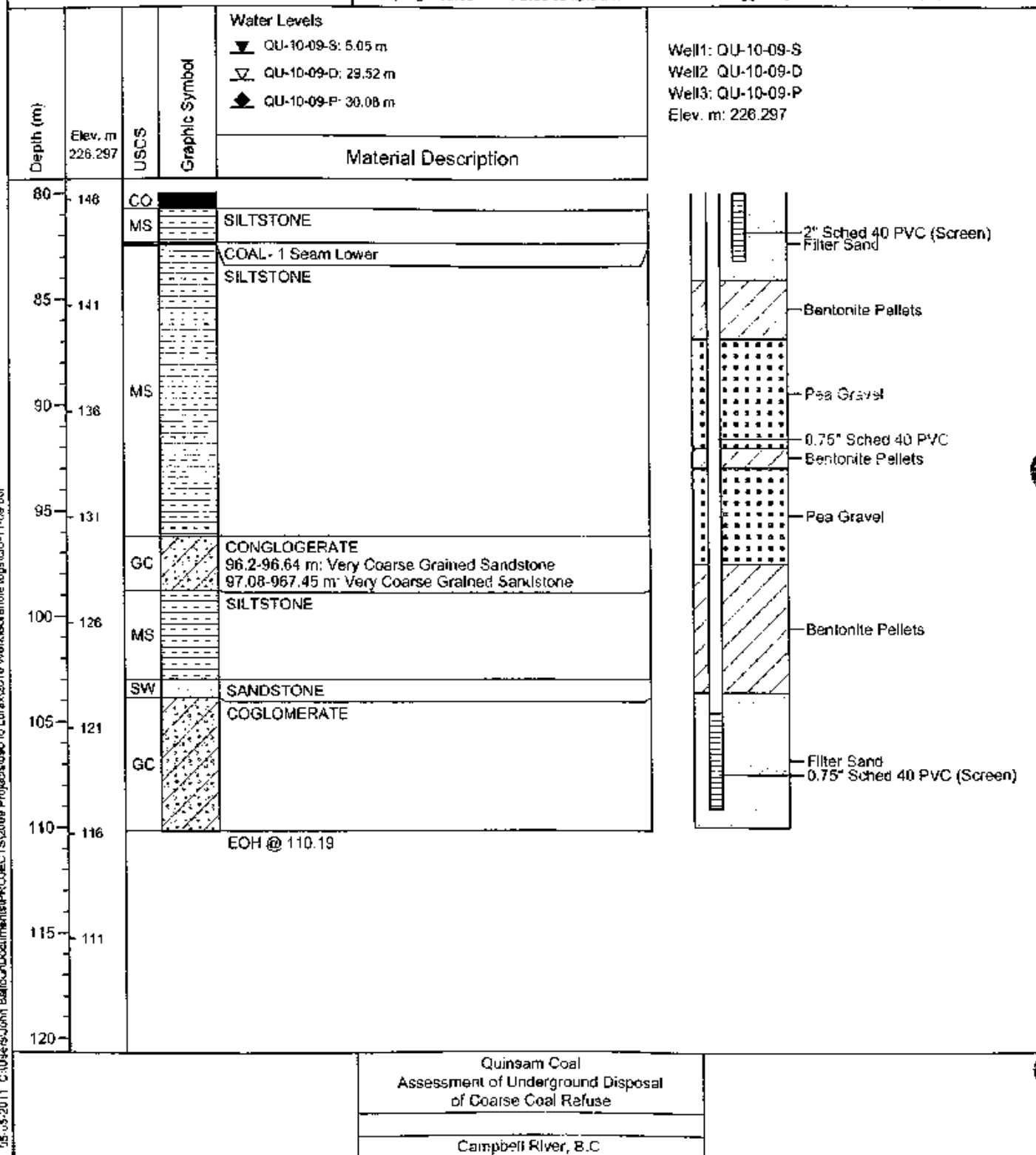


Enterprise Geoscience Services Ltd.



Borehole Log of QU-11-09

Date Started	:		Drilled By	:	Drillwell Enterprise
Date Completed	:	March 8, 2011	Northng Coord.	:	102561.8
Hole Diameter	:	152 mm / 140 mm	Eastng Coord.	:	100736
Drilling Method	:	Air rotary with wireline coring	Survey By	:	QCC
Sampling Method	:	Grab sample and core	Logged By	:	N. Bazowski





LORAX
ENVIRONMENTAL INC.

Borehole Log of QU11-18

(Page 1 of 2)

**HILLSBOROUGH
Resources Limited**

Date Drilled : August 2011
Date Installed : Dec 12, 2011
Hole Diameter : 150 mm/ 85 mm core
Drilling Method : Air Rotary w/ wireline coring
Drilling Company : Drillwell Enterprises

Mine Grid Northing (m) : 100690.81
Mine Grid Easting (m) : 100542.84
Logged By : N. Bazowski (OCC)
Surveyed By : OCC
Installed By : M. Sloray (Lorax)

**Quinsam Coal Corporation
Project #: J885-7**

Water Levels

QU11-18S: 283.59 m (Mar 19, 2012)
QU11-18D: 278.09 m (Mar 19, 2012)

Well1: MW11-18S PVC Stickup 0.18m
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

5

294

10

289

15

284

20

279

25

274

30

269

35

264

40

259

45

254

50

249

55

244

60

TILL (not logged)

Drilled with casing, not logged

SANDSTONE, grey, fine to medium grained
Fault zone 37.2-37.7 m with fractures infilled with rusty clays,
little water flow inferred

Coal (4 Seam) with some calcite, few surfaces display
powdery orange mineral (realgar) in minor amounts

SILTSTONE

COAL (4L Seam), dirty dull to bright clean, pyrite noted in limited
intervals

SILTSTONE, medium grey

COAL (4B Seam)

SILTSTONE, medium grey

Bentonite Chips

Pea Gravel

Bentonite Pellets

Pea Gravel

1.5" PVC Casing

Bentonite Pellets

Pea Gravel

Bentonite Pellets

2" PVC Casing

Screen

Filter Sand

Bentonite Pellets

Pea Gravel

Bentonite Pellets

Pea Gravel

Bentonite Pellets



HILLSBOROUGH
Resources Limited

Borehole Log of QU11-18

(Page 2 of 2)

HILLSBOROUGH
Resources Limited

Date Drilled : August 2011
Date Installed : Dec 12, 2011
Hole Diameter : 150 mm/ 85 mm core
Drilling Method : Air Rotary w/ wireline coring
Drilling Company : Drillwell Enterprises

Mine Grid Northing (m) : 100690.81
Mine Grid Easting (m) : 100542.84
Logged By : N. Bazowski (QCC)
Surveyed By : QCC
Installed By : M. Storey (Lorax)

Quinsam Coal Corporation
Project #: J895-7

Depth (m)	Elev. (m asl) 299.71	Cored Interval	GRAPHIC	Water Levels	DESCRIPTION	
				QU11-18S: 283.59 m (Mar 19, 2012) QU11-18D: 278.09 m (Mar 19, 2012)		
60	239				SANDSTONE, medium grey, fine grained, tight	Well1: MW11-18S PVC Stickup 0.16m Well2: MW11-18D PVC Stickup 0.16m Elev.: 299.71 m (ground surface)
65	234				SILTSTONE, medium to dark grey, trace coal	
					Airlift yield increased 12 GPM at 65.8 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	208					
95	204					
100	199				SANDSTONE, greenish grey, fine to medium grained	
					CONGLOMERATE	
105	194				SILTSTONE, with minor mudstone, some fractures	
					BENSON CONGLOMERATE, both cleft and matrix supported	
110	189				SILTSTONE, hematitic and dark green, 20 cm fault zone at 111.7 m	
					CONGLOMERATE	
115	184				EOH 115.2 m.	
120						



Hillsborough Resources Limited

Borehole Log of QU11-36D

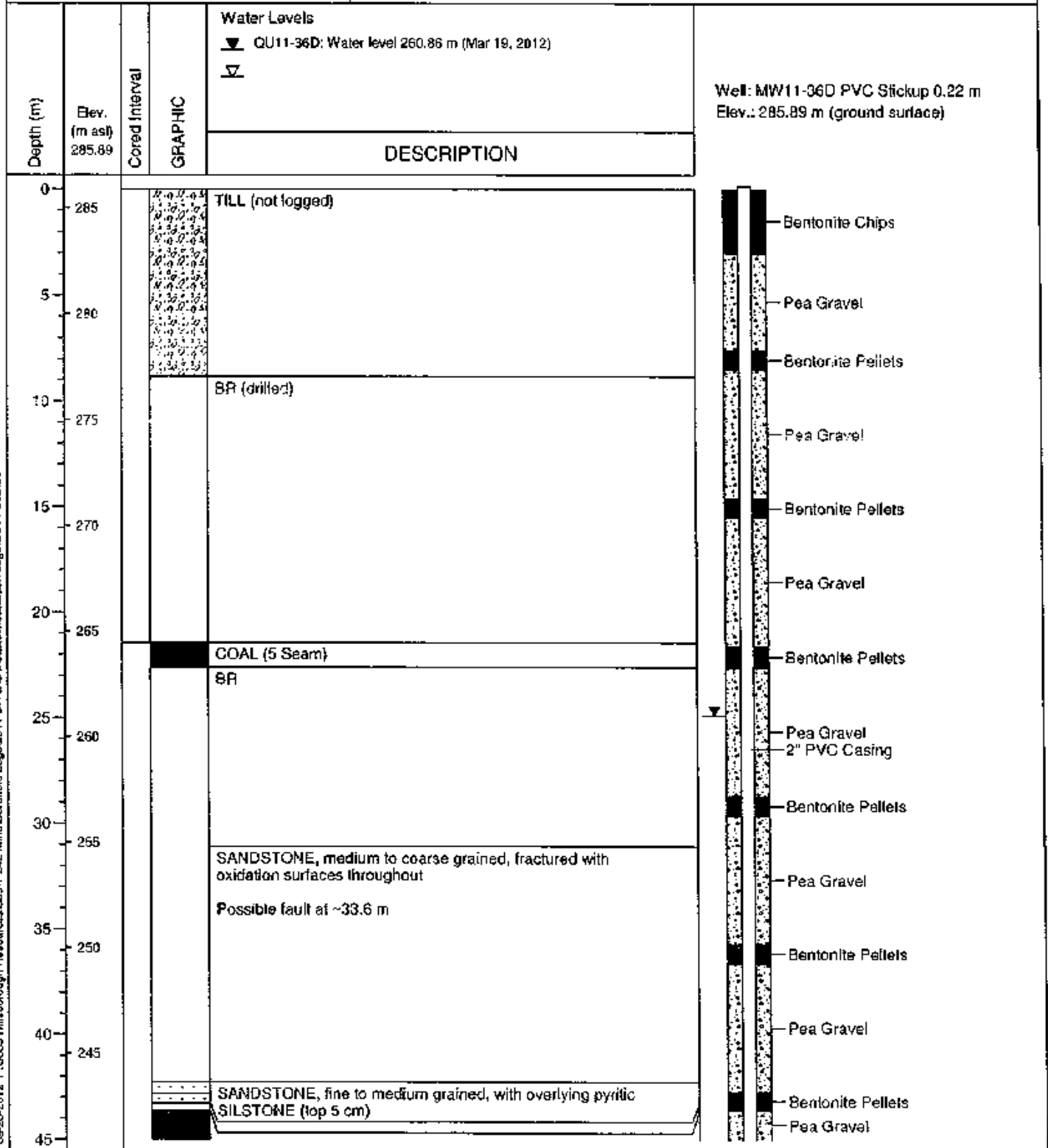
(Page 1 of 2)

**HILLSBOROUGH
Resources Limited**

Date Drilled : December 2011
Date Installed : Dec 20, 2011
Hole Diameter : 150 mm/ 65 mm core
Drilling Method : Air Rotary w/ wireline coring
Drilling Company : Drillwell Enterprises

Mine Grid Northing (m) : 100111.42
Mine Grid Easting (m) : 100322.46
Logged By : N. Bazowski (QCC)
Surveyed By : QCC
Installed By : M. Storey (Lorax)

Quinsam Coal Corporation
Project #: J885-7





LORAX
ENVIRONMENTAL SERVICES

Borehole Log of QU11-36D

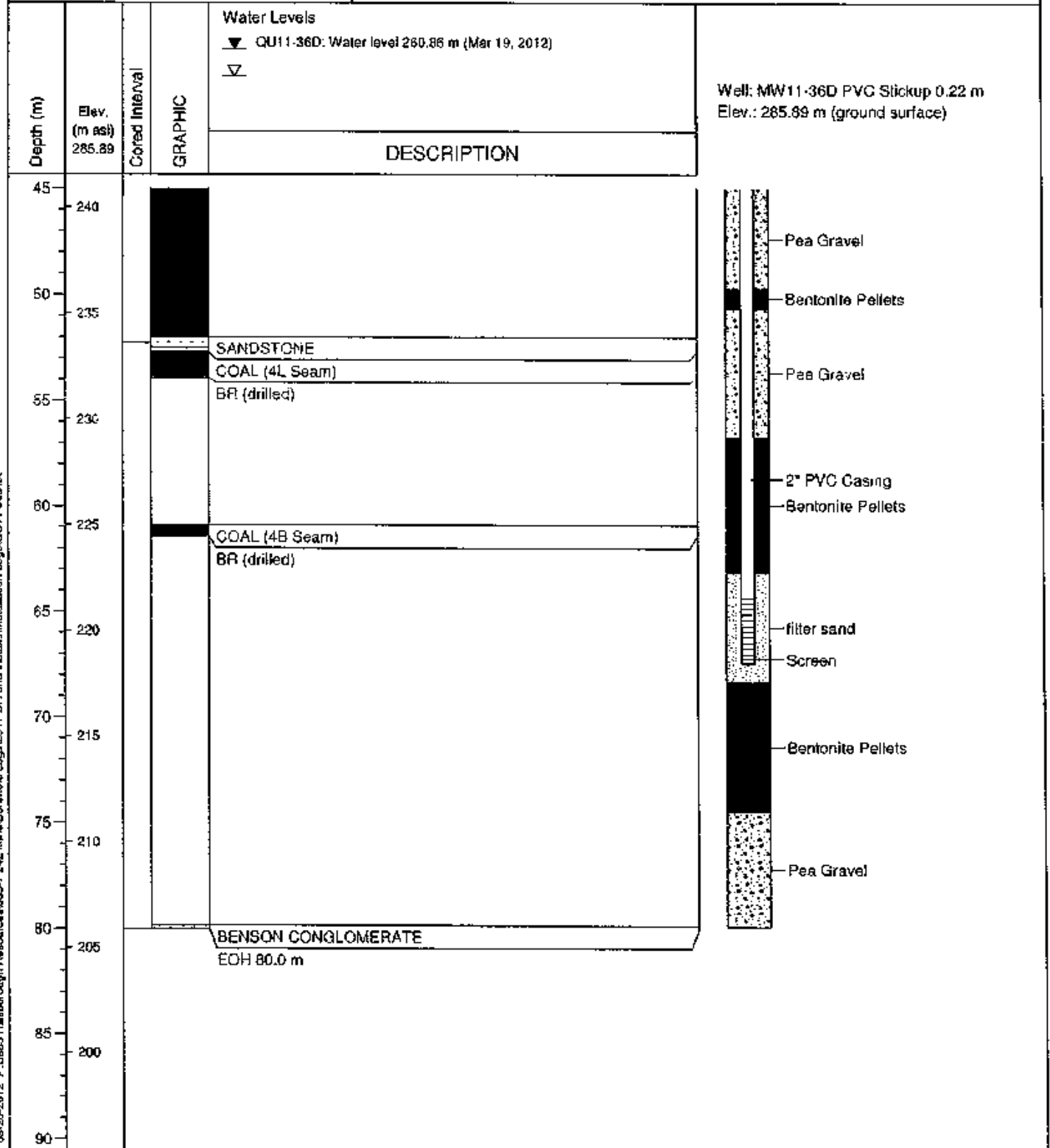
(Page 2 of 2)

HILLSBOROUGH
Resources Limited

Date Drilled : December 2011
Date Installed : Dec 20, 2011
Hole Diameter : 150 mm/ 85 mm core
Drilling Method : Air Rotary w/ wireline coring
Drilling Company : Drillwell Enterprises

Mine Grid Northing (m) : 100111.42
Mine Grid Easting (m) : 100322.48
Logged By : N. Bazowski (OCC)
Surveyed By : OCC
Installed By : M. Storey (Lorax)

Quinsam Coal Corporation
Project #: J885-7





LORAX
ENVIRONMENTAL

Borehole Log of MW12-23

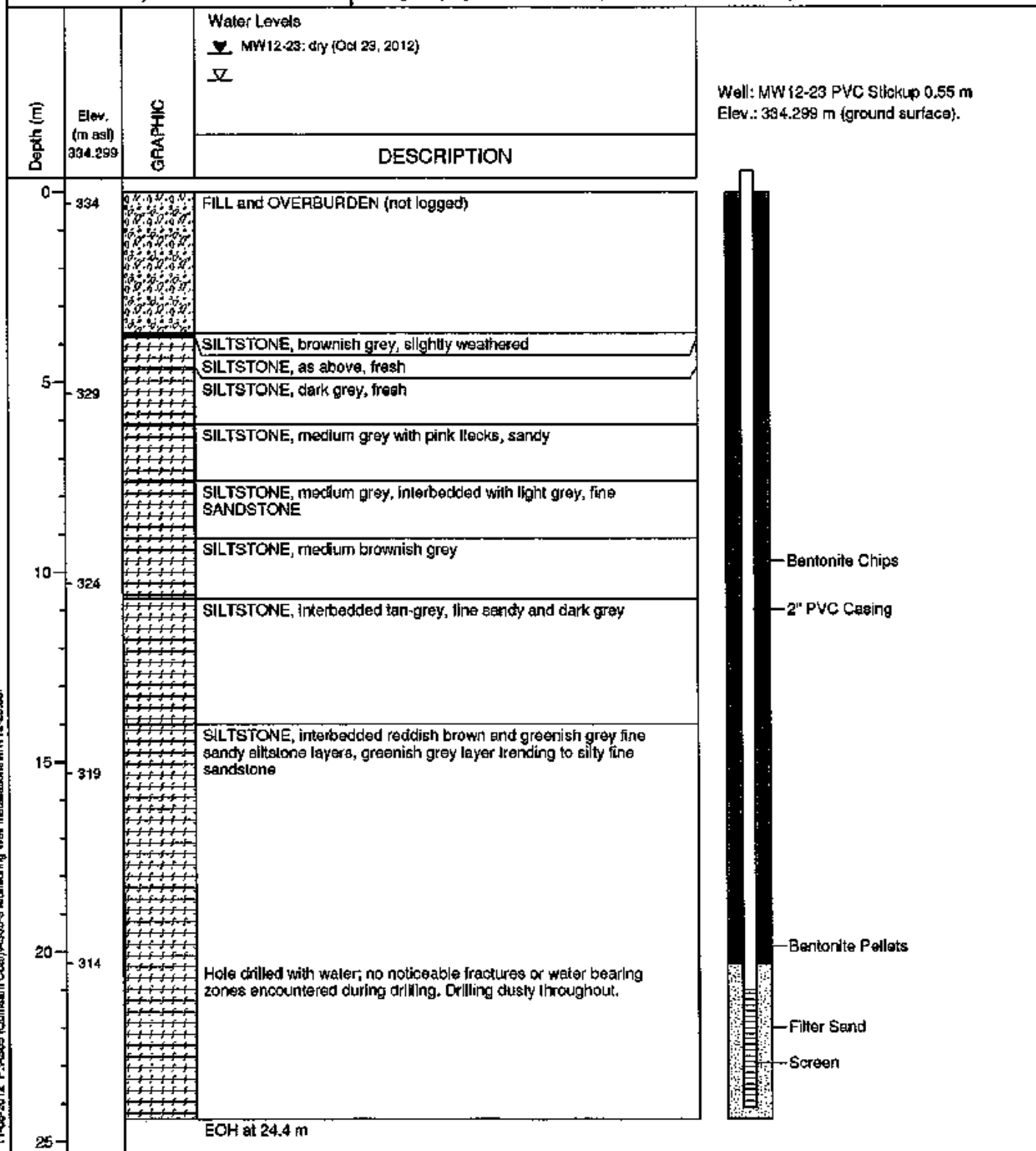
(Page 1 of 1)

HILLSBOROUGH
Resources Limited

Date Drilled : Oct 3, 2012
Date Installed : Oct 4, 2012
Hole Diameter : 150 mm
Drilling Method : Air rotary
Drilling Company : Drillwell Enterprises

Mine Grid Northing (m) : 101584.912
Mine Grid Easting (m) : 97205.970
Logged By : L. Findlater
Surveyed By : QCC
Installed By : L. Findlater

Quinsam Coal Corporation
Project #: A305-3





LORAX
ENVIRONMENTAL

Borehole Log of MW12-24

(Page 1 of 1)

HILLSBOROUGH
Resources Limited

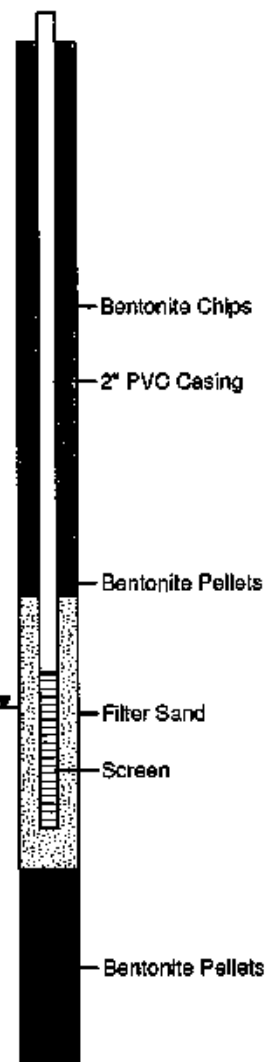
Date Drilled : Oct 3, 2012
Date Installed : Oct 4, 2012
Hole Diameter : 150 mm
Drilling Method : Air rotary
Drilling Company : Drillwell Enterprises

Mine Grid Northing (m) : 101583.676
Mine Grid Easting (m) : 97207.129
Logged By : L. Findlater
Surveyed By : QCC
Installed By : L. Findlater

Quinsam Coal Corporation
Project #: A305-3

Depth (m)	Elev. (m asl) 334.354	GRAPHIC	Water Levels	DESCRIPTION	
			▼ MW12-24: 13.448 m bTOC (Oct 23, 2012). ▽		
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	
10	324			SILTSTONE, grey	
				SILTSTONE, greenish grey, fine sandy	
15	319			SILTSTONE, interbedded reddish brown and greenish grey fine sandy siltstone layers, greenish grey layer somewhat trending to silty fine sandstone	
20	314			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	
25				EOH at 19.8 m	

Well: MW12-24 PVC Stickup 0.58 m
Elev.: 334.354 m (ground surface).



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 4th, 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 m³/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 13th 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 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 series 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

Ph: (250) 286-3224 ext. 225

E-mail: kathleen.russell@quinsam.com

Appendix VIII

Annual Status			
AUTHORIZATION NUMBER:		7008	
AUTHORIZATION TYPE:		Effluent, Permit	
LEGAL AUTHORIZATION HOLDER NAME:		Quinsam Coal Corporation	
AUTHORIZED PERSON NAME:		Kathleen Russell	
AUTHORIZED PERSON SIGNATURE:		KR	
SIGNATURE DATE:		June 30, 2020	
<i>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.</i>			
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 m³/s and 0.08 m³/s respectively. The authorized discharge period is 365 d/a. The maximum flow rate observed was 0.238 m³/s. The average annual flow rate was calculated as 0.0921, above the average authorized discharge rate of 0.080 m³/s by 15%.	No	The average rate of discharge was 0.1203 m³/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 precipitation the site receives.
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 m³/s and 0.10 m³/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 solids (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 m³/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 m³/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 m³/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 m³. 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 m³/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 m³/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 permit limit related to beaver activity. 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:

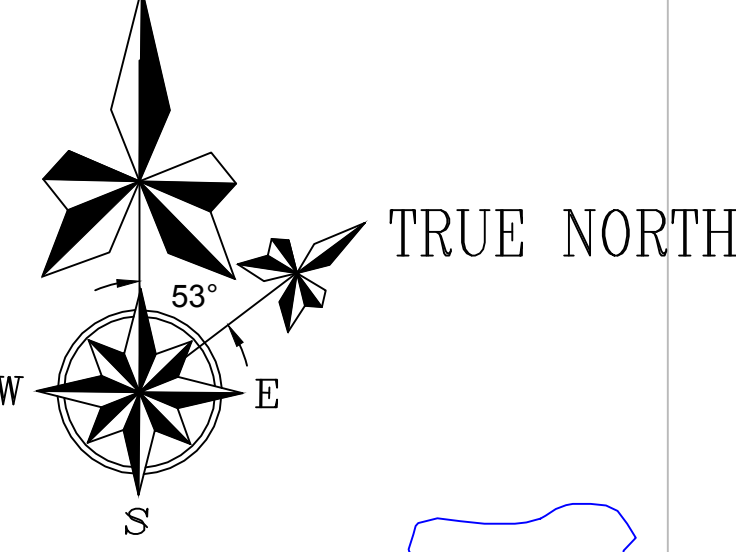
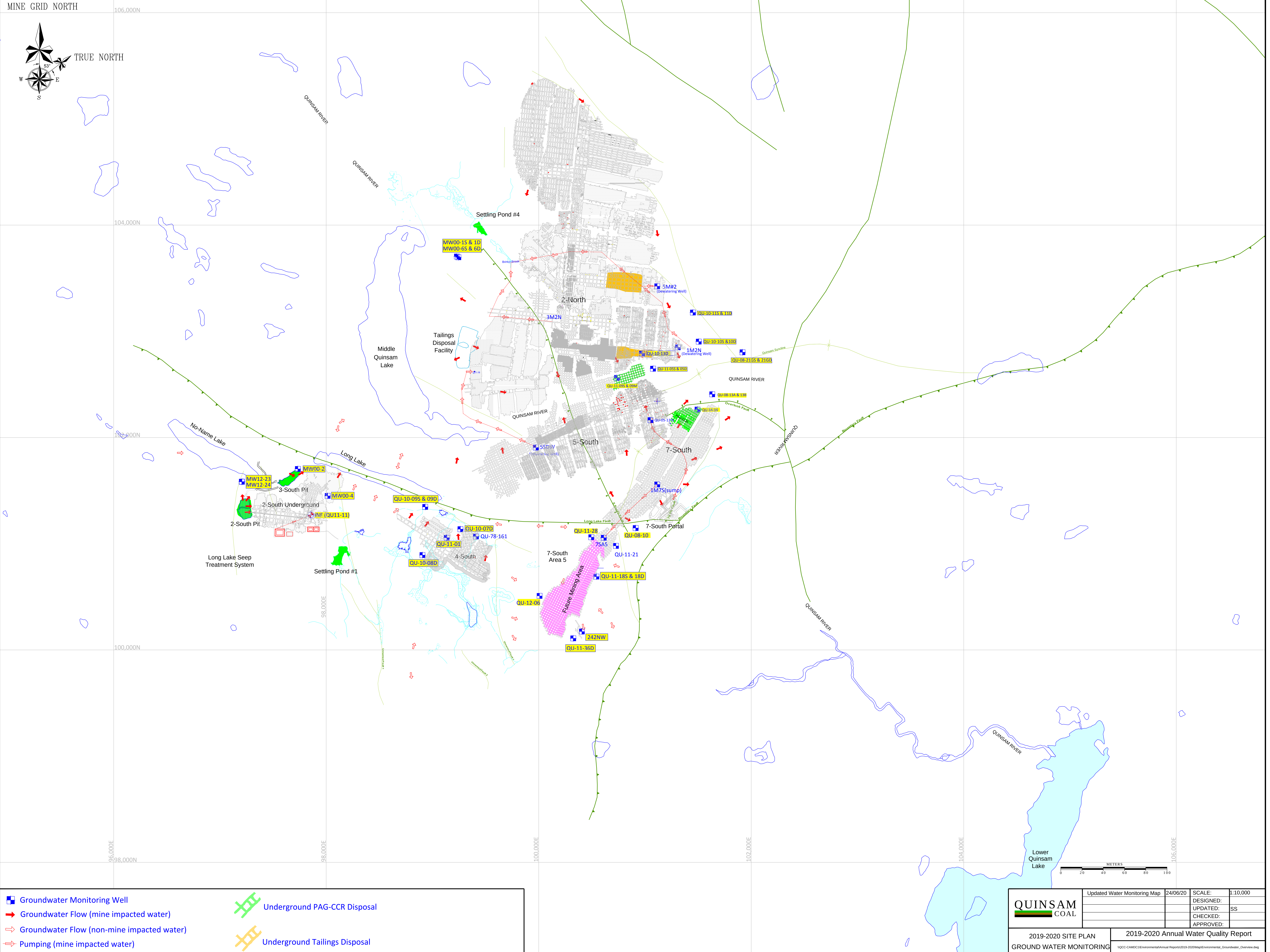
Date:

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/ mandatory 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/mandatory holidays for all employees. Site South Dyke Sump (SDS) EMS #E292126 removed. Permit ammendment 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 ammendment 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. 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



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

2019-2020 SITE PLAN
GROUND WATER MONITORING

Updated Water Monitoring Map

24/06/20

SCALE: 1:10,000

DESIGNED:

UPDATED:

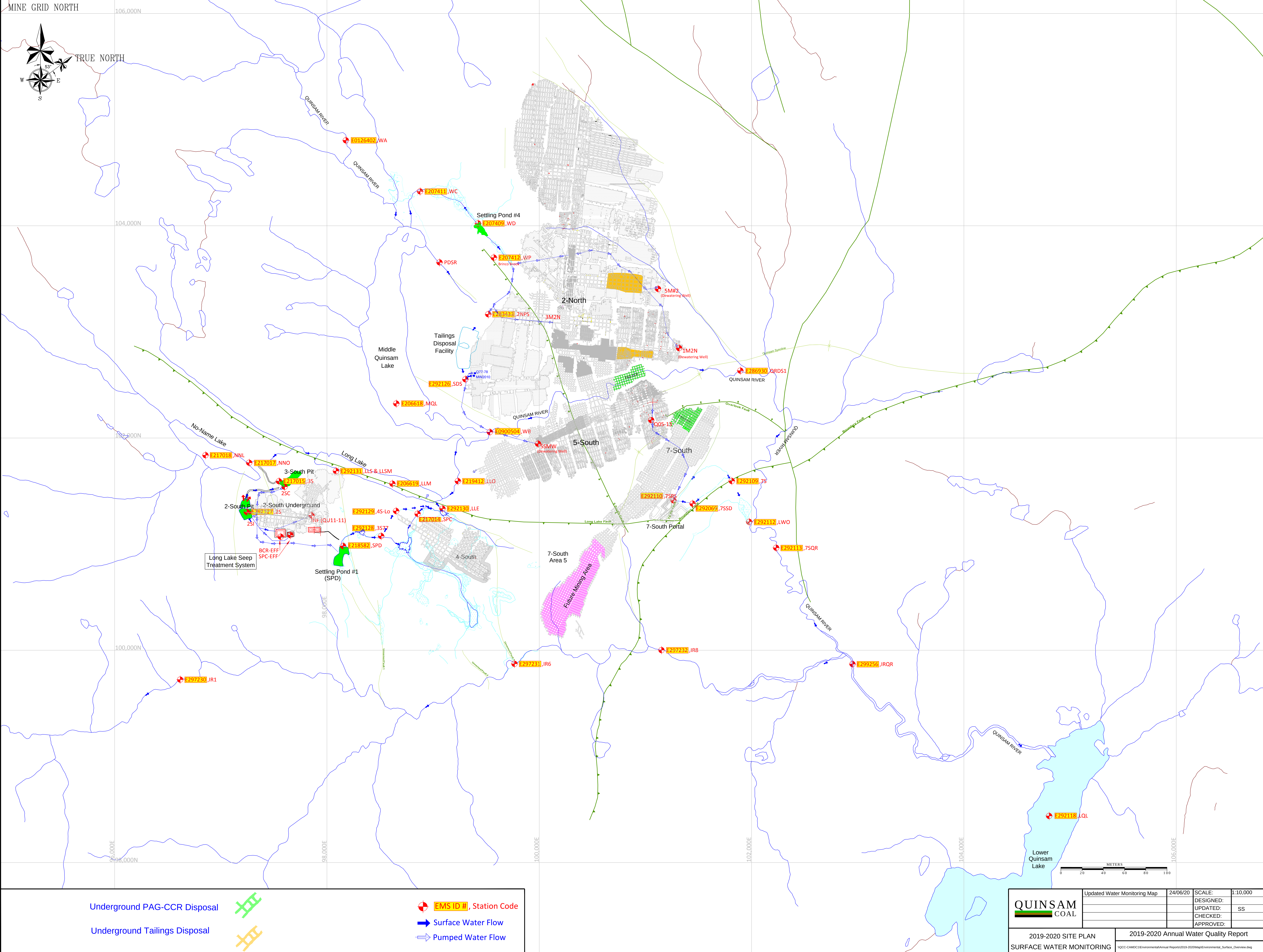
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APPROVED:

SS

2019-2020 Annual Water Quality Report

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Underground PAG-CCR Disposal

Underground Tailings Disposal

EMS ID #, Station Code

Surface Water Flow

Pumped Water Flow

QUINSAM COAL

2019-2020 SITE PLAN
SURFACE WATER MONITORING

Updated Water Monitoring Map

24/06/20

SCALE: 1:10,000

DESIGNED: SS

CHECKED:

APPROVED:

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.

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 $0.054 \text{ m}^3/\text{s}$. 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 $0.046 \text{ m}^3/\text{s}$. 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,

A handwritten signature in black ink that reads "Liz Freyman". The signature is written in a cursive, flowing style.

Liz Freyman R.P.Bio.

For Director, Environmental Management Act

Ministry of Environment and Climate Change Strategy,

Liz.Freyman@gov.bc.ca