Eagle Mountain - Woodfibre Gas Pipeline Project

BCER Waste Discharge Permit Weekly Report

Contents

Preamble

This weekly report for the British Columbia Energy Regulator (BCER) Waste Discharge Permit (BCER number PE-110163) for the FortisBC Eagle Mountain – Woodfibre Gas Pipeline (EGP) Project includes the results of water quality monitoring and sampling of the receiving environments (upstream and downstream) and points of discharge.

FortisBC has retained Triton Environmental Consultants Ltd. as the Qualified Professional to implement and oversee the monitoring and sampling program in the receiving environments. The data represented below, including laboratory reported exceedances, represent background conditions from the receiving environment sampling as shown on the Waste Discharge Permit.

Introduction

The results provided in this document are submitted to BC Energy Regulator (BCER) by FortisBC as per the requirements listed in the Waste Discharge Permit PE-110163 Section 4.2:

> The Permittee shall summarize the results of the discharge and receiving environment compliance sampling and monitoring program in a report that shall be submitted weekly over the term of this permit. The sampling and monitoring results shall be suitably tabulated and include comparison to the respective British Columbia Approved and Working Water Quality Guidelines for Freshwater & Marine Aquatic Life, as published by the Ministry of Environment & Climate Change Strategy. Any exceedance of regulatory guidelines shall be clearly highlighted, and any missed sampling events/missing data shall be identified with an explanation provided. Reporting frequency may be reduced upon a history of compliance and by written confirmation from the BCER. These reports shall be submitted to Waste.Management@bc-er.ca. A copy of the reports shall be provided to each First Nation consulted with regarding the subject permit, and also made publicly available on the FortisBC Eagle Mountain-Woodfibre Gas Pipeline Project | Talking Energy webpage.

Sampling Methodology

The monitoring and sampling has been carried out in accordance with the procedures described in the most recent edition of the “British Columbia Field Sampling Manual” using field equipment and lab samples to meet daily and real time requirements for the Waste Discharge Permit.

At the receiving environments, real time and daily readings are being monitored at the same time with one piece of equipment, allowing all the daily readings real time. Visible sheen will be monitored with visual inspections during times of discharge or sampling.
At the point of discharge from the WTP, the parameters are being monitored using field equipment and sondes/real time meters. Table 1 and Table 2 below show how each parameter is being monitored.

Table 1. Monitor Details for the Point of Discharge from the Water Treatment System-BC Rail and Woodfibre

Permit Frequency	Parameters	Details
Daily	Visible Sheen	In field inspection
Daily (or per batch)	DO	Monitoring using YSI ProDSS
	ORP	Monitoring using YSI ProDSS
	Salinity	Monitoring using YSI ProDSS
Real Time (or per batch)	pH	Monitoring using GF Dryloc pH Series NPT
	Temperature	Monitoring using LevelPro PT100 Temperature and Signet 2350 Temp sensor
	NTU	Monitoring using Observator NEP9504GPI
	Electrical Conductivity	Monitoring using ProCon C450
Weekly (or per batch) Lab Samples	List prescribed in permit	Lab samples

Table 2. Monitor Details for the Receiving Environment (upstream and downstream)-BC Rail and Woodfibre

Permit Frequency	Parameters	Details
Daily	Visible Sheen	In field inspection
Daily	DO	Monitoring using Sonde- AquaTROLL 600 datalogger
	ORP	Monitoring using Sonde- AquaTROLL 600 datalogger
	Salinity	Monitoring using Sonde- AquaTROLL 600 datalogger
Real Time	pH	Monitoring using Sonde- AquaTROLL 600 datalogger
	Temperature	Monitoring using Sonde- AquaTROLL 600 datalogger
	NTU	Monitoring using Sonde- AquaTROLL 600 datalogger
	Electrical Conductivity	Monitoring using Sonde- AquaTROLL 600 datalogger
Weekly Lab Samples	List prescribed in permit	Lab samples

*Note that Woodfibre receiving environment downstream sonde is not in place due to dry conditions

Summary-BC Rail Site

Site Activities

- No discharges during this reporting period
- Water produced by the water treatment plant is being recirculated for tunneling and to create grout for tunneling.

Point of Discharge from Water Treatment System Monitoring

Table 3 below includes information on water quality and lab sampling during discharges. Appendix A includes a full set of lab results with real time/field samples from discharges.

Table 3: Discharge from Water Treatment System Information

Location	Date of Discharge	Date of Lab Sample (for the discharge)	Real Time Monitored	Discharge Rate (batch)	Discharge Volume (batch)	Results
BC Rail- No discharges						

*Max discharge is 515 m3/day

Exceedances

No exceedances this reporting period.

Receiving Environment Monitoring

The receiving environment is being monitored as outlined in the permit.

Table 4: Upstream Monitoring Information

Location	Date of Lab Sample	Real Time Monitored	Results
Squamish River Upstream	2024-08-06	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.

Table 5: Downstream Monitoring Information

	Date of Lab Sample	Real Time Monitored	Results
Squamish River Downstream	2023-08-06	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.

***** Sondes set up to log temperature, specific conductivity, salinity (in PSU), pH, ORP, DO (mg/L), and turbidity (NTU) at 10-minute intervals.

Receiving Environment Monitoring Details

- Upstream sonde was not calibrated this week as it could not be removed from the river due to high flows and debris. Triton and FortisBC working on a plan to remove the trapped sonde. No discharges occurred.
- Visual sheen checks conducted for days of discharge.
- All receiving environment lab results are in Appendix B.
- Any recorded exceedances in the laboratory and field samples collected from the receiving environment (upstream and downstream) are indicative of the existing background water quality in the Squamish River, and are not related to the EGP Project activities.

Summary-Woodfibre

Site Activities

- The downstream sonde/data logger was removed July 16th as there was not enough water in the watercourse to log data. BCER was notified.
- Triton (FortisBC QP) sampled upstream and downstream of WC 309-R2, Triton went further downstream to find a location with sufficient water for a sample.
- No discharge from the WTP to the receiving environment occurred during this reporting period. Water generated from tunneling was recirculated and repurposed for construction and not discharged to the receiving environment. EOP samples were collected; however, as there was no discharge to the receiving environment, the results are not included in the report.

Point of Discharge from Water Treatment System Monitoring

Table 3 below includes information on the continuous discharge water. Appendix C includes real time/field samples from the discharge.

Table 3: Discharges from Water Treatment System

Location	Date of Discharge	Real Time Monitored and Daily Monitoring	Discharge Volume
WLNG - No Discharge			

*Max discharge is 1500m^3/day

Exceedances

No exceedances this reporting period.

Receiving Environment Monitoring

The receiving environment is being monitored as outlined in the permit.

Table 4: Upstream Monitoring Information

Location	Date of Lab Sample	Real Time Monitored	Results
Woodfibre Upstream	2024-08-07	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix D.

Table 5: Downstream Monitoring Information

	Date of Lab Sample	Real Time Monitored	Results
Woodfibre Downstream	2024-08-07	No-Sonde Removed	Full set of lab sample results, photo and documentation are provided in Appendix D. Note that Sonde was removed on July 16th, 2024 due to dry conditions.

* Sondes set up to log temperature, specific conductivity, salinity (in PSU), pH, ORP, DO (mg/L), and turbidity (NTU) at 10-minute intervals.

Receiving Environment Monitoring Details

- Visual sheen checks are conducted during discharges.
- All receiving environment lab results are in Appendix D.
- Recorded exceedances in the laboratory and field samples collected from the receiving environment (upstream and downstream) may be indicative of the existing background water quality in the East Creek and are not related to the EGP Project activities.

Appendix A: BCR Site Point of Discharge from Water Treatment Plant Documentation

BCR Site Batch Sample Analysis

No Discharges

BCR Site Batch Sample Lab Documentation

No Discharges

BCR Site WTP Discharge Field Notes and Logs
No Discharges

Appendix B: BCR Site Receiving Environment Documentation

BCR Site Receiving Environment Sample Analysis

Analyte	Units	FAL-ST [1,2]	FAL-LT [1,2]	MAL-ST [1]	MAL-LT [1,2]	SQU US1 (Upstream)	SQU DS1 (Downstream)	Sample or value notes	BCWQ FAL - Short Term	BCWQ FAL - Long Term	BCWQ MAL - Short Term	BCWQ MAL - Long Term
TRITON Environmental Consultants	LAB ID	Reviewed and signed off by:			Farshad Shafiei Ph.D., R.P.Bio.	VA24B9484-001	VA24B9484-002					
	Date Sampled					06-Aug-2024	06-Aug-2024					
	Time Sampled					09:55	10:48					
						Water	Water					
						N/A	N/A		Guideline notes			
In Situ Parameters												
pH (field)	pH units	6.5-9.0	6.5-9.0	7.0-8.7	7.0-8.7	6.1	6.3	**pH at the US and DS location are outside of the recommended range and exceed short-term guidelines for BCWQ MAL.** Discharge from BCR has not begun full-time, therefore, the low pH may be characteristic of the Squamish River and the local geology.	If natural pH < 6.5, no statisticaly significant decrease from background. No restriction in increase except in areas with unique flora or fauna. Unrestricted change permitted within range of 6.5 to 9.0. If natural pH > 9.0, no statistically significant increase from background. Refer to BC Water Quality Guidelines for more information.		Unrestricted change within this range (for protection of mollusc embryo development).	
Temperature (field)	°C	Max +/- from BKG 1°C [4]	-	Max +/- from BKG 1°C [4]	-	14.2	15.4		Guideline is species-dependent. Short-term daily temperature guideline is 19°C for streams with unknown fish distribution. Refer to footnote 4 for background temperature range for the Squamish River. Refer to BC Water Quality Guidelines for more information Hourly rate of change not to exceed 1°C. Calculation: US value +/- 1 = guideline range		Guideline for marine waters are based on natural ambient conditions. Max and min. 1°C change from natural condition. Natural temperature cycle characteristic of the site should not be altered in amplitude or frequency by human activities. Max rate of any human-induced temperature change not to exceed 0.5°C hourly. treams with unknown fish distribution. Refer to footnote 4 for background temperature range for the Squamish River. Calculation: US value +/- 1 = guideline range	
Conductivity (field)	µS/cm	-	-	-	-	26	25					
Turbidity (field)	NTU	Varies with background, see note	Varies with background, see note	Varies with background, see note	Varies with background, see note	245.0	197.0		Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Oxygen (field)	mg/L	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	10.53	9.72		Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.
General Parameters												
Hardness (as $CaCO_3$) (total)	mg/L	-	-	-	-	21.4	18.5					
Total Dissolved Solids	mg/L	-	-	-	-	48	44					
Total Suspended Solids	mg/L	Varies with background, see note	Varies with background, see note	Varies with background, see note	Varies with background, see note	292	169		Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100 mg/L at any time during high flows or turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100 mg/L at any time during high flows or turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Organic Carbon (DOC)	mg/L	-	-	-	-	< 0.50	< 0.50			Long-term (30-day) median within 20% of background median [3]		
Total Alkalinity ($CaCO_3$)	mg/L	-	Categorical	-	-	9.2	7.8	The upstream location has medium sensitivity to acid inputs (i.e. medium buffering capacity) while the downstream location has high sensitivity to acid inputs (i.e. low buffering capcity).		Guideline is for alkalinity (as CaCO3) and categorizes the sensitivity of a water body to acid inputs. Alkalinity < 10 mg/L is considered highly sensitive to acid inputs; 10 - 20 mg/L is considered moderately sensitive to acid inputs; > 20 mg/L is considered low sensitivity.		
Total Sulfide (as S)	mg/L	-	-	-	-	< 0.0015	< 0.0015					
Total Sulfide (un-ionized as H_2S)	mg/L	-	0.002	-	-	< 0.0015	< 0.0015			Working guideline		
Total Sulfide (as H_2S)	mg/L	-	-	-	-	< 0.0016	< 0.0016					
Anions and Nutrients												
Ammonia	mg/L ammonia-N	Varies with pH and temperature. See note. US ST guideline = 21.5 DS ST guideline = 21.0	Varies with pH and temperature. See note. US LT guideline = 1.88 DS LT guideline = 1.77	Varies with pH, temperature and salinity. See note. US ST guideline = 92 DS ST guideline = 92	Varies with pH, temperature and salinity. See note. US LT guideline = 14 DS LT guideline = 14	0.0962	0.0591		Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27D in BC WQG for guideline values.	Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27C in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27F in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27E in BC WQG for guideline values.
Bromide	mg/L	-	-	-	-	< 0.050	< 0.050					
Chloride	mg/L	600	150	> 110% of background	< 90% of background	1.08	0.85				Human activities should not cause the chloride of marine and estuarine waters to fluctuate by more than 10% of the natural chloride expected at that time and depth.	Human activities should not cause the chloride of marine and estuarine waters to fluctuate by more than 10% of the natural chloride expected at that time and depth.
Fluoride	mg/L	Varies with hardness US ST guideline = 0.714 DS ST guideline = 0.656	-	1.5	-	< 0.020	< 0.020		Guideline has interim status. Guideline is calculated with the following equation: Guideline = [-51.73 + 92.57 log10 (hardness)] * 0.01			
Nitrate (as N)	mg/L	32.8	3	-	3.7	0.0142	0.0118					
Nitrite (as N)	mg/L	Varies with chloride. See note. US ST guideline = 0.06 DS ST guideline = 0.06	Varies with chloride. See note. US LT guideline = 0.02 DS LT guideline = 0.02	-	-	< 0.0010	< 0.0010		Varies with chloride. Refer to Table 27B in BC WQG for guideline values.	Varies with chloride. Refer to Table 27B in BC WQG for guideline values.		
Total Nitrogen	mg/L	-	-	-	-	0.174	0.124					
Total Phosphorous	mg/L	-	0.005 to 0.015	-	-	0.213	0.19			Guideline is for lakes, refer to BCWQ guideline for nutrients and algae for more information. Guideline does not apply to site.		
Sulfate (as SO_4)	mg/L	-	Varies with hardness. See note. US LT guideline = 128.00 DS LT guideline = 128.00	-	-	2.52	2.17			Guidelines for hardness ranges below: Hardness 0 - 30: 128 Hardness 31 - 75: 218 Hardness 76 - 180: 309 Hardness 181 - 250: 429		
Total Metals												
Aluminum (Al)-Total	mg/L	-	Varies with pH, DOC, hardness US LT guideline = 0.036 US 5-week field average = 6.25 DS LT guideline = 0.029 DS 5-week field average = 5.70	-	-	*6.64*	*5.35*	**Total Al exceed the long-term average BCWG for FAL at both upstream and downstream locations; thus there is a risk for chronic effects to FAL.** However, this should not be deemed a reportable exceedance because the background total Al concentration at the upstream location is greater than that of the downstream. Discharge from BCR has not begun full-time, therefore, the high total Al concentration may be characteristic of the Squamish River and the local geology.		Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated with the following equation: Guideline = (EXP((0.645 * LN(DOC)) + (2.255 * LN(hardness)) + (1.995 * pH) + (-0.284 * (LN(hardness) * pH))-9.898)/3/1000) If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.		
Antimony (Sb)-Total	mg/L	0.25	0.074	-	-	< 0.00010	< 0.00010					
Arsenic (As)-Total	mg/L	-	0.005	-	0.0125	0.00043	0.00045					Interim guideline status
Barium (Ba)-Total	mg/L	-	1	-	-	0.069	0.0598			Working guideline status		
Beryllium (Be)-Total	mg/L	-	0.00013	-	0.100	< 0.00010	< 0.00010			Working guideline status		Working guideline status
Bismuth (Bi)-Total	mg/L	-	-	-	-	<0.000050	<0.000050					
Boron (B)-Total	mg/L	-	1.2	-	1.2	< 0.010	< 0.010					
Cadmium (Cd)-Total	mg/L	-	-	-	0.00012	0.0000768	*0.00036*	**Total Cd exceeds the long-term BCWG for MAL at the downstream location, thus there is a risk for chronic effects to MAL.** Discharge from BCR has not begun full-time, therefore, the high total Cd concentration may be characteristic of the Squamish River and the local geology.				Working guideline status
Calcium (Ca)-Total	mg/L	-	-	-	-	5.92	4.87					
Cesium (Cs)-Total	mg/L	-	-	-	-	0.000166	0.000151					
Chromium (Cr) - Total	mg/L	-	-	-	-	0.00153	0.00152					
Chromium (Cr(III))-Total	mg/L	-	0.0089	-	0.056	0.00153	0.00152			Working guideline status		Working guideline status
Chromium (Cr(VI))-Total	mg/L	-	0.0025	-	0.0015	< 0.00050	< 0.00050			Working guideline status		Working guideline status
Cobalt (Co)-Total	mg/L	0.11	0.004	-	-	0.00131	0.00131					
Copper (Cu)-Total	mg/L	-	-	0.003	0.002	0.00713	0.00617	**Total Cu exceeds the short and long-term BCWG for MAL at both upstream and downstream locations, thus there is a risk for acute and chronic effects to MAL.** However, this should not be deemed a reportable exceedance because the background total Cu concentration at the upstream location is greater than that of the downstream. Discharge from BCR has not begun full-time, therefore, the high total Cu concentration may be characteristic of the Squamish River and the local geology.				
Iron (Fe)-Total	mg/L	1	-	-	-	2.85	2.7	**Total Fe exceeds the short-term BCWG for FAL at both upstream and downstream locations, thus there is a risk for acute effects to FAL.** However, this should not be deemed a reportable exceedance because the background total Fe concentration at the upstream location is greater than that of the downstream. Discharge from BCR has not begun full-time. These impacts are not attributable to BCR construction activities and may be characteristic of the Squamish River and the local geology.				
Lead (Pb)-Total	mg/L	Varies with hardness. See Note. US ST guideline = 0.0115 DS ST guideline = 0.0095	Varies with hardness. See Note. US LT guideline = 0.0037 DS LT guideline = 0.0037	0.14	0.002	0.000819	0.000722		Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. Guideline is 0.003 where hardness ≤8mg/L. Guideline uses equation EXP[1.273*on(hardness)-1.460] where hardness is 8-360 mg/L. Lowest value for guideline is 0.003 mg/L.	Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. Guideline equation EXP[1.273*on(hardness)-4.704] applies to samples with hardness 8-360 mg/L.		
Lithium (Li)-Total	mg/L	-	-	-	-	0.0026	0.0023					
Magnesium (Mg)-Total	mg/L	-	-	-	-	1.61	1.55					
Manganese (Mn)-Total	mg/L	Varies with hardness US ST guideline = 0.715 DS ST guideline = 0.715	Varies with hardness US LT guideline = 0.768 DS LT guideline = 0.768	-	-	0.0744	0.0751		Guideline varies with hardness. The guideline is calculated using the following equation: Guideline = (0.0044 * hardness + 0.605) Guideline applies to samples with hardness 25-259 mg/L. Lowest value for guideline is 0.77 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. The guideline is calculated using the following formula: Guideline = (0.01102 * hardness + 0.54) Guideline applies to samples with hardness 37-450 mg/L. Lowest value for guideline is 0.81 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Mercury (Hg)-Total	mg/L	-	Varies with methyl mercury US LT guideline = N/A DS LT guideline = N/A	-	-	< 0.0000050	< 0.0000050			When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L Guideline = 0.1/[MeHg/totalHg]. When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L		
Molybdenum (Mo)-Total	mg/L	46	7.6	-	-	0.000417	0.000352					
Nickel (Ni)-Total	mg/L	-	Varies with hardness US LT guideline = 0.025 DS LT guideline = 0.025	-	0.0083	0.00168	0.00166			Working guideline status. Guideline varies with hardness. Refer to BC Water Quality Guidelines for more information. Hardness 0 ≤ 60: 0.025 Hardness > 60 ≤ 180: Guideline = (EXP((0.76 * (LN(hardness)) + 1.06))/1000) Hardness ≥ 180: 0.15		Working guideline status
Phosphorus (P)-Total	mg/L	-	0.005 to 0.015	-	-	0.196	0.185			Guideline only applies to lakes with salmonid species being the dominant fish species. Guideline is for reference only and does not apply to site.		
Potassium (K)-Total	mg/L	-	-	-	-	1.84	1.89					
Rubidium (Rb)-Total	mg/L	-	-	-	-	0.00443	0.0043					
Selenium (Se)-Total	mg/L	-	0.002	-	0.002	< 0.000050	< 0.000050			Guideline for freshwater aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guidelines for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guidelines and sampling guidance.		Guideline for marine aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guidelines for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guidelines and sampling guidance.
Silicon (Si)-Total	mg/L	-	-	-	-	11	9.08					
Silver (Ag)-Total	mg/L	Varies with hardness, see note US ST guideline = 0.0001 DS ST guideline = 0.0001	Varies with hardness, see note US LT guideline = 0.0015 DS LT guideline = 0.0015	0.003	0.0015	0.000039	0.000015		Varies with hardness Guideline ranges: Hardness ≤ 100: 0.0001 Hardness > 100: 0.003	Varies with hardness Guideline ranges: Hardness ≤ 100: 0.00005 Hardness > 100: 0.0015		Guideline applies to open coast and estuaries. Guideline is applicable to the EGP site.
Sodium (Na)-Total	mg/L	-	-	-	-	3.59	2.56					
Strontium (Sr)-Total	mg/L	-	-	-	-	0.069	0.0544					
Sulfur (S)-Total	mg/L	-	-	-	-	< 0.50	< 0.50					
Tellurium (Te)-Total	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Thallium (Tl)-Total	mg/L	-	0.0008	-	-	0.000028	0.000028			30-day average, site-specific objective for the lower Columbia River, BC. Guideline is for reference only and does not apply to tnhe EGP site.		
Thorium (Th)-Total	mg/L	-	-	-	-	< 0.00030	< 0.00020					
Tin (Sn)-Total	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Titanium (Ti)-Total	mg/L	-	-	-	-	0.175	0.178					
Tungsten (W)-Total	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Uranium (U)-Total	mg/L	-	0.0085	-	-	0.00011	0.000116			Working guideline status		
Vanadium (V)-Total	mg/L	-	-	-	0.050	0.00741	0.00717					Working guideline status
Zinc (Zn)-Total	mg/L	-	-	0.055	0.010	0.0987	0.0506					
Zirconium (Zr)-Total	mg/L	-	-	-	-	< 0.00060	< 0.00060					
Dissolved Metals												
Aluminum (Al)-Dissolved	mg/L	-	-	-	-	0.199	0.158					
Antimony (Sb)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Arsenic (As)-Dissolved	mg/L	-	-	-	-	0.00014	0.00016					
Barium (Ba)-Dissolved	mg/L	-	-	-	-	0.0051	0.00494					
Beryllium (Be)-Dissolved	mg/L	-	-	-	-	<0.000100	<0.000100					
Bismuth (Bi)-Dissolved	mg/L	-	-	-	-	<0.000050	<0.000050					
Boron (B)-Dissolved	mg/L	-	-	-	-	<0.010	<0.010					
Cadmium (Cd)-Dissolved	mg/L	Varies with hardness, see note US ST guideline = 0.00012 DS ST guideline = 0.000103	Varies with hardness, see note US LT guideline = 0.000065 DS LT guideline = 0.000062	-	-	< 0.000005	< 0.000005		Guideline is hardness dependent. Guideline is appilcable to water hardness between 7.0 and 455 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(1.03 * (LN(hardness)) - 5.274)/1000) Lowest value for guideline is 0.000018 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline is hardness dependent. Guideline is applicable to hardness between 3.4 and 285 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(0.736 * (LN(hardness)) - 4.943)/1000) Lowest value for guiedeline is 0.00004. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Calcium (Ca)-Dissolved	mg/L	-	Categorical, see note	-	-	3.05	2.72	Both locations have high sensitivity to acid inputs (i.e. low buffering capacity).		Guideline categorizes the sensitivity of a water body to acid inputs (i.e. buffering capacity). Standard is 4 mg/L dissolved Ca for the most sensitive waterbodies,5 - 8 mg/L for waterbodies with moderate sensitivity to acid inputs. Waterbodies with dissolved calcium > 8mg/L are considered to have low sensitivity to acid inputs.		
Cesium (Cs)-Dissolved	mg/L	-	-	-	-	0.000014	< 0.000010					
Chromium (Cr)-Dissolved	mg/L	-	-	-	-	< 0.00050	< 0.00050					
Cobalt (Co)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Copper (Cu)-Dissolved	mg/L	Guideline varies with other parameters, see note US ST guideline = 0.0002 DS ST guideline = 0.0002	Guideline varies with other parameters, see note US LT guideline = 0.0002 US 5-week field average = 0.00046 DS LT guideline = 0.0002 DS 5-week field average = 0.00039	-	-	0.00069	0.00054	**Dissolved Cu exceeds the short-term and long-term BCWG for FAL at both the upstream and downstream locations.** However, this should not be deemed a reportable exceedance because the background dissolved Cu concentration at the upstream location is greater than the BCWG. Discharge from BCR has not begun full-time. These impacts are not attributable to BCR construction activities and may be characteristic of the Squamish River and the local geology.	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date		
Iron (Fe)-Dissolved	mg/L	0.35	-	-	-	0.085	0.069					
Lead (Pb)-Dissolved	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Lithium (Li)-Dissolved	mg/L	-	-	-	-	<0.0010	<0.0010					
Magnesium (Mg)-Dissolved	mg/L	-	-	-	-	0.393	0.344					
Manganese (Mn)-Dissolved	mg/L	-	-	-	-	0.00922	0.00784					
Mercury (Hg)-Dissolved	mg/L	-	-	-	-	< 0.0000050	< 0.0000050					
Molybdenum (Mo)-Dissolved	mg/L	-	-	-	-	0.000367	0.000322					
Nickel (Ni)-Dissolved	mg/L	-	-	-	-	< 0.00050	< 0.00050					
Phosphorus (P)-Dissolved	mg/L	-	-	-	-	< 0.050	< 0.050					
Potassium (K)-Dissolved	mg/L	-	-	-	-	0.613	0.66					
Rubidium (Rb)-Dissolved	mg/L	-	-	-	-	0.00094	0.00096					
Selenium (Se)-Dissolved	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Silicon (Si)-Dissolved	mg/L	-	-	-	-	3.25	2.68					
Silver (Ag)-Dissolved	mg/L	-	-	-	-	< 0.000010	< 0.000010					
Sodium (Na)-Dissolved	mg/L	-	-	-	-	1.36	1.1					
Strontium (Sr)-Dissolved	mg/L	-	-	-	-	0.0202	0.0173					
Sulfur (S)-Dissolved	mg/L	-	-	-	-	0.61	0.53					
Tellurium (Te)-Dissolved	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Thallium (Tl)-Dissolved	mg/L	-	-	-	-	< 0.000010	< 0.000010					
Thorium (Th)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Tin (Sn)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Titanium (Ti)-Dissolved	mg/L	-	-	-	-	0.00544	0.0051					
Tungsten (W)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Uranium (U)-Dissolved	mg/L	-	-	-	-	0.000016	0.000016					
Vanadium (V)-Dissolved	mg/L	-	-	-	-	0.00113	0.00103					
Zinc (Zn)-Dissolved	mg/L	Varies with DOC and hardness US ST guideline = 0.009 DS ST guideline = 0.008	Varies with pH, DOC, hardness US LT guideline = 0.00380 DS LT guideline = 0.00353	-	-	0.0011	< 0.0010		Guideline varies with DOC and hardness. Guideline is calculated using the following formula: Guideline = (EXP((0.833 * (LN(hardness))) + (0.24 * (LN(DOC))) + 0.526)/2/1000) If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.	Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated using the following formula: Guideline = (EXP((0.974 * (LN(hardness))) - (0.815 * pH) + (0.398 * (LN(DOC))) + 4.625)/2/1000) Guideline only applies to water with pH between 6.5 and 8.13, DOC between 0.3 and 22.9 mg/L, anmd hardness between 23.4 and 399 mg/L. If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.		
Zirconium (Zr)-Dissolved	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Applied Guideline:		British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Freshwater Aquatic Life British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Marine Aquatic Life										
Color Key:	Exceeds both FAL and MAL Guidelines	Exceeds FAL Short term Guideline	*Exceeds FAL Long term Guideline*	Exceeds MAL Short term Guideline	*Exceeds MAL Long term Guideline*							
Color Key:		Exceeds Short and Long-Term Guideline		Exceeds MAL Short and Long-term Guidelines								

[1]BC MOECCS. 2023. BC Water Qualtiy Guidelines for the Protection of Aquatic Life, Wildlife & Agriculture. Accessed from:
wqg_summary_aquaticlife_wildlife_agri.pdf (gov.bc.ca)
[2]BC MOECCS. 2021. BC Working Water Qualtiy Guidelines for the Protection of Aquatic Life, Widlife & Agriculture. Accessed from:
bc_env_working_water_quality_guidelines.pdf (gov.bc.ca)
[3]Note that long-term guidelines apply to averaged data to account for chronic impacts to aquatic life. Ideally, five samples collected at evenly spaced intervals over 30 days is considered to be the minimum number needed to calculate the long-term average of any parameter, though this may vary by parameter and site conditions. Long-term guidelines applied here are for reference only and may not indicate chronic impacts to aquatic life if exceedances occur in the short term.
[4]Background temperature ranges: Dec-Feb: 2.0-4.0C; Mar-Apr: 4.0-6.0C; May-June: 6.0-12.0C; Jul-Sept: 9.0-12.0C; Oct-Nov: 3.0-5.0
Reference: Triton Environmental Consulants Ltd. 2023. Memo - Background water quality values for the BC Rail Discharge to Squamish River
For guidelines dependent on other parameters, when hardness, pH or DOC are below the range stated in the guideline, the lowest value in the range is used to calculate the guideline.

Parameters Used to Calculate Guidelines

Analyte	Units	FAL-ST [1,2]	FAL-LT [1,2]	MAL-ST [1]	MAL-LT [1,2]	Values: SQU US1 (Upstream)	Values: SQU DS1 (Downstream)
pH (field)	pH units	Field pH taken using handheld meters during sampling used in calculations				6.1	6.3
Temperature (field)	°C	Field temperature taken using handheld meters during sampling used in calculations				14.2	15.4
Turbidity (field)	NTU	Field turbidity taken using handheld meters during sampling used in calculations				245.00	197.00
Hardness (as CaCO3) (total)	mg/L	Laboratory tested total hardness taken at each respective sample site on the day of sampling used in guideline calculations				21.4	18.5
Dissolved Organic Carbon (DOC)	mg/L	Laboratory tested dissolved organic carbon tested at the lab used in guideline calculations				0.5	0.5
Total Alkalinity ($CaCO_3$)	mg/L	Laboratory tested total alkalinity used in calculations				9.2	7.8
Chloride	mg/L	Laboratory tested chloride taken at each respective sample site on the day of sampling used in guideline calculations				1.08	0.85

BCR Site Receiving Environment Lab Documentation

CERTIFICATE OF ANALYSIS

Work Order	: **VA24B9484**	Page	: 1 of 6
Client	: **Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone	: ----	Telephone	
Project	: 11964	Date Samples Received	: 07-Aug-2024 08:09
PO	: 11964 -Task 20- Phase 3C-4C	Date Analysis Commenced	: 07-Aug-2024
C-O-C number	: ----	Issue Date	: 14-Aug-2024 14:48
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
	Lab Assistant	Metals, Burnaby, British Columbia
	Analyst- General	Inorganics, Burnaby, British Columbia
	Production Manager, Environmental	Metals, Waterloo, Ontario
	Technical Specialist	Inorganics, Waterloo, Ontario
	Technical Specialist	Metals, Waterloo, Ontario
	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
	Department Manager - Metals	Inorganics, Burnaby, British Columbia
	Lab Assistant	Inorganics, Burnaby, British Columbia
		Metals, Burnaby, British Columbia
	Account Manager Assistant	Administration, Burnaby, British Columbia
	Analyst	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
°C	degrees celsius
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	Client Id	*Comment*
VA24B9484-001	SQU US 1	Water sample for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
HTDC	*Hold time exceeded for dilution or re-analysis. Reported results are consistent with initial results (tested within hold time), and are valid and defensible.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SQU US 1	SQU DS 1	----	----	----
					Client sampling date / time	06-Aug-2024 09:55	06-Aug-2024 10:48	----	----	----
						VA24B9484-001	VA24B9484-002	--------	--------	--------
						Result	Result	----	----	----
Field Tests										
Conductivity, field	----	EF001/VA	0.01	µS/cm		26.000	25.000	----	----	----
pH, field	----	EF001/VA	0.01	pH units		6.10	6.30	----	----	----
Temperature, field	----	EF001/VA	0.01	°C		14.2	15.4	----	----	----
Physical Tests										
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		9.23	8.21	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		21.4	18.5	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L		48	44	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		292	169	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L		9.2	7.8	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L		0.0962	0.0591	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L		1.08	0.85	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L		<0.020	<0.020	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L		0.0142 HTDC	0.0118 HTDC	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L		0.174	0.124	----	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L		0.213	0.190	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L		2.52	2.17	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		<0.50	<0.50	----	----	----
Total Sulfides										
Sulfide, total (as S)	18496-25-8	E395/VA	0.0015	mg/L		<0.0015	<0.0015	----	----	----
Sulfide, un-ionized (as H2S), from total	7783-06-4	EC395/VA	0.0015	mg/L		<0.0015	<0.0015	----	----	----
Sulfide, total (as H2S)	7783-06-4	E395/VA	0.0016	mg/L		<0.0016	<0.0016	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		6.64	5.35	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SQU US 1	SQU DS 1	----	----	----
					Client sampling date / time	06-Aug-2024 09:55	06-Aug-2024 10:48	----	----	----
						VA24B9484-001	VA24B9484-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00043	0.00045	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0690	0.0598	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	<0.000100	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		<0.010	<0.010	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000768	0.000360	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		5.92	4.87	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000166	0.000151	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		0.00153	0.00152	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.00131	0.00131	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00713	0.00617	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		2.85	2.70	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000819	0.000722	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0026	0.0023	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		1.61	1.55	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.0744	0.0751	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000417	0.000352	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.00168	0.00166	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		0.196	0.185	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		1.84	1.89	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00443	0.00430	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		11.0	9.08	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		0.000039	0.000015	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		3.59	2.56	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.0690	0.0544	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		<0.50	<0.50	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		0.000028	0.000028	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SQU US 1	SQU DS 1	----	----	----
					Client sampling date / time	06-Aug-2024 09:55	06-Aug-2024 10:48	----	----	----
						VA24B9484-001	VA24B9484-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00030 DLM	<0.00020 DLM	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.175	0.178	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000110	0.000116	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		0.00741	0.00717	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.0987	0.0506	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00060 DLM	<0.00060 DLM	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.199	0.158	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00014	0.00016	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.00510	0.00494	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	<0.000100	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		<0.010	<0.010	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		3.05	2.72	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		0.000014	0.000010	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00069	0.00054	----	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.085	0.069	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		0.393	0.344	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.00922	0.00784	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000367	0.000322	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SQU US 1	SQU DS 1	----	----	----
					Client sampling date / time	06-Aug-2024 09:55	06-Aug-2024 10:48	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24B9484-001	VA24B9484-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		0.613	0.660	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00094	0.00096	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		3.25	2.68	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		1.36	1.10	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.0202	0.0173	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		0.61	0.53	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		0.00544	0.00510	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000016	0.000016	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		0.00113	0.00103	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.0011	<0.0010	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Laboratory	Laboratory	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Laboratory	Laboratory	----	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532/WT	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Chromium, trivalent [Cr III], total	16065-83-1	EC535/WT	0.00050	mg/L		0.00153	0.00152	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24B9484**	Page	: 1 of 15
Client	: **Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone		Telephone	
Project	: 11964	Date Samples Received	: 07-Aug-2024 08:09
PO	: 11964 -Task 20- Phase 3C-4C	Issue Date	: 14-Aug-2024 14:48
C-O-C number	: ----		
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Anions and Nutrients	QC-MRG7-1586014 001	----	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0225 B mg/L	0.005 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) SQU US 1	E298	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	12-Aug-2024	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) SQU DS 1	E298	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	12-Aug-2024	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE SQU US 1	E235.Br-L	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE SQU DS 1	E235.Br-L	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE SQU US 1	E235.Cl	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE SQU DS 1	E235.Cl	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE SQU US 1	E235.F	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE SQU DS 1	E235.F	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE SQU US 1	E235.NO3-L	06-Aug-2024	08-Aug-2024	3 days	2 days	✓	08-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE SQU DS 1	E235.NO3-L	06-Aug-2024	08-Aug-2024	3 days	2 days	✓	08-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE SQU US 1	E235.NO2-L	06-Aug-2024	08-Aug-2024	3 days	2 days	✓	08-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE SQU DS 1	E235.NO2-L	06-Aug-2024	08-Aug-2024	3 days	2 days	✓	08-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE SQU US 1	E235.SO4	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE SQU DS 1	E235.SO4	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) SQU US 1	E366	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	3 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) SQU DS 1	E366	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
SQU US 1	E372-U	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	11-Aug-2024	28 days	5 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
SQU DS 1	E372-U	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	11-Aug-2024	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
SQU US 1	E509	06-Aug-2024	07-Aug-2024	28 days	1 days	✓	07-Aug-2024	28 days	1 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
SQU DS 1	E509	06-Aug-2024	07-Aug-2024	28 days	1 days	✓	07-Aug-2024	28 days	1 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
SQU US 1	E421	06-Aug-2024	07-Aug-2024	180 days	1 days	✓	08-Aug-2024	180 days	2 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
SQU DS 1	E421	06-Aug-2024	07-Aug-2024	180 days	1 days	✓	08-Aug-2024	180 days	2 days	✓
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - total (lab preserved)										
SQU US 1	EF001	06-Aug-2024	----	----	----		14-Aug-2024	----	8 days	
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial - total (lab preserved)										
SQU DS 1	EF001	06-Aug-2024	----	----	----		14-Aug-2024	----	8 days	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
SQU US 1	E358-L	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SQU DS 1	E358-L	06-Aug-2024	08-Aug-2024	28 days	2 days	✓	08-Aug-2024	28 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE SQU US 1	E290	06-Aug-2024	08-Aug-2024	14 days	2 days	✓	08-Aug-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE SQU DS 1	E290	06-Aug-2024	08-Aug-2024	14 days	2 days	✓	08-Aug-2024	14 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE SQU DS 1	E162	06-Aug-2024	----	----	----		09-Aug-2024	7 days	3 days	✓
Physical Tests : TDS by Gravimetry										
HDPE SQU US 1	E162	06-Aug-2024	----	----	----		09-Aug-2024	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SQU US 1	E160	06-Aug-2024	----	----	----		09-Aug-2024	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SQU DS 1	E160	06-Aug-2024	----	----	----		09-Aug-2024	7 days	3 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide) SQU US 1	E532	06-Aug-2024	----	----	----		09-Aug-2024	28 days	3 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide) SQU DS 1	E532	06-Aug-2024	----	----	----		09-Aug-2024	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
HDPE - total (lab preserved) SQU US 1	E508	06-Aug-2024	13-Aug-2024	0 hrs	158 hrs	× UCP	13-Aug-2024	0 hrs	158 hrs	× UCP
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) SQU DS 1	E508	06-Aug-2024	13-Aug-2024	28 days	7 days	✓	13-Aug-2024	28 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SQU US 1	E420	06-Aug-2024	08-Aug-2024	180 days	2 days	✓	09-Aug-2024	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SQU DS 1	E420	06-Aug-2024	08-Aug-2024	180 days	2 days	✓	09-Aug-2024	180 days	3 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) SQU US 1	E395	06-Aug-2024	----	----	----		13-Aug-2024	7 days	7 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide) SQU DS 1	E395	06-Aug-2024	----	----	----		13-Aug-2024	7 days	7 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

UCP: Unsuitable Container and/or Preservative used (invalidates standard hold time). Maximum hold time of zero applied. Test results may be biased low / unreliable, and may not meet regulatory requirements.

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1586011	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	1585766	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1586016	1	2	50.0	5.0	✓
Chloride in Water by IC	E235.Cl	1586015	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1583853	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1582722	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585759	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	1586014	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1586017	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1586018	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1586019	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1588424	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1586959	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1592206	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1583309	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1585767	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1585764	1	12	8.3	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1593678	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	1588422	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1586011	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	1585766	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1586016	1	2	50.0	5.0	✓
Chloride in Water by IC	E235.Cl	1586015	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1583853	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1582722	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585759	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	1586014	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1586017	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1586018	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1586019	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1588424	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1586959	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1592206	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1583309	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1585767	1	5	20.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1585764	1	12	8.3	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1593678	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	1588422	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1586011	1	6	16.6	5.0	✓
Ammonia by Fluorescence	E298	1585766	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1586016	1	2	50.0	5.0	✓
Chloride in Water by IC	E235.Cl	1586015	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1583853	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1582722	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585759	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	1586014	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1586017	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1586018	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1586019	1	7	14.2	5.0	✓
TDS by Gravimetry	E162	1588424	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1586959	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1592206	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1583309	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1585767	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1585764	1	12	8.3	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1593678	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	1588422	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1585766	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1586016	1	2	50.0	5.0	✓
Chloride in Water by IC	E235.Cl	1586015	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1583853	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1582722	1	18	5.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585759	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	1586014	1	2	50.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1586017	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1586018	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1586019	1	7	14.2	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1586959	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1592206	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1583309	1	20	5.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1585767	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1585764	1	12	8.3	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Total Sulfide by Colourimetry (Automated Flow)	E395	1593678	1	17	5.8	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	Chinchilla Scientific Nitrate Method, 2011	Following digestion, total nitrogen is is determined colourimetrically using a discrete analyzer utilizing the vanadium chloride reduction method. This method of analysis is approved under US EPA 40 CFR Part 136 (May 2021).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Sulfide by Colourimetry (Automated Flow)	E395 ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methlyene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H_2S concentration based on the total sulfide concentration in the sample. The H_2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Waterloo	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. Results are based on an un-filtered, field-preserved sample.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Un-ionized Total Hydrogen Sulfide (calculated)	EC395 ALS Environmental - Vancouver	Water	APHA 4500 -S H	Un-ionized sulfide is calculated using results from total sulfide analysis, pH, temperature, and ionic strength of the sample. Calculation of un-ionized sulfide using total sulfide concentrations may be biased high due to particulate forms of sulfide measured during total sulfide testing.
Total Trivalent Chromium (Cr III) by Calculation	EC535 ALS Environmental - Waterloo	Water	APHA 3030B/6020A/EPA 7196A (mod)	Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results.
Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3 or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples for total nitrogen analysis are digested using a heated persulfate digestion. Nitrogen compounds are converted to nitrate in this digestion.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **VA24B9484**	Page	: 1 of 17
Client	: Triton Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	:	Account Manager	:
Address	:	Address	:
Telephone	:	Telephone	:
Project	: 11964	Date Samples Received	: 07-Aug-2024 08:09
PO	: 11964 -Task 20- Phase 3C-4C	Date Analysis Commenced	: 07-Aug-2024
C-O-C number	: ----	Issue Date	: 14-Aug-2024 14:48
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
	Analyst- General	Vancouver Inorganics, Burnaby, British Columbia
	Production Manager, Environmental	Waterloo Metals, Waterloo, Ontario
	Technical Specialist	Waterloo Inorganics, Waterloo, Ontario
	Technical Specialist	Waterloo Metals, Waterloo, Ontario
	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
	Department Manager - Metals	Vancouver Inorganics, Burnaby, British Columbia
	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
		Vancouver Metals, Burnaby, British Columbia
	Account Manager Assistant	Vancouver Administration, Burnaby, British Columbia
	Analyst	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1586011)											
VA24B9715-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	73.9	73.7	0.271%	20%	----
Physical Tests (QC Lot: 1588422)											
VA24B9306-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	5.4	5.6	0.2	Diff <2x LOR	----
Physical Tests (QC Lot: 1588424)											
VA24B9306-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	404	410	1.23%	20%	----
Anions and Nutrients (QC Lot: 1585764)											
FJ2402249-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0031	0.0034	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1585766)											
FJ2402249-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.158	0.160	1.27%	20%	----
Anions and Nutrients (QC Lot: 1585767)											
VA24B9484-001	SQU US 1	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.174	0.170	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586014)											
VA24B9484-001	SQU US 1	Fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586015)											
VA24B9484-001	SQU US 1	Chloride	16887-00-6	E235.Cl	0.50	mg/L	1.08	0.98	0.10	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586016)											
VA24B9484-001	SQU US 1	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586017)											
VA24B9484-001	SQU US 1	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0142	0.0144	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586018)											
VA24B9484-001	SQU US 1	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586019)											
VA24B9484-001	SQU US 1	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.52	2.52	0.003	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1585759)											
FJ2402249-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.85	1.90	0.04	Diff <2x LOR	----
Total Sulfides (QC Lot: 1593678)											
CG2411053-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
Total Metals (QC Lot: 1583309)											
VA24B9459-021	Anonymous	Aluminum, total	7429-90-5	E420	1.50	mg/L	7.70	7.18	0.520	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.0500	mg/L	0.0950	0.0862	0.00887	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1583309) - continued											
VA24B9459-021	Anonymous	Arsenic, total	7440-38-2	E420	0.0500	mg/L	0.0916	0.0829	0.00876	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.0500	mg/L	0.705	0.847	18.3%	20%	----
		Beryllium, total	7440-41-7	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	5.00	mg/L	<5.00	<5.00	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.00250	mg/L	11.6	11.1	4.03%	20%	----
		Calcium, total	7440-70-2	E420	25.0	mg/L	454	430	5.39%	20%	----
		Cesium, total	7440-46-2	E420	0.00500	mg/L	0.0102	0.0102	0.000014	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.0500	mg/L	1.90	1.86	2.16%	20%	----
		Copper, total	7440-50-8	E420	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	5.00	mg/L	510	499	2.20%	20%	----
		Lead, total	7439-92-1	E420	0.0250	mg/L	2.77	2.76	0.500%	20%	----
		Lithium, total	7439-93-2	E420	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	2.50	mg/L	333	324	2.76%	20%	----
		Manganese, total	7439-96-5	E420	0.0500	mg/L	85.5	82.6	3.42%	20%	----
		Molybdenum, total	7439-98-7	E420	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.250	mg/L	4.65	4.56	1.90%	20%	----
		Phosphorus, total	7723-14-0	E420	25.0	mg/L	<25.0	<25.0	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	25.0	mg/L	<25.0	<25.0	0	Diff <2x LOR	----
		Rubidium, total	7440-17-7	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	50.0	mg/L	<50.0	<50.0	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	25.0	mg/L	36.8	35.2	1.61	Diff <2x LOR	----
		Strontium, total	7440-24-6	E420	0.100	mg/L	3.70	3.51	5.27%	20%	----
		Sulfur, total	7704-34-9	E420	250	mg/L	1630	1670	37.8	Diff <2x LOR	----
		Tellurium, total	13494-80-9	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.00500	mg/L	0.129	0.124	4.25%	20%	----
		Thorium, total	7440-29-1	E420	0.0500	mg/L	<0.0500	<0.0500	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.0500	mg/L	<0.0500	<0.0500	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.150	mg/L	<0.150	<0.150	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.0500	mg/L	<0.0500	<0.0500	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.00500	mg/L	0.204	0.194	5.29%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1583309) - continued											
VA24B9459-021	Anonymous	Vanadium, total	7440-62-2	E420	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	1.50	mg/L	1430	1350	5.74%	20%	----
		Zirconium, total	7440-67-7	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
Total Metals (QC Lot: 1592206)											
VA24B9185-001	Anonymous	Mercury, total	7439-97-6	E508	0.000500	mg/L	0.0160	0.0160	0.250%	20%	----
Dissolved Metals (QC Lot: 1582722)											
YL2401074-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0102	0.0095	0.0007	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00220	0.00224	2.09%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0147	0.0143	2.39%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0216	0.0216	0.345%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.012	0.013	0.0002	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	19.6	19.4	0.955%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00145	0.00144	0.000006	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.014	0.014	0.00004	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0031	0.0032	0.00006	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	6.29	6.09	3.26%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00022	0.00024	0.00002	Diff <2x LOR	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000480	0.000493	0.000013	Diff <2x LOR	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00082	0.00082	0.000003	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	1.32	1.30	1.85%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00179	0.00177	0.00002	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000086	0.000103	0.000016	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.507	0.520	2.46%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	7.27	7.19	1.04%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.116	0.113	1.98%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 1582722) - continued											
YL2401074-001	Anonymous	Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	9.17	8.86	3.50%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000381	0.000394	3.13%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1583853)											
VA24B5657-010	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	0.0191 µg/L	0.0000204	0.0000013	Diff <2x LOR	----
Speciated Metals (QC Lot: 1586959)											
VA24B9484-001	SQU US 1	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1586011)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1588422)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1588424)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1585764)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1585766)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1585767)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1586014)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1586015)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1586016)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1586017)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	# 0.0225	B
Anions and Nutrients (QCLot: 1586018)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1586019)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Organic / Inorganic Carbon (QCLot: 1585759)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Sulfides (QCLot: 1593678)						
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----
Total Metals (QCLot: 1583309)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1583309) - continued						
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1592206)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1582722)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1582722) - continued						
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 1583853)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Speciated Metals (QCLot: 1586959)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----

Qualifiers

Qualifier	Description
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1586011)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	104	85.0	115	----
Physical Tests (QCLot: 1588422)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	100	85.0	115	----
Physical Tests (QCLot: 1588424)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 1585764)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.7	80.0	120	----
Anions and Nutrients (QCLot: 1585766)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 1585767)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1586014)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1586015)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1586016)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
Anions and Nutrients (QCLot: 1586017)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1586018)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1586019)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Organic / Inorganic Carbon (QCLot: 1585759)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	97.0	80.0	120	----
Total Sulfides (QCLot: 1593678)									
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	95.2	80.0	120	----
Total Metals (QCLot: 1583309)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1583309) - continued									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	99.7	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.7	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.3	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.6	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	95.4	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.4	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.7	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	106	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	97.0	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	97.3	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	104	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	92.8	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	86.1	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	94.0	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	86.2	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	89.8	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.4	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	100	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	98.6	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1583309) - continued									
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	103	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.8	80.0	120	----
Total Metals (QCLot: 1592206)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	97.9	80.0	120	----
Dissolved Metals (QCLot: 1582722)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	108	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	108	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	103	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.2	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	100	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	93.4	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	105	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	99.2	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	109	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.0	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1582722) - continued									
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	94.1	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	104	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.6	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.9	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	97.3	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	87.6	80.0	120	----
Speciated Metals (QCLot: 1586959)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	100	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1585764)										
VA24B8815-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0493 mg/L	0.05 mg/L	98.7	70.0	130	----
Anions and Nutrients (QCLot: 1585766)										
VA24B8815-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1585767)										
VA24B9484-002	SQU DS 1	Nitrogen, total	7727-37-9	E366	0.411 mg/L	0.4 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 1586014)										
VA24B9484-002	SQU DS 1	Fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1586015)										
VA24B9484-002	SQU DS 1	Chloride	16887-00-6	E235.Cl	103 mg/L	100 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1586016)										
VA24B9484-002	SQU DS 1	Bromide	24959-67-9	E235.Br-L	0.516 mg/L	0.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1586017)										
VA24B9484-002	SQU DS 1	Nitrate (as N)	14797-55-8	E235.NO3-L	2.46 mg/L	2.5 mg/L	98.3	75.0	125	----
Anions and Nutrients (QCLot: 1586018)										
VA24B9484-002	SQU DS 1	Nitrite (as N)	14797-65-0	E235.NO2-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1586019)										
VA24B9484-002	SQU DS 1	Sulfate (as SO4)	14808-79-8	E235.SO4	103 mg/L	100 mg/L	103	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1585759)										
VA24B8815-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.20 mg/L	5 mg/L	104	70.0	130	----
Total Sulfides (QCLot: 1593678)										
CG2411053-002	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.194 mg/L	0.2 mg/L	97.0	75.0	125	----
Total Metals (QCLot: 1583309)										
VA24B9459-022	Anonymous	Aluminum, total	7429-90-5	E420	95.9 mg/L	100 mg/L	95.9	70.0	130	----
		Antimony, total	7440-36-0	E420	8.97 mg/L	10 mg/L	89.7	70.0	130	----
		Arsenic, total	7440-38-2	E420	9.93 mg/L	10 mg/L	99.3	70.0	130	----
		Barium, total	7440-39-3	E420	9.94 mg/L	10 mg/L	99.4	70.0	130	----
		Beryllium, total	7440-41-7	E420	20.3 mg/L	20 mg/L	102	70.0	130	----
		Bismuth, total	7440-69-9	E420	4.85 mg/L	5 mg/L	96.9	70.0	130	----
		Boron, total	7440-42-8	E420	50.2 mg/L	50 mg/L	100	70.0	130	----
		Cadmium, total	7440-43-9	E420	ND mg/L	----	ND	70.0	130	----
		Calcium, total	7440-70-2	E420	2000 mg/L	2000 mg/L	99.8	70.0	130	----
		Cesium, total	7440-46-2	E420	4.63 mg/L	5 mg/L	92.6	70.0	130	----
		Chromium, total	7440-47-3	E420	19.3 mg/L	20 mg/L	96.3	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1583309) - continued										
VA24B9459-022	Anonymous	Cobalt, total	7440-48-4	E420	9.55 mg/L	10 mg/L	95.5	70.0	130	----
		Copper, total	7440-50-8	E420	9.55 mg/L	10 mg/L	95.5	70.0	130	----
		Iron, total	7439-89-6	E420	915 mg/L	1000 mg/L	91.5	70.0	130	----
		Lead, total	7439-92-1	E420	9.58 mg/L	10 mg/L	95.8	70.0	130	----
		Lithium, total	7439-93-2	E420	49.4 mg/L	50 mg/L	98.7	70.0	130	----
		Magnesium, total	7439-95-4	E420	464 mg/L	500 mg/L	92.8	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	9.21 mg/L	10 mg/L	92.1	70.0	130	----
		Nickel, total	7440-02-0	E420	19.1 mg/L	20 mg/L	95.4	70.0	130	----
		Phosphorus, total	7723-14-0	E420	4690 mg/L	5000 mg/L	93.8	70.0	130	----
		Potassium, total	7440-09-7	E420	2020 mg/L	2000 mg/L	101	70.0	130	----
		Rubidium, total	7440-17-7	E420	9.82 mg/L	10 mg/L	98.2	70.0	130	----
		Selenium, total	7782-49-2	E420	17.8 mg/L	20 mg/L	89.0	70.0	130	----
		Silicon, total	7440-21-3	E420	4590 mg/L	5000 mg/L	91.8	70.0	130	----
		Silver, total	7440-22-4	E420	1.83 mg/L	2 mg/L	91.5	70.0	130	----
		Sodium, total	7440-23-5	E420	1040 mg/L	1000 mg/L	104	70.0	130	----
		Strontium, total	7440-24-6	E420	9.30 mg/L	10 mg/L	93.0	70.0	130	----
		Sulfur, total	7704-34-9	E420	9310 mg/L	10000 mg/L	93.1	70.0	130	----
		Tellurium, total	13494-80-9	E420	19.1 mg/L	20 mg/L	95.4	70.0	130	----
		Thallium, total	7440-28-0	E420	1.87 mg/L	2 mg/L	93.6	70.0	130	----
		Thorium, total	7440-29-1	E420	9.91 mg/L	10 mg/L	99.1	70.0	130	----
		Tin, total	7440-31-5	E420	9.21 mg/L	10 mg/L	92.1	70.0	130	----
		Titanium, total	7440-32-6	E420	19.5 mg/L	20 mg/L	97.6	70.0	130	----
		Tungsten, total	7440-33-7	E420	9.26 mg/L	10 mg/L	92.6	70.0	130	----
		Uranium, total	7440-61-1	E420	1.89 mg/L	2 mg/L	94.7	70.0	130	----
		Vanadium, total	7440-62-2	E420	48.7 mg/L	50 mg/L	97.4	70.0	130	----
		Zinc, total	7440-66-6	E420	ND mg/L	----	ND	70.0	130	----
		Zirconium, total	7440-67-7	E420	18.7 mg/L	20 mg/L	93.3	70.0	130	----
Total Metals (QCLot: 1592206)										
VA24B9432-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000963 mg/L	0 mg/L	96.3	70.0	130	----
Dissolved Metals (QCLot: 1582722)										
YL2401074-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	99.0	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00961 mg/L	0.01 mg/L	96.1	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.094 mg/L	0.1 mg/L	93.6	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00387 mg/L	0.004 mg/L	96.6	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00956 mg/L	0.01 mg/L	95.6	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1582722) - continued										
YL2401074-002	Anonymous	Copper, dissolved	7440-50-8	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	96.0	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0978 mg/L	0.1 mg/L	97.8	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.6 mg/L	10 mg/L	106	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.84 mg/L	4 mg/L	96.0	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.76 mg/L	10 mg/L	97.6	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	19.6 mg/L	20 mg/L	97.8	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0189 mg/L	0.02 mg/L	94.6	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0366 mg/L	0.04 mg/L	91.6	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0983 mg/L	0.1 mg/L	98.3	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.378 mg/L	0.4 mg/L	94.4	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
Dissolved Metals (QCLot: 1583853)										
VA24B9224-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000869 mg/L	0 mg/L	86.9	70.0	130	----
Speciated Metals (QCLot: 1586959)										
VA24B9484-001	SQU US 1	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0406 mg/L	0.04 mg/L	101	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 -

Page 1 of

Report To	Contact and company name below will appear on the final report
Company:	Triton Environmental
Contact:	
Phone:	
	eport
Street:	
City/Province:	
Postal Code:	
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☑ PDF ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	
Email 3	

Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☑ MAIL ☑ FAX
Email 1 or Fax	
Email 2	

Project Information	
ALS Account # / Quote #:	VA23-TRIT100-012
Job #:	11964
PO / AFE:	11964 - Task 20 - Phase 3C-4C
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): B9484

ALS Contact: Sampler:

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ | 3 day [P3-25%] ☐ | 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ | Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total metals + mercury	Dissolved metals + mercury	Total hexavalent chromium	Total trivalent chromium	TSS	TDS	Nutrients (ammonia, ammonium, total nitrogen, total phosphorus)	Total sulfide (low) (as H2S), Unionized Sulfide (low)	Anions scan (Br, Cl, F, NO2, NO3, SO4)	General parameters (alkalinity)	DOC	SAMPLES ON HOLD	Sample is hazardous (please provide further detail)	NUMBER OF CONTAINERS
						F					P	P			F/P			
	SQU US 1			Water	R	R	R	R	R	R	R	R	R	R	R		N	9
	pH: 6.10 cond: 26 temp: 14.2	06/08/24	9:55am															
	SQU DS 1			Water	R	R	R	R	R	R	R	R	R	R	R		N	9
	pH: 6.30 cond: 25 temp: 15.4	06/08/24	10:48am															
	~~Duplicate~~			Water	~~R~~	~~R~~	~~R~~	~~R~~									~~N~~	~~9~~
	~~Field Blank~~			Water	~~R~~	~~R~~	~~R~~	~~R~~									~~N~~	~~9~~
	~~Trip Blank~~			Water	~~R~~		~~R~~	~~R~~									~~N~~	~~6~~

Environmental Division
Vancouver
Work Order Reference
VA24B9484

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ ☑ NO	Dissolved metals, dissolved mercury, and dissolved nutrients need to be filtered since it was not possible in field
Are samples for human consumption/ use? ☐ ☑ NO	Triton Project # 11964

Frozen ☐ | Ice Packs ☐ | Cooling Initiated ☐ (only) No ☐ No ☐

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	12°C

SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Aug 6/2024	12:50					6th Aug	12.50pm

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

warm Icepacks

BCR Site Receiving Environment Field Notes and Logs

FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-8-6-Chycoski-96CA1

Project Component:	Tunnel	**Site Name:**	Receiving Environment - Downstream of Discharge
Inspection Date:	08/06/2024	**Location:**	BC Rail Site
Triton QP:	Lily Chycoski	**Latitude/Longitude:**	49.725282 -123.165175
Temperature(c):	Low 14 High 26	**Permit:**	AE 111824
Weather Conditions:	Clear	**Ground Conditions:**	Dry

Observations

Time: 10:48:00 **Flow Volume (visual):** moderate

Notes: Conductivity: 25 micro Siemens per cm
Turbidity: measured in ratiometric units due to being over range.
Unable to filter bottles due to turbidity - will mention on the COC.

Odour Detected?:	No	**Notes:**	
Unusual Colour?	No	**Notes:**	
Unusual Observations?	No	**Notes:**	
Sheen on Water?	No	**Notes:**	

Samples Collected - Parameters

Total Metals + Mercury	Yes	**General Parameters (Alkalinity)**	Yes	**Other Sample:**	
Dissolved Metals + Mercury	Yes	**Total Sulfide, Unionized Sulfide**	Yes		
TSS	Yes	**Anions**	Yes		
TDS	Yes	**Total Trivalent Chromium**	Yes	**QA Samples:**	No
Nutrients	Yes	**VOC/VPH**	No		
DOC	Yes	**EPH, PAH, LEPH/HEPH**	No		
		Trout LC50	No		

Logger Maintenance

Logger Maintenance Performed?	Yes	**Photo of COC with Lab Signature?**	Yes

Describe Logger Maintenance

Cleaned sonde

Photos

Photo: 1

Location: SQU DS1

Description: Up view

Photo: 2

Location: SQU DS1

Description: Across view

Photos

Photo: 3

Location: SQU DS1

Description: Down view

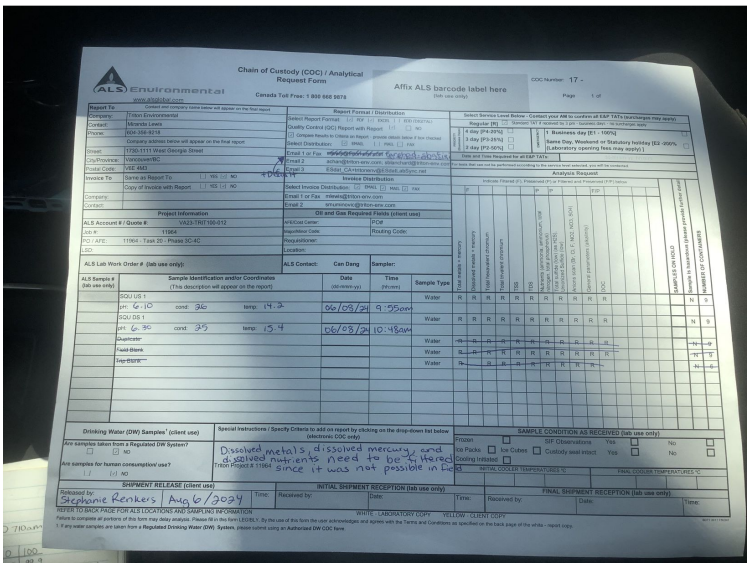

Photo: 4

Location: SQU DS 1

Description: Signed lab COC

Sign Off

Report Prepared By:	Lily Chycoski	**Report Reviewed:**	Yes
Report Reviewer:		**Professional(s) of Record:**	
Name:			
Designation:			
Designation Number:			

FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-8-6-Chycoski-6CDCC

Project Component:	Tunnel	**Site Name:**	Receiving Environment - Upstream of Discharge
Inspection Date:	08/06/2024	**Location:**	BC Rail Site
Triton QP:	Lily Chycoski	**Latitude/Longitude:**	49.726866 -123.163912
Temperature(c):	Low 14 High 26	**Permit:**	AE 111824
Weather Conditions:	Clear	**Ground Conditions:**	Dry

Observations

Time: 10:03:11 **Flow Volume (visual):** moderate

Notes: Conductivity: 26 micro Siemens per cm
Turbidity: measured in ratiometric units due to being over range.
Unable to pull sonde out of the river for maintenance. Stuck on rock.
Unable to filter bottles due to turbidity - will mention on the COC

Odour Detected?:	No	**Notes:**	
Unusual Colour?	No	**Notes:**	
Unusual Observations?	No	**Notes:**	
Sheen on Water?	No	**Notes:**	

Samples Collected - Parameters

Total Metals + Mercury	Yes	**General Parameters (Alkalinity)**	Yes	**Other Sample:**	
Dissolved Metals + Mercury	Yes	**Total Sulfide, Unionized Sulfide**	Yes		
TSS	Yes	**Anions**	Yes		
TDS	Yes	**Total Trivalent Chromium**	Yes	**QA Samples:**	No
Nutrients	Yes	**VOC/VPH**	No		
DOC	Yes	**EPH, PAH, LEPH/HEPH**	No		
		Trout LC50	No		

Logger Maintenance

Logger Maintenance Performed?	No	**Photo of COC with Lab Signature?**	Yes

Describe Logger Maintenance

Photos

Photo: 1

Location: SQU US1

Description: Up view

Photo: 2

Location: SQU US1

Description: Across view

Photos

Photo: 3

Location: SQU US1

Description: Down view

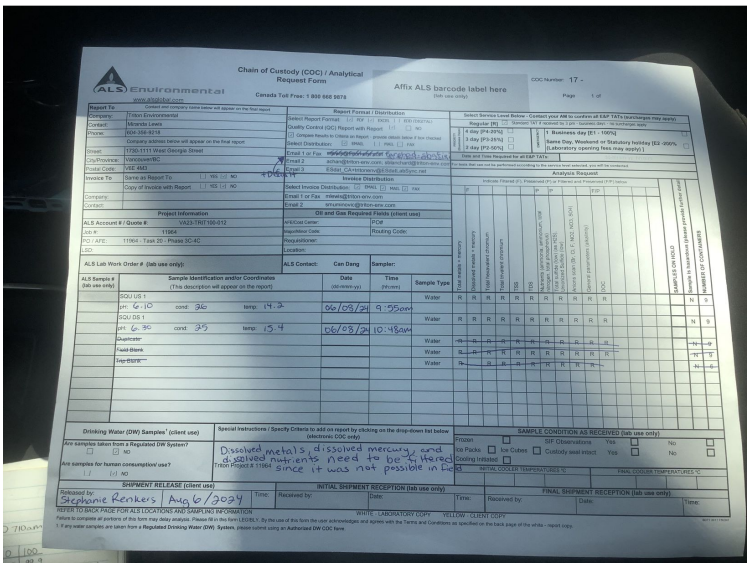

Photo: 4

Location: SQU US1

Description: Signed lab COC

Sign Off

Report Prepared By:	Lily Chycoski	**Report Reviewed:**	Yes
Report Reviewer:		**Professional(s) of Record:**	
Name:			
Designation:			
Designation Number:			

Appendix C: Woodfibre Site Point of Discharge from Water Treatment Plant Documentation

Woodfibre Site Sample Analysis
No Discharge

Woodfibre Site Sample Lab Documentation
No Discharge

Woodfibre Site WTP Discharge Field Notes and Logs
No Discharge

Appendix D: Woodfibre Site Receiving Environment Documentation

Woodfibre Site Receiving Environment Sample Analysis

	Sample ID	Reviewed and signed off by:			Farshad Shafiei Ph.D., R.P.Bio.	WLNG US1 (Upstream)	WLNG DS 1 (Downstream)	Sample or value notes	BCWQ FAL - Short Term	BCWQ FAL - Long Term	BCWQ MAL - Short Term	BCWQ MAL - Long Term
	LAB ID					VA24B9683-001	VA24B9683-002					
	Date Sampled					07-Aug-2024	07-Aug-2024					
	Time Sampled					10:30	13:56					
Analyte	Units	FAL-ST [1,2]	FAL-LT [1,2]	MAL-ST [1]	MAL-LT [1,2]	Water	Water					
						N/A	N/A		Guideline notes			
In Situ Parameters												
pH (field)	pH units	6.5-9.0	6.5-9.0	7.0-8.7	7.0-8.7	7.55	7.72		If natural pH < 6.5, no statisticaly significant decrease from background. No restriction in increase except in areas with unique flora or fauna. Unrestricted change permitted within range of 6.5 to 9.0. If natural pH > 9.0, no statistically significant increase from background. Refer to BC Water Quality Guidelines for more information.		Unrestricted change within this range (for protection of mollusc embryo development).	
Temperature (field)	°C	Short-term daily temperature guideline is 19°C for streams with unknown fish distribution Max +/- from BKG 1°C [4]	-	Short-term daily temperature guideline is 19°C for streams with unknown fish distribution Max +/- from BKG 1°C [4]	-	25.6 (Likely inaccuarte because the recorded realtime temperature by sonde was 16.7)	**19.7**	**Temperature exceeds the Maximum Daily Tamperature of 19°C.** Temperature cannot be compared accurately to guidelines because it is only measured once discretely each week, not collected throughout the week.	Guideline is species-dependent. Short-term daily temperature guideline is 19°C for streams with unknown fish distribution. Refer to footnote 4 for background temperature range for East Creek. Refer to BC Water Quality Guidelines for more information Hourly rate of change not to exceed 1°C. Calculation: US value +/- 1 = guideline range		Guideline for marine waters are based on natural ambient conditions. Max and min. 1°C change from natural condition. Natural temperature cycle characteristic of the site should not be altered in amplitude or frequency by human activities. Max rate of any human-induced temperature change not to exceed 0.5°C hourly. treams with unknown fish distribution. Refer to footnote 4 for background temperature range for East Creek. Calculation: US value +/- 1 = guideline range	
Conductivity (field)	µS/cm	-	-	-	-	59	220					
Turbidity (field)	NTU	Varies with background, see note	Varies with background, see note	Varies with background, see note	Varies with background, see note	3.10	6.10		Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 8 = DS guideline Change from background of 5 NTU at any time when background is 8 - 50 NTU during high flows or in turbid waters. Calculation: US value + 5 = DS guideline Change from background of 10% when background is > 50 NTU at any time during high flows or in turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 2 NTU at any one time for 30 days in clear flows. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Oxygen (field)	mg/L	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	Varies with life stage, see note	8.54	-		Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 9 mg/L, all other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.	Buried embryo/alevin minimum 11 mg/L, all other life stages 8 mg/L. Refer to BC Water Quality Guidelines for more information.
General Parameters												
Hardness (as $CaCO_3$) (total)	mg/L	-	-	-	-	9.09	73.5					
Total Dissolved Solids	mg/L	-	-	-	-	26	84					
Total Suspended Solids	mg/L	Varies with background, see note	Varies with background, see note	Varies with background, see note	Varies with background, see note	< 3.0	< 3.0		Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100 mg/L at any time during high flows or turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.	Change from background of 25 mg/L at any one time for duration of 24 h in all waters during clear flows or in clear waters. Calculation: US value + 25 = DS guideline Change from background of 10 mg/L at any one time when background 25-100 mg/L during high flows or turbid waters. Calculation: US value + 10 = DS guideline Change from background of 10% when background is > 100 mg/L at any time during high flows or turbid waters. Calculation: US value + (US value*0.1) = DS guideline	Change from background of 5 mg/L @ one time for a druation of 30 days in clear flow. Note that a rolling average of US values over a 30-day period is required to properly calculate this guideline. Guideline calculated in this spreadsheet using US concentration at the time of sampling.
Dissolved Organic Carbon (DOC)	mg/L	-	-	-	-	1.9	2.22			Long-term (30-day) median within 20% of background median [3]		
Total Alkalinity ($CaCO_3$)	mg/L	-	Categorical	-	-	10.1	78.2	The upstream location has medium sensitivity to acid inputs (i.e. medium buffering capacity), while the downstream has low sensitivity to acid inputs.		Guideline is for alkalinity (as CaCO3) and categorizes the sensitivity of a water body to acid inputs. Alkalinity < 10 mg/L is considered highly sensitive to acid inputs; 10 - 20 mg/L is considered moderately sensitive to acid inputs; > 20 mg/L is considered low sensitivity.		
Total Sulfide (as S)	mg/L	-	-	-	-	< 0.0015	< 0.0015					
Total Sulfide (un-ionized as H_2S)	mg/L	-	0.002	-	-	< 0.0015	< 0.0015			Working guideline		
Total Sulfide (as H_2S)	mg/L	-	-	-	-	< 0.0016	< 0.0016					
Anions and Nutrients												
Ammonia	mg/L ammonia-N	Varies with pH and temperature. See note. US ST guideline = 10.5 DS ST guideline = 9.12	Varies with pH and temperature. See note. US LT guideline = 1.42 DS LT guideline = 1.42	Varies with pH, temperature and salinity. See note. US ST guideline = 11 DS ST guideline = 10	Varies with pH, temperature and salinity. See note. US LT guideline = 5.9 DS LT guideline = 5.9	0.0144	< 0.0050		Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27D in BC WQG for guideline values.	Guideline for ammonia as N and is pH and temperature dependent. Refer to Table 27C in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27F in BC WQG for guideline values.	Guideline for ammonia as N. Guideline is pH, temperature and salinity dependent. Refer to Table 27E in BC WQG for guideline values.
Bromide	mg/L	-	-	-	-	< 0.050	< 0.050					
Chloride	mg/L	600	150	> 110% of background	< 90% of background	0.93	0.83				Human activities should not cause the chloride of marine and estuarine waters to fluctuate by more than 10% of the natural chloride expected at that time and depth.	Human activities should not cause the chloride of marine and estuarine waters to fluctuate by more than 10% of the natural chloride expected at that time and depth.
Fluoride	mg/L	Varies with hardness US ST guideline = 0.37 DS ST guideline =1.12	-	1.5	-	0.024	0.042		Guideline has interim status. Guideline is calculated with the following equation: Guideline = [-51.73 + 92.57 log10 (hardness)] * 0.01			
Nitrate (as N)	mg/L	32.8	3	-	3.7	0.0171	0.0411					
Nitrite (as N)	mg/L	Varies with chloride. Table 27B, see note. US ST guideline = 0.06 DS ST guideline = 0.06	Varies with chloride. Table 27B, see note. US LT guideline = 0.02 DS LT guideline = 0.02	-	-	< 0.0010	< 0.0010		Varies with chloride. Refer to Table 27B in BC WQG for guideline values.	Varies with chloride. Refer to Table 27B in BC WQG for guideline values.		
Total Nitrogen	mg/L	-	-	-	-	0.103	0.16					
Total Phosphorous	mg/L	-	0.005 to 0.015	-	-	0.0063	0.0167			Guideline is for lakes, refer to BCWQ guideline for nutrients and algae for more information. Guideline does not apply to site.		
Sulfate (as SO_4)	mg/L	-	Varies with hardness. See note. US LT guideline = 128 DS LT guideline = 218	-	-	2.54	2.62			Guidelines for hardness ranges below: Hardness 0 - 30: 128 Hardness 31 - 75: 218 Hardness 76 - 180: 309 Hardness 181 - 250: 429		
Total Metals												
Aluminum (Al)-Total	mg/L	-	Varies with pH, DOC, hardness US LT guideline = 0.084 US 5-week field average = 0.1012 DS LT guideline = 0.083 DS 5-week field average =0.0902	-	-	***0.0567***	***0.065***	**Total Al exceeds the long-term BCWG for FAL at the upstream and downstream location.** However, this should not be deemed a reportable exceedance because the background total Al concentration (5-week field average) at upstream location is greater than the downstream location. This result and previous sampling works suggest that the high total Al concentration is attributed to other factors rather than to WLNG discharge activities.		Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated with the following equation: Guideline = (EXP((0.645 * LN(DOC)) + (2.255 * LN(hardness)) + (1.995 * pH) + (-0.284 * (LN(hardness) * pH))-9.898)/3/1000) If hardness or DOC is below the hardness range, the minimum hardness or DOC will be applied in the calculation.		
Antimony (Sb)-Total	mg/L	0.25	0.074	-	-	< 0.00010	< 0.00010					
Arsenic (As)-Total	mg/L	-	0.005	-	0.0125	0.00015	0.00016					Interim guideline status
Barium (Ba)-Total	mg/L	-	1	-	-	0.00484	0.013			Working guideline status		
Beryllium (Be)-Total	mg/L	-	0.00013	-	0.100	< 0.000100	< 0.000100			Working guideline status		Working guideline status
Bismuth (Bi)-Total	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Boron (B)-Total	mg/L	-	1.2	-	1.2	< 0.010	0.015					
Cadmium (Cd)-Total	mg/L	-	-	-	0.00012	0.0000054	0.0000137					Working guideline status
Calcium (Ca)-Total	mg/L	-	-	-	-	3.14	27.8					
Cesium (Cs)-Total	mg/L	-	-	-	-	0.000012	0.000016					
Chromium (Cr) - Total	mg/L	-	-	-	-	< 0.00050	< 0.00050					
Chromium (Cr(III))-Total	mg/L	-	0.0089	-	0.056	< 0.00050	< 0.00050			Working guideline status		Working guideline status
Chromium (Cr(VI))-Total	mg/L	-	0.0025	-	0.0015	< 0.00050	< 0.00050			Working guideline status		Working guideline status
Cobalt (Co)-Total	mg/L	0.11	0.004	-	-	< 0.00010	< 0.00010					
Copper (Cu)-Total	mg/L	-	-	0.003	0.002	0.00063	0.0009					
Iron (Fe)-Total	mg/L	1	-	-	-	0.072	0.607					
Lead (Pb)-Total	mg/L	Varies with hardness. See Note. US ST guideline = 0.00386 DS ST guideline = 0.0552	Varies with hardness. See Note. US LT guideline = 0.00345 DS LT guideline = 0.00383	0.14	0.002	< 0.000050	0.000238		Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. Guideline is 0.003 where hardness ≤8mg/L. Guideline uses equation EXP[1.273*on(hardness)-1.460] where hardness is 8-360 mg/L. Lowest value for guideline is 0.003 mg/L.	Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. Guideline equation EXP[1.273*on(hardness)-4.704] applies to samples with hardness 8-360 mg/L.		
Lithium (Li)-Total	mg/L	-	-	-	-	< 0.0010	< 0.0010					
Magnesium (Mg)-Total	mg/L	-	-	-	-	0.304	0.984					
Manganese (Mn)-Total	mg/L	Varies with hardness US ST guideline = 0.816 DS ST guideline = 0.816	Varies with hardness US LT guideline = 0.768 DS LT guideline = 0.768	-	-	0.00216	0.0428		Guideline varies with hardness. The guideline is calculated using the following equation: Guideline = (0.0044 * hardness + 0.605) Guideline applies to samples with hardness 25-259 mg/L. Lowest value for guideline is 0.77 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline varies with hardness, refer to BC Water Quality Guidelines for more information. The guideline is calculated using the following formula: Guideline = (0.01102 * hardness + 0.54) Guideline applies to samples with hardness 37-450 mg/L. Lowest value for guideline is 0.81 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Mercury (Hg)-Total	mg/L	-	Varies with methyl mercury US LT guideline = N/A DS LT guideline = N/A	-	-	< 0.000005	< 0.000005			When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L Guideline = 0.1/[MeHg/totalHg]. When MeHg ≤ 0.5% of total Hg, guideline is equal to 0.02 mg/L		
Molybdenum (Mo)-Total	mg/L	46	7.6	-	-	0.000547	0.0012					
Nickel (Ni)-Total	mg/L	-	Varies with hardness US LT guideline = 0.025 DS LT guideline = 0.025	-	0.0083	< 0.00050	0.00054			Working guideline status. Guideline varies with hardness. Refer to BC Water Quality Guidelines for more information. Hardness 0 ≤ 60: 0.025 Hardness > 60 ≤ 180: Guideline = (EXP((0.76 * (LN(hardness)) + 1.06))/1000) Hardness ≥ 180: 0.15		Working guideline status
Phosphorus (P)-Total	mg/L	-	0.005 to 0.015	-	-	< 0.050	< 0.050			Guideline only applies to lakes with salmonid species being the dominant fish species. Guideline is for reference only and does not apply to site.		
Potassium (K)-Total	mg/L	-	-	-	-	0.362	0.636					
Rubidium (Rb)-Total	mg/L	-	-	-	-	0.00088	0.00137					
Selenium (Se)-Total	mg/L	-	0.002	-	0.002	< 0.000050	< 0.000050			Guideline for freshwater aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guidelines for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guidelines and sampling guidance.		Guideline for marine aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guidelines for sediment, invertebrate and fish tissue. Refer to BC Water Quality Guidelines for more information on guidelines and sampling guidance.
Silicon (Si)-Total	mg/L	-	-	-	-	5.1	5.34					
Silver (Ag)-Total	mg/L	Varies with hardness, see note US ST guideline = 0.0001 DS ST guideline = 0.0001	Varies with hardness, see note US LT guideline = 0.00005 DS LT guideline = 0.00005	0.003	0.0015	< 0.000010	< 0.000010		Varies with hardness Guideline ranges: Hardness ≤ 100: 0.0001 Hardness > 100: 0.003	Varies with hardness Guideline ranges: Hardness ≤ 100: 0.00005 Hardness > 100: 0.0015		Guideline applies to open coast and estuaries. Guideline is applicable to the EGP site.
Sodium (Na)-Total	mg/L	-	-	-	-	1.96	2.47					
Strontium (Sr)-Total	mg/L	-	-	-	-	0.0166	0.0727					
Sulfur (S)-Total	mg/L	-	-	-	-	< 0.50	0.58					
Tellurium (Te)-Total	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Thallium (Tl)-Total	mg/L	-	0.0008	-	-	< 0.000010	< 0.000010			30-day average, site-specific objective for the lower Columbia River, BC. Guideline is for reference only and does not apply to the EGP site.		
Thorium (Th)-Total	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Tin (Sn)-Total	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Titanium (Ti)-Total	mg/L	-	-	-	-	0.00087	0.00207					
Tungsten (W)-Total	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Uranium (U)-Total	mg/L	-	0.0085	-	-	0.000065	0.000059			Working guideline status		
Vanadium (V)-Total	mg/L	-	-	-	0.050	< 0.00050	< 0.00050					Working guideline status
Zinc (Zn)-Total	mg/L	-	-	0.055	0.010	< 0.0030	< 0.0030					
Zirconium (Zr)-Total	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Dissolved Metals												
Aluminum (Al)-Dissolved	mg/L	-	-	-	-	0.0381	0.0098					
Antimony (Sb)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Arsenic (As)-Dissolved	mg/L	-	-	-	-	0.00012	< 0.00010					
Barium (Ba)-Dissolved	mg/L	-	-	-	-	0.00462	0.0126					
Beryllium (Be)-Dissolved	mg/L	-	-	-	-	< 0.000100	< 0.000100					
Bismuth (Bi)-Dissolved	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Boron (B)-Dissolved	mg/L	-	-	-	-	< 0.010	< 0.010					
Cadmium (Cd)-Dissolved	mg/L	Varies with hardness, see note US ST guideline = 0.00005 DS ST guideline = 0.00005	Varies with hardness, see note US LT guideline = 0.000035 DS LT guideline = 0.000074	-	-	< 0.0000050	0.0000059		Guideline is hardness dependent. Guideline is appilcable to water hardness between 7.0 and 455 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(1.03 * (LN(hardness)) - 5.274)/1000) Lowest value for guideline is 0.000018 mg/L. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.	Guideline is hardness dependent. Guideline is applicable to hardness between 3.4 and 285 mg/L. Guideline is calculated with the following formula: Guideline = (EXP(0.736 * (LN(hardness)) - 4.943)/1000) Lowest value for guiedeline is 0.00004. If hardness is below the hardness range, the minimum hardness will be applied in the calculation.		
Calcium (Ca)-Dissolved	mg/L	-	Categorical, see note	-	-	3.06	26.7	The upstream location has high sensitivity to acid inputs (i.e. low buffering capacity) while the downstream location has low sensitivity to acid inputs (i.e. high buffering capacity).		Guideline categorizes the sensitivity of a water body to acid inputs (i.e. buffering capacity). Standard is 4 mg/L dissolved Ca for the most sensitive waterbodies,5 - 8 mg/L for waterbodies with moderate sensitivity to acid inputs. Waterbodies with dissolved calcium > 8mg/L are considered to have low sensitivity to acid inputs.		
Cesium (Cs)-Dissolved	mg/L	-	-	-	-	0.000011	0.000014					
Chromium (Cr)-Dissolved	mg/L	-	-	-	-	< 0.00050	< 0.00050					
Cobalt (Co)-Dissolved	mg/L	-	-	-	-	< 0.00010	< 0.00010					
Copper (Cu)-Dissolved	mg/L	Guideline varies with other parameters, see note US ST guideline = 0.0031 DS ST guideline = 0.0056	Guideline varies with other parameters, see note US LT guideline = 0.0004 US 5-week average = **0.0006** DS LT guideline = 0.0003 DS 5-week average = **0.00047**	-	-	***0.00056***	***0.00058***	**Dissolved Cu exceeds the long-term BCWG for FAL at both upstream and downstream locations.** However, this should not be deemed a reportable exceedance because the background dissolved Cu concentration at upstream location is greater than that of the downstream. This suggests that the high dissolved Cu concentration is attributed to other factors rather than to WLNG discharge activities.	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date	Guideline varies with other parameters and is calculated using BC BLM software. Simplified model: Temperature, pH, DOC and hardness Detailed model: Temperature, pH, DOC, humic acid content, total calcium, total magnesium, total sodium, total potassium, sulphate, chloride, and alkalinity Guideline calculated using values for parameters above taken at the specific site on each sampling date		
Iron (Fe)-Dissolved	mg/L	0.35	-	-	-	0.048	0.035					
Lead (Pb)-Dissolved	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Lithium (Li)-Dissolved	mg/L	-	-	-	-	< 0.0010	< 0.0010					
Magnesium (Mg)-Dissolved	mg/L	-	-	-	-	0.305	1.02					
Manganese (Mn)-Dissolved	mg/L	-	-	-	-	0.00136	0.0189					
Mercury (Hg)-Dissolved	mg/L	-	-	-	-	< 0.0000050	< 0.0000050					
Molybdenum (Mo)-Dissolved	mg/L	-	-	-	-	0.000507	0.00113					
Nickel (Ni)-Dissolved	mg/L	-	-	-	-	< 0.00050	< 0.00050					
Phosphorus (P)-Dissolved	mg/L	-	-	-	-	< 0.050	< 0.050					
Potassium (K)-Dissolved	mg/L	-	-	-	-	0.318	0.64					
Rubidium (Rb)-Dissolved	mg/L	-	-	-	-	0.00087	0.00128					
Selenium (Se)-Dissolved	mg/L	-	-	-	-	< 0.000050	< 0.000050					
Silicon (Si)-Dissolved	mg/L	-	-	-	-	5.21	5.51					
Silver (Ag)-Dissolved	mg/L	-	-	-	-	< 0.000010	< 0.000010					
Sodium (Na)-Dissolved	mg/L	-	-	-	-	1.78	2.22					
Strontium (Sr)-Dissolved	mg/L	-	-	-	-	0.0167	0.0702					
Sulfur (S)-Dissolved	mg/L	-	-	-	-	0.64	0.88					
Tellurium (Te)-Dissolved	mg/L	-	-	-	-	<0.00020	<0.00020					
Thallium (Tl)-Dissolved	mg/L	-	-	-	-	<0.000010	<0.000010					
Thorium (Th)-Dissolved	mg/L	-	-	-	-	<0.00010	<0.00010					
Tin (Sn)-Dissolved	mg/L	-	-	-	-	<0.00010	<0.00010					
Titanium (Ti)-Dissolved	mg/L	-	-	-	-	< 0.00030	< 0.00030					
Tungsten (W)-Dissolved	mg/L	-	-	-	-	<0.00010	<0.00010					
Uranium (U)-Dissolved	mg/L	-	-	-	-	0.000059	0.000051					
Vanadium (V)-Dissolved	mg/L	-	-	-	-	< 0.00050	< 0.00050					
Zinc (Zn)-Dissolved	mg/L	Varies with DOC and hardness US ST guideline = 0.009 DS ST guideline = 0.037	Varies with pH, DOC, hardness US LT guideline = 0.00398 DS LT guideline = 0.00434	-	-	< 0.0010	0.0013		Guideline varies with DOC and hardness. Guideline is calculated using the following formula: Guideline = (EXP((0.833 * (LN(hardness))) + (0.24 * (LN(DOC))) + 0.526)/2/1000) If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.	Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Guideline is calculated using the following formula: Guideline = (EXP((0.974 * (LN(hardness))) - (0.815 * pH) + (0.398 * (LN(DOC))) + 4.625)/2/1000) Guideline only applies to water with pH between 6.5 and 8.13, DOC between 0.3 and 22.9 mg/L, anmd hardness between 23.4 and 399 mg/L. If hardness or DOC is below the hardness or DOC range, the minimum hardness or DOC will be applied in the calculation.		
Zirconium (Zr)-Dissolved	mg/L	-	-	-	-	< 0.00020	< 0.00020					
Applied Guideline:		**British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Freshwater Aquatic Life** **British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCAWWQG - Marine Aquatic Life**										
Color Key:	**Exceeds both FAL and MAL Guidelines**	**Exceeds FAL Short term Guideline**	***Exceeds FAL Long term Guideline***	**Exceeds MAL Short term Guideline**	***Exceeds MAL Long term Guideline***							
Color Key:		**Exceeds FAL Short and Long-Term Guideline**		**Exceeds MAL Short and Long-term Guidelines**								

[1]BC MOECCS. 2023. BC Water Qualtiy Guidelines for the Protection of Aquatic Life, Wildlife & Agriculture. Accessed from: wqg_summary_aquaticlife_wildlife_agri.pdf (gov.bc.ca)

[2]BC MOECCS. 2021. BC Working Water Qualtiy Guidelines for the Protection of Aquatic Life, Widlife & Agriculture. Accessed from: bc_env_working_water_quality_guidelines.pdf (gov.bc.ca)

[3]Note that long-term guidelines apply to averaged data to account for chronic impacts to aquatic life. Ideally, five samples collected at evenly spaced intervals over 30 days is considered to be the minimum number needed to calculate the long-term average of any parameter, though this may vary by parameter and site conditions. Long-term guidelines applied here are for reference only and may not indicate chronic impacts to aquatic life if exceedances occur in the short term.

[4]Background temperature ranges: Dec-Feb: 0.3-8.0C; Mar-Apr: 3.0-10.2C; May-June: 6.8-15.1C; Jul-present: 12.9-18.2C

Reference: AquaTROLL In-Situ Data Logger - Background water quality readings collected from Dec.-present.

For guidelines dependent on other parameters, when hardness, pH or DOC are below the range stated in the guideline, the lowest value in the range is used to calculate the guideline.

Parameters Used to Calculate Guidelines

Analyte	Units	FAL-ST [1,2]	FAL-LT [1,2]	MAL-ST [1]	MAL-LT [1,2]	Values: WLNG US1 (Upstream)	Values: WLNG DS 1 (Downstream)
pH (field)	pH units	Field pH taken using handheld meters during sampling used in calculations				7.55	7.72
Temperature (field)	°C	Field temperature taken using handheld meters during sampling used in calculations				25.6 (Likely inaccuarte because the recorded realtime temperature by sonde was 16.7)	19.7
Turbidity (field)	NTU	Field turbidity taken using handheld meters during sampling used in calculations				3.10	6.10
Hardness (as CaCO3) (total)	mg/L	Laboratory tested total hardness taken at each respective sample site on the day of sampling used in guideline calculations				9.09	73.5
Dissolved Organic Carbon (DOC)	mg/L	Laboratory tested dissolved organic carbon tested at the lab used in guideline calculations				1.9	2.22
Total Alkalinity ($CaCO_3$)	mg/L	Laboratory tested total alkalinity used in calculations				10.1	78.2
Chloride	mg/L	Laboratory tested chloride taken at each respective sample site on the day of sampling used in guideline calculations				0.93	0.83

Woodfibre Site Receiving Environment Lab Documentation

CERTIFICATE OF ANALYSIS

Work Order	: **VA24B9683**	Page	: 1 of 6
Client	: **Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone	: ----	Telephone	
Project	: 11964	Date Samples Received	: 07-Aug-2024 17:30
PO	: 11964-Task 20-Phase3C-4C	Date Analysis Commenced	: 08-Aug-2024
C-O-C number	: ----	Issue Date	: 14-Aug-2024 13:45
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
	Lab Assistant	Metals, Burnaby, British Columbia
	Analyst	Metals, Burnaby, British Columbia
	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
	Department Manager - Metals	Inorganics, Burnaby, British Columbia
	Lab Analyst	Metals, Burnaby, British Columbia
	Lab Assistant	Inorganics, Burnaby, British Columbia
	Account Manager Assistant	Administration, Burnaby, British Columbia
	Analyst	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
°C	degrees celsius
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	WLNG US 1	WLNG DS 1	----	----	----
					Client sampling date / time	07-Aug-2024 10:30	07-Aug-2024 13:56	----	----	----
						VA24B9683-001	VA24B9683-002	--------	--------	--------
						Result	Result	----	----	----
Field Tests										
Conductivity, field	----	EF001/VA	0.10	µS/cm		59.000	220.00	----	----	----
pH, field	----	EF001/VA	0.10	pH units		7.55	7.72	----	----	----
Temperature, field	----	EF001/VA	0.10	°C		25.6	19.7	----	----	----
Physical Tests										
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		8.90	70.9	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		9.09	73.5	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L		26	84	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		<3.0	<3.0	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L		10.1	78.2	----	----	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L		0.0144	<0.0050	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L		0.93	0.83	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L		0.024	0.042	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L		0.0171	0.0411	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L		0.103	0.160	----	----	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L		0.0063	0.0167	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L		2.54	2.62	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		1.90	2.22	----	----	----
Total Sulfides										
Sulfide, total (as S)	18496-25-8	E395/VA	0.0015	mg/L		<0.0015	<0.0015	----	----	----
Sulfide, un-ionized (as H2S), from total	7783-06-4	EC395/VA	0.0015	mg/L		<0.0015	<0.0015	----	----	----
Sulfide, total (as H2S)	7783-06-4	E395/VA	0.0016	mg/L		<0.0016	<0.0016	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.0567	0.0650	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	WLNG US 1	WLNG DS 1	----	----	----
					Client sampling date / time	07-Aug-2024 10:30	07-Aug-2024 13:56	----	----	----
						VA24B9683-001	VA24B9683-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00015	0.00016	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.00484	0.0130	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	<0.000100	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		<0.010	0.015	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000054	0.0000137	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		3.14	27.8	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000012	0.000016	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00063	0.00090	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.072	0.607	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		<0.000050	0.000238	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		0.304	0.984	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.00216	0.0428	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000547	0.00120	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		<0.00050	0.00054	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		0.362	0.636	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00088	0.00137	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		5.10	5.34	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		1.96	2.47	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.0166	0.0727	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		<0.50	0.58	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	WLNG US 1	WLNG DS 1	----	----	----
					Client sampling date / time	07-Aug-2024 10:30	07-Aug-2024 13:56	----	----	----
						VA24B9683-001	VA24B9683-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00087	0.00207	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000065	0.000059	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	<0.0030	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0381	0.0098	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00012	<0.00010	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.00462	0.0126	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	<0.000100	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		<0.010	0.015	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	0.0000059	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		3.06	26.7	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		0.000011	0.000014	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00056	0.00058	----	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.048	0.035	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		0.305	1.02	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.00136	0.0189	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000507	0.00113	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	WLNG US 1	WLNG DS 1	----	----	----
					Client sampling date / time	07-Aug-2024 10:30	07-Aug-2024 13:56	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24B9683-001	VA24B9683-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		0.318	0.640	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00087	0.00128	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		5.21	5.51	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		1.78	2.22	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.0167	0.0702	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		0.64	0.88	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	<0.00030	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000059	0.000051	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		<0.0010	0.0013	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	Field	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Field	Field	----	----	----
Speciated Metals										
Chromium, hexavalent [Cr VI], total	18540-29-9	E532/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Chromium, trivalent [Cr III], total	16065-83-1	EC535/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24B9683**	Page	: 1 of 14
Client	: **Triton Environmental Consultants Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact		Account Manager	
Address		Address	
Telephone		Telephone	
Project	: 11964	Date Samples Received	: 07-Aug-2024 17:30
PO	: 11964-Task 20-Phase3C-4C	Issue Date	: 14-Aug-2024 13:45
C-O-C number	: ----		
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WLNG DS 1	E298	07-Aug-2024	08-Aug-2024	28 days	1 days	✓	12-Aug-2024	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WLNG US 1	E298	07-Aug-2024	08-Aug-2024	28 days	1 days	✓	12-Aug-2024	28 days	5 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WLNG DS 1	E235.Br-L	07-Aug-2024	09-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WLNG US 1	E235.Br-L	07-Aug-2024	09-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WLNG DS 1	E235.Cl	07-Aug-2024	09-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WLNG US 1	E235.Cl	07-Aug-2024	09-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE WLNG DS 1	E235.F	07-Aug-2024	09-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
WLNG US 1	E235.F	07-Aug-2024	09-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
WLNG DS 1	E235.NO3-L	07-Aug-2024	09-Aug-2024	3 days	2 days	✓	09-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
WLNG US 1	E235.NO3-L	07-Aug-2024	09-Aug-2024	3 days	2 days	✓	09-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
WLNG DS 1	E235.NO2-L	07-Aug-2024	09-Aug-2024	3 days	2 days	✓	09-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
WLNG US 1	E235.NO2-L	07-Aug-2024	09-Aug-2024	3 days	2 days	✓	09-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
WLNG DS 1	E235.SO4	07-Aug-2024	09-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE										
WLNG US 1	E235.SO4	07-Aug-2024	09-Aug-2024	28 days	2 days	✓	09-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
WLNG DS 1	E366	07-Aug-2024	08-Aug-2024	28 days	1 days	✓	09-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
WLNG US 1	E366	07-Aug-2024	08-Aug-2024	28 days	1 days	✓	09-Aug-2024	28 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
WLNG DS 1	E372-U	07-Aug-2024	08-Aug-2024	28 days	1 days	✓	11-Aug-2024	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
WLNG US 1	E372-U	07-Aug-2024	08-Aug-2024	28 days	1 days	✓	11-Aug-2024	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
WLNG DS 1	E509	07-Aug-2024	12-Aug-2024	28 days	5 days	✓	12-Aug-2024	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved)										
WLNG US 1	E509	07-Aug-2024	12-Aug-2024	28 days	5 days	✓	12-Aug-2024	28 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
WLNG DS 1	E421	07-Aug-2024	12-Aug-2024	180 days	5 days	✓	12-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
WLNG US 1	E421	07-Aug-2024	12-Aug-2024	180 days	5 days	✓	12-Aug-2024	180 days	5 days	✓
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial - total (lab preserved)										
WLNG DS 1	EF001	07-Aug-2024	----	----	----		09-Aug-2024	----	2 days	
Field Tests : Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial - total (lab preserved)										
WLNG US 1	EF001	07-Aug-2024	----	----	----		09-Aug-2024	----	2 days	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
WLNG DS 1	E358-L	07-Aug-2024	08-Aug-2024	28 days	1 days	✓	08-Aug-2024	28 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
WLNG US 1	E358-L	07-Aug-2024	08-Aug-2024	28 days	1 days	✓	08-Aug-2024	28 days	1 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
WLNG DS 1	E290	07-Aug-2024	09-Aug-2024	14 days	2 days	✓	09-Aug-2024	14 days	2 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
WLNG US 1	E290	07-Aug-2024	09-Aug-2024	14 days	2 days	✓	09-Aug-2024	14 days	2 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
WLNG DS 1	E162	07-Aug-2024	----	----	----		12-Aug-2024	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE										
WLNG US 1	E162	07-Aug-2024	----	----	----		12-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
WLNG DS 1	E160	07-Aug-2024	----	----	----		12-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE										
WLNG US 1	E160	07-Aug-2024	----	----	----		12-Aug-2024	7 days	5 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide)										
WLNG DS 1	E532	07-Aug-2024	----	----	----		11-Aug-2024	28 days	4 days	✓
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC										
UV-inhibited HDPE - total (sodium hydroxide)										
WLNG US 1	E532	07-Aug-2024	----	----	----		11-Aug-2024	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
WLNG DS 1	E508	07-Aug-2024	12-Aug-2024	28 days	5 days	✓	12-Aug-2024	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
WLNG US 1	E508	07-Aug-2024	12-Aug-2024	28 days	5 days	✓	12-Aug-2024	28 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
WLNG DS 1	E420	07-Aug-2024	09-Aug-2024	180 days	2 days	✓	10-Aug-2024	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
WLNG US 1	E420	07-Aug-2024	09-Aug-2024	180 days	2 days	✓	10-Aug-2024	180 days	3 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide)										
WLNG DS 1	E395	07-Aug-2024	----	----	----		13-Aug-2024	7 days	6 days	✓
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)										
HDPE total (zinc acetate+sodium hydroxide)										
WLNG US 1	E395	07-Aug-2024	----	----	----		13-Aug-2024	7 days	6 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1586522	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	1585766	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1586528	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1586524	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1591908	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1586464	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585759	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	1586527	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1586525	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1586526	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1586523	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	1592120	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1589642	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1591389	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1585460	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1585767	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1585764	1	12	8.3	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1593678	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	1592111	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1586522	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	1585766	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1586528	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1586524	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1591908	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1586464	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585759	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	1586527	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1586525	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1586526	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1586523	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	1592120	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1589642	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1591389	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1585460	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1585767	1	5	20.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1585764	1	12	8.3	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1593678	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	1592111	1	20	5.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1586522	1	9	11.1	5.0	✓
Ammonia by Fluorescence	E298	1585766	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1586528	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1586524	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1591908	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1586464	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585759	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	1586527	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1586525	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1586526	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1586523	1	9	11.1	5.0	✓
TDS by Gravimetry	E162	1592120	1	20	5.0	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1589642	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1591389	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1585460	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1585767	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1585764	1	12	8.3	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1593678	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	1592111	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1585766	1	14	7.1	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1586528	1	8	12.5	5.0	✓
Chloride in Water by IC	E235.Cl	1586524	1	9	11.1	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1591908	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1586464	1	14	7.1	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1585759	1	12	8.3	5.0	✓
Fluoride in Water by IC	E235.F	1586527	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1586525	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1586526	1	9	11.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1586523	1	9	11.1	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1589642	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	1591389	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1585460	1	19	5.2	5.0	✓
Total Nitrogen by Colourimetry	E366	1585767	1	5	20.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1585764	1	12	8.3	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Total Sulfide by Colourimetry (Automated Flow)	E395	1593678	1	17	5.8	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	Chinchilla Scientific Nitrate Method, 2011	Following digestion, total nitrogen is is determined colourimetrically using a discrete analyzer utilizing the vanadium chloride reduction method. This method of analysis is approved under US EPA 40 CFR Part 136 (May 2021).
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Sulfide by Colourimetry (Automated Flow)	E395 ALS Environmental - Vancouver	Water	APHA 4500 -S E-Auto-Colorimetry	Sulfide is determined using the gas dialysis automated methlyene blue colourimetric method. Results expressed "as H2S" if reported represent the maximum possible H2S concentration based on the total sulfide concentration in the sample. The H2S calculation converts Total Sulphide as (S2-) and reports it as Total Sulphide as (H2S)
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Vancouver	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection. Results are based on an un-filtered, field-preserved sample.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Un-ionized Total Hydrogen Sulfide (calculated)	EC395 ALS Environmental - Vancouver	Water	APHA 4500 -S H	Un-ionized sulfide is calculated using results from total sulfide analysis, pH, temperature, and ionic strength of the sample. Calculation of un-ionized sulfide using total sulfide concentrations may be biased high due to particulate forms of sulfide measured during total sulfide testing.
Total Trivalent Chromium (Cr III) by Calculation	EC535 ALS Environmental - Vancouver	Water	APHA 3030B/6020A/EPA 7196A (mod)	Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results.The Limit of Reporting for Chromium (III) varies as a function of the test results.
Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity, TDS, Cl2,ClO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3 or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples for total nitrogen analysis are digested using a heated persulfate digestion. Nitrogen compounds are converted to nitrate in this digestion.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.

QUALITY CONTROL REPORT

Work Order	: **VA24B9683**	Page	: 1 of 17
Client	: Triton Environmental Consultants Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	:	Account Manager	
Address	:	Address	
Telephone	:	Telephone	
Project	: 11964	Date Samples Received	: 07-Aug-2024 17:30
PO	: 11964-Task 20-Phase3C-4C	Date Analysis Commenced	: 08-Aug-2024
C-O-C number	: ----	Issue Date	: 14-Aug-2024 13:45
Sampler	: ----		
Site	: Water Analysis		
Quote number	: VA23-TRIT100-012 _V2		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
	Analyst	Vancouver Metals, Burnaby, British Columbia
	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
	Department Manager - Metals	Vancouver Inorganics, Burnaby, British Columbia
	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
	Account Manager Assistant	Vancouver Administration, Burnaby, British Columbia
	Analyst	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1586522)											
KS2403101-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	352	354	0.429%	20%	----
Physical Tests (QC Lot: 1592111)											
VA24B9613-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	4.7	4.3	0.4	Diff <2x LOR	----
Physical Tests (QC Lot: 1592120)											
VA24B9613-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	376	373	0.801%	20%	----
Anions and Nutrients (QC Lot: 1585764)											
FJ2402249-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0031	0.0034	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1585766)											
FJ2402249-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.158	0.160	1.27%	20%	----
Anions and Nutrients (QC Lot: 1585767)											
VA24B9484-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.174	0.170	0.004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586523)											
VA24B9683-001	WLNG US 1	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.54	2.47	0.07	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586524)											
VA24B9683-001	WLNG US 1	Chloride	16887-00-6	E235.Cl	0.50	mg/L	0.93	0.72	0.21	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586525)											
VA24B9683-001	WLNG US 1	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0171	0.0182	0.0011	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586526)											
VA24B9683-001	WLNG US 1	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586527)											
VA24B9683-001	WLNG US 1	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.024	0.024	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1586528)											
VA24B9683-001	WLNG US 1	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1585759)											
FJ2402249-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.85	1.90	0.04	Diff <2x LOR	----
Total Sulfides (QC Lot: 1593678)											
CG2411053-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
Total Metals (QC Lot: 1585460)											
FJ2402236-005	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0781	0.0785	0.509%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00028	0.00028	0.000001	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1585460) - continued											
FJ2402236-005	Anonymous	Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00038	0.00037	0.000004	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.117	0.125	6.71%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.015	0.015	0.0003	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000282	0.0000297	0.0000015	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	84.0	81.9	2.48%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000043	0.000044	0.0000008	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00032	0.00035	0.00002	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00110	0.00112	0.00002	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.109	0.112	2.82%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000122	0.000142	0.000020	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0095	0.0096	0.00003	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	39.6	41.0	3.32%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00414	0.00429	3.58%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00116	0.00118	1.35%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00174	0.00179	0.00005	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	1.89	1.95	3.02%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00141	0.00153	0.00012	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.00596	0.00626	4.94%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	1.43	1.50	5.02%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	6.51	6.52	0.135%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.211	0.212	0.808%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	81.2	80.6	0.773%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	0.000011	0.000011	0.0000002	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00120	mg/L	<0.00120	<0.00120	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.00139	0.00144	3.11%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1585460) - continued											
FJ2402236-005	Anonymous	Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0044	0.0042	0.0002	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1591389)											
VA24B9683-001	WLNG US 1	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1586464)											
KS2403108-003	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 1586464) - continued											
KS2403108-003	Anonymous	Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1591908)											
VA24B9498-004	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 1589642)											
VA24B9683-001	WLNG US 1	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1586522)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1592111)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1592120)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1585764)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1585766)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1585767)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1586523)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1586524)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1586525)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1586526)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1586527)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1586528)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Organic / Inorganic Carbon (QCLot: 1585759)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Sulfides (QCLot: 1593678)						
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----
Total Metals (QCLot: 1585460)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1585460) - continued						
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1591389)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1586464)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1586464) - continued						
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 1591908)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Speciated Metals (QCLot: 1589642)						
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	<0.00050	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1586522)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	106	85.0	115	----
Physical Tests (QCLot: 1592111)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	105	85.0	115	----
Physical Tests (QCLot: 1592120)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.9	85.0	115	----
Anions and Nutrients (QCLot: 1585764)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.7	80.0	120	----
Anions and Nutrients (QCLot: 1585766)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
Anions and Nutrients (QCLot: 1585767)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1586523)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1586524)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1586525)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1586526)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1586527)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1586528)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	----
Organic / Inorganic Carbon (QCLot: 1585759)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	97.0	80.0	120	----
Total Sulfides (QCLot: 1593678)									
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	95.2	80.0	120	----
Total Metals (QCLot: 1585460)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1585460) - continued									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	94.3	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	99.4	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.1	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	87.1	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.6	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	88.5	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	94.0	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	93.7	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	100	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	95.6	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	94.4	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	92.2	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	96.0	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.0	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	92.0	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.1	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.6	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.5	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	94.1	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	105	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	96.3	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	95.3	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	90.2	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.5	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	87.3	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.9	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	90.6	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	94.5	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.0	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	93.5	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	94.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Total Metals (QCLot: 1585460) - continued									
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	92.4	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	92.3	80.0	120	----
Total Metals (QCLot: 1591389)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	104	80.0	120	----
Dissolved Metals (QCLot: 1586464)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.4	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	99.7	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	97.7	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.2	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	92.9	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.7	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.8	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	106	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	98.4	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.9	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	97.6	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.4	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.2	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.4	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	94.8	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.7	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	99.1	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	95.6	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.0	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	97.0	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	97.5	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1586464) - continued									
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	94.6	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	91.6	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	91.5	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	92.0	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	95.5	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.0	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	94.1	80.0	120	----
Speciated Metals (QCLot: 1589642)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.25 mg/L	99.2	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1585764)										
VA24B8815-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0493 mg/L	0.05 mg/L	98.7	70.0	130	----
Anions and Nutrients (QCLot: 1585766)										
VA24B8815-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1585767)										
VA24B9484-002	Anonymous	Nitrogen, total	7727-37-9	E366	0.411 mg/L	0.4 mg/L	103	70.0	130	----
Anions and Nutrients (QCLot: 1586523)										
VA24B9683-002	WLNG DS 1	Sulfate (as SO4)	14808-79-8	E235.SO4	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1586524)										
VA24B9683-002	WLNG DS 1	Chloride	16887-00-6	E235.Cl	101 mg/L	100 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1586525)										
VA24B9683-002	WLNG DS 1	Nitrate (as N)	14797-55-8	E235.NO3-L	2.53 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1586526)										
VA24B9683-002	WLNG DS 1	Nitrite (as N)	14797-65-0	E235.NO2-L	0.500 mg/L	0.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1586527)										
VA24B9683-002	WLNG DS 1	Fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1586528)										
VA24B9683-002	WLNG DS 1	Bromide	24959-67-9	E235.Br-L	0.511 mg/L	0.5 mg/L	102	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1585759)										
VA24B8815-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.20 mg/L	5 mg/L	104	70.0	130	----
Total Sulfides (QCLot: 1593678)										
CG2411053-002	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.194 mg/L	0.2 mg/L	97.0	75.0	125	----
Total Metals (QCLot: 1585460)										
FJ2402236-008	Anonymous	Aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.6	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00918 mg/L	0.01 mg/L	91.8	70.0	130	----
		Boron, total	7440-42-8	E420	0.093 mg/L	0.1 mg/L	93.0	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00375 mg/L	0.004 mg/L	93.7	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00998 mg/L	0.01 mg/L	99.8	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1585460) - continued										
FJ2402236-008	Anonymous	Cobalt, total	7440-48-4	E420	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		Copper, total	7440-50-8	E420	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	----
		Iron, total	7439-89-6	E420	1.84 mg/L	2 mg/L	92.1	70.0	130	----
		Lead, total	7439-92-1	E420	0.0178 mg/L	0.02 mg/L	88.8	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0937 mg/L	0.1 mg/L	93.7	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.2 mg/L	10 mg/L	102	70.0	130	----
		Potassium, total	7440-09-7	E420	3.62 mg/L	4 mg/L	90.5	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		Silicon, total	7440-21-3	E420	9.62 mg/L	10 mg/L	96.2	70.0	130	----
		Silver, total	7440-22-4	E420	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	----	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00366 mg/L	0.004 mg/L	91.6	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		Tin, total	7440-31-5	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00366 mg/L	0.004 mg/L	91.5	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0982 mg/L	0.1 mg/L	98.2	70.0	130	----
		Zinc, total	7440-66-6	E420	0.365 mg/L	0.4 mg/L	91.2	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
Total Metals (QCLot: 1591389)										
VA24B9683-002	WLNG DS 1	Mercury, total	7439-97-6	E508	0.000103 mg/L	0 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 1586464)										
VA24B9566-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.188 mg/L	0.2 mg/L	94.1	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	----	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0388 mg/L	0.04 mg/L	97.0	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00914 mg/L	0.01 mg/L	91.4	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	92.8	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00381 mg/L	0.004 mg/L	95.3	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00995 mg/L	0.01 mg/L	99.5	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0382 mg/L	0.04 mg/L	95.5	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1586464) - continued										
VA24B9566-001	Anonymous	Copper, dissolved	7440-50-8	E421	0.0186 mg/L	0.02 mg/L	93.1	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.86 mg/L	2 mg/L	92.8	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0195 mg/L	0.02 mg/L	97.3	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	8.83 mg/L	10 mg/L	88.3	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.86 mg/L	4 mg/L	96.6	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0188 mg/L	0.02 mg/L	94.3	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.69 mg/L	10 mg/L	96.9	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	1.69 mg/L	2 mg/L	84.4	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	19.6 mg/L	20 mg/L	98.0	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0381 mg/L	0.04 mg/L	95.4	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00362 mg/L	0.004 mg/L	90.5	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0356 mg/L	0.04 mg/L	88.9	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0180 mg/L	0.02 mg/L	89.9	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0948 mg/L	0.1 mg/L	94.8	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.390 mg/L	0.4 mg/L	97.6	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----
Dissolved Metals (QCLot: 1591908)										
VA24B9498-005	Anonymous	Mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0 mg/L	101	70.0	130	----
Speciated Metals (QCLot: 1589642)										
VA24B9683-002	WLNG DS 1	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.263 mg/L	0.25 mg/L	105	70.0	130	----

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 -

Page 1 of

Report To	Contact and company name below will appear on the final report
Company:	Triton Environmental
Contact:	
Phone:	
	n the final report
Street:	
City/Province:	
Postal Code:	
Invoice To	Same as Report To ☐ YES ☑ NO
	Copy of Invoice with Report ☐ YES ☑ NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	☑ ☑ EXCEL ☐ EDD (DIGITAL)
Quality Control (QC) Report with Report	☑ YES ☐ NO
☑ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	
Email 2	
Email 3	
Invoice Distribution	
Select Invoice Distribution:	☑ EMAIL ☑ MAIL ☑ FAX
Email 1 or Fax	
Email 2	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days): 4 day [P4-20%] ☐ 3 day [P3-25%] ☐ 2 day [P2-50%] ☐

EMERGENCY: 1 Business day [E1 - 100%] ☐ Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)] ☐

...e Required for all E&P TATs: 14-mm-yy hh:mm 8-24

...t be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	VA23-TRIT100-012
Job #:	11964
PO / AFE:	11964 - Task 20 - Phase 3C-4C
LSD:	
ALS Lab Work Order # (lab use only):	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact:	Sampler:

Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total metals + mercury	Dissolved metals + mercury (F)	Total hexavalent chromium	Total trivalent chromium	TSS	TDS	Nutrients (ammonia, ammonium, total nitrogen, total phosphorus) (P)	Total sulfide (low) (as H2S), Unionized Sulfide (low) (P)	Anions scan (Br, Cl, F, NO2, NO3, SO4)	General parameters (alkalinity)	DOC (F/P)					SAMPLES ON HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	WLNG US 1			Water	R	R	R	R	R	R	R	R	R	R	R						N	9
	pH: 7.55 cond: 59 µS/cm temp: 25.6 °C	Aug 7/24	10:30																			
	WLNG DS 1			Water	R	R	R	R	R	R	R	R	R	R	R						N	9
	pH: 7.72 cond: 220 µS/cm temp: 19.7 °C	Aug 7/24	13:56																			
	~~Duplicate~~			Water	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~						~~N~~	~~9~~
	~~Field Blank~~			Water	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~						~~N~~	~~9~~
	~~Trip Blank~~			Water	~~R~~		~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~	~~R~~							~~N~~	~~6~~

Environmental Division
Vancouver
Work Order Reference
VA24B9683
Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ ☑ NO

Are samples for human consumption/ use? ☐ ☑ NO

Special Instructions / ... drop-down list below

Triton project # 11964

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☑ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C | FINAL COOLER TEMPERATURES °C: 12

SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: Aug 7/2024 Time:	Received by:	Date:	Time:	Received by: RJ	Date: Aug - 7	Time: 17:30

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

SEPT 2017 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

Woodfibre Site Receiving Environment Field Notes and Logs

FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-8-7-Chycoski-7F91B

Project Component:	Tunnel	**Site Name:**	Receiving Environment - Downstream of Discharge
Inspection Date:	08/07/2024	**Location:**	WLNG
Triton QP:	Lily Chycoski	**Latitude/Longitude:**	49.6683 -123.247958
Temperature(c):	Low 19 High 29	**Permit:**	PE 110136
Weather Conditions:	Clear	**Ground Conditions:**	Dry

Observations

Time: 13:56:00 **Flow Volume (visual):** low

Notes: Not able to sample at usual EAS DS 1 due to low flows. Sampled downstream instead at 10U 482107 5501786.
Conductivity: 220 micro Siemens per cm

Odour Detected?:	No	**Notes:**	
Unusual Colour?	No	**Notes:**	
Unusual Observations?	No	**Notes:**	
Sheen on Water?	No	**Notes:**	

Samples Collected - Parameters

Total Metals + Mercury	Yes	**General Parameters (Alkalinity)**	Yes	**Other Sample:** Total hexavalent chromium and total trivalent chromium
Dissolved Metals + Mercury	Yes	**Total Sulfide, Unionized Sulfide**	Yes	
TSS	Yes	**Anions**	Yes	
TDS	Yes	**Total Trivalent Chromium**	Yes	**QA Samples:** No Total hexavalent chromium and total trivalent chromium
Nutrients	Yes	**VOC/VPH**	No	
DOC	Yes	**EPH, PAH, LEPH/HEPH**	No	
		Trout LC50	No	

Logger Maintenance

Logger Maintenance Performed?	No	**Photo of COC with Lab Signature?**	Yes

Describe Logger Maintenance

Photos

Photo: 1

Location: EAS DS 1 - original

Description: Low flow in culvert

Photo: 2

Location: EAS DS 1 - original

Description: Low flow DS view

Photos

Photo: 3

Location: EAS DS 1 - new

Description: US view

Photo: 4

Location: EAS DS 1 - new

Description: Across view

Photos

Photo: 5

Location: EAS DS 1 - new

Description: DS view

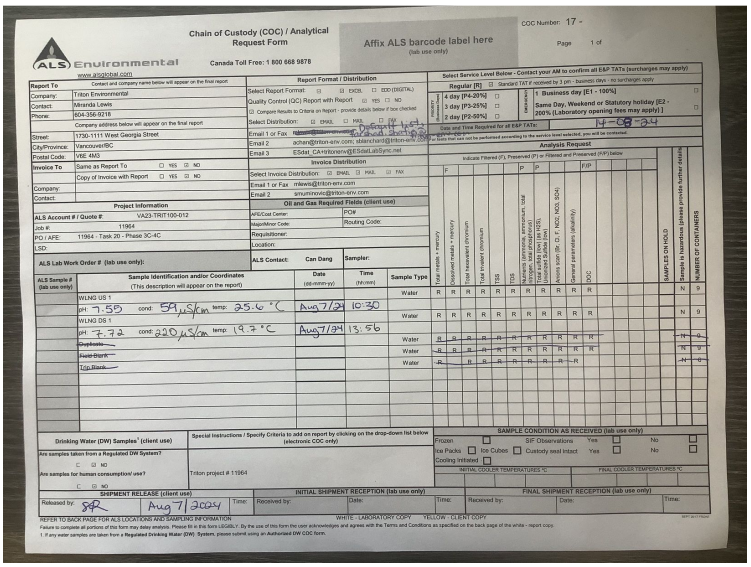

Photo: 6

Location: EAS DS 1

Description: Lab COC

Sign Off

Report Prepared By:	Lily Chycoski	**Report Reviewed:**	Yes
Report Reviewer:		**Professional(s) of Record:**	
Name:			
Designation:			
Designation Number:			

FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-8-7-Chycoski-CEDF3

Project Component:	Tunnel	**Site Name:**	Receiving Environment - Upstream of Discharge
Inspection Date:	08/07/2024	**Location:**	WLNG
Triton QP:	Lily Chycoski	**Latitude/Longitude:**	49.669455 -123.25087
Temperature(c):	Low 19 High 29	**Permit:**	PE 110136
Weather Conditions:	Clear	**Ground Conditions:**	Dry

Observations

Time: 10:30:00 **Flow Volume (visual):** low

Notes: Conductivity: 59 micro Siemens per cm

Odour Detected?:	No	**Notes:**	
Unusual Colour?	No	**Notes:**	
Unusual Observations?	No	**Notes:**	
Sheen on Water?	No	**Notes:**	

Samples Collected - Parameters

Total Metals + Mercury	Yes	**General Parameters (Alkalinity)**	Yes	**Other Sample:** Total hexavalent chromium and total trivalent chromium
Dissolved Metals + Mercury	Yes	**Total Sulfide, Unionized Sulfide**	Yes	
TSS	Yes	**Anions**	Yes	
TDS	Yes	**Total Trivalent Chromium**	Yes	**QA Samples:** No Total hexavalent chromium and total trivalent chromium
Nutrients	Yes	**VOC/VPH**	No	
DOC	Yes	**EPH, PAH, LEPH/HEPH**	No	
		Trout LC50	No	

Logger Maintenance

Logger Maintenance Performed?	No	**Photo of COC with Lab Signature?**	Yes

Describe Logger Maintenance

Photos

Photo: 1

Location: EAS US 1

Description: US view

Photo: 2

Location: EAS US 1

Description: Across view

Photos

Photo: 3

Location: EAS US 1

Description: DS view

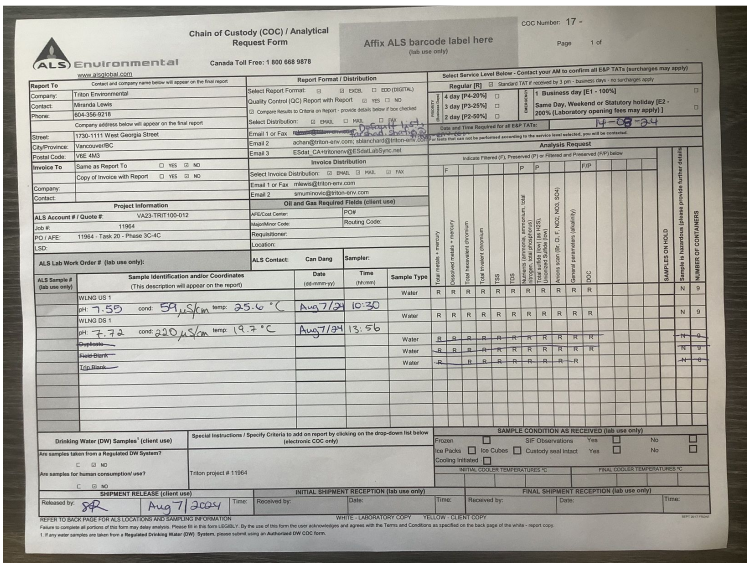

Photo: 4

Location: EAS US 1

Description: Lab COC

Sign Off

Report Prepared By:	Lily Chycoski	**Report Reviewed:**	Yes
Report Reviewer:		**Professional(s) of Record:**	
Name:			
Designation:			
Designation Number:			