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Eagle Mountain - Woodfibre Gas Pipeline Project

BCER Waste Discharge Approval Report—BC Rail Site Sampling and Monitoring

Report Period: March 18th to March 24th, 2024

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Preamble

This is a report for the British Columbia Energy Regulator (BCER) Waste Discharge Approval (BCER number AE 111824) for the FortisBC Eagle Mountain – Woodfibre Gas Pipeline (EGP) Project for the BC Rail Site. This report covers the period of March 18th to March 24th, 2024 and includes the results of water quality monitoring and sampling of the receiving environment (upstream and downstream) in the Squamish River. During this timeframe one batch of treated water stored onsite was discharged by FortisBC’s tunnel contractor Frontier-Kemper Michels Joint Venture (FKM) to the authorized point of discharge, from the BC Rail site water treatment plant.

FortisBC has retained Triton Environmental Consultants Ltd. as the Qualified Professional to implement and oversee the monitoring and sampling program in the receiving environment. The data represented below, including laboratory reported exceedances, represent background conditions from the receiving environment sampling, and are not related to EGP Project activities. The data collected and reported on represents background water quality conditions at the two receiving environment sampling sites as shown on the approved Waste Discharge Approval AE-111824.


Water Treatment Plant Update

Since the issuance of the Waste Discharge Approval (AE 111824) on September 29, 2023, FortisBC’s tunnel contractor Frontier-Kemper Michels Joint Venture (FKM) has completed setting up the water treatment plant (WTP) including the installing the plumbing, pumps & equipment, and treatment chemicals. The assembly of the WTP components were completed on October 22, 2023. The commissioning of the WTP occurred throughout January and February 2024 prior to the first batch discharge. Water was sampled by FKM and confirmed that the batch from the WTP meets the British Columbia Approved and Working Water Quality Guidelines for Freshwater & Marine Aquatic Life requirements prior to discharge as outlined in the Waste Discharge Approval.

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 Approval AE-111824 Section 4.2:

The Approval Holder 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 approval. 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 date 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

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the reports shall be provided to each First Nation consulted with regarding this subject approval, 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 Approval.

At the receiving environment, real time daily field readings of pH, temperature, NTU, electrical conductivity, DO, ORP and salinity are being taken using an AquaTROLL 600 datalogger upstream and downstream in the river. Visible sheen will be monitored with visual inspections during times of discharge or sampling. Real time and daily readings are being monitored at the same time with one piece of equipment, allowing all the daily readings real time.


At the point of discharge from the WTP, the parameters are being monitored using field equipment (YSI ProDSS) and sondes/real time meters make and models to be confirmed by the contractor. Table 1 and Table 2 below show how each parameter is being monitored.

Table 1. Monitoring Process at Point of Discharge from Water Treatment System at the BC Rail Site

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 YSI ProDSS
	Temperature	Monitoring using YSI ProDSS
	NTU	Monitoring using YSI ProDSS
	Electrical Conductivity	Monitoring using YSI ProDSS
Weekly (or per batch) Lab Samples	List prescribed in permit	Lab samples

Table 2. Receiving Environment (upstream and downstream) Monitoring Process

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

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Receiving Environment equipment details: Sondes: Aqua-TROLL 600 made by In-Situ Inc. Sondes set up to log temperature, specific conductivity, salinity (in PSU), pH, ORP, DO (mg/L), and turbidity (NTU) at 10 minute intervals.

Point of Discharge from the WTP equipment details: YSI ProDSS with pH, conductivity, DO, ORP and turbidity probe that measure pH, temperature, NTU, electrical conductivity, ORP, DO and salinity

Summary

Activities

- There was 1 batch test discharge on Thursday March 21st, 2024 to the authorized point of discharge during this reporting period.

Point of Discharge from Water Treatment System (BC Rail Site) Summary

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

Table 3: Discharge from Water Treatment System Information

Date of Discharge	Date of Lab Sample (for the discharge)	Real Time Monitored	Field Samples Taken	Discharge Rate (batch)	Discharge Volume (batch)	Results
2024-03-21	2024-03-18	N/A- Batch Sample	Yes-YSI ProDSS for Batch Sample	150GPM	133.39m ³	Full set of lab samples results, photo, documentation are provided in Appendix A

Exceedance details

No exceedances with the batch test discharge

Receiving Environment Summary

The receiving environment is being monitored as outlined in the permit. One batch was discharged from the BC Rail Site WTP during this reporting period. The Batch discharge met the permitted discharge requirements and did not result in negative impacts to the receiving environment. All recorded exceedances from the receiving environment are existing background quality and not related to project activities.


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Table 4: Upstream Monitoring Information

Date of Lab Sample	Real Time Monitored	Field Samples Taken	Results
2024-03-18	Yes *	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.
2024-03-21	Yes	Yes	Real time monitoring results are available. No visible sheen observed.


Table 5: Downstream Monitoring Information

Date of Lab Sample	Real Time Monitored	Field Samples Taken	Results
2023-03-18	Yes *	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.
2024-03-21	Yes	Yes	Real time monitoring results available. No visible sheen observed.


* 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 were conducted in the receiving environment. No visual sheen was observed.
- All receiving environment lab results are in Appendix B.
- 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.

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Appendix A Point of Discharge from Water Treatment Plant Documentation

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End of Pipe Sample Analysis

BCR Batch Testing Results

Batch Number 4
(03-15-24)

Sara Derakhshi

03-26-24

Water Sample Results:

Client Sample ID			WTP Discharge	In-situ before discharging		
Date Sampled			18-Mar-2024	21-Mar-2024		
Time Sampled			11:30	07:35		
ALS Sample ID			VA24A5592-001			
Sample Type			Lab	Field		
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water		BCAWWQG-FAL-ST	BCAWWQG-MAL-ST
Field Tests (Matrix: Water)						
Conductivity, field	0.10	µS/cm	475.40	588	-	-
Temperature, field	0.10	°C	12.9	5.0	19, hourly rate of change <1°C	Max +/- from BKG 1°C, hourly rate of change <0.5°C
Turbidity, field	0.01	NTU	1.41	2.04	Varies with background, Lowest value for guideline is 9 NTU	Varies with background, Lowest value for guideline is 9 NTU
Salinity		ppt		0.29	-	-
pH, field	0.10	pH units	7.89	7.6	6.5-9.0	7.0-8.7
ORP		Mv		75.1	-	-
DO		mg/L		3.78	-	-
Visible Sheen				No	-	-
Physical Tests (Matrix: Water)						
Conductivity	2.0	µS/cm	482		-	-
Alkalinity, bicarbonate (as CaCO ₃)	2.0	mg/L	220		-	-
Alkalinity, carbonate (as CaCO ₃)	2.0	mg/L	4.2		-	-
Alkalinity, hydroxide (as CaCO ₃)	2.0	mg/L	<2.0		-	-
Alkalinity, phenolphthalein (as CaCO ₃)	2.0	mg/L	2.1		-	-
Alkalinity, total (as CaCO ₃)	2.0	mg/L	224		-	-
Hardness (as CaCO ₃), dissolved	0.60	mg/L	1.08		-	-

Hardness (as CaCO ₃), from total Ca/Mg	0.60	mg/L	1.17		-	-
Oxidation-reduction potential [ORP]	0.10	mV	264		-	-
Solids, total dissolved [TDS]	10	mg/L	289		-	-
Solids, total suspended [TSS]	3.0	mg/L	<3.0		Varies with background, see note Lowest value for guideline is 26mg/L	Varies with background, see note Lowest value for guideline is 26mg/L
Turbidity	0.10	NTU	1.06		-	-
pH	0.10	pH units	8.34		6.5-9.0	7.0-8.7
Anions and Nutrients (Matrix: Water)						
Ammonia, total (as N)	0.0050	mg/L	1.16		11.7	-
Bromide	0.050	mg/L	<0.050		-	-
Chloride	0.50	mg/L	16.1		600	> 110% of background
Fluoride	0.020	mg/L	0.092		-	1.5
Nitrate (as N)	0.0050	mg/L	0.626		32.8	-
Nitrite (as N)	0.0010	mg/L	0.0227		0.6	-
Nitrogen, total	0.030	mg/L	2.28		-	-
Phosphorus, total	0.0020	mg/L	0.0125		-	-
Sulfate (as SO ₄)	0.30	mg/L	13.9		-	-
Ammonium (as NH ₄), field	0.0010	mg/L	1.47		-	-
Organic / Inorganic Carbon (Matrix: Water)						
Carbon, dissolved organic [DOC]	0.50	mg/L	3.03		-	-
Carbon, total organic [TOC]	0.50	mg/L	2.94		-	-
Total Metals (Matrix: Water)						
Aluminum, total	0.0030	mg/L	0.0047		-	-
Antimony, total	0.00010	mg/L	0.00095		0.25	-
Arsenic, total	0.00010	mg/L	0.00044		-	-
Barium, total	0.00010	mg/L	0.00087		-	-
Beryllium, total	0.000100	mg/L	<0.000100		-	-

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Bismuth, total	0.000050	mg/L	<0.000050		-	-
Boron, total	0.010	mg/L	0.021		-	-
Cadmium, total	0.0000050	mg/L	<0.0000050		-	-
Calcium, total	0.050	mg/L	0.439		-	-
Cesium, total	0.000010	mg/L	0.000184		-	-
Chromium, total	0.00050	mg/L	<0.00050		-	-
Cobalt, total	0.00010	mg/L	<0.00010		0.11	-
Copper, total	0.00050	mg/L	0.00095		-	0.003
Iron, total	0.010	mg/L	0.031		1	-
Lead, total	0.000050	mg/L	0.000060		0.003	0.14
Lithium, total	0.0010	mg/L	0.0042		-	-
Magnesium, total	0.0050	mg/L	0.0188		-	-
Manganese, total	0.00010	mg/L	0.00243		0.553	-
Mercury, total	0.0000050	mg/L	<0.0000050		-	-
Molybdenum, total	0.000050	mg/L	0.00782		46	-
Nickel, total	0.00050	mg/L	<0.00050		-	-
Phosphorus, total	0.050	mg/L	<0.050		-	-
Potassium, total	0.050	mg/L	6.61		-	-
Rubidium, total	0.00020	mg/L	0.0129		-	-
Selenium, total	0.000050	mg/L	0.000108		-	-
Silicon, total	0.10	mg/L	3.23		-	-
Silver, total	0.000010	mg/L	<0.000010		0.0001	0.003
Sodium, total	0.050	mg/L	106		-	-
Strontium, total	0.00020	mg/L	0.00091		-	-
Sulfur, total	0.50	mg/L	4.76		-	-
Tellurium, total	0.00020	mg/L	<0.00020		-	-
Thallium, total	0.000010	mg/L	<0.000010		-	-
Thorium, total	0.00010	mg/L	<0.00010		-	-
Tin, total	0.00010	mg/L	<0.00010		-	-
Titanium, total	0.00030	mg/L	0.00030		-	-

Tungsten, total	0.00010	mg/L	<0.00010		-	-
Uranium, total	0.000010	mg/L	<0.000010		-	-
Vanadium, total	0.00050	mg/L	<0.00050		-	-
Zinc, total	0.0030	mg/L	<0.0030		-	0.055
Zirconium, total	0.00020	mg/L	<0.00020		-	-
Dissolved Metals (Matrix: Water)						
Aluminum, dissolved	0.0010	mg/L	0.0038		-	-
Antimony, dissolved	0.00010	mg/L	0.00090		-	-
Arsenic, dissolved	0.00010	mg/L	0.00038		-	-
Barium, dissolved	0.00010	mg/L	0.00087		-	-
Beryllium, dissolved	0.000100	mg/L	<0.000100		-	-
Bismuth, dissolved	0.000050	mg/L	<0.000050		-	-
Boron, dissolved	0.010	mg/L	0.020		-	-
Cadmium, dissolved	0.0000050	mg/L	<0.0000050		0.00002	-
Calcium, dissolved	0.050	mg/L	0.401		-	-
Cesium, dissolved	0.000010	mg/L	0.000174		-	-
Chromium, dissolved	0.00050	mg/L	<0.00050		-	-
Cobalt, dissolved	0.00010	mg/L	<0.00010		-	-
Copper, dissolved	0.00020	mg/L	0.00073		0.0112	-
Iron, dissolved	0.010	mg/L	<0.010		0.35	-
Lead, dissolved	0.000050	mg/L	<0.000050		-	-
Lithium, dissolved	0.0010	mg/L	0.0043		-	-
Magnesium, dissolved	0.0050	mg/L	0.0187		-	-
Manganese, dissolved	0.00010	mg/L	0.00228		-	-
Mercury, dissolved	0.0000050	mg/L	<0.0000050		-	-
Molybdenum, dissolved	0.000050	mg/L	0.00745		-	-
Nickel, dissolved	0.00050	mg/L	<0.00050		-	-
Phosphorus, dissolved	0.050	mg/L	<0.050		-	-
Potassium, dissolved	0.050	mg/L	6.56		-	-
Rubidium, dissolved	0.00020	mg/L	0.0128		-	-

Selenium, dissolved	0.000050	mg/L	0.000090		-	-
Silicon, dissolved	0.050	mg/L	3.42		-	-
Silver, dissolved	0.000010	mg/L	<0.000010		-	-
Sodium, dissolved	0.050	mg/L	110		-	-
Strontium, dissolved	0.00020	mg/L	0.00095		-	-
Sulfur, dissolved	0.50	mg/L	4.66		-	-
Tellurium, dissolved	0.00020	mg/L	<0.00020		-	-
Thallium, dissolved	0.000010	mg/L	<0.000010		-	-
Thorium, dissolved	0.00010	mg/L	<0.00010		-	-
Tin, dissolved	0.00010	mg/L	<0.00010		-	-
Titanium, dissolved	-0.00030	mg/L	<0.00030		-	-
Tungsten, dissolved	0-0.00010	mg/L	<0.00010		-	-
Uranium, dissolved	0.000010	mg/L	<0.000010		-	-
Vanadium, dissolved	0.00050	mg/L	<0.00050		-	-
Zinc, dissolved	0.0010	mg/L	0.0021		0.0093	-
Zirconium, dissolved	0.00020	mg/L	<0.00020		-	-
Dissolved mercury filtration location			Field			-
Dissolved metals filtration location			Field			-
Aggregate Organics (Matrix: Water)						
Phenols, total (4AAP)	0.0010	mg/L	<0.0010		0.05	-
Volatile Organic Compounds (Matrix: Water)						-
Chlorobenzene	0.50	µg/L	<0.50		-	-
Chloromethane	5.0	µg/L	<5.0		-	-
Dichlorobenzene, 1,2-	0.50	µg/L	<0.50		-	-
Dichlorobenzene, 1,3-	0.50	µg/L	<0.50		-	-
Dichlorobenzene, 1,4-	0.50	µg/L	<0.50		-	-
Dichloropropane, 1,2-	0.50	µg/L	<0.50		-	-
Dichloropropylene, cis+trans-1,3-	0.75	µg/L	<0.75		-	-
Dichloropropylene, cis-1,3-	0.50	µg/L	<0.50		-	-
Tetrachloroethane, 1,1,1,2-	0.50	µg/L	<0.50		-	-


Tetrachloroethane, 1,1,2,2-	0.20	µg/L	<0.20		-	-
Trichloroethane, 1,1,2-	0.50	µg/L	<0.50		-	-
Trichlorofluoromethane	0.50	µg/L	<0.50		-	-
Volatile Organic Compounds [Drycleaning] (Matrix: Water)						
Carbon tetrachloride	0.50	µg/L	<0.50		-	-
Chloroethane	0.50	µg/L	<0.50		-	-
Dichloroethane, 1,1-	0.50	µg/L	<0.50		-	-
Dichloroethane, 1,2-	0.50	µg/L	<0.50		-	-
Dichloroethylene, 1,1-	0.50	µg/L	<0.50		-	-
Dichloroethylene, cis-1,2-	0.50	µg/L	<0.50		-	-
Dichloroethylene, trans-1,2-	0.50	µg/L	<0.50		-	-
Dichloromethane	1.0	µg/L	<1.0		-	-
Dichloropropylene, trans-1,3-	0.50	µg/L	<0.50		-	-
Tetrachloroethylene	0.50	µg/L	<0.50		-	-
Trichloroethane, 1,1,1-	0.50	µg/L	<0.50		-	-
Trichloroethylene	0.50	µg/L	<0.50		-	-
Vinyl chloride	0.40	µg/L	<0.40		-	-
Volatile Organic Compounds [Fuels] (Matrix: Water)						
Benzene	0.50	µg/L	<0.50		-	-
Ethylbenzene	0.50	µg/L	<0.50		-	-
Methyl-tert-butyl ether [MTBE]	0.50	µg/L	<0.50		3400	440
Styrene	0.50	µg/L	<0.50		-	-
Toluene	0.40	µg/L	<0.40		-	-
Xylene, m+p-	0.40	µg/L	<0.40		-	-
Xylene, o-	0.30	µg/L	<0.30		-	-
Xylenes, total	0.50	µg/L	<0.50		-	-
Volatile Organic Compounds [THMs] (Matrix: Water)						
Bromodichloromethane	0.50	µg/L	<0.50		-	-
Bromoform	0.50	µg/L	<0.50		-	-

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Discharged Water Report

Chloroform	0.50	µg/L	<0.50		-	-
Dibromochloromethane	0.50	µg/L	<0.50		-	-
Hydrocarbons (Matrix: Water)						
EPH (C10-C19)	250	µg/L	<250		-	-
EPH (C19-C32)	250	µg/L	<250		-	-
VHw (C6-C10)	100	µg/L	<100		-	-
LEPHw	250	µg/L	<250		-	-
VPHw	100	µg/L	<100		-	-
HEPHw	250	µg/L	<250		-	-
Hydrocarbons Surrogates (Matrix: Water)						
Bromobenzotrifluoride, 2- (EPH surrogate)	1.0	%	78.2		-	-
Dichlorotoluene, 3,4-	1.0	%	121		-	-
Volatile Organic Compounds Surrogates (Matrix: Water)						
Bromofluorobenzene, 4-	1.0	%	99.5		-	-
Difluorobenzene, 1,4-	1.0	%	99.9		-	-
Polycyclic Aromatic Hydrocarbons (Matrix: Water)						
Acenaphthene	0.010	µg/L	<0.010		-	-
Acenaphthylene	0.010	µg/L	<0.010		-	-
Acridine	0.010	µg/L	<0.010		-	-
Anthracene	0.010	µg/L	<0.010		-	-
Benz(a)anthracene	0.010	µg/L	<0.010		0.1	-
Benzo(a)pyrene	0.0050	µg/L	<0.0050		0.1	-
Benzo(b+j)fluoranthene	0.010	µg/L	<0.010		-	-
Benzo(b+j+k)fluoranthene	0.015	µg/L	<0.015		-	-
Benzo(g,h,i)perylene	0.010	µg/L	<0.010		-	-
Benzo(k)fluoranthene	0.010	µg/L	<0.010		-	-
Chrysene	0.010	µg/L	<0.010		-	-
Dibenz(a,h)anthracene	0.0050	µg/L	<0.0050		-	-
Fluoranthene	0.010	µg/L	<0.010		0.2	-

Fluorene	0.010	µg/L	<0.010		-	-
Indeno(1,2,3-c,d)pyrene	0.010	µg/L	<0.010		-	-
Methylnaphthalene, 1-	0.010	µg/L	<0.010		-	-
Methylnaphthalene, 2-	0.010	µg/L	<0.010		-	-
Naphthalene	0.050	µg/L	<0.050		-	-
Phenanthrene	0.020	µg/L	<0.020		-	-
Pyrene	0.010	µg/L	<0.010		0.2	-
Quinoline	0.050	µg/L	<0.050		-	-
Polycyclic Aromatic Hydrocarbons Surrogates (Matrix: Water)						-
Chrysene-d12	0.1	%	94.7		-	-
Naphthalene-d8	0.1	%	96.7		-	-
Phenanthrene-d10	0.1	%	101		-	-
Glycols (Matrix: Water)						-
Diethylene glycol	5.0	mg/L	<5.0		-	-
Ethylene glycol	5.0	mg/L	<5.0		-	-
Propylene glycol, 1,2-	5.0	mg/L	<5.0		-	-
Triethylene glycol	5.0	mg/L	<5.0		-	-
Glycols, total (EG+DEG+PG)	10	mg/L	<10		-	-

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End of Pipe Lab Documentation



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

COC Number 23 - 1084265

Canada Toll Free: 1 800 668 9878

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Report To Company: <u>FKM</u> Contact: <u>Sara Demetkshi</u> Phone: <u>514 891 2993</u> <small>Company address below will appear on the final report</small>		Reports / Recipients Select Report Format: <input type="checkbox"/> PDF <input checked="" type="checkbox"/> FAX <input type="checkbox"/> EDD (DIGITAL) Merge QC/QC1 Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: <u>Sara Demetkshi@MichelsCanada.com</u> Email 2: <u>Brook Clarke@MichelsCanada.com</u> Email 3:		Turnaround Time (TAT) Requested Routine (R) if received by 3pm M-F - no surcharge apply 4 day (P4) if received by 3pm M-F - 20% rush surcharge minimum 3 day (P3) if received by 3pm M-F - 20% rush surcharge minimum 2 day (P2) if received by 3pm M-F - 50% rush surcharge minimum 1 day (P1) if received by 3pm M-F - 100% rush surcharge minimum Same day (D) if received by 11am M-F - 100% rush surcharge <small>Add'l fees may apply to rush requests on weekends, statutory holidays and for non-routine tests</small> Date and Time Required for all EMP TATs: <u>10-03-24 11:30 am (PT)</u> <small>For all tests with rush TATs requested, please contact your AM to confirm availability</small>		Analysis Request <small>Methods: T (Total), P (Preserved) or F (Filtered and Preserved) (F/P) below</small>																															
Street: City/Province: Postal Code:		Invoice To Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Copy of Invoice with Report <input type="checkbox"/> YES <input type="checkbox"/> NO Company: <u>Jenssa Scriwaka</u> Contact:		Invoice Recipients Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: <u>Jenssa.Scriwaka@FrontierKempco.com</u> Email 2:		<table border="1"> <thead> <tr> <th>NUMBER OF CONTAINERS</th> <th>PHYSICAL TEST</th> <th>TOTAL METALS</th> <th>DISSOLVED METALS</th> <th>ORGANICS</th> <th>PAHs, EPA, VPH</th> <th>SVOC</th> <th>ANIONS AND AMMONIUM</th> <th>HYDRO CARBON</th> <th>GLYCOLS</th> <th>DOC, TOC</th> <th>PHENOLS</th> <th>SAMPLES ON HOLD</th> <th>EXTENDED STORAGE REQUIRED</th> <th>SUSPECTED HAZARD (see notes)</th> </tr> </thead> <tbody> <tr> <td></td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td>✓</td> <td></td> <td></td> <td></td> </tr> </tbody> </table>		NUMBER OF CONTAINERS	PHYSICAL TEST	TOTAL METALS	DISSOLVED METALS	ORGANICS	PAHs, EPA, VPH	SVOC	ANIONS AND AMMONIUM	HYDRO CARBON	GLYCOLS	DOC, TOC	PHENOLS	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
NUMBER OF CONTAINERS	PHYSICAL TEST	TOTAL METALS	DISSOLVED METALS	ORGANICS	PAHs, EPA, VPH	SVOC	ANIONS AND AMMONIUM	HYDRO CARBON	GLYCOLS	DOC, TOC	PHENOLS	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																							
	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓																										
Project Information ALS Client Code / QUOTE #: <u>TOP 150</u> Job / Project #: <u>BC Rain</u> PO / AFE: LSD:		Oil and Gas Required Fields (client use) A/C Coast Code: <u>PO#</u> Major/Minor Code: <u>Routing Code:</u> Requisitioner: Location:		ALS Lab Work Order # (ALS use only): ALS Sample #: <u>WTP discharge</u> Sample Identification and/or Coordinates (This description will appear on the report): Date (dd-mm-yy): <u>18-03-24</u> Time (hh:mm): <u>11:30</u> Sample Type: <u>Water</u>		ALS Contact: Sampler:																															
Drinking Water (DW) Samples* (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption use? <input type="checkbox"/> YES <input type="checkbox"/> NO		SHIPPING RELEASE (client use) Released by: <u>Sara Demetkshi</u> Date: <u>18.03.24</u> Time:		INITIAL SHIPMENT RECEPTION (ALS use only) Received by: <u>AS</u> Date: <u>3/18/24</u> Time:		FINAL SHIPMENT RECEPTION (ALS use only) Received by: <u>AS</u> Date: <u>3/18/24</u> Time: <u>12:45 AM</u>																															

Environmental Division
Vancouver
Work Order Reference
VA24A5592



Telephone: +1 604 253 4188

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WRITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

CERTIFICATE OF ANALYSIS

Work Order	: VA24A5592	Page	: 1 of 10
Client	: Frontier-Kemper Michels Joint Venture	Laboratory	: ALS Environmental - Vancouver
Contact	: Sara Derakhshi	Account Manager	: Thomas Chang
Address	: 404-850 Harbourside Drive	Address	: 8081 Lougheed Highway
	: North Vancouver BC Canada V7P 0A3		: Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4168
Project	: ----	Date Samples Received	: 18-Mar-2024 12:45
PO	: ----	Date Analysis Commenced	: 18-Mar-2024
C-O-C number	: 23-1084265	Issue Date	: 20-Mar-2024 15:23
Sampler	: ----		
Site	: BC Rail		
Quote number	: WTP Dishcharge		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
- Surrogate Control Limits

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Chamoi Beckford	Lab Assistant	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kate Dimitrova	Supervisor - Inorganic	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Virginia Smith	Account Manager Assistant	Administration, Burnaby, British Columbia
Walt Kippenhuck	Supervisor - Inorganic	Inorganics, Waterloo, Ontario



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).

<i>Unit</i>	<i>Description</i>
-	no units
°C	degrees celsius
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
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					Client sample ID	WTP Discharge				
(Matrix: Water)										
Client sampling date / time					18-Mar-2024 11:30					
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5592-001					
					Result					
Anions and Nutrients										
Nitrogen, total	7727-37-6	E388/VA	0.030	mg/L	2.28					
Phosphorus, total	7723-14-0	E372-UV/VA	0.0020	mg/L	0.0125					
Sulfate (as SO4)	14808-79-8	E235_S04/VA	0.30	mg/L	13.9					
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	---	E358-L/VA	0.50	mg/L	3.03					
Carbon, total organic [TOC]	---	E355-L/VA	0.50	mg/L	2.94					
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	0.0047					
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	0.00095					
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.00044					
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.00087					
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L	<0.000100					
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050					
Boron, total	7440-42-8	E420/VA	0.010	mg/L	0.021					
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	<0.0000050					
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	0.439					
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	0.000184					
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L	<0.00050					
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L	<0.00010					
Copper, total	7440-50-8	E420/VA	0.00050	mg/L	0.00095					
Iron, total	7439-89-6	E420/VA	0.010	mg/L	0.031					
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	0.000060					
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L	0.0042					
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	0.0188					
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L	0.00243					
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L	<0.0000050					
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L	0.00782					
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L	<0.00050					
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L	<0.050					
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	6.61					



Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge				
(Matrix: Water)										
Client sampling date / time					18-Mar-2024 11:30					
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5592-001					
					Result					
Field Tests										
Conductivity, field		EF001/VA	0.10	µS/cm	475.40					
Oxygen, dissolved, field		EF001/VA	0.01	mg/L	9.97					
pH, field		EF001/VA	0.10	pH units	7.89					
Redox potential, field		EF001/VA	0.01	mV	124					
Temperature, field		EF001/VA	0.10	°C	12.9					
Turbidity, field		EF001/VA	0.01	NTU	1.41					
Physical Tests										
Alkalinity, bicarbonate (as CaCO3)		E290/VA	2.0	mg/L	220					
Alkalinity, carbonate (as CaCO3)		E290/VA	2.0	mg/L	4.2					
Alkalinity, hydroxide (as CaCO3)		E290/VA	2.0	mg/L	-2.0					
Alkalinity, phenolphthalein (as CaCO3)		E290/VA	2.0	mg/L	2.1					
Alkalinity, total (as CaCO3)		E290/VA	2.0	mg/L	224					
Conductivity		E100/VA	2.0	µS/cm	482					
Hardness (as CaCO3), dissolved		EC100/VA	0.60	mg/L	1.08					
Hardness (as CaCO3), from total Ca/Mg		EC100A/VA	0.60	mg/L	1.17					
Oxidation-reduction potential [ORP]		E125/VA	0.10	mV	264					
pH		E108/VA	0.10	pH units	8.34					
Solids, total dissolved [TDS]		E162/VA	10	mg/L	289					
Solids, total suspended [TSS]		E160/VA	3.0	mg/L	<3.0					
Turbidity		E121/VA	0.10	NTU	1.06					
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	1.16					
Ammonium (as NH4), field	14786-03-9	EC298A/VA	0.0010	mg/L	1.47					
Bromide	24959-87-9	E235.B/L/VA	0.050	mg/L	<0.050					
Chloride	16887-00-8	E235.C/VA	0.50	mg/L	16.1					
Fluoride	18984-48-3	E235.F/VA	0.020	mg/L	0.092					
Nitrate (as N)	14797-55-0	E235.N03-L/V A	0.0050	mg/L	0.626					
Nitrite (as N)	14797-65-0	E235.N02-L/V A	0.0010	mg/L	0.0227					



Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge				
(Matrix: Water)										
Client sampling date / time					18-Mar-2024 11:30					
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5592-001					
					Result					
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680ENA	1.0	%	90.2					

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.



Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge				
(Matrix: Water)										
Client sampling date / time					18-Mar-2024 11:30					
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5592-001					
					Result					
Polycyclic Aromatic Hydrocarbons										
Acridine	260-94-6	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Anthracene	120-12-7	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Benzo(a)anthracene	56-85-3	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Benzo(a)pyrene	50-32-8	E641A/VA	0.0050	µg/L	<0.0050	---	---	---	---	---
Benzo(b,j)fluoranthene	n/a	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Benzo(b+k)fluoranthene	n/a	E641A/VA	0.015	µg/L	<0.015	---	---	---	---	---
Benzo(g,h,i)perylene	191-24-2	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Benzo(k)fluoranthene	207-08-9	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Chrysene	218-01-9	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Dibenz(a,h)anthracene	53-70-3	E641A/VA	0.0050	µg/L	<0.0050	---	---	---	---	---
Fluoranthene	206-44-0	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Fluorene	86-73-7	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Methylnaphthalene, 1-	90-12-0	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Methylnaphthalene, 2-	91-57-6	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Naphthalene	91-20-3	E641A/VA	0.050	µg/L	<0.050	---	---	---	---	---
Phenanthrene	85-01-8	E641A/VA	0.020	µg/L	<0.020	---	---	---	---	---
Pyrene	129-00-0	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Quinoline	91-22-5	E641A/VA	0.050	µg/L	<0.050	---	---	---	---	---
Polycyclic Aromatic Hydrocarbons Surrogates										
Chrysene-d12	1719-03-5	E641A/VA	0.1	%	94.7	---	---	---	---	---
Naphthalene-d8	1146-85-2	E641A/VA	0.1	%	96.7	---	---	---	---	---
Phenanthrene-d10	1517-22-2	E641A/VA	0.1	%	101	---	---	---	---	---
Glycols										
Diethylene glycol	111-46-6	E680E/VA	5.0	mg/L	<5.0	---	---	---	---	---
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L	<5.0	---	---	---	---	---
Propylene glycol, 1,2-	57-55-6	E680E/VA	5.0	mg/L	<5.0	---	---	---	---	---
Triethylene glycol	112-27-6	E680E/VA	5.0	mg/L	<5.0	---	---	---	---	---
Glycols, total (EG+DEG+PG)	---	E680E/VA	10	mg/L	<10	---	---	---	---	---
Glycols Surrogates										



Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge				
(Matrix: Water)										
Client sampling date / time					18-Mar-2024 11:30					
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5592-001					
					Result					
Volatile Organic Compounds [Fuels]										
Ethylbenzene	100-41-4	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	---
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	---
Styrene	100-42-5	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	---
Toluene	108-88-3	E611C/VA	0.40	µg/L	<0.40	---	---	---	---	---
Xylene, m+p-	179601-23-1	E611C/VA	0.40	µg/L	<0.40	---	---	---	---	---
Xylene, o-	95-47-6	E611C/VA	0.30	µg/L	<0.30	---	---	---	---	---
Xylenes, total	1330-20-7	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	---
Volatile Organic Compounds [THMs]										
Bromodichloromethane	75-27-4	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	---
Bromoform	75-25-2	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	---
Chloroform	67-66-3	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	---
Dibromochloromethane	124-48-1	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	---
Hydrocarbons										
EPH (C10-C19)	---	E601A/VA	250	µg/L	<250	---	---	---	---	---
EPH (C19-C32)	---	E601A/VA	250	µg/L	<250	---	---	---	---	---
VHw (C6-C10)	---	E581.VH+F1/ VA	100	µg/L	<100	---	---	---	---	---
HEPHw	---	EC600A/VA	250	µg/L	<250	---	---	---	---	---
LEPHw	---	EC600A/VA	250	µg/L	<250	---	---	---	---	---
VPHw	---	EC590A/VA	100	µg/L	<100	---	---	---	---	---
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6	E601A/VA	1.0	%	78.2	---	---	---	---	---
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/ VA	1.0	%	121	---	---	---	---	---
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611C/VA	1.0	%	99.5	---	---	---	---	---
Difluorobenzene, 1,4-	540-36-3	E611C/VA	1.0	%	99.9	---	---	---	---	---
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---
Acenaphthylene	208-96-8	E641A/VA	0.010	µg/L	<0.010	---	---	---	---	---



Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge				
(Matrix: Water)										
Client sampling date / time					18-Mar-2024 11:30					
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5592-001					
					Result					
Aggregate Organics										
Phenols, total (4AAP)	---	ES82/MT	0.0010	mg/L	<0.0010	---	---	---	---	---
Volatile Organic Compounds										
Chlorobenzene	106-89-7	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Chloromethane	74-87-3	E611C/NA	5.0	µg/L	<5.0	---	---	---	---	---
Dichlorobenzene, 1,2-	95-50-1	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichlorobenzene, 1,3-	541-73-1	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichlorobenzene, 1,4-	106-46-7	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichloropropane, 1,2-	78-87-5	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichloropropylene, cis+trans-1,3-	542-75-6	E611C/NA	0.75	µg/L	<0.75	---	---	---	---	---
Dichloropropylene, cis-1,3-	10061-01-6	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C/NA	0.20	µg/L	<0.20	---	---	---	---	---
Trichloroethane, 1,1,2-	79-00-5	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Trichlorofluoromethane	75-69-4	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Volatile Organic Compounds [Drycleaning]										
Carbon tetrachloride	56-23-5	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Chloroethane	75-00-3	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichloroethane, 1,1-	75-34-3	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichloroethane, 1,2-	107-06-2	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichloroethylene, 1,1-	75-35-4	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichloroethylene, cis-1,2-	156-59-2	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichloroethylene, trans-1,2-	156-60-5	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Dichloromethane	75-09-2	E611C/NA	1.0	µg/L	<1.0	---	---	---	---	---
Dichloropropylene, trans-1,3-	10061-02-6	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Tetrachloroethylene	127-18-4	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Trichloroethane, 1,1,1-	71-55-6	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Trichloroethylene	79-01-6	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---
Vinyl chloride	75-01-4	E611C/NA	0.40	µg/L	<0.40	---	---	---	---	---
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611C/NA	0.50	µg/L	<0.50	---	---	---	---	---



Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge				
(Matrix: Water)										
Client sampling date / time					18-Mar-2024 11:30					
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5592-001					
					Result					
Dissolved Metals										
Copper, dissolved	7440-50-8	E421/NA	0.00020	mg/L	0.00073	---	---	---	---	---
Iron, dissolved	7439-89-6	E421/NA	0.010	mg/L	<0.010	---	---	---	---	---
Lead, dissolved	7439-92-1	E421/NA	0.000050	mg/L	<0.000050	---	---	---	---	---
Lithium, dissolved	7439-93-2	E421/NA	0.0010	mg/L	0.0043	---	---	---	---	---
Magnesium, dissolved	7439-95-4	E421/NA	0.0050	mg/L	0.0187	---	---	---	---	---
Manganese, dissolved	7439-96-6	E421/NA	0.00010	mg/L	0.00228	---	---	---	---	---
Mercury, dissolved	7439-97-6	E509/NA	0.0000050	mg/L	<0.0000050	---	---	---	---	---
Molybdenum, dissolved	7439-98-7	E421/NA	0.000050	mg/L	0.00745	---	---	---	---	---
Nickel, dissolved	7440-02-0	E421/NA	0.00050	mg/L	<0.00050	---	---	---	---	---
Phosphorus, dissolved	7723-14-0	E421/NA	0.050	mg/L	<0.050	---	---	---	---	---
Potassium, dissolved	7440-09-7	E421/NA	0.050	mg/L	6.56	---	---	---	---	---
Rubidium, dissolved	7440-17-7	E421/NA	0.00020	mg/L	0.0128	---	---	---	---	---
Selenium, dissolved	7782-49-2	E421/NA	0.000050	mg/L	0.000090	---	---	---	---	---
Silicon, dissolved	7440-21-3	E421/NA	0.050	mg/L	3.42	---	---	---	---	---
Silver, dissolved	7440-22-4	E421/NA	0.000010	mg/L	<0.000010	---	---	---	---	---
Sodium, dissolved	7440-23-5	E421/NA	0.050	mg/L	110	---	---	---	---	---
Strontium, dissolved	7440-24-6	E421/NA	0.00020	mg/L	0.00095	---	---	---	---	---
Sulfur, dissolved	7704-34-9	E421/NA	0.50	mg/L	4.66	---	---	---	---	---
Tellurium, dissolved	13494-80-0	E421/NA	0.00020	mg/L	<0.00020	---	---	---	---	---
Thallium, dissolved	7440-28-0	E421/NA	0.000010	mg/L	<0.000010	---	---	---	---	---
Thorium, dissolved	7440-29-1	E421/NA	0.00010	mg/L	<0.00010	---	---	---	---	---
Tin, dissolved	7440-31-6	E421/NA	0.00010	mg/L	<0.00010	---	---	---	---	---
Titanium, dissolved	7440-32-6	E421/NA	0.00030	mg/L	<0.00030	---	---	---	---	---
Tungsten, dissolved	7440-33-7	E421/NA	0.00010	mg/L	<0.00010	---	---	---	---	---
Uranium, dissolved	7440-61-1	E421/NA	0.000010	mg/L	<0.000010	---	---	---	---	---
Vanadium, dissolved	7440-62-2	E421/NA	0.00050	mg/L	<0.00050	---	---	---	---	---
Zinc, dissolved	7440-66-6	E421/NA	0.0010	mg/L	0.0021	---	---	---	---	---
Zirconium, dissolved	7440-67-7	E421/NA	0.00020	mg/L	<0.00020	---	---	---	---	---
Dissolved mercury filtration location	---	EP509/NA	-	-	Field	---	---	---	---	---
Dissolved metals filtration location	---	EP421/NA	-	-	Field	---	---	---	---	---



Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge				
(Matrix: Water)										
Client sampling date / time					18-Mar-2024 11:30					
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5592-001					
					Result					
Total Metals										
Ruobidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.0128	---	---	---	---	---
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	0.000108	---	---	---	---	---
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	3.23	---	---	---	---	---
Silver, total	7440-22-4	E420/VA	0.000010	mg/L	<0.000010	---	---	---	---	---
Sodium, total	7440-23-6	E420/VA	0.050	mg/L	106	---	---	---	---	---
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.00091	---	---	---	---	---
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	4.76	---	---	---	---	---
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L	<0.00020	---	---	---	---	---
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L	<0.000010	---	---	---	---	---
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L	<0.00010	---	---	---	---	---
Tin, total	7440-31-8	E420/VA	0.00010	mg/L	<0.00010	---	---	---	---	---
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L	0.00030	---	---	---	---	---
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L	<0.00010	---	---	---	---	---
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	<0.000010	---	---	---	---	---
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	<0.00050	---	---	---	---	---
Zinc, total	7440-68-6	E420/VA	0.0030	mg/L	<0.0030	---	---	---	---	---
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L	<0.00020	---	---	---	---	---
Dissolved Metals										
Aluminum, dissolved	7429-90-6	E421/VA	0.0010	mg/L	0.0038	---	---	---	---	---
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L	0.00090	---	---	---	---	---
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L	0.00038	---	---	---	---	---
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L	0.00067	---	---	---	---	---
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L	<0.000100	---	---	---	---	---
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L	<0.000050	---	---	---	---	---
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L	0.020	---	---	---	---	---
Cadmium, dissolved	7440-43-8	E421/VA	0.0000050	mg/L	<0.0000050	---	---	---	---	---
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L	0.401	---	---	---	---	---
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L	0.000174	---	---	---	---	---
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L	<0.00050	---	---	---	---	---
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L	<0.00010	---	---	---	---	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOF	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	
Organic / Inorganic Carbon (QCLot: 1370904)									
Carbon, dissolved organic [DOC]	---	E359-L	0.5	mg/L	8.57 mg/L	101	80.0	120	---
Organic / Inorganic Carbon (QCLot: 1370905)									
Carbon, total organic [TOC]	---	E355-L	0.5	mg/L	8.57 mg/L	98.6	80.0	120	---
Total Metals (QCLot: 1371021)									
Mercury, total	7439-97-6	E508	0.00005	mg/L	0.0001 mg/L	99.5	80.0	120	---
Total Metals (QCLot: 1371036)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	---
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	109	80.0	120	---
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	---
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	---
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	104	80.0	120	---
Bismuth, total	7440-09-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	---
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	103	80.0	120	---
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	---
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	---
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	101	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	102	80.0	120	---
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	---
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	109	80.0	120	---
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	---
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	102	80.0	120	---
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	---
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	---
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	107	80.0	120	---
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	---
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	106	80.0	120	---
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	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	102	80.0	120	---
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	109	80.0	120	---
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100.0	80.0	120	---
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	104	80.0	120	---
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	---
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	99.6	80.0	120	---



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

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	Recovery Limits (%)		
					LCS	Low	High		
Physical Tests (QCLot: 1370811)									
Turbidity	---	E121	0.1	NTU	200 NTU	100	85.0	115	---
Physical Tests (QCLot: 1370902)									
Solids, total suspended (TSS)	---	E160	3	mg/L	150 mg/L	100	85.0	115	---
Physical Tests (QCLot: 1370903)									
Solids, total dissolved (TDS)	---	E162	10	mg/L	1000 mg/L	106	85.0	115	---
Physical Tests (QCLot: 1370913)									
pH	---	E108	---	pH units	7 pH units	100	98.0	102	---
Physical Tests (QCLot: 1370914)									
Alkalinity, phenolphthalein (as CaCO3)	---	E290	1	mg/L	229 mg/L	118	75.0	125	---
Alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	111	85.0	115	---
Physical Tests (QCLot: 1370915)									
Conductivity	---	E100	1	µS/cm	146.9 µS/cm	98.4	90.0	110	---
Anions and Nutrients (QCLot: 1370906)									
Nitrogen, total	7727-37-8	E366	0.03	mg/L	0.5 mg/L	102	75.0	125	---
Anions and Nutrients (QCLot: 1370907)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	97.0	80.0	120	---
Anions and Nutrients (QCLot: 1370908)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	94.9	85.0	115	---
Anions and Nutrients (QCLot: 1370916)									
Fluoride	16984-49-6	E235-F	0.02	mg/L	1 mg/L	99.5	90.0	110	---
Anions and Nutrients (QCLot: 1370917)									
Chloride	16887-00-6	E235-Cl	0.5	mg/L	100 mg/L	101	90.0	110	---
Anions and Nutrients (QCLot: 1370918)									
Bromide	24859-67-6	E235-Br-L	0.05	mg/L	0.5 mg/L	101	85.0	115	---
Anions and Nutrients (QCLot: 1370919)									
Nitrate (as N)	14797-55-8	E235-NO3-L	0.005	mg/L	2.0 mg/L	100	90.0	110	---
Anions and Nutrients (QCLot: 1370920)									
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: 1370921)									
Sulfate (as SO4)	14808-79-8	E235-SO4	0.3	mg/L	100 mg/L	102	90.0	110	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1370973) - continued						
Chrysene	218-01-9	E841A	0.01	µg/L	<0.010	---
Dibenz(a,h)anthracene	53-70-3	E841A	0.005	µg/L	<0.0050	---
Fluoranthene	206-44-0	E841A	0.01	µg/L	<0.010	---
Fluorene	86-73-7	E841A	0.01	µg/L	<0.010	---
Indeno(1,2,3-c,d)pyrene	193-39-6	E841A	0.01	µg/L	<0.010	---
Methylnaphthalene, 1-	90-12-0	E841A	0.01	µg/L	<0.010	---
Methylnaphthalene, 2-	91-57-6	E841A	0.01	µg/L	<0.010	---
Naphthalene	91-20-3	E841A	0.05	µg/L	<0.050	---
Phenanthrene	85-01-8	E841A	0.02	µg/L	<0.020	---
Pyrene	129-00-0	E841A	0.01	µg/L	<0.010	---
Quinoline	91-22-6	E841A	0.05	µg/L	<0.050	---
Glycols (QCLot: 1370894)						
Diethylene glycol	111-46-6	E880E	5	mg/L	<5.0	---
Ethylene glycol	107-21-1	E880E	5	mg/L	<5.0	---
Propylene glycol, 1,2-	57-55-6	E880E	5	mg/L	<5.0	---
Triethylene glycol	112-27-6	E880E	5	mg/L	<5.0	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1371037) - continued						
Dichloroethylene, cis-1,2-	156-59-2	E811C	0.5	µg/L	<0.50	---
Dichloroethylene, trans-1,2-	156-60-5	E811C	0.5	µg/L	<0.50	---
Dichloromethane	75-09-2	E811C	1	µg/L	<1.0	---
Dichloropropane, 1,2-	78-87-5	E811C	0.5	µg/L	<0.50	---
Dichloropropylene, cis-1,3-	10061-01-5	E811C	0.5	µg/L	<0.50	---
Dichloropropylene, trans-1,3-	10061-02-6	E811C	0.5	µg/L	<0.50	---
Ethylbenzene	100-41-4	E811C	0.5	µg/L	<0.50	---
Methyl-tert-butyl ether (MTBE)	1634-04-4	E811C	0.5	µg/L	<0.50	---
Styrene	100-42-6	E811C	0.5	µg/L	<0.50	---
Tetrachloroethane, 1,1,1,2-	630-20-6	E811C	0.5	µg/L	<0.50	---
Tetrachloroethane, 1,1,2,2-	79-34-5	E811C	0.2	µg/L	<0.20	---
Tetrachloroethylene	127-18-4	E811C	0.5	µg/L	<0.50	---
Toluene	108-88-3	E811C	0.4	µg/L	<0.40	---
Trichloroethane, 1,1,1-	71-55-6	E811C	0.5	µg/L	<0.50	---
Trichloroethane, 1,1,2-	79-00-5	E811C	0.5	µg/L	<0.50	---
Trichloroethylene	79-01-0	E811C	0.5	µg/L	<0.50	---
Trichlorofluoromethane	75-89-4	E811C	0.5	µg/L	<0.50	---
Vinyl chloride	75-01-4	E811C	0.4	µg/L	<0.40	---
Xylene, m+p-	179601-23-1	E811C	0.4	µg/L	<0.40	---
Xylene, o-	95-47-8	E811C	0.3	µg/L	<0.30	---
Hydrocarbons (QCLot: 1370972)						
EPH (C10-C19)	---	E801A	250	µg/L	<250	---
EPH (C19-C32)	---	E801A	250	µg/L	<250	---
Hydrocarbons (QCLot: 1371038)						
VHw (C6-C10)	---	E581,VH-F1	100	µg/L	<100	---
Polycyclic Aromatic Hydrocarbons (QCLot: 1370973)						
Acenaphthene	83-32-9	E841A	0.01	µg/L	<0.010	---
Acenaphthylene	208-96-8	E841A	0.01	µg/L	<0.010	---
Acridine	260-84-6	E841A	0.01	µg/L	<0.010	---
Anthracene	120-12-7	E841A	0.01	µg/L	<0.010	---
Benzo(a)anthracene	56-55-3	E841A	0.01	µg/L	<0.010	---
Benzo(a)pyrene	50-32-8	E841A	0.005	µg/L	<0.0050	---
Benzo(b)fluoranthene	n/a	E841A	0.01	µg/L	<0.010	---
Benzo(g,h,i)perylene	191-24-2	E841A	0.01	µg/L	<0.010	---
Benzo(k)fluoranthene	207-08-9	E841A	0.01	µg/L	<0.010	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1371034) - continued						
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	---
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	7440-68-0	E421	0.001	mg/L	<0.0010	---
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	---
Aggregate Organics (QCLot: 1371645)						
Phenols, total (4AAP)	---	E392	0.001	mg/L	<0.0010	---
Volatile Organic Compounds (QCLot: 1371037)						
Benzene	71-43-2	E611C	0.5	µg/L	<0.50	---
Bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	---
Bromoform	75-35-2	E611C	0.5	µg/L	<0.50	---
Carbon tetrachloride	56-23-5	E611C	0.5	µg/L	<0.50	---
Chlorobenzene	108-90-7	E611C	0.5	µg/L	<0.50	---
Chloroethane	75-00-3	E611C	0.5	µg/L	<0.50	---
Chloroform	67-69-3	E611C	0.5	µg/L	<0.50	---
Chloromethane	74-87-3	E611C	5	µg/L	<5.0	---
Dibromochloromethane	124-48-1	E611C	0.5	µg/L	<0.50	---
Dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	<0.50	---
Dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	<0.50	---
Dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	<0.50	---
Dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	<0.50	---
Dichloroethane, 1,2	107-06-2	E611C	0.5	µg/L	<0.50	---
Dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	<0.50	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1371036) - continued						
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	7440-31-6	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	---
Dissolved Metals (QCLot: 1371019)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
Dissolved Metals (QCLot: 1371034)						
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	7440-42-6	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	7440-49-4	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	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Organic / Inorganic Carbon (QCLot: 1370904) - continued						
Carbon, dissolved organic [DOC]	---	E366-L	0.5	mg/L	<0.50	---
Organic / Inorganic Carbon (QCLot: 1370905)						
Carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
Total Metals (QCLot: 1371021)						
Mercury, total	7438-87-6	F508	0.000005	mg/L	<0.0000050	---
Total Metals (QCLot: 1371036)						
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	7440-39-2	E420	0.0001	mg/L	<0.00010	---
Barium, total	7440-30-3	E420	0.0001	mg/L	<0.00010	---
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	---
Bismuth, total	7440-80-9	F420	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	7439-89-2	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	7440-23-6	E420	0.05	mg/L	<0.050	---
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	---
Sulfur, total	7704-34-8	E420	0.5	mg/L	<0.50	---



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: 1370811)						
Turbidity	---	E121	0.1	NTU	<0.10	---
Physical Tests (QCLot: 1370902)						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
Physical Tests (QCLot: 1370903)						
Solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
Physical Tests (QCLot: 1370914)						
Alkalinity, bicarbonate (as CaCO3)	---	E290	1	mg/L	<1.0	---
Alkalinity, carbonate (as CaCO3)	---	E290	1	mg/L	<1.0	---
Alkalinity, hydroxide (as CaCO3)	---	E290	1	mg/L	<1.0	---
Alkalinity, phenolphthalein (as CaCO3)	---	E290	1	mg/L	<1.0	---
Alkalinity, total (as CaCO3)	---	E290	1	mg/L	<1.0	---
Physical Tests (QCLot: 1370915)						
Conductivity	---	E100	1	µS/cm	<1.0	---
Anions and Nutrients (QCLot: 1370906)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	---
Anions and Nutrients (QCLot: 1370907)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
Anions and Nutrients (QCLot: 1370908)						
Ammonia, total (as N)	7094-41-7	E298	0.005	mg/L	<0.0050	---
Anions and Nutrients (QCLot: 1370916)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
Anions and Nutrients (QCLot: 1370917)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	---
Anions and Nutrients (QCLot: 1370918)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
Anions and Nutrients (QCLot: 1370919)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
Anions and Nutrients (QCLot: 1370920)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
Anions and Nutrients (QCLot: 1370921)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
Organic / Inorganic Carbon (QCLot: 1370904)						



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
Volatile Organic Compounds (QC Lot: 1371037) - continued											
VA24A5592-001	WTP Discharge	Dichloroethane, 1,1-	75-34-3	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichloroethane, 1,2-	107-06-2	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichloroethylene, 1,1-	75-35-4	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichloroethylene, cis-1,2-	156-59-2	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichloroethylene, trans-1,2-	156-60-5	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichloromethane	75-08-2	E811C	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	---
		Dichloropropane, 1,2-	78-87-5	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichloropropylene, cis-1,3-	10061-01-5	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichloropropylene, trans-1,3-	10061-02-6	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Ethylbenzene	100-41-4	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Methyl-tert-butyl ether (MTBE)	1634-04-4	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Styrene	100-42-5	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Tetrachloroethane, 1,1,1,2-	630-20-6	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Tetrachloroethane, 1,1,2,2-	79-34-5	E811C	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	---
		Tetrachloroethylene	127-18-4	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Toluene	108-88-3	E811C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	---
		Trichloroethane, 1,1,1-	71-55-8	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Trichloroethane, 1,1,2-	79-00-5	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Trichloroethylene	78-01-6	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Trichlorofluoromethane	75-69-4	E811C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
Vinyl chloride	75-01-4	E811C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	---		
Xylene, m+p-	178601-23-1	E811C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	---		
Xylene, o-	95-47-6	E811C	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	---		
Hydrocarbons (QC Lot: 1371038)											
VA24A5592-001	WTP Discharge	VHw (C8-C10)	---	E881.VH+F1	100	µg/l	<100	<100	0.0%	30%	---
Glycols (QC Lot: 1370894)											
VA24A5424-001	Anonymous	Diethylene glycol	111-46-6	E880E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	---
		Ethylene glycol	107-21-1	E880E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	---
		Propylene glycol, 1,2-	57-55-6	E880E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	---
		Triethylene glycol	112-27-6	E880E	5.0	mg/L	<5.0	<5.0	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: 1371034) - continued											
VA24A5592-001	WTP Discharge	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	6.56	6.73	2.49%	20%	---
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.0128	0.0132	3.71%	20%	---
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000090	0.000084	0.00006	Diff <2x LOR	---
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.42	3.50	2.43%	20%	---
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	---
		Sodium, dissolved	7440-23-6	E421	0.050	mg/L	110	114	2.99%	20%	---
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.00095	0.00094	0.00001	Diff <2x LOR	---
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.66	4.68	0.01	Diff <2x LOR	---
		Tellurium, dissolved	13494-90-9	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	0.0021	0.0020	0.0001	Diff <2x LOR	---
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	---
Aggregate Organics (QC Lot: 1371645)											
CG2403281-001	Anonymous	Phenols, total (4AAP)	---	E582	0.0010	mg/L	0.0020	0.0017	0.0003	Diff <2x LOR	---
Volatile Organic Compounds (QC Lot: 1371037)											
VA24A5592-001	WTP Discharge	Benzene	71-43-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Bromodichloromethane	75-27-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Bromoform	75-26-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Carbon tetrachloride	56-23-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Chlorobenzene	108-90-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Chloroethane	75-00-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Chloroform	67-66-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Chloromethane	74-87-3	E611C	5.0	µg/L	<5.0	<5.0	0	Diff <2x LOR	---
		Dibromochloromethane	124-48-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichlorobenzene, 1,2-	95-50-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichlorobenzene, 1,3-	541-73-1	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	---
		Dichlorobenzene, 1,4-	108-48-7	E611C	0.50	µg/L	<0.50	<0.50	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
Total Metals (QC Lot: 1371036) - continued											
VA24A5592-001	WTP Discharge	Sulfur, total	7704-34-8	E420	0.50	mg/L	4.76	5.06	0.30	Diff <2x LOR	---
		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	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00030	0.00032	0.00002	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	<0.000010	<0.000010	0	Diff <2x LOR	---
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	---
		Zinc, total	7440-68-8	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	---
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	---
Dissolved Metals (QC Lot: 1371019)											
VA24A6241-013	Anonymous	Mercury, dissolved	7439-97-8	E509	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	---
Dissolved Metals (QC Lot: 1371034)											
VA24A5592-001	WTP Discharge	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0038	0.0021	0.0017	Diff <2x LOR	---
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00090	0.00090	0.000002	Diff <2x LOR	---
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00038	0.00042	0.00004	Diff <2x LOR	---
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00087	0.00090	0.00002	Diff <2x LOR	---
		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	0.020	0.020	0.0002	Diff <2x LOR	---
		Cadmium, dissolved	7440-43-8	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	---
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	0.401	0.391	0.011	Diff <2x LOR	---
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000174	0.000176	1.21%	20%	---
		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	0.00073	0.00078	0.00005	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	7438-93-2	E421	0.0010	mg/L	0.0043	0.0042	0.0001	Diff <2x LOR	---
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	0.0187	0.0180	0.0007	Diff <2x LOR	---
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00228	0.00234	2.88%	20%	---
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00745	0.00746	0.142%	20%	---
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	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
Organic / Inorganic Carbon (QC Lot: 1370904) - continued											
VA24A5592-001	WTP Discharge	Carbon, dissolved organic [DOC]	---	E358-L	0.50	mg/L	3.03	3.70	0.67	Diff <2x LOR	---
Organic / Inorganic Carbon (QC Lot: 1370905)											
VA24A5592-001	WTP Discharge	Carbon, total organic [TOC]	---	E355-L	0.50	mg/L	2.94	3.30	0.45	Diff <2x LOR	---
Total Metals (QC Lot: 1371021)											
VA24A5433-021	Anonymous	Mercury, total	7439-97-6	E508	0.000050	mg/L	0.000288	0.000294	1.92%	20%	---
Total Metals (QC Lot: 1371036)											
VA24A5592-001	WTP Discharge	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0047	0.0048	0.00008	Diff <2x LOR	---
		Antimony, total	7440-39-0	E420	0.00010	mg/L	0.00095	0.00095	0.0000006	Diff <2x LOR	---
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00044	0.00047	0.00002	Diff <2x LOR	---
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.00087	0.00092	0.00005	Diff <2x LOR	---
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	---
		Bismuth, total	7440-89-8	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	---
		Boron, total	7440-42-8	E420	0.010	mg/L	0.021	0.021	0.00006	Diff <2x LOR	---
		Cadmium, total	7440-43-8	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	---
		Calcium, total	7440-70-2	E420	0.050	mg/L	0.439	0.427	-0.012	Diff <2x LOR	---
		Cesium, total	7440-45-2	E420	0.000010	mg/L	0.000164	0.000164	0.228%	20%	---
		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	<0.00010	<0.00010	0	Diff <2x LOR	---
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00095	0.00098	0.00004	Diff <2x LOR	---
		Iron, total	7439-89-6	E420	0.010	mg/L	0.031	0.033	0.002	Diff <2x LOR	---
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000080	0.000052	0.000008	Diff <2x LOR	---
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0042	0.0042	0.00008	Diff <2x LOR	---
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	0.0188	0.0189	0.0002	Diff <2x LOR	---
		Manganese, total	7439-98-5	E420	0.00010	mg/L	0.00243	0.00290	-8.74%	20%	---
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00782	0.00781	0.130%	20%	---
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	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	6.81	6.94	4.86%	20%	---
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.0129	0.0137	6.10%	20%	---
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000108	0.000108	0.0000002	Diff <2x LOR	---
		Silicon, total	7440-21-3	E420	0.10	mg/L	3.23	3.36	3.86%	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	106	112	4.98%	20%	---
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.00091	0.00092	0.00001	Diff <2x LOR	---



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: 1370811)												
KS2400883-001	Anonymous	Turbidity	---	E121	0.10	NTU	8.98	9.15	1.87%	15%	---	
Physical Tests (QC Lot: 1370902)												
VA24A5592-001	WTP Discharge	Solids, total suspended [TSS]	---	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	---	
Physical Tests (QC Lot: 1370903)												
VA24A5592-001	WTP Discharge	Solids, total dissolved [TDS]	---	E162	20	mg/L	289	280	3.17%	20%	---	
Physical Tests (QC Lot: 1370913)												
VA24A5592-001	WTP Discharge	pH	---	E108	0.10	pH units	8.34	8.38	0.478%	4%	---	
Physical Tests (QC Lot: 1370915)												
VA24A5592-001	WTP Discharge	Conductivity	---	E100	2.0	µS/cm	482	484	0.414%	10%	---	
Physical Tests (QC Lot: 1371487)												
VA24A5592-001	WTP Discharge	Oxidation reduction potential [ORP]	---	E125	0.10	mV	264	261	1.18%	15%	---	
Anions and Nutrients (QC Lot: 1370906)												
VA24A5592-001	WTP Discharge	Nitrogen, total	7727-37-8	E366	0.150	mg/L	2.28	2.28	0.0781%	20%	---	
Anions and Nutrients (QC Lot: 1370907)												
VA24A5592-001	WTP Discharge	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0126	0.0124	0.00068	Diff <2x LOR	---	
Anions and Nutrients (QC Lot: 1370908)												
VA24A5592-001	WTP Discharge	Ammonia, total (as N)	7664-41-7	E298	0.100	mg/L	1.16	1.18	1.04%	20%	---	
Anions and Nutrients (QC Lot: 1370916)												
VA24A5592-001	WTP Discharge	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.092	0.091	0.001	Diff <2x LOR	---	
Anions and Nutrients (QC Lot: 1370917)												
VA24A5592-001	WTP Discharge	Chloride	16887-00-6	E235.Cl	0.50	mg/L	16.1	16.1	0.223%	20%	---	
Anions and Nutrients (QC Lot: 1370918)												
VA24A5592-001	WTP Discharge	Bromide	24959-87-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	---	
Anions and Nutrients (QC Lot: 1370919)												
VA24A5592-001	WTP Discharge	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.028	0.028	0.294%	20%	---	
Anions and Nutrients (QC Lot: 1370920)												
VA24A5592-001	WTP Discharge	Nitrite (as N)	14797-85-0	E235.NO2-L	0.0010	mg/L	0.0227	0.0227	0.0924%	20%	---	
Anions and Nutrients (QC Lot: 1370921)												
VA24A5592-001	WTP Discharge	Sulfate (as SO4)	14808-78-8	E235.SO4	0.30	mg/L	13.9	13.9	0.00987%	20%	---	
Organic / Inorganic Carbon (QC Lot: 1370904)												

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Work Order : VA24A5692
Client : Frontier-Kemper Michels Joint Venture
Project : ---



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.



QUALITY CONTROL REPORT

Work Order	: VA24A5592	Page	: 1 of 21
Client	: Frontier-Kemper Michels Joint Venture	Laboratory	: ALS Environmental - Vancouver
Contact	: Sara Derakhshi	Account Manager	: Thomas Chang
Address	: 404-850 Harbourside Drive North Vancouver BC Canada V7P 0A3	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: ----	Date Samples Received	: 18-Mar-2024 12:45
PO	: ----	Date Analysis Commenced	: 18-Mar-2024
C-O-C number	: 23-1084265	Issue Date	: 20-Mar-2024 15:24
Sampler	: ----		
Site	: BC Rail		
Quote number	: WTP Dishcharge		
No. of samples received	: 1		
No. of samples analysed	: 1		

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
- Reference Material (RM) 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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
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Sub-Matrix: Water					Matrix Spike (MS) Report					
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
Volatile Organic Compounds (QCLot: 1371037) - continued										
VA24A5592-001	WTP Discharge	Tetrachloroethane, 1,1,2,2-	79-34-5	E811C	92.6 µg/L	100 µg/L	92.6	60.0	140	---
		Tetrachloroethylene	127-18-4	E811C	111 µg/L	100 µg/L	111	60.0	140	---
		Toluene	106-88-3	E811C	112 µg/L	100 µg/L	112	60.0	140	---
		Trichloroethane, 1,1,1-	71-55-6	E811C	104 µg/L	100 µg/L	104	60.0	140	---
		Trichloroethane, 1,1,2-	79-00-5	E811C	102 µg/L	100 µg/L	102	60.0	140	---
		Trichloroethylene	79-01-6	E811C	100 µg/L	100 µg/L	100	60.0	140	---
		Trichlorofluoromethane	75-89-4	E811C	111 µg/L	100 µg/L	111	50.0	150	---
		Vinyl chloride	75-01-4	E811C	110 µg/L	100 µg/L	110	50.0	150	---
		Xylene, m+p-	179601-23-1	E811C	221 µg/L	200 µg/L	111	60.0	140	---
		Xylene, o-	95-47-6	E811C	104 µg/L	100 µg/L	104	60.0	140	---

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:					Reference Material (RM) Report					
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	RM Target	Recovery (%)	Recovery Limits (%)		Qualifier	
					Concentration	RM	Low	High		
Physical Tests (QCLot: 1371487)										
	RM	Oxidation-reduction potential [ORP]	---	E125	220 mV	100	95.0	105	---	



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					
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Spike		Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	Target	MS	Low	High	
Total Metals (QCLot: 1371021)										
VA24A5433-022	Anonymous	Mercury, total	7439-97-6	E508	0.0000989 mg/L	0.0001 mg/L	99.9	70.0	130	---
Dissolved Metals (QCLot: 1371019)										
VA24A5241-014	Anonymous	Mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	---
Aggregate Organics (QCLot: 1371545)										
CG2403281-001	Anonymous	Phenols, total (4AAP)	---	E562	0.0228 mg/L	0.02 mg/L	113	75.0	125	---
Volatile Organic Compounds (QCLot: 1371037)										
VA24A5592-001	WTP Discharge	Benzene	71-43-2	E811C	104 µg/L	100 µg/L	104	60.0	140	---
		Bromodichloromethane	75-27-4	E811C	98.1 µg/L	100 µg/L	98.1	60.0	140	---
		Bromoform	75-25-2	E811C	99.3 µg/L	100 µg/L	99.3	60.0	140	---
		Carbon tetrachloride	56-23-5	E811C	103 µg/L	100 µg/L	103	60.0	140	---
		Chlorobenzene	108-90-7	E811C	109 µg/L	100 µg/L	109	60.0	140	---
		Chloroethane	75-00-3	E811C	112 µg/L	100 µg/L	112	50.0	150	---
		Chloroform	67-66-3	E811C	104 µg/L	100 µg/L	104	60.0	140	---
		Chloromethane	74-87-3	E811C	111 µg/L	100 µg/L	111	50.0	150	---
		Dibromochloromethane	124-48-1	E811C	103 µg/L	100 µg/L	103	60.0	140	---
		Dichlorobenzene, 1,2-	96-50-1	E811C	108 µg/L	100 µg/L	109	60.0	140	---
		Dichlorobenzene, 1,3-	541-73-1	E811C	119 µg/L	100 µg/L	119	60.0	140	---
		Dichlorobenzene, 1,4-	106-46-7	E811C	118 µg/L	100 µg/L	118	60.0	140	---
		Dichloroethane, 1,1-	75-34-3	E811C	102 µg/L	100 µg/L	102	60.0	140	---
		Dichloroethane, 1,2-	107-06-2	E811C	102 µg/L	100 µg/L	102	60.0	140	---
		Dichloroethylene, 1,1-	75-35-4	E811C	97.2 µg/L	100 µg/L	97.2	60.0	140	---
		Dichloroethylene, cis-1,2-	156-59-2	E811C	100 µg/L	100 µg/L	100	60.0	140	---
		Dichloroethylene, trans-1,2-	156-60-5	E811C	102 µg/L	100 µg/L	102	60.0	140	---
		Dichloromethane	75-09-2	E811C	105 µg/L	100 µg/L	105	60.0	140	---
		Dichloropropane, 1,2-	78-87-5	E811C	101 µg/L	100 µg/L	101	60.0	140	---
		Dichloropropylene, cis-1,3-	10091-01-5	E811C	105 µg/L	100 µg/L	105	60.0	140	---
		Dichloropropylene, trans-1,3-	10091-02-6	E811C	107 µg/L	100 µg/L	107	60.0	140	---
		Ethylbenzene	100-41-4	E811C	104 µg/L	100 µg/L	104	60.0	140	---
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E811C	107 µg/L	100 µg/L	107	60.0	140	---
		Styrene	100-42-5	E811C	101 µg/L	100 µg/L	101	60.0	140	---
		Tetrachloroethane, 1,1,1,2-	630-20-6	E811C	101 µg/L	100 µg/L	101	60.0	140	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	Recovery Limits (%)		
							Low	High	
Polycyclic Aromatic Hydrocarbons (QCLot: 1370973) - continued									
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	---
Chrysene	218-01-6	E641A	0.01	µg/L	0.5 µg/L	113	60.0	130	---
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	104	60.0	130	---
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	---
Fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	---
Indeno(1,2,3-c,d)pyrene	193-38-5	E641A	0.01	µg/L	0.5 µg/L	90.7	60.0	130	---
Methylnaphthalene, 1	90-12-0	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	---
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	112	60.0	130	---
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	111	60.0	130	---
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	110	60.0	130	---
Pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	110	60.0	130	---
Quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	120	60.0	130	---
Glycols (QCLot: 1370894)									
Diethylene glycol	111-46-6	E680E	5	mg/L	25 mg/L	98.2	70.0	130	---
Ethylene glycol	107-21-1	F680F	5	mg/L	25 mg/L	97.5	70.0	130	---
Propylene glycol, 1,2-	57-55-6	E680E	5	mg/L	25 mg/L	98.8	70.0	130	---
Triethylene glycol	112-27-6	E680E	5	mg/L	25 mg/L	96.0	70.0	130	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	Recovery Limits (%)		
							Low	High	
Volatile Organic Compounds (QCLot: 1371037) - continued									
Dichloroethylene, cis-1,2-	156-59-2	E811C	0.5	µg/L	100 µg/L	99.6	70.0	130	---
Dichloroethylene, trans-1,2-	156-60-5	E811C	0.5	µg/L	100 µg/L	104	70.0	130	---
Dichloromethane	75-09-2	E811C	1	µg/L	100 µg/L	101	70.0	130	---
Dichloropropene, 1,2-	78-67-9	E811C	0.5	µg/L	100 µg/L	99.7	70.0	130	---
Dichloropropylene, cis-1,3-	10061-01-6	E811C	0.5	µg/L	100 µg/L	105	70.0	130	---
Dichloropropylene, trans-1,3-	16061-02-6	E811C	0.5	µg/L	100 µg/L	104	70.0	130	---
Ethylbenzene	100-41-4	E811C	0.5	µg/L	100 µg/L	109	70.0	130	---
Methyl-tert-butyl ether [MTBE]	1634-04-4	E811C	0.5	µg/L	100 µg/L	105	70.0	130	---
Styrene	100-42-5	E811C	0.5	µg/L	100 µg/L	107	70.0	130	---
Tetrachloroethane, 1,1,1,2-	630-20-6	E811C	0.5	µg/L	100 µg/L	105	70.0	130	---
Tetrachloroethane, 1,1,2,2-	79-34-5	E811C	0.2	µg/L	100 µg/L	99.6	70.0	130	---
Tetrachloroethylene	127-18-4	E811C	0.5	µg/L	100 µg/L	108	70.0	130	---
Toluene	108-88-3	E811C	0.4	µg/L	100 µg/L	112	70.0	130	---
Trichloroethane, 1,1,1-	71-55-6	F811C	0.5	µg/L	100 µg/L	109	70.0	130	---
Trichloroethane, 1,1,2-	78-00-5	E811C	0.5	µg/L	100 µg/L	100	70.0	130	---
Trichloroethylene	78-01-6	E811C	0.5	µg/L	100 µg/L	102	70.0	130	---
Trichlorofluoromethane	75-69-4	E811C	0.5	µg/L	100 µg/L	120	60.0	140	---
Vinyl chloride	75-01-4	E811C	0.4	µg/L	100 µg/L	130	60.0	140	---
Xylene, m+p-	170601-23-1	E811C	0.4	µg/L	200 µg/L	112	70.0	130	---
Xylene, o-	95-47-6	E811C	0.3	µg/L	100 µg/L	108	70.0	130	---
Hydrocarbons (QCLot: 1370972)									
EPH (C19-C19)	---	E801A	250	µg/L	6481 µg/L	101	70.0	130	---
EPH (C19-C32)	---	E801A	250	µg/L	3363 µg/L	99.2	70.0	130	---
Hydrocarbons (QCLot: 1371038)									
VHw (C8-C10)	---	E581.VH-F1	100	µg/L	6310 µg/L	79.2	70.0	130	---
Polycyclic Aromatic Hydrocarbons (QCLot: 1370973)									
Acenaphthene	63-32-9	E841A	0.01	µg/L	0.5 µg/L	108	60.0	130	---
Acenaphthylene	208-86-8	E841A	0.01	µg/L	0.5 µg/L	115	60.0	130	---
Acridine	260-94-6	E841A	0.01	µg/L	0.5 µg/L	102	60.0	130	---
Anthracene	120-12-7	E841A	0.01	µg/L	0.5 µg/L	111	60.0	130	---
Benzo(a)anthracene	56-55-3	E841A	0.01	µg/L	0.5 µg/L	93.1	60.0	130	---
Benzo(a)pyrene	50-32-6	E841A	0.005	µg/L	0.5 µg/L	97.8	60.0	130	---
Benzo(b)fluoranthene	n/a	E841A	0.01	µg/L	0.5 µg/L	106	60.0	130	---
Benzo(g,h,i)perylene	191-24-2	E841A	0.01	µg/L	0.5 µg/L	112	60.0	130	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOF	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	Recovery Limits (%)		
							Low	High	
Dissolved Metals (QCLot: 1371034) - continued									
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	105	80.0	120	---
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	116	80.0	120	---
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	99.5	80.0	120	---
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	110	80.0	120	---
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	105	80.0	120	---
Sulfur, dissolved	7704-34-8	E421	0.5	mg/L	50 mg/L	93.1	80.0	120	---
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	105	80.0	120	---
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	105	80.0	120	---
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	104	80.0	120	---
Tin, dissolved	7440-31-6	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	---
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	103	80.0	120	---
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	104	80.0	120	---
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	107	80.0	120	---
Vanadium, dissolved	7440-62-2	F421	0.0005	mg/L	0.5 mg/L	105	80.0	120	---
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	102	80.0	120	---
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	97.6	80.0	120	---
Aggregate Organics (QCLot: 1371645)									
Phenols, total (4AAP)		E562	0.001	mg/L	0.02 mg/L	105	85.0	115	---
Volatile Organic Compounds (QCLot: 1371037)									
Benzene	71-43-2	E811C	0.5	µg/L	100 µg/L	104	70.0	130	---
Bromodichloromethane	75-27-4	E811C	0.5	µg/L	100 µg/L	98.5	70.0	130	---
Bromoform	75-25-2	E811C	0.5	µg/L	100 µg/L	95.5	70.0	130	---
Carbon tetrachloride	56-23-5	E811C	0.5	µg/L	100 µg/L	105	70.0	130	---
Chlorobenzene	108-90-7	E811C	0.5	µg/L	100 µg/L	105	70.0	130	---
Chloroethane	75-00-3	F811C	0.5	µg/L	100 µg/L	121	60.0	140	---
Chloroform	67-66-3	E811C	0.5	µg/L	100 µg/L	104	70.0	130	---
Chloromethane	74-87-3	E811C	5	µg/L	100 µg/L	130	60.0	140	---
Dibromochloromethane	124-48-1	E811C	0.5	µg/L	100 µg/L	105	70.0	130	---
Dichlorobenzene, 1,2-	95-50-1	F811C	0.5	µg/L	100 µg/L	112	70.0	130	---
Dichlorobenzene, 1,3-	641-73-1	E811C	0.5	µg/L	100 µg/L	112	70.0	130	---
Dichlorobenzene, 1,4-	106-46-7	E811C	0.5	µg/L	100 µg/L	114	70.0	130	---
Dichloroethane, 1,1-	75-34-3	E811C	0.5	µg/L	100 µg/L	102	70.0	130	---
Dichloroethane, 1,2-	107-06-2	E811C	0.5	µg/L	100 µg/L	97.0	70.0	130	---
Dichloroethylene, 1,1-	75-35-4	E811C	0.5	µg/L	100 µg/L	104	70.0	130	---



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				Qualifier
					Spike Concentration	Recovery (%)	Recovery Limits (%)		
							Low	High	
Total Metals (QCLot: 1371036) - continued									
Tellurium, total	13494-80-9	E420	0.0002	ng/L	0.1 mg/L	108	80.0	120	---
Thallium, total	7440-28-0	E420	0.0001	mg/L	1 mg/L	99.4	80.0	120	---
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	103	80.0	120	---
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	105	80.0	120	---
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	---
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	104	80.0	120	---
Uranium, total	7440-61-1	E420	0.0001	mg/L	0.005 mg/L	103	80.0	120	---
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	---
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	---
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	---
Mercury, dissolved	7439-97-6	E509	0.000005	ng/L	0.0001 mg/L	97.7	80.0	120	---
Dissolved Metals (QCLot: 1371034)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	---
Antimony, dissolved	7440-58-0	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	106	80.0	120	---
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	---
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.3	80.0	120	---
Bismuth, dissolved	7440-09-9	E421	0.00005	mg/L	1 mg/L	107	80.0	120	---
Boron, dissolved	7440-42-6	E421	0.01	mg/L	1 mg/L	98.1	80.0	120	---
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	104	80.0	120	---
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.8	80.0	120	---
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	99.1	80.0	120	---
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	107	80.0	120	---
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	---
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	---
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	106	80.0	120	---
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	106	80.0	120	---
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	100	80.0	120	---
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	106	80.0	120	---
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	104	80.0	120	---
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	104	80.0	120	---
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	---
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	106	80.0	120	---
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	111	80.0	120	---
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	106	80.0	120	---



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Method Blanks (MB) - Continued							
Total Nitrogen by Colourimetry	E368	1370906	1	1	100.0	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1370905	1	1	100.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1370907	1	1	100.0	5.0	✔
TSS by Gravimetry	E160	1370902	1	2	50.0	5.0	✔
Turbidity by Nephelometry	E121	1370811	1	11	9.0	5.0	✔
VH and F1 by Headspace GC-FID	E581.VH+F1	1371038	1	1	100.0	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	1371037	1	1	100.0	5.0	✔
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1370908	0	1	0.0	5.0	✖
Bromide in Water by IC (Low Level)	E235.Br-L	1370918	0	1	0.0	5.0	✖
Chloride in Water by IC	E235.Cl	1370917	0	1	0.0	5.0	✖
Dissolved Mercury in Water by CVAAS	E509	1371019	1	12	8.3	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1371034	0	1	0.0	5.0	✖
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1370904	0	1	0.0	5.0	✖
Fluoride in Water by IC	E235.F	1370916	0	1	0.0	5.0	✖
Nitrate in Water by IC (Low Level)	E235.NO3-L	1370919	0	1	0.0	5.0	✖
Nitrite in Water by IC (Low Level)	E235.NO2-L	1370920	0	1	0.0	5.0	✖
Phenols (4AAP) in Water by Colorimetry	E562	1371645	1	6	16.6	5.0	✔
Sulfate in Water by IC	E235.SO4	1370921	0	1	0.0	5.0	✖
Total Mercury in Water by CVAAS	E508	1371021	1	19	5.2	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1371036	0	1	0.0	5.0	✖
Total Nitrogen by Colourimetry	E366	1370906	0	1	0.0	5.0	✖
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1370905	0	1	0.0	5.0	✖
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1370907	0	1	0.0	5.0	✖
VH and F1 by Headspace GC-FID	E581.VH+F1	1371038	0	1	0.0	5.0	✖
VOCs (BC List) by Headspace GC-MS	E611C	1371037	1	1	100.0	5.0	✔



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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	1370916	1	1	100.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1370894	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1370919	1	1	100.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1370920	1	1	100.0	5.0	✓
ORP by Electrode	E125	1371487	1	1	100.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1370973	1	1	100.0	5.0	✓
pH by Meter	E108	1370913	1	2	50.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1371646	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1370921	1	1	100.0	5.0	✓
TDS by Gravimetry	E162	1370903	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1371021	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1371036	1	1	100.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1370906	1	1	100.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1370905	1	1	100.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1370907	1	1	100.0	5.0	✓
TSS by Gravimetry	E180	1370902	1	2	50.0	5.0	✓
Turbidity by Nephelometry	E121	1370811	1	11	9.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1371038	1	1	100.0	5.0	✓
VOCs (BC List) by Headspace GC-MS	E611C	1371037	1	1	100.0	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E280	1370914	1	1	100.0	5.0	✓
Ammonia by Fluorescence	E288	1370908	1	1	100.0	5.0	✓
BC PHCs - EPH by GC-FID	E601A	1370972	1	1	100.0	5.0	✓
Bromides in Water by IC (Low Level)	E235.Br-L	1370918	1	1	100.0	5.0	✓
Chloride in Water by IC	E235.Cl	1370917	1	1	100.0	5.0	✓
Conductivity in Water	E100	1370915	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1371019	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1371034	1	1	100.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1370904	1	1	100.0	5.0	✓
Fluoride in Water by IC	E235.F	1370916	1	1	100.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1370894	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1370919	1	1	100.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1370920	1	1	100.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1370973	1	1	100.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1371646	1	6	16.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1370921	1	1	100.0	5.0	✓
TDS by Gravimetry	E162	1370903	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1371021	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1371036	1	1	100.0	5.0	✓



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	Analytical Methods	Method	QC Lot #	Count		Frequency (%)		Evaluation
				QC	Regular	Actual	Expected	
Laboratory Duplicates (DUP)								
Alkalinity Species by Titration		E280	1370914	0	1	0.0	5.0	*
Ammonia by Fluorescence		E280	1370908	1	1	100.0	5.0	✓
Bromide in Water by IC (Low Level)		E235.Br-L	1370918	1	1	100.0	5.0	✓
Chloride in Water by IC		E235.Cl	1370917	1	1	100.0	5.0	✓
Conductivity in Water		E100	1370915	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS		E609	1371019	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS		E421	1371034	1	1	100.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)		E358-L	1370904	1	1	100.0	5.0	✓
Fluoride in Water by IC		E235.F	1370916	1	1	100.0	5.0	✓
Glycols (4 analytes) by GC-FID		E680E	1370884	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)		E235.NO3-L	1370919	1	1	100.0	5.0	✓
Nitrite in Water by IC (Low Level)		E235.NO2-L	1370920	1	1	100.0	5.0	✓
ORP by Electrode		E125	1371487	1	1	100.0	5.0	✓
pH by Meter		E108	1370913	1	2	50.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry		E562	1371645	1	6	16.6	5.0	✓
Sulfate in Water by IC		E235.SO4	1370921	1	1	100.0	5.0	✓
TDS by Gravimetry		E162	1370903	1	1	100.0	5.0	✓
Total Mercury in Water by CVAAS		E508	1371021	1	19	5.2	5.0	✓
Total Metals in Water by CRC ICPMS		E420	1371036	1	1	100.0	5.0	✓
Total Nitrogen by Colourimetry		E366	1370906	1	1	100.0	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)		E355-L	1370905	1	1	100.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)		E372-U	1370907	1	1	100.0	5.0	✓
TSS by Gravimetry		E160	1370902	1	2	50.0	5.0	✓
Turbidity by Nephelometry		E121	1370811	1	11	9.0	5.0	✓
VH and F1 by Headspace GC-FID		E581.VH+F1	1371038	1	1	100.0	5.0	✓
VOCs (BC List) by Headspace GC-MS		E611C	1371037	1	1	100.0	5.0	✓
Laboratory Control Samples (LCS)								
Alkalinity Species by Titration		E280	1370914	1	1	100.0	5.0	✓
Ammonia by Fluorescence		E288	1370908	1	1	100.0	5.0	✓
BC PHCs - EPH by GC-FID		E601A	1370972	1	1	100.0	5.0	✓
Bromide in Water by IC (Low Level)		E235.Br-L	1370918	1	1	100.0	5.0	✓
Chloride in Water by IC		E235.Cl	1370917	1	1	100.0	5.0	✓
Conductivity in Water		E100	1370915	1	1	100.0	5.0	✓
Dissolved Mercury in Water by CVAAS		E609	1371019	1	12	8.3	5.0	✓
Dissolved Metals in Water by CRC ICPMS		E421	1371034	1	1	100.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)		E358-L	1370904	1	1	100.0	5.0	✓



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) WTP Discharge	E641A	18-Mar-2024	18-Mar-2024	14 days	0 days	✓	19-Mar-2024	40 days	0 days	✓
Total Metals : Total Mercury in Water by CVAAS										
HDPE - total (lab preserved) WTP Discharge	E508	18-Mar-2024	19-Mar-2024	0 hrs	13 hrs	* UCP	19-Mar-2024	0 hrs	13 hrs	* UCP
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) WTP Discharge	E420	18-Mar-2024	19-Mar-2024	180 days	1 days	✓	19-Mar-2024	180 days	1 days	✓
Volatile Organic Compounds - VOCs (BC List) by Headspace GC-MS										
Glass vial (sodium bisulfate) WTP Discharge	E511C	18-Mar-2024	19-Mar-2024	14 days	1 days	✓	19-Mar-2024	14 days	1 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended
 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.



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	Actual	Eval	Analysis Date	Holding Times Rec	Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) WTP Discharge	E355-L	18-Mar-2024	18-Mar-2024	3 days	0 days	✓	18-Mar-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) WTP Discharge	E355-L	18-Mar-2024	18-Mar-2024	28 days	0 days	✓	18-Mar-2024	28 days	0 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE WTP Discharge	E280	18-Mar-2024	18-Mar-2024	14 days	0 days	✓	19-Mar-2024	14 days	1 days	✓
Physical Tests : Conductivity in Water										
HDPE WTP Discharge	E100	18-Mar-2024	18-Mar-2024	28 days	0 days	✓	19-Mar-2024	28 days	1 days	✓
Physical Tests : ORP by Electrode										
HDPE WTP Discharge	E125	18-Mar-2024	---	---	---		19-Mar-2024	0.25 hrs	21 hrs	* EHTR-FM
Physical Tests : pH by Meter										
HDPE WTP Discharge	E108	18-Mar-2024	18-Mar-2024	0.25 hrs	7 hrs	* EHTR-FM	19-Mar-2024	0.25 hrs	18 hrs	* EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE WTP Discharge	E162	18-Mar-2024	---	---	---		18-Mar-2024	7 days	0 days	✓
Physical Tests : TSS by Gravimetry										
HDPE WTP Discharge	E160	18-Mar-2024	---	---	---		18-Mar-2024	7 days	0 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE WTP Discharge	E121	18-Mar-2024	---	---	---		18-Mar-2024	3 days	0 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	Actual	Eval	Analysis Date	Holding Times Rec	Actual	Eval
Anions and Nutrients : Sulfate in Water by IC										
HDPE WTP Discharge	E235.S04	18-Mar-2024	18-Mar-2024	28 days	0 days	✓	18-Mar-2024	28 days	0 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) WTP Discharge	E366	18-Mar-2024	18-Mar-2024	28 days	0 days	✓	19-Mar-2024	28 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) WTP Discharge	E372-U	18-Mar-2024	18-Mar-2024	28 days	0 days	✓	19-Mar-2024	28 days	1 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) WTP Discharge	E509	18-Mar-2024	19-Mar-2024	0 hrs	13 hrs	* UCP	19-Mar-2024	0 hrs	13 hrs	* UCP
Dissolved Metals : Dissolved Metals in Water by CRC IC/MS										
HDPE - dissolved (lab preserved) WTP Discharge	E421	18-Mar-2024	19-Mar-2024	180 days	1 days	✓	19-Mar-2024	180 days	1 days	✓
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO,Turbidity,T-T,P-o-PO4,NH3,Chloramine										
Amber glass dissolved (lab preserved) WTP Discharge	EF001	18-Mar-2024	----	----	----		19-Mar-2024	----	1 days	
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial (sodium bisulfate) WTP Discharge	E680E	18-Mar-2024	18-Mar-2024	14 days	0 days	✓	19-Mar-2024	40 days	1 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) WTP Discharge	E601A	18-Mar-2024	18-Mar-2024	14 days	0 days	✓	19-Mar-2024	40 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) WTP Discharge	E581.VH+F1	18-Mar-2024	19-Mar-2024	14 days	1 days	✓	19-Mar-2024	14 days	1 days	✓



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) WTP Discharge	E562	18-Mar-2024	18-Mar-2024	28 days	1 days	✓	19-Mar-2024	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) WTP Discharge	E298	18-Mar-2024	18-Mar-2024	28 days	0 days	✓	19-Mar-2024	28 days	1 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE WTP Discharge	E235.Br-L	18-Mar-2024	18-Mar-2024	28 days	0 days	✓	18-Mar-2024	28 days	0 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE WTP Discharge	E235.Cl	18-Mar-2024	18-Mar-2024	28 days	0 days	✓	18-Mar-2024	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE WTP Discharge	E235.F	18-Mar-2024	18-Mar-2024	28 days	0 days	✓	18-Mar-2024	28 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE WTP Discharge	E235.NO3-L	18-Mar-2024	18-Mar-2024	3 days	0 days	✓	18-Mar-2024	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE WTP Discharge	E235.NO2-L	18-Mar-2024	18-Mar-2024	3 days	0 days	✓	18-Mar-2024	3 days	0 days	✓

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA24A5592	Page	: 1 of 14
Client	: Frontier-Kemper Michels Joint Venture	Laboratory	: ALS Environmental - Vancouver
Contact	: Sara Derakhshi	Account Manager	: Thomas Chang
Address	: 404-850 Harbourside Drive	Address	: 8081 Lougheed Highway
	: North Vancouver BC Canada V7P 0A3		: Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: ----	Date Samples Received	: 18-Mar-2024 12:45
PO	: ----	Issue Date	: 20-Mar-2024 15:23
C-O-C number	: 23-1084265		
Sampler	: ----		
Site	: BC Rail		
Quote number	: WTP Dishcharge		
No. of samples received	: 1		
No. of samples analysed	: 1		

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.



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Description
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.
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO ₃ .
Dissolved Mercury Water Filtration	EP609 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Vancouver	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Vancouver	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Glycolis Extraction and Derivatization (BC Only)	EP680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with organic solvent.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Description
Glycols (4 analytes) by GC-FID	E680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.
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 and Ionized Ammonia (Calculation) (Field Temperature and pH)	EC296A ALS Environmental - Vancouver	Water	CCME CWQG Ammonia	Un-ionized ammonia is calculated from test results for total ammonia, field temperature and pH, and is expressed in units of mg/L "as N".
VPH: VH-BTEX-Styrene	EC680A ALS Environmental - Vancouver	Water	BC MOE Lab Manual (VPH in Water and Solids) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPH _V = Volatile Hydrocarbons (VH6-10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.
LEPH and HEPH: EPH-PAH	EC600A ALS Environmental - Vancouver	Water	BC MOE Lab Manual (LEPH and HEPH)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene.
Field pH, EC, Salinity, Cl2, ClO2, ORP, DO, Turbidity, T, T-P, p-PO4, NH3, Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH, EC, Salinity, Cl2, ClO2, ORP, DO, Turbidity, T, T-P, p-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 Description
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Description
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 µm), 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	E609 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 µm), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Phenols (4AAP) in Water by Colorimetry	E662 ALS Environmental - Waterloo	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K ₃ Fe(CN) ₆) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
VH and F1 by Headspace GC-FID	E581.VH+F1 ALS Environmental - Vancouver	Water	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BC PHCs - EPH by GC-FID	E601A ALS Environmental - Vancouver	Water	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
VOCs (BC List) by Headspace GC-MS	E611C ALS Environmental - Vancouver	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs by Hexane LVI GC-MS	E641A ALS Environmental - Vancouver	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.




Analytical Methods	Method / Lab	Matrix	Method Reference	Method Description
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.
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)
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
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 CO ₂ . 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 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.



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 Description
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 ALS Environmental - Vancouver	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
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.

 Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report	Reporting Week	March 18 th to March 24 th , 2024
	Report #	16
	Appendix	A

End of Pipe Field Notes

Discharged Water Details:

Details	Values
Discharge Date	March 21, 2024
Discharge Time	Commencement Time: 09:26 AM, Completion Time: 01:38 PM
Total Duration	4 hours and 12 minutes
Total Volume Discharged	Gallons: 35,238.529 gallons, Cubic Meters: 133.392 m ³
Discharge Rate	Approximately 150 gallons per minute (GPM)
In-Situ Parameter Checks	Prior to commencing discharge: 07:35 AM
Weather	Temperature: Early morning 4°C, Afternoon 12°C

Photos:



Photo 1: 07:35 AM, 03/21/24
(In-Situ before start discharging)




Photo 2: 07:10 AM, 03/21/24
(Top of the tanks without Visible Sheen)




Photo 3: 09:26 AM, 03/21/24
(Flow Meter at the start of discharging)




Photo 4: 01:38 PM, 03/21/24
(Flow Meter at the end of discharging)

 Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report	Reporting Week	March 18 th to March 24 th
	Report #	16
	Appendix	B

Appendix B Receiving Environment Documentation

 Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report	Reporting Week	March 18 th to March 24 th
	Report #	16
	Appendix	B

Receiving Environment Sample Analysis

 Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report	Reporting Week	March 18 th to March 24 th
	Report #	16
	Appendix	B

Receiving Environment Lab Documentation



CERTIFICATE OF ANALYSIS

Work Order : VA24A5643
Contact : Triton Environmental Consultants Ltd.
Address : [Redacted]
Telephone : [Redacted]
Project : 11904
PO : 11964-Task20-Phase 3C-4C
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : VA23-TRIT100-003
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 6
Laboratory : ALS Environmental - Vancouver
Account Manager : [Redacted]
Address : [Redacted]
Telephone : [Redacted]
Date Samples Received : 18-Mar-2024 14:00
Date Analysis Commenced : 19-Mar-2024
Issue Date : 25-Mar-2024 16:03

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Brianna Allen	Production/Validation Manager	Administration, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Sam Silveira	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).

<i>Unit</i>	<i>Description</i>
-	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					Client sample ID	SQU US 1	SQU DS1	---	---	---
(Matrix: Water)					Client sampling date / time	18-Mar-2024 10:31	18-Mar-2024 11:03	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5643-001	VA24A5643-002	-----	-----	-----	
					Result	Result	---	---	---	
Field Tests										
Conductivity, field	----	EF001/VA	0.10	µS/cm	56.000	55.000	---	---	---	
pH, field	----	EF001/VA	0.10	pH units	7.21	7.24	---	---	---	
Temperature, field	----	EF001/VA	0.10	°C	4.70	5.00	---	---	---	
Physical Tests										
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L	17.3	17.0	---	---	---	
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	18.1	16.8	---	---	---	
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	43	40	---	---	---	
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	3.0	4.0	---	---	---	
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L	17.3	15.3	---	---	---	
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.258	0.120	---	---	---	
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	2.12	1.79	---	---	---	
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	<0.020	<0.020	---	---	---	
Nitrate (as N)	14797-55-8	E235.NO3-L/V A	0.0050	mg/L	0.0639	0.0536	---	---	---	
Nitrite (as N)	14797-65-0	E235.NO2-L/V A	0.0010	mg/L	0.0015	<0.0010	---	---	---	
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	0.414	0.247	---	---	---	
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.0236	0.0173	---	---	---	
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	4.68	4.45	---	---	---	
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	2.40	2.54	---	---	---	
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	0.135	0.172	---	---	---	
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	<0.00010	<0.00010	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	SQU US 1	SQU DS1	----	----	----
(Matrix: Water)					Client sampling date / time	18-Mar-2024 10:31	18-Mar-2024 11:03	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5643-001	VA24A5643-002	-----	-----	-----	
					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	0.00793	0.00842	----	----	----	
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	0.0000086	0.0000077	----	----	----	
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	6.16	5.68	----	----	----	
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	0.000022	0.000022	----	----	----	
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	0.00092	0.00097	----	----	----	
Iron, total	7439-89-6	E420/VA	0.010	mg/L	0.169	0.210	----	----	----	
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
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	0.654	0.637	----	----	----	
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L	0.00665	0.00772	----	----	----	
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	0.000608	0.000560	----	----	----	
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
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	0.576	0.547	----	----	----	
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.00079	0.00081	----	----	----	
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	0.000051	<0.000050	----	----	----	
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	4.54	4.39	----	----	----	
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	2.27	2.09	----	----	----	
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.0381	0.0358	----	----	----	
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	1.61	1.49	----	----	----	
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					Client sample ID	SQU US 1	SQU DS1	----	----	----
(Matrix: Water)					Client sampling date / time	18-Mar-2024 10:31	18-Mar-2024 11:03	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5643-001	VA24A5643-002	-----	-----	-----	
					Result	Result	---	---	---	
Total Metals										
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L	0.00011	<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	0.00351	0.00553	---	---	---	
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	0.000035	0.000039	---	---	---	
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	0.00126	0.00125	---	---	---	
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	0.0472	0.0478	---	---	---	
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	0.00011	---	---	---	
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L	0.00688	0.00701	---	---	---	
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	0.0000069	0.0000064	---	---	---	
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L	5.86	5.79	---	---	---	
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L	0.000015	0.000013	---	---	---	
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	0.00074	0.00069	---	---	---	
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L	0.068	0.058	---	---	---	
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	0.654	0.619	---	---	---	
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L	0.00478	0.00489	---	---	---	
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	0.000578	0.000548	---	---	---	
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L	<0.00050	<0.00050	---	---	---	



Analytical Results

Sub-Matrix: Water					Client sample ID	SQU US 1	SQU DS1	----	----	----
(Matrix: Water)					Client sampling date / time	18-Mar-2024 10:31	18-Mar-2024 11:03	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A5643-001	VA24A5643-002	-----	-----	-----	
					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	0.556	0.508	----	----	----	
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L	0.00084	0.00080	----	----	----	
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	4.74	4.56	----	----	----	
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	2.36	2.09	----	----	----	
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L	0.0359	0.0353	----	----	----	
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L	1.67	1.48	----	----	----	
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	0.00033	0.00043	----	----	----	
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	0.000030	0.000031	----	----	----	
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L	0.00114	0.00104	----	----	----	
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L	0.0012	<0.0010	----	----	----	
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.

QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : VA24A5643</p> <p>Client : Triton Environmental Consultants Ltd.</p> <p>Contact : [REDACTED]</p> <p>Address : [REDACTED]</p> <p>Telephone : [REDACTED]</p> <p>Project : 11964</p> <p>PO : 11964-Task20-Phase 3C-4C</p> <p>C-O-C number : ----</p> <p>Sampler : ----</p> <p>Site : ----</p> <p>Quote number : VA23-TRIT100-003</p> <p>No. of samples received : 2</p> <p>No. of samples analysed : 2</p>	<p>Page : 1 of 14</p> <p>Laboratory : ALS Environmental - Vancouver</p> <p>Account Manager : [REDACTED]</p> <p>Address : [REDACTED]</p> <p>Telephone : [REDACTED]</p> <p>Date Samples Received : 18-Mar-2024 14:00</p> <p>Issue Date : 25-Mar-2024 16:03</p>
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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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Anions and Nutrients : Ammonia by Fluorescence											
Amber glass total (sulfuric acid) SQU DS1	E298	18-Mar-2024	21-Mar-2024	28 days	3 days	✔	22-Mar-2024	28 days	4 days	✔	
Anions and Nutrients : Ammonia by Fluorescence											
Amber glass total (sulfuric acid) SQU US 1	E298	18-Mar-2024	21-Mar-2024	28 days	3 days	✔	22-Mar-2024	28 days	4 days	✔	
Anions and Nutrients : Bromide in Water by IC (Low Level)											
HDPE SQU DS1	E235.Br-L	18-Mar-2024	19-Mar-2024	28 days	1 days	✔	19-Mar-2024	28 days	1 days	✔	
Anions and Nutrients : Bromide in Water by IC (Low Level)											
HDPE SQU US 1	E235.Br-L	18-Mar-2024	19-Mar-2024	28 days	1 days	✔	19-Mar-2024	28 days	1 days	✔	
Anions and Nutrients : Chloride in Water by IC											
HDPE SQU DS1	E235.Cl	18-Mar-2024	19-Mar-2024	28 days	1 days	✔	19-Mar-2024	28 days	1 days	✔	
Anions and Nutrients : Chloride in Water by IC											
HDPE SQU US 1	E235.Cl	18-Mar-2024	19-Mar-2024	28 days	1 days	✔	19-Mar-2024	28 days	1 days	✔	
Anions and Nutrients : Fluoride in Water by IC											
HDPE SQU DS1	E235.F	18-Mar-2024	19-Mar-2024	28 days	1 days	✔	19-Mar-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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Anions and Nutrients : Fluoride in Water by IC											
HDPE SQU US 1	E235.F	18-Mar-2024	19-Mar-2024	28 days	1 days	✔	19-Mar-2024	28 days	1 days	✔	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE SQU DS1	E235.NO3-L	18-Mar-2024	19-Mar-2024	3 days	1 days	✔	19-Mar-2024	3 days	1 days	✔	
Anions and Nutrients : Nitrate in Water by IC (Low Level)											
HDPE SQU US 1	E235.NO3-L	18-Mar-2024	19-Mar-2024	3 days	1 days	✔	19-Mar-2024	3 days	1 days	✔	
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE SQU DS1	E235.NO2-L	18-Mar-2024	19-Mar-2024	3 days	1 days	✔	19-Mar-2024	3 days	1 days	✔	
Anions and Nutrients : Nitrite in Water by IC (Low Level)											
HDPE SQU US 1	E235.NO2-L	18-Mar-2024	19-Mar-2024	3 days	1 days	✔	19-Mar-2024	3 days	1 days	✔	
Anions and Nutrients : Sulfate in Water by IC											
HDPE SQU DS1	E235.SO4	18-Mar-2024	19-Mar-2024	28 days	1 days	✔	19-Mar-2024	28 days	1 days	✔	
Anions and Nutrients : Sulfate in Water by IC											
HDPE SQU US 1	E235.SO4	18-Mar-2024	19-Mar-2024	28 days	1 days	✔	19-Mar-2024	28 days	1 days	✔	
Anions and Nutrients : Total Nitrogen by Colourimetry											
Amber glass total (sulfuric acid) SQU DS1	E366	18-Mar-2024	21-Mar-2024	28 days	3 days	✔	22-Mar-2024	28 days	4 days	✔	
Anions and Nutrients : Total Nitrogen by Colourimetry											
Amber glass total (sulfuric acid) SQU US 1	E366	18-Mar-2024	21-Mar-2024	28 days	3 days	✔	22-Mar-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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) SQU DS1	E372-U	18-Mar-2024	21-Mar-2024	28 days	3 days	✔	23-Mar-2024	28 days	5 days	✔
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) SQU US 1	E372-U	18-Mar-2024	21-Mar-2024	28 days	3 days	✔	23-Mar-2024	28 days	5 days	✔
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) SQU DS1	E509	18-Mar-2024	20-Mar-2024	28 days	2 days	✔	20-Mar-2024	28 days	2 days	✔
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) SQU US 1	E509	18-Mar-2024	20-Mar-2024	28 days	2 days	✔	20-Mar-2024	28 days	2 days	✔
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SQU DS1	E421	18-Mar-2024	20-Mar-2024	180 days	2 days	✔	21-Mar-2024	180 days	3 days	✔
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SQU US 1	E421	18-Mar-2024	20-Mar-2024	180 days	2 days	✔	21-Mar-2024	180 days	3 days	✔
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial - total (lab preserved) SQU DS1	EF001	18-Mar-2024	----	----	----		19-Mar-2024	----	1 days	
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
Glass vial - total (lab preserved) SQU US 1	EF001	18-Mar-2024	----	----	----		19-Mar-2024	----	1 days	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SQU DS1	E358-L	18-Mar-2024	21-Mar-2024	28 days	3 days	✔	21-Mar-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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)											
Amber glass dissolved (sulfuric acid) SQU US 1	E358-L	18-Mar-2024	21-Mar-2024	28 days	3 days	✓	21-Mar-2024	28 days	3 days	✓	
Physical Tests : Alkalinity Species by Titration											
HDPE SQU DS1	E290	18-Mar-2024	19-Mar-2024	14 days	1 days	✓	20-Mar-2024	14 days	2 days	✓	
Physical Tests : Alkalinity Species by Titration											
HDPE SQU US 1	E290	18-Mar-2024	19-Mar-2024	14 days	1 days	✓	20-Mar-2024	14 days	2 days	✓	
Physical Tests : TDS by Gravimetry											
HDPE SQU DS1	E162	18-Mar-2024	----	----	----		21-Mar-2024	7 days	3 days	✓	
Physical Tests : TDS by Gravimetry											
HDPE SQU US 1	E162	18-Mar-2024	----	----	----		21-Mar-2024	7 days	3 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE SQU DS1	E160	18-Mar-2024	----	----	----		21-Mar-2024	7 days	3 days	✓	
Physical Tests : TSS by Gravimetry											
HDPE SQU US 1	E160	18-Mar-2024	----	----	----		21-Mar-2024	7 days	3 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
UV-inhibited HDPE - total (sodium hydroxide) SQU DS1	E532	18-Mar-2024	----	----	----		21-Mar-2024	28 days	3 days	✓	
Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC											
UV-inhibited HDPE - total (sodium hydroxide) SQU US 1	E532	18-Mar-2024	----	----	----		21-Mar-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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
Total Metals : Total Mercury in Water by CVAAS											
Glass vial - total (lab preserved) SQU DS1	E508	18-Mar-2024	20-Mar-2024	28 days	2 days	✔	20-Mar-2024	28 days	2 days	✔	
Total Metals : Total Mercury in Water by CVAAS											
Glass vial - total (lab preserved) SQU US 1	E508	18-Mar-2024	20-Mar-2024	28 days	2 days	✔	20-Mar-2024	28 days	2 days	✔	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE - total (lab preserved) SQU DS1	E420	18-Mar-2024	20-Mar-2024	180 days	2 days	✔	21-Mar-2024	180 days	3 days	✔	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE - total (lab preserved) SQU US 1	E420	18-Mar-2024	20-Mar-2024	180 days	2 days	✔	21-Mar-2024	180 days	3 days	✔	
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)											
HDPE total (zinc acetate+sodium hydroxide) SQU DS1	E395	18-Mar-2024	----	----	----		24-Mar-2024	7 days	6 days	✔	
Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)											
HDPE total (zinc acetate+sodium hydroxide) SQU US 1	E395	18-Mar-2024	----	----	----		24-Mar-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	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1371631	1	6	16.6	5.0	✔
Ammonia by Fluorescence	E298	1375345	1	18	5.5	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1371625	1	4	25.0	5.0	✔
Chloride in Water by IC	E235.Cl	1371624	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1374213	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1371999	1	13	7.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1375346	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	1371623	1	8	12.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1371626	1	6	16.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1371627	1	8	12.5	5.0	✔
Sulfate in Water by IC	E235.SO4	1371628	1	9	11.1	5.0	✔
TDS by Gravimetry	E162	1374917	1	20	5.0	5.0	✔
Total Hexavalent Chromium (Cr VI) by IC	E532	1375151	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1374322	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1371931	1	17	5.8	5.0	✔
Total Nitrogen by Colourimetry	E366	1375341	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1375342	1	16	6.2	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1378307	1	17	5.8	5.0	✔
TSS by Gravimetry	E160	1374899	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1371631	1	6	16.6	5.0	✔
Ammonia by Fluorescence	E298	1375345	1	18	5.5	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1371625	1	4	25.0	5.0	✔
Chloride in Water by IC	E235.Cl	1371624	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1374213	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1371999	1	13	7.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1375346	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	1371623	1	8	12.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1371626	1	6	16.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1371627	1	8	12.5	5.0	✔
Sulfate in Water by IC	E235.SO4	1371628	1	9	11.1	5.0	✔
TDS by Gravimetry	E162	1374917	1	20	5.0	5.0	✔
Total Hexavalent Chromium (Cr VI) by IC	E532	1375151	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1374322	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1371931	1	17	5.8	5.0	✔
Total Nitrogen by Colourimetry	E366	1375341	1	17	5.8	5.0	✔



Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Control Samples (LCS) - Continued							
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1375342	1	16	6.2	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1378307	1	17	5.8	5.0	✔
TSS by Gravimetry	E160	1374899	1	20	5.0	5.0	✔
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1371631	1	6	16.6	5.0	✔
Ammonia by Fluorescence	E298	1375345	1	18	5.5	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1371625	1	4	25.0	5.0	✔
Chloride in Water by IC	E235.Cl	1371624	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1374213	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1371999	1	13	7.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1375346	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	1371623	1	8	12.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1371626	1	6	16.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1371627	1	8	12.5	5.0	✔
Sulfate in Water by IC	E235.SO4	1371628	1	9	11.1	5.0	✔
TDS by Gravimetry	E162	1374917	1	20	5.0	5.0	✔
Total Hexavalent Chromium (Cr VI) by IC	E532	1375151	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1374322	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1371931	1	17	5.8	5.0	✔
Total Nitrogen by Colourimetry	E366	1375341	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1375342	1	16	6.2	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1378307	1	17	5.8	5.0	✔
TSS by Gravimetry	E160	1374899	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1375345	1	18	5.5	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1371625	1	4	25.0	5.0	✔
Chloride in Water by IC	E235.Cl	1371624	1	18	5.5	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1374213	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1371999	1	13	7.6	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1375346	1	15	6.6	5.0	✔
Fluoride in Water by IC	E235.F	1371623	1	8	12.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1371626	1	6	16.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1371627	1	8	12.5	5.0	✔
Sulfate in Water by IC	E235.SO4	1371628	1	9	11.1	5.0	✔
Total Hexavalent Chromium (Cr VI) by IC	E532	1375151	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1374322	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1371931	1	17	5.8	5.0	✔
Total Nitrogen by Colourimetry	E366	1375341	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1375342	1	16	6.2	5.0	✔



Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
Matrix Spikes (MS) - Continued							
Total Sulfide by Colourimetry (Automated Flow)	E395	1378307	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 $104 \pm 1^\circ\text{C}$, 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 $180 \pm 2^\circ\text{C}$ 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 CO ₂ . 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 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 methylene blue colourimetric method. Results expressed "as H ₂ S" if reported represent the maximum possible H ₂ S concentration based on the total sulfide concentration in the sample. The H ₂ S calculation converts Total Sulphide as (S ₂ ⁻) and reports it as Total Sulphide as (H ₂ S)
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 CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ 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 CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ 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,Cl ₂ ,ClO ₂ ,ORP,DO, Turbidity,T,T-P,o-PO ₄ ,NH ₃ ,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity,Cl ₂ ,ClO ₂ ,ORP,DO, Turbidity,T,T-P,o-PO ₄ ,NH ₃ 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.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
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 : **VA24A5643**
Client : [REDACTED]
Contact : [REDACTED]
Address : [REDACTED]
Telephone : [REDACTED]
Project : 11964
PO : 11964-Task20-Phase 3C-4C
C-O-C number : ----
Sampler : ---- 604 631 2213
Site : ----
Quote number : VA23-TRIT100-003
No. of samples received : 2
No. of samples analysed : 2

Page : 1 of 18
Laboratory : ALS Environmental - Vancouver
Account Manager : [REDACTED]
Address : [REDACTED]
Telephone : [REDACTED]
Date Samples Received : [REDACTED]
Date Analysis Commenced : 19-Mar-2024
Issue Date : 25-Mar-2024 16:03

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Brianna Allen	Production/Validation Manager	Vancouver Administration, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Inorganics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Sam Silveira	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: 1371631)											
VA24A5605-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	166	165	0.605%	20%	----
Physical Tests (QC Lot: 1374899)											
FJ2400778-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	9.8	9.2	0.6	Diff <2x LOR	----
Physical Tests (QC Lot: 1374917)											
FJ2400778-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	1900	1920	0.812%	20%	----
Anions and Nutrients (QC Lot: 1371623)											
FJ2400715-001	Anonymous	Fluoride	16984-48-8	E235.F	0.200	mg/L	<0.200	<0.200	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1371624)											
FJ2400715-001	Anonymous	Chloride	16887-00-6	E235.Cl	5.00	mg/L	<5.00	<5.00	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1371625)											
FJ2400715-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1371626)											
FJ2400715-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0500	mg/L	<0.0500	<0.0500	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1371627)											
FJ2400715-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1371628)											
FJ2400715-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	3.00	mg/L	960	960	0.0189%	20%	----
Anions and Nutrients (QC Lot: 1375341)											
VA24A5635-022	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.244	0.243	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1375342)											
VA24A5635-024	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0311	0.0306	1.56%	20%	----
Anions and Nutrients (QC Lot: 1375345)											
VA24A5635-020	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1375346)											
VA24A5635-020	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Total Sulfides (QC Lot: 1378307)											
CG2403338-004	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: 1371931)											
VA24A5666-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0268	0.0265	0.0002	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00091	0.00092	0.000006	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: 1371931) - continued											
VA24A5666-001	Anonymous	Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00939	0.00944	0.586%	20%	---
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0224	0.0225	0.393%	20%	---
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	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	<0.010	<0.010	0	Diff <2x LOR	---
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000185	0.0000205	0.0000020	Diff <2x LOR	---
		Calcium, total	7440-70-2	E420	0.050	mg/L	29.8	29.0	2.49%	20%	---
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000174	0.000175	0.500%	20%	---
		Chromium, total	7440-47-3	E420	0.000050	mg/L	0.00174	0.00181	0.00007	Diff <2x LOR	---
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00014	0.00014	0.000004	Diff <2x LOR	---
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	---
		Iron, total	7439-89-6	E420	0.010	mg/L	0.048	0.048	0.0009	Diff <2x LOR	---
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000095	0.000091	0.000004	Diff <2x LOR	---
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0086	0.0086	0.00009	Diff <2x LOR	---
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	5.64	5.61	0.645%	20%	---
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00450	0.00470	4.30%	20%	---
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00157	0.00157	0.0929%	20%	---
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00123	0.00120	0.00003	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	0.472	0.479	0.007	Diff <2x LOR	---
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00056	0.00052	0.00004	Diff <2x LOR	---
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000268	0.000288	0.000020	Diff <2x LOR	---
		Silicon, total	7440-21-3	E420	0.10	mg/L	2.13	2.20	3.25%	20%	---
		Silver, total	7440-22-4	E420	0.000010	mg/L	0.000010	0.000010	0.00000004	Diff <2x LOR	---
		Sodium, total	7440-23-5	E420	0.050	mg/L	3.09	3.12	1.07%	20%	---
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.768	0.772	0.601%	20%	---
		Sulfur, total	7704-34-9	E420	0.50	mg/L	11.5	12.3	6.18%	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	<0.000010	<0.000010	0	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	0.00030	mg/L	0.00031	0.00044	0.00012	Diff <2x LOR	---
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00055	0.00054	0.00001	Diff <2x LOR	---
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000179	0.000177	0.926%	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: 1371931) - continued											
VA24A5666-001	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	<0.0030	<0.0030	0	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: 1374322)											
FJ2400774-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1371999)											
FJ2400778-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0042	0.0039	0.0003	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00135	0.00133	1.44%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00023	0.00022	0.000009	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0493	0.0507	2.84%	20%	----
		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	0.239	0.236	1.55%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000541	0.0000556	2.66%	20%	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	209	213	1.78%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000012	0.000013	0.0000003	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	0.00053	0.00052	0.00001	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00054	0.00053	0.000008	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	0.331	0.326	1.66%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	89.3	89.1	0.267%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0244	0.0242	0.892%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00384	0.00386	0.657%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.0283	0.0285	0.711%	20%	----
		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	3.66	3.77	2.96%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00259	0.00263	1.52%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.0382	0.0375	2.07%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.71	2.68	1.08%	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	229	237	3.33%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.322	0.319	0.705%	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: 1371999) - continued											
FJ2400778-001	Anonymous	Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	320	308	3.93%	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	0.000026	0.000028	0.000001	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	0.00090	mg/L	<0.00090	<0.00090	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	0.0214	0.0219	2.33%	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	0.0028	0.0028	0.00001	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: 1374213)											
VA24A5635-014	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1374214)											
VA24A5643-002	SQU DS1	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Speciated Metals (QC Lot: 1375151)											
KS2400889-001	Anonymous	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: 1371631)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1374899)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1374917)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1371623)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1371624)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1371625)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1371626)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1371627)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1371628)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1375341)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1375342)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1375345)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 1375346)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Sulfides (QCLot: 1378307)						
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----
Total Metals (QCLot: 1371931)						
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: 1371931) - 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: 1374322)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1371999)						
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: 1371999) - 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: 1374213)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1374214)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Speciated Metals (QCLot: 1375151)						
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				
Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Physical Tests (QCLot: 1371631)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	113	85.0	115	----
Physical Tests (QCLot: 1374899)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	101	85.0	115	----
Physical Tests (QCLot: 1374917)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	100	85.0	115	----
Anions and Nutrients (QCLot: 1371623)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.1	90.0	110	----
Anions and Nutrients (QCLot: 1371624)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1371625)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 1371626)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 1371627)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.2	90.0	110	----
Anions and Nutrients (QCLot: 1371628)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1375341)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	98.1	75.0	125	----
Anions and Nutrients (QCLot: 1375342)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.0	80.0	120	----
Anions and Nutrients (QCLot: 1375345)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.4	85.0	115	----
Organic / Inorganic Carbon (QCLot: 1375346)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	110	80.0	120	----
Total Sulfides (QCLot: 1378307)									
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	108	80.0	120	----
Total Metals (QCLot: 1371931)									



Sub-Matrix: Water

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Total Metals (QCLot: 1371931) - continued									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.2	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	107	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	99.7	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.4	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.1	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	105	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.3	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	103	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.0	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	104	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	102	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	98.4	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	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	97.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	95.8	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	105	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	106	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.9	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	97.1	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	98.1	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	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1371931) - continued									
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	----
Total Metals (QCLot: 1374322)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.8	80.0	120	----
Dissolved Metals (QCLot: 1371999)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.4	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	100.0	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	95.2	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.6	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.8	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	96.6	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.4	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	99.5	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	95.6	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.4	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.2	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.2	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	105	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.3	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	97.5	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	108	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.9	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	98.3	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.3	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1371999) - continued									
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	95.6	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	92.2	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.9	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	97.1	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	99.1	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.6	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	94.2	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	100	80.0	120	----
Speciated Metals (QCLot: 1375151)									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.25 mg/L	103	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: 1371623)										
FJ2400715-002	Anonymous	Fluoride	16984-48-8	E235.F	9.85 mg/L	10 mg/L	98.5	75.0	125	----
Anions and Nutrients (QCLot: 1371624)										
FJ2400715-002	Anonymous	Chloride	16887-00-6	E235.Cl	1020 mg/L	1000 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1371625)										
FJ2400715-002	Anonymous	Bromide	24959-67-9	E235.Br-L	5.18 mg/L	5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1371626)										
FJ2400715-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	25.5 mg/L	25 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1371627)										
FJ2400715-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	5.01 mg/L	5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1371628)										
FJ2400715-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	ND mg/L	1000 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 1375341)										
VA24A5635-023	Anonymous	Nitrogen, total	7727-37-9	E366	0.393 mg/L	0.4 mg/L	98.2	70.0	130	----
Anions and Nutrients (QCLot: 1375342)										
VA24A5635-025	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0489 mg/L	0.05 mg/L	97.8	70.0	130	----
Anions and Nutrients (QCLot: 1375345)										
VA24A5635-021	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0911 mg/L	0.1 mg/L	91.1	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1375346)										
VA24A5635-021	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.32 mg/L	5 mg/L	106	70.0	130	----
Total Sulfides (QCLot: 1378307)										
CG2403338-005	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.244 mg/L	0.2 mg/L	122	75.0	125	----
Total Metals (QCLot: 1371931)										
VA24A5666-002	Anonymous	Aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		Arsenic, total	7440-38-2	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0367 mg/L	0.04 mg/L	91.7	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00897 mg/L	0.01 mg/L	89.7	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
Total Metals (QCLot: 1371931) - continued										
VA24A5666-002	Anonymous	Boron, total	7440-42-8	E420	0.099 mg/L	0.1 mg/L	99.3	70.0	130	---
		Cadmium, total	7440-43-9	E420	0.00364 mg/L	0.004 mg/L	90.9	70.0	130	---
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	---
		Cesium, total	7440-46-2	E420	0.00989 mg/L	0.01 mg/L	98.9	70.0	130	---
		Chromium, total	7440-47-3	E420	0.0360 mg/L	0.04 mg/L	89.9	70.0	130	---
		Cobalt, total	7440-48-4	E420	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	---
		Copper, total	7440-50-8	E420	0.0179 mg/L	0.02 mg/L	89.7	70.0	130	---
		Iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	---
		Lead, total	7439-92-1	E420	0.0180 mg/L	0.02 mg/L	90.0	70.0	130	---
		Lithium, total	7439-93-2	E420	0.0945 mg/L	0.1 mg/L	94.5	70.0	130	---
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	---
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		Molybdenum, total	7439-98-7	E420	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	---
		Nickel, total	7440-02-0	E420	0.0365 mg/L	0.04 mg/L	91.2	70.0	130	---
		Phosphorus, total	7723-14-0	E420	9.09 mg/L	10 mg/L	90.9	70.0	130	---
		Potassium, total	7440-09-7	E420	3.45 mg/L	4 mg/L	86.3	70.0	130	---
		Rubidium, total	7440-17-7	E420	0.0185 mg/L	0.02 mg/L	92.3	70.0	130	---
		Selenium, total	7782-49-2	E420	0.0400 mg/L	0.04 mg/L	100	70.0	130	---
		Silicon, total	7440-21-3	E420	9.05 mg/L	10 mg/L	90.5	70.0	130	---
		Silver, total	7440-22-4	E420	0.00387 mg/L	0.004 mg/L	96.7	70.0	130	---
		Sodium, total	7440-23-5	E420	1.78 mg/L	2 mg/L	89.1	70.0	130	---
		Strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		Sulfur, total	7704-34-9	E420	19.1 mg/L	20 mg/L	95.5	70.0	130	---
		Tellurium, total	13494-80-9	E420	0.0414 mg/L	0.04 mg/L	104	70.0	130	---
		Thallium, total	7440-28-0	E420	0.00358 mg/L	0.004 mg/L	89.4	70.0	130	---
		Thorium, total	7440-29-1	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	---
		Tin, total	7440-31-5	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	---
		Titanium, total	7440-32-6	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	---
		Tungsten, total	7440-33-7	E420	0.0180 mg/L	0.02 mg/L	90.1	70.0	130	---
		Uranium, total	7440-61-1	E420	0.00358 mg/L	0.004 mg/L	89.5	70.0	130	---
		Vanadium, total	7440-62-2	E420	0.0945 mg/L	0.1 mg/L	94.5	70.0	130	---
		Zinc, total	7440-66-6	E420	0.370 mg/L	0.4 mg/L	92.6	70.0	130	---
		Zirconium, total	7440-67-7	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	---
Total Metals (QCLot: 1374322)										
FJ2400774-002	Anonymous	Mercury, total	7439-97-6	E508	0.000101 mg/L	0.0001 mg/L	101	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: 1371999)										
FJ2400778-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.200 mg/L	0.2 mg/L	99.8	70.0	130	---
		Antimony, dissolved	7440-36-0	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	---
		Arsenic, dissolved	7440-38-2	E421	0.0205 mg/L	0.02 mg/L	102	70.0	130	---
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	---
		Beryllium, dissolved	7440-41-7	E421	0.0372 mg/L	0.04 mg/L	92.9	70.0	130	---
		Bismuth, dissolved	7440-69-9	E421	0.00821 mg/L	0.01 mg/L	82.1	70.0	130	---
		Boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	---
		Cadmium, dissolved	7440-43-9	E421	0.00368 mg/L	0.004 mg/L	92.1	70.0	130	---
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 mg/L	ND	70.0	130	---
		Cesium, dissolved	7440-46-2	E421	0.00960 mg/L	0.01 mg/L	96.0	70.0	130	---
		Chromium, dissolved	7440-47-3	E421	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	---
		Cobalt, dissolved	7440-48-4	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	---
		Copper, dissolved	7440-50-8	E421	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	---
		Iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	---
		Lead, dissolved	7439-92-1	E421	0.0175 mg/L	0.02 mg/L	87.6	70.0	130	---
		Lithium, dissolved	7439-93-2	E421	ND mg/L	0.1 mg/L	ND	70.0	130	---
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	---
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	---
		Molybdenum, dissolved	7439-98-7	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	---
		Nickel, dissolved	7440-02-0	E421	0.0351 mg/L	0.04 mg/L	87.8	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	3.85 mg/L	4 mg/L	96.3	70.0	130	---
		Rubidium, dissolved	7440-17-7	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	---
		Selenium, dissolved	7782-49-2	E421	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	---
		Silicon, dissolved	7440-21-3	E421	10.4 mg/L	10 mg/L	104	70.0	130	---
		Silver, dissolved	7440-22-4	E421	0.00333 mg/L	0.004 mg/L	83.4	70.0	130	---
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	---
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	---
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	---
		Tellurium, dissolved	13494-80-9	E421	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	---
		Thallium, dissolved	7440-28-0	E421	0.00342 mg/L	0.004 mg/L	85.6	70.0	130	---
		Thorium, dissolved	7440-29-1	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	---
		Tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	---
		Titanium, dissolved	7440-32-6	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	---
		Tungsten, dissolved	7440-33-7	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	---
		Uranium, dissolved	7440-61-1	E421	ND mg/L	0.004 mg/L	ND	70.0	130	---



Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		Qualifier
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	
Dissolved Metals (QCLot: 1371999) - continued										
FJ2400778-002	Anonymous	Vanadium, dissolved	7440-62-2	E421	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.372 mg/L	0.4 mg/L	93.1	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
Dissolved Metals (QCLot: 1374213)										
VA24A5635-015	Anonymous	Mercury, dissolved	7439-97-6	E509	0.000103 mg/L	0.0001 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 1374214)										
VA24A5651-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Speciated Metals (QCLot: 1375151)										
KS2400891-001	Anonymous	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.262 mg/L	0.25 mg/L	105	70.0	130	----

 Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report	Reporting Week	March 18 th to March 24 th
	Report #	16
	Appendix	B

Receiving Environment Field Notes and Logs



FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-3-18-Chan-0715F

Project Component:	Tunnel	Site Name:	Receiving Environment - Downstream of Discharge	
Inspection Date:	03/18/2024	Location:	BC Rail Site	
Triton QP:	Aegean Chan	Latitude/Longitude:	49.725282	-123.165175
Temperature(c):	Low 3	High 6	Permit:	AE 111824
Weather Conditions:	Clear		Ground Conditions:	Dry

Observations

Time: 11:03:37 **Flow Volume (visual):** moderate

Notes:

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		Total Chromium
TSS	Yes	Anions	Yes		
TDS	Yes	VOC/VPH	No	QA Samples:	No
Nutrients	Yes	EPH, PAH, LEPH/HEPH	No		Total Chromium
DOC	Yes	Trout LC50	No		

Logger Maintenance

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

Calibrated for turbidity with 0 and 10 FNU.

Photos

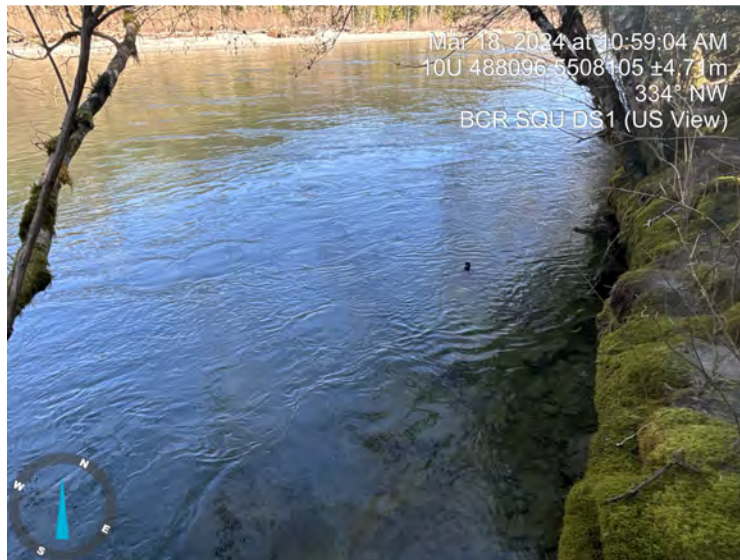


Photo: 1
Location: Downstream
Description: SQU DS1 - US View



Photo: 2
Location: Downstream
Description: SQU DS1 - Across View

Photos



Photo: 3
Location: Downstream
Description: SQU DS1 - DS View

Mar 18, 2024 at 12:17:06 PM
10U 488275 5508358 ±16.87m

ALS Environmental
Canada Toll Free: 1 800 569 9879

Chain of Custody (COC) / Analytical Request Form
ALS ALS barcode label here (add date only)
COC Number: 17 -
Page: 1 of 1

Request To: Client and address same below OR specify on the first report	Report Format / Distribution: Select Report Format: <input type="checkbox"/> PDF <input type="checkbox"/> HTML <input type="checkbox"/> PRINTABLE Quality Control (QC) Report with Report: <input type="checkbox"/> NO <input type="checkbox"/> YES Select Distribution: <input type="checkbox"/> Email <input type="checkbox"/> Mail <input type="checkbox"/> Fax	Select Service Level Option - Contact your ALS to confirm all SAP C4's (sample/hold times, report frequency, etc.) Standard (24 hr) - Standard (24 hr) - Standard (24 hr) - Standard (24 hr) 24 hr (P4-20%) <input type="checkbox"/> Business Day (BT - 100%) 24 hr (P4-20%) <input type="checkbox"/> Business Day (BT - 100%) 24 hr (P4-20%) <input type="checkbox"/> Business Day (BT - 100%) 24 hr (P4-20%) <input type="checkbox"/> Business Day (BT - 100%)
Company: Tropin Environmental Address: Box 506-5218 Company Address below will appear on the first report	Project Information: Project Name: 11904 Project Code: 11904-1 Project Description: 11904-1	Site Information: Site Name: 11904-1 Site Address: 11904-1 Site Phone: 11904-1 Site Email: 11904-1
Client/Project: Client Name: 11904-1 Client Address: 11904-1 Client Phone: 11904-1 Client Email: 11904-1	ALS Account # / Order #: ALS Account #: 11904 Order #: 11904-1	ALS Lab Work Order # (add date only): ALS Lab Work Order #: 11904-1
ALS Barcode # (add date only): ALS Barcode #: 11904-1	Sample Identification and/or Combination: Sample ID: 11904-1 Sample Description: 11904-1	ALS Contact: ALS Contact: 11904-1 ALS Phone: 11904-1 ALS Email: 11904-1

Delivering Water (DW) Samples (check case):
Are samples taken from a Regulated DW System? NO YES
Are samples for human consumption use? NO YES

INITIALS RECEIPT (add date only):
Requested by: Person Chan Date: Mar 18, 2024
Requested by: _____ Date: _____

Photo: 4
Location: Lab COC
Description: Lab COC

Sign Off

Report Prepared By: Aegean Chan

Report Reviewed: Yes

Report Reviewer: Miranda Lewis

Professional(s) of Record: N/A

Name:

Designation:

Designation Number:



FortisBC Eagle Mountain-Woodfibre Gas Pipeline

Water Discharge Authorization Water Quality Monitoring

2024-3-18-Chan-077CB

Project Component:	Tunnel	Site Name:	Receiving Environment - Upstream of Discharge	
Inspection Date:	03/18/2024	Location:	BC Rail Site	
Triton QP:	Aegean Chan	Latitude/Longitude:	49.726866	-123.163912
Temperature(c):	Low 3	High 6	Permit:	AE 111824
Weather Conditions:	Clear		Ground Conditions:	Dry

Observations

Time: 10:31:46 **Flow Volume (visual):** moderate

Notes:

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		Total Chromium
TSS	Yes	Anions	Yes		
TDS	Yes	VOC/VPH	No	QA Samples:	No
Nutrients	Yes	EPH, PAH, LEPH/HEPH	No		Total Chromium
DOC	Yes	Trout LC50	No		

Logger Maintenance

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

Calibrated for turbidity using 0 and 10 FNU.

Photos



Photo: 1
Location: Upstream
Description: SQU US1 - US View



Photo: 2
Location: Upstream
Description: SQU US1 - Across View



2024-3-18-Chan-077CB

Sign Off

Report Prepared By: Aegean Chan

Report Reviewed: Yes

Report Reviewer: Miranda Lewis

Professional(s) of Record: N/A

Name:

Designation:

Designation Number:

EGP-STU-001 (BCR DS):

Date and Time	Temperature (°C)	Specific Conductivity (µS/cm)	Salinity (PSU)	pH (pH)	ORP (mV)	Dissolved Oxygen Concentration (mg/L)	Turbidity (NTU)	TL Battery V	Notes
3/21/2024 3:20	5.05	39.07	0.02	7.21	282.77	11.68	0.00	11.18	
3/21/2024 3:30	5.04	39.22	0.02	7.19	286.07	11.69	0.00	11.21	
3/21/2024 3:40	5.04	39.02	0.02	7.21	287.86	11.69	0.00	11.21	
3/21/2024 3:50	5.01	39.04	0.02	7.21	290.15	11.70	0.00	11.18	
3/21/2024 4:00	4.99	38.76	0.02	7.22	292.20	11.71	0.00	11.18	
3/21/2024 4:10	4.97	38.86	0.02	7.19	295.14	11.71	0.00	11.11	
3/21/2024 4:20	4.96	39.08	0.02	7.21	290.43	11.71	0.00	11.21	
3/21/2024 4:30	4.95	39.21	0.02	7.19	287.95	11.71	0.00	11.21	
3/21/2024 4:40	4.93	39.37	0.02	7.21	286.56	11.73	0.00	11.21	
3/21/2024 4:50	4.93	39.47	0.02	7.18	286.80	11.71	0.00	11.18	
3/21/2024 5:00	4.91	39.50	0.02	7.23	286.31	11.72	0.00	11.18	
3/21/2024 5:10	4.87	39.85	0.02	7.16	287.62	11.73	0.00	11.21	
3/21/2024 5:20	4.86	40.26	0.02	7.25	283.68	11.73	0.00	11.18	
3/21/2024 5:30	4.82	40.38	0.02	7.22	285.27	11.76	0.00	11.18	
3/21/2024 5:40	4.81	39.94	0.02	7.15	290.07	11.75	0.00	11.18	
3/21/2024 5:50	4.78	40.07	0.02	7.16	291.26	11.77	0.00	11.18	
3/21/2024 6:00	4.76	39.92	0.02	7.19	291.94	11.78	0.00	11.18	
3/21/2024 6:10	4.73	40.30	0.02	7.16	293.56	11.78	0.00	11.18	
3/21/2024 6:20	4.73	40.94	0.02	7.19	289.60	11.77	0.00	11.18	
3/21/2024 6:30	4.71	41.29	0.02	7.17	287.56	11.78	0.00	11.18	
3/21/2024 6:40	4.70	41.05	0.02	7.16	285.75	11.78	0.00	11.18	
3/21/2024 6:50	4.68	40.91	0.02	7.18	283.94	11.77	0.00	11.18	
3/21/2024 7:00	4.65	40.93	0.02	7.20	283.23	11.79	0.00	11.18	
3/21/2024 7:10	4.62	40.83	0.02	7.19	283.75	11.80	0.00	11.18	
3/21/2024 7:20	4.61	41.42	0.02	7.18	280.54	11.79	0.00	11.18	
3/21/2024 7:30	4.61	41.97	0.02	7.16	283.50	11.78	0.00	11.18	
3/21/2024 7:40	4.59	41.92	0.02	7.17	286.02	11.78	0.00	11.18	
3/21/2024 7:50	4.57	41.26	0.02	7.17	288.23	11.82	0.00	11.16	
3/21/2024 8:00	4.55	41.49	0.02	7.15	291.21	11.81	0.00	11.16	
3/21/2024 8:10	4.55	41.68	0.02	7.17	290.05	11.81	0.00	11.16	
3/21/2024 8:20	4.54	41.72	0.02	7.18	287.22	11.83	0.00	11.16	
3/21/2024 8:30	4.55	41.42	0.02	7.16	286.47	11.84	0.00	11.16	
3/21/2024 8:40	4.56	41.47	0.02	7.18	285.76	11.85	0.00	11.16	
3/21/2024 8:50	4.55	41.53	0.02	7.17	287.02	11.88	0.00	11.16	
3/21/2024 9:00	4.58	41.41	0.02	7.19	286.67	11.87	0.00	11.18	
3/21/2024 9:10	4.61	41.32	0.02	7.15	288.58	11.87	0.00	11.16	
3/21/2024 9:20	4.63	41.40	0.02	7.16	284.39	11.90	0.00	11.16	
3/21/2024 9:30	4.65	41.44	0.02	7.16	287.08	11.90	0.00	11.16	
3/21/2024 9:40	4.67	41.70	0.02	7.20	287.13	11.92	0.00	11.16	
3/21/2024 9:50	4.70	41.61	0.02	7.21	288.24	11.91	0.00	11.16	
3/21/2024 9:50	4.70	41.61	0.02	7.21	288.24	11.91	0.00	11.16	
3/21/2024 10:00	4.73	41.97	0.02	7.20	289.85	11.93	0.00	11.16	
3/21/2024 10:10	4.78	42.44	0.02	7.18	291.92	11.93	0.00	11.16	
3/21/2024 10:20	4.85	42.60	0.02	7.20	289.43	11.92	0.00	11.16	
3/21/2024 10:30	4.91	42.17	0.02	7.19	288.95	11.93	0.00	11.16	
3/21/2024 10:40	4.96	42.29	0.02	7.20	288.51	11.93	0.00	11.16	
3/21/2024 10:50	5.02	42.61	0.02	7.18	290.35	11.94	0.00	11.16	
3/21/2024 11:00	5.08	42.52	0.02	7.16	290.63	11.92	0.00	11.16	
3/21/2024 11:10	5.11	42.34	0.02	7.17	289.69	11.95	0.00	11.16	
3/21/2024 11:20	5.14	42.64	0.02	7.19	284.79	11.93	0.00	11.16	
3/21/2024 11:30	5.17	43.05	0.02	7.18	288.30	11.92	0.00	11.16	
3/21/2024 11:40	5.20	42.50	0.02	7.20	289.78	11.92	0.00	11.16	
3/21/2024 11:50	5.21	42.66	0.02	7.19	292.69	11.91	0.00	11.16	
3/21/2024 12:00	5.20	42.72	0.02	7.22	293.01	11.93	0.00	11.16	
3/21/2024 12:10	5.20	43.00	0.02	7.17	296.61	11.92	0.00	11.07	
3/21/2024 12:20	5.18	42.92	0.02	7.19	293.05	11.93	0.00	11.16	
3/21/2024 12:30	5.17	42.67	0.02	7.19	291.62	11.93	0.00	11.16	
3/21/2024 12:40	5.17	42.45	0.02	7.18	291.89	11.93	0.00	11.09	
3/21/2024 12:50	5.16	42.69	0.02	7.20	291.10	11.95	0.00	11.16	
3/21/2024 13:00	5.18	42.45	0.02	7.22	289.14	11.94	0.00	11.16	
3/21/2024 13:10	5.20	42.58	0.02	7.20	289.61	11.94	0.00	11.16	
3/21/2024 13:20	5.24	42.84	0.02	7.25	285.11	11.93	0.00	11.16	
3/21/2024 13:30	5.27	42.47	0.02	7.22	288.78	11.93	0.00	11.16	
3/21/2024 13:40	5.31	42.78	0.02	7.20	290.73	11.92	0.00	11.16	
3/21/2024 13:50	5.35	42.38	0.02	7.19	294.11	11.92	0.00	11.16	
3/21/2024 14:00	5.38	42.18	0.02	7.20	295.15	11.92	0.00	11.16	
3/21/2024 14:10	5.42	41.98	0.02	7.22	296.01	11.93	0.00	11.16	
3/21/2024 14:20	5.46	41.76	0.02	7.17	295.89	11.93	0.00	11.07	
3/21/2024 14:30	5.51	41.48	0.02	7.21	292.17	11.93	0.00	11.07	
3/21/2024 14:40	5.55	41.45	0.02	7.19	293.85	11.94	0.00	11.07	
3/21/2024 14:50	5.59	41.49	0.02	7.22	291.88	11.95	0.00	11.14	
3/21/2024 15:00	5.63	41.38	0.02	7.20	293.77	11.92	0.00	11.16	
3/21/2024 15:10	5.70	41.33	0.02	7.23	292.48	11.91	0.00	11.14	
3/21/2024 15:20	5.77	41.43	0.02	7.22	289.73	11.91	0.00	11.14	
3/21/2024 15:30	5.80	41.46	0.02	7.22	291.31	11.91	0.00	11.14	
3/21/2024 15:40	5.82	41.41	0.02	7.23	292.97	11.90	0.00	11.14	

EGP-STU-001 (BCR DS):

Date and Time	Temperature (°C)	Specific Conductivity (µS/cm)	Salinity (PSU)	pH (pH)	ORP (mV)	Dissolved Oxygen Concentration (mg/L)	Turbidity (NTU)	TL Battery V	Notes
3/21/2024 15:50	5.84	41.26	0.02	7.23	294.98	11.88	0.00	11.14	
3/21/2024 16:00	5.86	41.53	0.02	7.22	297.58	11.90	0.00	11.14	
3/21/2024 16:10	5.87	41.50	0.02	7.25	297.77	11.88	0.00	11.14	
3/21/2024 16:20	5.87	41.71	0.02	7.26	293.45	11.88	0.00	11.14	
3/21/2024 16:30	5.88	41.77	0.02	7.21	295.81	11.86	0.00	11.14	
3/21/2024 16:40	5.88	41.83	0.02	7.20	295.70	11.85	0.00	11.14	
3/21/2024 16:50	5.88	41.65	0.02	7.23	295.00	11.86	0.00	11.14	
3/21/2024 17:00	5.91	41.76	0.02	7.21	296.28	11.84	0.00	11.14	
3/21/2024 17:10	5.92	41.71	0.02	7.18	296.69	11.83	0.00	11.14	
3/21/2024 17:20	5.92	41.75	0.02	7.24	290.96	11.83	0.00	11.16	
3/21/2024 17:30	5.92	41.88	0.02	7.21	294.33	11.80	0.00	11.14	
3/21/2024 17:40	5.90	41.70	0.02	7.22	296.25	11.79	0.00	11.14	
3/21/2024 17:50	5.86	41.71	0.02	7.24	295.67	11.79	0.00	11.14	
3/21/2024 18:00	5.83	41.53	0.02	7.24	297.87	11.78	0.00	11.14	
3/21/2024 18:10	5.81	41.59	0.02	7.23	299.04	11.77	0.00	11.14	
3/21/2024 18:20	5.79	41.80	0.02	7.20	297.97	11.75	0.00	11.14	
3/21/2024 18:30	5.77	41.93	0.02	7.23	296.68	11.75	0.00	11.14	
3/21/2024 18:40	5.75	42.25	0.02	7.24	295.48	11.73	0.00	11.07	
3/21/2024 18:50	5.74	42.60	0.02	7.21	296.01	11.73	0.00	11.14	
3/21/2024 19:00	5.72	42.76	0.02	7.21	295.91	11.71	0.00	11.14	
3/21/2024 19:10	5.70	43.04	0.02	7.21	293.60	11.69	0.00	11.14	
3/21/2024 19:20	5.68	43.43	0.02	7.21	288.99	11.68	0.00	11.14	
3/21/2024 19:30	5.66	43.79	0.02	7.20	290.01	11.66	0.00	11.14	
3/21/2024 19:40	5.65	43.94	0.02	7.18	293.59	11.65	0.00	11.14	

Rainfall data source

Environment Canada daily data for Squamish Airport (49°46'59.550" N, 123°09'40.300" W)

[Daily Data Report for March 2024 - Climate - Environment and Climate Change Canada \(weather.gc.ca\)](#)

Tide data source

Government of Canada Tide Data for Squamish Inner Harbour (station ID 07811)

[Squamish Inner \(07811\) \(tides.gc.ca\)](#)

Squamish River Discharge Data Source

Government of Canada Hydrometric Data for Squamish River near Brackendale (station ID 08GA022)

[Real-Time Hydrometric Data Graph for SQUAMISH RIVER NEAR BRACKENDALE \(08GA022\) \[BC\] - Water Level and Flow - Environment Canada \(ec.gc.ca\)](#)

EGP-STU-006 (BCR US):

Date and Time	Temperature (°C)	Specific			Dissolved Oxygen			Turbidity (NTU)	TL Battery V	Notes
		Conductivity (µS/cm)	Salinity (PSU)	pH (pH)	ORP (mV)	Concentration (mg/L)				
3/21/2024 3:20	4.85	42.84	0.02	7.22	162.37	12.80	65.28	11.42	Due to warm weather, snow melt	
3/21/2024 3:30	4.83	43.11	0.02	7.23	206.69	12.80	60.92	11.42	begun on March 16 and water levels	
3/21/2024 3:40	4.82	42.72	0.02	7.23	208.54	12.80	113.23	11.42	increased from 1.96 m to 2.56 m on	
3/21/2024 3:50	4.79	42.56	0.02	7.23	224.43	12.83	95.09	11.45	March 21. Turbidity in the river have	
3/21/2024 4:00	4.78	41.72	0.02	7.24	243.50	12.86	117.94	11.42	increased as a result.	
3/21/2024 4:10	4.77	41.91	0.02	7.21	203.25	12.84	70.74	11.42		
3/21/2024 4:20	4.77	42.56	0.02	7.23	234.18	12.84	90.83	11.42		
3/21/2024 4:30	4.75	42.46	0.02	7.26	269.38	12.83	82.45	11.35		
3/21/2024 4:40	4.74	43.04	0.02	7.30	288.11	12.83	80.72	11.35		
3/21/2024 4:50	4.74	42.83	0.02	7.24	278.97	12.83	76.09	11.35		
3/21/2024 5:00	4.71	43.90	0.02	7.31	298.23	12.85	72.90	11.33		
3/21/2024 5:10	4.70	44.83	0.02	7.26	207.17	12.86	78.93	11.42		
3/21/2024 5:20	4.67	44.86	0.02	7.25	236.40	12.87	67.27	11.42		
3/21/2024 5:30	4.65	45.32	0.02	7.25	238.79	12.86	80.05	11.42		
3/21/2024 5:40	4.62	44.41	0.02	7.26	268.32	12.88	84.32	11.42		
3/21/2024 5:50	4.61	44.39	0.02	7.23	255.07	12.89	75.03	11.42		
3/21/2024 6:00	4.58	41.49	0.02	7.26	267.27	12.89	75.47	11.42		
3/21/2024 6:10	4.59	42.65	0.02	7.25	200.08	12.88	84.12	11.42		
3/21/2024 6:20	4.59	43.78	0.02	7.23	226.54	12.83	75.02	11.42		
3/21/2024 6:30	4.57	44.29	0.02	7.21	258.45	12.81	58.31	11.35		
3/21/2024 6:40	4.55	44.07	0.02	7.21	255.61	12.84	59.70	11.42		
3/21/2024 6:50	4.52	43.51	0.02	7.22	262.16	12.85	51.73	11.42		
3/21/2024 7:00	4.50	44.29	0.02	7.18	278.90	12.86	80.95	11.33		
3/21/2024 7:10	4.48	44.58	0.02	7.20	166.65	12.86	68.10	11.33		
3/21/2024 7:20	4.48	45.45	0.02	7.26	175.35	12.85	91.15	11.40		
3/21/2024 7:30	4.48	46.06	0.02	7.20	211.49	12.85	61.59	11.42		
3/21/2024 7:40	4.45	45.38	0.02	7.23	225.11	12.88	72.73	11.42		
3/21/2024 7:50	4.42	44.89	0.02	7.17	235.25	12.90	55.96	11.42		
3/21/2024 8:00	4.42	44.51	0.02	7.23	253.57	12.89	70.84	11.42		
3/21/2024 8:10	4.41	44.25	0.02	7.23	229.65	12.91	65.13	11.42		
3/21/2024 8:20	4.40	44.15	0.02	7.23	247.34	12.94	47.55	11.42		
3/21/2024 8:30	4.39	44.08	0.02	7.23	268.48	12.95	49.78	11.42		
3/21/2024 8:40	4.40	44.18	0.02	7.27	263.10	12.98	17.23	11.40		
3/21/2024 8:50	4.40	43.90	0.02	7.21	275.52	12.99	62.01	11.42		
3/21/2024 9:00	4.43	46.60	0.02	7.25	291.38	13.00	26.79	11.42		
3/21/2024 9:10	4.45	46.37	0.02	7.22	165.90	13.01	67.84	11.40		
3/21/2024 9:10	4.45	46.37	0.02	7.22	165.90	13.01	67.84	11.40		
3/21/2024 9:20	4.48	46.51	0.02	7.21	182.14	13.03	75.29	11.30		
3/21/2024 9:30	4.52	46.47	0.02	7.23	226.12	13.05	33.83	11.40	Due to warm weather, snow melt	
3/21/2024 9:40	4.54	46.64	0.02	7.22	232.10	13.04	59.35	11.40	begun on March 16 and water levels	
3/21/2024 9:50	4.56	46.35	0.02	7.22	246.91	13.07	71.09	11.42	increased from 1.96 m to 2.56 m on	
3/21/2024 10:00	4.61	44.46	0.02	7.23	257.51	13.09	24.86	11.42	March 21. Turbidity in the river have	
3/21/2024 10:10	4.67	45.33	0.02	7.23	225.64	13.08	33.86	11.35	increased as a result.	
3/21/2024 10:20	4.74	45.38	0.02	7.23	252.78	13.09	79.60	11.42		
3/21/2024 10:30	4.80	44.47	0.02	7.23	268.54	13.12	44.20	11.42		
3/21/2024 10:40	4.88	45.43	0.02	7.24	279.14	13.11	89.67	11.33		
3/21/2024 10:50	4.94	45.17	0.02	7.21	280.29	13.10	81.57	11.42		
3/21/2024 11:00	5.01	47.94	0.02	7.25	280.56	13.10	74.83	11.42		
3/21/2024 11:10	5.05	47.41	0.02	7.21	141.20	13.12	33.33	11.42		
3/21/2024 11:20	5.09	48.16	0.02	7.23	184.00	13.08	44.84	11.35		
3/21/2024 11:30	5.12	48.15	0.02	7.24	209.86	13.09	78.47	11.42		
3/21/2024 11:40	5.14	47.77	0.02	7.24	248.94	13.08	45.65	11.42		
3/21/2024 11:50	5.13	47.31	0.02	7.23	260.43	13.09	51.35	11.42		
3/21/2024 12:00	5.13	48.18	0.02	7.26	279.14	13.08	51.68	11.42		
3/21/2024 12:10	5.11	48.21	0.02	7.28	190.20	13.08	35.51	11.42		
3/21/2024 12:20	5.09	47.85	0.02	7.27	206.07	13.09	45.36	11.42		
3/21/2024 12:30	5.08	48.18	0.02	7.26	247.52	13.10	44.15	11.42		
3/21/2024 12:40	5.07	47.10	0.02	7.28	262.18	13.11	54.07	11.42		
3/21/2024 12:50	5.07	47.57	0.02	7.26	265.77	13.09	46.48	11.33		
3/21/2024 13:00	5.09	46.18	0.02	7.31	284.67	13.11	39.30	11.33		
3/21/2024 13:10	5.13	46.37	0.02	7.22	162.92	13.10	49.50	11.42		
3/21/2024 13:20	5.17	46.49	0.02	7.25	189.47	13.09	61.46	11.42		
3/21/2024 13:30	5.20	45.85	0.02	7.27	210.25	13.10	74.19	11.42		
3/21/2024 13:40	5.26	46.59	0.02	7.26	230.55	13.08	40.18	11.42		
3/21/2024 13:50	5.29	45.71	0.02	7.27	258.59	13.09	46.29	11.42		
3/21/2024 14:00	5.33	46.92	0.02	7.27	266.86	13.09	73.41	11.42		
3/21/2024 14:10	5.38	46.41	0.02	7.28	220.25	13.07	46.01	11.42		
3/21/2024 14:20	5.42	46.18	0.02	7.29	246.25	13.09	54.66	11.42		
3/21/2024 14:30	5.47	46.02	0.02	7.40	273.87	13.08	59.22	11.42		
3/21/2024 14:40	5.52	46.08	0.02	7.29	274.36	13.08	82.60	11.42		
3/21/2024 14:50	5.57	46.02	0.02	7.25	270.70	13.08	73.59	11.42		
3/21/2024 15:00	5.61	45.58	0.02	7.31	283.24	13.07	19.80	11.42		
3/21/2024 15:10	5.69	45.81	0.02	7.22	144.63	13.06	25.35	11.40		
3/21/2024 15:20	5.78	46.02	0.02	7.27	160.85	13.06	20.01	11.40		
3/21/2024 15:30	5.82	46.18	0.02	7.29	205.19	13.04	22.49	11.40		
3/21/2024 15:40	5.82	45.71	0.02	7.29	228.97	13.05	27.67	11.40		
3/21/2024 15:50	5.83	45.85	0.02	7.29	239.94	13.03	21.58	11.40		
3/21/2024 16:00	5.85	46.00	0.02	7.30	256.54	13.02	19.54	11.42		
3/21/2024 16:10	5.86	46.00	0.02	7.30	224.09	13.01	21.12	11.42		
3/21/2024 16:20	5.87	46.51	0.02	7.30	254.84	13.00	23.45	11.35		
3/21/2024 16:30	5.87	46.54	0.02	7.29	274.62	12.98	19.71	11.42		
3/21/2024 16:40	5.86	46.56	0.02	7.31	275.42	12.98	22.39	11.42		
3/21/2024 16:50	5.87	46.35	0.02	7.30	281.51	12.98	23.90	11.42		
3/21/2024 17:00	5.90	47.80	0.02	7.32	290.40	12.96	27.92	11.42		
3/21/2024 17:10	5.90	47.57	0.02	7.26	150.10	12.96	36.62	11.42		
3/21/2024 17:20	5.91	47.84	0.02	7.30	173.00	12.94	25.00	11.45		

EGP-STU-006 (BCR US):

Date and Time	Temperature (°C)	Specific Conductivity (µS/cm)	Salinity (PSU)	pH (pH)	ORP (mV)	Dissolved Oxygen Concentration (mg/L)	Turbidity (NTU)	TL Battery V	Notes
3/21/2024 17:30	5.90	47.59	0.02	7.30	215.83	12.93	37.69	11.42	Due to warm weather, snow melt
3/21/2024 17:40	5.86	47.38	0.02	7.28	213.68	12.93	28.97	11.42	begun on March 16 and water levels
3/21/2024 17:50	5.80	47.20	0.02	7.30	247.09	12.92	28.56	11.42	increased from 1.96 m to 2.56 m on
3/21/2024 18:00	5.77	46.75	0.02	7.29	249.19	12.91	25.07	11.42	March 21. Turbidity in the river have
3/21/2024 18:10	5.75	46.98	0.02	7.30	219.70	12.89	22.16	11.45	increased as a result.
3/21/2024 18:20	5.72	47.05	0.02	7.45	255.87	12.87	26.26	11.45	
3/21/2024 18:30	5.70	47.06	0.02	7.32	265.66	12.86	18.65	11.45	
3/21/2024 18:40	5.67	47.40	0.02	7.29	268.09	12.84	28.41	11.45	
3/21/2024 18:50	5.65	47.67	0.02	7.29	273.48	12.83	25.71	11.38	
3/21/2024 19:00	5.62	48.82	0.02	7.32	291.46	12.82	71.62	11.42	
3/21/2024 19:10	5.60	49.12	0.02	7.21	196.05	12.81	81.08	11.42	
3/21/2024 19:20	5.58	49.59	0.02	7.29	220.96	12.78	66.64	11.42	
3/21/2024 19:30	5.55	49.72	0.02	7.27	257.17	12.76	70.29	11.45	
3/21/2024 19:40	5.52	49.98	0.02	7.27	271.20	12.74	86.82	11.42	

Rainfall data source

Environment Canada daily data for Squamish Airport (49°46'59.550" N, 123°09'40.300" W)
[Daily Data Report for March 2024 - Climate - Environment and Climate Change Canada \(weather.gc.ca\)](#)

Tide data source

Government of Canada Tide Data for Squamish Inner Harbour (station ID 07811)
[Squamish Inner \(07811\) \(tides.gc.ca\)](#)

Squamish River Discharge Data Source

Government of Canada Hydrometric Data for Squamish River near Brackendale (station ID 08GA022)
[Real-Time Hydrometric Data Graph for SQUAMISH RIVER NEAR BRACKENDALE \(08GA022\) \[BC\] - Water Level and Flow - Environment Canada \(ec.gc.ca\)](#)