




Reporting Week	Mar 4 <sup>th</sup> to Mar 11 <sup>th</sup> , 2024
Report #	14
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# **Eagle Mountain - Woodfibre Gas Pipeline Project**

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

**Report Period: March 4<sup>th</sup> to March 11<sup>th</sup>, 2024**


 <b>Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report</b>	Reporting Week	Mar 4 <sup>th</sup> to Mar 11 <sup>th</sup> , 2024
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Appendix A: Point of Discharge from Water Treatment System Documentation

Appendix B: Receiving Environment Documentation

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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 4<sup>th</sup> to March 11<sup>th</sup>, 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. Tunnelling at the BC Rail site has not begun.

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 has been 1 batch test discharge on Friday, March 7<sup>th</sup>, 2024 to authorized point of discharge.

### 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 Lab Sample	Real Time Monitored	Field Samples Taken	Discharge Rate (batch)	Discharge Volume (batch)	Results
2024-03-	N/A- Batch Sample	Yes-YSI ProDSS for Batch Sample	120GPM	90.04m <sup>3</sup>	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
2024-03-04	Yes *	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.
2024-03-07	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
2023-03-04	Yes *	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.
2024-03-07	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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## Batch Sample Analysis

Analyte	Lowest Detection Limit	Units	WTP Discharge 03-March-2024, 12:20	7-March-2024 07:37	BCAWWQG-FAL-ST	BCAWWQG-MAL-ST
<b>Physical Tests (Matrix: Water)</b>						
Alkalinity, total (as CaCO <sub>3</sub> )	2.0	mg/L	148			
Hardness (as CaCO <sub>3</sub> ), dissolved	0.60	mg/L	1.03			
Hardness (as CaCO <sub>3</sub> ), from total Ca/Mg	0.60	mg/L	1.02			
Solids, total dissolved [TDS]	10	mg/L				
Solids, total suspended [TSS]	3.0	mg/L	<3.0			
pH	0.10	pH units	8.25		6.5-9.0	7.0-8.7
<b>In Situ Parameters</b>						
pH		pH	8.02	7.89	6.5-9.0	7.0-8.7
Temperature		°C	6.7	5.5		
Conductivity		µS/cm	383.1	654		
Turbidity		NTU	1.85	0.73		
DO		mg/L	11.26	12.40		
ORP		mV	129.7	146.9		
Salinity		ppt	0.18	0.32		
Visible sheen		No	No	No		
<b>Anions and Nutrients (Matrix: Water)</b>						
Ammonia, total (as N)	0.005000000	mg/L	0.775		3.43	
Bromide	0.050000000	mg/L	<0.050			
Chloride	0.500000000	mg/L	25.6		600	
Fluoride	0.020000000	mg/L	0.066			1.5
Nitrate (as N)	0.005000000	mg/L	0.651		32.8	
Nitrite (as N)	0.001000000	mg/L	0.0321		0.6	
Nitrogen, total	0.030000000	mg/L	1.53			
Sulfate (as SO <sub>4</sub> )	0.300000000	mg/L	14.0			
Ammonium (as NH <sub>4</sub> ), field	0.0010	mg/L	0.983			
<b>Organic / Inorganic Carbon (Matrix: Water)</b>						
Carbon, dissolved organic [DOC]	0.50	mg/L	4.03			
<b>Total Metals (Matrix: Water)</b>						
Aluminum, total	0.0030	mg/L	0.0061			
Antimony, total	0.00010	mg/L	0.00087		0.25	
Arsenic, total	0.00010	mg/L	0.00049			
Barium, total	0.00010	mg/L	0.00106			
Beryllium, total	0.000020	mg/L	<0.000100			
Bismuth, total	0.000050	mg/L	<0.000050			
Boron, total	0.010	mg/L	0.018			
Cadmium, total	0.0000050	mg/L	<0.0000050			
Calcium, total	0.050	mg/L	0.384			

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## Discharged Water Report

Chromium, total	0.00050	mg/L	0.00150			
Cobalt, total	0.00010	mg/L	<0.00010		0.11	
Copper, total	0.00050	mg/L	0.00077			0.003
Iron, total	0.010	mg/L	0.048		1	
Lead, total	0.000050	mg/L	<0.000050		0.003	0.14
Lithium, total	0.0010	mg/L	0.0033			
Magnesium, total	0.100	mg/L	0.0159			
Manganese, total	0.00010	mg/L	0.00341		0.551	
Mercury, total	0.0000050	mg/L	<0.0000050			
Molybdenum, total	0.000050	mg/L	0.0106		46	
Nickel, total	0.00050	mg/L	<0.00050			
Phosphorus, total	0.050	mg/L	<0.050			
Potassium, total	0.100	mg/L	4.94			
Selenium, total	0.000050	mg/L	0.000105			
Silicon, total	0.10	mg/L	3.03			
Silver, total	0.000010	mg/L	<0.000010		0.0001	0.003
Sodium, total	0.050	mg/L	82.6			
Strontium, total	0.00020	mg/L	0.00072			
Sulfur, total	0.50	mg/L	4.88			
Thallium, total	0.000010	mg/L	<0.000010			
Tin, total	0.00010	mg/L	<0.00010			
Titanium, total	0.00030	mg/L	<0.00030			
Uranium, total	0.000010	mg/L	<0.000010			
Vanadium, total	0.00050	mg/L	0.00061			
Zinc, total	0.0030	mg/L	0.0034			0.055
Zirconium, total	0.00020	mg/L	<0.00020			
<b>Dissolved Metals (Matrix: Water)</b>						
Aluminum, dissolved	0.0010	mg/L	0.0024			
Antimony, dissolved	0.00010	mg/L	0.00083			
Arsenic, dissolved	0.00010	mg/L	0.00043			
Barium, dissolved	0.00010	mg/L	0.00106			
Beryllium, dissolved	0.000020	mg/L	<0.000100			
Bismuth, dissolved	0.000050	mg/L	<0.000050			
Boron, dissolved	0.010	mg/L	0.017			
Cadmium, dissolved	0.0000050	mg/L	<0.0000050		0.00002	
Calcium, dissolved	0.050	mg/L	0.389			
Chromium, dissolved	0.00050	mg/L	0.00119			
Cobalt, dissolved	0.00010	mg/L	<0.00010			
Copper, dissolved	0.00020	mg/L	0.00072		0.00865	
Iron, dissolved	0.010	mg/L	0.013		0.35	
Lead, dissolved	0.000050	mg/L	<0.000050			
Lithium, dissolved	0.0010	mg/L	0.0032			
Magnesium, dissolved	0.100	mg/L	0.0141			
Manganese, dissolved	0.00010	mg/L	0.00297			
Mercury, dissolved	0.0000050	mg/L	<0.0000050			

Molybdenum, dissolved	0.000050	mg/L	0.0103			
Nickel, dissolved	0.00050	mg/L	<0.00050			
Phosphorus, dissolved	0.050	mg/L	<0.050			
Potassium, dissolved	0.100	mg/L	4.82			
Selenium, dissolved	0.000050	mg/L	0.000091			
Silicon, dissolved	0.050	mg/L	2.98			
Silver, dissolved	0.000010	mg/L	<0.000010			
Sodium, dissolved	0.050	mg/L	79.7			
Strontium, dissolved	0.00020	mg/L	0.00075			
Sulfur, dissolved	0.50	mg/L	4.83			
Thallium, dissolved	0.000010	mg/L	<0.000010			
Tin, dissolved	0.00010	mg/L	<0.00010			
Titanium, dissolved	0.00030	mg/L	<0.00030			
Uranium, dissolved	0.000010	mg/L	<0.000010			
Vanadium, dissolved	0.00050	mg/L	<0.00050			
Zinc, dissolved	0.0010	mg/L	0.0177		0.0186	
Zirconium, dissolved	0.00020	mg/L	<0.00020			
<b>Aggregate Organics (Matrix: Water)</b>						
Phenols, total (4AAP)	0.0010	mg/L	<0.0010		0.05	
<b>Volatile Organic Compounds (Matrix: Water)</b>						
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			
<b>Volatile Organic Compounds [Drycleaning] (Matrix: Water)</b>						
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			

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## Discharged Water Report

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			
<b>Volatile Organic Compounds [Fuels] (Matrix: Water)</b>						
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			
<b>Volatile Organic Compounds [THMs] (Matrix: Water)</b>						
Bromodichloromethane	0.50	µg/L	<0.50			
Bromoform	0.50	µg/L	<0.50			
Chloroform	0.50	µg/L	<0.50			
Dibromochloromethane	0.50	µg/L	<0.50			
<b>Hydrocarbons (Matrix: Water)</b>						
EPH (C10-C19)	250	µg/L	<250			
EPH (C19-C32)	250	µg/L	<250			
LEPHw	250	µg/L	<250			
HEPHw	250	µg/L	<250			
<b>Polycyclic Aromatic Hydrocarbons (Matrix: Water)</b>						
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		0.1	
Benz(a)anthracene	0.010	µg/L	<0.010		0.1	
Benzo(a)pyrene	0.0050	µg/L	<0.0050			
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			



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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		0.02	
Quinoline	0.050	µg/L	<0.050			
<b>G+A208:G211+A208:F213glycols (Matrix: Water)</b>						
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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## Batch Sample Lab Documentation



## CERTIFICATE OF ANALYSIS

**Work Order** : **VA24A4370**  
**Client** : **Frontier-Kemper Michels Joint Venture**  
**Contact** : Sara Derakhshi  
**Address** : 404-850 Harbourside Drive  
 North Vancouver BC Canada V7P 0A3  
**Telephone** : ----  
**Project** : ----  
**PO** : CO 018  
**C-O-C number** : 20-975977  
**Sampler** : ----  
**Site** : BC Rail  
**Quote number** : WTP Dishcharge  
**No. of samples received** : 1  
**No. of samples analysed** : 1

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**Laboratory** : ALS Environmental - Vancouver  
**Account Manager** : Thomas Chang  
**Address** : 8081 Lougheed Highway  
 Burnaby BC Canada V5A 1W9  
**Telephone** : +1 604 253 4188  
**Date Samples Received** : 03-Mar-2024 14:10  
**Date Analysis Commenced** : 04-Mar-2024  
**Issue Date** : 06-Mar-2024 13:34

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>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Delson Resende	Lab Assistant	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Jing Liu	Lab Assistant	Inorganics, Edmonton, Alberta
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Thomas Chang	Account Manager	Administration, Burnaby, British Columbia



## General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).

Unit	Description
-	no units
°C	degrees celsius
µg/L	micrograms per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

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

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

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

## Sample Comments

Sample	Client Id	Comment
VA24A4370-001	WTP Discharge	<b>Sample(001) : Water sample for VOC analysis contained &gt; 5% headspace. Results may be biased low.</b>
VA24A4370-001	WTP Discharge	Water sample for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
VA24A4370-001	WTP Discharge	Water sample for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

## Qualifiers

Qualifier	Description
DTC	Dissolved concentration exceeds total. Results were confirmed by re-analysis.



## Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge	----	----	----	----
(Matrix: Water)					Client sampling date / time	03-Mar-2024 12:40	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4370-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Field Tests</b>										
pH, field	----	EF001/VA	0.10	pH units	8.02	----	----	----	----	----
Temperature, field	----	EF001/VA	0.10	°C	6.70	----	----	----	----	----
<b>Physical Tests</b>										
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L	1.03	----	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	1.02	----	----	----	----	----
pH	----	E108/VA	0.10	pH units	8.25	----	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	219	----	----	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	<3.0	----	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L	148	----	----	----	----	----
<b>Anions and Nutrients</b>										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.775	----	----	----	----	----
Ammonium (as NH4), field	14798-03-9	EC298A/VA	0.0010	mg/L	0.983	----	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L	<0.050	----	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	25.6	----	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.066	----	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/V A	0.0050	mg/L	0.651	----	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/V A	0.0010	mg/L	0.0321	----	----	----	----	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	1.53	----	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	14.0	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	4.03	----	----	----	----	----
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	4.06	----	----	----	----	----
<b>Total Metals</b>										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	0.0061	----	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	0.00087	----	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.00049	----	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.00106	----	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L	<0.000100	----	----	----	----	----



## Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge	----	----	----	----
(Matrix: Water)					Client sampling date / time	03-Mar-2024 12:40	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4370-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Total Metals</b>										
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050	---	---	---	---	
Boron, total	7440-42-8	E420/VA	0.010	mg/L	0.018	---	---	---	---	
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	<0.0000050	---	---	---	---	
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	0.384	---	---	---	---	
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	0.000158	---	---	---	---	
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L	0.00150	---	---	---	---	
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L	<0.00010	---	---	---	---	
Copper, total	7440-50-8	E420/VA	0.00050	mg/L	0.00077	---	---	---	---	
Iron, total	7439-89-6	E420/VA	0.010	mg/L	0.048	---	---	---	---	
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	<0.000050	---	---	---	---	
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L	0.0033	---	---	---	---	
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	0.0159	---	---	---	---	
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L	0.00341	---	---	---	---	
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L	<0.0000050	---	---	---	---	
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L	0.0106	---	---	---	---	
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	4.94	---	---	---	---	
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.00976	---	---	---	---	
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	0.000105	---	---	---	---	
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	3.03	---	---	---	---	
Silver, total	7440-22-4	E420/VA	0.000010	mg/L	<0.000010	---	---	---	---	
Sodium, total	7440-23-5	E420/VA	0.050	mg/L	82.6	---	---	---	---	
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.00072	---	---	---	---	
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	4.88	---	---	---	---	
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	7440-31-5	E420/VA	0.00010	mg/L	<0.00010	---	---	---	---	
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L	<0.00030	---	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge	----	----	----	----
(Matrix: Water)					Client sampling date / time	03-Mar-2024 12:40	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4370-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Total Metals</b>										
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L	0.00014	---	---	---	---	
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	<0.000010	---	---	---	---	
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	0.00061	---	---	---	---	
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L	0.0034	---	---	---	---	
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L	<0.00020	---	---	---	---	
<b>Dissolved Metals</b>										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L	0.0024	---	---	---	---	
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L	0.00083	---	---	---	---	
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L	0.00043	---	---	---	---	
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L	0.00106	---	---	---	---	
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	0.017	---	---	---	---	
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L	<0.0000050	---	---	---	---	
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L	0.389	---	---	---	---	
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L	0.000154	---	---	---	---	
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L	0.00119	---	---	---	---	
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L	<0.00010	---	---	---	---	
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L	0.00072	---	---	---	---	
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L	0.013	---	---	---	---	
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L	<0.000050	---	---	---	---	
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L	0.0032	---	---	---	---	
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L	0.0141	---	---	---	---	
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L	0.00297	---	---	---	---	
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L	<0.0000050	---	---	---	---	
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L	0.0103	---	---	---	---	
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L	<0.00050	---	---	---	---	
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L	<0.050	---	---	---	---	
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L	4.82	---	---	---	---	
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L	0.00954	---	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge	----	----	----	----
(Matrix: Water)					Client sampling date / time	03-Mar-2024 12:40	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4370-001	-----	-----	-----	-----	
					Result	---	---	---	---	
<b>Dissolved Metals</b>										
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L	0.000091	---	---	---	---	
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L	2.98	---	---	---	---	
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L	<0.000010	---	---	---	---	
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L	79.7	---	---	---	---	
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L	0.00075	---	---	---	---	
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L	4.83	---	---	---	---	
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L	<0.00020	---	---	---	---	
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L	<0.000010	---	---	---	---	
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L	<0.00010	---	---	---	---	
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L	<0.00010	---	---	---	---	
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L	<0.00030	---	---	---	---	
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L	0.00014	---	---	---	---	
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L	<0.000010	---	---	---	---	
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L	<0.00050	---	---	---	---	
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L	0.0177 <sup>DTC</sup>	---	---	---	---	
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L	<0.00020	---	---	---	---	
Dissolved mercury filtration location	----	EP509/VA	-	-	Field	---	---	---	---	
Dissolved metals filtration location	----	EP421/VA	-	-	Field	---	---	---	---	
<b>Aggregate Organics</b>										
Phenols, total (4AAP)	----	E562/EO	0.0010	mg/L	<0.0010	---	---	---	---	
<b>Volatile Organic Compounds</b>										
Chlorobenzene	108-90-7	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	
Chloromethane	74-87-3	E611C/VA	5.0	µg/L	<5.0	---	---	---	---	
Dichlorobenzene, 1,2-	95-50-1	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	
Dichlorobenzene, 1,3-	541-73-1	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	
Dichlorobenzene, 1,4-	106-46-7	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	
Dichloropropane, 1,2-	78-87-5	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	
Dichloropropylene, cis+trans-1,3-	542-75-6	E611C/VA	0.75	µg/L	<0.75	---	---	---	---	
Dichloropropylene, cis-1,3-	10061-01-5	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C/VA	0.50	µg/L	<0.50	---	---	---	---	





## Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge	----	----	----	----
(Matrix: Water)					Client sampling date / time	03-Mar-2024 12:40	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4370-001	-----	-----	-----	-----	
						Result	---	---	---	---
<b>Volatile Organic Compounds</b>										
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C/N/A	0.20	µg/L	<0.20	---	---	---	---	
Trichloroethane, 1,1,2-	79-00-5	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Trichlorofluoromethane	75-69-4	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
<b>Volatile Organic Compounds [Drycleaning]</b>										
Carbon tetrachloride	56-23-5	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Chloroethane	75-00-3	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethane, 1,1-	75-34-3	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethane, 1,2-	107-06-2	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethylene, 1,1-	75-35-4	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethylene, cis-1,2-	156-59-2	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Dichloroethylene, trans-1,2-	156-60-5	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Dichloromethane	75-09-2	E611C/N/A	1.0	µg/L	<1.0	---	---	---	---	
Dichloropropylene, trans-1,3-	10061-02-6	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Tetrachloroethylene	127-18-4	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Trichloroethane, 1,1,1-	71-55-6	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Trichloroethylene	79-01-6	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Vinyl chloride	75-01-4	E611C/N/A	0.40	µg/L	<0.40	---	---	---	---	
<b>Volatile Organic Compounds [Fuels]</b>										
Benzene	71-43-2	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Ethylbenzene	100-41-4	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Styrene	100-42-5	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Toluene	108-88-3	E611C/N/A	0.40	µg/L	<0.40	---	---	---	---	
Xylene, m+p-	179601-23-1	E611C/N/A	0.40	µg/L	<0.40	---	---	---	---	
Xylene, o-	95-47-6	E611C/N/A	0.30	µg/L	<0.30	---	---	---	---	
Xylenes, total	1330-20-7	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
<b>Volatile Organic Compounds [THMs]</b>										
Bromodichloromethane	75-27-4	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Bromoform	75-25-2	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	
Chloroform	67-66-3	E611C/N/A	0.50	µg/L	<0.50	---	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge	----	----	----	----
(Matrix: Water)					Client sampling date / time	03-Mar-2024 12:40	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4370-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Volatile Organic Compounds [THMs]</b>										
Dibromochloromethane	124-48-1	E611C/VA	0.50	µg/L	<0.50	----	----	----	----	
<b>Hydrocarbons</b>										
EPH (C10-C19)	----	E601A/VA	250	µg/L	<250	----	----	----	----	
EPH (C19-C32)	----	E601A/VA	250	µg/L	<250	----	----	----	----	
HEPHw	----	EC600A/VA	250	µg/L	<250	----	----	----	----	
LEPHw	----	EC600A/VA	250	µg/L	<250	----	----	----	----	
<b>Hydrocarbons Surrogates</b>										
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6	E601A/VA	1.0	%	89.6	----	----	----	----	
<b>Volatile Organic Compounds Surrogates</b>										
Bromofluorobenzene, 4-	460-00-4	E611C/VA	1.0	%	80.0	----	----	----	----	
Difluorobenzene, 1,4-	540-36-3	E611C/VA	1.0	%	96.6	----	----	----	----	
<b>Polycyclic Aromatic Hydrocarbons</b>										
Acenaphthene	83-32-9	E641A/VA	0.010	µg/L	<0.010	----	----	----	----	
Acenaphthylene	208-96-8	E641A/VA	0.010	µg/L	<0.010	----	----	----	----	
Acridine	260-94-6	E641A/VA	0.010	µg/L	<0.010	----	----	----	----	
Anthracene	120-12-7	E641A/VA	0.010	µg/L	<0.010	----	----	----	----	
Benz(a)anthracene	56-55-3	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+j+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	----	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	WTP Discharge	----	----	----	----
(Matrix: Water)					Client sampling date / time	03-Mar-2024 12:40	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4370-001	-----	-----	-----	-----	
					Result	----	----	----	----	
<b>Polycyclic Aromatic Hydrocarbons</b>										
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	----	----	----	----	
<b>Polycyclic Aromatic Hydrocarbons Surrogates</b>										
Chrysene-d12	1719-03-5	E641A/VA	0.1	%	109	----	----	----	----	
Naphthalene-d8	1146-65-2	E641A/VA	0.1	%	100	----	----	----	----	
Phenanthrene-d10	1517-22-2	E641A/VA	0.1	%	102	----	----	----	----	
<b>Glycols</b>										
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	----	----	----	----	
<b>Glycols Surrogates</b>										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%	102	----	----	----	----	

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 REPORT

<p><b>Work Order</b> : <b>VA24A4370</b></p> <p><b>Client</b> : Frontier-Kemper Michels Joint Venture</p> <p><b>Contact</b> : Sara Derakhshi</p> <p><b>Address</b> : 404-850 Harbourside Drive North Vancouver BC Canada V7P 0A3</p> <p><b>Telephone</b> :</p> <p><b>Project</b> : ----</p> <p><b>PO</b> : CO 018</p> <p><b>C-O-C number</b> : 20-975977</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : BC Rail</p> <p><b>Quote number</b> : WTP Dishcharge</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 21</p> <p><b>Laboratory</b> : ALS Environmental - Vancouver</p> <p><b>Account Manager</b> : Thomas Chang</p> <p><b>Address</b> : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9</p> <p><b>Telephone</b> : +1 604 253 4188</p> <p><b>Date Samples Received</b> : 03-Mar-2024 14:10</p> <p><b>Date Analysis Commenced</b> : 04-Mar-2024</p> <p><b>Issue Date</b> : 06-Mar-2024 13:33</p>
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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
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
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Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Thomas Chang	Account Manager	Vancouver Administration, Burnaby, British Columbia

Page : 2 of 21  
Work Order : VA24A4370  
Client : Frontier-Kemper Michels Joint Venture  
Project : ----



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## 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

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1352815)</b>											
VA24A4370-001	WTP Discharge	pH	----	E108	0.10	pH units	8.25	8.27	0.242%	4%	----
<b>Physical Tests (QC Lot: 1352847)</b>											
VA24A4070-003	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 1352853)</b>											
VA24A4070-003	Anonymous	Solids, total dissolved [TDS]	----	E162	13	mg/L	61	63	2	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1352809)</b>											
VA24A4370-001	WTP Discharge	Chloride	16887-00-6	E235.Cl	0.50	mg/L	25.6	25.6	0.236%	20%	----
<b>Anions and Nutrients (QC Lot: 1352810)</b>											
VA24A4370-001	WTP Discharge	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.066	0.064	0.001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1352811)</b>											
VA24A4370-001	WTP Discharge	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	14.0	14.1	0.760%	20%	----
<b>Anions and Nutrients (QC Lot: 1352812)</b>											
VA24A4370-001	WTP Discharge	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1352813)</b>											
VA24A4370-001	WTP Discharge	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0321	0.0316	1.41%	20%	----
<b>Anions and Nutrients (QC Lot: 1352814)</b>											
VA24A4370-001	WTP Discharge	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.651	0.658	0.986%	20%	----
<b>Anions and Nutrients (QC Lot: 1353089)</b>											
VA24A4262-003	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1353091)</b>											
VA24A4262-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 1353088)</b>											
VA24A4262-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 1353092)</b>											
VA24A4370-001	WTP Discharge	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	4.03	4.30	0.27	Diff <2x LOR	----
<b>Total Metals (QC Lot: 1353637)</b>											
VA24A4370-001	WTP Discharge	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0061	0.0064	0.0003	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00087	0.00086	0.000007	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00049	0.00051	0.00002	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.00106	0.00104	2.16%	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
<b>Total Metals (QC Lot: 1353637) - continued</b>											
VA24A4370-001	WTP Discharge	Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	---
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	---
		Boron, total	7440-42-8	E420	0.010	mg/L	0.018	0.017	0.0006	Diff <2x LOR	---
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	---
		Calcium, total	7440-70-2	E420	0.050	mg/L	0.384	0.363	0.021	Diff <2x LOR	---
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000158	0.000162	2.08%	20%	---
		Chromium, total	7440-47-3	E420	0.00050	mg/L	0.00150	0.00135	0.00014	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	0.00077	0.00080	0.00002	Diff <2x LOR	---
		Iron, total	7439-89-6	E420	0.010	mg/L	0.048	0.047	0.0009	Diff <2x LOR	---
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	---
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0033	0.0031	0.0002	Diff <2x LOR	---
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	0.0159	0.0163	0.0003	Diff <2x LOR	---
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00341	0.00337	0.980%	20%	---
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0106	0.0106	0.430%	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	4.94	5.02	1.69%	20%	---
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00976	0.00999	2.28%	20%	---
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000105	0.000118	0.000012	Diff <2x LOR	---
		Silicon, total	7440-21-3	E420	0.10	mg/L	3.03	3.09	2.10%	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	82.6	86.0	4.05%	20%	---
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.00072	0.00071	0.000010	Diff <2x LOR	---
		Sulfur, total	7704-34-9	E420	0.50	mg/L	4.88	5.02	0.13	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	<0.00030	0	Diff <2x LOR	---
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00014	0.00014	0.000002	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	0.00061	0.00062	0.00001	Diff <2x LOR	---
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0034	0.0035	0.00010	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
<b>Total Metals (QC Lot: 1353637) - continued</b>											
VA24A4370-001	WTP Discharge	Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 1353671)</b>											
VA24A4337-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000219	0.0000251	0.0000031	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 1353629)</b>											
VA24A4370-001	WTP Discharge	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0024	0.0027	0.0003	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00083	0.00086	0.00003	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00043	0.00043	0.000002	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00106	0.00106	0.349%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.017	0.018	0.0002	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	0.389	0.374	0.015	Diff <2x LOR	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000154	0.000157	1.97%	20%	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00119	0.00116	0.00003	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	0.00072	0.00074	0.00002	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.013	0.012	0.0002	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	0.0032	0.0031	0.00004	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	0.0141	0.0138	0.0003	Diff <2x LOR	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00297	0.00293	1.55%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0103	0.0106	2.34%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	4.82	4.85	0.566%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00954	0.00934	2.06%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000091	0.000080	0.000011	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	2.98	2.90	2.57%	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	79.7	80.4	0.914%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.00075	0.00076	0.00001	Diff <2x LOR	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	4.83	4.68	0.14	Diff <2x LOR	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----





Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 1353629) - continued</b>											
VA24A4370-001	WTP Discharge	Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.000030	mg/L	<0.000030	<0.000030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.000010	mg/L	0.00014	0.00013	0.00001	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	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0177	0.0168	5.24%	20%	----
Zirconium, dissolved	7440-67-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----		
<b>Dissolved Metals (QC Lot: 1353657)</b>											
VA24A4113-004	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1355788)</b>											
CG2402577-005	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Volatile Organic Compounds (QC Lot: 1352749)</b>											
VA24A4370-001	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	75-25-2	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-	106-46-7	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611C	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	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
<b>Volatile Organic Compounds (QC Lot: 1352749) - continued</b>											
VA24A4370-001	WTP Discharge	Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611C	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611C	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
Xylene, o-	95-47-6	E611C	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----		
<b>Glycols (QC Lot: 1353133)</b>											
VA24A4370-001	WTP Discharge	Diethylene glycol	111-46-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Propylene glycol, 1,2-	57-55-6	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
		Triethylene glycol	112-27-6	E680E	5.0	mg/L	<5.0	<5.0	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
<b>Physical Tests (QCLot: 1352816)</b>						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 1352847)</b>						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
<b>Physical Tests (QCLot: 1352853)</b>						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 1352809)</b>						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
<b>Anions and Nutrients (QCLot: 1352810)</b>						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 1352811)</b>						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 1352812)</b>						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 1352813)</b>						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 1352814)</b>						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 1353089)</b>						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
<b>Anions and Nutrients (QCLot: 1353091)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Organic / Inorganic Carbon (QCLot: 1353088)</b>						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
<b>Organic / Inorganic Carbon (QCLot: 1353092)</b>						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Total Metals (QCLot: 1353637)</b>						
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	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 1353637) - continued</b>						
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	---
<b>Total Metals (QCLot: 1353671)</b>						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 1353629)</b>						
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	---
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	---
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 1353629) - continued</b>						
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	---
<b>Dissolved Metals (QCLot: 1353657)</b>						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	---
<b>Aggregate Organics (QCLot: 1355788)</b>						
Phenols, total (4AAP)	---	E562	0.001	mg/L	<0.0010	---
<b>Volatile Organic Compounds (QCLot: 1352749)</b>						
Benzene	71-43-2	E611C	0.5	µg/L	<0.50	---
Bromodichloromethane	75-27-4	E611C	0.5	µg/L	<0.50	---
Bromoform	75-25-2	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	67-66-3	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	---
Dichloroethylene, cis-1,2-	156-59-2	E611C	0.5	µg/L	<0.50	---
Dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	<0.50	---
Dichloromethane	75-09-2	E611C	1	µg/L	<1.0	---
Dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	<0.50	---
Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	<0.50	---
Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	<0.50	---
Ethylbenzene	100-41-4	E611C	0.5	µg/L	<0.50	---
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	<0.50	---
Styrene	100-42-5	E611C	0.5	µg/L	<0.50	---
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	<0.50	---
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	<0.20	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Volatile Organic Compounds (QCLot: 1352749) - continued</b>						
Tetrachloroethylene	127-18-4	E611C	0.5	µg/L	<0.50	---
Toluene	108-88-3	E611C	0.4	µg/L	<0.40	---
Trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	<0.50	---
Trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	<0.50	---
Trichloroethylene	79-01-6	E611C	0.5	µg/L	<0.50	---
Trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	<0.50	---
Vinyl chloride	75-01-4	E611C	0.4	µg/L	<0.40	---
Xylene, m+p-	179601-23-1	E611C	0.4	µg/L	<0.40	---
Xylene, o-	95-47-6	E611C	0.3	µg/L	<0.30	---
<b>Hydrocarbons (QCLot: 1353445)</b>						
EPH (C10-C19)	---	E601A	250	µg/L	<250	---
EPH (C19-C32)	---	E601A	250	µg/L	<250	---
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 1353444)</b>						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	---
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	---
Acridine	260-94-6	E641A	0.01	µg/L	<0.010	---
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	---
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	---
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	---
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	---
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	---
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	---
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	---
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	---
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	---
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	---
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	---
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	---
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	---
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	---
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	---
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	---
Quinoline	91-22-5	E641A	0.05	µg/L	<0.050	---
<b>Glycols (QCLot: 1353133)</b>						
Diethylene glycol	111-46-6	E680E	5	mg/L	<5.0	---



Sub-Matrix: **Water**

<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Result</i>	<i>Qualifier</i>
<b>Glycols (QCLot: 1353133) - continued</b>						
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	---
Propylene glycol, 1,2-	57-55-6	E680E	5	mg/L	<5.0	---
Triethylene glycol	112-27-6	E680E	5	mg/L	<5.0	---





## Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike Concentration	Recovery (%) LCS	Recovery Limits (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1352815)</b>									
pH	---	E108	---	pH units	7 pH units	101	98.0	102	---
<b>Physical Tests (QCLot: 1352816)</b>									
Alkalinity, total (as CaCO3)	---	E290	1	mg/L	500 mg/L	107	85.0	115	---
<b>Physical Tests (QCLot: 1352847)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	91.3	85.0	115	---
<b>Physical Tests (QCLot: 1352853)</b>									
Solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	95.7	85.0	115	---
<b>Anions and Nutrients (QCLot: 1352809)</b>									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.8	90.0	110	---
<b>Anions and Nutrients (QCLot: 1352810)</b>									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.4	90.0	110	---
<b>Anions and Nutrients (QCLot: 1352811)</b>									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 1352812)</b>									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	99.5	85.0	115	---
<b>Anions and Nutrients (QCLot: 1352813)</b>									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 1352814)</b>									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.9	90.0	110	---
<b>Anions and Nutrients (QCLot: 1353089)</b>									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	99.9	75.0	125	---
<b>Anions and Nutrients (QCLot: 1353091)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	---
<b>Organic / Inorganic Carbon (QCLot: 1353088)</b>									
Carbon, total organic [TOC]	---	E355-L	0.5	mg/L	8.57 mg/L	102	80.0	120	---
<b>Organic / Inorganic Carbon (QCLot: 1353092)</b>									
Carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	8.57 mg/L	98.8	80.0	120	---
<b>Total Metals (QCLot: 1353637)</b>									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	---



Sub-Matrix: Water

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 1353637) - continued</b>									
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.6	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.6	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	90.3	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	97.5	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	97.3	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.4	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	96.1	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.8	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.8	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	98.5	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.8	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	99.8	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.2	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	98.9	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	105	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	89.3	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.6	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	91.7	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	106	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	105	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	98.9	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.4	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	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 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
<b>Total Metals (QCLot: 1353637) - continued</b>									
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	94.7	80.0	120	----
<b>Total Metals (QCLot: 1353671)</b>									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
<b>Dissolved Metals (QCLot: 1353629)</b>									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	102	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	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	97.5	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	95.7	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100.0	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	97.4	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	97.6	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.1	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	93.9	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	97.4	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	98.7	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.5	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	98.8	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	107	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.9	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	99.7	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.9	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	89.6	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	88.2	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----



Sub-Matrix: **Water**

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Dissolved Metals (QCLot: 1353629) - continued</b>									
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	99.8	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	92.3	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	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	98.9	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
<b>Aggregate Organics (QCLot: 1355788)</b>									
Phenols, total (4AAP)	---	E562	0.001	mg/L	0.02 mg/L	99.9	85.0	115	----
<b>Volatile Organic Compounds (QCLot: 1352749)</b>									
Benzene	71-43-2	E611C	0.5	µg/L	100 µg/L	90.6	70.0	130	----
Bromodichloromethane	75-27-4	E611C	0.5	µg/L	100 µg/L	90.5	70.0	130	----
Bromoform	75-25-2	E611C	0.5	µg/L	100 µg/L	110	70.0	130	----
Carbon tetrachloride	56-23-5	E611C	0.5	µg/L	100 µg/L	95.4	70.0	130	----
Chlorobenzene	108-90-7	E611C	0.5	µg/L	100 µg/L	97.0	70.0	130	----
Chloroethane	75-00-3	E611C	0.5	µg/L	100 µg/L	101	60.0	140	----
Chloroform	67-66-3	E611C	0.5	µg/L	100 µg/L	91.0	70.0	130	----
Chloromethane	74-87-3	E611C	5	µg/L	100 µg/L	102	60.0	140	----
Dibromochloromethane	124-48-1	E611C	0.5	µg/L	100 µg/L	95.7	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611C	0.5	µg/L	100 µg/L	98.2	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611C	0.5	µg/L	100 µg/L	117	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611C	0.5	µg/L	100 µg/L	117	70.0	130	----
Dichloroethane, 1,1-	75-34-3	E611C	0.5	µg/L	100 µg/L	91.9	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611C	0.5	µg/L	100 µg/L	88.7	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611C	0.5	µg/L	100 µg/L	97.1	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611C	0.5	µg/L	100 µg/L	88.4	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611C	0.5	µg/L	100 µg/L	109	70.0	130	----
Dichloromethane	75-09-2	E611C	1	µg/L	100 µg/L	94.0	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611C	0.5	µg/L	100 µg/L	90.0	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611C	0.5	µg/L	100 µg/L	92.7	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611C	0.5	µg/L	100 µg/L	103	70.0	130	----



Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Volatile Organic Compounds (QCLot: 1352749) - continued</b>									
Ethylbenzene	100-41-4	E611C	0.5	µg/L	100 µg/L	86.9	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	0.5	µg/L	100 µg/L	101	70.0	130	----
Styrene	100-42-5	E611C	0.5	µg/L	100 µg/L	94.2	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	0.5	µg/L	100 µg/L	93.5	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	0.2	µg/L	100 µg/L	102	70.0	130	----
Tetrachloroethylene	127-18-4	E611C	0.5	µg/L	100 µg/L	107	70.0	130	----
Toluene	108-88-3	E611C	0.4	µg/L	100 µg/L	89.7	70.0	130	----
Trichloroethane, 1,1,1-	71-55-6	E611C	0.5	µg/L	100 µg/L	93.8	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611C	0.5	µg/L	100 µg/L	88.8	70.0	130	----
Trichloroethylene	79-01-6	E611C	0.5	µg/L	100 µg/L	95.6	70.0	130	----
Trichlorofluoromethane	75-69-4	E611C	0.5	µg/L	100 µg/L	105	60.0	140	----
Vinyl chloride	75-01-4	E611C	0.4	µg/L	100 µg/L	101	60.0	140	----
Xylene, m+p-	179601-23-1	E611C	0.4	µg/L	200 µg/L	106	70.0	130	----
Xylene, o-	95-47-6	E611C	0.3	µg/L	100 µg/L	87.4	70.0	130	----
<b>Hydrocarbons (QCLot: 1353445)</b>									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	109	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	106	70.0	130	----
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 1353444)</b>									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	127	60.0	130	----
Acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	117	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	108	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	127	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	123	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	119	60.0	130	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	117	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	127	60.0	130	----



Sub-Matrix: <b>Water</b>					Laboratory Control Sample (LCS) Report				
					<i>Spike</i>	<i>Recovery (%)</i>	<i>Recovery Limits (%)</i>		
<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Concentration</i>	<i>LCS</i>	<i>Low</i>	<i>High</i>	<i>Qualifier</i>
<b>Polycyclic Aromatic Hydrocarbons (QCLot: 1353444) - continued</b>									
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	120	50.0	130	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	116	60.0	130	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	----
Quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	117	60.0	130	----
<b>Glycols (QCLot: 1353133)</b>									
Diethylene glycol	111-46-6	E680E	5	mg/L	25 mg/L	94.9	70.0	130	----
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	96.1	70.0	130	----
Propylene glycol, 1,2-	57-55-6	E680E	5	mg/L	25 mg/L	95.8	70.0	130	----
Triethylene glycol	112-27-6	E680E	5	mg/L	25 mg/L	95.8	70.0	130	----



### 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
<b>Anions and Nutrients (QCLot: 1352809)</b>										
VA24A4000-002	Anonymous	Chloride	16887-00-6	E235.Cl	1970 mg/L	2000 mg/L	98.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 1353089)</b>										
VA24A4262-004	Anonymous	Nitrogen, total	7727-37-9	E366	0.414 mg/L	0.4 mg/L	104	70.0	130	----
<b>Anions and Nutrients (QCLot: 1353091)</b>										
VA24A4262-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.101 mg/L	0.1 mg/L	101	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 1353088)</b>										
VA24A4262-002	Anonymous	Carbon, total organic [TOC]	----	E355-L	5.79 mg/L	5 mg/L	116	70.0	130	----
<b>Total Metals (QCLot: 1353671)</b>										
VA24A4337-003	Anonymous	Mercury, total	7439-97-6	E508	0.000102 mg/L	0.0001 mg/L	102	70.0	130	----
<b>Dissolved Metals (QCLot: 1353657)</b>										
VA24A4337-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.000109 mg/L	0.0001 mg/L	109	70.0	130	----
<b>Aggregate Organics (QCLot: 1355788)</b>										
CG2402577-005	Anonymous	Phenols, total (4AAP)	----	E562	0.0191 mg/L	0.02 mg/L	95.6	75.0	125	----
<b>Volatile Organic Compounds (QCLot: 1352749)</b>										
VA24A4370-001	WTP Discharge	Benzene	71-43-2	E611C	86.0 µg/L	100 µg/L	86.0	60.0	140	----
		Bromodichloromethane	75-27-4	E611C	88.4 µg/L	100 µg/L	88.4	60.0	140	----
		Bromoform	75-25-2	E611C	107 µg/L	100 µg/L	107	60.0	140	----
		Carbon tetrachloride	56-23-5	E611C	89.2 µg/L	100 µg/L	89.2	60.0	140	----
		Chlorobenzene	108-90-7	E611C	92.3 µg/L	100 µg/L	92.3	60.0	140	----
		Chloroethane	75-00-3	E611C	93.4 µg/L	100 µg/L	93.4	50.0	150	----
		Chloroform	67-66-3	E611C	87.9 µg/L	100 µg/L	87.9	60.0	140	----
		Chloromethane	74-87-3	E611C	90.5 µg/L	100 µg/L	90.5	50.0	150	----
		Dibromochloromethane	124-48-1	E611C	93.0 µg/L	100 µg/L	93.0	60.0	140	----
		Dichlorobenzene, 1,2-	95-50-1	E611C	93.5 µg/L	100 µg/L	93.5	60.0	140	----
		Dichlorobenzene, 1,3-	541-73-1	E611C	113 µg/L	100 µg/L	113	60.0	140	----
		Dichlorobenzene, 1,4-	106-46-7	E611C	113 µg/L	100 µg/L	113	60.0	140	----
		Dichloroethane, 1,1-	75-34-3	E611C	87.9 µg/L	100 µg/L	87.9	60.0	140	----
		Dichloroethane, 1,2-	107-06-2	E611C	88.4 µg/L	100 µg/L	88.4	60.0	140	----
		Dichloroethylene, 1,1-	75-35-4	E611C	89.5 µg/L	100 µg/L	89.5	60.0	140	----



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
<b>Volatile Organic Compounds (QCLot: 1352749) - continued</b>										
VA24A4370-001	WTP Discharge	Dichloroethylene, cis-1,2-	156-59-2	E611C	85.6 µg/L	100 µg/L	85.6	60.0	140	----
		Dichloroethylene, trans-1,2-	156-60-5	E611C	102 µg/L	100 µg/L	102	60.0	140	----
		Dichloromethane	75-09-2	E611C	91.1 µg/L	100 µg/L	91.1	60.0	140	----
		Dichloropropane, 1,2-	78-87-5	E611C	88.0 µg/L	100 µg/L	88.0	60.0	140	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611C	89.6 µg/L	100 µg/L	89.6	60.0	140	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611C	99.5 µg/L	100 µg/L	99.5	60.0	140	----
		Ethylbenzene	100-41-4	E611C	78.5 µg/L	100 µg/L	78.5	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611C	95.1 µg/L	100 µg/L	95.1	60.0	140	----
		Styrene	100-42-5	E611C	86.4 µg/L	100 µg/L	86.4	60.0	140	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611C	89.2 µg/L	100 µg/L	89.2	60.0	140	----
		Tetrachloroethane, 1,1,2,2-	79-34-5	E611C	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Tetrachloroethylene	127-18-4	E611C	101 µg/L	100 µg/L	101	60.0	140	----
		Toluene	108-88-3	E611C	83.6 µg/L	100 µg/L	83.6	60.0	140	----
		Trichloroethane, 1,1,1-	71-55-6	E611C	88.0 µg/L	100 µg/L	88.0	60.0	140	----
		Trichloroethane, 1,1,2-	79-00-5	E611C	87.9 µg/L	100 µg/L	87.9	60.0	140	----
		Trichloroethylene	79-01-6	E611C	90.8 µg/L	100 µg/L	90.8	60.0	140	----
		Trichlorofluoromethane	75-69-4	E611C	94.9 µg/L	100 µg/L	94.9	50.0	150	----
		Vinyl chloride	75-01-4	E611C	90.8 µg/L	100 µg/L	90.8	50.0	150	----
		Xylene, m+p-	179601-23-1	E611C	200 µg/L	200 µg/L	100	60.0	140	----
		Xylene, o-	95-47-6	E611C	80.2 µg/L	100 µg/L	80.2	60.0	140	----





## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>VA24A4370</b></p> <p><b>Client</b> : <b>Frontier-Kemper Michels Joint Venture</b></p> <p><b>Contact</b> : Sara Derakhshi</p> <p><b>Address</b> : 404-850 Harbourside Drive North Vancouver BC Canada V7P 0A3</p> <p><b>Telephone</b> : ----</p> <p><b>Project</b> : ----</p> <p><b>PO</b> : CO 018</p> <p><b>C-O-C number</b> : 20-975977</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : BC Rail</p> <p><b>Quote number</b> : WTP Dishcharge</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 12</p> <p><b>Laboratory</b> : ALS Environmental - Vancouver</p> <p><b>Account Manager</b> : Thomas Chang</p> <p><b>Address</b> : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9</p> <p><b>Telephone</b> : +1 604 253 4188</p> <p><b>Date Samples Received</b> : 03-Mar-2024 14:10</p> <p><b>Issue Date</b> : 06-Mar-2024 13:34</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)***

- 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.



## 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		
<b>Aggregate Organics : Phenols (4AAP) in Water by Colorimetry</b>											
Amber glass total (sulfuric acid) WTP Discharge	E562	03-Mar-2024	06-Mar-2024	28 days	3 days	✔	06-Mar-2024	28 days	3 days	✔	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
Amber glass total (sulfuric acid) WTP Discharge	E298	03-Mar-2024	04-Mar-2024	28 days	1 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE WTP Discharge	E235.Br-L	03-Mar-2024	04-Mar-2024	28 days	1 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC</b>											
HDPE WTP Discharge	E235.Cl	03-Mar-2024	04-Mar-2024	28 days	1 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE WTP Discharge	E235.F	03-Mar-2024	04-Mar-2024	28 days	1 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE WTP Discharge	E235.NO3-L	03-Mar-2024	04-Mar-2024	3 days	1 days	✔	04-Mar-2024	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE WTP Discharge	E235.NO2-L	03-Mar-2024	04-Mar-2024	3 days	1 days	✔	04-Mar-2024	3 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	
<b>Anions and Nutrients : Sulfate in Water by IC</b>										
HDPE WTP Discharge	E235.SO4	03-Mar-2024	04-Mar-2024	28 days	1 days	✓	04-Mar-2024	28 days	1 days	✓
<b>Anions and Nutrients : Total Nitrogen by Colourimetry</b>										
Amber glass total (sulfuric acid) WTP Discharge	E366	03-Mar-2024	04-Mar-2024	28 days	1 days	✓	05-Mar-2024	28 days	2 days	✓
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
HDPE - dissolved (lab preserved) WTP Discharge	E509	03-Mar-2024	05-Mar-2024	0 hrs	36 hrs	* UCP	05-Mar-2024	0 hrs	36 hrs	* UCP
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
HDPE - total (lab preserved) WTP Discharge	E421	03-Mar-2024	05-Mar-2024	0 hrs	36 hrs	* UCP	05-Mar-2024	0 hrs	42 hrs	* UCP
<b>Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine</b>										
Amber glass dissolved (lab preserved) WTP Discharge	EF001	03-Mar-2024	----	----	----		04-Mar-2024	----	1 days	
<b>Glycols : Glycols (4 analytes) by GC-FID</b>										
Glass vial (sodium bisulfate) WTP Discharge	E680E	03-Mar-2024	04-Mar-2024	14 days	1 days	✓	04-Mar-2024	40 days	0 days	✓
<b>Hydrocarbons : BC PHCs - EPH by GC-FID</b>										
Amber glass/Teflon lined cap (sodium bisulfate) WTP Discharge	E601A	03-Mar-2024	04-Mar-2024	14 days	1 days	✓	04-Mar-2024	40 days	0 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
Amber glass dissolved (lab preserved) WTP Discharge	E358-L	03-Mar-2024	04-Mar-2024	3 days	1 days	✓	04-Mar-2024	28 days	0 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
Amber glass total (sulfuric acid) WTP Discharge	E355-L	03-Mar-2024	04-Mar-2024	28 days	1 days	✓	04-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	
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE WTP Discharge	E290	03-Mar-2024	04-Mar-2024	14 days	1 days	✓	04-Mar-2024	14 days	1 days	✓
<b>Physical Tests : pH by Meter</b>										
HDPE WTP Discharge	E108	03-Mar-2024	04-Mar-2024	0.25 hrs	19 hrs	* EHTR-FM	04-Mar-2024	0.25 hrs	20 hrs	* EHTR-FM
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE WTP Discharge	E162	03-Mar-2024	----	----	----		04-Mar-2024	7 days	1 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE WTP Discharge	E160	03-Mar-2024	----	----	----		04-Mar-2024	7 days	1 days	✓
<b>Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS</b>										
Amber glass/Teflon lined cap (sodium bisulfate) WTP Discharge	E641A	03-Mar-2024	04-Mar-2024	14 days	1 days	✓	04-Mar-2024	40 days	0 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
HDPE - total (lab preserved) WTP Discharge	E508	03-Mar-2024	05-Mar-2024	0 hrs	36 hrs	* UCP	05-Mar-2024	0 hrs	36 hrs	* UCP
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE - total (lab preserved) WTP Discharge	E420	03-Mar-2024	05-Mar-2024	180 days	2 days	✓	05-Mar-2024	180 days	2 days	✓
<b>Volatile Organic Compounds : VOCs (BC List) by Headspace GC-MS</b>										
Glass vial (sodium bisulfate) WTP Discharge	E611C	03-Mar-2024	04-Mar-2024	14 days	1 days	✓	04-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.



## 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 (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Alkalinity Species by Titration	E290	1352816	0	1	0.0	5.0	✖
Ammonia by Fluorescence	E298	1353091	1	7	14.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1352812	1	1	100.0	5.0	✔
Chloride in Water by IC	E235.Cl	1352809	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1353657	1	12	8.3	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1353629	1	1	100.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1353092	1	1	100.0	5.0	✔
Fluoride in Water by IC	E235.F	1352810	1	1	100.0	5.0	✔
Glycols (4 analytes) by GC-FID	E680E	1353133	1	1	100.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1352814	1	1	100.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1352813	1	1	100.0	5.0	✔
pH by Meter	E108	1352815	1	1	100.0	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1355788	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1352811	1	1	100.0	5.0	✔
TDS by Gravimetry	E162	1352853	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	1353671	1	16	6.2	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1353637	1	1	100.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1353089	1	6	16.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1353088	1	7	14.2	5.0	✔
TSS by Gravimetry	E160	1352847	1	14	7.1	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	1352749	1	1	100.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Alkalinity Species by Titration	E290	1352816	1	1	100.0	5.0	✔
Ammonia by Fluorescence	E298	1353091	1	7	14.2	5.0	✔
BC PHCs - EPH by GC-FID	E601A	1353445	1	5	20.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1352812	1	1	100.0	5.0	✔
Chloride in Water by IC	E235.Cl	1352809	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1353657	1	12	8.3	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1353629	1	1	100.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1353092	1	1	100.0	5.0	✔
Fluoride in Water by IC	E235.F	1352810	1	1	100.0	5.0	✔
Glycols (4 analytes) by GC-FID	E680E	1353133	1	1	100.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1352814	1	1	100.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1352813	1	1	100.0	5.0	✔
PAHs by Hexane LVI GC-MS	E641A	1353444	1	7	14.2	5.0	✔
pH by Meter	E108	1352815	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 (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Phenols (4AAP) in Water by Colorimetry	E562	1355788	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1352811	1	1	100.0	5.0	✔
TDS by Gravimetry	E162	1352853	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	1353671	1	16	6.2	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1353637	1	1	100.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1353089	1	6	16.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1353088	1	7	14.2	5.0	✔
TSS by Gravimetry	E160	1352847	1	14	7.1	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	1352749	1	1	100.0	5.0	✔
<b>Method Blanks (MB)</b>							
Alkalinity Species by Titration	E290	1352816	1	1	100.0	5.0	✔
Ammonia by Fluorescence	E298	1353091	1	7	14.2	5.0	✔
BC PHCs - EPH by GC-FID	E601A	1353445	1	5	20.0	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1352812	1	1	100.0	5.0	✔
Chloride in Water by IC	E235.Cl	1352809	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1353657	1	12	8.3	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1353629	1	1	100.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1353092	1	1	100.0	5.0	✔
Fluoride in Water by IC	E235.F	1352810	1	1	100.0	5.0	✔
Glycols (4 analytes) by GC-FID	E680E	1353133	1	1	100.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1352814	1	1	100.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1352813	1	1	100.0	5.0	✔
PAHs by Hexane LVI GC-MS	E641A	1353444	1	7	14.2	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1355788	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1352811	1	1	100.0	5.0	✔
TDS by Gravimetry	E162	1352853	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	1353671	1	16	6.2	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1353637	1	1	100.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1353089	1	6	16.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1353088	1	7	14.2	5.0	✔
TSS by Gravimetry	E160	1352847	1	14	7.1	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	1352749	1	1	100.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1353091	1	7	14.2	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1352812	0	1	0.0	5.0	✖
Chloride in Water by IC	E235.Cl	1352809	1	4	25.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1353657	1	12	8.3	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1353629	0	1	0.0	5.0	✖
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1353092	0	1	0.0	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>							
<b>Matrix Spikes (MS) - Continued</b>							
Fluoride in Water by IC	E235.F	1352810	0	1	0.0	5.0	✘
Nitrate in Water by IC (Low Level)	E235.NO3-L	1352814	0	1	0.0	5.0	✘
Nitrite in Water by IC (Low Level)	E235.NO2-L	1352813	0	1	0.0	5.0	✘
Phenols (4AAP) in Water by Colorimetry	E562	1355788	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1352811	0	1	0.0	5.0	✘
Total Mercury in Water by CVAAS	E508	1353671	1	16	6.2	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1353637	0	1	0.0	5.0	✘
Total Nitrogen by Colourimetry	E366	1353089	1	6	16.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1353088	1	7	14.2	5.0	✔
VOCs (BC List) by Headspace GC-MS	E611C	1352749	1	1	100.0	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
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 $20 \pm 5^\circ\text{C}$ ). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
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.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 <sub>2</sub> . 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 <sub>2</sub> . 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 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
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K <sub>3</sub> Fe(CN) <sub>6</sub> ) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
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.
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 CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> 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 <sub>3</sub> ), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> 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)	EC298A 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".
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,C12,C1O2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity,C12,C1O2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3 or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.




<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
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
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.
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.
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.
Glycols Extraction and Derivatization (BC Only)	EP680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with organic solvent.

<b>Report To</b> Contact and company name below will appear on the final report Company: <b>FKM</b> Contact: <b>Sara Demkishi</b> Phone: <b>514 891 2993</b> Company address below will appear on the final report Street: <b>850 Ashbur drive</b> City/Province: Postal Code:		<b>Reports / Recipients</b> Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> 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: <b>SaraDemkishi@MichelsCanada.com</b> Email 2: <b>BradClarke@MichelsCanada.com</b> Email 3:		<b>Turnaround Time (TAT) Requested</b> <input type="checkbox"/> Routine [R] if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum <input checked="" type="checkbox"/> 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day [EZ] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm		<b>AFFIX ALS BARCODE LABEL HERE</b> (ALS use only)	
<b>Invoice To</b> 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: <b>FKM</b> Contact: <b>Jenessa Krivokon</b>		<b>Invoice Recipients</b> Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax Email 2: <b>J.Krivokon@frontier.computer.com</b>		<b>Analysis Request</b> Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below			
<b>Project Information</b> ALS Account # / Quote #: <b>92</b> Job #: <b>CO 078</b> PO / AFE: <b>BC Rail</b> LSD:		<b>Oil and Gas Required Fields (client use)</b> AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:		<b>NUMBER OF CONTAINERS</b> physical test Doc, Toc Total metals dissolved metals VOC organics Anionic nutrients Hydrocarbon HFPH glycols		<b>SAMPLES ON HOLD</b> <b>EXTENDED STORAGE REQUIRED</b> <b>SUSPECTED HAZARD (see notes)</b>	
ALS Lab Work Order # (ALS use only):		ALS Contact:		Sampler:			
<b>ALS Sample # (ALS use only)</b> <b>Sample Identification and/or Coordinates</b> (This description will appear on the report) <b>VTP discharge</b>		<b>Date</b> (dd-mmm-yy) <b>3/3/24</b>		<b>Time</b> (hh:mm) <b>12:40</b>		<b>Sample Type</b> <b>water</b>	
Drinking Water (DW) <input type="checkbox"/>		Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		<b>SAMPLE RECEIPT DETAILS (ALS use only)</b> Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED Submission Comments identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO Cooler Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Intact: <input type="checkbox"/> YES <input type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C: FINAL COOLER TEMPERATURES °C: <b>13C</b>			
Are samples taken from a Regulated System? <input type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input type="checkbox"/> YES <input type="checkbox"/> NO		<b>Compare + short term and long term marine and Fresh water guideline</b>		<b>SHIPMENT RELEASE (client use)</b> Released by: <b>Sara Demkishi</b> Date: <b>3/3/24</b> Time:			
		<b>INITIAL SHIPMENT RECEPTION (ALS use only)</b> Received by: Date: Time:		<b>FINAL SHIPMENT RECEPTION (ALS use only)</b> Received by: <b>SL</b> Date: <b>3/3/24</b> Time: <b>2:10pm</b>			

Environmental Division  
 Vancouver  
 Work Order Reference  
**VA24A4370**



Telephone: +1 604 253 4189

 <b>Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report</b>	Reporting Week	Mar 4 <sup>th</sup> to Mar 11 <sup>th</sup> , 2024
	Report #	14
	Appendix	A

## WTP Discharge Field Notes and Logs

Discharge Volume (m <sup>3</sup> )	Discharge Volume (gal)	Flow Rate (m <sup>3</sup> /sec)	Discharge Time
98.04	25,900	0.007571	11:46 AM to 4:46

Discharging commenced at 11:46 AM, March 7<sup>th</sup> 2024, and finished at 04:46 PM, March 7<sup>th</sup> 2024, 5 hours. There was a pause in discharging for 1 hour and 20 minutes within this timeframe. The initial reading on the flow meter was 30820100, and at the end of discharge, it stood at 30846000. The total discharge amounted to 25,900 gallons (98.04m<sup>3</sup>). Average flow rate during discharge was 120 (GPM). Additional in-situ readings were taken at 1:51 PM and 3:09 PM.

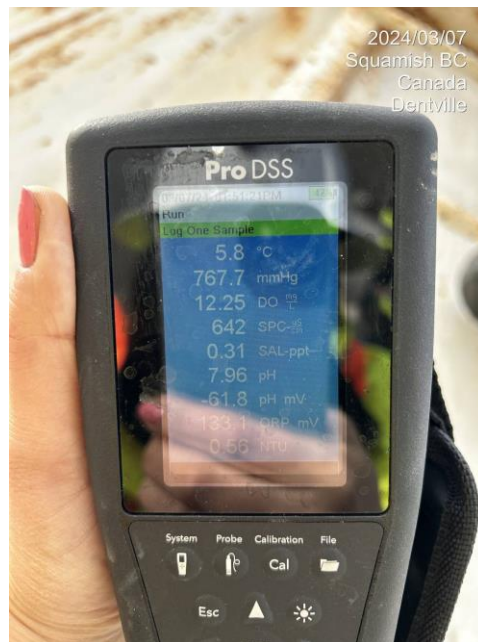


In-Situ parameter at 7:37 AM March 7<sup>th</sup>, 2024



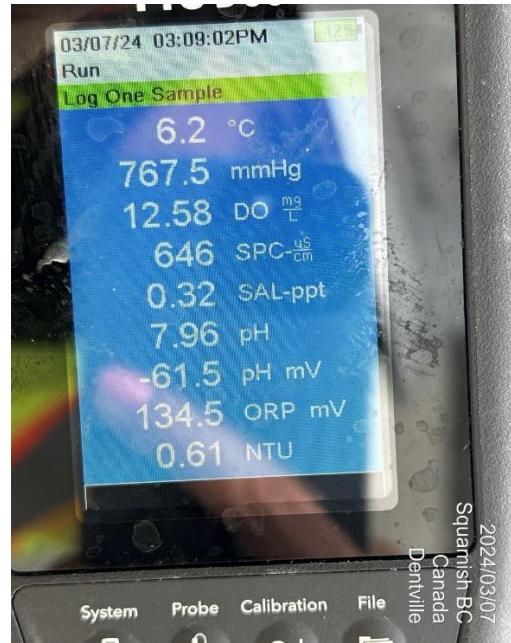


Start discharging at 11:46 AM



Checked In-Situ parameters during discharging at 1:51 PM






Checked In-Situ parameters during discharging at 3:09 PM




Finish discharging at 4:46 PM



No visible sheen on discharging water


 <b>Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report</b>	Reporting Week	Mar 4 <sup>th</sup> to Mar 11 <sup>th</sup> , 2024
	Report #	14
	Appendix	B

## Appendix B Receiving Environment Documentation

 <b>Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report</b>	Reporting Week	Mar 4 <sup>th</sup> to Mar 11 <sup>th</sup> , 2024
	Report #	14
	Appendix	B

## Receiving Environment Sample Analysis



 <b>Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report</b>	Reporting Week	Mar 4 <sup>th</sup> to Mar 11 <sup>th</sup> , 2024
	Report #	14
	Appendix	B

## Receiving Environment Lab Documentation



**CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)**

**Work Order** : VA24A4403  
**Client** : Triton Environmental Consultants Ltd.  
**Contact** : [Redacted]  
**Address** : [Redacted]  
**Telephone** : [Redacted]  
**Project** : 11964  
**PO** : 11964-Task20-Phase 3C-4C  
**C-O-C number** : ----  
**Sampler** : ----  
**Site** : Water Analysis  
**Quote number** : VA23-TRIT100-012  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 7  
**Laboratory** : ALS Environmental - Vancouver  
**Account Manager** : [Redacted]  
**Address** : [Redacted]  
**Telephone** : [Redacted]  
**Date Samples Received** : 04-Mar-2024 12:20  
**Date Analysis Commenced** : 04-Mar-2024  
**Issue Date** : 12-Mar-2024 14:49

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
- Guideline Comparison

**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
Juanita Martis	Account Manager Assistant	Administration, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Inorganics, Burnaby, British Columbia
Nik Perkio	Inorganics Analyst	Inorganics, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Metals, Waterloo, Ontario
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Sam Silveira	Analyst	Metals, Burnaby, British Columbia



## No Breaches Found

### 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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : 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

>: greater than.

<: less than.

Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.

### Workorder Comments

The samples "Duplicate", "Field Blank" and "Trip Blank" listed on the Chain of Custody form were not received.





## Analytical Results Evaluation

Matrix: Water				Client sample ID	SQU DS1	SQU US 1	---	---	---	---	---
				Sampling date/time	04-Mar-2024 08:46	04-Mar-2024 09:40	---	---	---	---	---
				Sub-Matrix	Water	Water	---	---	---	---	---
Analyte	CAS Number	Method/Lab	Unit	VA24A4403-001	VA24A4403-002	-----	-----	-----	-----	-----	-----
<b>Field Tests</b>											
Conductivity, field	----	EF001/VA	µS/cm	79.000	72.000	---	---	---	---	---	---
pH, field	----	EF001/VA	pH units	7.33	7.38	---	---	---	---	---	---
Temperature, field	----	EF001/VA	°C	2.20	2.20	---	---	---	---	---	---
<b>Physical Tests</b>											
Hardness (as CaCO <sub>3</sub> ), dissolved	----	EC100/VA	mg/L	21.3	22.2	---	---	---	---	---	---
Hardness (as CaCO <sub>3</sub> ), from total Ca/Mg	----	EC100A/VA	mg/L	21.4	22.8	---	---	---	---	---	---
Solids, total dissolved [TDS]	----	E162/VA	mg/L	49	56	---	---	---	---	---	---
Solids, total suspended [TSS]	----	E160/VA	mg/L	<3.0	<3.0	---	---	---	---	---	---
Alkalinity, total (as CaCO <sub>3</sub> )	----	E290/VA	mg/L	24.9	23.5	---	---	---	---	---	---
<b>Anions and Nutrients</b>											
Ammonia, total (as N)	7664-41-7	E298/VA	mg/L	0.247	0.436	---	---	---	---	---	---
Bromide	24959-67-9	E235.Br-L/VA	mg/L	<0.050	<0.050	---	---	---	---	---	---
Chloride	16887-00-6	E235.Cl/VA	mg/L	4.40	6.52	---	---	---	---	---	---
Fluoride	16984-48-8	E235.F/VA	mg/L	0.024	0.026	---	---	---	---	---	---
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	mg/L	0.0524	0.0512	---	---	---	---	---	---
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	mg/L	<0.0010	<0.0010	---	---	---	---	---	---
Nitrogen, total	7727-37-9	E366/VA	mg/L	0.355	0.581	---	---	---	---	---	---
Phosphorus, total	7723-14-0	E372-U/VA	mg/L	0.0257	0.0401	---	---	---	---	---	---
Sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4/VA	mg/L	6.27	7.00	---	---	---	---	---	---
<b>Organic / Inorganic Carbon</b>											
Carbon, dissolved organic [DOC]	----	E358-L/VA	mg/L	1.23	1.39	---	---	---	---	---	---
Carbon, total organic [TOC]	----	E355-L/VA	mg/L	0.80	1.13	---	---	---	---	---	---
<b>Total Sulfides</b>											
Sulfide, total (as S)	18496-25-8	E395/VA	mg/L	<0.0015	<0.0015	---	---	---	---	---	---
Sulfide, un-ionized (as H <sub>2</sub> S), from total	7783-06-4	EC395/VA	mg/L	<0.0015	<0.0015	---	---	---	---	---	---
Sulfide, total (as H <sub>2</sub> S)	7783-06-4	E395/VA	mg/L	<0.0016	<0.0016	---	---	---	---	---	---
<b>Total Metals</b>											



## Analytical Results Evaluation

Matrix: Water				Client sample ID	SQU DS1	SQU US 1	----	----	----	----	----
				Sampling date/time	04-Mar-2024 08:46	04-Mar-2024 09:40	----	----	----	----	----
				Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	VA24A4403-001	VA24A4403-002	-----	-----	-----	-----	-----	-----
<b>Total Metals</b>											
<b>Aluminum, total</b>	7429-90-5	E420/VA	mg/L	0.0427	0.0387	----	----	----	----	----	----
<b>Antimony, total</b>	7440-36-0	E420/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
<b>Arsenic, total</b>	7440-38-2	E420/VA	mg/L	0.00017	0.00016	----	----	----	----	----	----
<b>Barium, total</b>	7440-39-3	E420/VA	mg/L	0.00924	0.00893	----	----	----	----	----	----
<b>Beryllium, total</b>	7440-41-7	E420/VA	mg/L	<0.000100	<0.000100	----	----	----	----	----	----
<b>Bismuth, total</b>	7440-69-9	E420/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
<b>Boron, total</b>	7440-42-8	E420/VA	mg/L	0.014	0.015	----	----	----	----	----	----
<b>Cadmium, total</b>	7440-43-9	E420/VA	mg/L	0.0000086	0.0000071	----	----	----	----	----	----
<b>Calcium, total</b>	7440-70-2	E420/VA	mg/L	7.13	7.36	----	----	----	----	----	----
<b>Cesium, total</b>	7440-46-2	E420/VA	mg/L	0.000022	0.000022	----	----	----	----	----	----
<b>Chromium, total</b>	7440-47-3	E420/VA	mg/L	<0.00050	<0.00050	----	----	----	----	----	----
<b>Cobalt, total</b>	7440-48-4	E420/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
<b>Copper, total</b>	7440-50-8	E420/VA	mg/L	0.00065	0.00067	----	----	----	----	----	----
<b>Iron, total</b>	7439-89-6	E420/VA	mg/L	0.191	0.217	----	----	----	----	----	----
<b>Lead, total</b>	7439-92-1	E420/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
<b>Lithium, total</b>	7439-93-2	E420/VA	mg/L	0.0012	0.0011	----	----	----	----	----	----
<b>Magnesium, total</b>	7439-95-4	E420/VA	mg/L	0.870	1.08	----	----	----	----	----	----
<b>Manganese, total</b>	7439-96-5	E420/VA	mg/L	0.0126	0.0133	----	----	----	----	----	----
<b>Mercury, total</b>	7439-97-6	E508/VA	mg/L	<0.0000050	<0.0000050	----	----	----	----	----	----
<b>Molybdenum, total</b>	7439-98-7	E420/VA	mg/L	0.000612	0.000642	----	----	----	----	----	----
<b>Nickel, total</b>	7440-02-0	E420/VA	mg/L	<0.00050	<0.00050	----	----	----	----	----	----
<b>Phosphorus, total</b>	7723-14-0	E420/VA	mg/L	<0.050	0.058	----	----	----	----	----	----
<b>Potassium, total</b>	7440-09-7	E420/VA	mg/L	0.802	0.911	----	----	----	----	----	----
<b>Rubidium, total</b>	7440-17-7	E420/VA	mg/L	0.00126	0.00131	----	----	----	----	----	----
<b>Selenium, total</b>	7782-49-2	E420/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
<b>Silicon, total</b>	7440-21-3	E420/VA	mg/L	6.38	6.81	----	----	----	----	----	----
<b>Silver, total</b>	7440-22-4	E420/VA	mg/L	<0.000010	<0.000010	----	----	----	----	----	----
<b>Sodium, total</b>	7440-23-5	E420/VA	mg/L	3.97	5.15	----	----	----	----	----	----
<b>Strontium, total</b>	7440-24-6	E420/VA	mg/L	0.0483	0.0505	----	----	----	----	----	----



## Analytical Results Evaluation

Matrix: Water				Client sample ID	SQU DS1	SQU US 1	----	----	----	----	----
				Sampling date/time	04-Mar-2024 08:46	04-Mar-2024 09:40	----	----	----	----	----
				Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	VA24A4403-001	VA24A4403-002	-----	-----	-----	-----	-----	-----
<b>Total Metals</b>											
Sulfur, total	7704-34-9	E420/VA	mg/L	2.08	2.28	----	----	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	mg/L	<0.00020	<0.00020	----	----	----	----	----	----
Thallium, total	7440-28-0	E420/VA	mg/L	<0.000010	<0.000010	----	----	----	----	----	----
Thorium, total	7440-29-1	E420/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Tin, total	7440-31-5	E420/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Titanium, total	7440-32-6	E420/VA	mg/L	0.00111	0.00092	----	----	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Uranium, total	7440-61-1	E420/VA	mg/L	0.000028	0.000029	----	----	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	mg/L	0.00157	0.00173	----	----	----	----	----	----
Zinc, total	7440-66-6	E420/VA	mg/L	<0.0030	<0.0030	----	----	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	mg/L	<0.00020	<0.00020	----	----	----	----	----	----
<b>Dissolved Metals</b>											
Aluminum, dissolved	7429-90-5	E421/VA	mg/L	0.0223	0.0217	----	----	----	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	mg/L	0.00015	0.00017	----	----	----	----	----	----
Barium, dissolved	7440-39-3	E421/VA	mg/L	0.00896	0.00873	----	----	----	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	mg/L	<0.000100	<0.000100	----	----	----	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
Boron, dissolved	7440-42-8	E421/VA	mg/L	0.011	0.013	----	----	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	mg/L	0.0000083	0.0000081	----	----	----	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	mg/L	7.04	7.32	----	----	----	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	mg/L	0.000022	0.000022	----	----	----	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	mg/L	<0.00050	<0.00050	----	----	----	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Copper, dissolved	7440-50-8	E421/VA	mg/L	0.00052	0.00056	----	----	----	----	----	----
Iron, dissolved	7439-89-6	E421/VA	mg/L	0.129	0.150	----	----	----	----	----	----
Lead, dissolved	7439-92-1	E421/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	mg/L	0.0013	0.0012	----	----	----	----	----	----



## Analytical Results Evaluation

Matrix: Water				Client sample ID	SQU DS1	SQU US 1	----	----	----	----	----
				Sampling date/time	04-Mar-2024 08:46	04-Mar-2024 09:40	----	----	----	----	----
				Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	VA24A4403-001	VA24A4403-002	-----	-----	-----	-----	-----	-----
<b>Dissolved Metals</b>											
Magnesium, dissolved	7439-95-4	E421/VA	mg/L	0.904	0.966	----	----	----	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	mg/L	0.0124	0.0128	----	----	----	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	mg/L	0.000607	0.000603	----	----	----	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	mg/L	<0.00050	<0.00050	----	----	----	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	mg/L	<0.050	<0.050	----	----	----	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	mg/L	0.856	0.920	----	----	----	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	mg/L	0.00124	0.00134	----	----	----	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	mg/L	5.78	6.07	----	----	----	----	----	----
Silver, dissolved	7440-22-4	E421/VA	mg/L	<0.000010	<0.000010	----	----	----	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	mg/L	4.19	4.73	----	----	----	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	mg/L	0.0472	0.0489	----	----	----	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	mg/L	1.88	2.04	----	----	----	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	mg/L	<0.00020	<0.00020	----	----	----	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	mg/L	<0.000010	<0.000010	----	----	----	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Tin, dissolved	7440-31-5	E421/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	mg/L	<0.00030	<0.00030	----	----	----	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	mg/L	0.000029	0.000026	----	----	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	mg/L	0.00144	0.00162	----	----	----	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	mg/L	0.0013	0.0015	----	----	----	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	mg/L	<0.00020	<0.00020	----	----	----	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	Field	Field	----	----	----	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	Field	Field	----	----	----	----	----	----
<b>Speciated Metals</b>											
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532/AWT	mg/L	<0.00050	<0.00050	----	----	----	----	----	----



## Analytical Results Evaluation

Matrix: Water				Client sample ID	SQU DS1	SQU US 1	----	----	----	----	----
				Sampling date/time	04-Mar-2024 08:46	04-Mar-2024 09:40	----	----	----	----	----
				Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	VA24A4403-001	VA24A4403-002	-----	-----	-----	-----	-----	-----
<b>Speciated Metals</b>											
Chromium, hexavalent [Cr VI], total	18540-29-9	E532/WT	mg/L	<0.00050	<0.00050	----	----	----	----	----	----
Chromium, trivalent [Cr III], dissolved	16065-83-1	EC535A/WT	mg/L	<0.00050	<0.00050	----	----	----	----	----	----
Chromium, trivalent [Cr III], total	16065-83-1	EC535/WT	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.

Key:



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>VA24A4403</b></p> <p><b>Client</b> : <b>Triton Environmental Consultants Ltd.</b></p> <p><b>Contact</b> : Miranda Lewis</p> <p><b>Address</b> : Suite 1730, 1111 West Georgia St Vancouver BC Canada V6E 4M3</p> <p><b>Telephone</b> : 604 631 2213</p> <p><b>Project</b> : 11964</p> <p><b>PO</b> : 11964-Task20-Phase 3C-4C</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : Water Analysis</p> <p><b>Quote number</b> : VA23-TRIT100-012</p> <p><b>No. of samples received</b> : 2</p> <p><b>No. of samples analysed</b> : 2</p>	<p><b>Page</b> : 1 of 7</p> <p><b>Laboratory</b> : ALS Environmental - Vancouver</p> <p><b>Account Manager</b> : Can Dang</p> <p><b>Address</b> : 8081 Lougheed Highway Burnaby BC Canada V5A 1W9</p> <p><b>Telephone</b> : +1 604 253 4188</p> <p><b>Date Samples Received</b> : 04-Mar-2024 12:20</p> <p><b>Date Analysis Commenced</b> : 04-Mar-2024</p> <p><b>Issue Date</b> : 12-Mar-2024 14:49</p>
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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>
Chamoi Beckford	Lab Assistant	Metals, Burnaby, British Columbia
Juanita Martis	Account Manager Assistant	Administration, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Inorganics, Burnaby, British Columbia
Nik Perkio	Inorganics Analyst	Inorganics, Waterloo, Ontario
Nik Perkio	Inorganics Analyst	Metals, Waterloo, Ontario
Robin Weeks	Team Leader - Metals	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.

## Workorder Comments

*The samples "Duplicate", "Field Blank" and "Trip Blank" listed on the Chain of Custody form were not received.*



## Analytical Results

Sub-Matrix: Water					Client sample ID	SQU DS1	SQU US 1	---	---	---
(Matrix: Water)					Client sampling date / time	04-Mar-2024 08:46	04-Mar-2024 09:40	---	---	---
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4403-001	VA24A4403-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Field Tests</b>										
Conductivity, field	----	EF001/VA	0.10	µS/cm	79.000	72.000	---	---	---	
pH, field	----	EF001/VA	0.10	pH units	7.33	7.38	---	---	---	
Temperature, field	----	EF001/VA	0.10	°C	2.20	2.20	---	---	---	
<b>Physical Tests</b>										
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L	21.3	22.2	---	---	---	
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	21.4	22.8	---	---	---	
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	49	56	---	---	---	
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	<3.0	<3.0	---	---	---	
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L	24.9	23.5	---	---	---	
<b>Anions and Nutrients</b>										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.247	0.436	---	---	---	
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	4.40	6.52	---	---	---	
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.024	0.026	---	---	---	
Nitrate (as N)	14797-55-8	E235.NO3-L/V A	0.0050	mg/L	0.0524	0.0512	---	---	---	
Nitrite (as N)	14797-65-0	E235.NO2-L/V A	0.0010	mg/L	<0.0010	<0.0010	---	---	---	
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	0.355	0.581	---	---	---	
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.0257	0.0401	---	---	---	
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	6.27	7.00	---	---	---	
<b>Organic / Inorganic Carbon</b>										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	1.23	1.39	---	---	---	
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L	0.80	1.13	---	---	---	
<b>Total Sulfides</b>										
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	---	---	---	
<b>Total Metals</b>										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	0.0427	0.0387	---	---	---	





## Analytical Results

Sub-Matrix: Water					Client sample ID	SQU DS1	SQU US 1	----	----	----
(Matrix: Water)					Client sampling date / time	04-Mar-2024 08:46	04-Mar-2024 09:40	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4403-001	VA24A4403-002	-----	-----	-----	
					Result	Result	---	---	---	
<b>Total Metals</b>										
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	<0.00010	<0.00010	---	---	---	
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.00017	0.00016	---	---	---	
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.00924	0.00893	---	---	---	
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	0.014	0.015	---	---	---	
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	0.0000086	0.0000071	---	---	---	
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	7.13	7.36	---	---	---	
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	0.00065	0.00067	---	---	---	
Iron, total	7439-89-6	E420/VA	0.010	mg/L	0.191	0.217	---	---	---	
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	0.0012	0.0011	---	---	---	
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	0.870	1.08	---	---	---	
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L	0.0126	0.0133	---	---	---	
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	0.000612	0.000642	---	---	---	
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	0.058	---	---	---	
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	0.802	0.911	---	---	---	
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.00126	0.00131	---	---	---	
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	<0.000050	<0.000050	---	---	---	
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	6.38	6.81	---	---	---	
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	3.97	5.15	---	---	---	
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.0483	0.0505	---	---	---	
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	2.08	2.28	---	---	---	
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L	<0.00020	<0.00020	---	---	---	



## Analytical Results

Sub-Matrix: Water					Client sample ID	SQU DS1	SQU US 1	----	----	----
(Matrix: Water)					Client sampling date / time	04-Mar-2024 08:46	04-Mar-2024 09:40	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4403-001	VA24A4403-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Total Metals</b>										
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Tin, total	7440-31-5	E420/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L	0.00111	0.00092	----	----	----	
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	0.000028	0.000029	----	----	----	
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	0.00157	0.00173	----	----	----	
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	----	----	----	
<b>Dissolved Metals</b>										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L	0.0223	0.0217	----	----	----	
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	0.00015	0.00017	----	----	----	
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L	0.00896	0.00873	----	----	----	
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	0.011	0.013	----	----	----	
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L	0.0000083	0.0000081	----	----	----	
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L	7.04	7.32	----	----	----	
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L	0.000022	0.000022	----	----	----	
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	0.00052	0.00056	----	----	----	
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L	0.129	0.150	----	----	----	
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	0.0013	0.0012	----	----	----	
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L	0.904	0.966	----	----	----	
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L	0.0124	0.0128	----	----	----	
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	0.000607	0.000603	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	SQU DS1	SQU US 1	----	----	----
(Matrix: Water)					Client sampling date / time	04-Mar-2024 08:46	04-Mar-2024 09:40	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A4403-001	VA24A4403-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Dissolved Metals</b>										
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
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	0.856	0.920	----	----	----	
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L	0.00124	0.00134	----	----	----	
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L	5.78	6.07	----	----	----	
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	4.19	4.73	----	----	----	
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L	0.0472	0.0489	----	----	----	
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L	1.88	2.04	----	----	----	
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L	<0.00020	<0.00020	----	----	----	
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L	<0.000010	<0.000010	----	----	----	
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L	<0.00030	<0.00030	----	----	----	
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L	0.000029	0.000026	----	----	----	
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L	0.00144	0.00162	----	----	----	
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L	0.0013	0.0015	----	----	----	
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	----	----	----	
<b>Speciated Metals</b>										
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A/WT	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
Chromium, hexavalent [Cr VI], total	18540-29-9	E532/WT	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
Chromium, trivalent [Cr III], dissolved	16065-83-1	EC535A/WT	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
Chromium, trivalent [Cr III], total	16065-83-1	EC535/WT	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><b>Work Order</b> : <b>VA24A4403</b></p> <p><b>Client</b> : <b>Triton Environmental Consultants Ltd.</b></p> <p><b>Contact</b> : [REDACTED]</p> <p><b>Address</b> : [REDACTED]</p> <p><b>Telephone</b> : [REDACTED]</p> <p><b>Project</b> : 11964</p> <p><b>PO</b> : 11964-Task20-Phase 3C-4C</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : Water Analysis</p> <p><b>Quote number</b> : VA23-TRIT100-012</p> <p><b>No. of samples received</b> : 2</p> <p><b>No. of samples analysed</b> : 2</p>	<p><b>Page</b> : 1 of 15</p> <p><b>Laboratory</b> : ALS Environmental - Vancouver</p> <p><b>Account Manager</b> : [REDACTED]</p> <p><b>Address</b> : [REDACTED]</p> <p><b>Telephone</b> : +1 604 253 4188</p> <p><b>Date Samples Received</b> : 04-Mar-2024 12:20</p> <p><b>Issue Date</b> : 12-Mar-2024 14:50</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		
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
Amber glass total (sulfuric acid) SQU DS1	E298	04-Mar-2024	08-Mar-2024	28 days	4 days	✔	09-Mar-2024	28 days	5 days	✔	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
Amber glass total (sulfuric acid) SQU US 1	E298	04-Mar-2024	08-Mar-2024	28 days	4 days	✔	09-Mar-2024	28 days	5 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE SQU US 1	E235.Br-L	04-Mar-2024	04-Mar-2024	28 days	0 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>											
HDPE SQU DS1	E235.Br-L	04-Mar-2024	04-Mar-2024	28 days	1 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC</b>											
HDPE SQU US 1	E235.Cl	04-Mar-2024	04-Mar-2024	28 days	0 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Chloride in Water by IC</b>											
HDPE SQU DS1	E235.Cl	04-Mar-2024	04-Mar-2024	28 days	1 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE SQU US 1	E235.F	04-Mar-2024	04-Mar-2024	28 days	0 days	✔	04-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		
<b>Anions and Nutrients : Fluoride in Water by IC</b>											
HDPE SQU DS1	E235.F	04-Mar-2024	04-Mar-2024	28 days	1 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE SQU US 1	E235.NO3-L	04-Mar-2024	04-Mar-2024	3 days	0 days	✔	04-Mar-2024	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE SQU DS1	E235.NO3-L	04-Mar-2024	04-Mar-2024	3 days	1 days	✔	04-Mar-2024	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE SQU US 1	E235.NO2-L	04-Mar-2024	04-Mar-2024	3 days	0 days	✔	04-Mar-2024	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE SQU DS1	E235.NO2-L	04-Mar-2024	04-Mar-2024	3 days	1 days	✔	04-Mar-2024	3 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE SQU US 1	E235.SO4	04-Mar-2024	04-Mar-2024	28 days	0 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE SQU DS1	E235.SO4	04-Mar-2024	04-Mar-2024	28 days	1 days	✔	04-Mar-2024	28 days	1 days	✔	
<b>Anions and Nutrients : Total Nitrogen by Colourimetry</b>											
Amber glass total (sulfuric acid) SQU DS1	E366	04-Mar-2024	08-Mar-2024	28 days	4 days	✔	11-Mar-2024	28 days	7 days	✔	
<b>Anions and Nutrients : Total Nitrogen by Colourimetry</b>											
Amber glass total (sulfuric acid) SQU US 1	E366	04-Mar-2024	08-Mar-2024	28 days	4 days	✔	11-Mar-2024	28 days	7 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	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) SQU DS1	E372-U	04-Mar-2024	08-Mar-2024	28 days	4 days	✔	11-Mar-2024	28 days	7 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) SQU US 1	E372-U	04-Mar-2024	08-Mar-2024	28 days	4 days	✔	11-Mar-2024	28 days	7 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
Glass vial - dissolved (lab preserved) SQU DS1	E509	04-Mar-2024	07-Mar-2024	28 days	3 days	✔	07-Mar-2024	28 days	3 days	✔
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
Glass vial - dissolved (lab preserved) SQU US 1	E509	04-Mar-2024	07-Mar-2024	28 days	3 days	✔	07-Mar-2024	28 days	3 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
HDPE - dissolved (lab preserved) SQU DS1	E421	04-Mar-2024	06-Mar-2024	180 days	2 days	✔	07-Mar-2024	180 days	3 days	✔
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
HDPE - dissolved (lab preserved) SQU US 1	E421	04-Mar-2024	06-Mar-2024	180 days	2 days	✔	07-Mar-2024	180 days	3 days	✔
<b>Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine</b>										
Glass vial - total (lab preserved) SQU DS1	EF001	04-Mar-2024	----	----	----		05-Mar-2024	----	1 days	
<b>Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine</b>										
Glass vial - total (lab preserved) SQU US 1	EF001	04-Mar-2024	----	----	----		05-Mar-2024	----	1 days	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
Amber glass dissolved (sulfuric acid) SQU DS1	E358-L	04-Mar-2024	08-Mar-2024	28 days	4 days	✔	08-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	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
Amber glass dissolved (sulfuric acid) SQU US 1	E358-L	04-Mar-2024	08-Mar-2024	28 days	4 days	✓	08-Mar-2024	28 days	4 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
Amber glass total (sulfuric acid) SQU DS1	E355-L	04-Mar-2024	08-Mar-2024	28 days	4 days	✓	08-Mar-2024	28 days	4 days	✓
<b>Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)</b>										
Amber glass total (sulfuric acid) SQU US 1	E355-L	04-Mar-2024	08-Mar-2024	28 days	4 days	✓	08-Mar-2024	28 days	4 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE SQU US 1	E290	04-Mar-2024	04-Mar-2024	14 days	0 days	✓	06-Mar-2024	14 days	2 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE SQU DS1	E290	04-Mar-2024	04-Mar-2024	14 days	1 days	✓	06-Mar-2024	14 days	2 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE SQU DS1	E162	04-Mar-2024	----	----	----		08-Mar-2024	7 days	4 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE SQU US 1	E162	04-Mar-2024	----	----	----		08-Mar-2024	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE SQU DS1	E160	04-Mar-2024	----	----	----		08-Mar-2024	7 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE SQU US 1	E160	04-Mar-2024	----	----	----		08-Mar-2024	7 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	
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
UV-inhibited HDPE - dissolved (sodium hydroxide) SQU DS1	E532A	04-Mar-2024	----	----	----		07-Mar-2024	28 days	3 days	✔
<b>Speciated Metals : Dissolved Hexavalent Chromium (Cr VI) by IC</b>										
UV-inhibited HDPE - dissolved (sodium hydroxide) SQU US 1	E532A	04-Mar-2024	----	----	----		07-Mar-2024	28 days	3 days	✔
<b>Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC</b>										
UV-inhibited HDPE - total (sodium hydroxide) SQU DS1	E532	04-Mar-2024	----	----	----		07-Mar-2024	28 days	3 days	✔
<b>Speciated Metals : Total Hexavalent Chromium (Cr VI) by IC</b>										
UV-inhibited HDPE - total (sodium hydroxide) SQU US 1	E532	04-Mar-2024	----	----	----		07-Mar-2024	28 days	3 days	✔
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
Glass vial - total (lab preserved) SQU DS1	E508	04-Mar-2024	06-Mar-2024	28 days	2 days	✔	06-Mar-2024	28 days	2 days	✔
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
Glass vial - total (lab preserved) SQU US 1	E508	04-Mar-2024	06-Mar-2024	28 days	2 days	✔	06-Mar-2024	28 days	2 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE - total (lab preserved) SQU DS1	E420	04-Mar-2024	07-Mar-2024	180 days	3 days	✔	07-Mar-2024	180 days	3 days	✔
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE - total (lab preserved) SQU US 1	E420	04-Mar-2024	07-Mar-2024	180 days	3 days	✔	07-Mar-2024	180 days	3 days	✔
<b>Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)</b>										
HDPE total (zinc acetate+sodium hydroxide) SQU DS1	E395	04-Mar-2024	----	----	----		11-Mar-2024	7 days	7 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	
<b>Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)</b>										
HDPE total (zinc acetate+sodium hydroxide) SQU US 1	E395	04-Mar-2024	----	----	----		11-Mar-2024	7 days	7 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
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Alkalinity Species by Titration	E290	1353573	1	7	14.2	5.0	✓
Ammonia by Fluorescence	E298	1358715	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1353567	1	5	20.0	5.0	✓
Chloride in Water by IC	E235.Cl	1353566	1	19	5.2	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1357076	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1358338	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1354566	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1358716	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1353570	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1353571	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1353568	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1353565	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	1359289	1	17	5.8	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1357079	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1356101	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1354309	1	18	5.5	5.0	✓
Total Nitrogen by Colourimetry	E366	1358713	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1358712	1	20	5.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1361564	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1359277	1	17	5.8	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Alkalinity Species by Titration	E290	1353573	1	7	14.2	5.0	✓
Ammonia by Fluorescence	E298	1358715	1	17	5.8	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1353567	1	5	20.0	5.0	✓
Chloride in Water by IC	E235.Cl	1353566	1	19	5.2	5.0	✓
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1357076	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1358338	2	40	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1354566	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1358716	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	1353570	1	19	5.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1353571	1	14	7.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1353568	1	17	5.8	5.0	✓
Sulfate in Water by IC	E235.SO4	1353565	1	20	5.0	5.0	✓
TDS by Gravimetry	E162	1359289	1	17	5.8	5.0	✓
Total Hexavalent Chromium (Cr VI) by IC	E532	1357079	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1356101	1	20	5.0	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
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Metals in Water by CRC ICPMS	E420	1354309	1	18	5.5	5.0	✔
Total Nitrogen by Colourimetry	E366	1358713	1	13	7.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1358712	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1361564	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1359277	1	17	5.8	5.0	✔
<b>Method Blanks (MB)</b>							
Alkalinity Species by Titration	E290	1353573	1	7	14.2	5.0	✔
Ammonia by Fluorescence	E298	1358715	1	17	5.8	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1353567	1	5	20.0	5.0	✔
Chloride in Water by IC	E235.Cl	1353566	1	19	5.2	5.0	✔
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1357076	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1358338	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1354566	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1358716	1	17	5.8	5.0	✔
Fluoride in Water by IC	E235.F	1353570	1	19	5.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1353571	1	14	7.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1353568	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	1353565	1	20	5.0	5.0	✔
TDS by Gravimetry	E162	1359289	1	17	5.8	5.0	✔
Total Hexavalent Chromium (Cr VI) by IC	E532	1357079	1	20	5.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1356101	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1354309	1	18	5.5	5.0	✔
Total Nitrogen by Colourimetry	E366	1358713	1	13	7.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1358712	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1361564	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1359277	1	17	5.8	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1358715	1	17	5.8	5.0	✔
Bromide in Water by IC (Low Level)	E235.Br-L	1353567	1	5	20.0	5.0	✔
Chloride in Water by IC	E235.Cl	1353566	1	19	5.2	5.0	✔
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A	1357076	1	20	5.0	5.0	✔
Dissolved Mercury in Water by CVAAS	E509	1358338	2	40	5.0	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1354566	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1358716	1	17	5.8	5.0	✔
Fluoride in Water by IC	E235.F	1353570	1	19	5.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1353571	1	14	7.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1353568	1	17	5.8	5.0	✔
Sulfate in Water by IC	E235.SO4	1353565	1	20	5.0	5.0	✔
Total Hexavalent Chromium (Cr VI) by IC	E532	1357079	1	20	5.0	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>							
<b>Matrix Spikes (MS) - Continued</b>							
Total Mercury in Water by CVAAS	E508	1356101	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1354309	1	18	5.5	5.0	✔
Total Nitrogen by Colourimetry	E366	1358713	1	13	7.6	5.0	✔
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1358712	1	20	5.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1361564	1	20	5.0	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)
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 <sub>2</sub> . 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 <sub>2</sub> . 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 <sub>2</sub> S" if reported represent the maximum possible H <sub>2</sub> S concentration based on the total sulfide concentration in the sample. The H <sub>2</sub> S calculation converts Total Sulphide as (S <sub>2</sub> -) and reports it as Total Sulphide as (H <sub>2</sub> 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



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Total Hexavalent Chromium (Cr VI) by IC	E532 ALS Environmental - Waterloo	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.  Results are based on an un-filtered, field-preserved sample.
Dissolved Hexavalent Chromium (Cr VI) by IC	E532A ALS Environmental - Waterloo	Water	APHA 3500-Cr C (Ion Chromatography)	Hexavalent Chromium is measured by Ion chromatography-Post column reaction and UV detection.  sample pretreatment involved field or lab filtration following by sample preservation.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO <sub>3</sub> ), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> 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 <sub>3</sub> ), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO <sub>3</sub> equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Un-ionized Total Hydrogen Sulfide (calculated)	EC395 ALS Environmental - Vancouver	Water	APHA 4500 -S H	Un-ionized sulfide is calculated using results from total sulfide analysis, pH, temperature, and ionic strength of the sample. Calculation of un-ionized sulfide using total sulfide concentrations may be biased high due to particulate forms of sulfide measured during total sulfide testing.
Total Trivalent Chromium (Cr III) by Calculation	EC535 ALS Environmental - Waterloo	Water	APHA 3030B/6020A/EPA 7196A (mod)	Chromium (III)-Total is calculated as the difference between the total chromium and the total hexavalent chromium (Cr(VI)) results. The Limit of Reporting for Chromium (III) varies as a function of the test results.
Dissolved Trivalent Chromium (Cr III) by Calculation	EC535A ALS Environmental - Waterloo	Water	APHA 3030B/6020A/EPA 7196A (mod)	Dissolved Chromium (III) is calculated as the difference between Dissolved Chromium and Dissolved 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 <sub>2</sub> ,ClO <sub>2</sub> ,ORP,DO, Turbidity,T,T-P,o-PO <sub>4</sub> ,NH <sub>3</sub> ,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity,Cl <sub>2</sub> ,ClO <sub>2</sub> ,ORP,DO, Turbidity,T,T-P,o-PO <sub>4</sub> ,NH <sub>3</sub> 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.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion
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 <sub>3</sub> .
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

<p><b>Work Order</b> : <b>VA24A4403</b></p> <p><b>Client</b> : Triton Environmental Consultants Ltd.</p> <p><b>Contact</b> : [Redacted]</p> <p><b>Address</b> : [Redacted]</p> <p><b>Telephone</b> : [Redacted]</p> <p><b>Project</b> : 11964</p> <p><b>PO</b> : 11964-Task20-Phase 3C-4C</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ---- 604 631 2213</p> <p><b>Site</b> : Water Analysis</p> <p><b>Quote number</b> : VA23-TRIT100-012</p> <p><b>No. of samples received</b> : 2</p> <p><b>No. of samples analysed</b> : 2</p>	<p><b>Page</b> : 1 of 18</p> <p><b>Laboratory</b> : ALS Environmental - Vancouver</p> <p><b>Account Manager</b> : [Redacted]</p> <p><b>Address</b> : [Redacted]</p> <p><b>Telephone</b> : [Redacted]</p> <p><b>Date Samples Received</b> : 04-Mar-2024 12:20</p> <p><b>Date Analysis Commenced</b> : 04-Mar-2024</p> <p><b>Issue Date</b> : 12-Mar-2024 14:50</p>
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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>
Chamoi Beckford	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Juanita Martis	Account Manager Assistant	Vancouver Administration, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
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Nik Perkio	Inorganics Analyst	Waterloo Inorganics, Waterloo, Ontario
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Sam Silveira	Analyst	Vancouver Metals, Burnaby, British Columbia

Page : 2 of 18  
Work Order : VA24A4403  
Client : Triton Environmental Consultants Ltd.  
Project : 11964

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## **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**

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1353573)</b>											
VA24A4378-006	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	176	177	0.515%	20%	----
<b>Physical Tests (QC Lot: 1359277)</b>											
FJ2400642-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	3.5	0.5	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 1359289)</b>											
FJ2400642-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	1730	1800	3.89%	20%	----
<b>Anions and Nutrients (QC Lot: 1353565)</b>											
VA24A4378-004	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	455	460	1.15%	20%	----
<b>Anions and Nutrients (QC Lot: 1353566)</b>											
VA24A4378-004	Anonymous	Chloride	16887-00-6	E235.Cl	2.50	mg/L	5.98	5.64	0.34	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1353567)</b>											
VA24A4378-004	Anonymous	Bromide	24959-67-9	E235.Br-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1353568)</b>											
VA24A4378-004	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1353570)</b>											
VA24A4378-004	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1353571)</b>											
VA24A4403-001	SQU DS1	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0524	0.0507	3.16%	20%	----
<b>Anions and Nutrients (QC Lot: 1358713)</b>											
VA24A4403-001	SQU DS1	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.355	0.348	1.81%	20%	----
<b>Anions and Nutrients (QC Lot: 1358715)</b>											
VA24A4294-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0100	mg/L	0.0657	0.0658	0.00006	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 1358712)</b>											
VA24A4374-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.44	1.98	0.47	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 1358716)</b>											
VA24A4294-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	10.6	11.5	7.57%	20%	----
<b>Total Sulfides (QC Lot: 1361564)</b>											
CG2402662-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	<0.0015	0	Diff <2x LOR	----
<b>Total Metals (QC Lot: 1354309)</b>											
VA24A4383-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	0.00016	0.000002	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
<b>Total Metals (QC Lot: 1354309) - continued</b>											
VA24A4383-001	Anonymous	Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00079	0.00081	0.00002	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0207	0.0216	4.38%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.025	0.026	0.001	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	32.3	33.0	1.97%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.000050	mg/L	<0.000050	<0.000050	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	0.000050	mg/L	0.00183	0.00186	0.00003	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000305	0.000312	0.000006	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0018	0.0018	0.00004	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	8.55	8.88	3.77%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00121	0.00123	1.75%	20%	----
		Nickel, total	7440-02-0	E420	0.000050	mg/L	0.00055	0.00054	0.000009	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	1.47	1.54	4.62%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00092	0.00094	0.00002	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000148	0.000147	0.0000006	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	0.38	0.38	0.0002	Diff <2x LOR	----
		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	13.0	13.5	3.56%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.183	0.178	2.67%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	8.59	8.60	0.0879%	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	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000355	0.000363	2.20%	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
<b>Total Metals (QC Lot: 1354309) - continued</b>											
VA24A4383-001	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	----
<b>Total Metals (QC Lot: 1356101)</b>											
FJ2400552-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 1354566)</b>											
VA24A4421-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0118	0.0117	0.206%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00972	0.00971	0.0322%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00465	0.00458	1.56%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0411	0.0406	1.28%	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	0.100	0.106	5.12%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000205	0.0000224	0.0000019	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	25.0	24.7	1.13%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.00236	0.00230	2.51%	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	<0.00020	<0.00020	0	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000076	0.000075	0.0000006	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0656	0.0659	0.518%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.90	1.86	2.33%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0711	0.0695	2.25%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.0101	0.0102	0.936%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	15.1	14.6	3.27%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.0199	0.0194	2.44%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000992	0.000961	3.25%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.54	1.55	0.280%	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	36.9	35.8	2.97%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.525	0.514	2.13%	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
<b>Dissolved Metals (QC Lot: 1354566) - continued</b>											
VA24A4421-001	Anonymous	Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	24.4	24.8	1.96%	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	0.000047	0.000045	0.000002	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	0.00108	0.00108	0.0492%	20%	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000407	0.000409	0.376%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0010	<0.0010	0.00001	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 1358338)</b>											
KS2400705-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 1358382)</b>											
VA24A4403-001	SQU DS1	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Speciated Metals (QC Lot: 1357076)</b>											
VA24A3295-001	Anonymous	Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
<b>Speciated Metals (QC Lot: 1357079)</b>											
VA24A4403-001	SQU DS1	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
<b>Physical Tests (QCLot: 1353573)</b>						
Alkalinity, total (as CaCO3)	---	E290	1	mg/L	1.0	---
<b>Physical Tests (QCLot: 1359277)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Physical Tests (QCLot: 1359289)</b>						
Solids, total dissolved [TDS]	---	E162	10	mg/L	<10	---
<b>Anions and Nutrients (QCLot: 1353565)</b>						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	---
<b>Anions and Nutrients (QCLot: 1353566)</b>						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	---
<b>Anions and Nutrients (QCLot: 1353567)</b>						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	---
<b>Anions and Nutrients (QCLot: 1353568)</b>						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1353570)</b>						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	---
<b>Anions and Nutrients (QCLot: 1353571)</b>						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1358713)</b>						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	---
<b>Anions and Nutrients (QCLot: 1358715)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Organic / Inorganic Carbon (QCLot: 1358712)</b>						
Carbon, total organic [TOC]	---	E355-L	0.5	mg/L	<0.50	---
<b>Organic / Inorganic Carbon (QCLot: 1358716)</b>						
Carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	<0.50	---
<b>Total Sulfides (QCLot: 1361564)</b>						
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	---
<b>Total Metals (QCLot: 1354309)</b>						
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
<b>Total Metals (QCLot: 1354309) - continued</b>						
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
<b>Total Metals (QCLot: 1356101)</b>						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 1354566)</b>						
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
<b>Dissolved Metals (QCLot: 1354566) - continued</b>						
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	----
<b>Dissolved Metals (QCLot: 1358338)</b>						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Dissolved Metals (QCLot: 1358382)</b>						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Speciated Metals (QCLot: 1357076)</b>						
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	<0.00050	----
<b>Speciated Metals (QCLot: 1357079)</b>						
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	
<b>Physical Tests (QCLot: 1353573)</b>									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	108	85.0	115	----
<b>Physical Tests (QCLot: 1359277)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	105	85.0	115	----
<b>Physical Tests (QCLot: 1359289)</b>									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	96.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 1353565)</b>									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 1353566)</b>									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	99.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 1353567)</b>									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	102	85.0	115	----
<b>Anions and Nutrients (QCLot: 1353568)</b>									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 1353570)</b>									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.0	90.0	110	----
<b>Anions and Nutrients (QCLot: 1353571)</b>									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 1358713)</b>									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	99.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 1358715)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	91.6	85.0	115	----
<b>Organic / Inorganic Carbon (QCLot: 1358712)</b>									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	99.2	80.0	120	----
<b>Organic / Inorganic Carbon (QCLot: 1358716)</b>									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	99.5	80.0	120	----
<b>Total Sulfides (QCLot: 1361564)</b>									
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	104	80.0	120	----
<b>Total Metals (QCLot: 1354309)</b>									



Sub-Matrix: Water

Laboratory Control Sample (LCS) Report

Analyte	CAS Number	Method	LOR	Unit	Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Total Metals (QCLot: 1354309) - continued</b>									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.1	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.0	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.0	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.2	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.7	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	104	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	95.6	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.5	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.9	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.4	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	105	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	104	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	98.0	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	114	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.4	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	104	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.7	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	98.8	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.7	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	95.9	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.2	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
<b>Total Metals (QCLot: 1354309) - continued</b>									
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.1	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	99.9	80.0	120	----
<b>Total Metals (QCLot: 1356101)</b>									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----
<b>Dissolved Metals (QCLot: 1354566)</b>									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	105	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	99.9	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	108	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	98.2	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	99.4	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	99.4	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	99.9	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.5	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	94.6	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	99.8	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	107	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	103	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.2	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	100.0	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	105	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	97.7	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	106	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.4	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	101	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	92.6	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
<b>Dissolved Metals (QCLot: 1354566) - continued</b>									
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	104	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	102	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	99.1	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.3	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	97.4	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	100.0	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	97.1	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	104	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	103	80.0	120	----
<b>Speciated Metals (QCLot: 1357076)</b>									
Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0005	mg/L	0.025 mg/L	98.2	80.0	120	----
<b>Speciated Metals (QCLot: 1357079)</b>									
Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0005	mg/L	0.025 mg/L	97.7	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
<b>Anions and Nutrients (QCLot: 1353565)</b>										
VA24A4378-005	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	472 mg/L	500 mg/L	94.4	75.0	125	----
<b>Anions and Nutrients (QCLot: 1353566)</b>										
VA24A4378-005	Anonymous	Chloride	16887-00-6	E235.Cl	480 mg/L	500 mg/L	96.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 1353567)</b>										
VA24A4378-005	Anonymous	Bromide	24959-67-9	E235.Br-L	2.44 mg/L	2.5 mg/L	97.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 1353568)</b>										
VA24A4378-005	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	2.36 mg/L	2.5 mg/L	94.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 1353570)</b>										
VA24A4378-005	Anonymous	Fluoride	16984-48-8	E235.F	4.69 mg/L	5 mg/L	93.8	75.0	125	----
<b>Anions and Nutrients (QCLot: 1353571)</b>										
VA24A4403-002	SQU US 1	Nitrate (as N)	14797-55-8	E235.NO3-L	2.49 mg/L	2.5 mg/L	99.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 1358713)</b>										
VA24A4403-002	SQU US 1	Nitrogen, total	7727-37-9	E366	ND mg/L	0.4 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 1358715)</b>										
VA24A4294-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.113 mg/L	0.1 mg/L	113	75.0	125	----
<b>Organic / Inorganic Carbon (QCLot: 1358712)</b>										
VA24A4374-002	Anonymous	Carbon, total organic [TOC]	----	E355-L	5.02 mg/L	5 mg/L	100	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 1358716)</b>										
VA24A4294-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	5 mg/L	ND	70.0	130	----
<b>Total Sulfides (QCLot: 1361564)</b>										
CG2402664-001	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.201 mg/L	0.2 mg/L	100	75.0	125	----
<b>Total Metals (QCLot: 1354309)</b>										
VA24A4383-002	Anonymous	Aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.6	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0207 mg/L	0.02 mg/L	103	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	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00925 mg/L	0.01 mg/L	92.5	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
<b>Total Metals (QCLot: 1354309) - continued</b>										
VA24A4383-002	Anonymous	Boron, total	7440-42-8	E420	0.110 mg/L	0.1 mg/L	110	70.0	130	---
		Cadmium, total	7440-43-9	E420	0.00390 mg/L	0.004 mg/L	97.5	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	0.0103 mg/L	0.01 mg/L	103	70.0	130	---
		Chromium, total	7440-47-3	E420	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	---
		Cobalt, total	7440-48-4	E420	0.0182 mg/L	0.02 mg/L	90.9	70.0	130	---
		Copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	---
		Iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.6	70.0	130	---
		Lead, total	7439-92-1	E420	0.0185 mg/L	0.02 mg/L	92.4	70.0	130	---
		Lithium, total	7439-93-2	E420	0.0947 mg/L	0.1 mg/L	94.7	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	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	---
		Molybdenum, total	7439-98-7	E420	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	---
		Nickel, total	7440-02-0	E420	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	---
		Phosphorus, total	7723-14-0	E420	9.99 mg/L	10 mg/L	99.9	70.0	130	---
		Potassium, total	7440-09-7	E420	3.90 mg/L	4 mg/L	97.5	70.0	130	---
		Rubidium, total	7440-17-7	E420	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	---
		Selenium, total	7782-49-2	E420	0.0414 mg/L	0.04 mg/L	103	70.0	130	---
		Silicon, total	7440-21-3	E420	9.82 mg/L	10 mg/L	98.2	70.0	130	---
		Silver, total	7440-22-4	E420	0.00386 mg/L	0.004 mg/L	96.5	70.0	130	---
		Sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	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	18.9 mg/L	20 mg/L	94.3	70.0	130	---
		Tellurium, total	13494-80-9	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	---
		Thallium, total	7440-28-0	E420	0.00357 mg/L	0.004 mg/L	89.2	70.0	130	---
		Thorium, total	7440-29-1	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	---
		Tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	---
		Titanium, total	7440-32-6	E420	0.0397 mg/L	0.04 mg/L	99.2	70.0	130	---
		Tungsten, total	7440-33-7	E420	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	---
		Uranium, total	7440-61-1	E420	0.00385 mg/L	0.004 mg/L	96.2	70.0	130	---
		Vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	---
		Zinc, total	7440-66-6	E420	0.374 mg/L	0.4 mg/L	93.6	70.0	130	---
		Zirconium, total	7440-67-7	E420	0.0416 mg/L	0.04 mg/L	104	70.0	130	---
<b>Total Metals (QCLot: 1356101)</b>										
KS2400705-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000965 mg/L	0.0001 mg/L	96.5	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
<b>Dissolved Metals (QCLot: 1354566)</b>										
VA24A4368-044	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.195 mg/L	0.2 mg/L	97.7	70.0	130	---
		Antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	---
		Arsenic, dissolved	7440-38-2	E421	0.0199 mg/L	0.02 mg/L	99.5	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	0.0355 mg/L	0.04 mg/L	88.7	70.0	130	---
		Bismuth, dissolved	7440-69-9	E421	0.00843 mg/L	0.01 mg/L	84.3	70.0	130	---
		Boron, dissolved	7440-42-8	E421	0.083 mg/L	0.1 mg/L	83.5	70.0	130	---
		Cadmium, dissolved	7440-43-9	E421	0.00360 mg/L	0.004 mg/L	90.0	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	0.00969 mg/L	0.01 mg/L	96.9	70.0	130	---
		Chromium, dissolved	7440-47-3	E421	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	---
		Cobalt, dissolved	7440-48-4	E421	0.0176 mg/L	0.02 mg/L	88.0	70.0	130	---
		Copper, dissolved	7440-50-8	E421	0.0170 mg/L	0.02 mg/L	85.1	70.0	130	---
		Iron, dissolved	7439-89-6	E421	1.81 mg/L	2 mg/L	90.5	70.0	130	---
		Lead, dissolved	7439-92-1	E421	0.0167 mg/L	0.02 mg/L	83.7	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	ND mg/L	0.02 mg/L	ND	70.0	130	---
		Nickel, dissolved	7440-02-0	E421	ND mg/L	0.04 mg/L	ND	70.0	130	---
		Phosphorus, dissolved	7723-14-0	E421	10.2 mg/L	10 mg/L	102	70.0	130	---
		Potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	---
		Rubidium, dissolved	7440-17-7	E421	0.0186 mg/L	0.02 mg/L	93.3	70.0	130	---
		Selenium, dissolved	7782-49-2	E421	ND mg/L	0.04 mg/L	ND	70.0	130	---
		Silicon, dissolved	7440-21-3	E421	9.29 mg/L	10 mg/L	92.9	70.0	130	---
		Silver, dissolved	7440-22-4	E421	0.00348 mg/L	0.004 mg/L	87.1	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	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	---
		Thallium, dissolved	7440-28-0	E421	0.00335 mg/L	0.004 mg/L	83.6	70.0	130	---
		Thorium, dissolved	7440-29-1	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	---
		Tin, dissolved	7440-31-5	E421	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	---
		Titanium, dissolved	7440-32-6	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	---
		Tungsten, dissolved	7440-33-7	E421	0.0181 mg/L	0.02 mg/L	90.3	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	
<b>Dissolved Metals (QCLot: 1354566) - continued</b>										
VA24A4368-044	Anonymous	Vanadium, dissolved	7440-62-2	E421	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.351 mg/L	0.4 mg/L	87.8	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 1358338)</b>										
KS2400708-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
<b>Dissolved Metals (QCLot: 1358382)</b>										
VA24A4433-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000951 mg/L	0.0001 mg/L	95.1	70.0	130	----
<b>Speciated Metals (QCLot: 1357076)</b>										
VA24A3295-001	Anonymous	Chromium, hexavalent [Cr VI], dissolved	18540-29-9	E532A	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
<b>Speciated Metals (QCLot: 1357079)</b>										
VA24A4403-001	SQU DS1	Chromium, hexavalent [Cr VI], total	18540-29-9	E532	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----



 <b>Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report</b>	Reporting Week	Mar 4 <sup>th</sup> to Mar 11 <sup>th</sup> , 2024
	Report #	14
	Appendix	B

## Receiving Environment Field Notes and Logs

<b>Project Component:</b>	Tunnel	<b>Site Name:</b>	Receiving Environment - Downstream of Discharge
<b>Inspection Date:</b>	03/04/2024	<b>Location:</b>	BC Rail Site
<b>Triton QP:</b>	Sam Blanchard	<b>Latitude/Longitude:</b>	49.725282      -123.165175
<b>Temperature(c):</b>	Low -2      High 4	<b>Permit:</b>	AE 111824
<b>Weather Conditions:</b>	Overcast	<b>Ground Conditions:</b>	Snow

**Observations**

**Time:** 09:40:00      **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**

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

**Logger Maintenance**

<b>Logger Maintenance Performed?</b>	Yes	<b>Photo of COC with Lab Signature?</b>	Yes
--------------------------------------	-----	---	-----

**Describe Logger Maintenance**

Factory reset. Calibrating logger for turbidity, pH, ORP, conductivity.



Photos



**Photo:** 1  
**Location:** SQU DS1  
**Description:** Looking at the logger location.



**Photo:** 2  
**Location:** SQU DS1  
**Description:** Looking downstream from the logger location.



**Sign Off**

**Report Prepared By:** Sam Blanchard

**Report Reviewed:** Yes

**Report Reviewer:** Miranda Lewis

**Professional(s) of Record:** N/A

**Name:**

**Designation:**

**Designation Number:**

<b>Project Component:</b>	Tunnel	<b>Site Name:</b>	Receiving Environment - Upstream of Discharge
<b>Inspection Date:</b>	03/04/2024	<b>Location:</b>	BC Rail Site
<b>Triton QP:</b>	Sam Blanchard	<b>Latitude/Longitude:</b>	49.726866 -123.163912
<b>Temperature(c):</b>	Low -2 High 4	<b>Permit:</b>	AE 111824
<b>Weather Conditions:</b>	Overcast	<b>Ground Conditions:</b>	Snow

**Observations**

**Time:** 08:55:09      **Flow Volume (visual):** moderate  
**Notes:** Data gap from Feb 29 to this morning due to low voltage on external battery.  
**Odour Detected?:** No      **Notes:**  
**Unusual Colour?:** No      **Notes:**  
**Unusual Observations?:** No      **Notes:**  
**Sheen on Water?:** No      **Notes:**

**Samples Collected - Parameters**

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

**Logger Maintenance**

<b>Logger Maintenance Performed?</b>	Yes	<b>Photo of COC with Lab Signature?</b>	Yes
--------------------------------------	-----	---	-----

**Describe Logger Maintenance**  
 Replaced external battery. Calibrated turbidity/factory reset.



Photos



**Photo:** 1  
**Location:** SQU US1  
**Description:** Looking out from the logger location.



**Photo:** 2  
**Location:** SQU US1  
**Description:** Looking downstream from the logger location.

Photos



**Photo:** 3  
**Location:** SQU US1  
**Description:** Looking upstream from the logger location.



**Photo:** 4  
**Location:** SQU US1  
**Description:** Algae built up on logger casing.



Photos

Chain of Custody (COC) / Analytical Request Form

ALS Environmental  
Canada Toll Free: 1 800 663 9878

Report To: *Customer's name below will appear on the final report*

Company: *Tridon Environmental*

Contact: *Monica Lewis*

Phone: *800-356-8218*

Address: *Company address below will appear on the final report*

Street: *1720 111 West George Street*

City/Province: *Vancouver BC*

Postal Code: *V6E 5A2*

Invoice To: *Same as Report To*

Company: *ALS Environmental*

Contact: *ALS Account #*

Project Information: *11964 - Task 20 - Phase 3C-4C*

ALS Lab Work Order # (lab use only): *11964*

ALS Contact: *ALS Contact*

ALS Sample # (lab use only): *SQU US 1*

Sample Identification and/or Coordinates: *SQU US 1*

Date: *2024-03-04*

Time: *09:16*

Sample Type: *Water*

ALS Contact: *ALS Contact*

Can Dang: *Can Dang*

Sampler: *Sampler*

Drinking Water (DW) Samples (client use): *None*

Are samples taken from a Registered DW System? *No*

Are samples for human consumption use? *No*

SHIPMENT RELEASE (client use): *Released by: [Signature]*

INITIAL SHIPMENT RECEPTION (lab use only): *Received by: [Signature]*

FINAL SHIPMENT RECEPTION (lab use only): *Received by: [Signature]*

Mar 4, 2024 at 12:20:56 PM  
10U 505186 5455844

Photo: 5  
Location: SQU US1  
Description: Lab COC

**Sign Off****Report Prepared By:** Sam Blanchard**Report Reviewed:** Yes**Report Reviewer:** Miranda Lewis**Professional(s) of Record:** N/A**Name:****Designation:****Designation Number:**