




Reporting Week	Jan 9 <sup>th</sup> to Jan 15 <sup>th</sup>
Report #	6
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# **Eagle Mountain - Woodfibre Gas Pipeline Project**

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

**Report Period: January 9<sup>th</sup> to January 15<sup>th</sup>, 2024**


 <b>Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report</b>	Reporting Week	Jan 9 <sup>th</sup> to Jan 15 <sup>th</sup>
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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 January 9<sup>th</sup> to January 15<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 no discharge into the receiving environment in the Squamish River occurred from the BC Rail site water treatment plant.

FortisBC has retained Triton Environmental Consultants Ltd. as the Qualified Professional to implement and oversee the monitoring and sampling program in the receiving environment. The data represented below, including laboratory reported exceedances, represent background conditions of the receiving environment, 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 commenced setting up the water treatment plant (WTP) including the installing the plumbing, pumps & equipment, and treatment chemicals. The commissioning process of the WTP began on October 22, 2023 and is continuing to date. Water will be sampled to confirm 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 the reports shall be provided to each First Nation consulted with regarding this subject approval,

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and also made publicly available on the FortisBC Eagle Mountain-Woodfibre Gas Pipeline Project | Talking Energy webpage.

FortisBC requests that the BCER confirm the receipt of this submittal and confirm that the submission meets the requirements of reporting. Future reports will use this format unless otherwise directed by BCER.

### 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

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Permit Frequency	Parameters	Details
	Electrical Conductivity	Monitoring using Sonde- AquaTROLL 600 datalogger
Weekly Lab Samples	List prescribed in permit	Lab samples

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

- No discharges to the receiving environment have occurred from the WTP within this reporting period. The WTP is currently being commissioned.

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

N/A - No discharge occurred during the reporting period.

### Exceedance details

N/A - No discharge occurred during the reporting period.

### Receiving Environment Summary


The receiving environment is being monitored as a permit requirement, currently, there are no discharges from the WTP to the receiving environment, so all recorded exceedances in the laboratory report are not project related and existing background quality.

**Table 3: Upstream Monitoring Information**

Date of Lab Sample	Real Time Monitored	Field Samples Taken	Results
2024-01-09	Yes *	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.

**Table 4: Downstream Monitoring Information**


Date of Lab Sample	Real Time Monitored	Field Samples Taken	Results
2023-01-09	Yes *	Yes *	Full set of lab sample results, photo and documentation are provided in Appendix B.

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\* 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

- Daily visible sheen checks have not been conducted in the receiving environment as there have not been any discharges from the WTP.
- 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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No discharge from the water treatment plant, nothing to report



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## Appendix B Receiving Environment Documentation

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## Receiving Environment Sample Analysis




Sample ID	LAB ID	Date Sampled	Time Sampled	Analyte	Units	Reviewed and signed off by:				Mirova Lewis (Pkg. Mgr.)		Sample or value notes	BCWQ FAL - Short Term	BCWQ FAL - Long Term	BCWQ MAL - Short Term	BCWQ MAL - Long Term
						SCR 101 (Upstream)	SCR 102 (Downstream)	1024/109-002	1024/109-001	09-Jan-24	09-Jan-24					
<p><b>Guideline notes</b></p> <p>pH (644) - If natural pH &lt; 6.5, no statistically significant decrease from background. No restriction in increase except in areas with unique flows or flows. Unrestricted change permitted within range of 6.5 to 9.0. If natural pH &gt; 9.0, no statistically significant increase from background. Refer to BC Water Quality Guidelines for more information.</p> <p>Temperature (645) - Guideline is species-dependent. Short-term daily temperature guidelines &lt; 19°C for streams with unknown fish distribution. Refer to BC Water Quality Guidelines for more information on incubation and spawning temperature guidelines, and for those with different fish distributions. Hourly rate of change not to exceed 1°C.</p> <p>Conductivity (646) - Change from background of 8 NTU at any one time for a duration of 24 h in all waters during clear flows or in clear waters.</p> <p>Turbidity (647) - Change from background of 2 NTU at any one time for 30 days in clear flows.</p> <p>Dissolved Oxygen (648) - Barred embryoblasts minimum 9 mg/L, at other life stages 5 mg/L. Refer to BC Water Quality Guidelines for more information.</p> <p><b>General Parameters</b></p> <p>Total Dissolved Solids - Change from background of 25 mg/L at any one time when background &lt; 50 mg/L during high flows or in turbid waters.</p> <p>Total Suspended Solids - Change from background of 10 mg/L at any one time when background &lt; 50 NTU during high flows or in turbid waters.</p> <p>Dissolved Organic Carbon (DOC) - Long-term (30-day) median within 20% of background median.</p> <p>Chemical Oxygen Demand (COD) - Interim guideline.</p> <p>Total Phospha - Interim guideline.</p> <p>Total Alkalinity (CaCO3) - Guideline for alkalinity (as CaCO3) and temperature dependent. Refer to BC Water Quality Guidelines for more information.</p> <p><b>Nitrogen and Nutrients</b></p> <p>Ammonia - Guideline for ammonia as N, pH and temperature dependent. Refer to BC Water Quality Guidelines for more information.</p> <p>Borates - Guideline for borates, refer to BCWQ guideline for borates and algae for more information. Guideline does not apply to site.</p> <p>Chloride - Human activities should not cause the chloride of marine and estuarine waters to fluctuate by more than 10% of the natural chloride expected at that time and depth.</p> <p>Fluoride - Guideline has interim status.</p> <p>Total Nitrogen (TN) - Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Refer to BC Water Quality Guidelines for more information.</p> <p>Nitrate (NO3) - Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Refer to BC Water Quality Guidelines for more information.</p> <p>Nitrite (NO2) - Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Refer to BC Water Quality Guidelines for more information.</p> <p>Total Phosphorus - Guideline is for lakes, refer to BCWQ guideline for phosphorus and algae for more information. Guideline does not apply to site.</p> <p>Sulfate (as SO4) - Both upstream and downstream location exceed the long term BCWQ for FAL. LT guideline not applicable.</p> <p><b>Total Metals</b></p> <p>Aluminum (Al)-Total - Guideline varies with pH, hardness and Dissolved Organic Carbon (DOC). Refer to BC Water Quality Guidelines for more information.</p> <p>Antimony (Sb)-Total - Working guideline status.</p> <p>Arsenic (As)-Total - Working guideline status.</p> <p>Barium (Ba)-Total - Working guideline status.</p> <p>Beryllium (Be)-Total - Working guideline status.</p> <p>Bismuth (Bi)-Total - Working guideline status.</p> <p>Calcium (Ca)-Total - Working guideline status.</p> <p>Cadmium (Cd)-Total - Guideline varies with hardness, refer to BC Water Quality Guidelines for more information.</p> <p>Chromium (Cr)-Total - Guideline varies with hardness, refer to BC Water Quality Guidelines for more information.</p> <p>Copper (Cu)-Total - Guideline varies with hardness, refer to BC Water Quality Guidelines for more information.</p> <p>Lead (Pb)-Total - Guideline varies with hardness, refer to BC Water Quality Guidelines for more information.</p> <p>Manganese (Mn)-Total - Guideline varies with hardness, refer to BC Water Quality Guidelines for more information.</p> <p>Molybdenum (Mo)-Total - Guideline is calculated as follows: 0.18(mg/L) when hardness is 0.15 or total mg/L guideline is equal to 0.02 mg/L.</p> <p>Nickel (Ni)-Total - Working guideline status. Guideline varies with hardness. Guideline is 0.02 mg/L at water hardness &lt; 100 mg/L, and 0.015 mg/L use equation: <math>0.00015 \times \text{Hardness} + 0.015</math>. Guideline at hardness &gt; 100 mg/L is 0.15 mg/L. Refer to BC Water Quality Guidelines for more information.</p> <p>Phosphorus (P)-Total - Guideline only applies to lakes with saturated geology being the dominant fish species. Guideline is for reference only and does not apply to site.</p> <p>Selenium (Se)-Total - Guideline for freshwater aquatic life (water column). Alert concentration is 0.001 mg/L, with separate guideline for sediments, invertebrates and fish tissue. Refer to BC Water Quality Guidelines for more information on guidelines and sampling guidance.</p> <p>Silver (Ag)-Total - Guideline applies to open coast and estuarine. Guideline is applicable to the EOP site.</p> <p>Sodium (Na)-Total - Guideline varies with hardness, refer to BC Water Quality Guidelines for more information.</p> <p>Sulfate (SO4)-Total - 30-day average, site-specific objective for the lower Columbia River. BC Guideline is for reference only and does not apply to site EOP site.</p> <p>Thallium (Tl)-Total - Working guideline status.</p> <p>Zinc (Zn)-Total - Downstream location exceeds the long term BCWQ for MAL. LT guideline not applicable.</p> <p><b>Trace Metals</b></p> <p>Aluminum (Al)-Dissolved - Guideline is 0.001 mg/L at water hardness &lt; 100 mg/L, and 0.0015 mg/L at hardness &gt; 100 mg/L.</p> <p>Arsenic (As)-Dissolved - Guideline is 0.001 mg/L at water hardness &lt; 100 mg/L, and 0.0015 mg/L at hardness &gt; 100 mg/L.</p> <p>Barium (Ba)-Dissolved - Guideline is 0.001 mg/L at water hardness &lt; 100 mg/L, and 0.0015 mg/L at hardness &gt; 100 mg/L.</p> <p>Beryllium (Be)-Dissolved - Guideline is 0.001 mg/L at water hardness &lt; 100 mg/L, and 0.0015 mg/L at hardness &gt; 100 mg/L.</p> <p>Bismuth (Bi)-Dissolved - Guideline is 0.001 mg/L at water hardness &lt; 100 mg/L, and 0.0015 mg/L at hardness &gt; 100 mg/L.</p> <p>Boron (B)-Dissolved - Guideline is 0.001 mg/L at water hardness &lt; 100 mg/L, and 0.0015 mg/L at hardness &gt; 100 mg/L.</p> <p>Cadmium (Cd)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Calcium (Ca)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Copper (Cu)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Iron (Fe)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Lead (Pb)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Manganese (Mn)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Mercury (Hg)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Nickel (Ni)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Phosphorus (P)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Selenium (Se)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Silver (Ag)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Sodium (Na)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Sulfate (SO4)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Thallium (Tl)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p> <p>Zinc (Zn)-Dissolved - Guideline is hardness dependent, refer to BC Water Quality Guidelines for more information.</p>																
<p>Applied Guideline:</p> <p>British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCWQWQ - Freshwater Aquatic Life</p> <p>British Columbia Approved and Working Water Quality Guidelines (NOV 2023) - BCWQWQ - Marine Aquatic Life</p>																
<p>Color Key:</p> <p>Exceeds BCWQWQ Short Term Guideline</p> <p>Exceeds BCWQWQ Long Term Guideline</p> <p>Exceeds BCWQWQ Short Term Guideline</p> <p>Exceeds BCWQWQ MAL Short Term Guideline</p> <p>Exceeds BCWQWQ MAL Short Term Guideline</p> <p>Exceeds BCWQWQ MAL Long Term Guideline</p>																
<p>Color Key:</p> <p>Exceeds BCWQWQ MAL Short Term Guideline</p> <p>Exceeds BCWQWQ MAL Short Term Guideline</p> <p>Exceeds BCWQWQ MAL Long Term Guideline</p>																

BC MOECOS 2023 BC Water Quality Guidelines for the Protection of Aquatic Life, Wildlife & Agriculture. Accessed from: <https://www2.gov.bc.ca/gov/content/soc/2023-01-26-Working-Water-Quality-Guidelines-for-the-Protection-of-Aquatic-Life-Wildlife-Agriculture>

BC MOECOS 2021 BC Working Water Quality Guidelines for the Protection of Aquatic Life, Wildlife & Agriculture. Accessed from: <https://www2.gov.bc.ca/gov/content/soc/2021-01-26-Working-Water-Quality-Guidelines-for-the-Protection-of-Aquatic-Life-Wildlife-Agriculture>

Note that long-term guidelines apply to averaged data to account for diurnal impacts to specific fish. Quality data sampled collected at every guideline interval over 30 days is considered to be the minimum number needed to calculate the long-term average of any parameter, though this may vary by parameter and site conditions. Long-term guidelines applied here are for reference only and may not include chronic impacts to aquatic life if exceedances occur in the short term.

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## Receiving Environment Lab Documentation



**CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)**

<b>Work Order</b>	: <b>VA24A0433</b>	<b>Page</b>	: 1 of 7
<b>Client</b>	: <b>Triton Environmental Consultants Ltd.</b>	<b>Laboratory</b>	: ALS Environmental - Vancouver
<b>Contact</b>		<b>Account Manager</b>	: [REDACTED]
<b>Address</b>		<b>Address</b>	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
<b>Telephone</b>		<b>Telephone</b>	: [REDACTED]
<b>Project</b>	: ----	<b>Date Samples Received</b>	: 09-Jan-2024 13:50
<b>PO</b>	: ----	<b>Date Analysis Commenced</b>	: 09-Jan-2024
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 15-Jan-2024 12:31
<b>Sampler</b>	: Aegeon Adrian		
<b>Site</b>	: Water Analysis		
<b>Quote number</b>	: VA23-TRIT100-012		
<b>No. of samples received</b>	: 2		
<b>No. of samples analysed</b>	: 2		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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>
Ilnaz Badbezanchi	Supervisor - Metals Prep & Mercury	Metals, Burnaby, British Columbia
Jing Liu	Lab Assistant	Inorganics, Edmonton, Alberta
Juanita Martis	Laboratory Analyst	Metals, Burnaby, British Columbia
Kate Dimitrova	Supervisor - Inorganic	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Paolo Obillo	Account Manager Assistant	Administration, 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.



## Analytical Results Evaluation

				Client sample ID	SQU DS 1	SQU US 1	----	----	----	----	----
Matrix: Water				Sampling date/time	09-Jan-2024 11:08	09-Jan-2024 10:23	----	----	----	----	----
				Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	VA24A0433-001	VA24A0433-002	-----	-----	-----	-----	-----	-----
<b>Field Tests</b>											
Conductivity, field	----	EF001/VA	µS/cm	67.000	68.000	----	----	----	----	----	----
pH, field	----	EF001/VA	pH units	7.30	7.01	----	----	----	----	----	----
Temperature, field	----	EF001/VA	°C	2.60	3.40	----	----	----	----	----	----
<b>Physical Tests</b>											
Hardness (as CaCO3), dissolved	----	EC100/VA	mg/L	17.3	18.4	----	----	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	mg/L	18.6	18.7	----	----	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	mg/L	41	54	----	----	----	----	----	----
Solids, total suspended [TSS]	----	E160/VA	mg/L	<3.0	<3.0	----	----	----	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	mg/L	16.3	17.1	----	----	----	----	----	----
<b>Anions and Nutrients</b>											
Ammonia, total (as N)	7664-41-7	E298/VA	mg/L	0.130	0.229	----	----	----	----	----	----
Bromide	24959-67-9	E235.Br-L/VA	mg/L	<0.050	<0.050	----	----	----	----	----	----
Chloride	16887-00-6	E235.Cl/VA	mg/L	4.21	5.71	----	----	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	mg/L	0.023	0.022	----	----	----	----	----	----
Kjeldahl nitrogen, total [TKN]	----	E318/VA	mg/L	0.189	0.296	----	----	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	mg/L	0.0707	0.0710	----	----	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	mg/L	<0.0010	0.0012	----	----	----	----	----	----
Nitrogen, total	7727-37-9	E366/VA	mg/L	0.255	0.355	----	----	----	----	----	----
Phosphorus, total	7723-14-0	E372-U/VA	mg/L	0.0198	0.0268	----	----	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	mg/L	5.41	5.59	----	----	----	----	----	----
<b>Organic / Inorganic Carbon</b>											
Carbon, dissolved organic [DOC]	----	E358-L/VA	mg/L	1.99	1.20	----	----	----	----	----	----
<b>Total Sulfides</b>											
Sulfide, total (as S)	18496-25-8	E395/VA	mg/L	<0.0015	<0.0015	----	----	----	----	----	----
Sulfide, un-ionized (as H2S), from total	7783-06-4	EC395/VA	mg/L	<0.0015	<0.0015	----	----	----	----	----	----
Sulfide, total (as H2S)	7783-06-4	E395/VA	mg/L	<0.0016	<0.0016	----	----	----	----	----	----
<b>Total Metals</b>											



## Analytical Results Evaluation

Matrix: Water				Client sample ID	SQU DS 1	SQU US 1	----	----	----	----	----
				Sampling date/time	09-Jan-2024 11:08	09-Jan-2024 10:23	----	----	----	----	----
				Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	VA24A0433-001	VA24A0433-002	-----	-----	-----	-----	-----	-----
<b>Total Metals</b>											
<b>Aluminum, total</b>	7429-90-5	E420/VA	mg/L	0.144	0.0824	----	----	----	----	----	----
<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	0.00016	0.00014	----	----	----	----	----	----
<b>Barium, total</b>	7440-39-3	E420/VA	mg/L	0.00942	0.00891	----	----	----	----	----	----
<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	<0.010	<0.010	----	----	----	----	----	----
<b>Cadmium, total</b>	7440-43-9	E420/VA	mg/L	0.0000098	0.0000092	----	----	----	----	----	----
<b>Calcium, total</b>	7440-70-2	E420/VA	mg/L	6.21	6.19	----	----	----	----	----	----
<b>Cesium, total</b>	7440-46-2	E420/VA	mg/L	0.000020	0.000018	----	----	----	----	----	----
<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	0.00012	<0.00010	----	----	----	----	----	----
<b>Copper, total</b>	7440-50-8	E420/VA	mg/L	0.00096	0.00078	----	----	----	----	----	----
<b>Iron, total</b>	7439-89-6	E420/VA	mg/L	0.285	0.334	----	----	----	----	----	----
<b>Lead, total</b>	7439-92-1	E420/VA	mg/L	0.000064	<0.000050	----	----	----	----	----	----
<b>Lithium, total</b>	7439-93-2	E420/VA	mg/L	0.0012	<0.0010	----	----	----	----	----	----
<b>Magnesium, total</b>	7439-95-4	E420/VA	mg/L	0.753	0.788	----	----	----	----	----	----
<b>Manganese, total</b>	7439-96-5	E420/VA	mg/L	0.0129	0.0127	----	----	----	----	----	----
<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	0.000577	0.000607	----	----	----	----	----	----
<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	<0.050	----	----	----	----	----	----
<b>Potassium, total</b>	7440-09-7	E420/VA	mg/L	0.691	0.728	----	----	----	----	----	----
<b>Rubidium, total</b>	7440-17-7	E420/VA	mg/L	0.00098	0.00100	----	----	----	----	----	----
<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	5.24	5.42	----	----	----	----	----	----
<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	3.65	4.46	----	----	----	----	----	----
<b>Strontium, total</b>	7440-24-6	E420/VA	mg/L	0.0368	0.0396	----	----	----	----	----	----





## Analytical Results Evaluation

Matrix: Water				Client sample ID	SQU DS 1	SQU US 1	----	----	----	----	----
				Sampling date/time	09-Jan-2024 11:08	09-Jan-2024 10:23	----	----	----	----	----
				Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	VA24A0433-001	VA24A0433-002	-----	-----	-----	-----	-----	-----
<b>Total Metals</b>											
Sulfur, total	7704-34-9	E420/VA	mg/L	1.60	1.70	----	----	----	----	----	----
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	0.00468	0.00207	----	----	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Uranium, total	7440-61-1	E420/VA	mg/L	0.000034	0.000029	----	----	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	mg/L	0.00117	0.00128	----	----	----	----	----	----
Zinc, total	7440-66-6	E420/VA	mg/L	0.0320	<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	0.0326	0.0290	----	----	----	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	mg/L	<0.00010	<0.00010	----	----	----	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	mg/L	0.00012	0.00013	----	----	----	----	----	----
Barium, dissolved	7440-39-3	E421/VA	mg/L	0.00801	0.00816	----	----	----	----	----	----
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	0.010	<0.010	----	----	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	mg/L	0.0000087	0.0000089	----	----	----	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	mg/L	5.76	6.15	----	----	----	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	mg/L	0.000016	0.000015	----	----	----	----	----	----
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	0.00059	0.00059	----	----	----	----	----	----
Iron, dissolved	7439-89-6	E421/VA	mg/L	0.145	0.205	----	----	----	----	----	----
Lead, dissolved	7439-92-1	E421/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	mg/L	0.0011	<0.0010	----	----	----	----	----	----



## Analytical Results Evaluation

Matrix: Water				Client sample ID	SQU DS 1	SQU US 1	----	----	----	----	----
				Sampling date/time	09-Jan-2024 11:08	09-Jan-2024 10:23	----	----	----	----	----
				Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	VA24A0433-001	VA24A0433-002	-----	-----	-----	-----	-----	-----
<b>Dissolved Metals</b>											
Magnesium, dissolved	7439-95-4	E421/VA	mg/L	0.702	0.743	----	----	----	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	mg/L	0.0105	0.0109	----	----	----	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	mg/L	0.000555	0.000556	----	----	----	----	----	----
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	0.660	0.697	----	----	----	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	mg/L	0.00094	0.00099	----	----	----	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	mg/L	<0.000050	<0.000050	----	----	----	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	mg/L	4.76	5.16	----	----	----	----	----	----
Silver, dissolved	7440-22-4	E421/VA	mg/L	<0.000010	<0.000010	----	----	----	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	mg/L	3.44	4.36	----	----	----	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	mg/L	0.0358	0.0371	----	----	----	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	mg/L	1.50	1.65	----	----	----	----	----	----
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	0.00047	<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	0.000025	----	----	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	mg/L	0.00097	0.00110	----	----	----	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	mg/L	0.0017	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>Aggregate Organics</b>											
Chemical oxygen demand [COD]	----	E559-L/VA	mg/L	<10	<10	----	----	----	----	----	----



## Analytical Results Evaluation

Matrix: Water				Client sample ID	SQU DS 1	SQU US 1	----	----	----	----	----
				Sampling date/time	09-Jan-2024 11:08	09-Jan-2024 10:23	----	----	----	----	----
				Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	VA24A0433-001	VA24A0433-002	-----	-----	-----	-----	-----	-----
<b>Aggregate Organics</b>											
Phenols, total (4AAP)	----	E562/EO	mg/L	<0.0010	<0.0010	----	----	----	----	----	----

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**

**Work Order** : VA24A0433  
**Client** : Triton Environmental Consultants Ltd.  
**Contact** : [Redacted]  
**Address** : [Redacted]  
**Telephone** : [Redacted]  
**Project** : ----  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : [Redacted]  
**Site** : Water Analysis  
**Quote number** : VA23-TRIT100-012  
**No. of samples received** : 2  
**No. of samples analysed** : 2

**Page** : 1 of 6  
**Laboratory** : ALS Environmental - Vancouver  
**Account Manager** : [Redacted]  
**Address** : 8081 Lougheed Highway  
 Burnaby BC Canada V5A 1W9  
**Telephone** : [Redacted]  
**Date Samples Received** : 09-Jan-2024 13:50  
**Date Analysis Commenced** : 09-Jan-2024  
**Issue Date** : 15-Jan-2024 12:31

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>
Ilmaz Badbezanchi	Supervisor - Metals Prep & Mercury	Metals, Burnaby, British Columbia
Jing Liu	Lab Assistant	Inorganics, Edmonton, Alberta
Juanita Martis	Laboratory Analyst	Metals, Burnaby, British Columbia
Kate Dimitrova	Supervisor - Inorganic	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia
Paolo Obillo	Account Manager Assistant	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).

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

<: less than.

>: greater than.

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

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

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



## Analytical Results

Sub-Matrix: Water					Client sample ID	SQU DS 1	SQU US 1	----	----	----
(Matrix: Water)					Client sampling date / time	09-Jan-2024 11:08	09-Jan-2024 10:23	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A0433-001	VA24A0433-002	-----	-----	-----	
					Result	Result	----	----	----	
<b>Field Tests</b>										
Conductivity, field	----	EF001/VA	0.10	µS/cm	67.000	68.000	----	----	----	
pH, field	----	EF001/VA	0.10	pH units	7.30	7.01	----	----	----	
Temperature, field	----	EF001/VA	0.10	°C	2.60	3.40	----	----	----	
<b>Physical Tests</b>										
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L	17.3	18.4	----	----	----	
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	18.6	18.7	----	----	----	
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	41	54	----	----	----	
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	<3.0	<3.0	----	----	----	
Alkalinity, total (as CaCO3)	----	E290/VA	2.0	mg/L	16.3	17.1	----	----	----	
<b>Anions and Nutrients</b>										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	0.130	0.229	----	----	----	
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	4.21	5.71	----	----	----	
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.023	0.022	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	E318/VA	0.050	mg/L	0.189	0.296	----	----	----	
Nitrate (as N)	14797-55-8	E235.NO3-LV A	0.0050	mg/L	0.0707	0.0710	----	----	----	
Nitrite (as N)	14797-65-0	E235.NO2-LV A	0.0010	mg/L	<0.0010	0.0012	----	----	----	
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	0.255	0.355	----	----	----	
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.0198	0.0268	----	----	----	
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	5.41	5.59	----	----	----	
<b>Organic / Inorganic Carbon</b>										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	1.99	1.20	----	----	----	
<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	0.144	0.0824	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	SQU DS 1	SQU US 1	----	----	----
(Matrix: Water)					Client sampling date / time	09-Jan-2024 11:08	09-Jan-2024 10:23	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A0433-001	VA24A0433-002	-----	-----	-----	
					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	0.00016	0.00014	----	----	----	
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.00942	0.00891	----	----	----	
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L	<0.000100	<0.000100	----	----	----	
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Boron, total	7440-42-8	E420/VA	0.010	mg/L	<0.010	<0.010	----	----	----	
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	0.0000098	0.0000092	----	----	----	
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	6.21	6.19	----	----	----	
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	0.000020	0.000018	----	----	----	
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	0.00012	<0.00010	----	----	----	
Copper, total	7440-50-8	E420/VA	0.00050	mg/L	0.00096	0.00078	----	----	----	
Iron, total	7439-89-6	E420/VA	0.010	mg/L	0.285	0.334	----	----	----	
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	0.000064	<0.000050	----	----	----	
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L	0.0012	<0.0010	----	----	----	
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	0.753	0.788	----	----	----	
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L	0.0129	0.0127	----	----	----	
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	0.000577	0.000607	----	----	----	
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L	<0.00050	<0.00050	----	----	----	
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L	<0.050	<0.050	----	----	----	
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	0.691	0.728	----	----	----	
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.00098	0.00100	----	----	----	
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	5.24	5.42	----	----	----	
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	3.65	4.46	----	----	----	
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.0368	0.0396	----	----	----	
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	1.60	1.70	----	----	----	
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L	<0.00020	<0.00020	----	----	----	



## Analytical Results

Sub-Matrix: Water					Client sample ID	SQU DS 1	SQU US 1	----	----	----
(Matrix: Water)					Client sampling date / time	09-Jan-2024 11:08	09-Jan-2024 10:23	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A0433-001	VA24A0433-002	-----	-----	-----	
					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	0.00468	0.00207	----	----	----	
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	0.000034	0.000029	----	----	----	
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L	0.00117	0.00128	----	----	----	
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L	0.0320	<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	0.0326	0.0290	----	----	----	
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L	<0.00010	<0.00010	----	----	----	
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L	0.00012	0.00013	----	----	----	
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L	0.00801	0.00816	----	----	----	
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L	<0.000100	<0.000100	----	----	----	
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L	0.010	<0.010	----	----	----	
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L	0.0000087	0.0000089	----	----	----	
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L	5.76	6.15	----	----	----	
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L	0.000016	0.000015	----	----	----	
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	0.00059	0.00059	----	----	----	
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L	0.145	0.205	----	----	----	
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	0.0011	<0.0010	----	----	----	
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L	0.702	0.743	----	----	----	
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L	0.0105	0.0109	----	----	----	
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	0.000555	0.000556	----	----	----	





## Analytical Results

Sub-Matrix: Water					Client sample ID	SQU DS 1	SQU US 1	----	----	----
(Matrix: Water)					Client sampling date / time	09-Jan-2024 11:08	09-Jan-2024 10:23	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	VA24A0433-001	VA24A0433-002	-----	-----	-----	
					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	0.660	0.697	----	----	----	
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L	0.00094	0.00099	----	----	----	
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L	<0.000050	<0.000050	----	----	----	
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L	4.76	5.16	----	----	----	
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	3.44	4.36	----	----	----	
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L	0.0358	0.0371	----	----	----	
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L	1.50	1.65	----	----	----	
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	0.00047	<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	0.000025	----	----	----	
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L	0.00097	0.00110	----	----	----	
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L	0.0017	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>Aggregate Organics</b>										
Chemical oxygen demand [COD]	----	E559-L/VA	10	mg/L	<10	<10	----	----	----	
Phenols, total (4AAP)	----	E562/EO	0.0010	mg/L	<0.0010	<0.0010	----	----	----	

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> : VA24A0433</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> : ----</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : Aegeon Adrian</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 16</p> <p><b>Laboratory</b> : ALS Environmental - Vancouver</p> <p><b>Account Manager</b> : [REDACTED]</p> <p><b>Address</b> : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9</p> <p><b>Telephone</b> : [REDACTED]</p> <p><b>Date Samples Received</b> : 09-Jan-2024 13:50</p> <p><b>Issue Date</b> : 15-Jan-2024 12:32</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
- Matrix Spike outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

#### Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

***Outliers : Analysis Holding Time Compliance (Breaches)***

- No Analysis Holding Time Outliers exist.

***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



**Outliers : Quality Control Samples**

*Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes*

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
<b>Matrix Spike (MS) Recoveries</b>								
Dissolved Metals	Anonymous	Anonymous	Silver, dissolved	7440-22-4	E421	64.2 % <sup>MES</sup>	70.0-130%	Recovery less than lower data quality objective

**Result Qualifiers**

Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).



## 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 : Chemical Oxygen Demand by Colourimetry (Low Level)</b>										
Amber glass total (sulfuric acid) SQU DS 1	E559-L	09-Jan-2024	----	----	----		09-Jan-2024	28 days	0 days	✔
<b>Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)</b>										
Amber glass total (sulfuric acid) SQU US 1	E559-L	09-Jan-2024	----	----	----		09-Jan-2024	28 days	0 days	✔
<b>Aggregate Organics : Phenols (4AAP) in Water by Colorimetry</b>										
Amber glass total (sulfuric acid) SQU DS 1	E562	09-Jan-2024	10-Jan-2024	28 days	1 days	✔	10-Jan-2024	28 days	1 days	✔
<b>Aggregate Organics : Phenols (4AAP) in Water by Colorimetry</b>										
Amber glass total (sulfuric acid) SQU US 1	E562	09-Jan-2024	10-Jan-2024	28 days	1 days	✔	10-Jan-2024	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) SQU DS 1	E298	09-Jan-2024	10-Jan-2024	28 days	1 days	✔	10-Jan-2024	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) SQU US 1	E298	09-Jan-2024	10-Jan-2024	28 days	1 days	✔	10-Jan-2024	28 days	1 days	✔
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE SQU DS 1	E235.Br-L	09-Jan-2024	09-Jan-2024	28 days	0 days	✔	09-Jan-2024	28 days	0 days	✔



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Anions and Nutrients : Bromide in Water by IC (Low Level)</b>										
HDPE SQU US 1	E235.Br-L	09-Jan-2024	09-Jan-2024	28 days	0 days	✓	09-Jan-2024	28 days	1 days	✓
<b>Anions and Nutrients : Chloride in Water by IC</b>										
HDPE SQU DS 1	E235.Cl	09-Jan-2024	09-Jan-2024	28 days	0 days	✓	09-Jan-2024	28 days	0 days	✓
<b>Anions and Nutrients : Chloride in Water by IC</b>										
HDPE SQU US 1	E235.Cl	09-Jan-2024	09-Jan-2024	28 days	0 days	✓	09-Jan-2024	28 days	1 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE SQU DS 1	E235.F	09-Jan-2024	09-Jan-2024	28 days	0 days	✓	09-Jan-2024	28 days	0 days	✓
<b>Anions and Nutrients : Fluoride in Water by IC</b>										
HDPE SQU US 1	E235.F	09-Jan-2024	09-Jan-2024	28 days	0 days	✓	09-Jan-2024	28 days	1 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE SQU DS 1	E235.NO3-L	09-Jan-2024	09-Jan-2024	3 days	0 days	✓	09-Jan-2024	3 days	0 days	✓
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>										
HDPE SQU US 1	E235.NO3-L	09-Jan-2024	09-Jan-2024	3 days	0 days	✓	09-Jan-2024	3 days	1 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE SQU DS 1	E235.NO2-L	09-Jan-2024	09-Jan-2024	3 days	0 days	✓	09-Jan-2024	3 days	0 days	✓
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>										
HDPE SQU US 1	E235.NO2-L	09-Jan-2024	09-Jan-2024	3 days	0 days	✓	09-Jan-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 SQU DS 1	E235.SO4	09-Jan-2024	09-Jan-2024	28 days	0 days	✓	09-Jan-2024	28 days	0 days	✓	
<b>Anions and Nutrients : Sulfate in Water by IC</b>											
HDPE SQU US 1	E235.SO4	09-Jan-2024	09-Jan-2024	28 days	0 days	✓	09-Jan-2024	28 days	1 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) SQU DS 1	E318	09-Jan-2024	11-Jan-2024	28 days	2 days	✓	13-Jan-2024	28 days	4 days	✓	
<b>Anions and Nutrients : Total Kjeldahl Nitrogen by Fluorescence (Low Level)</b>											
Amber glass total (sulfuric acid) SQU US 1	E318	09-Jan-2024	11-Jan-2024	28 days	2 days	✓	13-Jan-2024	28 days	4 days	✓	
<b>Anions and Nutrients : Total Nitrogen by Colourimetry</b>											
Amber glass total (sulfuric acid) SQU DS 1	E366	09-Jan-2024	10-Jan-2024	28 days	1 days	✓	11-Jan-2024	28 days	2 days	✓	
<b>Anions and Nutrients : Total Nitrogen by Colourimetry</b>											
Amber glass total (sulfuric acid) SQU US 1	E366	09-Jan-2024	10-Jan-2024	28 days	2 days	✓	11-Jan-2024	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) SQU DS 1	E372-U	09-Jan-2024	10-Jan-2024	28 days	1 days	✓	10-Jan-2024	28 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) SQU US 1	E372-U	09-Jan-2024	10-Jan-2024	28 days	1 days	✓	10-Jan-2024	28 days	1 days	✓	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>											
Glass vial - dissolved (lab preserved) SQU DS 1	E509	09-Jan-2024	10-Jan-2024	28 days	1 days	✓	10-Jan-2024	28 days	0 days	✓	



Matrix: **Water** Evaluation: \* = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Dissolved Metals : Dissolved Mercury in Water by CVAAS</b>										
Glass vial - dissolved (lab preserved) SQU US 1	E509	09-Jan-2024	10-Jan-2024	28 days	1 days	✓	10-Jan-2024	28 days	0 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
HDPE - dissolved (lab preserved) SQU DS 1	E421	09-Jan-2024	11-Jan-2024	180 days	2 days	✓	11-Jan-2024	180 days	2 days	✓
<b>Dissolved Metals : Dissolved Metals in Water by CRC ICPMS</b>										
HDPE - dissolved (lab preserved) SQU US 1	E421	09-Jan-2024	11-Jan-2024	180 days	2 days	✓	11-Jan-2024	180 days	2 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 DS 1	EF001	09-Jan-2024	----	----	----		11-Jan-2024	----	2 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	09-Jan-2024	----	----	----		11-Jan-2024	----	2 days	
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
Amber glass dissolved (sulfuric acid) SQU DS 1	E358-L	09-Jan-2024	12-Jan-2024	28 days	3 days	✓	12-Jan-2024	28 days	3 days	✓
<b>Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)</b>										
Amber glass dissolved (sulfuric acid) SQU US 1	E358-L	09-Jan-2024	12-Jan-2024	28 days	3 days	✓	12-Jan-2024	28 days	3 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE SQU DS 1	E290	09-Jan-2024	09-Jan-2024	14 days	0 days	✓	10-Jan-2024	14 days	1 days	✓
<b>Physical Tests : Alkalinity Species by Titration</b>										
HDPE SQU US 1	E290	09-Jan-2024	09-Jan-2024	14 days	0 days	✓	10-Jan-2024	14 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 : TDS by Gravimetry</b>										
HDPE SQU DS 1	E162	09-Jan-2024	----	----	----		11-Jan-2024	7 days	2 days	✓
<b>Physical Tests : TDS by Gravimetry</b>										
HDPE SQU US 1	E162	09-Jan-2024	----	----	----		11-Jan-2024	7 days	2 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE SQU DS 1	E160	09-Jan-2024	----	----	----		11-Jan-2024	7 days	2 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE SQU US 1	E160	09-Jan-2024	----	----	----		11-Jan-2024	7 days	2 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
Glass vial - total (lab preserved) SQU DS 1	E508	09-Jan-2024	10-Jan-2024	28 days	1 days	✓	10-Jan-2024	28 days	0 days	✓
<b>Total Metals : Total Mercury in Water by CVAAS</b>										
Glass vial - total (lab preserved) SQU US 1	E508	09-Jan-2024	10-Jan-2024	28 days	1 days	✓	10-Jan-2024	28 days	0 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE - total (lab preserved) SQU DS 1	E420	09-Jan-2024	11-Jan-2024	180 days	2 days	✓	11-Jan-2024	180 days	2 days	✓
<b>Total Metals : Total Metals in Water by CRC ICPMS</b>										
HDPE - total (lab preserved) SQU US 1	E420	09-Jan-2024	11-Jan-2024	180 days	2 days	✓	11-Jan-2024	180 days	2 days	✓
<b>Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)</b>										
HDPE total (zinc acetate+sodium hydroxide) SQU DS 1	E395	09-Jan-2024	----	----	----		10-Jan-2024	7 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>Total Sulfides : Total Sulfide by Colourimetry (Automated Flow)</b>										
HDPE total (zinc acetate+sodium hydroxide) SQU US 1	E395	09-Jan-2024	----	----	----		10-Jan-2024	7 days	1 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	1298283	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1298463	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1298287	1	17	5.8	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1298188	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	1298286	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1299554	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1299370	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1301344	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	1298290	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1298288	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1298289	1	17	5.8	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1298741	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1298285	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	1300241	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1300528	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	1299536	1	10	10.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1299079	1	17	5.8	5.0	✓
Total Nitrogen by Colourimetry	E366	1298464	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1298462	1	11	9.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1299003	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	1300240	1	19	5.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Alkalinity Species by Titration	E290	1298283	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1298463	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1298287	1	17	5.8	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1298188	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	1298286	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1299554	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1299370	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1301344	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	1298290	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1298288	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1298289	1	17	5.8	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1298741	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1298285	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	1300241	1	19	5.2	5.0	✓



Matrix: **Water**

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Control Samples (LCS) - Continued</b>							
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1300528	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	1299536	1	10	10.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1299079	1	17	5.8	5.0	✓
Total Nitrogen by Colourimetry	E366	1298464	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1298462	1	11	9.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1299003	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	1300240	1	19	5.2	5.0	✓
<b>Method Blanks (MB)</b>							
Alkalinity Species by Titration	E290	1298283	1	17	5.8	5.0	✓
Ammonia by Fluorescence	E298	1298463	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1298287	1	17	5.8	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1298188	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	1298286	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1299554	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1299370	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1301344	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	1298290	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1298288	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1298289	1	17	5.8	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1298741	1	20	5.0	5.0	✓
Sulfate in Water by IC	E235.SO4	1298285	1	18	5.5	5.0	✓
TDS by Gravimetry	E162	1300241	1	19	5.2	5.0	✓
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1300528	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	1299536	1	10	10.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1299079	1	17	5.8	5.0	✓
Total Nitrogen by Colourimetry	E366	1298464	1	6	16.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1298462	1	11	9.0	5.0	✓
Total Sulfide by Colourimetry (Automated Flow)	E395	1299003	1	17	5.8	5.0	✓
TSS by Gravimetry	E160	1300240	1	19	5.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1298463	1	19	5.2	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1298287	1	17	5.8	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1298188	1	9	11.1	5.0	✓
Chloride in Water by IC	E235.Cl	1298286	1	17	5.8	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1299554	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1299370	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1301344	1	9	11.1	5.0	✓
Fluoride in Water by IC	E235.F	1298290	1	17	5.8	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1298288	1	17	5.8	5.0	✓



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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<i>Analytical Methods</i>							
<b>Matrix Spikes (MS) - Continued</b>							
Nitrite in Water by IC (Low Level)	E235.NO2-L	1298289	1	17	5.8	5.0	✔
Phenols (4AAP) in Water by Colorimetry	E562	1298741	1	20	5.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1298285	1	18	5.5	5.0	✔
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318	1300528	1	17	5.8	5.0	✔
Total Mercury in Water by CVAAS	E508	1299536	1	10	10.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1299079	1	17	5.8	5.0	✔
Total Nitrogen by Colourimetry	E366	1298464	1	6	16.6	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1298462	1	11	9.0	5.0	✔
Total Sulfide by Colourimetry (Automated Flow)	E395	1299003	1	17	5.8	5.0	✔



## Methodology References and Summaries

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

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



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Total Kjeldahl Nitrogen by Fluorescence (Low Level)	E318 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	TKN in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO <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 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> <sup>-</sup> ) 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.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Vancouver	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
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.
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.
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.
Digestion for TKN in water	EP318 ALS Environmental - Vancouver	Water	APHA 4500-Norg D (mod)	Samples are digested at high temperature using Sulfuric Acid with Copper catalyst, which converts organic nitrogen sources to Ammonia, which is then quantified by the analytical method as TKN. This method is unsuitable for samples containing high levels of nitrate. If nitrate exceeds TKN concentration by ten times or more, results may be biased low.





<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
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>VA24A0433</b></p> <p>Client : [REDACTED]</p> <p>Contact : [REDACTED]</p> <p>Address : [REDACTED]</p> <p>Telephone : [REDACTED]</p> <p>Project : ----</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : Aegeon Adriaan [REDACTED]</p> <p>Site : Water Analysis</p> <p>Quote number : VA23-TRIT100-012</p> <p>No. of samples received : 2</p> <p>No. of samples analysed : 2</p>	<p>Page : 1 of 18</p> <p>Laboratory : ALS Environmental - Vancouver</p> <p>Account Manager : [REDACTED]</p> <p>Address : 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9</p> <p>Telephone : [REDACTED]</p> <p>Date Samples Received : 09-Jan-2024 13:50</p> <p>Date Analysis Commenced : 09-Jan-2024</p> <p>Issue Date : 15-Jan-2024 12:32</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>
Innaz Badbezanchi	Supervisor - Metals Prep & Mercury	Vancouver Metals, Burnaby, British Columbia
Jing Liu	Lab Assistant	Edmonton Inorganics, Edmonton, Alberta
Juanita Martis	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Kate Dimitrova	Supervisor - Inorganic	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Paolo Obillo	Account Manager Assistant	Vancouver Administration, Burnaby, British Columbia



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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: 1298283)</b>											
VA24A0380-003	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 1300240)</b>											
FJ2400047-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
<b>Physical Tests (QC Lot: 1300241)</b>											
FJ2400047-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	2120	2120	0.142%	20%	----
<b>Anions and Nutrients (QC Lot: 1298285)</b>											
VA24A0380-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	34.5	34.5	0.137%	20%	----
<b>Anions and Nutrients (QC Lot: 1298286)</b>											
VA24A0380-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	3.36	3.34	0.01	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1298287)</b>											
VA24A0380-001	Anonymous	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: 1298288)</b>											
VA24A0380-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0192	0.0186	0.0006	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1298289)</b>											
VA24A0380-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1298290)</b>											
VA24A0380-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.045	0.043	0.002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1298462)</b>											
FJ2400047-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0054	0.0059	0.0005	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1298463)</b>											
FJ2400047-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0613	0.0612	0.0810%	20%	----
<b>Anions and Nutrients (QC Lot: 1298464)</b>											
VA24A0433-001	SQU DS 1	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.255	0.254	0.001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1300528)</b>											
KS2400101-003	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	0.050	mg/L	0.078	0.091	0.013	Diff <2x LOR	----
<b>Organic / Inorganic Carbon (QC Lot: 1301344)</b>											
VA24A0433-001	SQU DS 1	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.99	1.32	0.67	Diff <2x LOR	----
<b>Total Sulfides (QC Lot: 1299003)</b>											
CG2400212-022	Anonymous	Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.0084	0.0088	0.0003	Diff <2x LOR	----
<b>Total Metals (QC Lot: 1299079)</b>											



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: 1299079) - continued</b>											
VA24A0474-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0122	0.0125	0.0003	Diff <2x LOR	---
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	---
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00070	0.00072	0.00002	Diff <2x LOR	---
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0975	0.100	3.10%	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	0.037	0.039	0.002	Diff <2x LOR	---
		Cadmium, total	7440-43-9	E420	0.0000150	mg/L	<0.0000150	<0.0000150	0	Diff <2x LOR	---
		Calcium, total	7440-70-2	E420	0.050	mg/L	170	175	3.37%	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	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	---
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	---
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00139	0.00143	0.00003	Diff <2x LOR	---
		Iron, total	7439-89-6	E420	0.010	mg/L	0.029	0.030	0.001	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	0.0091	0.0095	0.0004	Diff <2x LOR	---
		Magnesium, total	7439-95-4	E420	0.100	mg/L	54.4	55.4	1.87%	20%	---
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0337	0.0344	2.08%	20%	---
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0432	0.0448	3.61%	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	0.300	mg/L	<0.300	<0.300	0	Diff <2x LOR	---
		Potassium, total	7440-09-7	E420	0.050	mg/L	11.6	11.8	1.80%	20%	---
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00132	0.00139	0.00007	Diff <2x LOR	---
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000702	0.000672	4.36%	20%	---
		Silicon, total	7440-21-3	E420	0.10	mg/L	12.4	12.5	1.13%	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	80.3	81.4	1.28%	20%	---
		Strontium, total	7440-24-6	E420	0.00020	mg/L	1.09	1.11	1.18%	20%	---
		Sulfur, total	7704-34-9	E420	0.50	mg/L	199	202	1.63%	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	0.0100	mg/L	<0.0100	<0.0100	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>Total Metals (QC Lot: 1299079) - continued</b>											
VA24A0474-001	Anonymous	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	0.00390	0.00407	4.16%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00177	0.00181	0.00004	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: 1299536)</b>											
VA24A0433-001	SQU DS 1	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 1299370)</b>											
VA24A0525-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	1.23	1.18	4.30%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00028	0.00026	0.00002	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0107	0.0106	1.41%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.106	0.110	3.02%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	0.000102	<0.000100	0.000002	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	0.203	0.207	1.92%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.000161	0.000155	3.78%	20%	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	118	114	3.07%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000081	0.000078	0.000003	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	0.00486	0.00470	0.00016	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	0.00485	0.00483	0.451%	20%	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.0331	0.0319	3.63%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	9.48	9.18	3.29%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.00162	0.00161	0.676%	20%	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0016	0.0016	0.00004	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	22.0	22.3	1.34%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.83	1.85	0.751%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00171	0.00158	8.12%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00872	0.00846	2.96%	20%	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	3.45	3.55	3.04%	20%	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	164	168	2.41%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.0608	0.0613	0.778%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000483	0.000457	0.000026	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.100	mg/L	17.1	17.0	0.352%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000022	0.000020	0.000001	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Dissolved Metals (QC Lot: 1299370) - continued</b>											
VA24A0525-001	Anonymous	Sodium, dissolved	7440-23-5	E421	0.050	mg/L	84.0	85.4	1.54%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.470	0.459	2.18%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	18.6	18.3	1.64%	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	0.00010	mg/L	0.00021	0.00020	0.000004	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	0.00014	0.00012	0.00001	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	0.00016	0.00012	0.00004	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.0629	0.0575	8.89%	20%	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	0.00023	0.00020	0.00003	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.00010	mg/L	0.000262	0.000246	6.37%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.0203	0.0202	0.587%	20%	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0187	0.0180	3.41%	20%	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	0.00261	0.00243	0.00018	Diff <2x LOR	----
<b>Dissolved Metals (QC Lot: 1299554)</b>											
VA24A0398-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1298188)</b>											
FJ2400047-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	<10	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1298741)</b>											
EO2400126-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	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: 1298283)</b>						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
<b>Physical Tests (QCLot: 1300240)</b>						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
<b>Physical Tests (QCLot: 1300241)</b>						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
<b>Anions and Nutrients (QCLot: 1298285)</b>						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
<b>Anions and Nutrients (QCLot: 1298286)</b>						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
<b>Anions and Nutrients (QCLot: 1298287)</b>						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
<b>Anions and Nutrients (QCLot: 1298288)</b>						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 1298289)</b>						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 1298290)</b>						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
<b>Anions and Nutrients (QCLot: 1298462)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 1298463)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 1298464)</b>						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
<b>Anions and Nutrients (QCLot: 1300528)</b>						
Kjeldahl nitrogen, total [TKN]	----	E318	0.05	mg/L	<0.050	----
<b>Organic / Inorganic Carbon (QCLot: 1301344)</b>						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
<b>Total Sulfides (QCLot: 1299003)</b>						
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	<0.0015	----
<b>Total Metals (QCLot: 1299079)</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	----





Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 1299079) - continued</b>						
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	---
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	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Total Metals (QCLot: 1299079) - continued</b>						
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: 1299536)</b>						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	---
<b>Dissolved Metals (QCLot: 1299370)</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	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Dissolved Metals (QCLot: 1299370) - continued</b>						
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
<b>Dissolved Metals (QCLot: 1299554)</b>						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
<b>Aggregate Organics (QCLot: 1298188)</b>						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
<b>Aggregate Organics (QCLot: 1298741)</b>						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----



## 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: 1298283)</b>									
Alkalinity, total (as CaCO <sub>3</sub> )	---	E290	1	mg/L	500 mg/L	109	85.0	115	---
<b>Physical Tests (QCLot: 1300240)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	87.8	85.0	115	---
<b>Physical Tests (QCLot: 1300241)</b>									
Solids, total dissolved [TDS]	---	E162	10	mg/L	1000 mg/L	99.5	85.0	115	---
<b>Anions and Nutrients (QCLot: 1298285)</b>									
Sulfate (as SO <sub>4</sub> )	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 1298286)</b>									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 1298287)</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: 1298288)</b>									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	---
<b>Anions and Nutrients (QCLot: 1298289)</b>									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	---
<b>Anions and Nutrients (QCLot: 1298290)</b>									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	102	90.0	110	---
<b>Anions and Nutrients (QCLot: 1298462)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	89.0	80.0	120	---
<b>Anions and Nutrients (QCLot: 1298463)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	97.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 1298464)</b>									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	97.5	75.0	125	---
<b>Anions and Nutrients (QCLot: 1300528)</b>									
Kjeldahl nitrogen, total [TKN]	---	E318	0.05	mg/L	4 mg/L	91.3	75.0	125	---
<b>Organic / Inorganic Carbon (QCLot: 1301344)</b>									
Carbon, dissolved organic [DOC]	---	E358-L	0.5	mg/L	8.57 mg/L	94.2	80.0	120	---
<b>Total Sulfides (QCLot: 1299003)</b>									
Sulfide, total (as S)	18496-25-8	E395	0.0015	mg/L	0.08 mg/L	101	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: 1299079)</b>									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.0	80.0	120	---
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	---
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	---
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	---
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.7	80.0	120	---
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	103	80.0	120	---
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	100	80.0	120	---
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	104	80.0	120	---
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.9	80.0	120	---
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	91.9	80.0	120	---
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	---
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	---
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	---
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	101	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	106	80.0	120	---
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	112	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	104	80.0	120	---
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	---
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	107	80.0	120	---
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	---
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	97.8	80.0	120	---
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	110	80.0	120	---
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	110	80.0	120	---
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.8	80.0	120	---
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	103	80.0	120	---
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	---
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	90.5	80.0	120	---
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	105	80.0	120	---
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	107	80.0	120	---
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	95.4	80.0	120	---
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.8	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	97.8	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: 1299079) - continued</b>									
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	---
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	---
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.9	80.0	120	---
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	99.3	80.0	120	---
<b>Total Metals (QCLot: 1299536)</b>									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	95.7	80.0	120	---
<b>Dissolved Metals (QCLot: 1299370)</b>									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.0	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	102	80.0	120	---
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	---
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	98.0	80.0	120	---
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	94.5	80.0	120	---
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	100	80.0	120	---
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.7	80.0	120	---
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	98.0	80.0	120	---
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	91.8	80.0	120	---
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	98.9	80.0	120	---
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.8	80.0	120	---
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	95.8	80.0	120	---
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	91.6	80.0	120	---
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	95.7	80.0	120	---
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	106	80.0	120	---
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	107	80.0	120	---
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	96.1	80.0	120	---
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	100	80.0	120	---
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.2	80.0	120	---
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	101	80.0	120	---
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	101	80.0	120	---
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	100	80.0	120	---
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.3	80.0	120	---
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	107	80.0	120	---
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	90.9	80.0	120	---
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	99.2	80.0	120	---
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	96.3	80.0	120	---



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Dissolved Metals (QCLot: 1299370) - continued</b>									
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.6	80.0	120	----
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	101	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	89.4	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	95.2	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	98.2	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	92.7	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	93.6	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	98.7	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	93.5	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	98.2	80.0	120	----
<b>Aggregate Organics (QCLot: 1298188)</b>									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	105	85.0	115	----
<b>Aggregate Organics (QCLot: 1298741)</b>									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	100	85.0	115	----



## 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: 1298285)</b>										
VA24A0380-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	99.2 mg/L	100 mg/L	99.2	75.0	125	----
<b>Anions and Nutrients (QCLot: 1298286)</b>										
VA24A0380-002	Anonymous	Chloride	16887-00-6	E235.Cl	99.7 mg/L	100 mg/L	99.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 1298287)</b>										
VA24A0380-002	Anonymous	Bromide	24959-67-9	E235.Br-L	0.494 mg/L	0.5 mg/L	98.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 1298288)</b>										
VA24A0380-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.48 mg/L	2.5 mg/L	99.1	75.0	125	----
<b>Anions and Nutrients (QCLot: 1298289)</b>										
VA24A0380-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.495 mg/L	0.5 mg/L	99.0	75.0	125	----
<b>Anions and Nutrients (QCLot: 1298290)</b>										
VA24A0380-002	Anonymous	Fluoride	16984-48-8	E235.F	1.02 mg/L	1 mg/L	102	75.0	125	----
<b>Anions and Nutrients (QCLot: 1298462)</b>										
FJ2400047-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	4.47 mg/L	5 mg/L	89.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 1298463)</b>										
FJ2400047-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0963 mg/L	0.1 mg/L	96.3	75.0	125	----
<b>Anions and Nutrients (QCLot: 1298464)</b>										
VA24A0433-002	SQU US 1	Nitrogen, total	7727-37-9	E366	0.362 mg/L	0.4 mg/L	90.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 1300528)</b>										
KS2400101-004	Anonymous	Kjeldahl nitrogen, total [TKN]	----	E318	2.66 mg/L	2.5 mg/L	106	70.0	130	----
<b>Organic / Inorganic Carbon (QCLot: 1301344)</b>										
VA24A0433-002	SQU US 1	Carbon, dissolved organic [DOC]	----	E358-L	5.09 mg/L	5 mg/L	102	70.0	130	----
<b>Total Sulfides (QCLot: 1299003)</b>										
VA24A0433-001	SQU DS 1	Sulfide, total (as S)	18496-25-8	E395	0.218 mg/L	0.2 mg/L	109	75.0	125	----
<b>Total Metals (QCLot: 1299079)</b>										
VA24A0474-002	Anonymous	Aluminum, total	7429-90-5	E420	0.179 mg/L	0.2 mg/L	89.4	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0187 mg/L	0.02 mg/L	93.5	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	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: 1299079) - continued</b>										
VA24A0474-002	Anonymous	Beryllium, total	7440-41-7	E420	0.0338 mg/L	0.04 mg/L	84.6	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00828 mg/L	0.01 mg/L	82.8	70.0	130	----
		Boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	97.8	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00379 mg/L	0.004 mg/L	94.6	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	0.00950 mg/L	0.01 mg/L	95.0	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0186 mg/L	0.02 mg/L	93.3	70.0	130	----
		Copper, total	7440-50-8	E420	0.0177 mg/L	0.02 mg/L	88.4	70.0	130	----
		Iron, total	7439-89-6	E420	1.90 mg/L	2 mg/L	95.0	70.0	130	----
		Lead, total	7439-92-1	E420	0.0179 mg/L	0.02 mg/L	89.4	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0926 mg/L	0.1 mg/L	92.6	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		Phosphorus, total	7723-14-0	E420	9.70 mg/L	10 mg/L	97.0	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00358 mg/L	0.004 mg/L	89.6	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	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00346 mg/L	0.004 mg/L	86.5	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		Tin, total	7440-31-5	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		Uranium, total	7440-61-1	E420	ND mg/L	0.004 mg/L	ND	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0985 mg/L	0.1 mg/L	98.5	70.0	130	----
		Zinc, total	7440-66-6	E420	0.354 mg/L	0.4 mg/L	88.6	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0428 mg/L	0.04 mg/L	107	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: 1299536)</b>										
VA24A0433-002	SQU US 1	Mercury, total	7439-97-6	E508	0.0000983 mg/L	0.0001 mg/L	98.3	70.0	130	----
<b>Dissolved Metals (QCLot: 1299370)</b>										
VA24A0457-010	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.198 mg/L	0.2 mg/L	99.1	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0185 mg/L	0.02 mg/L	92.7	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0198 mg/L	0.02 mg/L	99.1	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	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00804 mg/L	0.01 mg/L	80.4	70.0	130	----
		Boron, dissolved	7440-42-8	E421	ND mg/L	0.1 mg/L	ND	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00373 mg/L	0.004 mg/L	93.2	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	0.00949 mg/L	0.01 mg/L	94.9	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0177 mg/L	0.02 mg/L	88.7	70.0	130	----
		Iron, dissolved	7439-89-6	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0178 mg/L	0.02 mg/L	89.0	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0371 mg/L	0.04 mg/L	92.8	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.6 mg/L	10 mg/L	106	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	4 mg/L	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	ND mg/L	10 mg/L	ND	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00257 mg/L	0.004 mg/L	64.2	70.0	130	MES
		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	21.1 mg/L	20 mg/L	106	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00349 mg/L	0.004 mg/L	87.2	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0186 mg/L	0.02 mg/L	93.0	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: 1299370) - continued</b>										
VA24A0457-010	Anonymous	Titanium, dissolved	7440-32-6	E421	0.0409 mg/L	0.04 mg/L	102	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0184 mg/L	0.02 mg/L	92.3	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00359 mg/L	0.004 mg/L	89.8	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.364 mg/L	0.4 mg/L	91.1	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
<b>Dissolved Metals (QCLot: 1299554)</b>										
VA24A0398-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000957 mg/L	0.0001 mg/L	95.7	70.0	130	----
<b>Aggregate Organics (QCLot: 1298188)</b>										
FJ2400047-002	Anonymous	Chemical oxygen demand [COD]	----	E559-L	ND mg/L	100 mg/L	ND	75.0	125	----
<b>Aggregate Organics (QCLot: 1298741)</b>										
EO2400126-002	Anonymous	Phenols, total (4AAP)	----	E562	0.0215 mg/L	0.02 mg/L	108	75.0	125	----

## Qualifiers


Qualifier	Description
MES	Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME).

<b>Report To</b> Contact and company name below will appear on the final report		<b>Report Format / Distribution</b>		<b>Select Service Level Below - Contact your AM to confirm all E&amp;P TATs (surcharges may apply)</b>													
Company:	Triton Environmental	Select Report Format:	<input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)	<b>Regular [R]</b> <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - business days - no surcharges apply													
Contact:		Quality Control (QC) Report with Report	<input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	<b>PRIORITY (Business Days)</b>	<b>4 day [P4-20%]</b>	<input type="checkbox"/>	<b>EMERGENCY</b>										
Phone:		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked			<b>3 day [P3-25%]</b>	<input type="checkbox"/>		<b>1 Business day [E1 - 100%]</b>	<input type="checkbox"/>								
Street:		Select Distribution:	<input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		<b>2 day [P2-50%]</b>	<input type="checkbox"/>		<b>Same Day, Weekend or Statutory holiday [E2 - 200% (Laboratory opening fees may apply)]</b>	<input type="checkbox"/>								
City/Province:	Vancouver/BC	Email 1 or Fax		<b>Date and Time Required for all E&amp;P TATs:</b> dd-mmm-yy hh:mm													
Postal Code:	V6E 4M3	Email 2		or tests that can not be performed according to the service level selected, you will be contacted.													
Invoice To	Same as Report To <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	Email 3		<b>Analysis Request</b>													
Copy of Invoice with Report <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO		<b>Invoice Distribution</b>		Indicate Filled (F), Preserved (P) or Filled and Preserved (F/P) below													
		Select Invoice Distribution:	<input type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX		F	F		P	P		F/P						
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>															
ALS Account # / Quote #:	VA23-TRIT100-012	AFE/Cost Center:	PO#														
Job #:		Major/Minor Code:	Routing Code:														
PO / AFE:		Requisitioner:															
LSD:		Location:															
ALS Lab Work Order # (lab use only):		ALS Contact:	Samplers:														

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total metals	Total mercury	Dissolved metals	Dissolved mercury	TSS	TDS	Nutrients (ammonia, ammonium, TKN, total nitrogen, total phosphorus, phenols, COD, Total sulfide (as H2S), Unionized Sulfide)	Anions scan (Br, Cl, F, NO2, NO3, SO4)	General parameters (alkalinity)	DOC	SAMPLER HOLD	Sample is hazardous (please provide further details)	NUMBER OF CONTAINERS
	SQU DS 1	09-Jan-24	11:08	Water	R	R	R	R	R	R	R	R	R	R		N	8
	pH: 7.30 cond: 67.0 temp: 2.6°C																
	SQU US 1	09-Jan-24	10:23	Water	R	R	R	R	R	R	R	R	R	R		N	8
	pH: 7.01 cond: 66.0 temp: 3.4°C																
	Duplicate			Water	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>		N	8
	Field Blank			Water	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>		N	8
	Trip Blank			Water	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>	<del>R</del>		N	5



<b>Drinking Water (DW) Samples (client use)</b>		<b>Special</b>		<b>SHIPPING ON THE DROP-DOWN LIST BELOW</b>		<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>					
Are samples taken from a Regulated DW System? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO						Frozen <input type="checkbox"/>		SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>			
Are samples for human consumption/ use? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO						Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/>		Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>			
						Cooling Initiated <input type="checkbox"/>					
						INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C			
								7			
<b>Released by:</b>		<b>Received by:</b>		<b>Date:</b>		<b>Time:</b>		<b>Received by:</b>		<b>Date:</b>	
		1345		9 Jan 24				JC		1350	

 <b>Eagle Mountain - Woodfibre Gas Pipeline Project BC Rail Waste Discharge Approval AE-111824 Report</b>	Reporting Week	Jan 9 <sup>th</sup> to Jan 15 <sup>th</sup> , 2024
	Report #	6
	Appendix	B

## Receiving Environment Field Notes and Logs

<b>Inspection Date</b>	<b>1/09/2024</b>	<b>1/09/2024</b>
<b>Location</b>	BC Rail Site	BC Rail Site
<b>SiteID</b>	SQU US1	SQU DS1
<b>Component</b>	Tunnel	Tunnel
<b>Permit</b>	AE 111824	AE 111824
<b>Site Name</b>	Receiving Environment - Upstream of Discharge	Receiving Environment - Downstream of Discharge
<b>Latitude</b>	49.726866	49.725282
<b>Longitude</b>	-123.163912	-123.165175
<b>EM</b>	Aegean Chan	Aegean Chan
<b>Air Temperature Low (°C)</b>	0	0
<b>Air Temperature High (°C)</b>	4	4
<b>Conditions</b>	Light Rain	Light Rain
<b>GroundCondition</b>	Snow	Snow
<b>Timestart</b>	10:17:27	11:08:14
<b>Flow Volume</b>	moderate	moderate
<b>Notes</b>	N/A	N/A
<b>Odour Detected</b>	No	No
<b>Odour</b>	N/A	N/A
<b>Colour Detected</b>	No	No
<b>Colour</b>	N/A	N/A
<b>Unusual Observation Detected</b>	No	No
<b>Unusual Observation</b>	N/A	N/A
<b>Sheen Detected</b>	No	No
<b>Sheen</b>	N/A	N/A
<b>SAMPLES COLLECTED</b>		
<b>Total Metals Mercury</b>	Yes	Yes
<b>Dissolved Metals Mercury</b>	Yes	Yes
<b>TSS</b>	Yes	Yes
<b>TDS</b>	Yes	Yes
<b>Nutrients</b>	Yes	Yes
<b>DOC</b>	Yes	Yes
<b>General Parameters Alkalinity</b>	Yes	Yes
<b>Total Sulfide Unionized Sulfide</b>	Yes	Yes
<b>Anions</b>	Yes	Yes
<b>Other Sample</b>	No	No
<b>QA Samples</b>	No	No
<b>Logger Maintenance Peformed</b>	No	No
<b>Photo Of COC</b>	Yes	Yes
<b>Logger Maintenance Comment</b>	N/A	N/A

Receiving Environment Sampling Upstream



Triton DFR 2024-01-09

Receiving Environment Sampling Downstream

