

CERTIFICATE OF ANALYSIS

Work Order	: VA23C3077	Page	: 1 of 6
Client	: Northwest Research and Monitoring Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Laura Guillon	Account Manager	: Sneha Sansare
Address	: PO Box 4357 Smithers BC Canada V0J 2N0	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: MWM T 2023	Date Samples Received	: 27-Sep-2023 13:00
PO	: ----	Date Analysis Commenced	: 28-Sep-2023
C-O-C number	: 20-1068888	Issue Date	: 11-Oct-2023 15:31
Sampler	: ----		
Site	: ----		
Quote number	: Q72918		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Cecilia Zhang	Account Manager Assistant	Administration, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Robert Nguyen	Analyst	Metals, Burnaby, British Columbia



General Comments

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

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

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

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

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

Unit	Description
-	no units
%	percent
°C	degrees celsius
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.



Analytical Results

Sub-Matrix: Water					Client sample ID	Shea Creek	Gosdell Creek	Crystal Creek	Morice River	Field Blank
(Matrix: Water)										
Client sampling date / time					25-Sep-2023 11:50	25-Sep-2023 13:00	25-Sep-2023 13:30	25-Sep-2023 14:00	25-Sep-2023 11:50	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C3077-001	VA23C3077-002	VA23C3077-003	VA23C3077-004	VA23C3077-005	
					Result	Result	Result	Result	Result	
Field Tests										
Conductivity, field	----	EF001/VA	0.10	µS/cm	62.500	102.60	963.00	48.200	----	
Oxygen, dissolved saturation %, field	----	EF001/VA	0.1	%	104	112	143	169	----	
Oxygen, dissolved, field	----	EF001/VA	0.01	mg/L	12.4	13.6	17.0	18.1	----	
pH, field	----	EF001/VA	0.10	pH units	7.84	7.91	8.01	8.17	----	
Temperature, field	----	EF001/VA	0.10	°C	8.60	8.20	7.80	12.2	----	
Physical Tests										
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	29.1	43.2	37.2	16.3	<1.0	
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	44	60	58	43	<10	
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L	5.8	<3.0	<3.0	<3.0	<3.0	
Turbidity	----	E121/VA	0.10	NTU	0.78	0.33	0.25	0.33	<0.10	
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L	<0.0050	<0.0050	<0.0050	0.0088	<0.0050	
Kjeldahl nitrogen, total [TKN]	----	EC318/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Nitrate (as N)	14797-55-8	E235.NO3-L/V A	0.0050	mg/L	0.0342	<0.0050	<0.0050	0.0117	<0.0050	
Nitrate + Nitrite (as N)	----	EC235.N+N/V A	0.0050	mg/L	0.0342	<0.0051	<0.0051	0.0117	<0.0051	
Nitrite (as N)	14797-65-0	E235.NO2-L/V A	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L	0.079	0.039	<0.030	0.060	<0.030	
Nitrogen, total dissolved	----	E368/VA	0.030	mg/L	0.056	0.042	<0.030	0.067	<0.030	
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L	0.0033	0.0032	0.0024	0.0064	<0.0020	
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L	1.76	1.45	1.07	1.27	<0.50	
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	0.0267	0.0172	0.0123	0.0201	<0.0030	
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.00014	0.00014	0.00018	<0.00010	<0.00010	
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.0270	0.0207	0.00494	0.0147	<0.00010	
Beryllium, total	7440-41-7	E420/VA	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	



Analytical Results

Sub-Matrix: Water					Client sample ID	Shea Creek	Gosdell Creek	Crystal Creek	Morice River	Field Blank
(Matrix: Water)										
Client sampling date / time										
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C3077-001	VA23C3077-002	VA23C3077-003	VA23C3077-004	VA23C3077-005	
					Result	Result	Result	Result	Result	
Total Metals										
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420/VA	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	8.02	13.1	12.9	6.73	<0.050	<0.050
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	0.00054	<0.00050	<0.00050
Iron, total	7439-89-6	E420/VA	0.010	mg/L	0.066	0.080	<0.010	0.016	<0.010	<0.010
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	1.16	1.59	1.03	0.516	<0.0050	<0.0050
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L	0.0111	0.0214	0.00078	0.00108	<0.00010	<0.00010
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L	<0.000050	0.000226	0.00153	0.000434	<0.000050	<0.000050
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420/VA	0.050	mg/L	0.181	0.260	0.273	0.292	<0.050	<0.050
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L	0.00021	0.00029	0.00032	0.00034	<0.00020	<0.00020
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silicon, total	7440-21-3	E420/VA	0.10	mg/L	3.01	4.86	3.20	1.23	<0.10	<0.10
Silver, total	7440-22-4	E420/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420/VA	0.050	mg/L	1.41	2.21	1.88	0.629	0.254	0.254
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L	0.0335	0.0470	0.0374	0.0292	<0.00020	<0.00020
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L	<0.50	1.16	2.33	1.34	<0.50	<0.50
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L	0.00090	0.00051	<0.00030	0.00047	<0.00030	<0.00030
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010



Analytical Results

Sub-Matrix: Water					Client sample ID	Shea Creek	Gosdell Creek	Crystal Creek	Morice River	Field Blank
(Matrix: Water)										
Client sampling date / time					25-Sep-2023 11:50	25-Sep-2023 13:00	25-Sep-2023 13:30	25-Sep-2023 14:00	25-Sep-2023 11:50	
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C3077-001	VA23C3077-002	VA23C3077-003	VA23C3077-004	VA23C3077-005	
					Result	Result	Result	Result	Result	
Total Metals										
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L	<0.000010	<0.000010	0.000042	0.000030	<0.000010	
Vanadium, total	7440-62-2	E420/VA	0.000050	mg/L	<0.000050	<0.000050	0.000052	<0.000050	<0.000050	
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L	0.0046	0.0060	0.0060	0.0095	0.0013	RRV
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L	0.00011	0.00013	0.00018	<0.00010	<0.00010	
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L	0.0266	0.0194	0.00484	0.0139	<0.00010	
Beryllium, dissolved	7440-41-7	E421/VA	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L	7.69	13.0	12.9	6.45	<0.050	
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L	0.00025	0.00032	0.00051	0.00050	0.00034	RRV
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L	0.036	0.065	<0.010	<0.010	<0.010	
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L	1.15	1.54	1.02	0.509	<0.0050	
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L	0.00971	0.0153	0.00052	0.00055	<0.00010	
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L	0.000050	0.000242	0.00152	0.000440	<0.000050	
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L	0.170	0.224	0.262	0.281	<0.050	
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L	0.00021	0.00020	0.00035	0.00031	<0.00020	
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L	2.95	4.53	3.08	1.13	<0.050	



Analytical Results

Sub-Matrix: Water					Client sample ID	Shea Creek	Gosdell Creek	Crystal Creek	Morice River	Field Blank
(Matrix: Water)										
					Client sampling date / time	25-Sep-2023 11:50	25-Sep-2023 13:00	25-Sep-2023 13:30	25-Sep-2023 14:00	25-Sep-2023 11:50
Analyte	CAS Number	Method/Lab	LOR	Unit	VA23C3077-001	VA23C3077-002	VA23C3077-003	VA23C3077-004	VA23C3077-005	
					Result	Result	Result	Result	Result	
Dissolved Metals										
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L	1.45	2.04	1.87	0.617	0.260 ^{RRV}	
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L	0.0328	0.0457	0.0366	0.0282	<0.00020	
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L	<0.50	1.17	2.11	1.27	<0.50	
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L	<0.000010	<0.000010	0.000043	0.000029	<0.000010	
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
Zirconium, dissolved	7440-67-7	E421/VA	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
Dissolved metals filtration location	----	EP421/VA	-	-	Field	Field	Field	Field	Field	

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

Work Order	: VA23C3077	Page	: 1 of 15
Client	: Northwest Research and Monitoring Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Laura Guillon	Account Manager	: Sneha Sansare
Address	: PO Box 4357 Smithers BC Canada V0J 2N0	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: MWMT 2023	Date Samples Received	: 27-Sep-2023 13:00
PO	: ----	Issue Date	: 11-Oct-2023 15:33
C-O-C number	: 20-1068888		
Sampler	: ----		
Site	: ----		
Quote number	: Q72918		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Crystal Creek	E298	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	11-Oct-2023	28 days	15 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Gosdell Creek	E298	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	11-Oct-2023	28 days	15 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Morice River	E298	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	11-Oct-2023	28 days	15 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	11-Oct-2023	28 days	16 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Shea Creek	E298	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	11-Oct-2023	28 days	16 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Crystal Creek	E235.NO3-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Field Blank	E235.NO3-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Gosdell Creek	E235.NO3-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Morice River	E235.NO3-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Shea Creek	E235.NO3-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Crystal Creek	E235.NO2-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Gosdell Creek	E235.NO2-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Morice River	E235.NO2-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Shea Creek	E235.NO2-L	25-Sep-2023	28-Sep-2023	3 days	3 days	✓	28-Sep-2023	3 days	3 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Crystal Creek	E368	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Field Blank	E368	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Gosdell Creek	E368	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Morice River	E368	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Shea Creek	E368	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Crystal Creek	E366	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Field Blank	E366	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Gosdell Creek	E366	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Morice River	E366	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Shea Creek	E366	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Crystal Creek	E372-U	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	06-Oct-2023	28 days	11 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Field Blank	E372-U	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	06-Oct-2023	28 days	11 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Gosdell Creek	E372-U	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	06-Oct-2023	28 days	11 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Morice River	E372-U	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	06-Oct-2023	28 days	11 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) Shea Creek	E372-U	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	06-Oct-2023	28 days	11 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Crystal Creek	E421	25-Sep-2023	03-Oct-2023	180 days	8 days	✓	05-Oct-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Field Blank	E421	25-Sep-2023	03-Oct-2023	180 days	8 days	✓	05-Oct-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Gosdell Creek	E421	25-Sep-2023	03-Oct-2023	180 days	8 days	✓	05-Oct-2023	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Morice River	E421	25-Sep-2023	03-Oct-2023	180 days	8 days	✓	05-Oct-2023	180 days	10 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Shea Creek	E421	25-Sep-2023	03-Oct-2023	180 days	8 days	✓	05-Oct-2023	180 days	10 days	✓
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - dissolved (lab preserved) Crystal Creek	EF001	25-Sep-2023	----	----	----		29-Sep-2023	----	4 days	
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - dissolved (lab preserved) Gosdell Creek	EF001	25-Sep-2023	----	----	----		29-Sep-2023	----	4 days	
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - dissolved (lab preserved) Morice River	EF001	25-Sep-2023	----	----	----		29-Sep-2023	----	4 days	
Field Tests : Field pH,EC,Salinity,Cl2,CIO2,ORP,DO, Turbidity,T,T-P,o-PO4,NH3,Chloramine										
HDPE - dissolved (lab preserved) Shea Creek	EF001	25-Sep-2023	----	----	----		29-Sep-2023	----	4 days	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Crystal Creek	E358-L	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Field Blank	E358-L	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Gosdell Creek	E358-L	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Morice River	E358-L	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Shea Creek	E358-L	25-Sep-2023	05-Oct-2023	28 days	10 days	✓	05-Oct-2023	28 days	10 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Crystal Creek	E290	25-Sep-2023	28-Sep-2023	14 days	3 days	✓	29-Sep-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	25-Sep-2023	28-Sep-2023	14 days	3 days	✓	29-Sep-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Gosdell Creek	E290	25-Sep-2023	28-Sep-2023	14 days	3 days	✓	29-Sep-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Morice River	E290	25-Sep-2023	28-Sep-2023	14 days	3 days	✓	29-Sep-2023	14 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Shea Creek	E290	25-Sep-2023	28-Sep-2023	14 days	3 days	✓	29-Sep-2023	14 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Crystal Creek	E162	25-Sep-2023	----	----	----		29-Sep-2023	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	25-Sep-2023	----	----	----		29-Sep-2023	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Gosdell Creek	E162	25-Sep-2023	----	----	----		29-Sep-2023	7 days	4 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Physical Tests : TDS by Gravimetry										
HDPE Morice River	E162	25-Sep-2023	----	----	----		29-Sep-2023	7 days	4 days	✓
Physical Tests : TDS by Gravimetry										
HDPE Shea Creek	E162	25-Sep-2023	----	----	----		29-Sep-2023	7 days	4 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Crystal Creek	E160	25-Sep-2023	----	----	----		30-Sep-2023	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160	25-Sep-2023	----	----	----		30-Sep-2023	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Gosdell Creek	E160	25-Sep-2023	----	----	----		30-Sep-2023	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Morice River	E160	25-Sep-2023	----	----	----		30-Sep-2023	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Shea Creek	E160	25-Sep-2023	----	----	----		30-Sep-2023	7 days	5 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Crystal Creek	E121	25-Sep-2023	----	----	----		28-Sep-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Field Blank	E121	25-Sep-2023	----	----	----		28-Sep-2023	3 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group 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	
Physical Tests : Turbidity by Nephelometry										
HDPE Gosdell Creek	E121	25-Sep-2023	----	----	----		28-Sep-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Morice River	E121	25-Sep-2023	----	----	----		28-Sep-2023	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Shea Creek	E121	25-Sep-2023	----	----	----		28-Sep-2023	3 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Crystal Creek	E420	25-Sep-2023	01-Oct-2023	180 days	6 days	✓	04-Oct-2023	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Field Blank	E420	25-Sep-2023	01-Oct-2023	180 days	6 days	✓	04-Oct-2023	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Gosdell Creek	E420	25-Sep-2023	01-Oct-2023	180 days	6 days	✓	04-Oct-2023	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Morice River	E420	25-Sep-2023	01-Oct-2023	180 days	6 days	✓	04-Oct-2023	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Shea Creek	E420	25-Sep-2023	01-Oct-2023	180 days	6 days	✓	04-Oct-2023	180 days	9 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 (%)		
Analytical Methods			QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1159585	1	11	9.0	5.0	✔
Ammonia by Fluorescence	E298	1169365	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1160852	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1169366	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1159588	1	13	7.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1159589	1	13	7.6	5.0	✔
TDS by Gravimetry	E162	1162253	1	19	5.2	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	1169369	1	5	20.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1159663	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1169368	1	5	20.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1169364	1	18	5.5	5.0	✔
TSS by Gravimetry	E160	1162257	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	1159141	2	23	8.7	5.0	✔
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1159585	1	11	9.0	5.0	✔
Ammonia by Fluorescence	E298	1169365	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1160852	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1169366	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1159588	1	13	7.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1159589	1	13	7.6	5.0	✔
TDS by Gravimetry	E162	1162253	1	19	5.2	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	1169369	1	5	20.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1159663	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1169368	1	5	20.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1169364	1	18	5.5	5.0	✔
TSS by Gravimetry	E160	1162257	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	1159141	2	23	8.7	5.0	✔
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1159585	1	11	9.0	5.0	✔
Ammonia by Fluorescence	E298	1169365	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1160852	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1169366	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1159588	1	13	7.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1159589	1	13	7.6	5.0	✔
TDS by Gravimetry	E162	1162253	1	19	5.2	5.0	✔



Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Total Dissolved Nitrogen by Colourimetry	E368	1169369	1	5	20.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1159663	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1169368	1	5	20.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1169364	1	18	5.5	5.0	✔
TSS by Gravimetry	E160	1162257	1	19	5.2	5.0	✔
Turbidity by Nephelometry	E121	1159141	2	23	8.7	5.0	✔
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1169365	1	18	5.5	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	1160852	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1169366	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1159588	1	13	7.6	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1159589	1	13	7.6	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	1169369	1	5	20.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1159663	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	1169368	1	5	20.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1169364	1	18	5.5	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
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
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.
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.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO ₂ . NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
Total Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	Chinchilla Scientific Nitrate Method, 2011	Following digestion, total nitrogen is determined colourimetrically using a discrete analyzer utilizing the vanadium chloride reduction method. This method of analysis is approved under US EPA 40 CFR Part 136 (May 2021).



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Dissolved Nitrogen by Colourimetry	E368 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Total Dissolved Nitrogen is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
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 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.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Vancouver	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
Total Kjeldahl Nitrogen (Calculation)	EC318 ALS Environmental - Vancouver	Water	BC MOE LABORATORY MANUAL (2005)	Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)].
Field pH,EC,Salinity,Cl ₂ ,ClO ₂ ,ORP,DO, Turbidity,T,T-P,o-PO ₄ ,NH ₃ ,Chloramine	EF001 ALS Environmental - Vancouver	Water	Field Measurement (Client Supplied)	Field pH,EC,Salinity,Cl ₂ ,ClO ₂ ,ORP,DO, Turbidity,T,T-P,o-PO ₄ ,NH ₃ or Chloramine measurements provided by client and recorded on ALS report may affect the validity of results.

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

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Work Order : VA23C3077
Client : Northwest Research and Monitoring Ltd.
Project : MWMT 2023



Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Total Dissolved Nitrogen in water	EP368 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples are filtration through a 0.45 micron filter and then heated with a persulfate digestion reagent.
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 HNO3.

QUALITY CONTROL REPORT

Work Order	: VA23C3077	Page	: 1 of 17
Client	: Northwest Research and Monitoring Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Laura Guillon	Account Manager	: Sneha Sansare
Address	: PO Box 4357 Smithers BC Canada V0J 2N0	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: MWMt 2023	Date Samples Received	: 27-Sep-2023 13:00
PO	: ----	Date Analysis Commenced	: 28-Sep-2023
C-O-C number	: 20-1068888	Issue Date	: 11-Oct-2023 15:34
Sampler	: ----		
Site	: ----		
Quote number	: Q72918		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Cecilia Zhang	Account Manager Assistant	Vancouver Administration, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Robert Nguyen	Analyst	Vancouver Metals, Burnaby, British Columbia



General Comments

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

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1159141)											
FJ2302543-001	Anonymous	Turbidity	----	E121	0.10	NTU	1.22	1.21	0.01	Diff <2x LOR	----
Physical Tests (QC Lot: 1159142)											
VA23C3077-003	Crystal Creek	Turbidity	----	E121	0.10	NTU	0.25	0.27	0.02	Diff <2x LOR	----
Physical Tests (QC Lot: 1159585)											
VA23C2871-003	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	68.0	67.9	0.147%	20%	----
Physical Tests (QC Lot: 1162253)											
VA23C3002-012	Anonymous	Solids, total dissolved [TDS]	----	E162	13	mg/L	95	94	1	Diff <2x LOR	----
Physical Tests (QC Lot: 1162257)											
VA23C3002-012	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	74.6	88.2	16.7%	20%	----
Anions and Nutrients (QC Lot: 1159588)											
VA23C2871-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1159589)											
VA23C2871-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1169364)											
VA23C3028-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0997	0.0992	0.462%	20%	----
Anions and Nutrients (QC Lot: 1169365)											
VA23C3028-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1169368)											
VA23C3077-001	Shea Creek	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.079	0.054	0.025	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1169369)											
VA23C3077-001	Shea Creek	Nitrogen, total dissolved	----	E368	0.030	mg/L	0.056	0.057	0.001	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1169366)											
VA23C3028-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.84	1.89	0.05	Diff <2x LOR	----
Total Metals (QC Lot: 1159663)											
VA23C3035-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0150	mg/L	0.496	0.502	1.23%	20%	----
		Antimony, total	7440-36-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00050	mg/L	0.0311	0.0316	1.63%	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	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 1159663) - continued											
VA23C3035-001	Anonymous	Boron, total	7440-42-8	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.00113	mg/L	<0.00113	<0.00113	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.250	mg/L	42.1	41.0	2.66%	20%	----
		Cesium, total	7440-46-2	E420	0.000050	mg/L	0.000078	0.000082	0.000004	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	0.00058	0.00008	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00250	mg/L	0.00871	0.00909	0.00038	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.050	mg/L	0.541	0.554	2.24%	20%	----
		Lead, total	7439-92-1	E420	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0250	mg/L	23.0	23.5	2.35%	20%	----
		Manganese, total	7439-96-5	E420	0.00050	mg/L	0.0492	0.0498	1.11%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000250	mg/L	5.34	5.50	3.10%	20%	----
		Nickel, total	7440-02-0	E420	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.250	mg/L	6.63	6.67	0.482%	20%	----
		Rubidium, total	7440-17-7	E420	0.00100	mg/L	0.00232	0.00222	0.00010	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.50	mg/L	2.75	2.74	0.01	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.250	mg/L	55.4	55.2	0.340%	20%	----
		Strontium, total	7440-24-6	E420	0.00100	mg/L	1.08	1.12	3.76%	20%	----
		Sulfur, total	7704-34-9	E420	2.50	mg/L	72.4	73.0	0.815%	20%	----
		Tellurium, total	13494-80-9	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.0255	mg/L	<0.0255	<0.0255	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000050	mg/L	0.00272	0.00282	3.46%	20%	----
		Vanadium, total	7440-62-2	E420	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0150	mg/L	<0.0150	<0.0150	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1160852)											



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 1160852) - continued											
VA23C2992-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	43.9 µg/L	0.0424	3.44%	20%	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.34 µg/L	0.00035	0.00001	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	14.5 µg/L	0.0144	0.864%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<10 µg/L	<0.010	0	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0075 µg/L	0.0000104	0.0000029	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	15500 µg/L	15.7	1.44%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.73 µg/L	0.00072	0.000009	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	31 µg/L	0.031	0.0003	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	1.0 µg/L	0.0010	0.000002	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	3860 µg/L	3.89	0.657%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	3.80 µg/L	0.00385	1.29%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.805 µg/L	0.000802	0.303%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<50 µg/L	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.050	mg/L	946 µg/L	0.935	1.14%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	1.28 µg/L	0.00122	0.00006	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.097 µg/L	0.000094	0.000002	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	2330 µg/L	2.29	2.08%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	2830 µg/L	2.86	1.08%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	90.8 µg/L	0.0893	1.65%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	3930 µg/L	4.11	0.19	Diff <2x LOR	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.62 µg/L	0.00061	0.000004	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Dissolved Metals (QC Lot: 1160852) - continued											
VA23C2992-001	Anonymous	Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.251 µg/L	0.000250	0.389%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	1.2 µg/L	0.0013	0.00010	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----



Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1159141)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1159142)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1159585)						
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1162253)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Physical Tests (QCLot: 1162257)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 1159588)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1159589)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1169364)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1169365)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1169368)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1169369)						
Nitrogen, total dissolved	----	E368	0.03	mg/L	<0.030	----
Organic / Inorganic Carbon (QCLot: 1169366)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1159663)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1159663) - continued						
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 1160852)						
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1160852) - continued						
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
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	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1160852) - continued						
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----



Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1159141)									
Turbidity	----	E121	0.1	NTU	200 NTU	98.8	85.0	115	----
Physical Tests (QCLot: 1159142)									
Turbidity	----	E121	0.1	NTU	200 NTU	98.6	85.0	115	----
Physical Tests (QCLot: 1159585)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	107	85.0	115	----
Physical Tests (QCLot: 1162253)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	104	85.0	115	----
Physical Tests (QCLot: 1162257)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	104	85.0	115	----
Anions and Nutrients (QCLot: 1159588)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1159589)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.7	90.0	110	----
Anions and Nutrients (QCLot: 1169364)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	98.1	80.0	120	----
Anions and Nutrients (QCLot: 1169365)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 1169368)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	94.5	75.0	125	----
Anions and Nutrients (QCLot: 1169369)									
Nitrogen, total dissolved	----	E368	0.03	mg/L	0.5 mg/L	96.6	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1169366)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	96.9	80.0	120	----
Total Metals (QCLot: 1159663)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1159663) - continued									
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.5	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.1	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	106	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	102	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	98.2	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.3	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	115	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	109	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.0	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	114	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.6	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.2	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.3	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	94.7	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.4	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Dissolved Metals (QCLot: 1160852)									



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1160852) - continued									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	98.4	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	106	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.0	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.2	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.6	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.6	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	120	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	99.2	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.0	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	107	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.3	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	102	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	103	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	100	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.3	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	99.1	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	103	80.0	120	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1160852) - continued									
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.8	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----



Matrix Spike (MS) Report

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

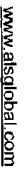
Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1159588)										
VA23C2871-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	124 mg/L	125 mg/L	99.3	75.0	125	----
Anions and Nutrients (QCLot: 1159589)										
VA23C2871-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	24.0 mg/L	25 mg/L	96.1	75.0	125	----
Anions and Nutrients (QCLot: 1169364)										
VA23C3028-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0490 mg/L	0.05 mg/L	98.1	70.0	130	----
Anions and Nutrients (QCLot: 1169365)										
VA23C3028-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0982 mg/L	0.1 mg/L	98.2	75.0	125	----
Anions and Nutrients (QCLot: 1169368)										
VA23C3077-002	Gosdell Creek	Nitrogen, total	7727-37-9	E366	0.397 mg/L	0.4 mg/L	99.3	70.0	130	----
Anions and Nutrients (QCLot: 1169369)										
VA23C3077-002	Gosdell Creek	Nitrogen, total dissolved	----	E368	0.390 mg/L	0.4 mg/L	97.6	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1169366)										
VA23C3028-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.16 mg/L	5 mg/L	103	70.0	130	----
Total Metals (QCLot: 1159663)										
VA23C3035-002	Anonymous	Aluminum, total	7429-90-5	E420	0.193 mg/L	0.2 mg/L	96.7	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00944 mg/L	0.01 mg/L	94.4	70.0	130	----
		Boron, total	7440-42-8	E420	0.100 mg/L	0.1 mg/L	99.7	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0103 mg/L	0.01 mg/L	103	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		Copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		Iron, total	7439-89-6	E420	1.90 mg/L	2 mg/L	95.1	70.0	130	----
		Lead, total	7439-92-1	E420	0.0187 mg/L	0.02 mg/L	93.4	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1159663) - continued										
VA23C3035-002	Anonymous	Lithium, total	7439-93-2	E420	0.0937 mg/L	0.1 mg/L	93.7	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0193 mg/L	0.02 mg/L	96.4	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	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.7 mg/L	10 mg/L	107	70.0	130	----
		Potassium, total	7440-09-7	E420	3.75 mg/L	4 mg/L	93.7	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0194 mg/L	0.02 mg/L	96.8	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	9.25 mg/L	10 mg/L	92.5	70.0	130	----
		Silver, total	7440-22-4	E420	0.00397 mg/L	0.004 mg/L	99.3	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	19.4 mg/L	20 mg/L	97.1	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00381 mg/L	0.004 mg/L	95.2	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		Tin, total	7440-31-5	E420	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00403 mg/L	0.004 mg/L	101	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		Zinc, total	7440-66-6	E420	0.373 mg/L	0.4 mg/L	93.3	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 1160852)										
VA23C2992-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.184 mg/L	0.2 mg/L	91.9	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0196 mg/L	0.02 mg/L	97.9	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00948 mg/L	0.01 mg/L	94.8	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.093 mg/L	0.1 mg/L	92.6	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00382 mg/L	0.004 mg/L	95.6	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	0.00982 mg/L	0.01 mg/L	98.2	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1160852) - continued										
VA23C2992-002	Anonymous	Chromium, dissolved	7440-47-3	E421	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.92 mg/L	2 mg/L	96.1	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0944 mg/L	0.1 mg/L	94.4	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	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	9.46 mg/L	10 mg/L	94.6	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.82 mg/L	4 mg/L	95.6	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0187 mg/L	0.02 mg/L	93.7	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.73 mg/L	10 mg/L	97.3	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00378 mg/L	0.004 mg/L	94.4	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	18.9 mg/L	20 mg/L	94.5	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0376 mg/L	0.04 mg/L	93.9	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0178 mg/L	0.02 mg/L	88.9	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0984 mg/L	0.1 mg/L	98.4	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.385 mg/L	0.4 mg/L	96.3	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0380 mg/L	0.04 mg/L	95.1	70.0	130	----



CQC Number: **20-1068888**

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AFFIX ALS BARCODE LABEL HERE
(ALS use only)

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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

Field Crew

Date

DN CS

Sept 25 / 23

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Water Quality Sampling Field Card

Site	Time	EMS ID	Water Stage	Water Colour	Ice Cover (cm)
Shea Creek	11:50	E272563	L (M) H	Clear	NA
Sp. Cond. (uS/cm)	62.5	DO (mg/L)	12.4	Duplicate	Y (N)
Cond (mmHg)	—	pH	7.84	Field Blank	Y (N)
DO (%)	104	Water Temp (°C)	8.6	# Sample Bottles	10 total
Notes: Stream bed blanketed. leaves in stream slow flow. KPa 91.1. 12:15 - took out temp logger temp logger.					

SN 21764085 - 2 month check. 12:26 data download

Water Quality Sampling Field Card

Site	Time	EMS ID	Water Stage	Water Colour	Ice Cover (cm)
Gosnell	1:00	E272551	L (M) H	Clear	NA
Sp. Cond. (uS/cm)	102.6	DO (mg/L)	13.6	Duplicate	Y (N)
Cond (mmHg)	—	pH	7.91	Field Blank	Y (N)
DO (%)	112	Water Temp (°C)	8.2	# Sample Bottles	5

Notes: ~~clear~~ Stream bed blanketed w sediment + Algae.
slow flow. KPa 91.6. 12:42pm took out temp logger SN: 2174087
extract data @ 12:49 start time for gosnell 1pm

Water Quality Sampling Field Card

Site	Time	EMS ID	Water Stage	Water Colour	Ice Cover (cm)
Crystal	1:30	E272554	L (M) H	Clear	NA
Sp. Cond. (uS/cm)	963	DO (mg/L)	17.0	Duplicate	Y (N)
Cond (mmHg)	—	pH	8.01	Field Blank	Y (N)
DO (%)	143	Water Temp (°C)	7.8	# Sample Bottles	5

Notes: Raining; water withdrawal downstream of site
temp logger taken out 117pm - SN: 2176488 - Delayed start 130

Field Crew
Date

DN CS
Sept 25/25

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Water Quality Sampling Field Card

Site	Time	EMS ID	Water Stage	Water Colour	Ice Cover (cm)
Monice River	2:00		O/H H	Clear	N/A
Sp. Cond. (uS/cm)	48.2	DO (mg/L)	18.4	Duplicate	Y (N)
Cond (mmHg)	—	pH	8.17	Field Blank	Y (N)
DO (%)	169	Water Temp (°C)	12.2	# Sample Bottles	5

Notes: low water lvl. Dead fish everywhere
Temp logger removed 4:49pm SN: 21764074 delay start 2pm

Water Quality Sampling Field Card

Site	Time	EMS ID	Water Stage	Water Colour	Ice Cover (cm)
			L / M / H		
Sp. Cond. (uS/cm)		DO (mg/L)		Duplicate	Y / N
Cond (mmHg)		pH		Field Blank	Y / N
DO (%)		Water Temp (°C)		# Sample Bottles	
Notes:					

Water Quality Sampling Field Card

Site	Time	EMS ID	Water Stage	Water Colour	Ice Cover (cm)
			L / M / H		
Sp. Cond. (uS/cm)		DO (mg/L)		Duplicate	Y / N
Cond (mmHg)		pH		Field Blank	Y / N
DO (%)		Water Temp (°C)		# Sample Bottles	
Notes:					