

CERTIFICATE OF ANALYSIS

Work Order : **VA20B2264**

Amendment : **1**

Client : **Northwest Research and Monitoring**

Contact : Laura Guillon

Address : PO Box 4357
Smithers BC Canada V0J 2N0

Telephone : ----

Project : MWM 2020 Sin 30

PO : ----

C-O-C number : 17-840079

Sampler : ----

Site : ----

Quote number : Q72918

No. of samples received : 6

No. of samples analysed : 6

Page : 1 of 8

Laboratory : Vancouver - Environmental

Account Manager : Rojina Ghavami

Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 10-Aug-2020 10:02

Date Analysis Commenced : 11-Aug-2020

Issue Date : 21-Aug-2020 09:27

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
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Mae Soropia	Laboratory Analyst	Metals, Burnaby, British Columbia
Michael Huang	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Yang Chu	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).

Unit	Description
-	No Unit
%	percent
°C	degrees Celsius
µS/cm	Microsiemens per centimetre
mg/L	milligrams per litre
mV	millivolts
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	Description
DTMF	Dissolved concentration exceeds total for field-filtered metals sample. Metallic contaminants may have been introduced to dissolved sample during field filtration.
RRV	Reported result verified by repeat analysis.



Analytical Results

Sub-Matrix: Water
 (Matrix: Water)

Client sample ID

					Gosnell Creek	Shea Creek	Crystal Creek	Shea Cr. Duplicate	Field Blank
Client sampling date / time					06-Aug-2020 14:00	06-Aug-2020 15:15	06-Aug-2020 15:55	06-Aug-2020 15:15	06-Aug-2020
Analyte	CAS Number	Method	LOR	Unit	VA20B2264-001	VA20B2264-002	VA20B2264-003	VA20B2264-004	VA20B2264-005
					Result	Result	Result	Result	Result
Field Tests									
conductivity, field	----	EF001	0.1	µS/cm	83.2	49.6	73.2	----	----
oxygen, dissolved, field	----	EF001	0.01	mg/L	9.93	8.81	10.6	----	----
pH, field	----	EF001	0.100	pH units	7.89	7.70	7.85	----	----
temperature, field	----	EF001	0.1	°C	13.5	15.1	10.4	----	----
oxygen, dissolved saturation %, field	----	EF001	0.1	%	93.6	86.6	94.9	----	----
Physical Tests									
alkalinity, total (as CaCO ₃)	----	E290	1.0	mg/L	36.7	25.8	31.0	25.8	<1.0
hardness (as CaCO ₃), dissolved	----	EC100	0.60	mg/L	38.4	23.0	32.9	23.6	<0.60
oxidation-reduction potential [ORP]	----	E125	0.10	mV	400	382	199	239	311
solids, total dissolved [TDS]	----	E162	10	mg/L	45	30	36	26	<10
solids, total suspended [TSS]	----	E160-H	3.0	mg/L	<3.0	<3.0	<3.0	<3.0	<3.0
turbidity	----	E121	0.10	NTU	0.30	0.29	0.36	0.26	<0.10
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0054	<0.0050	<0.0050	<0.0050	<0.0050
Kjeldahl nitrogen, total [TKN]	----	EC318	0.050	mg/L	<0.050	0.064	<0.050	0.073	<0.050
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	0.0051	<0.0050	0.0060	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
nitrogen, total	7727-37-9	E366	0.030	mg/L	0.050	0.070	<0.030	0.079	<0.030
nitrogen, total dissolved	----	E368	0.030	mg/L	0.113	0.099	0.062	0.117	<0.030
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0026	0.0022	0.0024	0.0026	<0.0020
Organic / Inorganic Carbon									
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.47	2.15	1.13	2.53	<0.50
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0271	0.0232	0.0413	0.0141	<0.0030
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00015	0.00017	0.00022	0.00018	<0.00010
barium, total	7440-39-3	E420	0.00010	mg/L	0.0173	0.0253	0.00426	0.0265	<0.00010
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010



Analytical Results

Sub-Matrix: Water

Client sample ID

(Matrix: Water)

					Gosnell Creek	Shea Creek	Crystal Creek	Shea Cr. Duplicate	Field Blank
Client sampling date / time					06-Aug-2020 14:00	06-Aug-2020 15:15	06-Aug-2020 15:55	06-Aug-2020 15:15	06-Aug-2020
Analyte	CAS Number	Method	LOR	Unit	VA20B2264-001	VA20B2264-002	VA20B2264-003	VA20B2264-004	VA20B2264-005
					Result	Result	Result	Result	Result
Total Metals									
cadmium, total	7440-43-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
calcium, total	7440-70-2	E420	0.050	mg/L	13.2	7.34	11.5	7.15	<0.050
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	0.106	0.098	0.038	0.091	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	1.39	1.09	0.874	1.11	<0.0050
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00804	0.00753	0.00204	0.00656	<0.00010
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000348	<0.000050	0.000958	<0.000050	<0.000050
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.050	mg/L	0.151	0.133	0.193	0.133	<0.050
rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0.00034	<0.00020	<0.00020
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L	3.13	2.90	2.66	2.96	0.11 ^{RRV}
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L	1.48	1.22	1.45	1.24	<0.050
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0445	0.0299	0.0327	0.0285	<0.00020
sulfur, total	7704-34-9	E420	0.50	mg/L	1.92	<0.50	2.14	<0.50	<0.50
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00059	0.00044	0.00112	<0.00030	<0.00030
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000015	<0.000010	0.000029	<0.000010	<0.000010
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00058	<0.00050	0.00065	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Gosnell Creek	Shea Creek	Crystal Creek	Shea Cr. Duplicate	Field Blank
Client sampling date / time						06-Aug-2020 14:00	06-Aug-2020 15:15	06-Aug-2020 15:55	06-Aug-2020 15:15	06-Aug-2020
Analyte	CAS Number	Method	LOR	Unit	VA20B2264-001	VA20B2264-002	VA20B2264-003	VA20B2264-004	VA20B2264-005	
					Result	Result	Result	Result	Result	
Total Metals										
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0087	0.0086	0.0106	0.0080	<0.0010	
antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00017	0.00014	0.00020	0.00013	<0.00010	<0.00010
barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0176	0.0262	0.00432	0.0260	<0.00010	<0.00010
beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, dissolved	7440-70-2	E421	0.050	mg/L	12.9	7.24	11.6	7.53	<0.050	<0.050
cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00048	0.00039	0.00044	0.00035	0.00032	RRV
iron, dissolved	7439-89-6	E421	0.010	mg/L	0.064	0.060	<0.010	0.058	<0.010	<0.010
lead, dissolved	7439-92-1	E421	0.000050	mg/L	0.000133	DTMF	<0.000050	<0.000050	<0.000050	<0.000050
lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	1.52	1.19	0.932	1.16	<0.0050	<0.0050
manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00635	0.00588	0.00093	0.00587	<0.00010	<0.00010
molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000373	0.000056	0.000996	0.000052	<0.000050	<0.000050
nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
potassium, dissolved	7440-09-7	E421	0.050	mg/L	0.154	0.138	0.199	0.135	<0.050	<0.050
rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	<0.00020	<0.00020	0.00028	<0.00020	<0.00020	<0.00020
selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0.000051	<0.000050	<0.000050	<0.000050
silicon, dissolved	7440-21-3	E421	0.050	mg/L	3.12	2.86	2.58	2.80	0.105	RRV
silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, dissolved	7440-23-5	E421	0.050	mg/L	1.78	1.29	1.51	1.27	<0.050	<0.050
strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0435	0.0307	0.0322	0.0296	<0.00020	<0.00020
sulfur, dissolved	7704-34-9	E421	0.50	mg/L	1.88	<0.50	2.06	<0.50	<0.50	<0.50



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Gosnell Creek	Shea Creek	Crystal Creek	Shea Cr. Duplicate	Field Blank
Client sampling date / time						06-Aug-2020 14:00	06-Aug-2020 15:15	06-Aug-2020 15:55	06-Aug-2020 15:15	06-Aug-2020
Analyte	CAS Number	Method	LOR	Unit	VA20B2264-001	VA20B2264-002	VA20B2264-003	VA20B2264-004	VA20B2264-005	
					Result	Result	Result	Result	Result	
Dissolved Metals										
tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000015	<0.000010	0.000030	<0.000010	<0.000010	<0.000010
vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0015	0.0015	<0.0010	0.0018	<0.0010	<0.0010
zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030
dissolved metals filtration location	----	EP421	-	-	Field	Field	Field	Field	Field	Field

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



Analytical Results

Sub-Matrix: Water					Client sample ID	Travel Blank	----	----	----	----
(Matrix: Water)										
					Client sampling date / time	06-Aug-2020	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B2264-006	-----	-----	-----	-----	
					Result	---	---	---	---	
Physical Tests										
alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	<1.0	----	----	----	----	
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	<0.60	----	----	----	----	
oxidation-reduction potential [ORP]	----	E125	0.10	mV	319	----	----	----	----	
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----	----	----	----	
solids, total suspended [TSS]	----	E160-H	3.0	mg/L	<3.0	----	----	----	----	
turbidity	----	E121	0.10	NTU	<0.10	----	----	----	----	
Anions and Nutrients										
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	----	----	----	----	
Kjeldahl nitrogen, total [TKN]	----	EC318	0.050	mg/L	<0.050	----	----	----	----	
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----	
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----	
nitrogen, total	7727-37-9	E366	0.030	mg/L	<0.030	----	----	----	----	
nitrogen, total dissolved	----	E368	0.030	mg/L	<0.030	----	----	----	----	
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----	
Organic / Inorganic Carbon										
carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	<0.50	----	----	----	----	
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----	
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	----	----	----	----	
beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	----	----	----	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	----	----	----	----	
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	----	----	----	----	
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	----	----	----	----	
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	----	----	----	----	
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	----	----	----	----	
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----	
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----	



Analytical Results

Sub-Matrix: Water					Client sample ID	Travel Blank	---	---	---	---
(Matrix: Water)										
					Client sampling date / time	06-Aug-2020	---	---	---	---
						VA20B2264-006	-----	-----	-----	-----
						Result	---	---	---	---
Total Metals										
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	---	---	---	---	---
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	---	---	---	---	---
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	---	---	---	---	---
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	---	---	---	---	---
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	---	---	---	---	---
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	---	---	---	---	---
rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	---	---	---	---	---
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	---	---	---	---	---
silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	---	---	---	---	---
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	---	---	---	---	---
sodium, total	7440-23-5	E420	0.050	mg/L	<0.050	---	---	---	---	---
strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	---	---	---	---	---
sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	---	---	---	---	---
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	---	---	---	---	---
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	---	---	---	---	---
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	---	---	---	---	---
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	---	---	---	---	---
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	---	---	---	---	---
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	---	---	---	---	---
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	---	---	---	---	---
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	---	---	---	---	---

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA20B2264	Page	: 1 of 18
Amendment	: 1		
Client	: Northwest Research and Monitoring	Laboratory	: Vancouver - Environmental
Contact	: Laura Guillon	Account Manager	: Rojina Ghavami
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 2020 Sin 30	Date Samples Received	: 10-Aug-2020 10:02
PO	: ----	Issue Date	: 21-Aug-2020 09:27
C-O-C number	: 17-840079		
Sampler	: ----		
Site	: ----		
Quote number	: Q72918		
No. of samples received	: 6		
No. of samples analysed	: 6		

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 Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

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

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Physical Tests	QC-70627-001	----	alkalinity, total (as CaCO3)	----	E290	2.3 mg/L ^B	1.5 mg/L	Blank result exceeds permitted value

Result Qualifiers

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

Laboratory Control Sample (LCS) Recoveries

Dissolved Metals	QC-MRG2-7197700 2	----	sodium, dissolved	7440-23-5	E421	125 % ^{MES}	80.0-120%	Recovery greater than upper control limit
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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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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	06-Aug-2020	----	----	----		14-Aug-2020	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Field Blank	E298	06-Aug-2020	----	----	----		14-Aug-2020	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Gosnell Creek	E298	06-Aug-2020	----	----	----		14-Aug-2020	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Shea Cr. Duplicate	E298	06-Aug-2020	----	----	----		14-Aug-2020	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Shea Creek	E298	06-Aug-2020	----	----	----		14-Aug-2020	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Travel Blank	E298	06-Aug-2020	----	----	----		14-Aug-2020	28 days	7 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Crystal Creek	E235.NO3-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	✖ EHTR



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 Field Blank	E235.NO3-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	<div>✖ EHTR</div>
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Gosnell Creek	E235.NO3-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	<div>✖ EHTR</div>
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Shea Cr. Duplicate	E235.NO3-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	<div>✖ EHTR</div>
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Shea Creek	E235.NO3-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	<div>✖ EHTR</div>
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	<div>✖ EHTR</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Crystal Creek	E235.NO2-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	<div>✖ EHTR</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	<div>✖ EHTR</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Gosnell Creek	E235.NO2-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	<div>✖ EHTR</div>
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Shea Cr. Duplicate	E235.NO2-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	<div>✖ EHTR</div>



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	
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Shea Creek	E235.NO2-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	✖ EHTR
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO2-L	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	✖ EHTR
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Crystal Creek	E368	06-Aug-2020	12-Aug-2020	28 days	6 days	✓	14-Aug-2020	21 days	1 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Field Blank	E368	06-Aug-2020	12-Aug-2020	28 days	6 days	✓	14-Aug-2020	21 days	1 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Gosnell Creek	E368	06-Aug-2020	12-Aug-2020	28 days	6 days	✓	14-Aug-2020	21 days	1 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Shea Cr. Duplicate	E368	06-Aug-2020	12-Aug-2020	28 days	6 days	✓	14-Aug-2020	21 days	1 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Shea Creek	E368	06-Aug-2020	12-Aug-2020	28 days	6 days	✓	14-Aug-2020	21 days	1 days	✓
Anions and Nutrients : Total Dissolved Nitrogen by Colourimetry										
Amber glass dissolved (sulfuric acid) Travel Blank	E368	06-Aug-2020	12-Aug-2020	28 days	6 days	✓	14-Aug-2020	21 days	1 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Crystal Creek	E366	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	13-Aug-2020	22 days	1 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 Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Field Blank	E366	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	13-Aug-2020	22 days	1 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Gosnell Creek	E366	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	13-Aug-2020	22 days	1 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Shea Cr. Duplicate	E366	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	13-Aug-2020	22 days	1 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Shea Creek	E366	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	13-Aug-2020	22 days	1 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid) Travel Blank	E366	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	13-Aug-2020	22 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Crystal Creek	E372-U	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	12-Aug-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Field Blank	E372-U	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	12-Aug-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Gosnell Creek	E372-U	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	12-Aug-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Shea Cr. Duplicate	E372-U	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	12-Aug-2020	22 days	0 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 (Ultra Trace)										
Amber glass total (sulfuric acid) Shea Creek	E372-U	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	12-Aug-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Travel Blank	E372-U	06-Aug-2020	12-Aug-2020	28 days	5 days	✓	12-Aug-2020	22 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Crystal Creek	E421	06-Aug-2020	14-Aug-2020	180 days	7 days	✓	14-Aug-2020	172 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Field Blank	E421	06-Aug-2020	14-Aug-2020	180 days	7 days	✓	14-Aug-2020	172 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Gosnell Creek	E421	06-Aug-2020	14-Aug-2020	180 days	7 days	✓	14-Aug-2020	172 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Shea Cr. Duplicate	E421	06-Aug-2020	14-Aug-2020	180 days	7 days	✓	14-Aug-2020	172 days	0 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Shea Creek	E421	06-Aug-2020	14-Aug-2020	180 days	7 days	✓	14-Aug-2020	172 days	0 days	✓
Field Tests : Field pH, EC, Salinity, Cl2, ORP, DO, Turbidity or T										
HDPE Crystal Creek	EF001	06-Aug-2020	----	----	----		12-Aug-2020	----	----	
Field Tests : Field pH, EC, Salinity, Cl2, ORP, DO, Turbidity or T										
HDPE Gosnell Creek	EF001	06-Aug-2020	----	----	----		12-Aug-2020	----	----	



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	
Field Tests : Field pH, EC, Salinity, Cl2, ORP, DO, Turbidity or T										
HDPE Shea Creek	EF001	06-Aug-2020	----	----	----		12-Aug-2020	----	----	
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Crystal Creek	E358-L	06-Aug-2020	----	----	----		12-Aug-2020	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Field Blank	E358-L	06-Aug-2020	----	----	----		12-Aug-2020	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Gosnell Creek	E358-L	06-Aug-2020	----	----	----		12-Aug-2020	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Shea Cr. Duplicate	E358-L	06-Aug-2020	----	----	----		12-Aug-2020	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Shea Creek	E358-L	06-Aug-2020	----	----	----		12-Aug-2020	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) Travel Blank	E358-L	06-Aug-2020	----	----	----		12-Aug-2020	28 days	6 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Crystal Creek	E290	06-Aug-2020	----	----	----		11-Aug-2020	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Field Blank	E290	06-Aug-2020	----	----	----		11-Aug-2020	14 days	5 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 : Alkalinity Species by Titration										
HDPE Gosnell Creek	E290	06-Aug-2020	----	----	----		11-Aug-2020	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Shea Cr. Duplicate	E290	06-Aug-2020	----	----	----		11-Aug-2020	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Shea Creek	E290	06-Aug-2020	----	----	----		11-Aug-2020	14 days	5 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE Travel Blank	E290	06-Aug-2020	----	----	----		11-Aug-2020	14 days	5 days	✓
Physical Tests : ORP by Electrode										
HDPE Crystal Creek	E125	06-Aug-2020	----	----	----		13-Aug-2020	0.34 hrs	164 hrs	✖ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE Shea Cr. Duplicate	E125	06-Aug-2020	----	----	----		13-Aug-2020	0.34 hrs	165 hrs	✖ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE Shea Creek	E125	06-Aug-2020	----	----	----		13-Aug-2020	0.34 hrs	165 hrs	✖ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE Field Blank	E125	06-Aug-2020	----	----	----		13-Aug-2020	0.34 hrs	166 hrs	✖ EHTR-FM
Physical Tests : ORP by Electrode										
HDPE Gosnell Creek	E125	06-Aug-2020	----	----	----		13-Aug-2020	0.34 hrs	166 hrs	✖ EHTR-FM



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 : ORP by Electrode										
HDPE Travel Blank	E125	06-Aug-2020	----	----	----		13-Aug-2020	0.34 hrs	166 hrs	<div>✖</div> EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE Crystal Creek	E162	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	<div>✔</div>
Physical Tests : TDS by Gravimetry										
HDPE Field Blank	E162	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	<div>✔</div>
Physical Tests : TDS by Gravimetry										
HDPE Gosnell Creek	E162	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	<div>✔</div>
Physical Tests : TDS by Gravimetry										
HDPE Shea Cr. Duplicate	E162	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	<div>✔</div>
Physical Tests : TDS by Gravimetry										
HDPE Shea Creek	E162	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	<div>✔</div>
Physical Tests : TDS by Gravimetry										
HDPE Travel Blank	E162	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	<div>✔</div>
Physical Tests : TSS by Gravimetry										
HDPE Crystal Creek	E160-H	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	<div>✔</div>
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160-H	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	<div>✔</div>



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 : TSS by Gravimetry										
HDPE Gosnell Creek	E160-H	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Shea Cr. Duplicate	E160-H	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Shea Creek	E160-H	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Travel Blank	E160-H	06-Aug-2020	----	----	----		13-Aug-2020	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Crystal Creek	E121	06-Aug-2020	----	----	----		11-Aug-2020	3 days	4 days	✖ EHTR
Physical Tests : Turbidity by Nephelometry										
HDPE Shea Cr. Duplicate	E121	06-Aug-2020	----	----	----		11-Aug-2020	3 days	4 days	✖ EHTR
Physical Tests : Turbidity by Nephelometry										
HDPE Shea Creek	E121	06-Aug-2020	----	----	----		11-Aug-2020	3 days	4 days	✖ EHTR
Physical Tests : Turbidity by Nephelometry										
HDPE Field Blank	E121	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	✖ EHTR
Physical Tests : Turbidity by Nephelometry										
HDPE Gosnell Creek	E121	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	✖ EHTR



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 Travel Blank	E121	06-Aug-2020	----	----	----		11-Aug-2020	3 days	5 days	✖ EHTR
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Crystal Creek	E420	06-Aug-2020	----	----	----		13-Aug-2020	180 days	7 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Field Blank	E420	06-Aug-2020	----	----	----		13-Aug-2020	180 days	7 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Gosnell Creek	E420	06-Aug-2020	----	----	----		13-Aug-2020	180 days	7 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Shea Cr. Duplicate	E420	06-Aug-2020	----	----	----		13-Aug-2020	180 days	7 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Shea Creek	E420	06-Aug-2020	----	----	----		13-Aug-2020	180 days	7 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Travel Blank	E420	06-Aug-2020	----	----	----		13-Aug-2020	180 days	7 days	✔

Legend & Qualifier Definitions

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

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	70627	1	6	16.6	5.0	✔
Ammonia by Fluorescence	E298	70814	1	13	7.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	71977	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	71213	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	70626	1	9	11.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	70625	1	9	11.1	5.0	✔
ORP by Electrode	E125	71601	1	10	10.0	5.0	✔
TDS by Gravimetry	E162	71567	1	20	5.0	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	71215	1	6	16.6	5.0	✔
Total Metals in Water by CRC ICPMS	E420	71427	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	70812	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	70813	1	12	8.3	5.0	✔
TSS by Gravimetry	E160-H	71565	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	70574	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	70627	1	6	16.6	5.0	✔
Ammonia by Fluorescence	E298	70814	1	13	7.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	71977	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	71213	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	70626	1	9	11.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	70625	1	9	11.1	5.0	✔
ORP by Electrode	E125	71601	1	10	10.0	5.0	✔
TDS by Gravimetry	E162	71567	1	20	5.0	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	71215	1	6	16.6	5.0	✔
Total Metals in Water by CRC ICPMS	E420	71427	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	70812	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	70813	1	12	8.3	5.0	✔
TSS by Gravimetry	E160-H	71565	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	70574	1	20	5.0	5.0	✔
Method Blanks (MB)							
Alkalinity Species by Titration	E290	70627	1	6	16.6	5.0	✔
Ammonia by Fluorescence	E298	70814	1	13	7.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	71977	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	71213	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	70626	1	9	11.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	70625	1	9	11.1	5.0	✔
TDS by Gravimetry	E162	71567	1	20	5.0	5.0	✔



Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Method Blanks (MB) - Continued							
Total Dissolved Nitrogen by Colourimetry	E368	71215	1	6	16.6	5.0	✔
Total Metals in Water by CRC ICPMS	E420	71427	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	70812	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	70813	1	12	8.3	5.0	✔
TSS by Gravimetry	E160-H	71565	1	20	5.0	5.0	✔
Turbidity by Nephelometry	E121	70574	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	70814	1	13	7.6	5.0	✔
Dissolved Metals in Water by CRC ICPMS	E421	71977	1	20	5.0	5.0	✔
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	71213	1	18	5.5	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	70626	1	9	11.1	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	70625	1	9	11.1	5.0	✔
Total Dissolved Nitrogen by Colourimetry	E368	71215	1	6	16.6	5.0	✔
Total Metals in Water by CRC ICPMS	E420	71427	1	20	5.0	5.0	✔
Total Nitrogen by Colourimetry	E366	70812	1	15	6.6	5.0	✔
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	70813	1	12	8.3	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 Vancouver - Environmental	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
ORP by Electrode	E125 Vancouver - Environmental	Water	ASTM D1498 (mod)	Oxidation reduction potential is reported as the oxidation-reduction potential of the platinum metal-reference electrode employed, measured in mV. For high accuracy test results, it is recommended that this analysis be conducted in the field.
TSS by Gravimetry	E160-H Vancouver - Environmental	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 Vancouver - Environmental	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 Vancouver - Environmental	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 Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 Vancouver - Environmental	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 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Dissolved Organic Carbon by Combustion (Low Level)	E358-L Vancouver - Environmental	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).



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Nitrogen by Colourimetry	E366 Vancouver - Environmental	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Dissolved Nitrogen by Colourimetry	E368 Vancouver - Environmental	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 (Ultra Trace)	E372-U Vancouver - Environmental	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 Vancouver - Environmental	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 Vancouver - Environmental	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.
Dissolved Hardness (Calculated)	EC100 Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Total Kjeldahl Nitrogen (Calculation)	EC318 Vancouver - Environmental	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 , ORP, DO, Turbidity or T	EF001 Vancouver - Environmental	Water	Field Measurement (Client Supplied)	Field pH, EC, Salinity, Cl ₂ , ORP, DO, Turbidity or T measurements provided by client and recorded on ALS report may affect the validity of results.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Total Nitrogen in water	EP366	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	Vancouver - Environmental			
Digestion for Total Dissolved Nitrogen in water	EP368 Vancouver - Environmental	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 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 Vancouver - Environmental	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

QUALITY CONTROL REPORT

Work Order : **VA20B2264**

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Amendment : **1**

Client : Northwest Research and Monitoring
 Contact : Laura Guillon
 Address : PO Box 4357
 Smithers BC Canada V0J 2N0
 Telephone : ----
 Project : MWMT 2020 Sin 30
 PO : ----
 C-O-C number : 17-840079
 Sampler : ----
 Site : ----
 Quote number : Q72918
 No. of samples received : 6
 No. of samples analysed : 6

Laboratory : Vancouver - Environmental
 Account Manager : Rojina Ghavami
 Address : 8081 Lougheed Highway
 Burnaby, British Columbia Canada V5A 1W9
 Telephone : +1 604 253 4188
 Date Samples Received : 10-Aug-2020 10:02
 Date Analysis Commenced : 11-Aug-2020
 Issue Date : 21-Aug-2020 09:27

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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

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
Caitlin Macey	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Mae Soropia	Laboratory Analyst	Metals, Burnaby, British Columbia
Michael Huang	Lab Assistant	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Yang Chu	Account Manager Assistant	Administration, 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 Services number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percentage Difference

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



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: 70574)											
VA20B1782-001	Anonymous	turbidity	----	E121	0.10	NTU	7.73	7.35	5.04%	15%	----
Physical Tests (QC Lot: 70627)											
VA20B2264-003	Crystal Creek	alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	31.0	30.1	2.94%	20%	----
Physical Tests (QC Lot: 71565)											
VA20B2052-007	Anonymous	solids, total suspended [TSS]	----	E160-H	7.5	mg/L	283	284	0.529%	20%	----
Physical Tests (QC Lot: 71567)											
VA20B2146-004	Anonymous	solids, total dissolved [TDS]	----	E162	20	mg/L	1680	1800	6.85%	20%	----
Physical Tests (QC Lot: 71601)											
VA20B2264-001	Gosnell Creek	oxidation-reduction potential [ORP]	----	E125	0.10	mV	400	397	0.853%	15%	----
Anions and Nutrients (QC Lot: 70625)											
VA20B2264-001	Gosnell Creek	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 70626)											
VA20B2264-001	Gosnell Creek	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 70812)											
VA20B2196-001	Anonymous	nitrogen, total	7727-37-9	E366	0.300	mg/L	3.91	3.89	0.490%	20%	----
Anions and Nutrients (QC Lot: 70813)											
VA20B2264-001	Gosnell Creek	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0026	0.0023	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 70814)											
VA20B2264-001	Gosnell Creek	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0054	0.0064	0.0010	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 71215)											
VA20B2264-001	Gosnell Creek	nitrogen, total dissolved	----	E368	0.030	mg/L	0.113	0.108	0.005	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 71213)											
VA20B2211-004	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	1.00	1.04	0.04	Diff <2x LOR	----
Total Metals (QC Lot: 71427)											
WR2000635-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0406	0.0412	1.40%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00069	0.00070	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.302	0.298	1.66%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.134	0.136	1.73%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	0.000022	0.000024	0.000002	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----



Sub-Matrix: **Water**

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: 71427) - continued											
WR2000635-001	Anonymous	cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000055	<0.0000050	0.0000005	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	43.4	44.2	1.86%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000013	0.000014	0.000001	Diff <2x LOR	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00032	0.00034	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00283	0.00283	0.0000006	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	10.0	9.95	0.785%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000127	0.000135	0.000008	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0051	0.0051	0.000010	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	10.4	10.4	0.185%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	1.09	1.09	0.452%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000230	0.000202	0.000028	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00096	0.00094	0.00002	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	0.057	0.062	0.005	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	4.56	4.48	1.59%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00440	0.00439	0.248%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000077	0.000117	0.000040	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	6.38	6.40	0.319%	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	2.51	2.28	9.42%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.235	0.242	2.60%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	0.73	0.60	0.12	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	0.00014	0.00016	0.00002	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00225	0.00234	0.00009	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00014	0.00014	0.000003	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000235	0.000239	1.81%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00111	0.00112	0.00001	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0137	0.0143	0.0007	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00075	0.00082	0.00007	Diff <2x LOR	----
Dissolved Metals (QC Lot: 71977)											
VA20B2212-001	Anonymous	aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.108	0.107	1.02%	20%	----
		antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00025	0.00023	0.00002	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: 71977) - continued											
VA20B2212-001	Anonymous	barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.00865	0.00897	3.64%	20%	----
		beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	0.000022	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, dissolved	7440-70-2	E421	0.050	mg/L	8.12	7.95	2.11%	20%	----
		cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000014	0.000016	0.000001	Diff <2x LOR	----
		chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00056	0.00055	0.000005	Diff <2x LOR	----
		iron, dissolved	7439-89-6	E421	0.010	mg/L	0.127	0.124	2.59%	20%	----
		lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, dissolved	7439-93-2	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, dissolved	7439-95-4	E421	0.100	mg/L	1.49	1.45	2.66%	20%	----
		manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00382	0.00375	1.85%	20%	----
		molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000339	0.000379	0.000039	Diff <2x LOR	----
		nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, dissolved	7440-09-7	E421	0.100	mg/L	0.289	0.274	0.015	Diff <2x LOR	----
		rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00044	0.00046	0.00001	Diff <2x LOR	----
		selenium, dissolved	7782-49-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, dissolved	7440-21-3	E421	0.050	mg/L	4.61	4.56	1.08%	20%	----
		silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, dissolved	7440-23-5	E421	0.050	mg/L	2.33	2.31	0.840%	20%	----
		strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.0548	0.0547	0.187%	20%	----
		sulfur, dissolved	7704-34-9	E421	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, dissolved	7440-32-6	E421	0.00030	mg/L	0.00188	0.00179	0.00009	Diff <2x LOR	----
		tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.000210	0.000220	4.70%	20%	----
		vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00046	0.00046	0.000003	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: 70574)						
turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 70627)						
alkalinity, total (as CaCO ₃)	----	E290	1	mg/L	# 2.3	B
Physical Tests (QCLot: 71565)						
solids, total suspended [TSS]	----	E160-H	3	mg/L	<3.0	----
Physical Tests (QCLot: 71567)						
solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 70625)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 70626)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 70812)						
nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 70813)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 70814)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 71215)						
nitrogen, total dissolved	----	E368	0.03	mg/L	<0.030	----
Organic / Inorganic Carbon (QCLot: 71213)						
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 71427)						
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	----
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 71427) - continued						
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: 71977)						
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	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 71977) - continued						
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	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----

Qualifiers

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





Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 70574)									
turbidity	----	E121	0.1	NTU	200 NTU	103	85.0	115	----
Physical Tests (QCLot: 70627)									
alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	99.2	85.0	115	----
Physical Tests (QCLot: 71565)									
solids, total suspended [TSS]	----	E160-H	3	mg/L	150 mg/L	104	85.0	115	----
Physical Tests (QCLot: 71567)									
solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	99.8	85.0	115	----
Anions and Nutrients (QCLot: 70625)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.8	90.0	110	----
Anions and Nutrients (QCLot: 70626)									
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: 70812)									
nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 70813)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	98.8	80.0	120	----
Anions and Nutrients (QCLot: 70814)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 71215)									
nitrogen, total dissolved	----	E368	0.03	mg/L	0.5 mg/L	103	75.0	125	----
Organic / Inorganic Carbon (QCLot: 71213)									
carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 71427)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	97.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.6	80.0	120	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 71427) - continued									
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	99.2	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.0	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	110	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	96.3	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.2	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	99.0	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	89.1	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	94.9	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	98.0	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	94.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.6	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.8	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	95.8	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.2	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	99.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.8	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.5	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	90.2	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.8	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.7	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	99.5	80.0	120	----
Dissolved Metals (QCLot: 71977)									
aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	106	80.0	120	----
antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	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	101	80.0	120	----
bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 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
Dissolved Metals (QCLot: 71977) - continued									
boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	105	80.0	120	----
chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.5	80.0	120	----
lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	110	80.0	120	----
manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	99.0	80.0	120	----
nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	107	70.0	130	----
potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	105	80.0	120	----
rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	109	80.0	120	----
silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	103	80.0	120	----
silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	# 125	80.0	120	MES
strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.2	80.0	120	----
tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	100	80.0	120	----
thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	100	80.0	120	----
tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	102	80.0	120	----
titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	99.8	80.0	120	----
tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	104	80.0	120	----
vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	105	80.0	120	----
zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----



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).



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: 70625)										
VA20B2264-002	Shea Creek	nitrite (as N)	14797-65-0	E235.NO2-L	0.458 mg/L	0.5 mg/L	91.6	75.0	125	----
Anions and Nutrients (QCLot: 70626)										
VA20B2264-002	Shea Creek	nitrate (as N)	14797-55-8	E235.NO3-L	2.42 mg/L	2.5 mg/L	96.6	75.0	125	----
Anions and Nutrients (QCLot: 70812)										
VA20B2197-001	Anonymous	nitrogen, total	7727-37-9	E366	ND mg/L	4 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 70813)										
VA20B2264-002	Shea Creek	phosphorus, total	7723-14-0	E372-U	0.0502 mg/L	0.05 mg/L	100	70.0	130	----
Anions and Nutrients (QCLot: 70814)										
VA20B2264-002	Shea Creek	ammonia, total (as N)	7664-41-7	E298	0.193 mg/L	0.2 mg/L	96.6	75.0	125	----
Anions and Nutrients (QCLot: 71215)										
VA20B2264-002	Shea Creek	nitrogen, total dissolved	----	E368	0.408 mg/L	0.4 mg/L	102	70.0	130	----
Organic / Inorganic Carbon (QCLot: 71213)										
VA20B2211-005	Anonymous	carbon, dissolved organic [DOC]	----	E358-L	5.01 mg/L	5 mg/L	100	70.0	130	----
Total Metals (QCLot: 71427)										
WR2000635-002	Anonymous	aluminum, total	7429-90-5	E420	0.192 mg/L	0.2 mg/L	95.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00930 mg/L	0.01 mg/L	93.0	70.0	130	----
		boron, total	7440-42-8	E420	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00387 mg/L	0.004 mg/L	96.7	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	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		chromium, total	7440-47-3	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0186 mg/L	0.02 mg/L	93.3	70.0	130	----



Sub-Matrix: **Water**

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: 71427) - continued										
WR2000635-002	Anonymous	lithium, total	7439-93-2	E420	0.0956 mg/L	0.1 mg/L	95.6	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	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, total	7440-02-0	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.44 mg/L	10 mg/L	94.4	70.0	130	----
		potassium, total	7440-09-7	E420	3.76 mg/L	4 mg/L	93.9	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		selenium, total	7782-49-2	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		silicon, total	7440-21-3	E420	9.81 mg/L	10 mg/L	98.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00393 mg/L	0.004 mg/L	98.2	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	21.5 mg/L	20 mg/L	107	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
		thallium, total	7440-28-0	E420	0.00367 mg/L	0.004 mg/L	91.7	70.0	130	----
		thorium, total	7440-29-1	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00390 mg/L	0.004 mg/L	97.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0988 mg/L	0.1 mg/L	98.8	70.0	130	----
		zinc, total	7440-66-6	E420	0.371 mg/L	0.4 mg/L	92.7	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
Dissolved Metals (QCLot: 71977)										
VA20B2212-002	Anonymous	aluminum, dissolved	7429-90-5	E421	0.204 mg/L	0.2 mg/L	102	70.0	130	----
		antimony, dissolved	7440-36-0	E421	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, dissolved	7440-38-2	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		barium, dissolved	7440-39-3	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		beryllium, dissolved	7440-41-7	E421	0.0420 mg/L	0.04 mg/L	105	70.0	130	----
		bismuth, dissolved	7440-69-9	E421	0.00981 mg/L	0.01 mg/L	98.1	70.0	130	----
		boron, dissolved	7440-42-8	E421	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		cadmium, dissolved	7440-43-9	E421	0.00414 mg/L	0.004 mg/L	104	70.0	130	----
		calcium, dissolved	7440-70-2	E421	4.31 mg/L	4 mg/L	108	70.0	130	----
		cesium, dissolved	7440-46-2	E421	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		chromium, dissolved	7440-47-3	E421	0.0407 mg/L	0.04 mg/L	102	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: 71977) - continued										
VA20B2212-002	Anonymous	cobalt, dissolved	7440-48-4	E421	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		copper, dissolved	7440-50-8	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		iron, dissolved	7439-89-6	E421	2.05 mg/L	2 mg/L	102	70.0	130	----
		lead, dissolved	7439-92-1	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		lithium, dissolved	7439-93-2	E421	0.0784 mg/L	0.1 mg/L	78.4	70.0	130	----
		magnesium, dissolved	7439-95-4	E421	1.06 mg/L	1 mg/L	106	70.0	130	----
		manganese, dissolved	7439-96-5	E421	0.0199 mg/L	0.02 mg/L	99.4	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	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		phosphorus, dissolved	7723-14-0	E421	9.96 mg/L	10 mg/L	99.6	70.0	130	----
		potassium, dissolved	7440-09-7	E421	4.66 mg/L	4 mg/L	116	70.0	130	----
		rubidium, dissolved	7440-17-7	E421	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		selenium, dissolved	7782-49-2	E421	0.0446 mg/L	0.04 mg/L	112	70.0	130	----
		silicon, dissolved	7440-21-3	E421	9.80 mg/L	10 mg/L	98.0	70.0	130	----
		silver, dissolved	7440-22-4	E421	0.00418 mg/L	0.004 mg/L	105	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	21.0 mg/L	20 mg/L	105	70.0	130	----
		tellurium, dissolved	13494-80-9	E421	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		thallium, dissolved	7440-28-0	E421	0.00395 mg/L	0.004 mg/L	98.8	70.0	130	----
		thorium, dissolved	7440-29-1	E421	0.0215 mg/L	0.02 mg/L	107	70.0	130	----
		tin, dissolved	7440-31-5	E421	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		titanium, dissolved	7440-32-6	E421	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		tungsten, dissolved	7440-33-7	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		uranium, dissolved	7440-61-1	E421	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, dissolved	7440-66-6	E421	0.416 mg/L	0.4 mg/L	104	70.0	130	----
		zirconium, dissolved	7440-67-7	E421	0.0415 mg/L	0.04 mg/L	104	70.0	130	----



Reference Material (RM) Report

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

Sub-Matrix: **Water**

					Reference Material (RM) Report				
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	RM Target	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	RM	Low	High	
Physical Tests (QCLot: 71601)									
QC-71601-001	RM	oxidation-reduction potential [ORP]	----	E125	220 mV	98.8	95.0	105	----

Report To Contact and company name below will appear on the final report		Report Format / Distribution		Select Service Level Below - Contact your AM to confirm																																														
Company: <u>Northwest Research and Monitoring</u>		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)		Regular [R] <input checked="" type="checkbox"/> Standard TAT if received by 3 pm - b																																														
Contact: <u>Laura Guillon</u>		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		4 day [P4-20%] <input type="checkbox"/>																																														
Phone: <u>250 877 7858</u>		<input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%] <input type="checkbox"/>																																														
Company address below will appear on the final report		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		2 day [P2-50%] <input type="checkbox"/>																																														
Street: <u>PO Box 4357</u>		Email 1 or Fax: <u>laura.crossroads@nrm.ca</u>		Date and Time Required for all E&P TATs:																																														
City/Province: <u>Smithers, BC</u>		Email 2: <u>ashleigh@nrm.ca</u>		For tests that can not be performed according to the service level selected, you																																														
Postal Code: <u>V0J 2N0</u>		Email 3: <u>info@nrm.ca</u>		Analysis Re																																														
Invoice To: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Invoice Distribution		Indicate Filtered (F), Preserved (P) or Filtered ar																																														
Copy of Invoice with Report <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX		F P F/P F/P																																														
Company:		Email 1 or Fax:		Total Metals																																														
Contact:		Email 2:		Dissolved Metals																																														
Project Information		Oil and Gas Required Fields (client use)		TN, TKN																																														
ALS Account # / Quote #:		AFE/Cost Center:		TDN, NO ₃ + NO ₂ , NH ₃																																														
Job #: <u>MWMT 2020 5 in 30</u>		Major/Minor Code:		DOC																																														
PO / AFE:		Requisitioner:		TP																																														
LSD:		Location:		Dissolved ORP																																														
ALS Lab Work Order # (lab use only): <u>VA20B2264</u>		ALS Contact:		TSS																																														
		Sampler:		TDS																																														
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td rowspan="7" style="writing-mode: vertical-rl; transform: rotate(180deg);">NUMBER OF CONTAINERS</td> <td>Total Metals</td> <td>Dissolved Metals</td> <td>TN, TKN</td> <td>TDN, NO₃ + NO₂, NH₃</td> <td>DOC</td> <td>TP</td> <td>Dissolved ORP</td> <td>TSS</td> <td>TDS</td> <td>Alkalinity</td> <td>Hardness</td> <td>Turbidity</td> <td rowspan="7" style="writing-mode: vertical-rl; transform: rotate(180deg);">SAMPLES O</td> <td rowspan="7" style="writing-mode: vertical-rl; transform: rotate(180deg);">SUSPECTED HAZARD (see S)</td> </tr> <tr><td>1</td><td>Gosnell Creek</td><td>06/08/20</td><td>14:00</td><td>Water</td></tr> <tr><td>2</td><td>Shea Creek</td><td>06/08/20</td><td>15:15</td><td></td></tr> <tr><td>3</td><td>Crystal Creek</td><td>06/08/20</td><td>15:55</td><td></td></tr> <tr><td>4</td><td>Shea Cr. Duplicate</td><td>06/08/20</td><td>15:15</td><td></td></tr> <tr><td>5</td><td>Field Blank</td><td>06/08/20</td><td></td><td></td></tr> <tr><td>6</td><td>Travel Blank</td><td></td><td></td><td></td></tr> </table>	NUMBER OF CONTAINERS	Total Metals	Dissolved Metals	TN, TKN	TDN, NO ₃ + NO ₂ , NH ₃	DOC	TP	Dissolved ORP	TSS	TDS	Alkalinity	Hardness	Turbidity	SAMPLES O	SUSPECTED HAZARD (see S)	1	Gosnell Creek	06/08/20	14:00	Water	2	Shea Creek	06/08/20	15:15		3	Crystal Creek	06/08/20	15:55		4	Shea Cr. Duplicate	06/08/20	15:15		5	Field Blank	06/08/20			6	Travel Blank			
NUMBER OF CONTAINERS	Total Metals	Dissolved Metals	TN, TKN	TDN, NO ₃ + NO ₂ , NH ₃			DOC	TP	Dissolved ORP	TSS	TDS	Alkalinity	Hardness	Turbidity	SAMPLES O	SUSPECTED HAZARD (see S)																																		
	1	Gosnell Creek	06/08/20	14:00			Water																																											
	2	Shea Creek	06/08/20	15:15																																														
	3	Crystal Creek	06/08/20	15:55																																														
	4	Shea Cr. Duplicate	06/08/20	15:15																																														
	5	Field Blank	06/08/20																																															
	6	Travel Blank																																																
1	Gosnell Creek	06/08/20	14:00	Water																																														
2	Shea Creek	06/08/20	15:15																																															
3	Crystal Creek	06/08/20	15:55																																															
4	Shea Cr. Duplicate	06/08/20	15:15																																															
5	Field Blank	06/08/20																																																
6	Travel Blank																																																	

Environmental Division
Vancouver
Work Order Reference
VA20B2264



Telephone: +1 604 253 4186

Water Quality Sampling Field Card					
Date	Aug 6 2020		Water Stage	Water Colour	EMS # E272551
Site	Gosnell		D/M/H	Clear	
Field Parameters					QA/QC
Sp. Cond. (uS/cm)	83.2	DO (ppm) ^{mg/L}	9.93	Regular Suite Y/N	Duplicate Y/N
Cond (uS/cmA)	—	pH	7.89	Hydrocarbons Y/N	Field Blank Y/N
DO (%)	93.6	Water Temp	13.5	Ice Cover (cm)	# Sample Bottles
			n/a		5

Notes: weather 16°C, 80% cc oaktown PET station
 waypoint #9 YSI Pro 20 - DO (mg/L +)
 photos: Rick's camera u/s, d/s, across

Time of Sample	14.00	Project	MWMT
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Water Quality Sampling Field Card					
Date	Aug 6 2020		Water Stage	Water Colour	EMS # E272563
Site	Shea Creek		D/M/H	Clear	
Field Parameters					QA/QC
Sp. Cond. (uS/cm)	49.6	DO (ppm) ^{mg/L}	8.81	Regular Suite Y/N	Duplicate Y/N
Cond (uS/cmA)	n/a	pH	7.70	Hydrocarbons Y/N	Field Blank Y/N
DO (%)	86.6	Water Temp	15.1	Ice Cover (cm)	# Sample Bottles
			n/a		5 + (dup 5)

Notes: weather 17°C, mostly cloudy.
 waypoint #70
 photos: Rick's camera u/s, d/s + across

Time of Sample	1515	Project	MWMT
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Water Quality Sampling Field Card					
Date	Aug 6 2020		Water Stage	Water Colour	EMS #
Site	Crystal Cr.		D/M/H	Clear	E272554
Field Parameters					QA/QC
Sp. Cond. (uS/cm)	73.2	DO (ppm) ^{mg/L}	10.6	Regular Suite Y/N	Duplicate Y/N
Cond (uS/cmA)	—	pH	7.85	Hydrocarbons Y/N	Field Blank Y/N
DO (%)	94.9	Water Temp	10.4	Ice Cover (cm)	# Sample Bottles
			n/a		5 + field blank 5

Notes: weather 15°C mostly cloudy.
 waypoint #92
 photos Rick's camera u/s, d/s, across

Time of Sample	1555	Project	MWMT
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