

CERTIFICATE OF ANALYSIS

Work Order	: KS2402981	Page	: 1 of 4
Client	: Thompson Nicola Regional District	Laboratory	: ALS Environmental - Kamloops
Contact	: Tyrone McCabe	Account Manager	: Caitlin Fountain
Address	: 300 - 465 Victoria Street Kamloops BC Canada V2C 2A9	Address	: 1445 McGill Road, Unit 2B Kamloops BC Canada V2C 6K7
Telephone	: (250)377-8673	Telephone	: 250 372 3588
Project	: Del Oro CWS	Date Samples Received	: 30-Jul-2024 13:31
PO	: ----	Date Analysis Commenced	: 30-Jul-2024
C-O-C number	: 20-991045	Issue Date	: 14-Aug-2024 10:56
Sampler	: ----		
Site	: ----		
Quote number	: Standing Offer		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

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

Signatories

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

Signatories	Position	Laboratory Department
Caitlin Fountain	Account Manager	Microbiology, Kamloops, British Columbia
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Stephanie Pinheiro	Team Leader - LCMS	LCMS, Waterloo, Ontario



General Comments

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

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

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

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

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

Unit	Description
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
CU	colour units (1 cu = 1 mg/l pt)
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres
NTU	nephelometric turbidity units
pH units	pH units

<: less than.

>: greater than.

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

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

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)			Client sample ID		Raw Water Intake	Treated Water SP East	----	----	----
Client sampling date / time					30-Jul-2024 12:40	30-Jul-2024 12:55	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	KS2402981-001	KS2402981-002	-----	-----	-----
					Result	Result	----	----	----
Physical Tests									
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L	38.4	----	----	----	----
Colour, true	----	E329/VA	5.0	CU	<5.0	----	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm	90.1	----	----	----	----
pH	----	E108/VA	0.10	pH units	7.80	----	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L	63	----	----	----	----
Turbidity	----	E121/VA	0.10	NTU	3.63	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	40.7	----	----	----	----
Anions and Nutrients									
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L	0.69	----	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L	0.051	----	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/V A	0.0050	mg/L	0.0132	----	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/V A	0.0010	mg/L	<0.0010	----	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L	5.67	----	----	----	----
Microbiological Tests									
Coliforms, total	----	E010/KS	1	MPN/100mL	>2420	----	----	----	----
Coliforms, Escherichia coli [E. coli]	----	E010/KS	1	MPN/100mL	4	----	----	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0100	mg/L	0.228	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00050	mg/L	<0.00050	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.00016	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.0200	mg/L	<0.0200	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.100	mg/L	<0.100	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.000200	mg/L	<0.000200	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.100	mg/L	12.9	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00200	mg/L	<0.00200	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00100	mg/L	0.0106	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.030	mg/L	0.332	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000500	mg/L	0.000550	----	----	----	----



Analytical Results

Sub-Matrix: Water					Client sample ID	Raw Water Intake	Treated Water SP East	----	----	----
(Matrix: Water)										
					Client sampling date / time	30-Jul-2024 12:40	30-Jul-2024 12:55	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit	KS2402981-001	KS2402981-002	-----	-----	-----	-----
					Result	Result	----	----	----	----
Total Metals										
Magnesium, total	7439-95-4	E420/VA	0.100	mg/L	2.06	----	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00200	mg/L	0.0124	----	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L	<0.0000050	----	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.100	mg/L	0.865	----	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.00100	mg/L	<0.00100	----	----	----	----	----
Sodium, total	7440-23-5	E420/VA	2.00	mg/L	<2.00	----	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000100	mg/L	0.000308	----	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0500	mg/L	<0.0500	----	----	----	----	----
Volatile Organic Compounds [THMs]										
Bromodichloromethane	75-27-4	E611B/VA	1.0	µg/L	----	1.5	----	----	----	----
Bromoform	75-25-2	E611B/VA	1.0	µg/L	----	<1.0	----	----	----	----
Chloroform	67-66-3	E611B/VA	1.0	µg/L	----	77.9	----	----	----	----
Dibromochloromethane	124-48-1	E611B/VA	1.0	µg/L	----	<1.0	----	----	----	----
Trihalomethanes [THMs], total	----	E611B/VA	2.0	µg/L	----	79.4	----	----	----	----
Volatile Organic Compounds [THMs] Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611B/VA	1.0	%	----	94.3	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611B/VA	1.0	%	----	101	----	----	----	----
Haloacetic Acids										
Bromochloroacetic acid	5589-96-8	E750/WT	1.00	µg/L	----	<1.00	----	----	----	----
Dibromoacetic acid	631-64-1	E750/WT	1.00	µg/L	----	<1.00	----	----	----	----
Dichloroacetic acid	79-43-6	E750/WT	1.00	µg/L	----	23.2	----	----	----	----
Monobromoacetic acid	79-08-3	E750/WT	1.00	µg/L	----	<1.00	----	----	----	----
Monochloroacetic acid	79-11-8	E750/WT	1.00	µg/L	----	1.22	----	----	----	----
Trichloroacetic acid	76-03-9	E750/WT	1.00	µg/L	----	32.5	----	----	----	----
Haloacetic acids, total [HAA5]	n/a	E750/WT	5.00	µg/L	n/a	56.9	----	----	----	----

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

Please refer to the Accreditation section for an explanation of analyte accreditations.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: KS2402981	Page	: 1 of 10
Client	: Thompson Nicola Regional District	Laboratory	: ALS Environmental - Kamloops
Contact	: Tyrone McCabe	Account Manager	: Caitlin Fountain
Address	: 300 - 465 Victoria Street Kamloops BC Canada V2C 2A9	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: (250)377-8673	Telephone	: 250 372 3588
Project	: Del Oro CWS	Date Samples Received	: 30-Jul-2024 13:31
PO	: ----	Issue Date	: 14-Aug-2024 10:57
C-O-C number	: 20-991045		
Sampler	: ----		
Site	: ----		
Quote number	: Standing Offer		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Matrix Spike Duplicate (MSD) outliers occur - please see following pages for full details.
- Duplicate 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
Duplicate (DUP) RPDs								
Microbiological Tests	KS2402981-001	Raw Water Intake	Coliforms, Escherichia coli [E. coli]	----	E010	3 % J	Diff <2x LOR	Low Level DUP DQO exceeded (difference > 2 LOR).

Result Qualifiers

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Anions and Nutrients : Chloride in Water by IC										
HDPE Raw Water Intake	E235.Cl	30-Jul-2024	01-Aug-2024	28 days	2 days	✓	01-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Raw Water Intake	E235.F	30-Jul-2024	01-Aug-2024	28 days	2 days	✓	01-Aug-2024	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Raw Water Intake	E235.NO3-L	30-Jul-2024	01-Aug-2024	3 days	2 days	✓	01-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Raw Water Intake	E235.NO2-L	30-Jul-2024	01-Aug-2024	3 days	2 days	✓	01-Aug-2024	3 days	2 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Raw Water Intake	E235.SO4	30-Jul-2024	01-Aug-2024	28 days	2 days	✓	01-Aug-2024	28 days	2 days	✓
Haloacetic Acids : Haloacetic Acids in Water by LC-MS/MS										
Glass vial (ammonium chloride) Treated Water SP East	E750	30-Jul-2024	02-Aug-2024	14 days	3 days	✓	02-Aug-2024	14 days	0 days	✓
Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate) Raw Water Intake	E010	30-Jul-2024	----	----	----		30-Jul-2024	30 hrs	2 hrs	✓



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

Analyte Group : Analytical Method	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 Raw Water Intake	E290	30-Jul-2024	01-Aug-2024	14 days	2 days	✓	01-Aug-2024	14 days	2 days	✓
Physical Tests : Colour (True) by Spectrometer (5 CU)										
HDPE Raw Water Intake	E329	30-Jul-2024	01-Aug-2024	3 days	2 days	✓	01-Aug-2024	3 days	2 days	✓
Physical Tests : Conductivity in Water										
HDPE Raw Water Intake	E100	30-Jul-2024	01-Aug-2024	28 days	2 days	✓	01-Aug-2024	28 days	2 days	✓
Physical Tests : pH by Meter										
HDPE Raw Water Intake	E108	30-Jul-2024	01-Aug-2024	0.25 hrs	46 hrs	✖ EHTR-FM	01-Aug-2024	0.25 hrs	46 hrs	✖ EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE Raw Water Intake	E162	30-Jul-2024	----	----	----		02-Aug-2024	7 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Raw Water Intake	E121	30-Jul-2024	----	----	----		31-Jul-2024	3 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Raw Water Intake	E508	30-Jul-2024	07-Aug-2024	28 days	8 days	✓	07-Aug-2024	28 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Raw Water Intake	E420	30-Jul-2024	01-Aug-2024	180 days	2 days	✓	03-Aug-2024	180 days	4 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium bisulfate) Treated Water SP East	E611B	30-Jul-2024	12-Aug-2024	14 days	13 days	✓	13-Aug-2024	14 days	14 days	✓

[Legend & Qualifier Definitions](#)

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Work Order : KS2402981
Client : Thompson Nicola Regional District
Project : Del Oro CWS



EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended
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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1575185	1	8	12.5	5.0	✔
Chloride in Water by IC	E235.Cl	1575187	1	8	12.5	5.0	✔
Colour (True) by Spectrometer (5 CU)	E329	1575194	1	4	25.0	5.0	✔
Conductivity in Water	E100	1575184	1	9	11.1	5.0	✔
Fluoride in Water by IC	E235.F	1575190	1	7	14.2	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1575188	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1575189	1	10	10.0	5.0	✔
pH by Meter	E108	1575183	1	8	12.5	5.0	✔
Sulfate in Water by IC	E235.SO4	1575186	1	8	12.5	5.0	✔
TDS by Gravimetry	E162	1578305	1	19	5.2	5.0	✔
THMs by Headspace GC-MS	E611B	1592165	1	9	11.1	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1573577	1	5	20.0	10.0	✔
Total Mercury in Water by CVAAS	E508	1582882	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1574286	1	16	6.2	5.0	✔
Turbidity by Nephelometry	E121	1574590	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1575185	1	8	12.5	5.0	✔
Chloride in Water by IC	E235.Cl	1575187	1	8	12.5	5.0	✔
Colour (True) by Spectrometer (5 CU)	E329	1575194	1	4	25.0	5.0	✔
Conductivity in Water	E100	1575184	1	9	11.1	5.0	✔
Fluoride in Water by IC	E235.F	1575190	1	7	14.2	5.0	✔
Haloacetic Acids in Water by LC-MS/MS	E750	1577068	1	13	7.6	4.7	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1575188	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1575189	1	10	10.0	5.0	✔
pH by Meter	E108	1575183	1	8	12.5	5.0	✔
Sulfate in Water by IC	E235.SO4	1575186	1	8	12.5	5.0	✔
TDS by Gravimetry	E162	1578305	1	19	5.2	5.0	✔
THMs by Headspace GC-MS	E611B	1592165	1	9	11.1	5.0	✔
Total Mercury in Water by CVAAS	E508	1582882	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1574286	1	16	6.2	5.0	✔
Turbidity by Nephelometry	E121	1574590	1	20	5.0	5.0	✔
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1575185	1	8	12.5	5.0	✔
Chloride in Water by IC	E235.Cl	1575187	1	8	12.5	5.0	✔
Colour (True) by Spectrometer (5 CU)	E329	1575194	1	4	25.0	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							
Conductivity in Water	E100	1575184	1	9	11.1	5.0	✔
Fluoride in Water by IC	E235.F	1575190	1	7	14.2	5.0	✔
Haloacetic Acids in Water by LC-MS/MS	E750	1577068	1	13	7.6	4.7	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1575188	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1575189	1	10	10.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1575186	1	8	12.5	5.0	✔
TDS by Gravimetry	E162	1578305	1	19	5.2	5.0	✔
THMs by Headspace GC-MS	E611B	1592165	1	9	11.1	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1573577	1	5	20.0	5.0	✔
Total Mercury in Water by CVAAS	E508	1582882	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1574286	1	16	6.2	5.0	✔
Turbidity by Nephelometry	E121	1574590	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Chloride in Water by IC	E235.Cl	1575187	1	8	12.5	5.0	✔
Fluoride in Water by IC	E235.F	1575190	1	7	14.2	5.0	✔
Haloacetic Acids in Water by LC-MS/MS	E750	1577068	1	13	7.6	4.7	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1575188	1	17	5.8	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1575189	1	10	10.0	5.0	✔
Sulfate in Water by IC	E235.SO4	1575186	1	8	12.5	5.0	✔
THMs by Headspace GC-MS	E611B	1592165	1	9	11.1	5.0	✔
Total Mercury in Water by CVAAS	E508	1582882	1	20	5.0	5.0	✔
Total Metals in Water by CRC ICPMS	E420	1574286	1	16	6.2	5.0	✔
Matrix Spike Duplicates (MSD)							
Haloacetic Acids in Water by LC-MS/MS	E750	1577068	1	13	7.6	4.7	✔



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
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Kamloops	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at $35.0 \pm 0.5^{\circ}\text{C}$ for either 18 or 24 hours (dependent on reagent used).
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C .
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally $20 \pm 5^{\circ}\text{C}$). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at $180 \pm 2^{\circ}\text{C}$ for 16 hours or to constant weight, with gravimetric measurement of the residue.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.



Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Colour (True) by Spectrometer (5 CU)	E329 ALS Environmental - Vancouver	Water	APHA 2120 C (mod)	Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Colour measurements can be highly pH dependent, and apply to the pH of the sample as received (at time of testing), without pH adjustment.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
THMs by Headspace GC-MS	E611B ALS Environmental - Vancouver	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Haloacetic Acids in Water by LC-MS/MS	E750 ALS Environmental - Waterloo	Water	MOE E3478	An aliquot of sample is fortified with formic acid and internal standards and analyzed via direct injection by LCMSMS
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Vancouver	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
Preparation of Haloacetic acid in Water for LCMSMS	EP750 ALS Environmental - Waterloo	Water	E3478	An aliquot of samples is fortified with formic acid and internal standard to be analyzed by direct injection LCMSMS

QUALITY CONTROL REPORT

Work Order	: KS2402981	Page	: 1 of 10
Client	: Thompson Nicola Regional District	Laboratory	: ALS Environmental - Kamloops
Contact	: Tyrone McCabe	Account Manager	: Caitlin Fountain
Address	: 300 - 465 Victoria Street Kamloops BC Canada V2C 2A9	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: (250)377-8673	Telephone	: 250 372 3588
Project	: Del Oro CWS	Date Samples Received	: 30-Jul-2024 13:31
PO	: ----	Date Analysis Commenced	: 30-Jul-2024
C-O-C number	: 20-991045	Issue Date	: 14-Aug-2024 10:57
Sampler	: ----		
Site	: ----		
Quote number	: Standing Offer		
No. of samples received	: 2		
No. of samples analysed	: 2		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Caitlin Fountain	Account Manager	Kamloops Microbiology, Kamloops, British Columbia
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Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
Stephanie Pinheiro	Team Leader - LCMS	Waterloo LCMS, Waterloo, Ontario

Page : 2 of 10
Work Order : KS2402981
Client : Thompson Nicola Regional District
Project : Del Oro CWS



General Comments

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

Key :

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

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

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

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

Workorder Comments

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



Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC Lot: 1574590)											
KS2402981-001	Raw Water Intake	Turbidity	----	E121	0.10	NTU	3.63	3.85	5.88%	15%	----
Physical Tests (QC Lot: 1575183)											
VA24B8672-001	Anonymous	pH	----	E108	0.10	pH units	7.68	7.69	0.130%	4%	----
Physical Tests (QC Lot: 1575184)											
VA24B8672-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	57.8	57.8	0.00%	10%	----
Physical Tests (QC Lot: 1575185)											
VA24B8672-001	Anonymous	Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	22.9	23.0	0.440%	20%	----
Physical Tests (QC Lot: 1575194)											
KS2402979-001	Anonymous	Colour, true	----	E329	5.0	CU	<5.0	<5.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1578305)											
KS2402968-001	Anonymous	Solids, total dissolved [TDS]	----	E162	20	mg/L	1190	1250	4.60%	20%	----
Anions and Nutrients (QC Lot: 1575186)											
KS2402979-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	1.50	mg/L	186	186	0.321%	20%	----
Anions and Nutrients (QC Lot: 1575187)											
KS2402979-001	Anonymous	Chloride	16887-00-6	E235.Cl	2.50	mg/L	12.0	12.1	0.06	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1575188)											
KS2402979-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.169	0.173	0.0040	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1575189)											
KS2402979-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1575190)											
KS2402979-001	Anonymous	Fluoride	16984-48-8	E235.F	0.100	mg/L	0.225	0.225	0.00008	Diff <2x LOR	----
Microbiological Tests (QC Lot: 1573577)											
KS2402981-001	Raw Water Intake	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	4	# 1	3	Diff <2x LOR	J
		Coliforms, total	----	E010	1	MPN/100mL	>2420	2420	0.00%	65%	----
Total Metals (QC Lot: 1574286)											
KS2402979-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0100	mg/L	0.0190	0.0189	0.0002	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00058	0.00055	0.00003	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.0200	mg/L	0.0212	0.0203	0.00086	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 1574286) - continued											
KS2402979-001	Anonymous	Cadmium, total	7440-43-9	E420	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.100	mg/L	68.4	69.6	1.72%	20%	----
		Chromium, total	7440-47-3	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00100	mg/L	0.00252	0.00244	0.00008	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.030	mg/L	<0.030	<0.030	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.100	mg/L	67.6	63.8	5.66%	20%	----
		Manganese, total	7439-96-5	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.100	mg/L	3.79	3.67	3.24%	20%	----
		Selenium, total	7782-49-2	E420	0.00100	mg/L	0.00574	0.00590	0.000159	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	2.00	mg/L	36.2	35.3	2.64%	20%	----
		Uranium, total	7440-61-1	E420	0.000100	mg/L	0.0105	0.0103	1.56%	20%	----
		Zinc, total	7440-66-6	E420	0.0500	mg/L	<0.0500	<0.0500	0	Diff <2x LOR	----
Total Metals (QC Lot: 1582882)											
KS2402968-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000061	0.0000052	0.0000009	Diff <2x LOR	----
Volatile Organic Compounds [THMs] (QC Lot: 1592165)											
KS2402979-002	Anonymous	Bromodichloromethane	75-27-4	E611B	1.0	µg/L	5.2	4.8	8.6%	30%	----
		Bromoform	75-25-2	E611B	1.0	µg/L	<1.0	<1.0	0.0%	30%	----
		Chloroform	67-66-3	E611B	1.0	µg/L	13.0	12.0	8.1%	30%	----
		Dibromochloromethane	124-48-1	E611B	1.0	µg/L	2.4	2.2	9.1%	30%	----

Qualifiers

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.



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: 1574590)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1575184)						
Conductivity	----	E100	1	µS/cm	<1.0	----
Physical Tests (QCLot: 1575185)						
Alkalinity, total (as CaCO ₃)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1575194)						
Colour, true	----	E329	5	CU	<5.0	----
Physical Tests (QCLot: 1578305)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1575186)						
Sulfate (as SO ₄)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1575187)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1575188)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1575189)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1575190)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Microbiological Tests (QCLot: 1573577)						
Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
Coliforms, total	----	E010	1	MPN/100mL	<1	----
Total Metals (QCLot: 1574286)						
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	----
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	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1574286) - continued						
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Total Metals (QCLot: 1582882)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds [THMs] (QCLot: 1592165)						
Bromodichloromethane	75-27-4	E611B	1	µg/L	<1.0	----
Bromoform	75-25-2	E611B	1	µg/L	<1.0	----
Chloroform	67-66-3	E611B	1	µg/L	<1.0	----
Dibromochloromethane	124-48-1	E611B	1	µg/L	<1.0	----
Haloacetic Acids (QCLot: 1577068)						
Bromochloroacetic acid	5589-96-8	E750	0.5	µg/L	<0.50	----
Dibromoacetic acid	631-64-1	E750	1	µg/L	<1.00	----
Dichloroacetic acid	79-43-6	E750	1	µg/L	<1.00	----
Monobromoacetic acid	79-08-3	E750	0.2	µg/L	<0.20	----
Monochloroacetic acid	79-11-8	E750	0.5	µg/L	<0.50	----
Trichloroacetic acid	76-03-9	E750	1	µg/L	<1.00	----



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 (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1574590)									
Turbidity	----	E121	0.1	NTU	200 NTU	98.0	85.0	115	----
Physical Tests (QCLot: 1575183)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1575184)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	101	90.0	110	----
Physical Tests (QCLot: 1575185)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	105	85.0	115	----
Physical Tests (QCLot: 1575194)									
Colour, true	----	E329	5	CU	100 CU	104	85.0	115	----
Physical Tests (QCLot: 1578305)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	108	85.0	115	----
Anions and Nutrients (QCLot: 1575186)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1575187)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1575188)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1575189)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1575190)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Total Metals (QCLot: 1574286)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	95.1	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.5	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.0	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.8	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	96.6	80.0	120	----



Sub-Matrix: Water					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1574286) - continued									
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	94.4	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	85.3	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	96.0	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	94.6	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	112	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	95.3	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	93.5	80.0	120	----
Total Metals (QCLot: 1582882)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	90.6	80.0	120	----
Volatile Organic Compounds [THMs] (QCLot: 1592165)									
Bromodichloromethane	75-27-4	E611B	1	µg/L	100 µg/L	92.2	70.0	130	----
Bromoform	75-25-2	E611B	1	µg/L	100 µg/L	96.2	70.0	130	----
Chloroform	67-66-3	E611B	1	µg/L	100 µg/L	102	70.0	130	----
Dibromochloromethane	124-48-1	E611B	1	µg/L	100 µg/L	97.1	70.0	130	----
Haloacetic Acids (QCLot: 1577068)									
Bromochloroacetic acid	5589-96-8	E750	0.5	µg/L	2.5 µg/L	110	70.0	130	----
Dibromoacetic acid	631-64-1	E750	1	µg/L	5 µg/L	123	70.0	130	----
Dichloroacetic acid	79-43-6	E750	1	µg/L	5 µg/L	113	70.0	130	----
Monobromoacetic acid	79-08-3	E750	0.2	µg/L	1 µg/L	112	70.0	130	----
Monochloroacetic acid	79-11-8	E750	0.5	µg/L	2.5 µg/L	111	70.0	130	----
Trichloroacetic acid	76-03-9	E750	1	µg/L	5 µg/L	126	70.0	130	----



Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1575186)										
KS2402981-001	Raw Water Intake	Sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1575187)										
KS2402981-001	Raw Water Intake	Chloride	16887-00-6	E235.Cl	106 mg/L	100 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 1575188)										
KS2402981-001	Raw Water Intake	Nitrate (as N)	14797-55-8	E235.NO3-L	2.62 mg/L	2.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1575189)										
KS2402981-001	Raw Water Intake	Nitrite (as N)	14797-65-0	E235.NO2-L	0.522 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 1575190)										
KS2402981-001	Raw Water Intake	Fluoride	16984-48-8	E235.F	1.06 mg/L	1 mg/L	106	75.0	125	----
Total Metals (QCLot: 1574286)										
KS2402981-001	Raw Water Intake	Aluminum, total	7429-90-5	E420	ND mg/L	----	ND	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0176 mg/L	0.02 mg/L	87.8	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		Barium, total	7440-39-3	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		Boron, total	7440-42-8	E420	0.092 mg/L	0.1 mg/L	92.2	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00394 mg/L	0.004 mg/L	98.5	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		Copper, total	7440-50-8	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		Iron, total	7439-89-6	E420	1.80 mg/L	2 mg/L	89.9	70.0	130	----
		Lead, total	7439-92-1	E420	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		Potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	97.9	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		Sodium, total	7440-23-5	E420	2.17 mg/L	2 mg/L	108	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00373 mg/L	0.004 mg/L	93.3	70.0	130	----
		Zinc, total	7440-66-6	E420	0.376 mg/L	0.4 mg/L	93.9	70.0	130	----
Total Metals (QCLot: 1582882)										
KS2402979-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000955 mg/L	0 mg/L	95.5	70.0	130	----
Volatile Organic Compounds [THMs] (QCLot: 1592165)										
KS2402981-002	Treated Water SP East	Bromodichloromethane	75-27-4	E611B	97.3 µg/L	100 µg/L	97.3	60.0	140	----
		Bromoform	75-25-2	E611B	103 µg/L	100 µg/L	103	60.0	140	----
		Chloroform	67-66-3	E611B	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Dibromochloromethane	124-48-1	E611B	103 µg/L	100 µg/L	103	60.0	140	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Haloacetic Acids (QCLot: 1577068)										
CG2410608-001	Anonymous	Bromochloroacetic acid	5589-96-8	E750	ND µg/L	----	ND	70.0	130	----
		Dibromoacetic acid	631-64-1	E750	4.55 µg/L	5 µg/L	91.0	70.0	130	----
		Dichloroacetic acid	79-43-6	E750	ND µg/L	----	ND	70.0	130	----
		Monobromoacetic acid	79-08-3	E750	1.11 µg/L	1 µg/L	111	70.0	130	----
		Monochloroacetic acid	79-11-8	E750	2.82 µg/L	2.5 µg/L	113	70.0	130	----
		Trichloroacetic acid	76-03-9	E750	ND µg/L	----	ND	70.0	130	----

Matrix Spike Duplicate (MSD) Report

A Matrix Spike Duplicate (MSD) is a duplicate of a Matrix Spike (MS), which has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples . Matrix Spike Duplicates provide information regarding method precision. ALS DQOs for Matrix Spike Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD).

Sub-Matrix: Water					Matrix Spike Duplicate (MSD) Report						
					LOR	Unit	Original Result	MSD Result	RPD(%) or Difference	MSD Limits	Qualifier
Haloacetic Acids (QC Lot: 1577068)											
QC-157706-004	Anonymous	Bromochloroacetic acid	5589-96-8	E750	0.50	µg/L	4.91	4.75	-----%	Diff <2x LOR	----
		Dibromoacetic acid	631-64-1	E750	1.00	µg/L	4.86	4.55	7.05%	200%	----
		Dichloroacetic acid	79-43-6	E750	1.00	µg/L	20.6	20.0	-----%	Diff <2x LOR	----
		Monobromoacetic acid	79-08-3	E750	1.00	µg/L	1.42	1.32	8.45%	200%	----
		Monochloroacetic acid	79-11-8	E750	1.00	µg/L	4.22	4.26	0.881%	200%	----
		Trichloroacetic acid	76-03-9	E750	1.00	µg/L	16.3	14.8	-----%	Diff <2x LOR	----



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 991045

Page of

Contact and company name below will appear on the final report

Reports / Recipients

Turnaround Time (TAT) Requested

AFFIX ALS BARCODE LABEL HERE
(ALS use only)

Company: Thompson Nicola Regional District

Select Report Format: ☐ PDF ☐ EXCEL ☐ EDD (DIGITAL)

☐ Routine [R] if received by 3pm M-F - no surcharges apply

Contact: Lyndee Macleube

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

Phone: 250 377 7056

Compare Results to Criteria on Report - provide details below if box checked

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

Street: 300 465 Victoria Street West

Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

City/Province: Kamloops BC

Email 1 or Fax: tmacleube@tnrd.bc.ca

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

Postal Code: V2C 3H4

Email 2

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

Invoice To: Same as Report To

Invoice Recipients

Date and Time Required for all EAP TATs:

Copy of Invoice with Report ☐ YES ☒ NO

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

For all tests with rush TATs requested, please contact your AM to confirm availability.

Company: Accounts Payable

Email 1 or Fax

Analysis Request

Contact: Accounts Payable

Email 2

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below

ALS Account # / Quote #

Oil and Gas Required Fields (client use)

SAMPLES ON HOLD

Job #: 201000 CWS

AFE/Cost Center: PO#

EXTENDED STORAGE REQUIRED

PO / AFE:

Routing Code:

SUSPECTED HAZARD (see notes)

LSD:

Location:

ALS Lab Work Order # (ALS use only):

ALS Contact:

Sampler:

ALS Sample # (ALS use only):

Sample Identification and/or Coordinates (This description will appear on the report)

NUMBER OF CONTAINERS

Sample Identification and/or Coordinates (This description will appear on the report)

Date (dd-mm-yy) Time (hh:mm) Sample Type

Full Total Water Drinking Package

Sample Identification and/or Coordinates (This description will appear on the report)

Date (dd-mm-yy) Time (hh:mm) Sample Type

100% Coliforms, E Coli

Sample Identification and/or Coordinates (This description will appear on the report)

Date (dd-mm-yy) Time (hh:mm) Sample Type

THMs in Water

Sample Identification and/or Coordinates (This description will appear on the report)

Date (dd-mm-yy) Time (hh:mm) Sample Type

HAAr for Western Canada

Sample Identification and/or Coordinates (This description will appear on the report)

Date (dd-mm-yy) Time (hh:mm) Sample Type

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Date (dd-mm-yy) Time (hh:mm) Sample Type

Sample Identification and/or Coordinates (This description will appear on the report)

Date (dd-mm-yy) Time (hh:mm) Sample Type

Drinking Water (DW) Samples (client use)

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

Are samples taken from a Regulated DW System?

Cooling Method: ☒ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Are samples for human consumption use?

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Are samples for human consumption use?

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

Are samples for human consumption use?

INITIAL COOLER TEMPERATURES °C: 18 FINAL COOLER TEMPERATURES °C: 18

SHIPMENT RELEASE (client use)

INITIAL SHIPMENT RECEPTION (ALS use only)

FINAL SHIPMENT RECEPTION (ALS use only)

Released by: Dale Shadsky

Received by: Wm

Received by:

Date: 30/7/24

Date: 30/7/24

Date:

Time: 1:25

Time: 11:25 AM

Time: 12:55

Time: 1:25

Time: 11:25 AM

Time: 12:55

Time: 1:25

Time: 11:25 AM

Time: 12:55