



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4674**
Client : **Vancouver School Board**
Contact : Stephen Thomas
Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Sexsmith
PO : ----
C-O-C number : 20-985896
Sampler : RL
Site : ----
Quote number : ----
No. of samples received : 10
No. of samples analysed : 10

Page : 1 of 3
Laboratory : Vancouver - Environmental
Account Manager : Tasnia Tarannum
Address : 8081 Lougheed Highway
Burnaby, British Columbia Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 07-Mar-2022 15:20
Date Analysis Commenced : 09-Mar-2022
Issue Date : 14-Mar-2022 10:52

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta



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.

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

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

Key : LOR: Limit of Reporting (detection limit).

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

Red shading is applied where the result is greater than the Guideline Upper Limit or the result is lower than the Guideline Lower Limit.

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

Analytical Results Evaluation

Matrix:	Client sample ID	----	----	----	----	----	----	----
	Sampling date/time	----	----	----	----	----	----	----
	Sub-Matrix	----	----	----	----	----	----	----
Analyte	CAS Number	Unit	----	----	----	----	----	----
	-							

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



No Breaches Found

lead, total	7439-92-1	mg/L								
-------------	-----------	------	--	--	--	--	--	--	--	--

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22A4674	Page	: 1 of 6
Client	: Vancouver School Board	Laboratory	: Vancouver - Environmental
Contact	: Stephen Thomas	Account Manager	: Tasnia Tarannum
Address	: 1549 Clark Drive Vancouver BC Canada V5L 3L4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: Sexsmith	Date Samples Received	: 07-Mar-2022 15:20
PO	: ----	Issue Date	: 14-Mar-2022 10:52
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Sampler	: RL		
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous:** Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S. D.F. Entry 200 Rm. 207 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S. D.F. Rm. 142 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 103 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 104 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 105 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 106 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 110 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 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	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 111 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 112 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 113 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✔

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	428973	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	428973	1	20	5.0	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	428973	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	428973	1	20	5.0	5.0	✔



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 Edmonton - 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.



QUALITY CONTROL REPORT

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Page : 1 of 3

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Issue Date : 14-Mar-2022 10:52

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.

Signatories	Position	Laboratory Department
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta



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.

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
Total Metals (QC Lot: 428973)											
FJ2200581-004	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00300	0.00310	3.01%	20%	----

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
Total Metals (QC Lot: 428973)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----



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	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 428973)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.3	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level $\geq 1x$ 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
Total Metals (QCLot: 428973)										
FJ2200581-005	Anonymous	lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----



www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 985896

Page of

Contact and company name below will appear on the final report

Reports / Recipients

Turnaround Time (TAT) Requested

cd-mm-yy hh:mm am/pm

Company: Vancouver School Board
 Contact: Stephen Thomas
 Phone: 604 273 5637
 Street: 1579 Clark Drive
 City/Province: Vancouver B.C.
 Postal Code: V5L 3L9

Select Report Format: PDF EXCEL EBD (optional)
 Merge QC/QCI Reports with COA YES NO N/A
 Compare Results to Criteria on Report - provide details below if box checked
 Select Distribution: EMAIL MAIL FAX
 Email 1 or Fax: stthomas@vsb.bc.ca
 Email 2: clenny@vsb.bc.ca
 Email 3: ccarell@vsb.bc.ca

For all tests with rush TATs requested, please contact your AM to confirm availability.
 Analysis Request
 Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below
 Turnaround Time (TAT) Requested
 For all tests with rush TATs requested, please contact your AM to confirm availability.
 AFIX ALS BARCODE LABEL HERE (ALS use only)

Company: _____
 Invoice To: Same as Report To YES NO
 Copy of Invoice with Report YES NO
 Select Invoice Distribution: EMAIL MAIL FAX
 Email 1 or Fax: _____
 Email 2: _____

Project Information
 ALS Account # / Quote #: _____
 Job #: Sexsmith
 PO / AFE: _____
 LSD: * * + *
 ALS Lab Work Order # (ALS use only): _____
 ALS Contact: T. Kavanon
 Sample: R. Lenny

Oil and Gas Required Fields (client use)
 AFE/Coast Center: _____ PO#: _____
 Major/Minor Code: _____ Routing Code: _____
 Requisitioner: _____
 Location: _____

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (cd-mm-yy)	Time (hh:mm)	Sample Type
SS.D.E	Entry 200 Km. 207 Sexsmith	07-03-22	7:43am	water
SS.D.E	Km. 142 Sexsmith	07-03-22	7:46am	water
Sink D.E.	Km. 103 Sexsmith	07-03-22	7:47am	water
Sink D.E.	Km. 104 Sexsmith	07-03-22	7:50am	water
Sink D.E.	Km. 105 Sexsmith	07-03-22	7:52am	water
Sink D.E.	Km. 110 Sexsmith	07-03-22	8:01am	water
S.S. D.E.	Km. 106 Sexsmith	07-03-22	8:03am	water
Sink D.E.	Km. 112 Sexsmith	07-03-22	8:06am	water
Sink D.E.	Km. 111 Sexsmith	07-03-22	8:08am	water
Sink D.E.	Km. 113 Sexsmith	07-03-22	8:08am	water

NUMBER OF CONTAINERS
 Lead

Environmental Division
 Vancouver
 Work Order Reference
 VA22A4674
 Telephone: +1 604 253 4189

SAMPLES ON HOLD
 EXTENDED STORAGE REQUIRED
 SUSPECTED HAZARD (see notes)

Drinking Water (DW) Samples (client use)
 Are samples taken from a Regulated DW System? YES NO
 Are samples for human consumption/ use? YES NO

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

Shipping Method: NONE ICE ICE PACKS FROZEN COOLING INITIATED
 Submission Comments identified on Sample Receipt Notification: _____
 Cooler Custody Seals Intact: YES N/A Sample Custody Seals Intact: YES N/A
 INITIAL COOLER TEMPERATURES °C: _____
 FINAL COOLER TEMPERATURES °C: _____

Released by: _____ Date: _____ Time: _____
 Received by: _____ Date: _____ Time: _____
 SHIPMENT RELEASE (client use)
 INITIAL SHIPMENT RECEPTION (ALS use only)
 FINAL SHIPMENT RECEPTION (ALS use only)

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION
 Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.
 1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

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Analytical Results Evaluation

Matrix:	Client sample ID	-----	-----	-----	-----	-----	-----	-----
	Sampling date/time	----	----	----	----	----	----	----
	Sub-Matrix	----	----	----	----	----	----	----
Analyte	CAS Number	Unit	----	----	----	----	----	----
		-						

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



No Breaches Found

lead, total	7439-92-1	mg/L								
-------------	-----------	------	--	--	--	--	--	--	--	--

QUALITY CONTROL INTERPRETIVE REPORT

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Outliers: Reference Material (RM) Samples

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Outliers : Analysis Holding Time Compliance (Breaches)

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Outliers : Frequency of Quality Control Samples

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Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 226 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 232 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 233 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 234 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 235 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 236 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 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		
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE - total (lab preserved) Sink D.F. Rm. 237 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE - total (lab preserved) Sink D.F. Rm. 238 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE - total (lab preserved) Sink D.F. Rm. 241 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE - total (lab preserved) Sink D.F. Rm. 242 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓	
Total Metals : Total Metals in Water by CRC ICPMS											
HDPE - total (lab preserved) Sink D.F. Rm. 243 Sexsmith	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓	

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
Analytical Methods							
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	429646	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	429646	1	20	5.0	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	429646	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	429646	1	20	5.0	5.0	✔



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Metals in Water by CRC ICPMS	E420 Edmonton - 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.



QUALITY CONTROL REPORT

Work Order : **VA22A4676**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Sexsmith
PO : ----
C-O-C number : 20-985895
Sampler : RL
Site : ----
Quote number : ----
No. of samples received : 12
No. of samples analysed : 12

Laboratory : Vancouver - Environmental
Account Manager : Tasnia Tarannum
Address : 8081 Lougheed Highway
Burnaby, British Columbia Canada V5A 1W9
Telephone : +1 604 253 4188
Date Samples Received : 07-Mar-2022 15:20
Date Analysis Commenced : 09-Mar-2022
Issue Date : 14-Mar-2022 11:01

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.

Signatories	Position	Laboratory Department
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta



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.

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
Total Metals (QC Lot: 429646)											
VA22A4675-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00124	0.00120	2.97%	20%	----

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
Total Metals (QC Lot: 429646)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----



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	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 429646)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.2	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level \geq 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
Total Metals (QCLot: 429646)										
VA22A4675-002	Anonymous	lead, total	7439-92-1	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----



www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 985895

Page of

Report To Company: Vancouver School Board Contact: Stephen Thomas Phone: 604 713 5637 Street: 1549 Clark Drive City/Province: Vancouver BC Postal Code: V5L 3L4		Select Report Format: <input checked="" type="checkbox"/> PDF <input type="checkbox"/> EXCEL <input type="checkbox"/> BOD (DIGITAL) Merge QC/QCI Reports with COA <input type="checkbox"/> YES <input type="checkbox"/> NO <input type="checkbox"/> N/A <input type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: Sstomas@usb.bc.ca Email 2: stomas@usb.bc.ca Email 3: carell@usb.bc.ca	
Company: Same as Report To <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO 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 Email 1 or Fax:		Reports / Recipients Invoice Recipients Oil and Gas Required Fields (client use) AF/Coast Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:	
ALS Account # / Quote #: Sexsmith Job #: Sexsmith PO / AFE: LSD:		ALS Lab Work Order # (ALS use only): Sample Identification and/or Coordinates (This description will appear on the report) Sink D.F. Rm. 235 Sexsmith Sink D.F. Rm. 234 Sexsmith Sink D.F. Rm. 236 Sexsmith Sink D.F. Rm. 237 Sexsmith Sink D.F. Rm. 233 Sexsmith Sink D.F. Rm. 238 Sexsmith Sink D.F. Rm. 232 Sexsmith Sink D.F. Rm. 227 Sexsmith Sink D.F. Rm. 241 Sexsmith Sink D.F. Rm. 226 Sexsmith Sink D.F. Rm. 242 Sexsmith Sink D.F. Rm. 243 Sexsmith	
Date: 07-03-22 Time: 7:07am Sample Type: water Date: 07-03-22 Time: 7:12am Sample Type: water Date: 07-03-22 Time: 7:17am Sample Type: water Date: 07-03-22 Time: 7:20am Sample Type: water Date: 07-03-22 Time: 7:22am Sample Type: water Date: 07-03-22 Time: 7:24am Sample Type: water Date: 07-03-22 Time: 7:28am Sample Type: water Date: 07-03-22 Time: 7:28am Sample Type: water Date: 07-03-22 Time: 7:32am Sample Type: water Date: 07-03-22 Time: 7:35am Sample Type: water Date: 07-03-22 Time: 7:38am Sample Type: water Date: 07-03-22 Time: 7:40am Sample Type: water		ALS Contact: T. Tarmon Sampler: R. Lenay NUMBER OF CONTAINERS Lead	
Are samples taken from a Regulated DW System? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Are samples for human consumption/ use? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO Drinking Water (DW) Samples (client use) Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		Turnaround Time (TAT) Requested <input checked="" type="checkbox"/> Routine (R) if received by 3pm M-F - no surcharges apply <input type="checkbox"/> 4 day (P4) if received by 3pm M-F - 20% rush surcharge minimum <input type="checkbox"/> 3 day (P3) if received by 3pm M-F - 25% rush surcharge minimum <input type="checkbox"/> 2 day (P2) if received by 3pm M-F - 50% rush surcharge minimum <input type="checkbox"/> 1 day (E) if received by 3pm M-F - 100% rush surcharge minimum <input type="checkbox"/> Same day (E2) if received by 12pm M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests Date and Time Required for all EAP TATs:	
SHIPMENT RELEASE (client use) Released by: Date: Time:		ANALYSIS REQUEST Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below Environmental Division Vancouver Work Order Reference VA22A4676 Telephone: + 1 604 263 4188	
SHIPPING RECEIPT (client use) Received by: Date: Time:		SAMPLE RECEIPT DETAILS (ALS use only) Cooling Method: <input type="checkbox"/> NONE <input type="checkbox"/> ICE <input type="checkbox"/> ICE PACKS <input type="checkbox"/> FROZEN <input type="checkbox"/> COOLING INITIATED Submission Comments Identified on Sample Receipt Notification: <input type="checkbox"/> YES <input type="checkbox"/> NO Cooler Custody Seals Inact: <input type="checkbox"/> YES <input type="checkbox"/> N/A Sample Custody Seals Inact: <input type="checkbox"/> YES <input type="checkbox"/> N/A INITIAL COOLER TEMPERATURES °C: <input type="checkbox"/> YES <input type="checkbox"/> NO FINAL COOLER TEMPERATURES °C: <input type="checkbox"/> YES <input type="checkbox"/> NO	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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

ALS 2020 FORM

Results Summary VA22A4674												
Project	Sexsmith											
Report To	Stephen Thomas, Vancouver School Board											
Date Received	07-Mar-2022 15:20											
Issue Date	14-Mar-2022 10:52											
Amendment	0											
Client Sample ID			S.S. D.F. Entry 200 Rm. 207 Sexsmith	S.S. D.F. Rm. 142 Sexsmith	Sink D.F. Rm. 103 Sexsmith	Sink D.F. Rm. 104 Sexsmith	Sink D.F. Rm. 105 Sexsmith	Sink D.F. Rm. 110 Sexsmith	Sink D.F. Rm. 106 Sexsmith	Sink D.F. Rm. 112 Sexsmith	Sink D.F. Rm. 111 Sexsmith	Sink D.F. Rm. 113 Sexsmith
Date Sampled			07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022
Time Sampled			07:43	07:46	07:47	07:50	07:52	08:01	08:03	08:06	08:08	08:08
ALS Sample ID			VA22A4674-001	VA22A4674-002	VA22A4674-003	VA22A4674-004	VA22A4674-005	VA22A4674-006	VA22A4674-007	VA22A4674-008	VA22A4674-009	VA22A4674-010
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)												
lead, total	0.000050	mg/L	0.000218	0.000271	0.000733	0.000504	0.000353	0.00130	0.00108	0.000555	0.00120	0.000490

Results Summary VA22A4676														
Project	Sexsmith													
Report To	Stephen Thomas, Vancouver School Board													
Date Received	07-Mar-2022 15:20													
Issue Date	14-Mar-2022 11:02													
Amendment	0													
Client Sample ID			Sink D.F. Rm. 235 Sexsmith	Sink D.F. Rm. 234 Sexsmith	Sink D.F. Rm. 236 Sexsmith	Sink D.F. Rm. 237 Sexsmith	Sink D.F. Rm. 233 Sexsmith	Sink D.F. Rm. 238 Sexsmith	Sink D.F. Rm. 232 Sexsmith	S.S. D.F. Rm. 227 Sexsmith	Sink D.F. Rm. 241 Sexsmith	Sink D.F. Rm. 226 Sexsmith	Sink D.F. Rm. 242 Sexsmith	Sink D.F. Rm. 243 Sexsmith
Date Sampled			07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022
Time Sampled			07:07	07:12	07:17	07:20	07:22	07:24	07:28	07:28	07:32	07:35	07:38	07:40
ALS Sample ID			VA22A4676-001	VA22A4676-002	VA22A4676-003	VA22A4676-004	VA22A4676-005	VA22A4676-006	VA22A4676-007	VA22A4676-008	VA22A4676-009	VA22A4676-010	VA22A4676-011	VA22A4676-012
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)														
lead, total	0.000050	mg/L	0.000733	0.000632	0.000779	0.000950	0.000920	0.00193	0.00213	0.000884	0.00109	0.000826	0.000562	0.000777