

Water Testing Results for 2022 Reporting Period

With deep gratitude and respect, we are honoured to be learning and unlearning on the ancestral and unceded lands of the xʷməθkʷəṅəm (Musqueam), Skwxwú7mesh Úxwumixw (Squamish Nation) & səliłwətał (Tsleil-Waututh Nation).

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CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C5234	Page	: 1 of 3
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	: Sir Mathew Begbie	Date Samples Received	: 19-Oct-2022 15:05
PO	: ----	Date Analysis Commenced	: 21-Oct-2022
C-O-C number	: 992014	Issue Date	: 24-Oct-2022 09:31
Sampler	: Robin lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 7		

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>
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C5234	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	: Sir Mathew Begbie	Date Samples Received	: 19-Oct-2022 15:05
PO	: ----	Issue Date	: 24-Oct-2022 09:31
C-O-C number	: 992014		
Sampler	: Robin lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 001 Rm. 007	E420	19-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm. 104	E420	19-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm. 106	E420	19-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 114 Rm. 113	E420	19-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Play area 009 Rm. 010	E420	19-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Play area 27 North Left	E420	19-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 204	E420	19-Oct-2022	21-Oct-2022	----	----		22-Oct-2022	180 days	2 days	✓



Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	706254	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	706254	1	20	5.0	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	706254	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	706254	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C5234	Page	: 1 of 3
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	: Sir Mathew Begbie	Date Samples Received	: 19-Oct-2022 15:05
PO	: ----	Date Analysis Commenced	: 21-Oct-2022
C-O-C number	: 992014	Issue Date	: 24-Oct-2022 09:31
Sampler	: Robin lemay ____		
Site	: ----		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 706254)											
VA22C5234-001	Play area 27 North Left	lead, total	7439-92-1	E420	0.000050	mg/L	0.00336	0.00320	4.77%	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 (QCLot: 706254)						
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 (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 706254)									
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 >= 1x spike level.

Sub-Matrix: Water					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
					Concentration	Target	MS	Low	High
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 706254)									
VA22C5234-002	Corr. 001 Rm. 007	lead, total	7439-92-1	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130



COC Number: 20 - 992014

Canada Toll Free: 1 800 668 9878

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[illegible]

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**.

AUG 30 20 58 C

White Paper Co. 604 951-3900

Results Summary VA22C5234

Project	Sir Mathew Begbie
Report To	Stephen Thomas, Vancouver School Board
Date Received	19-Oct-2022 15:05
Issue Date	24-Oct-2022 09:31
Amendment	0

Client Sample ID			Play area 27 North Left	Corr. 001 Rm. 007	Play area 009 Rm. 010	Corr. 114 Rm. 113	Corr. 100 Rm. 106	Corr. 100 Rm. 104	Rm. 204
Date Sampled			19-Oct-2022	19-Oct-2022	19-Oct-2022	19-Oct-2022	19-Oct-2022	19-Oct-2022	19-Oct-2022
Time Sampled			07:44	07:51	07:53	07:56	08:00	08:03	08:09
ALS Sample ID			VA22C5234-001	VA22C5234-002	VA22C5234-003	VA22C5234-004	VA22C5234-005	VA22C5234-006	VA22C5234-007
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
Total Metals (Matrix: Water)									
lead, total	0.000050	mg/L	0.00336	0.0013	0.000448	0.00516	0.000434	0.000606	0.00084

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C5992	Page	: 1 of 3
Amendment	: 1		
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	: Britannia Elementary	Date Samples Received	: 26-Oct-2022 14:50
PO	: ----	Date Analysis Commenced	: 02-Nov-2022
C-O-C number	: 20-1017398	Issue Date	: 07-Nov-2022 09:21
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

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.

<u>Signatories</u>	<u>Position</u>	<u>Laboratory Department</u>
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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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.

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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.

Workorder Comments

Amendment (7/11/2022): This report has been amended to alter the site details, project reference code or order number. All analysis results are as per the previous report.



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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C5992	Page	: 1 of 6
Amendment	: 1		
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	: Britannia Elementary	Date Samples Received	: 26-Oct-2022 14:50
PO	: ----	Issue Date	: 07-Nov-2022 09:21
C-O-C number	: 20-1017398		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

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Key

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RPD: Relative Percent Difference.

Workorder Comments

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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	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) Corr. 100 S.S.D.F.	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 141 B.F. station	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. Rm. 126 S.S.D.F	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 107 Girls change Rm. D.F.	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 108 Bubbler	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 110 Boy change Rm. D.F.	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 111 Bubbler	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓



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

Analyte Group	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) Rm. 112 Bubbler	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 113 Bubbler	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 114 Bubbler	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 117 Bubbler	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 118 Bubbler	E420	26-Oct-2022	02-Nov-2022	----	----		04-Nov-2022	180 days	8 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	725802	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	725802	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	725802	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	725802	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C5992	Page	: 1 of 3
Amendment	: 1		
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	: Britannia Elementary	Date Samples Received	: 26-Oct-2022 14:50
PO	: ----	Date Analysis Commenced	: 02-Nov-2022
C-O-C number	: 20-1017398	Issue Date	: 07-Nov-2022 09:21
Sampler	: Robin LeMay_---		
Site	: ----		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 725802)											
TY2203475-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000346	0.000349	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
Total Metals (QC Lot: 725802)						
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 (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 725802)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
					Concentration	Target	MS	Low	High
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 725802)									
TY2203475-002	Anonymous	lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130



www.alsglobal.com

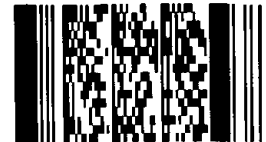
Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20-1017398

Page

Environmental Division
Vancouver
Work Order Reference
VA22C5992



Telephone : +1 604 253 4188

Report To	Contact and company name below will appear on the final report	Reports / Recipients	Turnaround Time (TAT) Requested
Company:	Vancouver School Board	Select Report Format: ☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
Phone:	604 713-5637	☐ 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
Company address below will appear on the final report		Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
Street:	1549 Clark Drive	Email 1 or Fax: sstomas@vsb.bc.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
City/Province:	Vancouver B.C.	Email 2: ccarrell@vsb.bc.ca	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional may apply to rush requests on weekends, statutory holidays and non-routine
Postal Code:		Email 3: jdvorag@vsb.bc.ca	Date and Time Required for all E&P TATs:
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients	For all tests with rush TATs requested, please contact
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX	Analysis Required
Company:		Email 1 or Fax: sstomas@vsb.bc.ca	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
Contact:		Email 2: ccarrell@vsb.bc.ca	

Project Information	Oil and Gas Required Fields (client use)
ALS Account # / Quote #	AFE/Cost Center: PO#
Job #: Britannia Elementary	Major/Minor Code: Routing Code:
PO / AFE:	Requisitioner:
LSD:	Location:
ALS Lab Work Order # (ALS use only):	ALS Contact: T. Tarannum Sampler: Robin Lemay

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
1	Corr. 141 B.F. station	10-26-22	7:26	water	Lead				
2	Rm. 117 Bubbler	10-26-22	7:31	water					
3	Rm. 118 Bubbler	10-26-22	7:35	water					
4	Rm. 114 -13. bubbler	10-26-22	7:38	water					
5	Rm. 113 Bubbler	10-26-22	7:43	water					
6	Rm. 112 Bubbler	10-26-22	7:48	water					
7	Rm. 111 Bubbler	10-26-22	7:56	water					
8	Rm. 108 Bubbler	10-26-22	7:59	water					
9	Corr. Rm. 126 SS D.F.	10-26-22	7:53	water					
10	Corr. 100 SS DF	10-26-22	8:04	water					
11	Rm. 110 Boy change Rm. D.F.	10-26-22	8:10	water					
12	Rm. 107 Girls change Rm. D.F.	10-26-22	8:36	water					

Drinking Water (DW) Samples ¹ (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)	SAMPLE RECEIPT DETAILS (ALS use only)	
Are samples taken from a Regulated DW System? ☒ YES ☐ NO	No Preservatives added	Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED	Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO
Are samples for human consumption/ use? ☒ YES ☐ NO		Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A	INITIAL COOLER TEMPERATURES °C
		FINAL COOLER TEMPERATURES °C	6
SHIPMENT RELEASE (client use)		FINAL SHIPMENT RECEPTION (ALS use only)	
Released by:	Date:	Received by:	Date:
		IC	26/10/22

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.

AUG 2005 FROTH

Results Summary VA22C5992

Project	Britannia Elementary													
Report To	Stephen Thomas, Vancouver School Board													
Date Received	26-Oct-2022 14:50													
Issue Date	07-Nov-2022 09:21													
Amendment	1													
Client Sample ID			Corr. 141 B.F. station	Rm. 117 Bubblr	Rm. 118 Bubblr	Rm. 114 Bubblr	Rm. 113 Bubblr	Rm. 112 Bubblr	Rm. 111 Bubblr	Rm. 108 Bubblr	Corr. Rm. 126 S.S.D.F	Corr. 100 S.S.D.F.	Rm. 110 Boy change Rm. D.F.	Rm. 107 Girls change Rm. D.F.
Date Sampled			26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022	26-Oct-2022
Time Sampled			07:26	07:31	07:35	07:38	07:43	07:48	07:56	07:59	07:53	08:04	08:10	08:36
ALS Sample ID			VA22C5992-001	VA22C5992-002	VA22C5992-003	VA22C5992-004	VA22C5992-005	VA22C5992-006	VA22C5992-007	VA22C5992-008	VA22C5992-009	VA22C5992-010	VA22C5992-011	VA22C5992-012
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	0.000149	0.000446	0.00031	0.000209	0.000285	0.000567	0.000253	0.000325	0.000516	0.000241	0.00356	0.199

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C6618	Page	: 1 of 3
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	: Britannia Secondary	Date Samples Received	: 02-Nov-2022 14:48
PO	: ----	Date Analysis Commenced	: 09-Nov-2022
C-O-C number	: 20-1016772	Issue Date	: 14-Nov-2022 22:03
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 11		
No. of samples analysed	: 11		

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.

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C6618	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	: Britannia Secondary	Date Samples Received	: 02-Nov-2022 14:48
PO	: ----	Issue Date	: 14-Nov-2022 22:03
C-O-C number	: 20-1016772		
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 11		
No. of samples analysed	: 11		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr. 136 Rm. 141 S.S.D.F	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 226 Rm. 216 B.F	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 245 Rm. 220 S.S.D.F	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 245 Rm. 244 B.F	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 327 Rm. 325 S.S.D.F	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 330 Rm. 331 S.S.D.F	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 330 Rm. 3346 D.F	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓



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

Analyte Group	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) Rm. 138 Girls change room S.S.D.F	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 203A Bubbler	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 203B Bubbler	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 213 Bubbler	E420	02-Nov-2022	09-Nov-2022	----	----		11-Nov-2022	180 days	9 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	733966	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	733966	1	20	5.0	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	733966	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	733966	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C6618	Page	: 1 of 3
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	: Britannia Secondary	Date Samples Received	: 02-Nov-2022 14:48
PO	: ----	Date Analysis Commenced	: 09-Nov-2022
C-O-C number	: 20-1016772	Issue Date	: 14-Nov-2022 22:03
Sampler	: R.Lemay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 11		
No. of samples analysed	: 11		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 733966)											
VA22C6598-001	Anonymous	lead, total	7439-92-1	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QC Lot: 733966)						
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 (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 733966)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	109	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
					Concentration	Target	MS	Low	High
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 733966)									
VA22C6598-002	Anonymous	lead, total	7439-92-1	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130



COC Number: 20-1016772

Canada Toll Free: 1 800 668 9878

Page of

Report To		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:	Vancouver School Board			Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL) Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A ☐ Compare Results to Criteria on Report - provide details below if box checked		☒ Routine [R] If received by 3pm M-F - no surcharges apply ☐ 4 day [P4] If received by 3pm M-F - 20% rush surcharge minimum ☐ 3 day [P3] If received by 3pm M-F - 25% rush surcharge minimum ☐ 2 day [P2] If received by 3pm M-F - 50% rush surcharge minimum ☐ 1 day [E] If received by 3pm M-F - 100% rush surcharge minimum ☐ 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		
Contact:	Stephen Thomas			Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX Email 1 or Fax: ssthomas@vss.bc.ca Email 2: ccarrell@vss.bc.ca Email 3: jduong@vss.bc.ca		Date and Time Required for all E&P TATs:		dd-mm-yy hh:mm am/pm
Phone:	604 713-5637								
Company address below will appear on the final report									
Street:	1549 Clark Drive								
City/Province:	Vancouver B.C.								
Postal Code:									
Invoice To	Same as Report To ☒ YES ☐ NO			Invoice Recipients					
	Copy of Invoice with Report ☐ YES ☐ NO			Select Invoice Distribution:		☒ EMAIL ☐ MAIL ☐ FAX Email 1 or Fax: Email 2: Email 3:		For all tests with rush TATs requested, please contact your AM to confirm availability.	
Company:									
Contact:									
Project Information				Oil and Gas Required Fields (client use)					
ALS Account # / Quote #:				AFE/Cost Center:		PO#			
Job #: Britannia Secondary				Major/Minor Code:		Routing Code:			
PO / AFE:				Requisitioner:					
LSD:				Location:					
ALS Lab Work Order # (ALS use only): 6618				ALS Contact: T. Tarannum		Sampler: R. Lemay			
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mm-yy)	Time (hh:mm)	Sample Type			
1	Rm. 138 Girls change room S.S.D.F			02-11-22	7:31	water			
2	Corr. 136 Rm. 141 S.S.D.F			02-11-22	7:36	water			
3	Corr. 245 Rm. 220 S.S.D.F			02-11-22	7:43	water			
4	Corr. 245 Rm. 244 B.F.			02-11-22	7:47	water			
5	Corr. 330 Rm. 334b D.F.			02-11-22	7:53	water			
6	Corr. 330 Rm. 331 S.S.D.F.			02-11-22	7:56	water			
7	Corr. 226 Rm. 216 B.F.			02-11-22	8:02	water			
8	Corr. 327 Rm. 325 S.S.D.F.			02-11-22	8:08	water			
9	Rm. 213 Bubbler			02-11-22	8:13	water			
10	Rm. 203 A Bubbler			02-11-22	8:18	water			
11	Rm. 203 B Bubbler			02-11-22	8:23	water			
Drinking Water (DW) Samples¹ (client use)				Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			SAMPLE RECEIPT DETAILS (ALS use only)		
Are samples taken from a Regulated DW System? ☐ YES ☐ NO				No preservatives added			Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED		
Are samples for human consumption/ use? ☐ YES ☐ NO							Submission Comments identified on Sample Receipt Notification: ☐ YES ☒ NO		
							Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A		
							INITIAL COOLER TEMPERATURES °C		
							FINAL COOLER TEMPERATURES °C		
							7		
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	
						JC	2 Nov 22	14:48	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 30 20 FRONT

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**.

White Paper Co. 604 951-3900

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C6740	Page	: 1 of 3
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	: General Brock Elementary	Date Samples Received	: 03-Nov-2022 14:55
PO	: ----	Date Analysis Commenced	: 08-Nov-2022
C-O-C number	: 20-1016773	Issue Date	: 15-Nov-2022 09:32
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 6		
No. of samples analysed	: 6		

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.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C6740	Page	: 1 of 5
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	: General Brock Elementary	Date Samples Received	: 03-Nov-2022 14:55
PO	: ----	Issue Date	: 15-Nov-2022 09:32
C-O-C number	: 20-1016773		
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
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 Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr. 101 Rm. C109 B.F	E420	03-Nov-2022	08-Nov-2022	----	----		10-Nov-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 205 Rm. 205A D.F	E420	03-Nov-2022	08-Nov-2022	----	----		10-Nov-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.101 Rm. B111 D.F	E420	03-Nov-2022	08-Nov-2022	----	----		10-Nov-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Play Area 001 D.F	E420	03-Nov-2022	08-Nov-2022	----	----		10-Nov-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Play Area 005 D.F	E420	03-Nov-2022	08-Nov-2022	----	----		10-Nov-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 130 Girls Change Rm. D.F	E420	03-Nov-2022	08-Nov-2022	----	----		10-Nov-2022	180 days	7 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	733907	1	14	7.1	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	733907	1	14	7.1	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	733907	1	14	7.1	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	733907	1	14	7.1	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C6740	Page	: 1 of 3
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	: General Brock Elementary	Date Samples Received	: 03-Nov-2022 14:55
PO	: ----	Date Analysis Commenced	: 08-Nov-2022
C-O-C number	: 20-1016773	Issue Date	: 15-Nov-2022 09:32
Sampler	: R.Lemay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 6		
No. of samples analysed	: 6		

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This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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 - LOR = Limit of Reporting (detection limit).
 - RPD = Relative Percent Difference
 - # = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

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Laboratory Duplicate (DUP) Report

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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: 733907)											
VA22C6675-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 733907)						
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: 733907)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 733907)									
VA22C6740-001	Rm. 130 Girls Change Rm. D.F	lead, total	7439-92-1	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130

Report To		Contact and company name below will appear on the final report			
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)		
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A		
Phone:	604-713-5637	Compare Results to Criteria or Report - provide details below if box checked			
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX		
Street:	1549 Clark Dr.	Email 1 or Fax	35thomas@usb.bc.ca		
City/Province:	Vancouver B.C.	Email 2	carve11@usb.bc.ca		
Postal Code:		Email 3	jdvong@usb.bc.ca		
Invoice To:	Same as Report To	Invoice Recipients			
Copy of Invoice with Report	☐ YES ☐ NO	Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX		
Company:		Email 1 or Fax			
Contact:		Email 2			
Project Information		Oil and Gas Required Fields (client use)			
ALS Account # / Quote #:		A/E/Cost Center:	PO#		
Job #:	General Beck Elementary	Major/Minor Code:	Routing Code:		
PO / A/E:		Requisitioner:			
LSD:		Location:			
ALS Lab Work Order # (ALS use only):	6740	ALS Contact:	T. Tarasum		
ALS Sample # (ALS use only)		Sample Identification and/or Coordinates (This description will appear on the report)	ALS Date (dd-mm-yy)	Time (hh:mm)	Sample Type
		Rn. 130 Girls Change Rn.	03-11-22	7:41	water
		corr. 205 Rn. 205A	03-11-22	7:47	water
		corr. 101 Rn. C109	03-11-22	7:50	water
		corr. 101 Rn. B111	03-11-22	8:05	water
		Play area 005	03-11-22	8:15	water
		Play area 001	03-11-22	8:17	water
Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)					
Drinking Water (DW) Samples (client use)					
Are samples taken from a Regulated DW System?					
☐ YES ☐ NO					
Are samples for human consumption/ use?					
☐ YES ☐ NO					
SHIPMENT RELEASE (client use)					
Released by: _____ Date: _____ Time: _____					
INITIAL SHIPMENT RECEPTION (ALS use only)					
Received by: _____ Date: _____ Time: _____					
WHITE - LABORATORY COPY YELLOW - CLIENT COPY					
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.					
SAMPLE RECEIPT DETAILS (ALS use only)					
Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED					
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO					
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A					
INITIAL COOLER TEMPERATURES °C: _____ FINAL COOLER TEMPERATURES °C: _____					
Date: 03/11/22 Time: 2:55 PM					
Environmental Division Vancouver Work Order Reference VA22C6740 Telephone: +1 604 263 4188					
NUMBER OF CONTAINERS					
Lead					
Turnaround Time (TAT) Requested					
☒ Routine [R] if received by 3pm M-F - no surcharges apply					
☐ 4 day [4] if received by 3pm M-F - 20% rush surcharge minimum					
☐ 3 day [3] if received by 3pm M-F - 25% rush surcharge minimum					
☐ 2 day [2] if received by 3pm M-F - 50% rush surcharge minimum					
☐ 1 day [1] if received by 3pm M-F - 100% rush surcharge minimum					
Same day [E] if received by 3pm M-F - 20% rush surcharge additional fees may apply for rush requests on weekends, statutory holidays and non-routine tests					
Date and Time Required for all E&P TATs: _____					
For all tests with rush TATs requested, please contact your A/E to confirm availability.					
Analysis Request					
Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below					
SAMPLES ON HOLD					
EXTENDED STORAGE REQUIRED					
SUSPECTED HAZARD (see notes)					

Results Summary VA22C6740

Project	General Brock Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	03-Nov-2022 14:55
Issue Date	15-Nov-2022 09:33
Amendment	0

Client Sample ID			Rm. 130 Girls Change Rm. D.F	Corr. 205 Rm. 205A D.F	Corr. 101 Rm. C109 B.F	Corr.101 Rm. B111 D.F	Play Area 005 D.F	Play Area 001 D.F
Date Sampled			03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022	03-Nov-2022
Time Sampled			07:41	07:47	07:50	08:05	08:15	08:17
ALS Sample ID			VA22C6740-001	VA22C6740-002	VA22C6740-003	VA22C6740-004	VA22C6740-005	VA22C6740-006
Analyte	Lowest Detection Limit	Units	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	0.0145	0.000306	0.000184	0.000979	0.00145	0.0377

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C6415	Page	: 1 of 3
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	: Graham Bruce Elementary	Date Samples Received	: 01-Nov-2022 08:28
PO	: ----	Date Analysis Commenced	: 08-Nov-2022
C-O-C number	: 20-992012	Issue Date	: 10-Nov-2022 16:34
Sampler	: R.Lenay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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.

Signatories	Position	Laboratory Department
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

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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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C6415	Page	: 1 of 5
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	: Graham Bruce Elementary	Date Samples Received	: 01-Nov-2022 08:28
PO	: ----	Issue Date	: 10-Nov-2022 16:34
C-O-C number	: 20-992012		
Sampler	: R.Lenay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr. 010 Rm.010 B D.F	E420	01-Nov-2022	08-Nov-2022	----	----		09-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 019 Rm.030 D.F	E420	01-Nov-2022	08-Nov-2022	----	----		09-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm.110 Bottle Filter	E420	01-Nov-2022	08-Nov-2022	----	----		09-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm 010 A D.F	E420	01-Nov-2022	08-Nov-2022	----	----		09-Nov-2022	180 days	8 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	732697	1	17	5.8	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	732697	1	17	5.8	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	732697	1	17	5.8	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	732697	1	17	5.8	5.0	✓



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.

QUALITY CONTROL REPORT

Work Order	: VA22C6415	Page	: 1 of 3
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	: Graham Bruce Elementary	Date Samples Received	: 01-Nov-2022 08:28
PO	: ----	Date Analysis Commenced	: 08-Nov-2022
C-O-C number	: 20-992012	Issue Date	: 10-Nov-2022 16:34
Sampler	: R.Lenay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Angela Ren	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 732697)											
KS2204121-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000113	0.000111	0.000002	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
Total Metals (QCLot: 732697)						
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 (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 732697)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.5	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
					Concentration	Target	MS	Low	High
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 732697)									
KS2204250-001	Anonymous	lead, total	7439-92-1	E420	0.201 mg/L	0.2 mg/L	101	70.0	130



COC Number: 20 - 992012

Canada Toll Free: 1 800 668 9878

Page of

[illegible]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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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**.

NIG 2020 FROM

Results Summary VA22C6415

Project Graham Bruce Elementary
Report To Stephen Thomas, Vancouver School Board
Date Received 01-Nov-2022 08:28
Issue Date 10-Nov-2022 16:34
Amendment 0

Client Sample ID			Corr. 010 Rm.010 B D.F	Corr. 019 Rm.030 D.F	Rm 010 A D.F	Corr. 100 Rm.110 Bottle Filter
Date Sampled			01-Nov-2022	01-Nov-2022	01-Nov-2022	01-Nov-2022
Time Sampled			07:45	07:49	07:52	07:57
ALS Sample ID			VA22C6415-001	VA22C6415-002	VA22C6415-003	VA22C6415-004
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)						
lead, total	0.000050	mg/L	0.00131	0.000692	0.00493	0.000080

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0675	Page	: 1 of 3
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	: Lord Byng Secondary	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1017395	Issue Date	: 28-Dec-2022 17:40
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

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.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0675	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	: Lord Byng Secondary	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Issue Date	: 28-Dec-2022 17:40
C-O-C number	: 20-1017395		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

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Key

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LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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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

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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	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) Corr. 117 Rm. 104A S.S.D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 117 Rm. 117A S.S.D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 123 Rm. 119 S.S.D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 221 Rm. 220A Bottle Filter	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 319 Rm. 304A D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 319 Rm. 305 D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 319 Rm. 318 S.S.D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 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) Girls Change Rm. 123 S.S.D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 102 Cafe Bottle Filter	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 109 Bottle Filter	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. B111 Bottle Filter	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. B120 Bottle Filter	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	785094	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	785094	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	785094	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	785094	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0675	Page	: 1 of 3
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	: Lord Byng Secondary	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1017395	Issue Date	: 28-Dec-2022 17:40
Sampler	: RL ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 785094)											
VA22D0657-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00179	0.00188	4.77%	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 (QCLot: 785094)						
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: 785094)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 785094)									
VA22D0663-001	Anonymous	lead, total	7439-92-1	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130



COC Number: 20 - 1017395

Canada Toll Free: 1 800 668 9878

Page of

Report To		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:	Vancouver School Board			Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply					
Contact:	Stephyn Thomas			Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum					
Phone:	604 113-5637			☐ 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					
Company address below will appear on the final report				Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum					
Street:	1549 Clark Drive			Email 1 or Fax	ssthomas@vsb.bc.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum					
City/Province:	Vancouver B.C.			Email 2	lcarrell@vsb.bc.ca	☐ 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					
Postal Code:				Email 3	jdong@vsb.bc.ca	Date and Time Required for all E&P TATs:		dd-mm-yy hh:mm am/pm			
Invoice To	Same as Report To ☒ YES ☐ NO			Invoice Recipients		For all tests with rush TATs requested, please contact your AM to confirm availability.					
	Copy of Invoice with Report ☐ YES ☐ NO			Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX		Analysis Request					
Company:				Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below					
Contact:				Email 2							
Project Information				Oil and Gas Required Fields (client use)				NUMBER OF CONTAINERS Lead			
ALS Account # / Quote #				AFE/Cost Center: PO#							
Job #: Lord Byng Secondary				Major/Minor Code: Routing Code:							
PO / AFE:				Requisitioner:							
LSD:				Location:				MPLES ON HOLD EXTENDED STORAGE REQUIRED SUSPECTED HAZARD (see notes)			
ALS Lab Work Order # (ALS use only): 675				ALS Contact: T. Tarannum		Sampler: R. Lemay					
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mm-yy)	Time (hh:mm)	Sample Type					
	Corr. 319 Rm. 305 D.F.			19-12-22	8:07	water					
	Corr. 319 Rm. 304A D.F.			19-12-22	8:09	water					
	Corr. 319 Rm. 318 S.S.D.F.			19-12-22	8:12	water					
	Corr. 221 Rm. 220A Bottle Filler			19-12-22	8:16	water					
	Corr. 117 Rm. 104A S.S.D.F.			19-12-22	8:19	water					
	Corr. 117 Rm. 117A S.S.D.F.			19-12-22	8:20	water					
	Corr. 123 Rm. 119 S.S.D.F.			19-12-22	8:27	water					
	Rm. B111 Bottle Filler			19-12-22	8:35	water					
	Rm. 109 Bottle Filler			19-12-22	8:38	water					
	Girls change Rm. 123 S.S.D.F.			19-12-22	8:40	water					
	Rm. B120 Bottle Filler			19-12-22	8:42	water					
	Rm. 102 Cate Bottle Filler			19-12-22	8:46	water					
Drinking Water (DW) Samples (client use)				Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)				SAMPLE RECEIPT DETAILS (ALS use only)			
Are samples taken from a Regulated DW System? ☒ YES ☐ NO				No preservatives added				Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED			
Are samples for human consumption/ use? ☒ YES ☐ NO								Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO			
								Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A			
								INITIAL COOLER TEMPERATURES °C: 2 FINAL COOLER TEMPERATURES °C: 2			
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (ALS use only)				FINAL SHIPMENT RECEPTION (ALS use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
							Dec-19				

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**.

AUG 2020 FRONT

Results Summary VA22D0675

Project	Lord Byng Secondary													
Report To	Stephen Thomas, Vancouver School Board													
Date Received	19-Dec-2022 15:30													
Issue Date	28-Dec-2022 17:40													
Amendment	0													
Client Sample ID			Corr. 319 Rm. 305 D.F.	Corr. 319 Rm. 304A D.F.	Corr. 319 Rm. 318 S.S.D.F.	Corr. 221 Rm. 220A Bottle Filter	Corr. 117 Rm. 104A S.S.D.F.	Corr. 117 Rm. 117A S.S.D.F.	Corr. 123 Rm. 119 S.S.D.F.	Rm. B111 Bottle Filter	Rm. 109 Bottle Filter	Girls Change Rm. 123 S.S.D.F.	Rm. B120 Bottle Filter	Rm. 102 Cafe Bottle Filter
Date Sampled			19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022
Time Sampled			08:07	08:09	08:12	08:16	08:19	08:20	08:27	08:35	08:38	08:41	08:42	08:46
ALS Sample ID			VA22D0675-001	VA22D0675-002	VA22D0675-003	VA22D0675-004	VA22D0675-005	VA22D0675-006	VA22D0675-007	VA22D0675-008	VA22D0675-009	VA22D0675-010	VA22D0675-011	VA22D0675-012
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	0.000760	0.00170	0.00125	0.000717	0.00190	0.00116	0.000474	0.000065	0.000060	0.00148	0.00209	0.000059

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C6108	Page	: 1 of 3
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	: Carnarvon Elementary	Date Samples Received	: 27-Oct-2022 15:18
PO	: ----	Date Analysis Commenced	: 04-Nov-2022
C-O-C number	: 20-992013	Issue Date	: 07-Nov-2022 23:05
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 6		
No. of samples analysed	: 6		

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.

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C6108	Page	: 1 of 5
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	: Carnarvon Elementary	Date Samples Received	: 27-Oct-2022 15:18
PO	: ----	Issue Date	: 07-Nov-2022 23:05
C-O-C number	: 20-992013		
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
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 Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr.119 Rm 110 S.S.D.F	E420	27-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.130 Rm 132 Bottle Filler	E420	27-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.151	E420	27-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.164 Rm 160 Bottle Filler	E420	27-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.164 Rm 163 D.F	E420	27-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm.101 D.F	E420	27-Oct-2022	04-Nov-2022	----	----		04-Nov-2022	180 days	8 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	729175	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	729175	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	729175	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	729175	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C6108	Page	: 1 of 3
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	: Carnarvon Elementary	Date Samples Received	: 27-Oct-2022 15:18
PO	: ----	Date Analysis Commenced	: 04-Nov-2022
C-O-C number	: 20-992013	Issue Date	: 07-Nov-2022 23:05
Sampler	: R.Lemay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 729175)											
VA22C6108-001	Rm.101 D.F	lead, total	7439-92-1	E420	0.000050	mg/L	0.00614	0.00622	1.15%	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 (QCLot: 729175)						
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 (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 729175)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
					Concentration	Target	MS	Low	High
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 729175)									
VA22C6108-002	Corr.151	lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130



COC Number: 20 - 992013

Canada Toll Free: 1 800 668 9878

Page of

Report To		Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)			☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A			☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone:	604 713-5637	☐ 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	
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX			☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street:	1549 Clark Dr.	Email 1 or Fax	sstomas@vsb.bc.ca			☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province:	Vancouver B.C.	Email 2	cscarrell@vsb.bc.ca			☐ 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	
Postal Code:		Email 3	jduong@vsb.bc.ca			Date and Time Required for all E&P TATs: dd-mm-yy hh:mm am/pm	
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients		For all tests with rush TATs requested, please contact your AM to confirm availability.			
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	Analysis Request			
Company:		Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below			
Contact:		Email 2					
Project Information		Oil and Gas Required Fields (client use)					
ALS Account # / Quote #		AFC/Cost Center:	PO#				
Job #:	Carnarvon Elementary	Major/Minor Code:	Routing Code:				
PO / AFE:		Requisitioner:					
LSD:		Location:					
ALS Lab Work Order # (ALS use only): 6108		ALS Contact:	T. Tarannum	Sampler:	R. Lemay		
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)	Time (hh:mm)	Sample Type		
	Rm. 101 D.F.		27-10-22	7:42am	water		
	Corr. 151		27-10-22	7:45am	water		
	Corr. 164 Rm. 160 Bottle Filler		27-10-22	7:48am	water		
	Corr. 164 Rm. 163 D.F.		27-10-22	7:52am	water		
	Corr. 119 Rm. 110 SS.D.F.		27-10-22	7:56am	water		
	Corr. 130 Rm. 132 Bottle Filler		27-10-22	8:03am	water		
Drinking Water (DW) Samples ¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)			
Are samples taken from a Regulated DW System? ☒ YES ☐ NO		No Preservatives added		Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED			
Are samples for human consumption/ use? ☒ YES ☐ NO				Submission Comments identified on Sample Receipt Notification: ☐ YES ☒ NO			
				Cooler Custody Seals Intact: ☐ YES ☒ N/A Sample Custody Seals Intact: ☐ YES ☒ N/A			
				INITIAL COOLER TEMPERATURES °C			
				FINAL COOLER TEMPERATURES °C			
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:
						J	27/10/22
							15:18

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 CQC form**.

AUG 2020 FROM

Results Summary VA22C6108

Project	Carnarvon Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	27-Oct-2022 15:18
Issue Date	07-Nov-2022 23:05
Amendment	0

Client Sample ID			Rm.101 D.F	Corr.151	Corr.164 Rm 160 Bottle Filler	Corr.164 Rm 163 D.F	Corr.119 Rm 110 S.S.D.F	Corr.130 Rm 132 Bottle Filler
Date Sampled			27-Oct-2022	27-Oct-2022	27-Oct-2022	27-Oct-2022	27-Oct-2022	27-Oct-2022
Time Sampled			07:42	07:45	07:48	07:52	07:56	08:03
ALS Sample ID			VA22C6108-001	VA22C6108-002	VA22C6108-003	VA22C6108-004	VA22C6108-005	VA22C6108-006
Analyte	Lowest Detection Limit	Units	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	0.00614	0.00194	0.000191	0.00241	0.00182	0.000427

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C7849	Page	: 1 of 3
Amendment	: 1		
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	: Emily Carr Elementary	Date Samples Received	: 16-Nov-2022 14:53
PO	: ----	Date Analysis Commenced	: 19-Nov-2022
C-O-C number	: 20-988640	Issue Date	: 25-Nov-2022 10:46
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 6		
No. of samples analysed	: 6		

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.

<u>Signatories</u>	<u>Position</u>	<u>Laboratory Department</u>
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C7849	Page	: 1 of 5
Amendment	: 1		
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	: Emily Carr Elementary	Date Samples Received	: 16-Nov-2022 14:53
PO	: ----	Issue Date	: 25-Nov-2022 10:46
C-O-C number	: 20-988640		
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
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 Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Boys Change Room 108 D.F	E420	16-Nov-2022	19-Nov-2022	----	----		21-Nov-2022	180 days	5 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.100 Rm.130 Bottle Filler	E420	16-Nov-2022	19-Nov-2022	----	----		21-Nov-2022	180 days	5 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.110 Rm.110A D.F	E420	16-Nov-2022	19-Nov-2022	----	----		21-Nov-2022	180 days	5 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls Change Room 109	E420	16-Nov-2022	19-Nov-2022	----	----		21-Nov-2022	180 days	5 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Play Area 001 S.S.D.F	E420	16-Nov-2022	19-Nov-2022	----	----		21-Nov-2022	180 days	5 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Play Area 004 D.F	E420	16-Nov-2022	19-Nov-2022	----	----		21-Nov-2022	180 days	5 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	747234	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	747234	1	20	5.0	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	747234	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	747234	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C7849	Page	: 1 of 3
Amendment	: 1		
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	: Emily Carr Elementary	Date Samples Received	: 16-Nov-2022 14:53
PO	: ----	Date Analysis Commenced	: 19-Nov-2022
C-O-C number	: 20-988640	Issue Date	: 25-Nov-2022 10:46
Sampler	: R.Lemay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 6		
No. of samples analysed	: 6		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 747234)											
VA22C7746-001	Anonymous	lead, total	7439-92-1	E420	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 747234)						
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: 747234)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.4	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 747234)									
VA22C7746-002	Anonymous	lead, total	7439-92-1	E420	0.0918 mg/L	0.1 mg/L	91.8	70.0	130



COC Number: 20 - 988640

Canada Toll Free: 1 800 668 9878

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[illegible]

REFER TO BACK PAGE FOR AIS 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 CQC form

White Paper Co. 604 951-3900

AUG 2020 EDITION

Results Summary VA22C7849

Project	Emily Carr Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	16-Nov-2022 14:53
Issue Date	25-Nov-2022 10:46
Amendment	1

Client Sample ID			Corr.100 Rm.130 Bottle Filler	Corr.110 Rm.110A D.F	Play Area 001 S.S.D.F	Play Area 004 D.F	Boys Change Room 108 D.F	Girls Change Room 109
Date Sampled			16-Nov-2022	16-Nov-2022	16-Nov-2022	16-Nov-2022	16-Nov-2022	16-Nov-2022
Time Sampled			07:33	07:38	07:41	07:45	07:52	07:58
ALS Sample ID			VA22C7849-001	VA22C7849-002	VA22C7849-003	VA22C7849-004	VA22C7849-005	VA22C7849-006
Analyte	Lowest Detection Limit	Units	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	0.000857	0.00267	0.000054	0.0101	0.0935	0.015

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C7286	Page	: 1 of 3
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	: Champlain Annex	Date Samples Received	: 09-Nov-2022 15:00
PO	: ----	Date Analysis Commenced	: 15-Nov-2022
C-O-C number	: 20-1016776	Issue Date	: 17-Nov-2022 09:31
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
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
- 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.

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C7286	Page	: 1 of 5
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	: Champlain Annex	Date Samples Received	: 09-Nov-2022 15:00
PO	: ----	Issue Date	: 17-Nov-2022 09:38
C-O-C number	: 20-1016776		
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
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 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	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) Corr 120 Rm121 Bottle Filter	E420	09-Nov-2022	15-Nov-2022	----	----		16-Nov-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 120 Rm129 SS DF	E420	09-Nov-2022	15-Nov-2022	----	----		16-Nov-2022	180 days	7 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	741412	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	741412	1	16	6.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	741412	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	741412	1	16	6.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C7286	Page	: 1 of 3
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	: Champlain Annex	Date Samples Received	: 09-Nov-2022 15:00
PO	: ----	Date Analysis Commenced	: 15-Nov-2022
C-O-C number	: 20-1016776	Issue Date	: 17-Nov-2022 09:31
Sampler	: R. Lemay ----		
Site	: ----		
Quote number	: ----		
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
 - 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
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 741412)											
FJ2203172-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000211	0.000225	0.000015	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
Total Metals (QCLot: 741412)						
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: 741412)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 741412)									
FJ2203175-001	Anonymous	lead, total	7439-92-1	E420	0.0358 mg/L	0.04 mg/L	89.6	70.0	130

[illegible]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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**.

Results Summary VA22C7286

Project	Champlain Annex
Report To	Stephen Thomas, Vancouver School Board
Date Received	09-Nov-2022 15:00
Issue Date	17-Nov-2022 09:31
Amendment	0

Client Sample ID			Corr 120 Rm121 Bottle Filter	Corr 120 Rm129 SS DF
Date Sampled			09-Nov-2022	09-Nov-2022
Time Sampled			08:09	08:12
ALS Sample ID			VA22C7286-001	VA22C7286-002
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)				
lead, total	0.000050	mg/L	0.000071	0.00236

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C7279	Page	: 1 of 3
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	: Champlain Elementary	Date Samples Received	: 09-Nov-2022 15:00
PO	: ----	Date Analysis Commenced	: 11-Nov-2022
C-O-C number	: 20-1016771	Issue Date	: 15-Nov-2022 07:50
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 11		
No. of samples analysed	: 11		

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C7279	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	: Champlain Elementary	Date Samples Received	: 09-Nov-2022 15:00
PO	: ----	Issue Date	: 15-Nov-2022 07:50
C-O-C number	: 20-1016771		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 11		
No. of samples analysed	: 11		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr 113 Rm112 Bottle Filter	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 223 Rm228 SSDF	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm161	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm162	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm163	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm164	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm223 Library Bottle	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 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) Rm261	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm262	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm263	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm264	E420	09-Nov-2022	11-Nov-2022	----	----		15-Nov-2022	180 days	6 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	739499	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	739499	1	18	5.5	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	739499	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	739499	1	18	5.5	5.0	✓



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.

QUALITY CONTROL REPORT

Work Order	: VA22C7279	Page	: 1 of 3
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	: Champlain Elementary	Date Samples Received	: 09-Nov-2022 15:00
PO	: ----	Date Analysis Commenced	: 11-Nov-2022
C-O-C number	: 20-1016771	Issue Date	: 15-Nov-2022 07:50
Sampler	: Robin LeMay_---		
Site	: ----		
Quote number	: ----		
No. of samples received	: 11		
No. of samples analysed	: 11		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 739499)											
VA22C7244-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000102	0.000100	0.000002	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
Total Metals (QCLot: 739499)						
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: 739499)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	108	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 739499)									
VA22C7244-002	Anonymous	lead, total	7439-92-1	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1016771

Page of

Report To 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: <u>Vancouver School Board</u>		Select Report Format: ☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)		☒ Routine [R] if received by 3pm M-F - no surcharges apply																																																																																																																																																																																
Contact: <u>Stephen Thomas</u>		Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A		☐ 4 day [M] if received by 3pm M-F - 20% rush surcharge minimum																																																																																																																																																																																
Phone: <u>604 713 5637</u>		☐ 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																																																																																																																																																																																
Company address below will appear on the final report		Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX		☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum																																																																																																																																																																																
Street: <u>1549 Clark Dr.</u>		Email 1 or Fax: <u>sstomas@vsb.bc.ca</u>		☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum																																																																																																																																																																																
City/Province: <u>Vancouver B.C.</u>		Email 2: <u>carrell@vsb.bc.ca</u>		☐ 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																																																																																																																																																																																
Postal Code:		Email 3: <u>jduong@vsb.bc.ca</u>		Date and Time Required for all E&P TATs:		dd-mm-yy hh:mm am/pm																																																																																																																																																																														
Invoice To: Same as Report To ☒ YES ☐ NO		Invoice Recipients		For all tests with rush TATs requested, please contact your AM to confirm availability.																																																																																																																																																																																
Copy of Invoice with Report ☐ YES ☐ NO		Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX		Analysis Request																																																																																																																																																																																
Company:		Email 1 or Fax:		<table border="1"> <tr> <td rowspan="10"> NUMBER OF CONTAINERS Lead </td> <td colspan="16">Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below</td> <td rowspan="10"> SAMPLES ON HOLD </td> <td rowspan="10"> EXTENDED STORAGE REQUIRED </td> <td rowspan="10"> SUSPECTED HAZARD (see notes) </td> </tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>				NUMBER OF CONTAINERS Lead	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																																																																																																																																																									
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Contact:		Email 2:																																																																																																																																																																																		
Project Information		Oil and Gas Required Fields (client use)																																																																																																																																																																																		
ALS Account # / Quote #:		AFE/Cost Center:		PO#																																																																																																																																																																																
Job #: <u>Champlain Elementary</u>		Major/Minor Code:		Routing Code:																																																																																																																																																																																
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LSD:		Location:																																																																																																																																																																																		
ALS Lab Work Order # (ALS use only):		ALS Contact: <u>T. Tarranum</u>		Sampler: <u>R. Lemay</u>																																																																																																																																																																																
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type																																																																																																																																																																																
	<u>Corr. 113 Rm. 112 Bottle Filler</u>	<u>09-11-22</u>	<u>7:14</u>	<u>water</u>																																																																																																																																																																																
	<u>Rm. 161 Bubbler</u>	<u>09-11-22</u>	<u>7:19</u>	<u>water</u>																																																																																																																																																																																
	<u>Rm. 162 Bubbler</u>	<u>09-11-22</u>	<u>7:21</u>	<u>water</u>																																																																																																																																																																																
	<u>Rm. 163 Bubbler</u>	<u>09-11-22</u>	<u>7:28</u>	<u>water</u>																																																																																																																																																																																
	<u>Rm. 164 Bubbler</u>	<u>09-11-22</u>	<u>7:31</u>	<u>water</u>																																																																																																																																																																																
	<u>Rm. 264 Bubbler</u>	<u>09-11-22</u>	<u>7:36</u>	<u>water</u>																																																																																																																																																																																
	<u>Rm. 263 Bubbler</u>	<u>09-11-22</u>	<u>7:39</u>	<u>water</u>																																																																																																																																																																																
	<u>Rm. 262 Bubbler</u>	<u>09-11-22</u>	<u>7:42</u>	<u>water</u>																																																																																																																																																																																
	<u>Rm. 261 Bubbler</u>	<u>09-11-22</u>	<u>7:46</u>	<u>water</u>																																																																																																																																																																																
	<u>Rm. 223 Library Bottle Filler</u>	<u>09-11-22</u>	<u>7:51</u>	<u>water</u>																																																																																																																																																																																
	<u>Corr. 226 Rm. 228 S.S.D.F.</u>	<u>09-11-22</u>	<u>7:54</u>	<u>water</u>																																																																																																																																																																																
Drinking Water (DW) Samples¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)																																																																																																																																																																																
Are samples taken from a Regulated DW System? ☒ YES ☐ NO		<u>No preservatives added</u>		Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☒ COOLING INITIATED																																																																																																																																																																																
Are samples for human consumption/ use? ☒ YES ☐ NO				Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO																																																																																																																																																																																
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A																																																																																																																																																																																
				INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C																																																																																																																																																																														
				11°																																																																																																																																																																																
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)																																																																																																																																																																																
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:																																																																																																																																																																													
						<u>RD</u>	<u>Nov 9, 22 3pm</u>																																																																																																																																																																													

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.

AUG 2020 FRC017

Results Summary VA22C7279

Project	Champlain Elementary												
Report To	Stephen Thomas, Vancouver School Board												
Date Received	09-Nov-2022 15:00												
Issue Date	15-Nov-2022 07:50												
Amendment	0												
Client Sample ID			Corr 113 Rm112 Bottle Filter	Rm161	Rm162	Rm163	Rm164	Rm264	Rm263	Rm262	Rm261	Rm223 Library Bottle	Corr 223 Rm228 SSDF
Date Sampled			09-Nov-2022	09-Nov-2022	09-Nov-2022	09-Nov-2022	09-Nov-2022	09-Nov-2022	09-Nov-2022	09-Nov-2022	09-Nov-2022	09-Nov-2022	09-Nov-2022
Time Sampled			07:14	07:19	07:21	07:28	07:31	07:36	07:39	07:42	07:46	07:51	07:54
ALS Sample ID			VA22C7279-001	VA22C7279-002	VA22C7279-003	VA22C7279-004	VA22C7279-005	VA22C7279-006	VA22C7279-007	VA22C7279-008	VA22C7279-009	VA22C7279-010	VA22C7279-011
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
Total Metals (Matrix: Water)													
lead, total	0.000050	mg/L	0.00118	0.00173	0.00186	0.000814	0.000660	0.000512	0.000636	0.000748	0.000651	0.00281	0.00260

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C8848	Page	: 1 of 3
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	: Sir Winston Churchill Secondary	Date Samples Received	: 25-Nov-2022 14:55
PO	: ----	Date Analysis Commenced	: 29-Nov-2022
C-O-C number	: 20-1038013 & 20-1017025	Issue Date	: 30-Nov-2022 09:58
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 19		
No. of samples analysed	: 19		

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.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C8848	Page	: 1 of 7
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	: Sir Winston Churchill Secondary	Date Samples Received	: 25-Nov-2022 14:55
PO	: ----	Issue Date	: 30-Nov-2022 09:58
C-O-C number	: 20-1038013 & 20-1017025		
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 19		
No. of samples analysed	: 19		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Boys Change F.G.D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 136 Rm. 110 Bottle Filler	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 136 Rm. 145 D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 149 Bottle Filler	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 169 Rm 148b Bottle Filler	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 234 Rm. 231 D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 236 Rm. 201 D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 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	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 236 Rm. 213 Bottle Filler	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 236 Rm. 215 Bottle Filler	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 334 Rm. 333 D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 336 Rm. 301 D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 336 Rm. 313 Bottle Filler	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 336 Rm. 316 D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A107 Rm. A116 S.S.D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A204 Rm. A214 S.S.D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A304 Rm. A313 S.S.D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 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	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls Change D.F.	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 115 Bubbler	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 117 Bubbler	E420	25-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	5 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	759587	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	759587	1	20	5.0	5.0	✔
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	759587	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	759587	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C8848	Page	: 1 of 3
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	: Sir Winston Churchill Secondary	Date Samples Received	: 25-Nov-2022 14:55
PO	: ----	Date Analysis Commenced	: 29-Nov-2022
C-O-C number	: 20-1038013 & 20-1017025	Issue Date	: 30-Nov-2022 09:58
Sampler	: R. Lemay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 19		
No. of samples analysed	: 19		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 759587)											
KS2204420-001	Anonymous	lead, total	7439-92-1	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QC Lot: 759587)						
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: 759587)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 759587)									
VA22C8848-001	Corr. 169 Rm 148b Bottle Filler	lead, total	7439-92-1	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20-1038013

Page 1 of 2

Report To		Contact and company name below will appear on the final report		
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	
Contact:	Stephen Thomas	Merge COC/OC Reports with COA	☐ YES ☐ NO ☐ N/A	
Phone:	604 713-5637	Compare Results to Criteria on Report - provide details below if box checked	☐	
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	
Street:	1549 Clark Drive	Email 1 or Fax:	55thomas@usb.bc.ca	
City/Province:	Vancouver B.C.	Email 2:	ccarell@usb.bc.ca	
Postal Code:		Email 3:	jdueng@usb.bc.ca	
Invoice To:	Same as Report To	Invoice Recipients:		
Copy of Invoice with Report:	☐ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	
Company:		Email 1 or Fax:		
Contact:		Email 2:		
Project Information		Oil and Gas Required Fields (client use)		
ALS Account # / Quote #:		APC/Cost Center:	PO#	
Job #:	Sir Winston Churchill Secondary	Major/Minor Code:	Routing Code:	
PO / AFE:		Requester:		
LSD:		Location:		
ALS Lab Work Order # (ALS use only):		ALS Contact:	T. Teranuvu	
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type
1	Corr. 169 Rm. 148b Bottle Filler	25-11-22	7:32am	water
2	Rm. 115 Bubble	25-11-22	7:44am	water
3	Corr. 149 Bottle Filler	25-11-22	7:50am	water
4	Boys Change F.G.D.F.	25-11-22	7:53am	water
5	Girls Change D.F.	25-11-22	7:59am	water
6	Rm. 117 Bubble	25-11-22	8:04am	water
7	Corr. A107 Rm. A116 S.S.D.F.	25-11-22	8:10am	water
8	Corr. 136 Rm. 145 D.F.	25-11-22	8:14am	water
9	Corr. 136 Rm. 110 Bottle Filler	25-11-22	8:21am	water
10	Corr. 234 Rm. 231 D.F.	25-11-22	8:25am	water
11	Corr. 236 Rm. 213 Bottle Filler	25-11-22	8:29am	water
12	Corr. 236 Rm. 201 D.F.	25-11-22	8:33am	water
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? ☒ YES ☐ NO				
Are samples for human consumption/ use? ☒ YES ☐ NO				
No preservatives added				
Released by: _____ Date: _____				
SHIPMENT RELEASE (client use)				
Time: _____				
Received by: _____ Date: _____				
INITIAL SHIPMENT RECEPTION (ALS use only)				
Time: _____				
Date: _____				
WHITE - LABORATORY COPY YELLOW - CLIENT COPY				
NUMBER OF CONTAINERS				
Lead				
Turnaround Time (TAT) Requested				
☒ Routine [R] if received by 3pm M-F - no surcharges apply				
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum				
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum				
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum				
☐ 1 day [P1] if received by 3pm M-F - 100% rush surcharge minimum				
Same day [Z] if received by 10am M-S - 200% rush surcharge. Additional may apply to rush requests on weekends, statutory holidays and non-work days.				
Date and Time Required for all ESP TATs:				
For all tests with rush TATs requested, please contact ALS.				
Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP)				
Analysis Re				
Telephone : +1 604 253 4188				
Environmental Division				
Vancouver				
Work Order Reference				
VA22C8848				
SAMPLES ON HOLD				
EXTENDED STORAGE REQUIRED				
SUSPECTED HAZARD (see)				



Telephone : +1 604 253 4188

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY

YELLOW - CLIENT COPY

NOV 25 2022

ALS20201001

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.



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1017025

Page 2 of 2

Report To		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:	Vancouver School Board			Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum ☐ 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			
Contact:	Stephen Thomas			Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A				
Phone:	604 713-5637			Compare Results to Criteria on Report - provide details below if box checked	☐				
Company address below will appear on the final report				Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX				
Street:	1549 Clark Drive			Email 1 or Fax:	ssthomas@vsb.bc.ca				
City/Province:	Vancouver B.C.			Email 2:	ccarrell@vsb.bc.ca				
Postal Code:				Email 3:	jdvong@vsb.bc.ca				
Invoice To:	Same as Report To ☒ YES ☐ NO			Select Invoice Distribution:		☒ EMAIL ☐ MAIL ☐ FAX			
Company:				Invoice Recipients					
Contact:				Email 1 or Fax:					
Project Information				Oil and Gas Required Fields (client use)					
ALS Account # / Quote #:				AFE/Cost Center:		PO#:			
Job #: Sir Winston Churchill Secondary				Major/Minor Code:		Routing Code:			
PO / AFE:				Requisitioner:					
LSD:				Location:					
ALS Lab Work Order # (ALS use only):				ALS Contact: T. Taranum		Sampler: R. Lemay			
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below SAMPLES ON HOLD EXTENDED STORAGE REQUIRED SUSPECTED HAZARD (see notes)
13	Corr. 236 Rm. 215 Bottle Filler			25-11-22	8:37	water	Lead		
14	Corr. A204 Rm. A214 S.S.D.F.			25-11-22	8:41	water			
15	Corr. A304 Rm. A313 S.S.D.F.			25-11-22	8:45	water			
16	Corr. 336 Rm. 316 D.F.			25-11-22	8:49	water			
17	Corr. 336 Rm. 301 D.F.			25-11-22	8:53	water			
18	Corr. 336 Rm. 313 Bottle Filler			25-11-22	8:56	water			
19	Corr. 334 Rm. 333 D.F.			25-11-22	12:02pm	water			
Drinking Water (DW) Samples (client use)				Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)			
Are samples taken from a Regulated DW System?				No Preservatives Added		Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED			
Are samples for human consumption/ use?						Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO			
						Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A			
						INITIAL COOLER TEMPERATURES °C: 3 FINAL COOLER TEMPERATURES °C: 3			
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NOV 25 2022

AUG 2020 FRONT

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.

Results Summary VA22C8848

Project	Sir Winston Churchill Secondary
Report To	Stephen Thomas, Vancouver School Board
Date Received	25-Nov-2022 14:55
Issue Date	30-Nov-2022 09:58
Amendment	0

Client Sample ID			Corr. 169 Rm 148b Bottle Filler	Rm. 115 Bubbler	Corr. 149 Bottle Filler	Boys Change F.G.D.F.	Girls Change D.F.	Rm. 117 Bubbler	Corr. A107 Rm. A116 S.S.D.F.	Corr. 136 Rm. 145 D.F.	Corr. 136 Rm. 110 Bottle Filler	Corr. 234 Rm. 231 D.F.	Corr. 236 Rm. 213 Bottle Filler	Corr. 236 Rm. 201 D.F.	Corr. 236 Rm. 215 Bottle Filler	Corr. A204 Rm. A214 S.S.D.F.	Corr. A304 Rm. A313 S.S.D.F.	Corr. 336 Rm. 316 D.F.	Corr. 336 Rm. 301 D.F.	Corr. 336 Rm. 313 Bottle Filler	Corr. 334 Rm. 333 D.F.
Date Sampled			25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022	25-Nov-2022
Time Sampled			07:32	07:44	07:50	07:55	07:59	08:04	08:10	08:14	08:21	08:25	08:29	08:33	08:37	08:41	08:45	08:49	08:53	08:56	12:02
ALS Sample ID			VA22C8848-001	VA22C8848-002	VA22C8848-003	VA22C8848-004	VA22C8848-005	VA22C8848-006	VA22C8848-007	VA22C8848-008	VA22C8848-009	VA22C8848-010	VA22C8848-011	VA22C8848-012	VA22C8848-013	VA22C8848-014	VA22C8848-015	VA22C8848-016	VA22C8848-017	VA22C8848-018	VA22C8848-019
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	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	0.000320	0.00341	0.000102	0.00116	0.000407	0.00227	<0.000050	0.00106	0.000272	0.00157	0.000214	0.00135	0.000296	0.00111	0.000941	0.000796	0.00206	0.000354	0.00245



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4011**

Client : **Vancouver School Board**

Contact : **Stephen Thomas**

Address : **1549 Clark Drive
Vancouver BC Canada V5L 3L4**

Telephone : **----**

Project : **----**

PO : **----**

C-O-C number : **20-986561, 20-986562**

Sampler : **inactive**

Site : **----**

Quote number : **DONT USE**

No. of samples received : **15**

No. of samples analysed : **15**

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 : **25-Feb-2022 14:40**

Date Analysis Commenced : **07-Mar-2022**

Issue Date : **08-Mar-2022 15:16**

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.

Signatories

Position

Laboratory Department

Kim Jensen

Department Manager - Metals

Metals, Burnaby, British Columbia



General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A4011	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	: ----	Date Samples Received	: 25-Feb-2022 14:40
PO	: ----	Issue Date	: 08-Mar-2022 15:16
C-O-C number	: 20-986561, 20-986562		
Sampler	: inactive		
Site	: ----		
Quote number	: DONT USE		
No. of samples received	: 15		
No. of samples analysed	: 15		

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) Collingwood SS. D.F. Rm. 116 Corr. 113	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Collingwood SS. D.F. Rm. 121 Corr. 100	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Collingwood SS. D.F. Rm. 211 Corr. 200	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew Bottle Fill Rm. 113 Corr. 116	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Opposite Rm. 121 Corr. 116	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 002 Corr. 003	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 101 Corr. 116	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 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) Renfrew D.F. Rm. 109 Corr. 116	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 202 Corr. 200	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 209 Corr. 200	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 217 Corr. 200	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. SS. Rm. 005 Play area	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew SS. D.F. Rm. 014 Play area 013	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew SS. D.F. Rm. 161 Vest. 152	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew SS. D.F. Rm. 256	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425672	1	15	6.6	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425672	1	15	6.6	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425672	1	15	6.6	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425672	1	15	6.6	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 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.

QUALITY CONTROL REPORT

Work Order : **VA22A4011**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : ----
PO : ----
C-O-C number : 20-986561, 20-986562
Sampler : inactive
Site : ----
Quote number : DONT USE
No. of samples received : 15
No. of samples analysed : 15

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 : 25-Feb-2022 14:40
Date Analysis Commenced : 07-Mar-2022
Issue Date : 08-Mar-2022 15:16

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>
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



General Comments

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

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts 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: 425672)											
VA22A4011-001	Renfrew D.F. Rm. 217 Corr. 200	lead, total	7439-92-1	E420	0.000050	mg/L	0.000276	0.000276	0.0000002	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		
Total Metals (QCLot: 425672)								
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 (%)		
					Concentration	LCS	Low	High	Qualifier
Analyte	CAS Number	Method	LOR	Unit					
Total Metals (QCLot: 425672)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	108	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
					Concentration	Target	MS	Low	High
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425672)									
VA22A4011-002	Renfrew D.F. Rm. 202 Corr. 200	lead, total	7439-92-1	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 986561

Page of

Environmental Division
Vancouver
Work Order Reference
VA22A4011



Telephone: +1 604 253 4188

Report To Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company: <u>Vancouver School Board</u>		Select Report Format: ☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)		☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact: <u>Stephen Thomas</u>		Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A		☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone: <u>604-713-5637</u>		☐ 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	
Company address below will appear on the final report		Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX		☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street: <u>1549 Clark Dr.</u>		Email 1 or Fax: <u>ss.thomas@vsb.bc.ca</u>		☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province: <u>B.C.</u>		Email 2: <u>rlemay@vsb.bc.ca</u>		☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Add may apply to rush requests on weekends, statutory holidays and non-	
Postal Code: <u>V5L 3L4</u>		Email 3:		Date and Time Required for all E&P TATs:	
Invoice To: Same as Report To ☐ YES ☐ NO		Invoice Recipients		For all tests with rush TATs requested, please	
Copy of Invoice with Report ☐ YES ☐ NO		Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX		Analysis R	
Company:		Email 1 or Fax:		Indicate Filtered (F), Preserved (P) or Filtered	
Contact:		Email 2:		NUMBER OF CONTAINERS	
Project Information		Oil and Gas Required Fields (client use)		Lead	
ALS Account # / Quote #:		AFE/Cost Center:		PO#	
Job #:		Major/Minor Code:		Routing Code:	
PO / AFE:		Requisitioner:			
LSD:		Location:			
ALS Lab Work Order # (ALS use only): <u>A4011</u>		ALS Contact: <u>T. Tarannon</u>		Sampler: <u>R. Lemay</u>	
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	
	Renfrew D.F. Rm. 217 Corr. 200	25-02-22	7:04am	water	
	Renfrew D.F. Rm. 202 Corr. 200	25-02-22	7:07am	water	
	Renfrew D.F. Rm. 209 Corr. 200	25-02-22	7:12am	water	
	Renfrew D.F. Rm. 109 Corr. 116	25-02-22	7:16am	water	
	Renfrew Bottle Fill Rm. 113 Corr. 116	25-02-22	7:19am	water	
	Renfrew D.F. Opposite Rm. 121 Corr. 116	25-02-22	7:24am	water	
	Renfrew D.F. Rm. 101 Corr. 116	25-02-22	7:27am	water	
	Renfrew D.F. Rm. 002 Corr. 003	25-02-22	7:30am	water	
	Renfrew D.F. SS. Rm. 005 Play area	25-02-22	7:35am	water	
	Renfrew SS.D.F. Rm. 014 Play area 013	25-02-22	7:41am	water	
	Renfrew SS.D.F. Rm. 256	25-02-22	7:47am	water	
	Renfrew SS.D.F. Rm. 161 Vest. 152	25-02-22	7:51am	water	
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)	
Are samples taken from a Regulated DW System?				Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED	
☒ YES ☐ NO				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	
☒ YES ☐ NO				INITIAL COOLER TEMPERATURES °C: FINAL COOLER TEMPERATURES °C:	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)	
Released by:	Date:	Time:	Received by:	Date:	Time:
				25 Feb 2022	14:40

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.

AUG 2020 FRONT



COC Number: 20 - 986562

Canada Toll Free: 1 800 668 9878

Page of

[illegible]

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**

AUG 21 20 58/78

Results Summary VA22A4011																		
Project																		
Report To	Stephen Thomas, Vancouver School Board																	
Date Received	25-Feb-2022 14:40																	
Issue Date	08-Mar-2022 15:16																	
Amendment	0																	
Client Sample ID			Renfrew D.F. Rm. 217 Corr. 200	Renfrew D.F. Rm. 202 Corr. 200	Renfrew D.F. Rm. 209 Corr. 200	Renfrew D.F. Rm. 109 Corr. 116	Renfrew Bottle Fill Rm. 113 Corr. 116	Renfrew D.F. Opposite Rm. 121 Corr. 116	Renfrew D.F. Rm. 101 Corr. 116	Renfrew D.F. Rm. 002 Corr. 003	Renfrew D.F. SS. Rm. 005 Play area	Renfrew SS. D.F. Rm. 014 Play area 013	Renfrew SS. D.F. Rm. 256	Renfrew SS. D.F. Rm. 161 Vest. 152	Collingwood SS. D.F. Rm. 121 Corr. 100	Collingwood SS. D.F. Rm. 116 Corr. 113	Collingwood SS. D.F. Rm. 211 Corr. 200	
Date Sampled			25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
Time Sampled			07:04	07:07	07:12	07:16	07:19	07:24	07:27	07:30	07:35	07:41	07:47	07:51	08:14	08:18	08:28	
ALS Sample ID			VA22A4011-001	VA22A4011-002	VA22A4011-003	VA22A4011-004	VA22A4011-005	VA22A4011-006	VA22A4011-007	VA22A4011-008	VA22A4011-009	VA22A4011-010	VA22A4011-011	VA22A4011-012	VA22A4011-013	VA22A4011-014	VA22A4011-015	
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	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	
Total Metals (Matrix: Water)																		
lead, total	0.000050	mg/L	0.000276	0.000458	0.00103	0.00196	0.000104	0.000445	0.00110	0.000168	0.000293	0.000342	0.00117	0.000214	0.000200	0.000612	0.000212	

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C7616	Page	: 1 of 3
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	: Captain James Cook Elementary	Date Samples Received	: 15-Nov-2022 14:45
PO	: ----	Date Analysis Commenced	: 17-Nov-2022
C-O-C number	: 20-988642	Issue Date	: 18-Nov-2022 23:20
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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.

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

<i>Unit</i>	<i>Description</i>
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.

Matrix:

[illegible]

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C7616	Page	: 1 of 5
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	: Captain James Cook Elementary	Date Samples Received	: 15-Nov-2022 14:45
PO	: ----	Issue Date	: 18-Nov-2022 23:20
C-O-C number	: 20-988642		
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr.113 Room 113A Bottle Filler	E420	15-Nov-2022	17-Nov-2022	----	----		18-Nov-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.113 Room 113A Stainless Steel D.F	E420	15-Nov-2022	17-Nov-2022	----	----		18-Nov-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.151 Room 104 Stainless Steel D.F	E420	15-Nov-2022	17-Nov-2022	----	----		18-Nov-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.151 Room 107 Stainless Steel D.F	E420	15-Nov-2022	17-Nov-2022	----	----		18-Nov-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr.151 Room 136 Stainless Steel D.F	E420	15-Nov-2022	17-Nov-2022	----	----		18-Nov-2022	180 days	3 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	745285	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	745285	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	745285	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	745285	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C7616	Page	: 1 of 3
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	: Captain James Cook Elementary	Date Samples Received	: 15-Nov-2022 14:45
PO	: ----	Date Analysis Commenced	: 17-Nov-2022
C-O-C number	: 20-988642	Issue Date	: 18-Nov-2022 23:20
Sampler	: R. Lemay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 745285)											
VA22C7557-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00587	0.00567	3.48%	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 (QCLot: 745285)						
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: 745285)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 745285)									
VA22C7632-001	Anonymous	lead, total	7439-92-1	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130



COC Number: 20 - 988642

Page of

[illegible]

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**.

White Paper Co. 604 951-3900

Results Summary VA22C7616

Project	Captain James Cook Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	15-Nov-2022 14:45
Issue Date	18-Nov-2022 23:21
Amendment	0

Client Sample ID			Corr.151 Room 107 Stainless Steel D.F	Corr.151 Room 104 Stainless Steel D.F	Corr.151 Room 136 Stainless Steel D.F	Corr.113 Room 113A Bottle Filler	Corr.113 Room 113A Stainless Steel D.F
Date Sampled			15-Nov-2022	15-Nov-2022	15-Nov-2022	15-Nov-2022	15-Nov-2022
Time Sampled			07:40	07:45	07:50	07:53	07:56
ALS Sample ID			VA22C7616-001	VA22C7616-002	VA22C7616-003	VA22C7616-004	VA22C7616-005
Analyte	Lowest Detection Limit	Units	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	0.000486	0.000282	0.000265	<0.000050	0.000050



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4171**

Client : **Vancouver School Board**

Contact : **Stephen Thomas**

Address : **1549 Clark Drive
Vancouver BC Canada V5L 3L4**

Telephone : **----**

Project : **----**

PO : **----**

C-O-C number : **20-986711**

Sampler : **Robin LeMay**

Site : **----**

Quote number : **----**

No. of samples received : **4**

No. of samples analysed : **4**

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 : **01-Mar-2022 14:40**

Date Analysis Commenced : **09-Mar-2022**

Issue Date : **14-Mar-2022 10:31**

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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.

Signatories

Position

Laboratory Department

Kim Jensen

Department Manager - Metals

Metals, Burnaby, British Columbia



General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A4171	Page	: 1 of 5
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	: ----	Date Samples Received	: 01-Mar-2022 14:40
PO	: ----	Issue Date	: 14-Mar-2022 10:31
C-O-C number	: 20-986711		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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	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) Bottle Filter Rm R111 Crosstown	E420	01-Mar-2022	----	----	----		10-Mar-2022	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS D.F Common R410 Cross town	E420	01-Mar-2022	----	----	----		10-Mar-2022	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS D.F L.S 1.2 Cross Town	E420	01-Mar-2022	----	----	----		10-Mar-2022	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS D.F rm R201 Cross town	E420	01-Mar-2022	----	----	----		10-Mar-2022	180 days	9 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

Matrix: Water			Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.				
Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	427450	1	19	5.2	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	427450	1	19	5.2	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	427450	1	19	5.2	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	427450	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order : **VA22A4171**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : ----
PO : ----
C-O-C number : 20-986711
Sampler : Robin LeMay
Site : ----
Quote number : ----
No. of samples received : 4
No. of samples analysed : 4

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 : 01-Mar-2022 14:40
Date Analysis Commenced : 09-Mar-2022
Issue Date : 14-Mar-2022 10:31

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

This 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>
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



General Comments

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- 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: 427450)											
CG2202448-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000177	0.000195	0.000018	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
Total Metals (QCLot: 427450)						
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: 427450)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 427450)									
CG2202448-003	Anonymous	lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	94.0	70.0	130



COC Number: 20 - 986711

Page of

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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**.

AUG 30 20 FROM

Results Summary VA22A4171						
Project						
Report To	Stephen Thomas, Vancouver School Board					
Date Received	01-Mar-2022 14:40					
Issue Date	14-Mar-2022 10:31					
Amendment	0					
Client Sample ID			Bottle Filter Rm R111 Crosstown	SS D.F rm R201 Cross town	SS D.F L.S 1.2 Cross Town	SS D.F Common R410 Cross town
Date Sampled			01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022
Time Sampled			08:04	08:09	08:15	08:20
ALS Sample ID			VA22A4171-001	VA22A4171-002	VA22A4171-003	VA22A4171-004
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)						
lead, total	0.000050	mg/L	<0.000050	0.000172	0.000074	0.000082

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C7928	Page	: 1 of 3
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	: George T. Cunningham Elementary	Date Samples Received	: 17-Nov-2022 14:45
PO	: ----	Date Analysis Commenced	: 22-Nov-2022
C-O-C number	: 20-1021130	Issue Date	: 22-Nov-2022 20:53
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 14		
No. of samples analysed	: 14		

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.

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C7928	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	: George T. Cunningham Elementary	Date Samples Received	: 17-Nov-2022 14:45
PO	: ----	Issue Date	: 22-Nov-2022 20:53
C-O-C number	: 20-1021130		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 14		
No. of samples analysed	: 14		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Boys Change rm 143 Drinking Fountain	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 148 Rm 110 Bottle Filter	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 149 Boys W/R 122 S.S.D.F	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 149 Rm. 123 Drinking Fountain	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A101 Rm A103 S.S.D.F	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls Change Rm 135 Drinking Fountain	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. A109 Bubbler	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 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) Rm. A110 Bubbler	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. A111 Bubbler	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. A205 Bubbler	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. A206 Bubbler	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. A207 Bubbler	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. A209 Bubbler	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. A210 Bubbler	E420	17-Nov-2022	22-Nov-2022	----	----		22-Nov-2022	180 days	6 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	750765	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	750765	1	18	5.5	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	750765	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	750765	1	18	5.5	5.0	✓



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.

QUALITY CONTROL REPORT

Work Order	: VA22C7928	Page	: 1 of 3
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	: George T. Cunningham Elementary	Date Samples Received	: 17-Nov-2022 14:45
PO	: ----	Date Analysis Commenced	: 22-Nov-2022
C-O-C number	: 20-1021130	Issue Date	: 22-Nov-2022 20:53
Sampler	: RL ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 14		
No. of samples analysed	: 14		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 750765)											
VA22C7857-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00168	0.00168	0.350%	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 (QCLot: 750765)						
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: 750765)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	105	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 750765)									
VA22C7857-002	Anonymous	lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.3	70.0	130



COC Number: 20 - 1021130

Canada Toll Free: 1 800 668 9878

Page 1 of 2

Report To		Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested		
Company:	Vancouver School Board			Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)		☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact:	Stephen Thomas			Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A		☒ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone:	604 713-5637			☐ 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	
Company address below will appear on the final report				Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX		☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street:	1549 Clark Drive			Email 1 or Fax	stthomas@vsb.bc.ca		☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province:	Vancouver B.C.			Email 2	carrell@vsb.bc.ca		☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional may apply to rush requests on weekends, statutory holidays and non-routine	
Postal Code:				Email 3	jdvoong@vsb.bc.ca		Date and Time Required for all E&P TATs:	
Invoice To	Same as Report To ☒ YES ☐ NO			Invoice Recipients		For all tests with rush TATs requested, please contact		
	Copy of Invoice with Report ☐ YES ☐ NO			Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX		Analysis Required	
Company:				Email 1 or Fax			NUMBER OF CONTAINERS	
Contact:				Email 2				
Project Information				Oil and Gas Required Fields (client use)				
ALS Account # / Quote #:				AFE/Cost Center: PO#				
Job #: George T. Cunningham Elementary				Major/Minor Code: Routing Code:				
PO / AFE:				Requisitioner:				
LSD:				Location:				
ALS Lab Work Order # (ALS use only):				ALS Contact: T. Taramum		Sampler: R. Lemay		
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mm-yy)	Time (hh:mm)	Sample Type	Lead	
	Corr. 149 Rm. 123 Drinking Fountain			17-11-22	7:22	water		
	Corr. 149 Boys w/R 122 S.S.D.F			17-11-22	7:27	water		
	Corr. 148 Rm. 110 Bottle Filler			17-11-22	7:29	water		
	Girls change rm. 135 Drinking Fountain			17-11-22	7:33	water		
	Boys change rm. 143 Drinking Fountain			17-11-22	7:37	water		
	Corr. A101 Rm. A103 S.S.D.F			17-11-22	7:41	water		
	Rm. A111 Bubbler			17-11-22	7:45	water		
	Rm. A110 Bubbler			17-11-22	7:47	water		
	Rm. A109 Bubbler			17-11-22	7:49	water		
	Rm. A205 Bubbler			17-11-22	7:54	water		
	Rm. A206 Bubbler			17-11-22	7:57	water		
	Rm. A207 Bubbler			17-11-22	8:00	water		
Drinking Water (DW) Samples ¹ (client use)				Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			SAMPLE RECEIPT DETAILS	
Are samples taken from a Regulated DW System? ☒ YES ☐ NO				No preservatives added			Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS	
Are samples for human consumption/ use? ☒ YES ☐ NO							Submission Comments identified on Sample Receipt Notification	
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (ALS use only)			Cooler Custody Seals Intact: ☐ YES ☐ N/A ☐ Sample	
Released by:				Received by:			INITIAL COOLER TEMPERATURES °C	
Date:				Date:			Date:	
Time:				Time:			Time:	
Date:				Date:			Date:	
Time:				Time:			Time:	

Work Order Reference
VA22C7928



Telephone : + 1 604 253 4188

White Paper Co. 604 951-3900

REFER TO BACK PAGE FOR AIS 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**.

AUG 2020 FROM



COC Number: 20 - 1038017

Page 2 of 2

[illegible]

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**.

AUG 2010 EPOC

White Paper Co. 604 951-3900

Results Summary VA22C7928

Project	George T. Cunningham Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	17-Nov-2022 14:45
Issue Date	22-Nov-2022 20:53
Amendment	0

Client Sample ID			Corr. 149 Rm. 123 Drinking Fountain	Corr. 149 Boys W/R 122 S.S.D.F	Corr. 148 Rm 110 Bottle Filter	Girls Change Rm 135 Drinking Fountain	Boys Change rm 143 Drinking Fountain	Corr. A101 Rm A103 S.S.D.F	Rm. A111 Bubbler	Rm. A110 Bubbler	Rm. A109 Bubbler	Rm. A205 Bubbler	Rm. A206 Bubbler	Rm. A207 Bubbler	Rm. A209 Bubbler	Rm. A210 Bubbler
Date Sampled			17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022	17-Nov-2022
Time Sampled			07:22	07:27	07:29	07:33	07:37	07:41	07:45	07:47	07:49	07:54	07:57	08:00	08:06	08:09
ALS Sample ID			VA22C7928-001	VA22C7928-002	VA22C7928-003	VA22C7928-004	VA22C7928-005	VA22C7928-006	VA22C7928-007	VA22C7928-008	VA22C7928-009	VA22C7928-010	VA22C7928-011	VA22C7928-012	VA22C7928-013	VA22C7928-014
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	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)																
lead, total	0.000050	mg/L	0.000899	0.000196	0.000643	0.0142	0.0156	0.000284	0.000749	0.00550	0.00358	0.000589	0.00196	0.000902	0.0435	0.00120



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A3804**

Client : **Vancouver School Board**

Contact : **Stephen Thomas**

Address : **1549 Clark Drive
Vancouver BC Canada V5L 3L4**

Telephone : **----**

Project : **----**

PO : **----**

C-O-C number : **20-986565**

Sampler : **Robin LeMay**

Site : **----**

Quote number : **----**

No. of samples received : **6**

No. of samples analysed : **6**

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 : **24-Feb-2022 15:00**

Date Analysis Commenced : **05-Mar-2022**

Issue Date : **10-Mar-2022 16:41**

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.

Signatories	Position	Laboratory Department
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A3804	Page	: 1 of 5
Client	: Vancouver School Board	Laboratory	: Vancouver - Environmental
Contact	: Stephen Thomas	Account Manager	: Tasnia Tarannum
Address	: 1549 Clark Drive	Address	: 8081 Lougheed Highway
	Vancouver BC Canada V5L 3L4		Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: ----	Date Samples Received	: 24-Feb-2022 15:00
PO	: ----	Issue Date	: 10-Mar-2022 16:41
C-O-C number	: 20-986565		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
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.

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) Stainless D.F. Beside Rm. 145 Dickens	E420	24-Feb-2022	----	----	----		06-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Stainless D.F. Beside Rm. 159 Dickens	E420	24-Feb-2022	----	----	----		06-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Stainless D.F. East of Rm. 210 Dickens	E420	24-Feb-2022	----	----	----		06-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Stainless D.F. West of Rm. 242 Dickens	E420	24-Feb-2022	----	----	----		06-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Fill Opposite Rm. 128 Dickens	E420	24-Feb-2022	----	----	----		05-Mar-2022	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Stainless D.F. Beside 114 Dickens	E420	24-Feb-2022	----	----	----		05-Mar-2022	180 days	9 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	424701	2	37	5.4	5.0	✓
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	424701	2	37	5.4	5.0	✓
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	424701	2	37	5.4	5.0	✓
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	424701	2	37	5.4	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 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.

QUALITY CONTROL REPORT

Work Order : **VA22A3804**

Page : 1 of 4

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : ----
PO : ----
C-O-C number : 20-986565
Sampler : Robin LeMay
Site : ----
Quote number : ----
No. of samples received : 6
No. of samples analysed : 6

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 : 24-Feb-2022 15:00
Date Analysis Commenced : 05-Mar-2022
Issue Date : 10-Mar-2022 16:41

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>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



General Comments

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

Key :

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

CAS Number = Chemical Abstracts 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: 424701)											
VA22A3770-001	Anonymous	lead, total	7439-92-1	E420	0.000500	mg/L	0.000608	0.000599	0.000009	Diff <2x LOR	----
Total Metals (QC Lot: 424769)											
VA22A3804-003	Stainless D.F. Beside Rm. 145 Dickens	lead, total	7439-92-1	E420	0.000050	mg/L	0.000750	0.000778	3.64%	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 (QCLot: 424701)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Total Metals (QCLot: 424769)						
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: 424701)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	105	80.0	120	----
Total Metals (QCLot: 424769)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 424701)									
VA22A3741-002	Anonymous	lead, total	7439-92-1	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130
Total Metals (QCLot: 424769)									
VA22A3804-004	Stainless D.F. Beside Rm.159 Dickens	lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	92.2	70.0	130





COC Number: 20-986565

Canada Toll Free: 1 800 668 9878

Page

Work Order Reference
VA22A3804



Telephone : +1 604 253 4188

[illegible]

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**.

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2025 FRO

Results Summary VA22A3804								
Project								
Report To	Stephen Thomas, Vancouver School Board							
Date Received	24-Feb-2022 15:00							
Issue Date	10-Mar-2022 16:41							
Amendment	0							
Client Sample ID			Bottle Fill Opposite Rm. 128 Dickens	Stainless D.F. Beside 114 Dickens	Stainless D.F. Beside Rm. 145 Dickens	Stainless D.F. Beside Rm.159 Dickens	Stainless D.F. West of Rm. 242 Dickens	Stainless D.F. East of Rm. 210 Dickens
Date Sampled			24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Time Sampled			07:37	07:41	07:45	07:49	07:52	07:55
ALS Sample ID			VA22A3804-001	VA22A3804-002	VA22A3804-003	VA22A3804-004	VA22A3804-005	VA22A3804-006
Analyte	Lowest Detection Limit	Units	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	0.000101	0.00167	0.000750	0.000134	0.000314	0.000178



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4085**

Client : **Vancouver School Board**

Contact : **Stephen Thomas**

Address : **1549 Clark Drive
Vancouver BC Canada V5L 3L4**

Telephone : **----**

Project : **Douglas Annex**

PO : **20-986707**

C-O-C number : **----**

Sampler : **----**

Site : **----**

Quote number : **----**

No. of samples received : **3**

No. of samples analysed : **3**

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 : **28-Feb-2022 14:30**

Date Analysis Commenced : **08-Mar-2022**

Issue Date : **10-Mar-2022 11:51**

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.

Signatories

Position

Laboratory Department

Angela Ren

Team Leader - Metals

Metals, Burnaby, British Columbia



General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A4085	Page	: 1 of 5
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	: Douglas Annex	Date Samples Received	: 28-Feb-2022 14:30
PO	: 20-986707	Issue Date	: 10-Mar-2022 11:51
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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) Bottle Filler Opposite Rm. 118 Douglas Annex	E420	28-Feb-2022	----	----	----		08-Mar-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm. 126 Douglas Annex	E420	28-Feb-2022	----	----	----		08-Mar-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm. 129 Douglas Annex	E420	28-Feb-2022	----	----	----		08-Mar-2022	180 days	8 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

Matrix: Water			Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.				
Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
Analytical Methods			QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	426312	1	17	5.8	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	426312	1	17	5.8	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	426312	1	17	5.8	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	426312	1	17	5.8	5.0	✔



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.

QUALITY CONTROL REPORT

Work Order : **VA22A4085**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Douglas Annex
PO : 20-986707
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 3
No. of samples analysed : 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 : 28-Feb-2022 14:30
Date Analysis Commenced : 08-Mar-2022
Issue Date : 10-Mar-2022 11:51

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>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia



General Comments

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

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts 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: 426312)											
VA22A3977-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000080	0.000079	0.000001	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
Total Metals (QCLot: 426312)						
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: 426312)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 426312)									
VA22A3977-002	Anonymous	lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.3	70.0	130



COC Number: 20 - 986707

Canada Toll Free: 1 800 668 9878

Page of

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**.

At 12, 2070 FRCM

Results Summary VA22A4085					
Project	Douglas Annex				
Report To	Stephen Thomas, Vancouver School Board				
Date Received	28-Feb-2022 14:30				
Issue Date	10-Mar-2022 11:51				
Amendment	0				
Client Sample ID			Bottle Filler Opposite Rm. 118 Douglas Annex	D.F Rm. 126 Douglas Annex	D.F Rm. 129 Douglas Annex
Date Sampled			28-Feb-2022	28-Feb-2022	28-Feb-2022
Time Sampled			08:07	08:09	08:13
ALS Sample ID			VA22A4085-001	VA22A4085-002	VA22A4085-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.00966	0.000706	0.000397



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4085**

Client : **Vancouver School Board**

Contact : **Stephen Thomas**

Address : **1549 Clark Drive
Vancouver BC Canada V5L 3L4**

Telephone : **----**

Project : **Douglas Annex**

PO : **20-986707**

C-O-C number : **----**

Sampler : **----**

Site : **----**

Quote number : **----**

No. of samples received : **3**

No. of samples analysed : **3**

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 : **28-Feb-2022 14:30**

Date Analysis Commenced : **08-Mar-2022**

Issue Date : **10-Mar-2022 11:51**

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.

Signatories

Position

Laboratory Department

Angela Ren

Team Leader - Metals

Metals, Burnaby, British Columbia



General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A4085	Page	: 1 of 5
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	: Douglas Annex	Date Samples Received	: 28-Feb-2022 14:30
PO	: 20-986707	Issue Date	: 10-Mar-2022 11:51
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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) Bottle Filler Opposite Rm. 118 Douglas Annex	E420	28-Feb-2022	----	----	----		08-Mar-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm. 126 Douglas Annex	E420	28-Feb-2022	----	----	----		08-Mar-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm. 129 Douglas Annex	E420	28-Feb-2022	----	----	----		08-Mar-2022	180 days	8 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

Matrix: Water			Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.				
Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
Analytical Methods			QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	426312	1	17	5.8	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	426312	1	17	5.8	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	426312	1	17	5.8	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	426312	1	17	5.8	5.0	✔



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.

QUALITY CONTROL REPORT

Work Order : **VA22A4085**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Douglas Annex
PO : 20-986707
C-O-C number : ----
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 3
No. of samples analysed : 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 : 28-Feb-2022 14:30
Date Analysis Commenced : 08-Mar-2022
Issue Date : 10-Mar-2022 11:51

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>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia



General Comments

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

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts 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: 426312)											
VA22A3977-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000080	0.000079	0.000001	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
Total Metals (QC Lot: 426312)						
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: 426312)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 426312)									
VA22A3977-002	Anonymous	lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.3	70.0	130



COC Number: 20 - 986707

Canada Toll Free: 1 800 668 9878

Page of

Report To			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: Vancouver School Board			Select Report Format: ☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)			☒ Routine [R] if received by 3pm M-F - no surcharges apply											
Contact: Stephen Thomas			Merge QC/QC1 Reports with COA ☐ YES ☐ NO ☐ N/A			☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum											
Phone: 604 713-5637			☐ 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											
Company address below will appear on the final report						Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX			☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum								
Street: 1549 Clark Drive			Email 1 or Fax: sstomas@usb.bc.ca			☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum			☐ 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								
City/Province: Vancouver B.C.			Email 2: rlemay@usb.bc.ca						Date and Time Required for all E&P TATs:			dd-mm-yy hh:mm am/pm					
Postal Code: V5L 3L4			Email 3:														
Invoice To			Same as Report To ☒ YES ☐ NO			Invoice Recipients			For all tests with rush TATs requested, please contact your AM to confirm availability.								
			Copy of Invoice with Report ☒ YES ☐ NO			Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX			Analysis Request								
Company:						Email 1 or Fax:			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below								
Contact:						Email 2:											
Project Information			Oil and Gas Required Fields (client use)														
ALS Account # / Quote #:			AFE/Cost Center:			PO#											
Job #: Douglas Annex			Major/Minor Code:			Routing Code:			NUMBER OF CONTAINERS Lead								
PO / AFE:			Requisitioner:														
LSD:			Location:														
ALS Lab Work Order # (ALS use only):			ALS Contact: T. Taranom			Sampler: R. Lemay											
ALS Sample # (ALS use only)			Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mm-yy)		Time (hh:mm)		Sample Type		SAMPLES ON HOLD EXTENDED STORAGE REQUIRED SUSPECTED HAZARD (see notes)					
			Bottle Filler Opposite Rm.118 Douglas Annex			28-02-22		8:07am		water							
			D.F. Rm. 126 Douglas Annex			28-02-22		8:09am		water							
			D.F. Rm. 129 Douglas Annex			28-02-22		8:13am		water							
												Environmental Division Vancouver Work Order Reference VA22A4085 Telephone : +1 604 263 4188					
Drinking Water (DW) Samples (client use)			Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			SAMPLE RECEIPT DETAILS (ALS use only)											
Are samples taken from a Regulated DW System? ☒ YES ☐ NO						Cooling Method: ☐ NONE ☐ ICE ☒ Fridge ☐ FROZEN ☐ COOLING INITIATED											
Are samples for human consumption/ use? ☒ YES ☐ NO						Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO											
						Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A											
						INITIAL COOLER TEMPERATURES °C: 9.2 FINAL COOLER TEMPERATURES °C: 9.2											
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)											
Released by:			Received by:			Received by:											
Date:			Date:			Date:											
Time:			Time:			Time:											

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**.

AUG 2070 FRCB

Results Summary VA22A4085					
Project	Douglas Annex				
Report To	Stephen Thomas, Vancouver School Board				
Date Received	28-Feb-2022 14:30				
Issue Date	10-Mar-2022 11:51				
Amendment	0				
Client Sample ID			Bottle Filler Opposite Rm. 118 Douglas Annex	D.F Rm. 126 Douglas Annex	D.F Rm. 129 Douglas Annex
Date Sampled			28-Feb-2022	28-Feb-2022	28-Feb-2022
Time Sampled			08:07	08:09	08:13
ALS Sample ID			VA22A4085-001	VA22A4085-002	VA22A4085-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.00966	0.000706	0.000397

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9082	Page	: 1 of 3
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	: Elsie Roy Elementary	Date Samples Received	: 29-Nov-2022 15:00
PO	: ----	Date Analysis Commenced	: 01-Dec-2022
C-O-C number	: 20-1039074	Issue Date	: 02-Dec-2022 08:11
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9082	Page	: 1 of 5
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	: Elsie Roy Elementary	Date Samples Received	: 29-Nov-2022 15:00
PO	: ----	Issue Date	: 02-Dec-2022 08:11
C-O-C number	: 20-1039074		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 113 Rm. 119 S.S.D.F.	E420	29-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 113 Rm. 124 Bottle Filler	E420	29-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 200 Rm. 214 S.S.D.F.	E420	29-Nov-2022	01-Dec-2022	----	----		01-Dec-2022	180 days	2 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	762928	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	762928	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	762928	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	762928	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9082	Page	: 1 of 3
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	: Elsie Roy Elementary	Date Samples Received	: 29-Nov-2022 15:00
PO	: ----	Date Analysis Commenced	: 01-Dec-2022
C-O-C number	: 20-1039074	Issue Date	: 02-Dec-2022 08:11
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 762928)											
FJ2203331-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000150	0.000133	0.000018	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
Total Metals (QC Lot: 762928)						
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: 762928)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

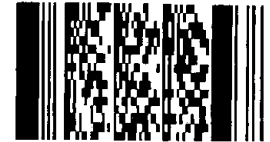
					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 762928)									
FJ2203331-002	Anonymous	lead, total	7439-92-1	E420	0.0170 mg/L	0.02 mg/L	85.0	70.0	130



COC Number: 20 - 1039074

Page

Work Order Reference
VA22C9082



Telephone : + 1 604 253 4188

Report To Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone:	604 713-5637	☐ 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	
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street:	1549 Clark Dr.	Email 1 or Fax	ss Thomas @ vsb.bc.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province:	Vancouver B.C.	Email 2	ccarrell @ vsb.bc.ca	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Add may apply to rush requests on weekends, statutory holidays and non-	
Postal Code:	V5E 3L4	Email 3	jdvoong @ vsb.bc.ca	Date and Time Required for all E&P TATs:	
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients		For all tests with rush TATs requested, please	
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX		Analysis R	
Company:		Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below	
Contact:		Email 2		NUMBER OF CONTAINERS	
Project Information		Oil and Gas Required Fields (client use)		Lead	
ALS Account # / Quote #		AFE/Cost Center: PO#		SAMPLES ON HOLD	
Job #: Elsie Roy Elementary		Major/Minor Code: Routing Code:		EXTENDED STORAGE REQUIRED	
PO / AFE:		Requisitioner:		SUSPECTED HAZARD (see notes)	
LSD:		Location:			
ALS Lab Work Order # (ALS use only): 9082		ALS Contact:			
		Sampler:			
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	
	Corr. 200 Rm. 119 S.S.D.F.	29-11-22	7:30	water	
	Corr. 200 Rm. 214 S.S.D.F.	29-11-22	7:30	water	
	Corr. 113 Rm. 119 S.S.D.F.	29-11-22	7:34	water	
	Corr. 113 Rm. 124 Bottle Filler	29-11-22	7:38	water	
Drinking Water (DW) Samples ¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)	
Are samples taken from a Regulated DW System?		No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED	
Are samples for human consumption/ use?				Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO	
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A	
				INITIAL COOLER TEMPERATURES °C: 2 FINAL COOLER TEMPERATURES °C: 2	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)	
Released by:	Date:	Time:	Received by:	Date:	Time:
				29	1500

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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.

Results Summary VA22C9082

Project Elsie Roy Elementary
Report To Stephen Thomas, Vancouver School Board
Date Received 29-Nov-2022 15:00
Issue Date 02-Dec-2022 08:11
Amendment 0

Client Sample ID			Corr. 200 Rm. 214 S.S.D.F.	Corr. 113 Rm. 119 S.S.D.F.	Corr. 113 Rm. 124 Bottle Filler
Date Sampled			29-Nov-2022	29-Nov-2022	29-Nov-2022
Time Sampled			07:30	07:34	07:38
ALS Sample ID			VA22C9082-001	VA22C9082-002	VA22C9082-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.000521	0.000326	0.000137

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C8854	Page	: 1 of 3
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	: False Creek Elementary	Date Samples Received	: 25-Nov-2022 14:55
PO	: ----	Date Analysis Commenced	: 30-Nov-2022
C-O-C number	: 20-1038011	Issue Date	: 30-Nov-2022 21:00
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

<i>Unit</i>	<i>Description</i>
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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C8854	Page	: 1 of 5
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	: False Creek Elementary	Date Samples Received	: 25-Nov-2022 14:55
PO	: ----	Issue Date	: 30-Nov-2022 21:00
C-O-C number	: 20-1038011		
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 114 Rm. 112 S.S.D.F.	E420	25-Nov-2022	30-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Stair 295 Rm. 216 Bottle Filler	E420	25-Nov-2022	30-Nov-2022	----	----		30-Nov-2022	180 days	5 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Vest. 109 S.S.D.F.	E420	25-Nov-2022	30-Nov-2022	----	----		30-Nov-2022	180 days	5 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	759588	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	759588	1	20	5.0	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	759588	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	759588	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C8854	Page	: 1 of 3
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	: False Creek Elementary	Date Samples Received	: 25-Nov-2022 14:55
PO	: ----	Date Analysis Commenced	: 30-Nov-2022
C-O-C number	: 20-1038011	Issue Date	: 30-Nov-2022 21:00
Sampler	: R. Lemay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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 - LOR = Limit of Reporting (detection limit).
 - RPD = Relative Percent Difference
 - # = Indicates a QC result that did not meet the ALS DQO.

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Laboratory Duplicate (DUP) Report

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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: 759588)											
VA22C8760-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000122	0.000125	0.000002	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
Total Metals (QCLot: 759588)						
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: 759588)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.1	80.0	120	----

Matrix Spike (MS) Report

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

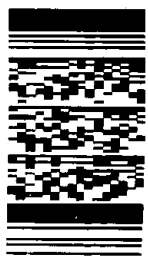
Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 759588)									
VA22C8760-002	Anonymous	lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	91.8	70.0	130



Telephone : +1 604 253 4186

Environmental Division
Vancouver
Work Order Reference
VA22C8854



Results Summary VA22C8854

Project False Creek Elementary
Report To Stephen Thomas, Vancouver School Board
Date Received 25-Nov-2022 14:55
Issue Date 30-Nov-2022 21:00
Amendment 0

Client Sample ID			Stair 295 Rm. 216 Bottle Filler	Vest. 109 S.S.D.F.	Corr. 114 Rm. 112 S.S.D.F.
Date Sampled			25-Nov-2022	25-Nov-2022	25-Nov-2022
Time Sampled			12:27	12:32	12:35
ALS Sample ID			VA22C8854-001	VA22C8854-002	VA22C8854-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.00107	0.00217	0.00129

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9819	Page	: 1 of 3
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	: Sir Sandford Fleming Elementary	Date Samples Received	: 08-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: 20-1017392	Issue Date	: 12-Dec-2022 16:05
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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.

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

<i>Unit</i>	<i>Description</i>
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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9819	Page	: 1 of 5
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	: Sir Sandford Fleming Elementary	Date Samples Received	: 08-Dec-2022 14:55
PO	: ----	Issue Date	: 12-Dec-2022 16:05
C-O-C number	: 20-1017392		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr 101 Rm 129 Bottle Filler	E420	08-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 101 Rm 129 SSDF	E420	08-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 201 Rm 219 Bottle Filler	E420	08-Dec-2022	10-Dec-2022	----	----		12-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 201 Rm 219 SSDF	E420	08-Dec-2022	10-Dec-2022	----	----		12-Dec-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	773339	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	773339	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	773339	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	773339	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9819	Page	: 1 of 3
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	: Sir Sandford Fleming Elementary	Date Samples Received	: 08-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: 20-1017392	Issue Date	: 12-Dec-2022 16:05
Sampler	: ---- ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 773339)											
VA22C9809-001	Anonymous	lead, total	7439-92-1	E420	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 773339)						
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: 773339)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.9	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 773339)									
KS2204612-002	Anonymous	lead, total	7439-92-1	E420	0.0175 mg/L	0.02 mg/L	87.6	70.0	130

Report To		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:	Vancouver School Board			Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)		☒ Routine [R] if received by 3pm M-F - no surcharges apply			
Contact:	Stephen Thomas			Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A		☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum			
Phone:	604 713-5637			☐ Compare Results to Criteria on Report - provide details below if box checked	Select Distribution:		☒ EMAIL ☐ MAIL ☐ FAX		☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum	
Company address below will appear on the final report				Select Distribution:		Email 1 or Fax		☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum		
Street:	1549 Clark Drive			Email 1 or Fax		sstthomas@usb.bc.ca		☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum		
City/Province:	Vancouver B.C.			Email 2		ccarrell@usb.bc.ca		☐ 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		
Postal Code:				Email 3		jdurang@usb.bc.ca		Date and Time Required for all E&P TATs:		
Invoice To	Same as Report To ☒ YES ☐ NO			Invoice Recipients				dd-mm-yy hh:mm am/pm		
Company:	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.		
Contact:				Email 1 or Fax				Analysis Request		
Project Information				Oil and Gas Required Fields (client use)		NUMBER OF CONTAINERS		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below		
ALS Account # / Quote #				AFE/Cost Center:		Lead		SAMPLES ON HOLD		
Job #: Sir Sandford Fleming Elementary				Major/Minor Code:				EXTENDED STORAGE REQUIRED		
PO / AFE:				Requisitioner:				SUSPECTED HAZARD (see notes)		
LSD:				Location:						
ALS Lab Work Order # (ALS use only):				ALS Contact: T. Tararum		Sampler: R. Lemay				
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mm-yy)	Time (hh:mm)	Sample Type				
	Corr. 201 Rm. 219 Bottle Filler			08-12-22	7:29	water				
	Corr. 201 Rm. 219 S.S.D.F.			08-12-22	7:31	water				
	Corr. 101 Rm. 129 Bottle Filler			08-12-22	7:35	water				
	Corr. 101 Rm. 129 S.S.D.F.			08-12-22	7:36	water				
Drinking Water (DW) Samples ¹ (client use)				Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel CQC only)		SAMPLE RECEIPT DETAILS (ALS use only)				
Are samples taken from a Regulated DW System?				No preservatives added		Cooling Method:				
☒ YES ☐ NO						☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED				
Are samples for human consumption/ use?						Submission Comments identified on Sample Receipt Notification:				
☒ YES ☐ NO						☐ YES ☐ NO				
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (ALS use only)		Cooler Custody Seals Intact:				
Released by:				Received by:		☐ YES ☐ N/A		Sample Custody Seals Intact:		
Date:				Date:		☐ YES ☐ NO				
Time:				Time:		INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C		
						6.2				
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)				
Released by:				Received by:		D.S.		K.C.		
Date:				Date:		12/5		12/5		
Time:				Time:						

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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 CQC form.

Results Summary VA22C9819

Project Sir Sandford Fleming Elementary
Report To Stephen Thomas, Vancouver School Board
Date Received 08-Dec-2022 14:55
Issue Date 12-Dec-2022 16:05
Amendment 0

Client Sample ID			Corr 201 Rm 219 Bottle Filler	Corr 201 Rm 219 SSDF	Corr 101 Rm 129 Bottle Filler	Corr 101 Rm 129 SSDF
Date Sampled			08-Dec-2022	08-Dec-2022	08-Dec-2022	08-Dec-2022
Time Sampled			07:29	07:31	07:35	07:36
ALS Sample ID			VA22C9819-001	VA22C9819-002	VA22C9819-003	VA22C9819-004
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)						
lead, total	0.000050	mg/L	0.000117	0.000167	0.000111	0.000089

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C8631	Page	: 1 of 3
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	: Sir John Franklin Elementary	Date Samples Received	: 24-Nov-2022 14:50
PO	: ----	Date Analysis Commenced	: 30-Nov-2022
C-O-C number	: 20-1038014	Issue Date	: 01-Dec-2022 16:34
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C8631	Page	: 1 of 5
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	: Sir John Franklin Elementary	Date Samples Received	: 24-Nov-2022 14:50
PO	: ----	Issue Date	: 01-Dec-2022 16:34
C-O-C number	: 20-1038014		
Sampler	: R.Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr. 100 Rm. 105 Bottle Filler	E420	24-Nov-2022	30-Nov-2022	----	----		01-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 300 Rm. 308 D.F	E420	24-Nov-2022	30-Nov-2022	----	----		01-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Multi Purpose 108 Rm. 109 D.F	E420	24-Nov-2022	30-Nov-2022	----	----		01-Dec-2022	180 days	7 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	759366	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	759366	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	759366	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	759366	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C8631	Page	: 1 of 3
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	: Sir John Franklin Elementary	Date Samples Received	: 24-Nov-2022 14:50
PO	: ----	Date Analysis Commenced	: 30-Nov-2022
C-O-C number	: 20-1038014	Issue Date	: 01-Dec-2022 16:34
Sampler	: R.Lemay ----		
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- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

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

Signatories	Position	Laboratory Department
Angela Ren	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 759366)											
VA22C8551-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000108	0.000110	0.000002	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
Total Metals (QC Lot: 759366)						
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

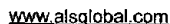
					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 759366)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	93.4	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 759366)									
VA22C8551-002	Anonymous	lead, total	7439-92-1	E420	0.193 mg/L	0.2 mg/L	96.6	70.0	130



COC Number: 20 - 1038014

Canada Toll Free: 1 800 668 9878

Page of

[illegible]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FROM

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**.

White Paper Co. 604 951-3900.

Results Summary VA22C8631

Project	Sir John Franklin Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	24-Nov-2022 14:50
Issue Date	01-Dec-2022 16:34
Amendment	0

Client Sample ID			Corr. 300 Rm. 308 D.F	Multi Purpose 108 Rm. 109 D.F	Corr. 100 Rm. 105 Bottle Filler
Date Sampled			24-Nov-2022	24-Nov-2022	24-Nov-2022
Time Sampled			07:28	07:43	07:47
ALS Sample ID			VA22C8631-001	VA22C8631-002	VA22C8631-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.00169	0.000460	0.000127

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C8635	Page	: 1 of 3
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	: Simon Fraser Elementary	Date Samples Received	: 24-Nov-2022 14:50
PO	: ----	Date Analysis Commenced	: 29-Nov-2022
C-O-C number	: 20-980494	Issue Date	: 30-Nov-2022 10:43
Sampler	: K.Messamole		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

<i>Unit</i>	<i>Description</i>
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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C8635	Page	: 1 of 5
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	: Simon Fraser Elementary	Date Samples Received	: 24-Nov-2022 14:50
PO	: ----	Issue Date	: 30-Nov-2022 10:42
C-O-C number	: 20-980494		
Sampler	: K.Messamole		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr. 100 Rm. 116 S.S.D.F	E420	24-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm. 128 Elkay BF	E420	24-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Entry 133 Rm. 141 S.S.D.F	E420	24-Nov-2022	29-Nov-2022	----	----		30-Nov-2022	180 days	6 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	759367	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	759367	1	18	5.5	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	759367	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	759367	1	18	5.5	5.0	✓



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.

QUALITY CONTROL REPORT

Work Order	: VA22C8635	Page	: 1 of 3
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	: Simon Fraser Elementary	Date Samples Received	: 24-Nov-2022 14:50
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Sampler	: K.Messamole_---		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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 - LOR = Limit of Reporting (detection limit).
 - RPD = Relative Percent Difference
 - # = Indicates a QC result that did not meet the ALS DQO.

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Laboratory Duplicate (DUP) Report

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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: 759367)											
KS2204413-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QC Lot: 759367)						
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: 759367)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 759367)									
KS2204413-003	Anonymous	lead, total	7439-92-1	E420	0.0362 mg/L	0.04 mg/L	90.4	70.0	130



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 980494

Page of

Report To 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:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply																																																																																																																											
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum																																																																																																																											
Phone:	604-713-5637	☐ 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																																																																																																																											
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum																																																																																																																											
Street:	1544 Clark drive	Email 1 or Fax	55thomas@vsb.bc.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum																																																																																																																											
City/Province:	Vancouver BC	Email 2	ccarrell@vsb.bc.ca	☐ 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																																																																																																																											
Postal Code:		Email 3	jdavong@vsb.bc.ca	Date and Time Required for all E&P TATs:		dd-mm-yy hh:mm am/pm																																																																																																																									
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PO / AFE:		Requisitioner:																																																																																																																													
LSD:		Location:																																																																																																																													
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ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type																																																																																																																											
	Corr. 100 RM 116 S.S.D.F.	24-11-22	7:10	water																																																																																																																											
	Corr. 100 RM 128 ELKAY BF	24-11-22	7:15	water																																																																																																																											
	Entry 133 RM 141 S.S.D.F.	24-11-22	7:20	water																																																																																																																											
Drinking Water (DW) Samples¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)																																																																																																																											
Are samples taken from a Regulated DW System? ☒ YES ☐ NO		No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED																																																																																																																											
Are samples for human consumption/ use? ☒ YES ☐ NO				Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO																																																																																																																											
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Environmental Division
Vancouver
Work Order Reference
VA22C8635



Telephone : +1 604 253 4188

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 FRONT

Results Summary VA22C8635

Project	Simon Fraser Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	24-Nov-2022 14:50
Issue Date	30-Nov-2022 10:44
Amendment	0

Client Sample ID			Corr. 100 Rm. 116 S.S.D.F	Corr. 100 Rm. 128 Elkay BF	Entry 133 Rm. 141 S.S.D.F
Date Sampled			24-Nov-2022	24-Nov-2022	24-Nov-2022
Time Sampled			07:10	07:15	07:20
ALS Sample ID			VA22C8635-001	VA22C8635-002	VA22C8635-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.000983	0.000208	0.00186



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22A4427	Page	: 1 of 3
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	: Gordon	Date Samples Received	: 03-Mar-2022 14:52
PO	: ----	Date Analysis Commenced	: 06-Mar-2022
C-O-C number	: 20-985905	Issue Date	: 14-Mar-2022 10:38
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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.

Signatories	Position	Laboratory Department
Dwayne Bennett	Supervisor - Inorganic	Metals, Calgary, 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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A4427	Page	: 1 of 5
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	: Gordon	Date Samples Received	: 03-Mar-2022 14:52
PO	: ----	Issue Date	: 14-Mar-2022 10:38
C-O-C number	: 20-985905		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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) Bottle Filler Rm. 156 Gordon	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 206 Gordon	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 306 Gordon	E420	03-Mar-2022	----	----	----		07-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425647	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 Calgary - 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 : **VA22A4427**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Gordon
PO : ----
C-O-C number : 20-985905
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 3
No. of samples analysed : 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 : 03-Mar-2022 14:52
Date Analysis Commenced : 06-Mar-2022
Issue Date : 14-Mar-2022 10:38

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>
Dwayne Bennett	Supervisor - Inorganic	Metals, Calgary, 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: 425647)											
VA22A4418-017	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000062	0.000063	0.000001	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
Total Metals (QCLot: 425647)						
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: 425647)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425647)									
VA22A4418-018	Anonymous	lead, total	7439-92-1	E420	0.207 mg/L	0.2 mg/L	104	70.0	130



COC Number: 20-985905

Page of



Telephone : +1 604 253 4186

REFER TO BACK PAGE FOR AJS 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 - (brand) copy.
 If any water samples are taken from a **Regulated Drinking Water (RDW) System**, please submit using an **Authorized DW CQC form**.
pm
 AJS 2025-01-01

Results Summary VA22A4427					
Project	Gordon				
Report To	Stephen Thomas, Vancouver School Board				
Date Received	03-Mar-2022 14:52				
Issue Date	14-Mar-2022 10:38				
Amendment	0				
Client Sample ID			Bottle Filler Rm. 306 Gordon	Bottle Filler Rm. 206 Gordon	Bottle Filler Rm. 156 Gordon
Date Sampled			03-Mar-2022	03-Mar-2022	03-Mar-2022
Time Sampled			07:45	07:47	07:49
ALS Sample ID			VA22A4427-001	VA22A4427-002	VA22A4427-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.000096	0.000063	0.000066

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C7116	Page	: 1 of 3
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	: Grandview Elementary	Date Samples Received	: 08-Nov-2022 15:19
PO	: ----	Date Analysis Commenced	: 15-Nov-2022
C-O-C number	: 20-1016770	Issue Date	: 16-Nov-2022 08:01
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

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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:

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C7116	Page	: 1 of 5
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	: Grandview Elementary	Date Samples Received	: 08-Nov-2022 15:19
PO	: ----	Issue Date	: 16-Nov-2022 08:01
C-O-C number	: 20-1016770		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr 100 Rm106 B.F	E420	08-Nov-2022	15-Nov-2022	----	----		15-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 200 Rm207 D.F	E420	08-Nov-2022	15-Nov-2022	----	----		15-Nov-2022	180 days	8 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Room 101 DF	E420	08-Nov-2022	15-Nov-2022	----	----		15-Nov-2022	180 days	8 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	741413	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	741413	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	741413	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	741413	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C7116	Page	: 1 of 3
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	: Grandview Elementary	Date Samples Received	: 08-Nov-2022 15:19
PO	: ----	Date Analysis Commenced	: 15-Nov-2022
C-O-C number	: 20-1016770	Issue Date	: 16-Nov-2022 08:01
Sampler	: Robin LeMay_---		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 741413)											
VA22C7055-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000053	0.000057	0.000004	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
Total Metals (QCLot: 741413)						
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: 741413)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 741413)									
VA22C7055-002	Anonymous	lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.8	70.0	130



COC Number: 20 - 1016770

Canada Toll Free: 1 800 668 9878

Page of

[illegible]

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**.

Results Summary VA22C7116

Project	Grandview Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	08-Nov-2022 15:19
Issue Date	16-Nov-2022 08:02
Amendment	0

Client Sample ID			Room 101 DF	Corr 100 Rm106 B.F	Corr 200 Rm207 D.F
Date Sampled			08-Nov-2022	08-Nov-2022	08-Nov-2022
Time Sampled			07:17	07:23	07:31
ALS Sample ID			VA22C7116-001	VA22C7116-002	VA22C7116-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.00353	0.000116	0.000240

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9231	Page	: 1 of 3
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	: Grenfell Elementary	Date Samples Received	: 01-Dec-2022 16:39
PO	: ----	Date Analysis Commenced	: 02-Dec-2022
C-O-C number	: 20-1039079	Issue Date	: 05-Dec-2022 10:18
Sampler	: k.Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 8		
No. of samples analysed	: 8		

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.

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9231	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	: Grenfell Elementary	Date Samples Received	: 01-Dec-2022 16:39
PO	: ----	Issue Date	: 05-Dec-2022 10:18
C-O-C number	: 20-1039079		
Sampler	: k.Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 8		
No. of samples analysed	: 8		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr 100 RM 106 SSDF	E420	01-Dec-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 200 RM 200B SSDF	E420	01-Dec-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 200 RM 206 SSDF	E420	01-Dec-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 200 RM 135 Bottle Filler	E420	01-Dec-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 164 Bubbler	E420	01-Dec-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 165 Bubbler	E420	01-Dec-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 167 Bubbler	E420	01-Dec-2022	02-Dec-2022	----	----		04-Dec-2022	180 days	4 days	✓

Page : 4 of 6
 Work Order : VA22C9231
 Client : Vancouver School Board
 Project : Grenfell Elementary



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	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 168 Bubbler	E420	01-Dec-2022	02-Dec-2022	----	----		04-Dec-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 (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	765697	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	765697	1	20	5.0	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	765697	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	765697	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9231	Page	: 1 of 3
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	: Grenfell Elementary	Date Samples Received	: 01-Dec-2022 16:39
PO	: ----	Date Analysis Commenced	: 02-Dec-2022
C-O-C number	: 20-1039079	Issue Date	: 05-Dec-2022 10:18
Sampler	: k.Messamore_		
Site	: ----		
Quote number	: ----		
No. of samples received	: 8		
No. of samples analysed	: 8		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 765697)											
VA22C9231-001	RM 167 Bubbler	lead, total	7439-92-1	E420	0.000050	mg/L	0.000138	0.000138	0.0000009	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
Total Metals (QCLot: 765697)						
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: 765697)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.7	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 765697)									
VA22C9231-002	RM 165 Bubbler	lead, total	7439-92-1	E420	0.0185 mg/L	0.02 mg/L	92.3	70.0	130



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

COC Number: 20-1039079

Canada Toll Free: 1 800 668 9878

Page of

Report To 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: VANCOUVER SCHOOL BOARD		Select Report Format: ☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)		☒ Routine (R) if received by 3pm M-F - no surcharges apply																																																																		
Contact: STEPHEN THOMAS		Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A		☐ 4 day (P4) if received by 3pm M-F - 20% rush surcharge minimum																																																																		
Phone: 604-713-5637		☐ 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																																																																		
Company address below will appear on the final report		Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX		☐ 2 day (P2) if received by 3pm M-F - 50% rush surcharge minimum																																																																		
Street: 1549 CLARK DRIVE E		Email 1 or Fax: Ssthomass@USD.BC.CA		☐ 1 day (E) if received by 3pm M-F - 100% rush surcharge minimum																																																																		
City/Province: VANCOUVER BC		Email 2: Sscarrell@USD.BC.CA		☐ 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																																																																		
Postal Code:		Email 3: JDuong@USD.BC.CA		Date and Time Required for all E&P TATs: dd-mm-yy hh:mm am/pm																																																																		
Invoice To		Invoice Recipients		Analysis Request																																																																		
Same as Report To ☒ YES ☐ NO		Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX		For all tests with rush TATs requested, please contact your AM to confirm availability.																																																																		
Copy of Invoice with Report ☐ YES ☐ NO		Email 1 or Fax:		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																		
Company:		Email 2:		NUMBER OF CONTAINERS																																																																		
Contact:				LEAD																																																																		
Project Information		Oil and Gas Required Fields (client use)		<table border="1"> <tr> <th colspan="12">Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below</th> <th rowspan="5">SAMPLES ON HOLD</th> <th rowspan="5">EXTENDED STORAGE REQUIRED</th> <th rowspan="5">SUSPECTED HAZARD (see notes)</th> </tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr> </table>				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																																																
Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																																																								
ALS Account # / Quote #		AFE/Cost Center:		PO#																																																																		
Job #: GRENFELL ELEMENTARY		Major/Minor Code:		Routing Code:																																																																		
PO / AFE:		Requisitioner:																																																																				
LSD:		Location:																																																																				
ALS Lab Work Order # (ALS use only):		ALS Contact: T. Taranum		Sampler: K. Messamore																																																																		
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mm-yy)	Time (hh:mm)	Sample Type																																																																
1	RM 167 Bubbler			01-DEC-22	7:30	Water																																																																
2	RM 165 Bubbler			01-DEC-22	7:35	Water																																																																
3	RM 164 Bubbler			01-DEC-22	7:40	Water																																																																
4	RM 168 Bubbler			01-DEC-22	7:45	Water																																																																
5	Corr 120 RM 135 Bottle Filler			01-DEC-22	7:50	Water																																																																
6	Corr 200 RM 200B SSDF			01-DEC-22	7:55	Water																																																																
7	Corr 200 RM 206 SSDF			01-DEC-22	8:00	Water																																																																
8	Corr 100 RM 106 SSDF			01-DEC-22	8:05	Water																																																																
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)																																																																		
Are samples taken from a Regulated DW System?		No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED																																																																		
Are samples for human consumption/use?				Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO																																																																		
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A																																																																		
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Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Time:																																																															
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Environmental Division
Vancouver
Work Order Reference
VA22C9231

Telephone: 1 804 253 4188

White Paper Co. 604 951-3900

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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.

Results Summary VA22C9231

Project	Grenfell Elementary									
Report To	Stephen Thomas, Vancouver School Board									
Date Received	01-Dec-2022 16:39									
Issue Date	05-Dec-2022 10:18									
Amendment	0									
Client Sample ID			RM 167 Bubbler	RM 165 Bubbler	RM 164 Bubbler	RM 168 Bubbler	Corr 200 RM 135 Bottle Filler	Corr 200 RM 200B SSDF	Corr 200 RM 206 SSDF	Corr 100 RM 106 SSDF
Date Sampled			01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022	01-Dec-2022
Time Sampled			07:30	07:35	07:40	07:45	07:50	07:55	08:00	08:05
ALS Sample ID			VA22C9231-001	VA22C9231-002	VA22C9231-003	VA22C9231-004	VA22C9231-005	VA22C9231-006	VA22C9231-007	VA22C9231-008
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
Total Metals (Matrix: Water)										
lead, total	0.000050	mg/L	0.000138	<0.000050	0.000088	0.000184	0.000291	0.00208	0.000947	0.000932

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0677	Page	: 1 of 3
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	: Eric Hamber Secondary School	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1017396/397	Issue Date	: 28-Dec-2022 20:35
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 16		
No. of samples analysed	: 16		

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.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0677	Page	: 1 of 7
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	: Eric Hamber Secondary School	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Issue Date	: 28-Dec-2022 20:35
C-O-C number	: 20-1017396/397		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 16		
No. of samples analysed	: 16		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Boys Change room 293 FGDF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 128 RM 144 SSDF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 229 RM 211A Bottle Filler	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 229 RM 221 DF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 229B RM 201 DF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 280 RM 285 Bottle Filler	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 329 RM 312 SSDF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 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) Corr 329 RM 323 DF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 329B RM 301 DF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 359 AM 358 DF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr A201 RM A201 SSDF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Entry L101 RM L121 SSDF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls Change room 290 DF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 138 DF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 145 Bubbler	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 295 SSDF	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓

[Legend & Qualifier Definitions](#)



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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	785095	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	785095	1	20	5.0	5.0	✔
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	785095	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	785095	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0677	Page	: 1 of 3
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	: Eric Hamber Secondary School	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1017396/397	Issue Date	: 28-Dec-2022 20:35
Sampler	: RL ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 16		
No. of samples analysed	: 16		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 785095)											
VA22D0651-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000572	0.000590	3.11%	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 (QCLot: 785095)						
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: 785095)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 785095)									
VA22D0654-001	Anonymous	lead, total	7439-92-1	E420	0.0185 mg/L	0.02 mg/L	92.6	70.0	130

Report To 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: Vancouver School Board			Select Report Format: ☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)			☒ Routine [R] if received by 3pm M-F - no surcharges apply					
Contact: Stephen Thomas			Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A			☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum					
Phone: 604 713-5637			☐ 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					
Company address below will appear on the final report			Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX			☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum					
Street: 1549 Clark Drive			Email 1 or Fax: stthomas@vsb.bc.ca			☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum					
City/Province: Vancouver B.C.			Email 2: ccarrell@vsb.bc.ca			☐ 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					
Postal Code:			Email 3: jdvong@vsb.bc.ca			Date and Time Required for all E&P TATs:			dd-mm-yy hh:mm am/pm		
Invoice To Same as Report To ☒ YES ☐ NO			Invoice Recipients			Analysis Request					
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:			Email 1 or Fax:			NUMBER OF CONTAINERS					
Contact:			Email 2:			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below					
Project Information			Oil and Gas Required Fields (client use)			SAMPLES ON HOLD			EXTENDED STORAGE REQUIRED		
ALS Account # / Quote #			AFE/Cost Center:			Routing Code:			SUSPECTED HAZARD (see notes)		
Job #: Eric Hamber Secondary School			Major/Minor Code:			Requisitioner:					
PO / AFE:			Location:			ALS Lab Work Order # (ALS use only): 677					
LSD:			ALS Contact: T. Tarannum			Sampler: R. Lenay					
ALS Sample # (ALS use only)			Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mm-yy)			Time (hh:mm)		
						Sample Type					
			corr 329 RM 323 DF			19-Dec-22			9:36		
			corr 329 RM 312 SSDF			19-Dec-22			9:38		
			corr 329 B RM 301 DF			19-Dec-22			9:41		
			corr 229 B RM 201 DF			19-Dec-22			9:45		
			corr 229 RM 211A Bottle Filler			19-Dec-22			9:46		
			corr 229 RM 221 DF			19-Dec-22			9:48		
			corr 280 RM 285 Bottle Filler			19-Dec-22			9:51		
			Girls change room 290 DF			19-Dec-22			9:53		
			Boys change room 293 FGDF			19-Dec-22			9:56		
			RM 295 SSDF			19-Dec-22			9:57		
			corr 359 RM 358 DF			19-Dec-22			10:06		
			corr A201 RM A201 SSDF			19-Dec-22			10:12		
Drinking Water (DW) Samples (client use)			Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC-only)			SAMPLE RECEIPT DETAILS (ALS use only)					
Are samples taken from a Regulated DW System? ☒ YES ☐ NO			No preservatives added			Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED					
Are samples for human consumption/ use? ☒ YES ☐ NO						Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO					
						Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A					
						INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)					
Released by:			Received by:			Received by: RJ			Date: Dec-19		
Date:			Date:			Date:			Time: 14:27		

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-lined copy.

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

AUG 2020 FRONT



COC Number: 20 - 1017397

Canada Toll Free: 1 800 668 9878

Page 2 of 2

Report To		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:	Vancouver School Board			Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply											
Contact:	Stephen Thomas			Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum											
Phone:	604 713-5637			☐ 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											
Company address below will appear on the final report				Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum											
Street:	1549 Clark Drive			Email 1 or Fax	stthomas@vsb.bc.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum											
City/Province:	Vancouver B.C.			Email 2	carrell@vsb.bc.ca	☐ 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											
Postal Code:				Email 3	jduong@vsb.bc.ca	Date and Time Required for all E&P TATs:		dd-mmm-yy hh:mm am/pm									
Invoice To	Same as Report To ☒ YES ☐ NO			Invoice Recipients		For all tests with rush TATs requested, please contact your AM to confirm availability.											
	Copy of Invoice with Report ☐ YES ☐ NO			Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX		Analysis Request											
Company:				Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below				SAMPLES ON HOLD		EXTENDED STORAGE REQUIRED		SUSPECTED HAZARD (see notes)			
Contact:				Email 2													
Project Information				Oil and Gas Required Fields (client use)		NUMBER OF CONTAINERS Lead											
ALS Account # / Quote #				AFE/Cost Center: PO#													
Job #: Eric Hamber Secondary School				Major/Minor Code: Routing Code:													
PO / AFE:				Requisitioner:													
LSD:				Location:													
ALS Lab Work Order # (ALS use only):				ALS Contact: T. Tarannum		Sampler: R. Lemay											
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)			Date (dd-mmm-yy)	Time (hh:mm)	Sample Type											
	Entry L101 RM L121 SSDF			19-Dec-22	10:17	water											
	corr 128 RM 144 SSDF			19-Dec-22	10:22	water											
	RM 138 DF			19-Dec-22	10:26	water											
	RM 145 Bubbler			19-Dec-22	10:40	water											
Drinking Water (DW) Samples ¹ (client use)				Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)											
Are samples taken from a Regulated DW System? ☒ YES ☐ NO				No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED											
Are samples for human consumption/ use? ☒ YES ☐ NO						Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO											
						Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A											
						INITIAL COOLER TEMPERATURES °C FINAL COOLER TEMPERATURES °C											
						2											
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)											
Released by:		Date:		Time:		Received by:		Date:		Time:		Received by:		Date:		Time:	
												RJ		Dec 19		15:30	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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**.

Results Summary VA22D0677

ProjectEric Hamber Secondary School
Report ToStephen Thomas, Vancouver School Board
Date Received19-Dec-2022 15:30
Issue Date28-Dec-2022 20:36
Amendment0

Client Sample ID			Corr 329 RM 323 DF	Corr 329 RM 312 SSDF	Corr 329B RM 301 DF	Corr 229B RM 201 DF	Corr 229 RM 211A Bottle Filler	Corr 229 RM 221 DF	Corr 280 RM 285 Bottle Filler	Girls Change room 290 DF	Boys Change room 293 FGDF	RM 295 SSDF	Corr 359 AM 358 DF	Corr A201 RM A201 SSDF	Entry L101 RM L121 SSDF	Corr 128 RM 144 SSDF	RM 138 DF	RM 145 Bubblers
Date Sampled			19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022
Time Sampled			09:36	09:38	09:41	09:45	09:46	09:48	09:51	09:53	09:56	09:57	10:06	10:12	10:17	10:22	10:26	10:40
ALS Sample ID			VA22D0677-001	VA22D0677-002	VA22D0677-003	VA22D0677-004	VA22D0677-005	VA22D0677-006	VA22D0677-007	VA22D0677-008	VA22D0677-009	VA22D0677-010	VA22D0677-011	VA22D0677-012	VA22D0677-013	VA22D0677-014	VA22D0677-015	VA22D0677-016
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	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)																		
lead, total	0.000050	mg/L	0.000495	0.00100	0.00164	0.00231	0.000128	0.000351	0.00101	0.000656	0.000163	0.000265	0.00161	0.000353	0.000226	0.000460	0.000696	0.00704

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9812	Page	: 1 of 3
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	: Hastings Elementary	Date Samples Received	: 08-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: 20-1039077	Issue Date	: 13-Dec-2022 10:12
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 7		

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.

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

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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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9812	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	: Hastings Elementary	Date Samples Received	: 08-Dec-2022 14:55
PO	: ----	Issue Date	: 13-Dec-2022 10:11
C-O-C number	: 20-1039077		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr 022 Rm 014A DF	E420	08-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 022 Rm 018 SSDF	E420	08-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 119 Rm 112 DF	E420	08-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 119 Rm 117 SSDF	E420	08-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 121 Rm 136 Bottle Filler	E420	08-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 217 Rm 215 SSDF	E420	08-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 217 Rm 312 DF	E420	08-Dec-2022	10-Dec-2022	----	----		11-Dec-2022	180 days	3 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	772887	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	772887	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	772887	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	772887	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9812	Page	: 1 of 3
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	: Hastings Elementary	Date Samples Received	: 08-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: 20-1039077	Issue Date	: 13-Dec-2022 10:11
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 7		
No. of samples analysed	: 7		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 772887)											
FJ2203376-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000170	0.000181	0.000011	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
Total Metals (QCLot: 772887)						
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: 772887)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 772887)									
FJ2203376-002	Anonymous	lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	91.8	70.0	130



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1039077

Page of

Report To 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:	VANCOUVER SCHOOL BOARD	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum ☐ Same day [E2] if received by 10am M-F - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests		
Contact:	STEPHEN THOMAS	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A			
Phone:	604-713-5637	Compare Results to Criteria on Report - provide details below if box checked	☐			
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs:		dd-mm-yy hh:mm am/pm
Street:	1549 Clark drive	Email 1 or Fax	ss.thomas@vsb.bc.ca	For all tests with rush TATs requested, please contact your AM to confirm availability.		
City/Province:	Vancouver BC	Email 2	c.carrell@vsb.bc.ca	Analysis Request		
Postal Code:		Email 3	J.duong@vsb.bc.ca	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below		
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients		NUMBER OF CONTAINERS LEAD SAMPLES ON HOLD EXTENDED STORAGE REQUIRED SUSPECTED HAZARD (see notes)		
Copy of Invoice with Report	☐ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX			
Company:		Email 1 or Fax				
Contact:		Email 2				
Project Information		Oil and Gas Required Fields (client use)				
ALS Account # / Quote #		AFE/Cost Center:	PO#			
Job #:	HASTINGS ELEMENTARY	Major/Minor Code:	Routing Code:			
PO / AFE:		Requisitioner:				
LSD:		Location:				
ALS Lab Work Order # (ALS use only):		ALS Contact: T. Tarannum	Sampler: K. Messamore			
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type		
	Corr 121 RM 136 Bottle Filler	8-Dec-22	7:20	Water		
	Corr 217 RM 212 DF	8-Dec-22	7:25	Water		
	Corr 217 RM 215 SSDF	8-Dec-22	7:30	Water		
	Corr 119 RM 117 SSDF	8-Dec-22	7:35	Water		
	Corr 119 RM 112 DF	8-Dec-22	7:40	Water		
	Corr 022 RM 018 SSDF	8-Dec-22	7:45	Water		
	Corr 022 RM 014A DF	8-Dec-22	7:50	Water		
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)		
Are samples taken from a Regulated DW System?	☒ YES ☐ NO	No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED		
Are samples for human consumption/ use?	☒ YES ☐ NO			Submission Comments Identified on Sample Receipt Notification: ☐ YES ☐ NO		
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A		
				INITIAL COOLER TEMPERATURES °C		
				FINAL COOLER TEMPERATURES °C		
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	

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 print 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.

XERO 2020 FRONT

Results Summary VA22C9812

Project	Hastings Elementary								
Report To	Stephen Thomas, Vancouver School Board								
Date Received	08-Dec-2022 14:55								
Issue Date	13-Dec-2022 10:12								
Amendment	0								
Client Sample ID			Corr 121 Rm 136 Bottle Filler	Corr 217 Rm 312 DF	Corr 217 Rm 215 SSDF	Corr 119 Rm 117 SSDF	Corr 119 Rm 112 DF	Corr 022 Rm 018 SSDF	Corr 022 Rm 014A DF
Date Sampled			08-Dec-2022	08-Dec-2022	08-Dec-2022	08-Dec-2022	08-Dec-2022	08-Dec-2022	08-Dec-2022
Time Sampled			07:20	07:25	07:30	07:35	07:40	07:45	07:50
ALS Sample ID			VA22C9812-001	VA22C9812-002	VA22C9812-003	VA22C9812-004	VA22C9812-005	VA22C9812-006	VA22C9812-007
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
Total Metals (Matrix: Water)									
lead, total	0.000050	mg/L	0.00226	0.000718	0.000124	0.000121	0.00310	0.000426	0.00170

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9148	Page	: 1 of 3
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	: John Henderson Elementary	Date Samples Received	: 30-Nov-2022 14:25
PO	: ----	Date Analysis Commenced	: 02-Dec-2022
C-O-C number	: 20-1017391	Issue Date	: 05-Dec-2022 10:15
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 9		
No. of samples analysed	: 9		

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>
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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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: Water			Client sample ID	Corr. 137 Rm.115 D.F.	Boys Change Rm. 151 D.F	Girls Change Rm. 142 D.F.	Corr. 125 Rm. 122 Bottle Filler	Corr. 125 Rm. 136 D.F.	Corr. 125 Rm. 133 S.S.D.F	Corr. 126 Rm. 129 D.F
			Sampling date/time	30-Nov-2022 07:51	30-Nov-2022 07:59	30-Nov-2022 08:03	30-Nov-2022 08:08	30-Nov-2022 08:12	30-Nov-2022 08:15	30-Nov-2022 08:19
			Sub-Matrix	Water	Water	Water	Water	Water	Water	Water
Analyte	CAS Number	Unit		VA22C9148-001	VA22C9148-002	VA22C9148-003	VA22C9148-004	VA22C9148-005	VA22C9148-006	VA22C9148-007
Total Metals										
lead, total	7439-92-1	mg/L		0.000328	0.00142	0.00321	0.000167	0.00291	0.000198	0.000321

Analytical Results Evaluation

Matrix: Water			Client sample ID	Corr. 172 Rm. 171 S.S.D.F	Corr. 201 Rm. 202 S.S.D.F	----	----	----	----	----
			Sampling date/time	30-Nov-2022 08:22	30-Nov-2022 08:26	----	----	----	----	----
			Sub-Matrix	Water	Water	----	----	----	----	----
Analyte	CAS Number	Unit		VA22C9148-008	VA22C9148-009	-----	-----	-----	-----	-----
Total Metals										
lead, total	7439-92-1	mg/L		0.000068	0.000138	----	----	----	----	----

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

Summary of Guideline Limits

Analyte	CAS Number	Unit	BCDWQG MAC						
Total Metals									
lead, total	7439-92-1	mg/L	0.005 mg/L						

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

Key:

BCDWQG

MAC

British Columbia Drinking Water Quality Guidelines (JAN, 2020

Maximum Acceptable Concentrations

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9148	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	: John Henderson Elementary	Date Samples Received	: 30-Nov-2022 14:25
PO	: ----	Issue Date	: 05-Dec-2022 10:15
C-O-C number	: 20-1017391		
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 9		
No. of samples analysed	: 9		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Boys Change Rm. 151 D.F	E420	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 125 Rm. 122 Bottle Filler	E420	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 125 Rm. 133 S.S.D.F	E420	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 125 Rm. 136 D.F.	E420	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 126 Rm. 129 D.F	E420	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 137 Rm.115 D.F.	E420	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 172 Rm. 171 S.S.D.F	E420	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	3 days	✓

Page : 4 of 6
 Work Order : VA22C9148
 Client : Vancouver School Board
 Project : John Henderson Elementary



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

Analyte Group	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) Corr. 201 Rm. 202 S.S.D.F	E420	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	3 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls Change Rm. 142 D.F.	E420	30-Nov-2022	02-Dec-2022	----	----		02-Dec-2022	180 days	3 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	763570	1	13	7.6	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	763570	1	13	7.6	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	763570	1	13	7.6	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	763570	1	13	7.6	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9148	Page	: 1 of 3
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	: John Henderson Elementary	Date Samples Received	: 30-Nov-2022 14:25
PO	: ----	Date Analysis Commenced	: 02-Dec-2022
C-O-C number	: 20-1017391	Issue Date	: 05-Dec-2022 10:15
Sampler	: R. Lemay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 9		
No. of samples analysed	: 9		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 763570)											
VA22C9095-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000577	0.000570	1.24%	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 (QCLot: 763570)						
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

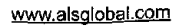
					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 763570)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 763570)									
VA22C9095-002	Anonymous	lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	95.1	70.0	130



COC Number: 20 - 1017391

Page of

Report To 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:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply										
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum										
Phone:	604 713-5637	☐ 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										
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum										
Street:	1549 Clark Drive	Email 1 or Fax	ssstomas@usb.bc.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum										
City/Province:	Vancouver B.C.	Email 2	ccarrell@usb.bc.ca	☐ Same day [E2] if received by 10am M-F - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests										
Postal Code:		Email 3	jduang@usb.bc.ca	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm										
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients			For all tests with rush TATs requested, please contact your AM to confirm availability.									
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	Analysis Request										
Company:		Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below										
Contact:		Email 2												
Project Information		Oil and Gas Required Fields (client use)			NUMBER OF CONTAINERS Lead									
ALS Account # / Quote #:		AFE/Cost Center:		PO#										
Job #: John Henderson Elementary		Major/Minor Code:		Routing Code:										
PO / AFE:		Requisitioner:												
LSD:		Location:				SAMPLES ON HOLD EXTENDED STORAGE REQUIRED SUSPECTED HAZARD (see notes)								
ALS Lab Work Order # (ALS use only): 9148		ALS Contact: T. Tarannum		Sampler: R. Lemay										
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type										
	Corr. 137 Rm. 115 D.F.	30-11-22	7:51am	water										
	Boys Change Rm. 151 D.F.	30-11-22	7:59am	water										
	Girls Change Rm. 142 D.F.	30-11-22	8:03am	water										
	Corr. 125 Rm. 122 Bottle Filler	30-11-22	8:08am	water										
	Corr. 125 Rm. 136 D.F.	30-11-22	8:12am	water										
	Corr. 125 Rm. 133 S.S.D.F.	30-11-22	8:15am	water										
	Corr. 126 Rm. 129 D.F.	30-11-22	8:19am	water										
	Corr. 172 Rm. 171 S.S.D.F.	30-11-22	8:22am	water										
	Corr. 201 Rm. 202 S.S.D.F.	30-11-22	8:26am	water										
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			SAMPLE RECEIPT/DETAILS (ALS use only)									
Are samples taken from a Regulated DW System?		No preservatives added			Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED									
☒ YES ☐ NO					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									
☒ YES ☐ NO					INITIAL COOLER TEMPERATURES °C: 20 FINAL COOLER TEMPERATURES °C: 20									
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)									
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:						

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

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**.

Results Summary VA22C9148

Project John Henderson Elementary
Report To Stephen Thomas, Vancouver School Board
Date Received 30-Nov-2022 14:25
Issue Date 05-Dec-2022 10:15
Amendment 0

Client Sample ID			Corr. 137 Rm.115 D.F.	Boys Change Rm. 151 D.F	Girls Change Rm. 142 D.F.	Corr. 125 Rm. 122 Bottle Filler	Corr. 125 Rm. 136 D.F.	Corr. 125 Rm. 133 S.S.D.F	Corr. 126 Rm. 129 D,F	Corr. 172 Rm. 171 S.S.D.F	Corr. 201 Rm. 202 S.S.D.F
Date Sampled			30-Nov-2022	30-Nov-2022	30-Nov-2022	30-Nov-2022	30-Nov-2022	30-Nov-2022	30-Nov-2022	30-Nov-2022	30-Nov-2022
Time Sampled			07:51	07:59	08:03	08:08	08:12	08:15	08:19	08:22	08:26
ALS Sample ID			VA22C9148-001	VA22C9148-002	VA22C9148-003	VA22C9148-004	VA22C9148-005	VA22C9148-006	VA22C9148-007	VA22C9148-008	VA22C9148-009
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
Total Metals (Matrix: Water)											
lead, total	0.000050	mg/L	0.000328	0.00142	0.00321	0.000167	0.00291	0.000198	0.000321	0.000068	0.000138

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9405	Page	: 1 of 3
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	: Ideal Mini School	Date Samples Received	: 02-Dec-2022 14:15
PO	: ----	Date Analysis Commenced	: 04-Dec-2022
C-O-C number	: 20-1039081	Issue Date	: 06-Dec-2022 16:21
Sampler	: KM		
Site	: ----		
Quote number	: ----		
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
- 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.

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9405	Page	: 1 of 5
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	: Ideal Mini School	Date Samples Received	: 02-Dec-2022 14:15
PO	: ----	Issue Date	: 06-Dec-2022 16:20
C-O-C number	: 20-1039081		
Sampler	: KM		
Site	: ----		
Quote number	: ----		
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 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	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) Corr 100 RM 114 Bottle Filter	E420	02-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 117 Sink	E420	02-Dec-2022	04-Dec-2022	----	----		06-Dec-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 (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	766303	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	766303	1	16	6.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	766303	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	766303	1	16	6.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9405	Page	: 1 of 3
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	: Ideal Mini School	Date Samples Received	: 02-Dec-2022 14:15
PO	: ----	Date Analysis Commenced	: 04-Dec-2022
C-O-C number	: 20-1039081	Issue Date	: 06-Dec-2022 16:20
Sampler	: KM ----		
Site	: ----		
Quote number	: ----		
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
- 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
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 766303)											
VA22C9047-001	Anonymous	lead, total	7439-92-1	E420	0.000500	mg/L	0.000652	0.000672	0.000020	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
Total Metals (QCLot: 766303)						
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: 766303)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 766303)									
VA22C9047-002	Anonymous	lead, total	7439-92-1	E420	0.0868 mg/L	0.1 mg/L	86.8	70.0	130



COC Number: 20 - 1039081

Canada Toll Free: 1 800 668 9878

Page of

[illegible]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FROM

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 CDC form**.

Results Summary VA22C9405

Project	Ideal Mini School
Report To	Stephen Thomas, Vancouver School Board
Date Received	02-Dec-2022 14:15
Issue Date	06-Dec-2022 16:21
Amendment	0

Client Sample ID			Corr 100 RM 114 Bottle Filter	RM 117 Sink
Date Sampled			02-Dec-2022	02-Dec-2022
Time Sampled			07:45	07:50
ALS Sample ID			VA22C9405-001	VA22C9405-002
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)				
lead, total	0.000050	mg/L	0.000397	0.000982

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9744	Page	: 1 of 3
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	: Kerrisdale Annex Elementary	Date Samples Received	: 07-Dec-2022 15:05
PO	: ----	Date Analysis Commenced	: 08-Dec-2022
C-O-C number	: 20-980045	Issue Date	: 09-Dec-2022 14:37
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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.

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9744	Page	: 1 of 5
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	: Kerrisdale Annex Elementary	Date Samples Received	: 07-Dec-2022 15:05
PO	: ----	Issue Date	: 09-Dec-2022 14:37
C-O-C number	: 20-980045		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm 109 Bottle Filter	E420	07-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 119 D.F.	E420	07-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	180 days	3 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 120 D.F.	E420	07-Dec-2022	08-Dec-2022	----	----		09-Dec-2022	180 days	3 days	✓

Legend & Qualifier Definitions

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



Quality Control Parameter Frequency Compliance

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

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

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	772512	1	15	6.6	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	772512	1	15	6.6	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	772512	1	15	6.6	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	772512	1	15	6.6	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9744	Page	: 1 of 3
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	: Kerrisdale Annex Elementary	Date Samples Received	: 07-Dec-2022 15:05
PO	: ----	Date Analysis Commenced	: 08-Dec-2022
C-O-C number	: 20-980045	Issue Date	: 09-Dec-2022 14:37
Sampler	: RL ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

- Key :
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 - 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
Total Metals (QC Lot: 772512)											
VA22C9673-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000079	0.000076	0.000004	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
Total Metals (QCLot: 772512)						
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: 772512)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	94.2	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 >= 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
Total Metals (QCLot: 772512)									
VA22C9675-001	Anonymous	lead, total	7439-92-1	E420	0.0178 mg/L	0.02 mg/L	88.8	70.0	130



REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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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**.

Results Summary VA22C9744

Project Kerrisdale Annex Elementary
Report To Stephen Thomas, Vancouver School Board
Date Received 07-Dec-2022 15:05
Issue Date 09-Dec-2022 14:37
Amendment 0

Client Sample ID			Corr. 100 Rm 109 Bottle Filter	Corr. 120 D.F.	Corr. 119 D.F.
Date Sampled			07-Dec-2022	07-Dec-2022	07-Dec-2022
Time Sampled			07:46	07:51	07:55
ALS Sample ID			VA22C9744-001	VA22C9744-002	VA22C9744-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.000658	0.0217	0.00889



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4602**

Client : **Vancouver School Board**

Contact : **Stephen Thomas**

Address : **1549 Clark Drive
Vancouver BC Canada V5L 3L4**

Telephone : **----**

Project : **Kerrisdale**

PO : **----**

C-O-C number : **20-985901**

Sampler : **Robin LeMay**

Site : **----**

Quote number : **----**

No. of samples received : **8**

No. of samples analysed : **8**

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 : **04-Mar-2022 15:00**

Date Analysis Commenced : **14-Mar-2022**

Issue Date : **21-Mar-2022 15:53**

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.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A4602	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	: Kerrisdale	Date Samples Received	: 04-Mar-2022 15:00
PO	: ----	Issue Date	: 21-Mar-2022 15:53
C-O-C number	: 20-985901		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 8		
No. of samples analysed	: 8		

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) Bottle Filler Rm 108 Kerrisdale	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm 208 Kerrisdale	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Frame Building Kerrisdale	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm 001 Kerrisdale	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm 111 Kerrisdale	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm 212 Kerrisdale	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm. 005 Kerrisdale	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓

Page : 4 of 6
 Work Order : VA22A4602
 Client : Vancouver School Board
 Project : Kerrisdale



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	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm. 021 Kerrisdale	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	431773	2	31	6.4	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	431773	2	31	6.4	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	431773	2	31	6.4	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	431773	2	31	6.4	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 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.

QUALITY CONTROL REPORT

Work Order : **VA22A4602**

Page : 1 of 4

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Kerrisdale
PO : ----
C-O-C number : 20-985901
Sampler : Robin LeMay
Site : ----
Quote number : ----
No. of samples received : 8
No. of samples analysed : 8

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 : 04-Mar-2022 15:00
Date Analysis Commenced : 14-Mar-2022
Issue Date : 21-Mar-2022 15:53

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



General Comments

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

Key :

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

CAS Number = Chemical Abstracts 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: 431773)											
VA22A4484-013	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 431804)											
VA22A4602-005	D.F Rm 001 Kerrisdale	lead, total	7439-92-1	E420	0.000050	mg/L	0.00169	0.00171	0.893%	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 (QCLot: 431773)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Total Metals (QCLot: 431804)						
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: 431773)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
Total Metals (QCLot: 431804)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 431773)									
VA22A4484-014	Anonymous	lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130
Total Metals (QCLot: 431804)									
VA22A4602-006	D.F Rm. 005 Kerrisdale	lead, total	7439-92-1	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130





www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 985901

Page of

Contact and company name below will appear on the final report

Report To

Company: **Vancouver School Board**

Contact: **Stephen Thomas**

Phone: **604 713 5637**

Street: **1549 Clark Drive**

City/Province: **Vancouver B.C.**

Postal Code: **V5L 3L4**

Invoice To: **Same as Report To**

Company: **Copy of Invoice with Report**

Project Information

ALS Account # / Quote #

Job #: **Kerrisdale**

PO / AFE:

ALS Lab Work Order # (ALS use only):

Sample Identification and/or Coordinates

ALS Sample # (ALS use only)

Sample Description will appear on the report

Date

Time

Sample Type

Notes / Specify Limits for result evaluation by selecting from drop-down below

Drinking Water (DW) Samples (client use)

Are samples taken from a Regulated DW System?

Are samples for human consumption/ use?

SHIPMENT RELEASE (client use)

Released by:

Date:

Time:

Received by:

Date:

Time:

Turnaround Time (TAT) Requested

☒ Routine (R) if received by 3pm M-F - no surcharges apply

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

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

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

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

☐ Same day (E2) if received by 10am M-F - 20% 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:

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

NUMBER OF CONTAINERS

Lead

SAMPLES ON HOLD

EXTENDED STORAGE REQUIRED

SUSPECTED HAZARD (see notes)

Environmental Division

Vancouver

Work Order Reference

VA22A4602

Telephone: +1 604 253 4188

Barcode

Cooling Method:

Submission Comments identified on Sample Receipt Notification:

Cooler Custody Seals Intact:

INITIAL COOLER TEMPERATURES °C

FINAL COOLER TEMPERATURES °C

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:

Date:

Time:

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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.

Results Summary VA22A4602										
Project	Kerrisdale									
Report To	Stephen Thomas, Vancouver School Board									
Date Received	04-Mar-2022 15:00									
Issue Date	21-Mar-2022 15:53									
Amendment	0									
Client Sample ID			Bottle Filler Rm 208 Kerrisdale	D.F Rm 212 Kerrisdale	D.F Rm 111 Kerrisdale	Bottle Filler Rm 108 Kerrisdale	D.F Rm 001 Kerrisdale	D.F Rm. 005 Kerrisdale	D.F Rm. 021 Kerrisdale	D.F Frame Building Kerrisdale
Date Sampled			04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022
Time Sampled			07:54	07:56	07:59	08:02	08:06	08:08	08:11	08:16
ALS Sample ID			VA22A4602-001	VA22A4602-002	VA22A4602-003	VA22A4602-004	VA22A4602-005	VA22A4602-006	VA22A4602-007	VA22A4602-008
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
Total Metals (Matrix: Water)										
lead, total	0.000050	mg/L	<0.000050	0.00137	0.00134	<0.000050	0.00169	0.000233	0.0376	0.00194

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0774	Page	: 1 of 3
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	: Killarney Secondary	Date Samples Received	: 21-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 24-Dec-2022
C-O-C number	: 20-1039086/085	Issue Date	: 29-Dec-2022 11:40
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 21		
No. of samples analysed	: 21		

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.

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0774	Page	: 1 of 7
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	: Killarney Secondary	Date Samples Received	: 21-Dec-2022 14:55
PO	: ----	Issue Date	: 29-Dec-2022 11:41
C-O-C number	: 20-1039086/085		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 21		
No. of samples analysed	: 21		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Boys Change Rm. C110 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A105 Rm. A112 D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A124 Rm. A120 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A132 bRm. A130 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A222 Rm. A202 D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A222 Rm. A208 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A225 Rm. A227 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 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) Corr. A319 Rm. A302 D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A319 Rm. A308 D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A319 Rm. A318 Bottle Filler	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. A325 Rm. A327 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. B116 Rm. B103 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. B116 Rm. B111 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. B200 Rm. B202 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. B200 Rm. B212 D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. C121 Rm. C101d Bottle Filler	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 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) Corr. D117 Rm. D120 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls Change Rm C125 D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls Change Rm. C111 S.S.D.F.	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. C107 Bubbler	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. D123 Bubbler	E420	21-Dec-2022	24-Dec-2022	----	----		28-Dec-2022	180 days	7 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	786794	2	31	6.4	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	786794	2	31	6.4	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	786794	2	31	6.4	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	786794	2	31	6.4	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0774	Page	: 1 of 4
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	: Killarney Secondary	Date Samples Received	: 21-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 24-Dec-2022
C-O-C number	: 20-1039086/085	Issue Date	: 29-Dec-2022 11:41
Sampler	: RL ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 21		
No. of samples analysed	: 21		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 786794)											
VA22D0774-001	Corr. C121 Rm. C101d Bottle Filler	lead, total	7439-92-1	E420	0.000050	mg/L	0.000108	0.000105	0.000003	Diff <2x LOR	----
Total Metals (QC Lot: 786796)											
YL2202122-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000176	0.000179	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
Total Metals (QCLot: 786794)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Total Metals (QCLot: 786796)						
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: 786794)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.9	80.0	120	----
Total Metals (QCLot: 786796)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 786794)									
VA22D0774-002	Girls Change Rm C125 D.F.	lead, total	7439-92-1	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130
Total Metals (QCLot: 786796)									
YL2202122-002	Anonymous	lead, total	7439-92-1	E420	0.0185 mg/L	0.02 mg/L	92.3	70.0	130





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Canada Toll Free: 1-800-668-9878

Page 1 of 2

Chain of Custody (COC) / Analytical Request Form

COC Number: 20-1039086

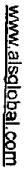
Report To		Contact and company name will appear on the final report	
Company:	Vancouver School Board	Selected Report Format:	☒ PDF ☐ EXCEL ☐ EVD (DIGITAL)
Contact:	Stephen Thomas	Merge QC/QC Reports with COA	☐ YES ☐ NO ☐ N/A
Phone:	604 273-5637	☐ Compare Results to Criterion Report - provide details below if box checked	
Company address below will appear on the final report		Selected Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
Street:	1549 Clark Drive	Email 1 or Fax Stephen Thomas @ vsb.bc.ca	
City/Province:	Vancouver B.C.	Email 2 ccarrell@vsb.bc.ca	
Postal Code:		Email 3 jduong@vsb.bc.ca	
Invoice To:	Same as Report To	☒ YES ☐ NO	
Copy of Invoice with Report	☐ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX
Company:		Email 1 or Fax	
Contact:		Email 2	
Project Information:		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #		AF/ECost Center	PO#
Job #:	Kilgore Secondary	Major/Minor Code:	Routing Code:
PO / A/E:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):	774	ALS Contact:	T. Paramunum
ALS Sample # (ALS use only)		Sample:	R. Lenay
Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)	Time (hh:mm)
Corr. C121 Km. C101d	Both Filler	21-12-22	8:50am
Girls Change Km. C125	D.F.	21-12-22	8:55am
Km. C104	Bubbler	21-12-22	8:59am
Boys Change Km. C110	S.S.D.F.	21-12-22	9:05
Girls Change Km. C111	S.S.D.F.	21-12-22	9:09
Corr. B116 Km. B103	S.S.D.F.	21-12-22	9:15am
Corr. B200 Km. B212	S.S.D.F.	21-12-22	9:23
Corr. B200 Km. B202	S.S.D.F.	21-12-22	9:29
Corr. A225 Km. A227	S.S.D.F.	21-12-22	9:35
Corr. A325 Km. A327	S.S.D.F.	21-12-22	9:39
Corr. A319 Km. A318	Boyle Filler	21-12-22	9:43
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?		No preservatives added	
Are samples for human consumption/ use?			
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)	
Released by:	Date:	Received by:	Date:
Time:		Time:	
WHITE - LABORATORY COPY		YELLOW - CLIENT COPY	

Telephone: +1 804 253 4188



Environmental Division
Vancouver
Work Order Reference
VA22D0774

SAMPLES ON HOLD
EXTENDED STORAGE RE
SUSPECTED HAZARD (se



Report To		Company: Vancouver School Board		Select Report Format: ☒ PDF ☐ EXCEL ☐ EOD (ORIGINAL)		Turnaround Time (TAT) Requested			
Contact: Stephen Thomas		604 713-5637		☐ Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A		☐ Routine (R) if received by 3pm M-F - no surcharges apply			
Phone:		Company address below will appear on the final report		☐ - Combine Results to Criteria on Report - provide details below if box checked		☐ 4 day (P4) if received by 3pm M-F - 20% rush surcharge minimum			
Street: 1549 Clark Drive		City/Province: Vancouver B.C.		Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX		☐ 3 day (P3) if received by 3pm M-F - 25% rush surcharge minimum			
Postal Code:		Email 1 or Fax: 588mas@usb.bc.ca		Email 2: jgarrell@usb.bc.ca		☐ 2 day (P2) if received by 3pm M-F - 50% rush surcharge minimum			
Invoice To		Same as Report To ☒ YES ☐ NO		Email 3: jduong@usb.bc.ca		☐ 1 day (E) if received by 3pm M-F - 100% rush surcharge minimum			
Company:		Copy of Invoice with Report ☐ YES ☐ NO		Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX		☐ Same day (E2) if received by 10am M-F - 20% rush surcharge. Additional fees may apply (rush) requests on weekends, statutory holidays and non-routine tests			
Contact:		Project Information		Email 1 or Fax		Date and Time Requested for all EAP TATs:			
ALS Account # / Quote #:		AF/ECost Center:		Oil and Gas Required Fields (client use)		For all tests with rush TATs requested, please contact your AM to confirm availability.			
Job #: Killarney Secondary		Mag/Material Code:		Routing Code:		Analysis Request			
PO / AFE:		Requisitioner:		Location:		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below			
LSD:		ALS Lab Work Order # (ALS use only):		ALS Contact: T. Tataruwn		SAMPLES ON HOLD			
ALS Sample # (ALS use only):		Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)		Time (hh:mm)		Sample Type	
Corr. A319 Km. A302		D.F.		21-12-22		9:47am		water	
Corr. A222 Km. A202		D.F.		21-12-22		9:52am		water	
Corr. A222 Km. A208		S.S.D.F.		21-12-22		9:55am		water	
Corr. A319 Km. A308		D.F.		21-12-22		10:00am		water	
Corr. A105 Km. A112		D.F.		21-12-22		10:05am		water	
Corr. D117 Km. D120		S.S.D.F.		21-12-22		10:08am		water	
Km. D123		Bubble		21-12-22		10:11am		water	
Corr. A124 Km. A120		S.S.D.F.		21-12-22		10:16am		water	
Corr. A132 Km. A130		S.S.D.F.		21-12-22		10:20am		water	
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		NUMBER OF CONTAINERS		Lead		SAMPLES ON HOLD	
Ate samples taken from a Regulated DW System?		No preservatives added		Extended Storage Required		SUSPECTED HAZARD (see notes)		SUSPECTED HAZARD (see notes)	
Ate samples for human consumption/ use?		No		Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED		Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO		Cooler Custody Seals Intact: ☐ YES ☐ NO	
SHIPMENT RELEASE (client use)		Date:		INITIAL SHIPMENT RECEPTION (ALS use only)		Date:		Time:	
Released by:		Date:		INITIAL SHIPMENT RECEPTION (ALS use only)		Date:		Time:	

REFER TO BACK PAGE FOR ALAS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY	YELLOW - CLIENT COPY

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

AUG 2020 FROM

Results Summary VA22D0774

Project	Killarney Secondary
Report To	Stephen Thomas, Vancouver School Board
Date Received	21-Dec-2022 14:55
Issue Date	29-Dec-2022 11:40
Amendment	0

Client Sample ID			Corr. C121 Rm. C101d Bottle Filler	Girls Change Rm C125 D.F.	Rm. C107 Bubblers	Boys Change Rm. C110 S.S.D.F.	Girls Change Rm. C111 S.S.D.F.	Corr. B116 Rm. B103 S.S.D.F.	Corr. B116 Rm. B111 S.S.D.F.	Corr. B200 Rm. B212 D.F.	Corr. B200 Rm. B202 S.S.D.F.	Corr. A225 Rm. A227 S.S.D.F.	Corr. A325 Rm. A327 S.S.D.F.	Corr. A319 Rm. A318 Bottle Filler	Corr. A319 Rm. A302 D.F.	Corr. A222 Rm. A202 D.F.	Corr. A222 Rm. A208 S.S.D.F.	Corr. A319 Rm. A308 D.F.	Corr. A105 Rm. A112 D.F.	Corr. D117 Rm. D120 S.S.D.F.	Rm. D123 Bubblers	Corr. A124 Rm. A120 S.S.D.F.	Corr. A132 bRm. A130 S.S.D.F.
Date Sampled			21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022
Time Sampled			08:50	08:53	08:59	09:05	09:09	09:15	09:18	09:23	09:29	09:35	09:39	09:43	09:47	09:52	09:55	10:00	10:05	10:08	10:11	10:16	10:20
ALS Sample ID			VA22D0774-001	VA22D0774-002	VA22D0774-003	VA22D0774-004	VA22D0774-005	VA22D0774-006	VA22D0774-007	VA22D0774-008	VA22D0774-009	VA22D0774-010	VA22D0774-011	VA22D0774-012	VA22D0774-013	VA22D0774-014	VA22D0774-015	VA22D0774-016	VA22D0774-017	VA22D0774-018	VA22D0774-019	VA22D0774-020	VA22D0774-021
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	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	0.000108	0.00246	0.00202	0.00126	0.000672	0.000244	0.0106	0.000980	0.000399	0.000422	0.000120	0.000306	0.00212	0.00204	0.00350	0.00447	0.000902	0.00912	0.00729	0.00183	0.000080

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0148	Page	: 1 of 3
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	: SIR CHARLES KINGSFORD SMITH ELEMENTARY	Date Samples Received	: 13-Dec-2022 14:40
PO	: ----	Date Analysis Commenced	: 17-Dec-2022
C-O-C number	: 20-1039075	Issue Date	: 19-Dec-2022 20:02
Sampler	: K. Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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.

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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:

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0148	Page	: 1 of 5
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	: SIR CHARLES KINGSFORD SMITH ELEMENTARY	Date Samples Received	: 13-Dec-2022 14:40
PO	: ----	Issue Date	: 19-Dec-2022 20:02
C-O-C number	: 20-1039075		
Sampler	: K. Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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 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

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



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	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) Corr 000C RM 000D Bottle Filler	E420	13-Dec-2022	17-Dec-2022	----	----		19-Dec-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 100C RM 100D Bottle Filler	E420	13-Dec-2022	17-Dec-2022	----	----		19-Dec-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 019 SSDF	E420	13-Dec-2022	17-Dec-2022	----	----		19-Dec-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 027 SSDF	E420	13-Dec-2022	17-Dec-2022	----	----		19-Dec-2022	180 days	6 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	777369	0	14	0.0	5.0	✖
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	777369	1	14	7.1	5.0	✔
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	777369	1	14	7.1	5.0	✔
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	777369	0	14	0.0	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0148	Page	: 1 of 3
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	: SIR CHARLES KINGSFORD SMITH ELEMENTARY	Date Samples Received	: 13-Dec-2022 14:40
PO	: ----	Date Analysis Commenced	: 17-Dec-2022
C-O-C number	: 20-1039075	Issue Date	: 19-Dec-2022 20:02
Sampler	: K. Messamore_		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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:

- 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
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

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 (QCLot: 777369)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----

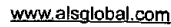
Laboratory Control Sample (LCS) Report

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

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: 777369)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.7	80.0	120	----





COC Number: 20 - 1039075

Page of

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AUG 2020 FRONT

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**.

Results Summary VA22D0148

Project	SIR CHARLES KINGSFORD SMITH ELEMENTARY
Report To	Stephen Thomas, Vancouver School Board
Date Received	13-Dec-2022 14:40
Issue Date	19-Dec-2022 20:02
Amendment	0

Client Sample ID			Corr 000C RM 000D Bottle Filler	RM 027 SSDF	RM 019 SSDF	Corr 100C RM 100D Bottle Filler
Date Sampled			13-Dec-2022	13-Dec-2022	13-Dec-2022	13-Dec-2022
Time Sampled			07:10	07:15	07:20	07:25
ALS Sample ID			VA22D0148-001	VA22D0148-002	VA22D0148-003	VA22D0148-004
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)						
lead, total	0.000050	mg/L	0.000148	0.000136	<0.000050	0.000063



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4377**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : Kitchener

PO : ----

C-O-C number : 20-986709

Sampler : Robin LeMay

Site : ----

Quote number : DONT USE

No. of samples received : 5

No. of samples analysed : 5

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 : 02-Mar-2022 14:45

Date Analysis Commenced : 06-Mar-2022

Issue Date : 07-Mar-2022 09:32

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.

Signatories	Position	Laboratory Department
Austin Wasylyshyn	Lab Analyst	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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A4377	Page	: 1 of 5
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	: Kitchener	Date Samples Received	: 02-Mar-2022 14:45
PO	: ----	Issue Date	: 07-Mar-2022 09:32
C-O-C number	: 20-986709		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: DONT USE		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

Key

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

CAS Number: Chemical Abstracts 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	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) Bottle Filler Corr. 165 Rm. 164 Kitchener	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS. D.F. Corr. 239 Rm. 234 Kitchener	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS. D.F. Rm. 132 Kitchener	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS. D.F. Rm. 134 Kitchener	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS. D.F. Rm. 209 Kitchener	E420	02-Mar-2022	----	----	----		06-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425256	1	16	6.2	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425256	1	16	6.2	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425256	1	16	6.2	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425256	1	16	6.2	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 : **VA22A4377**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Kitchener
PO : ----
C-O-C number : 20-986709
Sampler : Robin LeMay
Site : ----
Quote number : DONT USE
No. of samples received : 5
No. of samples analysed : 5

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 : 02-Mar-2022 14:45
Date Analysis Commenced : 06-Mar-2022
Issue Date : 07-Mar-2022 09:32

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>
Austin Wasylyshyn	Lab Analyst	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: 425256)											
EO2201405-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 425256)						
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: 425256)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	93.7	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425256)									
EO2201405-002	Anonymous	lead, total	7439-92-1	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130



COC Number: 20 - 986709

Canada Toll Free: 1 800 668 9878

Page

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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**.

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 EWOS

Results Summary VA22A4377							
Project	Kitchener						
Report To	Stephen Thomas, Vancouver School Board						
Date Received	02-Mar-2022 14:45						
Issue Date	07-Mar-2022 09:32						
Amendment	0						
Client Sample ID			Bottle Filler Corr. 165 Rm. 164 Kitchener	SS. D.F. Rm. 132 Kitchener	SS. D.F. Rm. 134 Kitchener	SS. D.F. Corr. 239 Rm. 234 Kitchener	SS. D.F. Rm. 209 Kitchener
Date Sampled			02-Mar-2022	02-Mar-2022	02-Mar-2022	02-Mar-2022	02-Mar-2022
Time Sampled			08:39	08:40	08:43	08:49	08:54
ALS Sample ID			VA22A4377-001	VA22A4377-002	VA22A4377-003	VA22A4377-004	VA22A4377-005
Analyte	Lowest Detection Limit	Units	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	0.000104	0.000119	0.000116	0.000095	0.000172



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4425**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : Kitsilano

PO : ----

C-O-C number : 20-985903

Sampler : ----

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 : 03-Mar-2022 14:52

Date Analysis Commenced : 06-Mar-2022

Issue Date : 14-Mar-2022 10:37

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.

Signatories	Position	Laboratory Department
Dwayne Bennett	Supervisor - Inorganic	Metals, Calgary, 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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A4425	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	: Kitsilano	Date Samples Received	: 03-Mar-2022 14:52
PO	: ----	Issue Date	: 14-Mar-2022 10:37
C-O-C number	: 20-985903		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 10		
No. of samples analysed	: 10		

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) Bottle Filler Rm. 127 Kitsilano	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 163 Kitsilano	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 184 Kitsilano	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 185 Kitsilano	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 188 Kitsilano	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 225 Kitsilano	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 261 Kitsilano	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✓



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

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 273 Kitsilano	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 310 Kitsilano	E420	03-Mar-2022	----	----	----		07-Mar-2022	180 days	4 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 368 Kitsilano	E420	03-Mar-2022	----	----	----		07-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425647	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 Calgary - 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 : **VA22A4425**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Kitsilano
PO : ----
C-O-C number : 20-985903
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 10
No. of samples analysed : 10

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 : 03-Mar-2022 14:52
Date Analysis Commenced : 06-Mar-2022
Issue Date : 14-Mar-2022 10:37

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>
Dwayne Bennett	Supervisor - Inorganic	Metals, Calgary, 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: 425647)											
VA22A4418-017	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000062	0.000063	0.000001	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
Total Metals (QCLot: 425647)						
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: 425647)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425647)									
VA22A4418-018	Anonymous	lead, total	7439-92-1	E420	0.207 mg/L	0.2 mg/L	104	70.0	130



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20-985903

Page

Environmental Division
Vancouver

Work Order Reference
VA22A4425



Telephone: +1 604 253 4189

Report To Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested																																																																	
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] If received by 3pm M-F - no surcharges apply																																																																	
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] If received by 3pm M-F - 20% rush surcharge minimum																																																																	
Phone:	604 713-5637	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																																																																	
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] If received by 3pm M-F - 50% rush surcharge minimum																																																																	
Street:	1549 Clark Dr.	Email 1 or Fax:	sstthomas@vsb.bc.ca	☐ 1 day [E] If received by 3pm M-F - 100% rush surcharge minimum																																																																	
City/Province:	Vancouver B.C.	Email 2:	rlemay@vsb.bc.ca	☐ Same day [E2] If received by 10am M-S - 200% rush surcharge. Add may apply to rush requests on weekends, statutory holidays and non-r																																																																	
Postal Code:	V5L 3L4	Email 3:	c.carrell@vsb.bc.ca	Date and Time Required for all E&P TATs:																																																																	
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients		For all tests with rush TATs requested, please d																																																																	
	Copy of Invoice with Report ☒ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	Analysis Re																																																																	
Company:		Email 1 or Fax:		<table border="1"> <tr> <td rowspan="5">NUMBER OF CONTAINERS</td> <td colspan="12">Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below</td> <td rowspan="5">SAMPLES ON HOLD</td> <td rowspan="5">EXTENDED STORAGE REQUIRED</td> <td rowspan="5">SUSPECTED HAZARD (see notes)</td> </tr> <tr><td colspan="12"></td></tr> <tr><td colspan="12"></td></tr> <tr><td colspan="12"></td></tr> <tr><td colspan="12"></td></tr> </table>		NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																																																
NUMBER OF CONTAINERS	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)																																																						
Contact:		Email 2:																																																																			
Project Information		Oil and Gas Required Fields (client use)																																																																			
ALS Account # / Quote #:		AFE/Cost Center:		PO#																																																																	
Job #:		Major/Minor Code:		Routing Code:																																																																	
PO / AFE:		Requisitioner:																																																																			
LSD:		Location:																																																																			
ALS Lab Work Order # (ALS use only):		ALS Contact: T. Taranton		Sampler: R. Lemay																																																																	
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type																																																																	
	Bottle Filler Rm. 127 Kitsilano	03 03 22	6:59am	water																																																																	
	Bottle Filler Rm. 163 Kitsilano	03 03 22	7:03am	water																																																																	
	Bottle Filler Rm. 188 Kitsilano	03 03 22	7:06am	water																																																																	
	Bottle Filler Rm. 225 Kitsilano	03 03 22	7:11am	water																																																																	
	Bottle Filler Rm. 310 Kitsilano	03 03 22	7:14am	water																																																																	
	Bottle Filler Rm. 368 Kitsilano	03 03 22	7:18am	water																																																																	
	Bottle Filler Rm. 273 Kitsilano	03 03 22	7:22am	water																																																																	
	Bottle Filler Rm. 261 Kitsilano	03 03 22	7:25am	water																																																																	
	Bottle Filler Rm. 185 Kitsilano	03 03 22	7:29am	water																																																																	
	Bottle Filler Rm. 184 Kitsilano	03 03 22	7:33am	water																																																																	
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)																																																																	
Are samples taken from a Regulated DW System?				Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED																																																																	
☒ YES ☐ NO				Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO																																																																	
Are samples for human consumption/ use?				Cooler Custody Seals Intact: ☐ YES ☒ NO Sample Custody Seals Intact: ☐ YES ☒ NO																																																																	
☒ YES ☐ NO				INITIAL COOLER TEMPERATURES °C: 6 FINAL COOLER TEMPERATURES °C: 6																																																																	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)																																																																	
Released by:	Date:	Time:	Received by:	Date:	Time:																																																																

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.

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

pm

Results Summary VA22A4425												
Project	Kitsilano											
Report To	Stephen Thomas, Vancouver School Board											
Date Received	03-Mar-2022 14:52											
Issue Date	14-Mar-2022 10:37											
Amendment	0											
Client Sample ID			Bottle Filler Rm. 127 Kitsilano	Bottle Filler Rm. 163 Kitsilano	Bottle Filler Rm. 188 Kitsilano	Bottle Filler Rm. 225 Kitsilano	Bottle Filler Rm. 310 Kitsilano	Bottle Filler Rm. 368 Kitsilano	Bottle Filler Rm. 273 Kitsilano	Bottle Filler Rm. 261 Kitsilano	Bottle Filler Rm. 185 Kitsilano	Bottle Filler Rm. 184 Kitsilano
Date Sampled			03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022	03-Mar-2022
Time Sampled			06:59	07:03	07:06	07:11	07:14	07:18	07:22	07:25	07:29	07:33
ALS Sample ID			VA22A4425-001	VA22A4425-002	VA22A4425-003	VA22A4425-004	VA22A4425-005	VA22A4425-006	VA22A4425-007	VA22A4425-008	VA22A4425-009	VA22A4425-010
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	<0.000050	<0.000050	<0.000050	0.000056	0.000084	0.000261	0.000059	0.000094	0.000558	0.000432

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9955	Page	: 1 of 3
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	: L'Ecole Bilingue Elementary	Date Samples Received	: 09-Dec-2022 14:48
PO	: ----	Date Analysis Commenced	: 12-Dec-2022
C-O-C number	: 20-1038007	Issue Date	: 13-Dec-2022 09:31
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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.

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9955	Page	: 1 of 5
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	: L'Ecole Bilingue Elementary	Date Samples Received	: 09-Dec-2022 14:48
PO	: ----	Issue Date	: 13-Dec-2022 09:30
C-O-C number	: 20-1038007		
Sampler	: R. Lemay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr. 101 Rm. 151 Bottle Filler	E420	09-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 101 Rm. 151 S.S.D.F	E420	09-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 202 Rm. 204 Bottle Filler	E420	09-Dec-2022	12-Dec-2022	----	----		13-Dec-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	774594	1	17	5.8	5.0	✔
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	774594	1	17	5.8	5.0	✔
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	774594	1	17	5.8	5.0	✔
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	774594	1	17	5.8	5.0	✔



Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.

QUALITY CONTROL REPORT

Work Order	: VA22C9955	Page	: 1 of 3
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	: L'Ecole Bilinge Elementary	Date Samples Received	: 09-Dec-2022 14:48
PO	: ----	Date Analysis Commenced	: 12-Dec-2022
C-O-C number	: 20-1038007	Issue Date	: 13-Dec-2022 09:30
Sampler	: R. Lemay ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

Key :

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 774594)											
VA22C9897-002	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000156	0.000153	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
Total Metals (QC Lot: 774594)						
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: 774594)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.0	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 774594)									
VA22C9897-003	Anonymous	lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	92.2	70.0	130



COC Number: 20 - 1038007

Page of

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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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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.

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

Results Summary VA22C9955

Project L'Ecole Bilinge Elementary
Report To Stephen Thomas, Vancouver School Board
Date Received 09-Dec-2022 14:48
Issue Date 13-Dec-2022 09:31
Amendment 0

Client Sample ID			Corr. 101 Rm. 151 Bottle Filler	Corr. 101 Rm. 151 S.S.D.F	Corr. 202 Rm. 204 Bottle Filler
Date Sampled			09-Dec-2022	09-Dec-2022	09-Dec-2022
Time Sampled			07:28	07:29	07:33
ALS Sample ID			VA22C9955-001	VA22C9955-002	VA22C9955-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	<0.000050	<0.000050	<0.000050

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9406	Page	: 1 of 3
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	: Sir Wilfred Laurier	Date Samples Received	: 02-Dec-2022 14:15
PO	: ----	Date Analysis Commenced	: 04-Dec-2022
C-O-C number	: 20-1039080	Issue Date	: 06-Dec-2022 16:21
Sampler	: KM		
Site	: ----		
Quote number	: ----		
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
- 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>
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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:

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9406	Page	: 1 of 5
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	: Sir Wilfred Laurier	Date Samples Received	: 02-Dec-2022 14:15
PO	: ----	Issue Date	: 06-Dec-2022 16:21
C-O-C number	: 20-1039080		
Sampler	: KM		
Site	: ----		
Quote number	: ----		
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 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	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) Corr 024 RM 003 Bottle Filter	E420	02-Dec-2022	04-Dec-2022	----	----		06-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 117 RM 103 SSDF	E420	02-Dec-2022	04-Dec-2022	----	----		06-Dec-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 (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	766303	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	766303	1	16	6.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	766303	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	766303	1	16	6.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9406	Page	: 1 of 3
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	: Sir Wilfred Laurier	Date Samples Received	: 02-Dec-2022 14:15
PO	: ----	Date Analysis Commenced	: 04-Dec-2022
C-O-C number	: 20-1039080	Issue Date	: 06-Dec-2022 16:21
Sampler	: KM		
Site	: ----		
Quote number	: ----		
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
- 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
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 766303)											
VA22C9047-001	Anonymous	lead, total	7439-92-1	E420	0.000500	mg/L	0.000652	0.000672	0.000020	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
Total Metals (QCLot: 766303)						
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: 766303)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 766303)									
VA22C9047-002	Anonymous	lead, total	7439-92-1	E420	0.0868 mg/L	0.1 mg/L	86.8	70.0	130



COC Number: 20 - 1039080

Canada Toll Free: 1 800 668 9878

Page of

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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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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 cover of the white report cover.

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

Results Summary VA22C9406

Project	Sir Wilfred Laurier
Report To	Stephen Thomas, Vancouver School Board
Date Received	02-Dec-2022 14:15
Issue Date	06-Dec-2022 16:21
Amendment	0

Client Sample ID			Corr 024 RM 003 Bottle Filter	Corr 117 RM 103 SSDF
Date Sampled			02-Dec-2022	02-Dec-2022
Time Sampled			07:34	07:39
ALS Sample ID			VA22C9406-001	VA22C9406-002
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)				
lead, total	0.000050	mg/L	0.000784	0.000650

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9951	Page	: 1 of 3
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	: DR A.R. Lord Elementary	Date Samples Received	: 09-Dec-2022 14:48
PO	: ----	Date Analysis Commenced	: 12-Dec-2022
C-O-C number	: 20-1039076	Issue Date	: 13-Dec-2022 15:51
Sampler	: K. Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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.

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

<i>Unit</i>	<i>Description</i>
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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9951	Page	: 1 of 5
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	: DR A.R. Lord Elementary	Date Samples Received	: 09-Dec-2022 14:48
PO	: ----	Issue Date	: 13-Dec-2022 15:56
C-O-C number	: 20-1039076		
Sampler	: K. Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 100 RM 112 SSDF	E420	09-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 104 RM B105 SSDF	E420	09-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 104 RM B109 FGDF	E420	09-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 200 RM 208 Bottle Filler	E420	09-Dec-2022	12-Dec-2022	----	----		13-Dec-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 (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	774595	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	774595	1	19	5.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	774595	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	774595	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9951	Page	: 1 of 3
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	: DR A.R. Lord Elementary	Date Samples Received	: 09-Dec-2022 14:48
PO	: ----	Date Analysis Commenced	: 12-Dec-2022
C-O-C number	: 20-1039076	Issue Date	: 13-Dec-2022 15:51
Sampler	: K. Messamore_		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 774595)											
VA22C9940-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 774595)						
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: 774595)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.7	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 774595)									
VA22C9940-002	Anonymous	lead, total	7439-92-1	E420	0.0174 mg/L	0.02 mg/L	87.0	70.0	130



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1039076

Page of

Report To 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:	VANCOUVER SCHOOL BOARD	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum ☐ 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		
Contact:	STEPHEN THOMAS	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A			
Phone:	604-713-5637	Compare Results to Criteria on Report - provide details below if box checked	☐			
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs:		dd-mm-yy hh:mm am/pm
Street:	1549 Clark drive	Email 1 or Fax	Sstomas@vsb.bc.ca			
City/Province:	Vancouver BC	Email 2	C.Carrell@vsb.bc.ca			
Postal Code:		Email 3	J.dvory@vsb.bc.ca			
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients		Analysis Request		
	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:		Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below		
Contact:		Email 2				
Project Information		Oil and Gas Required Fields (client use)		NUMBER OF CONTAINERS		
ALS Account # / Quote #		A/E/Cost Center:	PO#	LEAD		
Job #:	DR A.R. Lord elementary	Major/Minor Code:	Routing Code:			
PO / A/E:		Requisitioner:				
LSD:		Location:				
ALS Lab Work Order # (ALS use only):	9951	ALS Contact:	T. Tarannum	Sampler:		K. Messamore
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type		
	Corr 200 RM 208 BotHk Filler	9-Dec-22	7:00	water		
	Corr 104 RM B105 SSDF	9-Dec-22	7:05	water		
	Corr 104 RM B109 FGDF	9-Dec-22	7:10	water		
	Corr 100 RM 112 SSDF	9-Dec-22	7:20	water		
Drinking Water (DW) Samples¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)		
Are samples taken from a Regulated DW System?	☒ YES ☐ NO	No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED		
Are samples for human consumption/ use?	☒ YES ☐ NO			Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO		
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A		
				INITIAL COOLER TEMPERATURES °C		
				FINAL COOLER TEMPERATURES °C		
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	
				2C	12/09/22	2:45

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.

AUG 2016 PRINT

Results Summary VA22C9951

Project DR A.R. Lord Elementary
Report To Stephen Thomas, Vancouver School Board
Date Received 09-Dec-2022 14:48
Issue Date 13-Dec-2022 15:51
Amendment 0

Client Sample ID			Corr 200 RM 208 Bottle Filler	Corr 104 RM B105 SSDF	Corr 104 RM B109 FGDF	Corr 100 RM 112 SSDF
Date Sampled			09-Dec-2022	09-Dec-2022	09-Dec-2022	09-Dec-2022
Time Sampled			07:00	07:05	07:10	07:20
ALS Sample ID			VA22C9951-001	VA22C9951-002	VA22C9951-003	VA22C9951-004
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)						
lead, total	0.000050	mg/L	0.000471	0.000679	0.000627	0.00130

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0404	Page	: 1 of 3
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	: Sir Alexander Mackenzie	Date Samples Received	: 15-Dec-2022 14:50
PO	: ----	Date Analysis Commenced	: 16-Dec-2022
C-O-C number	: 20-1041045;20-1041046	Issue Date	: 19-Dec-2022 15:44
Sampler	: K. Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 13		
No. of samples analysed	: 13		

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.

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0404	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	: Sir Alexander Mackenzie	Date Samples Received	: 15-Dec-2022 14:50
PO	: ----	Issue Date	: 19-Dec-2022 15:44
C-O-C number	: 20-1041045;20-1041046		
Sampler	: K. Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 13		
No. of samples analysed	: 13		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water**

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

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Basement 014 RM 007A Bottle Filler	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Boys change Room 104 DF	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 100 RM 112 DF	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 200 RM 222 DF	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls change room 109 DF	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 004 DF	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 168 Build 104b Bub	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-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) RM 169 Build 104b Bub	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 170 Build 104b Bub	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 171 Build 104b Bub	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 172 Build 104b Bub	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 173 Build 104b Bub	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 174 Build 104b Bub	E420	15-Dec-2022	16-Dec-2022	----	----		19-Dec-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 (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	780340	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	780340	1	16	6.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	780340	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	780340	1	16	6.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0404	Page	: 1 of 3
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	: Sir Alexander Mackenzie	Date Samples Received	: 15-Dec-2022 14:50
PO	: ----	Date Analysis Commenced	: 16-Dec-2022
C-O-C number	: 20-1041045;20-1041046	Issue Date	: 19-Dec-2022 15:45
Sampler	: K. Messamore_		
Site	: ----		
Quote number	: ----		
No. of samples received	: 13		
No. of samples analysed	: 13		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 780340)											
KS2204709-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 780340)						
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: 780340)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.7	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 780340)									
KS2204711-001	Anonymous	lead, total	7439-92-1	E420	0.0194 mg/L	0.02 mg/L	97.3	70.0	130



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1041045

Page 1 of 2

Report To		Reports / Recipients		Turnaround Time (TAT) Requested		
Company:	VANCOUVER SCHOOL BOARD	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum ☐ 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		
Contact:	STEPHEN THOMAS	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A			
Phone:	604-713-5637	Compare Results to Criteria on Report - provide details below if box checked	☐			
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX			
Street:	1549 Clark drive	Email 1 or Fax:	SSThomas@vsb.bc.ca	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm For all tests with rush TATs requested, please contact your AM to confirm availability.		
City/Province:	Vancouver B.C.	Email 2:	C.Carroll@vsb.bc.ca			
Postal Code:		Email 3:	J.dunlop@vsb.bc.ca			
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients		Analysis Request		
Copy of Invoice with Report	☐ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below		
Company:		Email 1 or Fax:		NUMBER OF CONTAINERS LEAD		
Contact:		Email 2:				
Project Information		Oil and Gas Required Fields (client use)				
ALS Account # / Quote #:		AFE/Cost Center:	PO#			
Job #:	SIR ALEXANDER MACKENZIE	Major/Minor Code:	Routing Code:	SAMPLES ON HOLD EXTENDED STORAGE REQUIRED SUSPECTED HAZARD (see notes)		
PO / AFE:		Requisitioner:				
LSD:		Location:				
ALS Lab Work Order # (ALS use only):		ALS Contact: T. Tarannum	Sampler: K. Messamore			
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Environmental Division Vancouver Work Order Reference VA22D0404 Telephone: +1 604 263 4188	
	Basement 014 RM 007 A Bottle Filler	15-Dec-22	7:05	water		
	RM 004 DF	15-Dec-22	7:10	water		
	Corr 100 RM 112 DF	15-Dec-22	7:15	water		
	Corr 200 RM 222 -DF	15-Dec-22	7:20	water		
	RM 168 Build 104 b Bub	15-Dec-22	7:36	water		
	RM 170 Build 104 b Bub	15-Dec-22	7:39	water		
	RM 172 Build 104 b Bub	15-Dec-22	7:42	water		
	RM 174 Build 104 b Bub	15-Dec-22	7:45	water		
	RM 171 Build 104 b Bub	15-Dec-22	7:49	water		
	RM 173 Build 104 b Bub	15-Dec-22	7:49	water		
	RM 169 Build 104 b Bub	15-Dec-22	7:52	water		
	Boys change Room 104 DF	15-Dec-22	7:55	water		
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)		
Are samples taken from a Regulated DW System?		No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED		
Are samples for human consumption / use?				Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO		
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A		
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	
				12/15/22	2:50	

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.

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1041046

Page 2 of 2

Report To 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:	VANCOUVER SCHOOL BOARD	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum ☐ 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																	
Contact:	STEPHEN THOMAS	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A																		
Phone:	604-713-5632	Compare Results to Criteria on Report - provide details below if box checked	☐																		
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX																		
Street:	1549 Clark drive	Email 1 or Fax:	stthomas@vsb.bc.ca																		
City/Province:	Vancouver B.C.	Email 2:	ccarpell@vsb.bc.ca																		
Postal Code:		Email 3:	jdoung@vsb.bc.ca																		
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients		Date and Time Required for all E&P TATs:		dd-mmm-yy hh:mm am/pm															
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:		Email 1 or Fax:		Analysis Request																	
Contact:		Email 2:		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																	
Project Information		Oil and Gas Required Fields (client use)		NUMBER OF CONTAINERS LEAD													SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)		
ALS Account # / Quote #:		AFE/Cost Center:	PO#																		
Job #:	SIR ALEXANDER MACKENZIE	Major/Minor Code:	Routing Code:																		
PO / AFE:		Requisitioner:																			
LSD:		Location:																			
ALS Lab Work Order # (ALS use only):		ALS Contact:	T. Trannum		Sampler:	K. Messemore															
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mmm-yy)		Time (hh:mm)	Sample Type															
	Girls change room 109 DF		15-Dec-22		8:00	Water															
Drinking Water (DW) Samples¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)																	
Are samples taken from a Regulated DW System?		No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED																	
☒ YES ☐ NO				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																	
☒ YES ☐ NO				INITIAL COOLER TEMPERATURES °C: 20 FINAL COOLER TEMPERATURES °C: 20																	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)																	
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:													
							12/15/22	0:50													

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.

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Results Summary VA22D0404

Project	Sir Alexander Mackenzie														
Report To	Stephen Thomas, Vancouver School Board														
Date Received	15-Dec-2022 14:50														
Issue Date	19-Dec-2022 15:44														
Amendment	0														
Client Sample ID			Basement 014 RM 007A Bottle Filler	RM 004 DF	Corr 100 RM 112 DF	Corr 200 RM 222 DF	RM 168 Build 104b Bub	RM 170 Build 104b Bub	RM 172 Build 104b Bub	RM 174 Build 104b Bub	RM 171 Build 104b Bub	RM 173 Build 104b Bub	RM 169 Build 104b Bub	Boys change Room 104 DF	Girls change room 109 DF
Date Sampled			15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022	15-Dec-2022
Time Sampled			07:05	07:10	07:15	07:20	07:36	07:39	07:42	07:45	07:47	07:49	07:52	07:55	08:00
ALS Sample ID			VA22D0404-001	VA22D0404-002	VA22D0404-003	VA22D0404-004	VA22D0404-005	VA22D0404-006	VA22D0404-007	VA22D0404-008	VA22D0404-009	VA22D0404-010	VA22D0404-011	VA22D0404-012	VA22D0404-013
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	Sub-Matrix: Water
Total Metals (Matrix: Water)															
lead, total	0.000050	mg/L	0.000305	0.00838	0.00232	0.00309	0.000484	0.00203	0.000404	0.000469	0.000919	0.00104	0.00162	0.00178	0.00804



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4603**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : Magee

PO : ----

C-O-C number : 20-986710/20-985902

Sampler : ----

Site : ----

Quote number : ----

No. of samples received : 13

No. of samples analysed : 13

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 : 04-Mar-2022 15:00

Date Analysis Commenced : 14-Mar-2022

Issue Date : 21-Mar-2022 15:57

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.

Signatories

Position

Laboratory Department

Kim Jensen

Department Manager - Metals

Metals, Burnaby, British Columbia



General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

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	: VA22A4603	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	: Magee	Date Samples Received	: 04-Mar-2022 15:00
PO	: ----	Issue Date	: 21-Mar-2022 15:57
C-O-C number	: 20-986710/20-985902		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 13		
No. of samples analysed	: 13		

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) Bottle Filler Rm. 135 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 227 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 308 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bubbler Rm. 107 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bubbler Rm. 108 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bubbler Rm. 122 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S D.F Cor 109 Rm. 107 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✓



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

Analyte Group	Method	Sampling Date	Extraction / Preparation				Analysis			
Container / Client Sample ID(s)			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S D.F Corr. 121 Rm. 121A Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S D.F Rm. 116 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S D.F RM. 141A Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S D.F Rm. 209 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S D.F Rm. 328 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	10 days	✔
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S D.F Rm. 120 Magee	E420	04-Mar-2022	----	----	----		14-Mar-2022	180 days	11 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	431804	1	19	5.2	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	431804	1	19	5.2	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	431804	1	19	5.2	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	431804	1	19	5.2	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 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.

QUALITY CONTROL REPORT

Work Order : **VA22A4603**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Magee
PO : ----
C-O-C number : 20-986710/20-985902
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 13
No. of samples analysed : 13

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 : 04-Mar-2022 15:00
Date Analysis Commenced : 14-Mar-2022
Issue Date : 21-Mar-2022 15:57

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>
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



General Comments

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

- Key :
- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
 - CAS Number = Chemical Abstracts 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: 431804)											
VA22A4602-005	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00169	0.00171	0.893%	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 (QCLot: 431804)						
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: 431804)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	107	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 431804)									
VA22A4602-006	Anonymous	lead, total	7439-92-1	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20-986710

Page of

Contact and company name below will appear on the final report

Report To

Reports / Recipients

Turnaround Time (TAT) Requested

Analysis Request

dd-mm-yy hh:mm am/pm

Company: Vancouver School Board

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

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

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Contact: Stephen Thomas

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

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

ALS Lab Barcode Label Here (ALS use only)

Phone: 604 713-5637

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

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

ALS Lab Barcode Label Here (ALS use only)

Street: 1549 Clark Drive

Select Distribution: ☒ Email ☐ MAIL ☐ FAX

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

ALS Lab Barcode Label Here (ALS use only)

City/Province: Vancouver B.C.

Email 1 or Fax: ss.thomas@vsb.bc.ca

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

ALS Lab Barcode Label Here (ALS use only)

Postal Code: V5L 3L4

Email 2: rhenry@vsb.bc.ca

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

ALS Lab Barcode Label Here (ALS use only)

Invoice To: Same as Report To

Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

Date and Time Required for all EAP TATs:

ALS Lab Barcode Label Here (ALS use only)

Company: Copy of Invoice with Report

Select Invoice Distribution: ☒ YES ☐ NO

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

ALS Lab Barcode Label Here (ALS use only)

Contact: Project Information

Email 1 or Fax

Analysis Request

ALS Lab Barcode Label Here (ALS use only)

ALS Account # / Quote #

AFE/Cost Center

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

ALS Lab Barcode Label Here (ALS use only)

Job #:

Major/Minor Code

Routing Code

ALS Lab Barcode Label Here (ALS use only)

PO / AFE:

Requisitioner

Location

ALS Lab Barcode Label Here (ALS use only)

ALS Lab Work Order # (ALS use only):

ALS Confidentiality

Sampler: K. Lenay

ALS Lab Barcode Label Here (ALS use only)

ALS Sample #

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

NUMBER OF CONTAINERS

SAMPLES ON HOLD

SS. D.F. Rn. 120 Magee

Date (dd-mm-yy)

Time (hh:mm)

Sample Type

SS. D.F. Rn. 116 Magee

04 03 22

6:55am

water

SS. D.F. Rn. 121 Rn. 121A Magee

04 03 22

7:01am

water

SS. D.F. Rn. 122 Magee

04 03 22

7:09am

water

Bottle Filler Rn. 135 Magee

04 03 22

7:10am

water

SS. D.F. Lot 109 Rn. 107 Magee

04 03 22

7:14am

water

Bubbler Rn. 108 Magee

04 03 22

7:16am

water

Bubbler Rn. 107 Magee

04 03 22

7:19am

water

SS. D.F. Rn. 141A Magee

04 03 22

7:23am

water

Bottle Filler Rn. 227 Magee

04 03 22

7:27am

water

SS. D.F. Rn. 209 Magee

04 03 22

7:30am

water

Bottle Filler Rn. 308 Magee

04 03 22

7:34am

water

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

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

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

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

INITIAL COOLER TEMPERATURES °C: ☐ YES ☐ NO

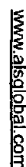
FINAL COOLER TEMPERATURES °C: ☐ YES ☐ NO

SHIPPING RELEASE (client use)

Released by: Date: Time: Received by: Date: Time: INITIAL SHIPMENT RECEPTION (ALS use only)

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

Environmental Division
Vancouver
Work Order Reference
VA22A4603
Telephone: +1 804 253 4188



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 985902

Page of

AUG 2020 FRONT

Results Summary VA22A4603															
Project	Magee														
Report To	Stephen Thomas, Vancouver School Board														
Date Received	04-Mar-2022 15:00														
Issue Date	21-Mar-2022 15:57														
Amendment	0														
Client Sample ID			S.S D.F Rm. 120 Magee	S.S D.F Rm. 116 Magee	S.S D.F Corr. 121 Rm. 121A Magee	Bubbler Rm. 122 Magee	Bottle Filler Rm. 135 Magee	S.S D.F Cor 109 Rm. 107 Magee	Bubbler Rm. 108 Magee	Bubbler Rm. 107 Magee	S.S D.F RM. 141A Magee	Bottle Filler Rm. 227 Magee	S.S D.F Rm. 209 Magee	Bottle Filler Rm. 308 Magee	S.S D.F Rm. 328 Magee
Date Sampled			04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022	04-Mar-2022
Time Sampled			06:55	07:01	07:04	07:06	07:10	07:14	07:16	07:19	07:23	07:27	07:30	07:34	07:38
ALS Sample ID			VA22A4603-001	VA22A4603-002	VA22A4603-003	VA22A4603-004	VA22A4603-005	VA22A4603-006	VA22A4603-007	VA22A4603-008	VA22A4603-009	VA22A4603-010	VA22A4603-011	VA22A4603-012	VA22A4603-013
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	Sub-Matrix: Water
Total Metals (Matrix: Water)															
lead, total	0.000050	mg/L	0.000181	0.00252	0.000161	0.00133	<0.000050	0.000103	0.00422	0.00267	0.000483	<0.000050	0.000424	0.000542	0.000130

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0884	Page	: 1 of 3
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	: Chief Maquinna Elementary	Date Samples Received	: 22-Dec-2022 15:20
PO	: ----	Date Analysis Commenced	: 28-Dec-2022
C-O-C number	: 20-1039089	Issue Date	: 29-Dec-2022 10:28
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

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

<i>Unit</i>	<i>Description</i>
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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0884	Page	: 1 of 5
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	: Chief Maquinna Elementary	Date Samples Received	: 22-Dec-2022 15:20
PO	: ----	Issue Date	: 29-Dec-2022 10:28
C-O-C number	: 20-1039089		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

Key

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

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

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

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

Summary of Outliers

Outliers : Quality Control Samples

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

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

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

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

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

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

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

Analyte Group	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) Corr. 001 Rm. 006 S.S.D.F.	E420	22-Dec-2022	28-Dec-2022	----	----		29-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm. 107 S.S.D.F.	E420	22-Dec-2022	28-Dec-2022	----	----		29-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm. 133 S.S.D.F.	E420	22-Dec-2022	28-Dec-2022	----	----		29-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 116 Rm. 112 S.S.D.F.	E420	22-Dec-2022	28-Dec-2022	----	----		29-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 126 Rm. 125b Bottle Filler	E420	22-Dec-2022	28-Dec-2022	----	----		29-Dec-2022	180 days	7 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	789375	1	9	11.1	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	789375	1	9	11.1	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	789375	1	9	11.1	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	789375	1	9	11.1	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0884	Page	: 1 of 3
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	: Chief Maquinna Elementary	Date Samples Received	: 22-Dec-2022 15:20
PO	: ----	Date Analysis Commenced	: 28-Dec-2022
C-O-C number	: 20-1039089	Issue Date	: 29-Dec-2022 10:28
Sampler	: RL ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

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

This Quality Control Report contains the following information:

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

Signatories

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

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

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

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

Workorder Comments

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

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 789375)											
VA22D0841-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QC Lot: 789375)						
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: 789375)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----

Matrix Spike (MS) Report

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

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 789375)									
VA22D0843-001	Anonymous	lead, total	7439-92-1	E420	0.0188 mg/L	0.02 mg/L	93.9	70.0	130



COC Number: 20 - 1039089

Canada Toll Free: 1 800 668 9878

Page

Environmental Division
Vancouver
Work Order Reference

VA22D0884



Telephone : +1 604 253 4188

[illegible]

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FROM

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**.

Results Summary VA22D0884

Project	Chief Maquinna Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	22-Dec-2022 15:20
Issue Date	29-Dec-2022 10:28
Amendment	0

Client Sample ID			Corr. 100 Rm. 107 S.S.D.F.	Corr. 100 Rm. 133 S.S.D.F.	Corr. 126 Rm. 125b Bottle Filler	Corr. 116 Rm. 112 S.S.D.F.	Corr. 001 Rm. 006 S.S.D.F.
Date Sampled			22-Dec-2022	22-Dec-2022	22-Dec-2022	22-Dec-2022	22-Dec-2022
Time Sampled			12:19	12:25	12:31	12:34	12:37
ALS Sample ID			VA22D0884-001	VA22D0884-002	VA22D0884-003	VA22D0884-004	VA22D0884-005
Analyte	Lowest Detection Limit	Units	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	<0.000050	<0.000050	<0.000050	0.000084	0.000199

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0598	Page	: 1 of 3
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	: Sir Richard McBride Elementary	Date Samples Received	: 16-Dec-2022 14:43
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1041044	Issue Date	: 28-Dec-2022 16:17
Sampler	: KM		
Site	: ----		
Quote number	: ----		
No. of samples received	: 6		
No. of samples analysed	: 6		

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

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

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

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

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

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

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

Key : LOR: Limit of Reporting (detection limit).

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0598	Page	: 1 of 5
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	: Sir Richard McBride Elementary	Date Samples Received	: 16-Dec-2022 14:43
PO	: ----	Issue Date	: 28-Dec-2022 16:17
C-O-C number	: 20-1041044		
Sampler	: KM		
Site	: ----		
Quote number	: ----		
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 Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 003 RM024 DF	E420	16-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 005 RM006 Bottle Filter	E420	16-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 009 RM006 DF	E420	16-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 120 RM 120B SSDF	E420	16-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM012 DF	E420	16-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM014 DF	E420	16-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	7 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	782341	1	10	10.0	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	782341	1	10	10.0	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	782341	1	10	10.0	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	782341	1	10	10.0	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0598	Page	: 1 of 3
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	: Sir Richard McBride Elementary	Date Samples Received	: 16-Dec-2022 14:43
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1041044	Issue Date	: 28-Dec-2022 16:17
Sampler	: KM ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

- Key :
- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
 - CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
 - DQO = Data Quality Objective.
 - LOR = Limit of Reporting (detection limit).
 - RPD = Relative Percent Difference
 - # = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 782341)											
VA22D0586-010	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000306	0.000320	0.000014	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
Total Metals (QCLot: 782341)						
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: 782341)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 782341)									
VA22D0586-011	Anonymous	lead, total	7439-92-1	E420	0.0174 mg/L	0.02 mg/L	87.2	70.0	130



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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20-1041044

Page of

Report To 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:	VANCOUVER SCHOOL BOARD	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply																																																																																				
Contact:	STEPHEN THOMAS	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum																																																																																				
Phone:	604-713-5637	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																																																																																				
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum																																																																																				
Street:	1544 clack drive	Email 1 or Fax	STthomas@vsb.bc.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum																																																																																				
City/Province:	Vancouver BC	Email 2	ccarrell@vsb.bc.ca	☐ 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																																																																																				
Postal Code:		Email 3	Jduong@vsb.bc.ca	Date and Time Required for all E&P TATs:		dd-mmm-yy hh:mm am/pm																																																																																		
Invoice To	Same as Report To ☒ YES ☐ NO	Select Invoice Distribution:		For all tests with rush TATs requested, please contact your AM to confirm availability.																																																																																				
Company:	Copy of Invoice with Report ☐ YES ☐ NO	☐ EMAIL ☐ MAIL ☐ FAX		Analysis Request																																																																																				
Contact:		Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																																																																																				
Project Information		Oil and Gas Required Fields (client use)		<table border="1"> <tr> <td rowspan="5">NUMBER OF CONTAINERS</td> <td colspan="16"></td> </tr> <tr> <td colspan="16"></td> </tr> <tr> <td colspan="16"></td> </tr> <tr> <td colspan="16"></td> </tr> <tr> <td colspan="16"></td> </tr> </table>		NUMBER OF CONTAINERS																																																																																		
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ALS Account # / Quote #:		AFE/Cost Center:	PO#																																																																																					
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PO / AFE:		Requisitioner:																																																																																						
LSD:		Location:																																																																																						
ALS Lab Work Order # (ALS use only): 598		ALS Contact: T. Toranum		Sampler: K. Messamore																																																																																				
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type																																																																																				
	corr 009 RM006 DF	16-Dec-22	7:09	Water																																																																																				
	corr 003 RM024 DF	16-Dec-22	7:11	Water																																																																																				
	RM014 DF	16-Dec-22	7:18	Water																																																																																				
	RM 012 DF	16-Dec-22	7:20	Water																																																																																				
	corr 005 RM 006 Bottle Filler	16-Dec-22	7:22	Water																																																																																				
	corr 120 RM 120B SSDF	16-Dec-22	7:24	Water																																																																																				
Drinking Water (DW) Samples¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)																																																																																				
Are samples taken from a Regulated DW System?	☒ YES ☐ NO	No preservatives added.		Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED																																																																																				
Are samples for human consumption/ use?	☒ YES ☐ NO			Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO																																																																																				
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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.

AUG 2020 FRONT

Results Summary VA22D0598

Project	Sir Richard McBride Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	16-Dec-2022 14:43
Issue Date	28-Dec-2022 16:17
Amendment	0

Client Sample ID			Corr 009 RM006 DF	Corr 003 RM024 DF	RM014 DF	RM012 DF	Corr 005 RM006 Bottle Filter	Corr 120 RM 120B SSDF
Date Sampled			16-Dec-2022	16-Dec-2022	16-Dec-2022	16-Dec-2022	16-Dec-2022	16-Dec-2022
Time Sampled			07:09	07:11	07:18	07:20	07:22	07:24
ALS Sample ID			VA22D0598-001	VA22D0598-002	VA22D0598-003	VA22D0598-004	VA22D0598-005	VA22D0598-006
Analyte	Lowest Detection Limit	Units	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	0.000329	0.000086	0.00276	0.000409	0.000096	0.000158

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0686	Page	: 1 of 3
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	: Dr. R. E. McKechnie Elementary	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1038008	Issue Date	: 28-Dec-2022 11:57
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0686	Page	: 1 of 5
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	: Dr. R. E. McKechnie Elementary	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Issue Date	: 28-Dec-2022 11:57
C-O-C number	: 20-1038008		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	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) Cor 201 Rm. 211 S.S.D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm 119 Bottle Filter	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm. 105 S.S.D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm 104 S.S.D.F.	E420	19-Dec-2022	22-Dec-2022	----	----		28-Dec-2022	180 days	9 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	786101	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	786101	1	20	5.0	5.0	✔
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	786101	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	786101	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0686	Page	: 1 of 3
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	: Dr. R. E. McKechnie Elementary	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1038008	Issue Date	: 28-Dec-2022 11:57
Sampler	: RL ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

- Key :
- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
 - CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
 - DQO = Data Quality Objective.
 - LOR = Limit of Reporting (detection limit).
 - RPD = Relative Percent Difference
 - # = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 786101)											
VA22D0681-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 786101)						
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

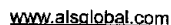
					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 786101)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.8	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 786101)									
VA22D0681-002	Anonymous	lead, total	7439-92-1	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130



COC Number: 20 - 1038008

Canada Toll Free: 1 800 668 9878

Page

Work Order Reference
VA22D0686



Telephone : +1 604 253 4188

[illegible]

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**.

AUG 2720 FRONT

Results Summary VA22D0686

Project	Dr. R. E. McKechnie Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	19-Dec-2022 15:30
Issue Date	28-Dec-2022 11:57
Amendment	0

Client Sample ID			Corr. 100 Rm 119 Bottle Filter	Corr. 100 Rm. 105 S.S.D.F.	Cor 201 Rm. 211 S.S.D.F.	Rm 104 S.S.D.F.
Date Sampled			19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022
Time Sampled			12:02	12:08	12:11	12:13
ALS Sample ID			VA22D0686-001	VA22D0686-002	VA22D0686-003	VA22D0686-004
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)						
lead, total	0.000050	mg/L	0.000164	0.000709	0.000846	0.000557

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0685	Page	: 1 of 3
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	: Mount Pleasant Elementary	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1038009	Issue Date	: 28-Dec-2022 16:34
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

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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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0685	Page	: 1 of 5
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	: Mount Pleasant Elementary	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Issue Date	: 28-Dec-2022 16:35
C-O-C number	: 20-1038009		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	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) Boys change room 123 DF	E420	19-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 100 RM 126 Bottle Filter	E420	19-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 100 RM 127 DF	E420	19-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 200 RM 218 SSDF	E420	19-Dec-2022	22-Dec-2022	----	----		23-Dec-2022	180 days	4 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls Change room 133 DF	E420	19-Dec-2022	22-Dec-2022	----	----		23-Dec-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	786100	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	786100	1	16	6.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	786100	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	786100	1	16	6.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0685	Page	: 1 of 3
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	: Mount Pleasant Elementary	Date Samples Received	: 19-Dec-2022 15:30
PO	: ----	Date Analysis Commenced	: 22-Dec-2022
C-O-C number	: 20-1038009	Issue Date	: 28-Dec-2022 16:34
Sampler	: RL ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

- Key :
- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
 - CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
 - DQO = Data Quality Objective.
 - LOR = Limit of Reporting (detection limit).
 - RPD = Relative Percent Difference
 - # = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 786100)											
KS2204585-002	Anonymous	lead, total	7439-92-1	E420	0.000100	mg/L	0.00180	0.00184	2.18%	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 (QCLot: 786100)						
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: 786100)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.0	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 786100)									
KS2204585-003	Anonymous	lead, total	7439-92-1	E420	19.2 mg/L	20 mg/L	96.0	70.0	130



COC Number: 20 - 1038009

Canada Toll Free: 1 800 668 9878

Page of

[illegible]

VA22D0685



Telephone : +1 604 253 4188

SA MB I EE ON HOI D

EXTENDED STORAGE REQUIRED

SUSPECTED HAZARD (see 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**.

AUG 30 2020 EBC

Results Summary VA22D0685

Project	Mount Pleasant Elementary
Report To	Stephen Thomas, Vancouver School Board
Date Received	19-Dec-2022 15:30
Issue Date	28-Dec-2022 16:34
Amendment	0

Client Sample ID			Girls Change room 133 DF	Corr 100 RM 127 DF	Corr 100 RM 126 Bottle Filter	Boys change room 123 DF	Corr 200 RM 218 SSDF
Date Sampled			19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022	19-Dec-2022
Time Sampled			12:56	12:58	12:59	13:03	13:07
ALS Sample ID			VA22D0685-001	VA22D0685-002	VA22D0685-003	VA22D0685-004	VA22D0685-005
Analyte	Lowest Detection Limit	Units	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	0.000899	0.000682	0.000066	0.00550	0.00174



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4376**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : Norma Rose Point

PO : ----

C-O-C number : 20-986708

Sampler : Robin LeMay

Site : ----

Quote number : DONT USE

No. of samples received : 3

No. of samples analysed : 3

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 : 02-Mar-2022 14:45

Date Analysis Commenced : 06-Mar-2022

Issue Date : 07-Mar-2022 09:31

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- 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.

Signatories	Position	Laboratory Department
Austin Wasylyshyn	Lab Analyst	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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A4376	Page	: 1 of 5
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	: Norma Rose Point	Date Samples Received	: 02-Mar-2022 14:45
PO	: ----	Issue Date	: 07-Mar-2022 09:31
C-O-C number	: 20-986708		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: DONT USE		
No. of samples received	: 3		
No. of samples analysed	: 3		

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) Norma Rose Point Bottle Filler Rm. A121	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS. D.F. Commons B101 Rm. C103A Norma Rose Point	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS. D.F. Rm. A221 Norma Rose Point	E420	02-Mar-2022	----	----	----		06-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425167	2	28	7.1	5.0	✓
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425167	2	28	7.1	5.0	✓
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425167	2	28	7.1	5.0	✓
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425167	2	28	7.1	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 : **VA22A4376**

Page : 1 of 4

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Norma Rose Point
PO : ----
C-O-C number : 20-986708
Sampler : Robin LeMay
Site : ----
Quote number : DONT USE
No. of samples received : 3
No. of samples analysed : 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 : 02-Mar-2022 14:45
Date Analysis Commenced : 06-Mar-2022
Issue Date : 07-Mar-2022 09:30

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>
Austin Wasylyshyn	Lab Analyst	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: 425167)											
EO2201385-013	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00776	0.00817	5.16%	20%	----
Total Metals (QC Lot: 425256)											
EO2201405-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 425167)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Total Metals (QCLot: 425256)						
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: 425167)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
Total Metals (QCLot: 425256)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	93.7	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425167)									
FC2200349-001	Anonymous	lead, total	7439-92-1	E420	0.0176 mg/L	0.02 mg/L	88.2	70.0	130
Total Metals (QCLot: 425256)									
EO2201405-002	Anonymous	lead, total	7439-92-1	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130





COC Number: 20 - 986708

Canada Toll Free: 1 800 668 9878

Page of

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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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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**.

AUG 2020 FEB 21

Results Summary VA22A4376					
Project	Norma Rose Point				
Report To	Stephen Thomas, Vancouver School Board				
Date Received	02-Mar-2022 14:45				
Issue Date	07-Mar-2022 09:31				
Amendment	0				
Client Sample ID			Norma Rose Point Bottle Filler Rm. A121	SS. D.F. Rm. A221 Norma Rose Point	SS. D.F. Commons B101 Rm. C103A Norma Rose Point
Date Sampled			02-Mar-2022	02-Mar-2022	02-Mar-2022
Time Sampled			07:49	07:56	08:00
ALS Sample ID			VA22A4376-001	VA22A4376-002	VA22A4376-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.00123	0.000357	0.000175

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9569	Page	: 1 of 3
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	: David Oppenheimer Elementary	Date Samples Received	: 06-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 07-Dec-2022
C-O-C number	: 20-1039078	Issue Date	: 09-Dec-2022 10:08
Sampler	: K. Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9569	Page	: 1 of 5
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	: David Oppenheimer Elementary	Date Samples Received	: 06-Dec-2022 14:55
PO	: ----	Issue Date	: 09-Dec-2022 10:09
C-O-C number	: 20-1039078		
Sampler	: K. Messamore		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	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) Corr 100 100c Bottle Filler	E420	06-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 112 RM 116 DF	E420	06-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr 141 RM 145 DF	E420	06-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	180 days	2 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) RM 131 DF	E420	06-Dec-2022	07-Dec-2022	----	----		08-Dec-2022	180 days	2 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	769485	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	769485	1	16	6.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	769485	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	769485	1	16	6.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22C9569	Page	: 1 of 3
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	: David Oppenheimer Elementary	Date Samples Received	: 06-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 07-Dec-2022
C-O-C number	: 20-1039078	Issue Date	: 09-Dec-2022 10:08
Sampler	: K. Messamore_		
Site	: ----		
Quote number	: ----		
No. of samples received	: 4		
No. of samples analysed	: 4		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

- Key :
- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
 - CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
 - DQO = Data Quality Objective.
 - LOR = Limit of Reporting (detection limit).
 - RPD = Relative Percent Difference
 - # = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 769485)											
VA22C9487-005	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00108	0.00111	3.38%	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 (QCLot: 769485)						
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: 769485)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 769485)									
VA22C9487-006	Anonymous	lead, total	7439-92-1	E420	0.0185 mg/L	0.02 mg/L	92.5	70.0	130



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 1039078

Page of

Report To 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:	VANCOUVER SCHOOL BOARD	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply ☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum ☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum ☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum ☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum ☐ 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			
Contact:	STEPHEN THOMAS	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A				
Phone:	604-713-5637	Compare Results to Criteria on Report - provide details below if box checked	☐				
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	Date and Time Required for all E&P TATs:		dd-mm-yy hh:mm am/pm	
Street:	1549 Clark Drive	Email 1 or Fax	STThomas@VSB.bc.ca				
City/Province:	VANCOUVER B.C.	Email 2	C.Carrell@VSB.bc.ca				
Postal Code:		Email 3	J.duong@VSB.bc.ca				
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients		For all tests with rush TATs requested, please contact your AM to confirm availability.			
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	Analysis Request			
Company:		Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below			
Contact:		Email 2					
Project Information		Oil and Gas Required Fields (client use)		NUMBER OF CONTAINERS LEAD			
ALS Account # / Quote #:		AFE/Cost Center:	PO#				
Job #:	DAVID OPPENHEIMER ELEMENTARY	Major/Minor Code:	Routing Code:				
PO / AFE:		Requisitioner:					
LSD:		Location:		SAMPLES ON HOLD EXTENDED STORAGE REQUIRED SUSPECTED HAZARD (see notes)			
ALS Lab Work Order # (ALS use only):		ALS Contact:	T. Tarannum				
		Sampler:	K. Messamore				
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	Environmental Division Vancouver Work Order Reference VA22C9569 Telephone: +1 604 253 4188		
	Corr 112 RM 116 DF	06-Dec-22	7:35	Water			
	RM 131 DF	06-Dec-22	7:40	Water			
	Corr 100 RM 100c Bottle Filler	06-Dec-22	7:45	Water			
	Corr 141 RM 145 DF	06-Dec-22	7:50	Water			
Drinking Water (DW) Samples* (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)			
Are samples taken from a Regulated DW System? ☒ YES ☐ NO		No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED			
Are samples for human consumption/ use? ☒ YES ☐ NO				Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO			
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A			
				INITIAL COOLER TEMPERATURES °C: FINAL COOLER TEMPERATURES °C:			
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:

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.

6 DEC 2022

ALS 2020 FRONT

Results Summary VA22C9569

Project David Oppenheimer Elementary
Report To Stephen Thomas, Vancouver School Board
Date Received 06-Dec-2022 14:55
Issue Date 09-Dec-2022 10:09
Amendment 0

Client Sample ID			Corr 112 RM 116 DF	RM 131 DF	Corr 100 100c Bottle Filler	Corr 141 RM 145 DF
Date Sampled			06-Dec-2022	06-Dec-2022	06-Dec-2022	06-Dec-2022
Time Sampled			07:35	07:40	07:45	07:50
ALS Sample ID			VA22C9569-001	VA22C9569-002	VA22C9569-003	VA22C9569-004
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)						
lead, total	0.000050	mg/L	0.00153	0.00625	0.00147	0.00225



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A3803**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : ----

PO : ----

C-O-C number : 20-986563

Sampler : Robin LeMay

Site : ----

Quote number : ----

No. of samples received : 5

No. of samples analysed : 5

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 : 24-Feb-2022 15:00

Date Analysis Commenced : 05-Mar-2022

Issue Date : 10-Mar-2022 16:42

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.

Signatories

Position

Laboratory Department

Angela Ren

Team Leader - Metals

Metals, Burnaby, British Columbia



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A3803	Page	: 1 of 5
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	: ----	Date Samples Received	: 24-Feb-2022 15:00
PO	: ----	Issue Date	: 10-Mar-2022 16:42
C-O-C number	: 20-986563		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts 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	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) D.F. North of 300c Queen Alex	E420	24-Feb-2022	----	----	----		05-Mar-2022	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F. North of Rm. 108 Queen Alex	E420	24-Feb-2022	----	----	----		05-Mar-2022	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F. North of Rm. 205 Queen Alex	E420	24-Feb-2022	----	----	----		05-Mar-2022	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F. Rm. 113 Queen Alex	E420	24-Feb-2022	----	----	----		05-Mar-2022	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F. South of Rm. 117 Queen Alex	E420	24-Feb-2022	----	----	----		05-Mar-2022	180 days	9 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: Water			Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.					
Quality Control Sample Type		Method	QC Lot #	Count		Frequency (%)		
				QC	Regular	Actual	Expected	Evaluation
Analytical Methods								
Laboratory Duplicates (DUP)								
Total Metals in Water by CRC ICPMS		E420	424701	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)								
Total Metals in Water by CRC ICPMS		E420	424701	1	20	5.0	5.0	✔
Method Blanks (MB)								
Total Metals in Water by CRC ICPMS		E420	424701	1	20	5.0	5.0	✔
Matrix Spikes (MS)								
Total Metals in Water by CRC ICPMS		E420	424701	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 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.

QUALITY CONTROL REPORT

Work Order : **VA22A3803**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : ----
PO : ----
C-O-C number : 20-986563
Sampler : Robin LeMay
Site : ----
Quote number : ----
No. of samples received : 5
No. of samples analysed : 5

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 : 24-Feb-2022 15:00
Date Analysis Commenced : 05-Mar-2022
Issue Date : 10-Mar-2022 16:43

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>
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts 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: 424701)											
VA22A3770-001	Anonymous	lead, total	7439-92-1	E420	0.000500	mg/L	0.000608	0.000599	0.000009	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
Total Metals (QCLot: 424701)						
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: 424701)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	105	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 424701)									
VA22A3741-002	Anonymous	lead, total	7439-92-1	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130



COC Number: 20 - 986563

Canada Toll Free: 1 800 668 9878

Page

Work Order Reference
VA22A3803



Telephone : +1 604 253 4188

[illegible]

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**.

AUG 2020 EBC

Results Summary VA22A3803							
Project							
Report To	Stephen Thomas, Vancouver School Board						
Date Received	24-Feb-2022 15:00						
Issue Date	10-Mar-2022 16:43						
Amendment	0						
Client Sample ID			D.F. North of 300c Queen Alex	D.F. North of Rm. 205 Queen Alex	D.F. North of Rm. 108 Queen Alex	D.F. South of Rm. 117 Queen Alex	D.F. Rm. 113 Queen Alex
Date Sampled			24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022	24-Feb-2022
Time Sampled			08:39	08:42	08:45	08:50	08:58
ALS Sample ID			VA22A3803-001	VA22A3803-002	VA22A3803-003	VA22A3803-004	VA22A3803-005
Analyte	Lowest Detection Limit	Units	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	0.000862	0.000669	0.000152	0.000132	0.0140



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4375**

Client : **Vancouver School Board**

Contact : **Stephen Thomas**

Address : **1549 Clark Drive
Vancouver BC Canada V5L 3L4**

Telephone : **----**

Project : **Queen Mary**

PO : **----**

C-O-C number : **20-985907**

Sampler : **Robin LeMay**

Site : **----**

Quote number : **DONT USE**

No. of samples received : **3**

No. of samples analysed : **3**

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 : **02-Mar-2022 14:45**

Date Analysis Commenced : **06-Mar-2022**

Issue Date : **07-Mar-2022 09:30**

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.

Signatories

Position

Laboratory Department

Austin Wasylyshyn

Lab Analyst

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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A4375	Page	: 1 of 5
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	: Queen Mary	Date Samples Received	: 02-Mar-2022 14:45
PO	: ----	Issue Date	: 07-Mar-2022 09:30
C-O-C number	: 20-985907		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: DONT USE		
No. of samples received	: 3		
No. of samples analysed	: 3		

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) Bottle Filler Corr. 127 Rm. 135 Queen Mary	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS. D.F. Rm. 012 Queen Mary	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SS. D.F. Rm. 104 Queen Mary	E420	02-Mar-2022	----	----	----		06-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425140	2	32	6.2	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425140	2	32	6.2	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425140	2	32	6.2	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425140	2	32	6.2	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 : **VA22A4375**

Page : 1 of 4

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Queen Mary
PO : ----
C-O-C number : 20-985907
Sampler : Robin LeMay
Site : ----
Quote number : DONT USE
No. of samples received : 3
No. of samples analysed : 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 : 02-Mar-2022 14:45
Date Analysis Commenced : 06-Mar-2022
Issue Date : 07-Mar-2022 09:30

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>
Austin Wasylyshyn	Lab Analyst	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: 425140)											
VA22A4357-020	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 425167)											
EO2201385-013	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.00776	0.00817	5.16%	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 (QCLot: 425140)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Total Metals (QCLot: 425167)						
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 (%)		Qualifier
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 425140)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	94.7	80.0	120	----
Total Metals (QCLot: 425167)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425140)									
VA22A4357-021	Anonymous	lead, total	7439-92-1	E420	0.0169 mg/L	0.02 mg/L	84.3	70.0	130
Total Metals (QCLot: 425167)									
FC2200349-001	Anonymous	lead, total	7439-92-1	E420	0.0176 mg/L	0.02 mg/L	88.2	70.0	130





www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20 - 985907

Page of

Environmental Division
Vancouver

Work Order Reference

VA22A4375



Telephone : + 1 604 253 4100

Report To		Reports / Recipients		Turnaround Time (TAT) Requested	
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone:	604 713-5637	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	
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street:	1549 Clark Drive	Email 1 or Fax	ss.thomas@vsb.bc.ca	☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province:	Vancouver B.C.	Email 2	r.lamay@vsb.bc.ca	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional may apply to rush requests on weekends, statutory holidays and non-routine	
Postal Code:	V5L 3L4	Email 3	ccarrell@vsb.bc.ca	Date and Time Required for all E&P TATs:	
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Recipients		For all tests with rush TATs requested, please call	
Copy of Invoice with Report	☒ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	Analysis Required	
Company:		Email 1 or Fax		Indicate Filtered (F), Preserved (P) or Filtered and	
Contact:		Email 2		NUMBER OF CONTAINERS	
Project Information		Oil and Gas Required Fields (client use)		SAMPLES ON HOLD	
ALS Account # / Quote #		APE/Cost Center:	PO#	EXTENDED STORAGE REQUIRED	
Job #:	Queen Mary	Major/Minor Code:	Routing Code:	SUSPECTED HAZARD (see note)	
PO / AFE:		Requisitioner:			
LSD:		Location:			
ALS Lab Work Order # (ALS use only):	A4375	ALS Contact:	T. Tarannon	Sampler: R. Lemay	
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	
	Bottle Filler Corr. 127 Rm. 135 Q. Mary	02 03 22	8:17am	water	
	SS. D.F. Rm. 104 Queen Mary	02 03 22	8:22am	water	
	SS. D.F. Rm. 012 Queen Mary	02 03 22	8:23am	water	
Drinking Water (DW) Samples ¹ (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)	
Are samples taken from a Regulated DW System?	☒ YES ☐ NO			Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED	
Are samples for human consumption/ use?	☒ YES ☐ NO			Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO	
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A	
				INITIAL COOLER TEMPERATURES °C	
				FINAL COOLER TEMPERATURES °C	
				8	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)	
Released by:	Date:	Time:	Received by:	Date:	Time:
				2 Mar 2022	1445

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.

ALISO 2020 FORM



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4428**
Client : **Vancouver School Board**
Contact : Stephen Thomas
Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Queen Mary
PO : ----
C-O-C number : 20-985904
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

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 : 03-Mar-2022 14:52
Date Analysis Commenced : 06-Mar-2022
Issue Date : 14-Mar-2022 10:40

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>
Dwayne Bennett	Supervisor - Inorganic	Metals, Calgary, 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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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	: VA22A4428	Page	: 1 of 5
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	: Queen Mary	Date Samples Received	: 03-Mar-2022 14:52
PO	: ----	Issue Date	: 14-Mar-2022 10:40
C-O-C number	: 20-985904		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

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	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	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S. D.F. Rm. 204 Queen Mary	E420	03-Mar-2022	----	----	----		07-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425647	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 Calgary - 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 : **VA22A4428**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Queen Mary
PO : ----
C-O-C number : 20-985904
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

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 : 03-Mar-2022 14:52
Date Analysis Commenced : 06-Mar-2022
Issue Date : 14-Mar-2022 10:40

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>
Dwayne Bennett	Supervisor - Inorganic	Metals, Calgary, 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: 425647)											
VA22A4418-017	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000062	0.000063	0.000001	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
Total Metals (QCLot: 425647)						
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: 425647)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425647)									
VA22A4418-018	Anonymous	lead, total	7439-92-1	E420	0.207 mg/L	0.2 mg/L	104	70.0	130



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

COC Number: 20-985904

Page

Environmental Division
Vancouver

Work Order Reference
VA22A4428

Telephone: +1 604 263 4188

Report To		Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EOD (DIGITAL)			☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A			☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone:	604 713-5637	Complete Results to Criteria on Report - provide details below if box checked				☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum	
	Company address below will appear on the final report	Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX			☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street:	1549 Clark Drive	Email 1 or Fax	55 Thomas @ vsb.bc.ca			☐ 1 day [P1] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province:	Vancouver B.C.	Email 2	rlenay @ vsb.bc.ca			☐ Same day [E2] if received by 10am M-F - 200% rush surcharge. Additions may apply to rush requests on weekends, statutory holidays and non-rout	
Postal Code:	V5L 3L4	Email 3	clarccl @ vsb.bc.ca			Date and Time Required for all ESP TATs:	
Invoice To	Same as Report To	☒ YES ☐ NO	Invoice Recipients			For all tests with rush TATs requested, please co	
Copy of Invoice with Report	☒ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX			Analysis Req.	
Company:		Email 1 or Fax					
Contact:		Email 2					
Project Information				Oil and Gas Required Fields (client use)			
ALS Account # / Quote #:		A/E/Cost Center:		PO#			
Job #:	Queen Mary	Major/Minor Code:		Routing Code:			
PO / A/E:		Requisitioner:					
LSD:		Location:					
ALS Lab Work Order # (ALS use only):		ALS Contact: T. Taranon		Sampler: R. Leman			
ALS Sample # (ALS use only)		Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	
		S.S. D.F. Km. 204 Queen Mary	05 03 22	8:00am	water	Lead	
Drinking Water (DW) Samples ¹ (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?							
☒ YES ☐ NO							
Are samples for human consumption/ use?							
☒ YES ☐ NO							
SHIPMENT RELEASE (client use)		Date:		Time:		Received by:	
INITIAL SHIPMENT RECEPTION (ALS use only)		Date:		Time:		Received by:	
WHITE - LABORATORY COPY		YELLOW - CLIENT COPY		FINAL SHIPMENT RECEPTION (ALS use only)			
Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED		Submission Comments identified on Sample Receipt/Notification: ☐ YES ☐ NO					
Cooler Custody Seals intact: ☐ YES ☐ NO		Sample Custody Seals intact: ☐ YES ☐ NO					
INITIAL COOLER TEMPERATURES °C		FINAL COOLER TEMPERATURES °C					



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.

ALS 2013 FORM

Results Summary VA22A4375					
Project	Queen Mary				
Report To	Stephen Thomas, Vancouver School Board				
Date Received	02-Mar-2022 14:45				
Issue Date	07-Mar-2022 09:30				
Amendment	0				
Client Sample ID			Bottle Filler Corr. 127 Rm. 135 Queen Mary	SS. D.F. Rm. 104 Queen Mary	SS. D.F. Rm. 012 Queen Mary
Date Sampled			02-Mar-2022	02-Mar-2022	02-Mar-2022
Time Sampled			08:17	08:22	08:23
ALS Sample ID			VA22A4375-001	VA22A4375-002	VA22A4375-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.000114	0.000172	0.000128

Results Summary VA22A4428				
Project	Queen Mary			
Report To	Stephen Thomas, Vancouver School Board			
Date Received	03-Mar-2022 14:52			
Issue Date	14-Mar-2022 10:40			
Amendment	0			
Client Sample ID			S.S. D.F. Rm. 204 Queen Mary	
Date Sampled			03-Mar-2022	
Time Sampled			08:00	
ALS Sample ID			VA22A4428-001	
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	
Total Metals (Matrix: Water)				
lead, total	0.000050	mg/L	0.000198	



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4011**

Client : **Vancouver School Board**

Contact : **Stephen Thomas**

Address : **1549 Clark Drive
Vancouver BC Canada V5L 3L4**

Telephone : **----**

Project : **----**

PO : **----**

C-O-C number : **20-986561, 20-986562**

Sampler : **inactive**

Site : **----**

Quote number : **DONT USE**

No. of samples received : **15**

No. of samples analysed : **15**

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 : **25-Feb-2022 14:40**

Date Analysis Commenced : **07-Mar-2022**

Issue Date : **08-Mar-2022 15:16**

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.

Signatories

Position

Laboratory Department

Kim Jensen

Department Manager - Metals

Metals, Burnaby, British Columbia



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non -infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A4011	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	: ----	Date Samples Received	: 25-Feb-2022 14:40
PO	: ----	Issue Date	: 08-Mar-2022 15:16
C-O-C number	: 20-986561, 20-986562		
Sampler	: inactive		
Site	: ----		
Quote number	: DONT USE		
No. of samples received	: 15		
No. of samples analysed	: 15		

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) Collingwood SS. D.F. Rm. 116 Corr. 113	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Collingwood SS. D.F. Rm. 121 Corr. 100	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Collingwood SS. D.F. Rm. 211 Corr. 200	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew Bottle Fill Rm. 113 Corr. 116	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Opposite Rm. 121 Corr. 116	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 002 Corr. 003	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 101 Corr. 116	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 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) Renfrew D.F. Rm. 109 Corr. 116	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 202 Corr. 200	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 209 Corr. 200	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. Rm. 217 Corr. 200	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew D.F. SS. Rm. 005 Play area	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew SS. D.F. Rm. 014 Play area 013	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew SS. D.F. Rm. 161 Vest. 152	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Renfrew SS. D.F. Rm. 256	E420	25-Feb-2022	----	----	----		07-Mar-2022	180 days	11 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425672	1	15	6.6	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425672	1	15	6.6	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425672	1	15	6.6	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425672	1	15	6.6	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 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.

QUALITY CONTROL REPORT

Work Order : **VA22A4011**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : ----
PO : ----
C-O-C number : 20-986561, 20-986562
Sampler : inactive
Site : ----
Quote number : DONT USE
No. of samples received : 15
No. of samples analysed : 15

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 : 25-Feb-2022 14:40
Date Analysis Commenced : 07-Mar-2022
Issue Date : 08-Mar-2022 15:16

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>
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts 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: 425672)											
VA22A4011-001	Renfrew D.F. Rm. 217 Corr. 200	lead, total	7439-92-1	E420	0.000050	mg/L	0.000276	0.000276	0.0000002	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	
Total Metals (QCLot: 425672)							
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: 425672)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	108	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425672)									
VA22A4011-002	Renfrew D.F. Rm. 202 Corr. 200	lead, total	7439-92-1	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130



COC Number: 20 - 986561

Canada Toll Free: 1 800 668 9878

Page of

Report To		Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company: Vancouver School Board		Select Report Format: ☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)		Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A		☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact: Stephen Thomas		☐ Compare Results to Criteria on Report - provide details below if box checked		Select Distribution: ☐ EMAIL ☐ MAIL ☐ FAX		☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone: 604-713-5637		Select Distribution:		Email 1 or Fax: ssstomas@vsb.bc.ca		☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum	
Company address below will appear on the final report		Email 2: rlemay@vsb.bc.ca		Email 3:		☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street: 1549 Clark Dr.		Invoice Recipients		Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX		☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province: B.C.		Email 1 or Fax:		Email 2:		☐ Same day [E2] if received by 10am M-F - 200% rush surcharge. Add may apply to rush requests on weekends, statutory holidays and non-	
Postal Code: V5L 3L4		Email 3:		Date and Time Required for all E&P TATs:			
Invoice To: Same as Report To ☐ YES ☐ NO		Copy of Invoice with Report ☐ YES ☐ NO		For all tests with rush TATs requested, please			
Company:		Project Information		Oil and Gas Required Fields (client use)		Analysis F	
Contact:		ALS Account # / Quote #		AFE/Cost Center:		Indicate Filtered (F), Preserved (P) or Filtered	
		Job #:		Major/Minor Code:			
		PO / AFE:		Requisitioner:			
		LSD:		Location:			
ALS Lab Work Order # (ALS use only): A4011		ALS Contact: T. Tarannon		Sampler: R. Lemay			
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS		
	Renfrew D.F. Rm. 217 Corr. 200	25-02-22	7:04am	water			
	Renfrew D.F. Rm. 202 Corr. 200	25-02-22	7:07am	water			
	Renfrew D.F. Rm. 209 Corr. 200	25-02-22	7:12am	water			
	Renfrew D.F. Rm. 109 Corr. 116	25-02-22	7:16am	water			
	Renfrew Bottle Fill Rm. 113 Corr. 116	25-02-22	7:19am	water			
	Renfrew D.F. Opposite Rm. 121 Corr. 116	25-02-22	7:24am	water			
	Renfrew D.F. Rm. 101 Corr. 116	25-02-22	7:27am	water			
	Renfrew D.F. Rm. 002 Corr. 003	25-02-22	7:30am	water			
	Renfrew D.F. SS. Rm. 005 Play area	25-02-22	7:35am	water			
	Renfrew SS.D.F. Rm. 014 Play area 013	25-02-22	7:41am	water			
	Renfrew SS.D.F. Rm. 256	25-02-22	7:47am	water			
	Renfrew SS.D.F. Rm. 161 Vest. 152	25-02-22	7:51am	water			
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		Cooling Method: ☐ NONE ☐ ICE ☒ ICE PACKS		Submission Comments identified on Sample Receipt No.	
Are samples taken from a Regulated DW System?				Cooler Custody Seals Intact: ☐ YES ☐ N/A		INITIAL COOLER TEMPERATURES °C	
☒ YES ☐ NO							
Are samples for human consumption/ use?							
☒ YES ☐ NO							
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT			
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:

Environmental Division
Vancouver
Work Order Reference
VA22A4011



Telephone : +1 604 253 4189

SAMPLES ON HOLD
EXTENDED STORAGE REC
SUSPECTED HAZARD /sa

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**.

AUG 2020 FROM



COC Number: 20 - 986562

Canada Toll Free: 1 800 668 9878

Page of

[illegible]

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**

AUG 21 20 58/78

Results Summary VA22A4011																	
Project																	
Report To	Stephen Thomas, Vancouver School Board																
Date Received	25-Feb-2022 14:40																
Issue Date	08-Mar-2022 15:16																
Amendment	0																
Client Sample ID			Renfrew D.F. Rm. 217 Corr. 200	Renfrew D.F. Rm. 202 Corr. 200	Renfrew D.F. Rm. 209 Corr. 200	Renfrew D.F. Rm. 109 Corr. 116	Renfrew Bottle Fill Rm. 113 Corr. 116	Renfrew D.F. Opposite Rm. 121 Corr. 116	Renfrew D.F. Rm. 101 Corr. 116	Renfrew D.F. Rm. 002 Corr. 003	Renfrew D.F. SS. Rm. 005 Play area	Renfrew SS. D.F. Rm. 014 Play area 013	Renfrew SS. D.F. Rm. 256	Renfrew SS. D.F. Rm. 161 Vest. 152	Collingwood SS. D.F. Rm. 121 Corr. 100	Collingwood SS. D.F. Rm. 116 Corr. 113	Collingwood SS. D.F. Rm. 211 Corr. 200
Date Sampled			25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022	25-Feb-2022
Time Sampled			07:04	07:07	07:12	07:16	07:19	07:24	07:27	07:30	07:35	07:41	07:47	07:51	08:14	08:18	08:28
ALS Sample ID			VA22A4011-001	VA22A4011-002	VA22A4011-003	VA22A4011-004	VA22A4011-005	VA22A4011-006	VA22A4011-007	VA22A4011-008	VA22A4011-009	VA22A4011-010	VA22A4011-011	VA22A4011-012	VA22A4011-013	VA22A4011-014	VA22A4011-015
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	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)																	
lead, total	0.000050	mg/L	0.000276	0.000458	0.00103	0.00196	0.000104	0.000445	0.00110	0.000168	0.000293	0.000342	0.00117	0.000214	0.000200	0.000612	0.000212



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.

Signatories	Position	Laboratory Department
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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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
C-O-C number	: 20-985896		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 10		
No. of samples analysed	: 10		

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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
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

Work Order : **VA22A4674**

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 : 20-985896
Sampler : RL
Site : ----
Quote number : ----
No. of samples received : 10
No. of samples analysed : 10

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 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>
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 (QCLot: 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 >= 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
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

Selected Report Format: ☒ PDF ☐ EXCEL ☐ EOD (PRINTAL)

☒ Routine (R) if received by 3pm M-F - no surcharges apply

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Company: Vancouver School Board

☐ Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ 4 day (P4) if received by 3pm M-F - 20% rush surcharge minimum

Contact: Stephen Thomas

☐ 3 day (P3) if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day (P2) if received by 3pm M-F - 50% rush surcharge minimum

Phone: 604 413 5637

☐ 1 day (P1) if received by 3pm M-F - 100% rush surcharge minimum

☐ 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

Company address below will appear on the final report

For all tests with rush TATs requested, please contact your AM to confirm availability.

Analysis Request

Street: 1549 Clark Drive

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below

SAMPLES ON HOLD

City/Province: Vancouver B.C.

Postal Code: V5L 3L7

EXTENDED STORAGE REQUIRED

Invoice To: Same as Report To

☒ YES ☐ NO

SUSPECTED HAZARD (see notes)

Company: Copy of Invoice with Report

☒ YES ☐ NO

Project Information

ALS Account # / Quote #

Job #: Sesmith

AFI/Coast Center

PO / AFE:

Major/Minor Code:

LSD: 7 + 4

Requisitioner:

ALS Lab Work Order # (ALS use only)

Location:

ALS Sample #

ALS contact: T. Kavanon

Sample Identification and/or Coordinates

Date

Time

(This description will appear on the report)

(dd-mm-yy)

(hh:mm)

Sample Type

Sample

Type

Sample Date

Sample Time

Sample Type

Sample Date

Sample Time

Sample Type

Sample Date

Sample Time

Sample Type

Sample Date

Sample Time

Sample Type

Sample Date

Sample Time

Sample Type

Sample Date

Sample Time

Sample Type

Sample Date

Sample Time

Sample Type

Sample Date

Sample Time

Sample Type



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4676**

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**

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 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 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.

Signatories	Position	Laboratory Department
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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A4676	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 11:01
C-O-C number	: 20-985895		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 12		
No. of samples analysed	: 12		

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. Rm. 227 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. 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
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 (QCLot: 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 >= 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
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		Contact and company name below will appear on the final report	
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ BOD (DIGITAL)
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A
Phone:	604 713 5637	☐ Compare Results to Criteria on Report - provide details below if box checked	
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
Street:	1549 Clark Drive	Email 1 or Fax	stthomas@usb.bc.ca
City/Province:	Vancouver B.C.	Email 2	stthomas@usb.bc.ca
Postal Code:	V5L 3L4	Email 3	clarell@usb.bc.ca
Invoice To	Same as Report To	☒ YES ☐ NO	
Copy of Invoice with Report	☒ YES ☐ NO	Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
Company:		Email 1 or Fax	
Contact:		Email 2	
Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #		AFC/Coast Center:	PO#
Job #:	Sexsmith	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (ALS use only):		ALS Contact:	T. Tarasov
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date	Time
Sink D.F. Rm. 235	Sexsmith	07-03-22	7:07am
Sink D.F. Rm. 234	Sexsmith	07-03-22	7:12am
Sink D.F. Rm. 236	Sexsmith	07-03-22	7:17am
Sink D.F. Rm. 237	Sexsmith	07-03-22	7:20am
Sink D.F. Rm. 233	Sexsmith	07-03-22	7:22am
Sink D.F. Rm. 238	Sexsmith	07-03-22	7:24am
Sink D.F. Rm. 232	Sexsmith	07-03-22	7:28am
Sink D.F. Rm. 227	Sexsmith	07-03-22	7:28am
Sink D.F. Rm. 241	Sexsmith	07-03-22	7:32am
Sink D.F. Rm. 226	Sexsmith	07-03-22	7:35am
Sink D.F. Rm. 242	Sexsmith	07-03-22	7:38am
Sink D.F. Rm. 243	Sexsmith	07-03-22	7:40am
Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)			
Drinking Water (DW) Samples (client use)			
Are samples taken from a Regulated DW System?			
☒ YES ☐ NO			
Are samples for human consumption/ use?			
☒ YES ☐ NO			
SHIPPING RELEASE (client use)			
Released by:	Date:	Time:	
INITIAL SHIPMENT RECEPTION (ALS use only)			
Date:	Time:	Date:	Time:
WHITE - LABORATORY COPY YELLOW - CLIENT COPY			
Turnaround Time (TAT) Requested			
☒ Routine (R) if received by 3pm M-F - no surcharges apply			
☐ 4 day (P4) if received by 3pm M-F - 25% rush surcharge minimum			
☐ 3 day (P3) if received by 3pm M-F - 25% rush surcharge minimum			
☐ 2 day (P2) if received by 3pm M-F - 50% rush surcharge minimum			
☐ 1 day (P1) if received by 3pm M-F - 100% rush surcharge minimum			
☐ Same day (E2) if received by 12pm M-F - 200% rush surcharge. Additional fees may apply (rush requests on weekends, statutory holidays and non-routine tests)			
Date and Time Required for all EAP TATs:			
For all tests with rush TATs requested, please contact your A/E to confirm availability.			
Analysis Request			
Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below			
Environmental Division			
Vancouver			
Work Order Reference			
VA22A4676			
SAMPLES ON HOLD			
EXTENDED STORAGE REQUIRED			
SUSPECTED HAZARD (see notes)			
AFRAX ALS BARCODE LABEL HERE (ALS use only)			
Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED			
Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO			
Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A			
INITIAL COOLER TEMPERATURES °C			
INITIAL COOLER TEMPERATURES °C			
Date: March 7/22 Time: 3:20			

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.

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



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4601**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : Shannon Park Annex

PO : ----

C-O-C number : 20-985900

Sampler : RL

Site : ----

Quote number : ----

No. of samples received : 3

No. of samples analysed : 3

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 : 04-Mar-2022 15:00

Date Analysis Commenced : 09-Mar-2022

Issue Date : 14-Mar-2022 10:50

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.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A4601	Page	: 1 of 5
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	: Shannon Park Annex	Date Samples Received	: 04-Mar-2022 15:00
PO	: ----	Issue Date	: 14-Mar-2022 10:50
C-O-C number	: 20-985900		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 3		
No. of samples analysed	: 3		

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) Bottle Filler R., Staff Shannon Park	E420	04-Mar-2022	----	----	----		10-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm. 101 Shannon Park	E420	04-Mar-2022	----	----	----		10-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm. 104 Shannon Park	E420	04-Mar-2022	----	----	----		10-Mar-2022	180 days	6 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	428235	1	7	14.2	5.0	✓
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	428235	1	7	14.2	5.0	✓
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	428235	1	7	14.2	5.0	✓
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	428235	1	7	14.2	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 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.

QUALITY CONTROL REPORT

Work Order : **VA22A4601**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Shannon Park Annex
PO : ----
C-O-C number : 20-985900
Sampler : RL
Site : ----
Quote number : ----
No. of samples received : 3
No. of samples analysed : 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 : 04-Mar-2022 15:00
Date Analysis Commenced : 09-Mar-2022
Issue Date : 14-Mar-2022 10:50

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts 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: 428235)											
KS2200710-006	Anonymous	lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 428235)						
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: 428235)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 428235)									
VA22A4524-005	Anonymous	lead, total	7439-92-1	E420	0.0360 mg/L	0.04 mg/L	90.1	70.0	130



COC Number: 20 - 985900

Page of

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 CQC form**.

AND 5030 FRO

Results Summary VA22A4601					
Project	Shannon Park Annex				
Report To	Stephen Thomas, Vancouver School Board				
Date Received	04-Mar-2022 15:00				
Issue Date	14-Mar-2022 10:51				
Amendment	0				
Client Sample ID			D.F Rm. 104 Shannon Park	D.F Rm. 101 Shannon Park	Bottle Filler R,. Staff Shannon Park
Date Sampled			04-Mar-2022	04-Mar-2022	04-Mar-2022
Time Sampled			08:41	08:38	08:46
ALS Sample ID			VA22A4601-001	VA22A4601-002	VA22A4601-003
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)					
lead, total	0.000050	mg/L	0.000392	0.000145	0.000665



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4174**

Client : **Vancouver School Board**

Contact : **Stephen Thomas**

Address : **1549 Clark Drive
Vancouver BC Canada V5L 3L4**

Telephone : **----**

Project : **----**

PO : **----**

C-O-C number : **20-986712**

Sampler : **Robin LeMay**

Site : **----**

Quote number : **----**

No. of samples received : **5**

No. of samples analysed : **5**

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 : **01-Mar-2022 14:40**

Date Analysis Commenced : **09-Mar-2022**

Issue Date : **14-Mar-2022 10:32**

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.

Signatories

Position

Laboratory Department

Kevin Duarte

Supervisor - Metals ICP Instrumentation

Metals, Burnaby, British Columbia



General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

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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	: VA22A4174	Page	: 1 of 5
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	: ----	Date Samples Received	: 01-Mar-2022 14:40
PO	: ----	Issue Date	: 14-Mar-2022 10:32
C-O-C number	: 20-986712		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: ----		
No. of samples received	: 5		
No. of samples analysed	: 5		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts 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	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) Bottle Filter Rm 010 Strathcona	E420	01-Mar-2022	----	----	----		09-Mar-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filter Rm 028 Strathcona	E420	01-Mar-2022	----	----	----		09-Mar-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filter Rm 113 Strathcona	E420	01-Mar-2022	----	----	----		09-Mar-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm 004 Strathcona	E420	01-Mar-2022	----	----	----		09-Mar-2022	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F Rm 301 Strathcona	E420	01-Mar-2022	----	----	----		09-Mar-2022	180 days	8 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	427305	1	7	14.2	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	427305	1	7	14.2	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	427305	1	7	14.2	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	427305	1	7	14.2	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 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.

QUALITY CONTROL REPORT

Work Order : **VA22A4174**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : ----
PO : ----
C-O-C number : 20-986712
Sampler : Robin LeMay
Site : ----
Quote number : ----
No. of samples received : 5
No. of samples analysed : 5

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 : 01-Mar-2022 14:40
Date Analysis Commenced : 09-Mar-2022
Issue Date : 14-Mar-2022 10:32

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>
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number = Chemical Abstracts 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: 427305)											
VA22A4494-011	Anonymous	lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water						
Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 427305)						
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: 427305)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	100	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 427305)									
VA22A4494-016	Anonymous	lead, total	7439-92-1	E420	0.0376 mg/L	0.04 mg/L	94.0	70.0	130



COC Number: 20 - 986712

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Page of

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REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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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)

Work Order : **VA22A4431**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : Strathcona

PO : ----

C-O-C number : 20-986559

Sampler : ----

Site : ----

Quote number : ----

No. of samples received : 1

No. of samples analysed : 1

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 : 03-Mar-2022 14:52

Date Analysis Commenced : 06-Mar-2022

Issue Date : 14-Mar-2022 10:43

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.

Signatories	Position	Laboratory Department
Dwayne Bennett	Supervisor - Inorganic	Metals, Calgary, 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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A4431	Page	: 1 of 5
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	: Strathcona	Date Samples Received	: 03-Mar-2022 14:52
PO	: ----	Issue Date	: 14-Mar-2022 10:44
C-O-C number	: 20-986559		
Sampler	: ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 1		
No. of samples analysed	: 1		

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	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	
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. E113 Strathcona	E420	03-Mar-2022	----	----	----		07-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425647	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425647	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 Calgary - 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 : **VA22A4431**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Strathcona
PO : ----
C-O-C number : 20-986559
Sampler : ----
Site : ----
Quote number : ----
No. of samples received : 1
No. of samples analysed : 1

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 : 03-Mar-2022 14:52
Date Analysis Commenced : 06-Mar-2022
Issue Date : 14-Mar-2022 10:43

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>
Dwayne Bennett	Supervisor - Inorganic	Metals, Calgary, 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**

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: 425647)											
VA22A4418-017	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000062	0.000063	0.000001	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
Total Metals (QCLot: 425647)						
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

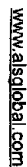
					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 425647)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425647)									
VA22A4418-018	Anonymous	lead, total	7439-92-1	E420	0.207 mg/L	0.2 mg/L	104	70.0	130



COC Number: 20 - 986559

Page

Environmental Division
Vancouver
Work Order Reference
VA22A4431

Telephone : +1 604 253 4186

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Results Summary VA22A4174							
Project							
Report To	Stephen Thomas, Vancouver School Board						
Date Received	01-Mar-2022 14:40						
Issue Date	14-Mar-2022 10:33						
Amendment	0						
Client Sample ID			Bottle Filter Rm 113 Strathcona	Bottle Filter Rm 010 Strathcona	Bottle Filter Rm 028 Strathcona	D.F Rm 004 Strathcona	D.F Rm 301 Strathcona
Date Sampled			01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022	01-Mar-2022
Time Sampled			07:12	07:17	07:24	07:29	07:37
ALS Sample ID			VA22A4174-001	VA22A4174-002	VA22A4174-003	VA22A4174-004	VA22A4174-005
Analyte	Lowest Detection Limit	Units	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	<0.000050	0.000060	0.000813	0.00348	0.00233

Results Summary VA22A4431

Project	Strathcona
Report To	Stephen Thomas, Vancouver School Board
Date Received	03-Mar-2022 14:52
Issue Date	14-Mar-2022 10:44
Amendment	0

Client Sample ID			Bottle Filler Rm. E113
			Strathcona
Date Sampled			03-Mar-2022
Time Sampled			08:46
ALS Sample ID			VA22A4431-001
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water

Total Metals (Matrix: Water)

lead, total	0.000050	mg/L	0.000356

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22D0771	Page	: 1 of 3
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	: David Thompson Secondary	Date Samples Received	: 21-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 23-Dec-2022
C-O-C number	: 20-1039087/088	Issue Date	: 28-Dec-2022 16:35
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 15		
No. of samples analysed	: 15		

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.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia



No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

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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.

lead, total	7439-92-1	mg/L							

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22D0771	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	: David Thompson Secondary	Date Samples Received	: 21-Dec-2022 14:55
PO	: ----	Issue Date	: 28-Dec-2022 16:35
C-O-C number	: 20-1039087/088		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 15		
No. of samples analysed	: 15		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: * = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group	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) Boys Change Rm. 273 S.S.D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm. 101 D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm. 109 D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 100 Rm. 112C S.S.D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 250 Rm. 210d F.G.D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 250 Rm. 214 F.G.D.F	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 282 Rm. 281 Bottle Filler	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓



Matrix: **Water** Evaluation: **x** = 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) Corr. 292 Rm. 233 Bottle Filler	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 335 Rm. 316b D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Corr. 335 Rm. 320 D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Girls Change Rm. 269 D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 226 Bubbler	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 264A D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 277A Left D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Rm. 277A Right D.F.	E420	21-Dec-2022	23-Dec-2022	----	----		28-Dec-2022	180 days	7 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
Total metals in Water by CRC ICPMS	E420	787918	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Total metals in Water by CRC ICPMS	E420	787918	1	16	6.2	5.0	✓
Method Blanks (MB)							
Total metals in Water by CRC ICPMS	E420	787918	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Total metals in Water by CRC ICPMS	E420	787918	1	16	6.2	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 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.

QUALITY CONTROL REPORT

Work Order	: VA22D0771	Page	: 1 of 3
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	: David Thompson Secondary	Date Samples Received	: 21-Dec-2022 14:55
PO	: ----	Date Analysis Commenced	: 23-Dec-2022
C-O-C number	: 20-1039087/088	Issue Date	: 28-Dec-2022 16:35
Sampler	: RL ----		
Site	: ----		
Quote number	: ----		
No. of samples received	: 15		
No. of samples analysed	: 15		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

- Key :
- Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
 - CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
 - DQO = Data Quality Objective.
 - LOR = Limit of Reporting (detection limit).
 - RPD = Relative Percent Difference
 - # = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 787918)											
VA22D0771-001	Corr. 100 Rm. 112C S.S.D.F.	lead, total	7439-92-1	E420	0.000050	mg/L	0.000646	0.000658	1.79%	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: 787918)						
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: 787918)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 787918)									
VA22D0771-002	Corr. 100 Rm. 109 D.F.	lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.2	70.0	130



www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 1039087

Canada Toll Free: 1 800 668 9878

Page 1 of 2

Report To Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact:	Stephen Thomas	Merge QC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone:	604 713 5637	☐ Compare Results to Criteria on Report - provide details below if box checked		☐ 3 day [E3] if received by 3pm M-F - 25% rush surcharge minimum	
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
Street:	1549 Clark Drive	Email 1 or Fax:	ssthenas@vsb.bc.ca	☐ 1 day [E1] if received by 3pm M-F - 100% rush surcharge minimum	
City/Province:	Vancouver B.C.	Email 2:	carrell@vsb.bc.ca	☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional may apply to rush requests on weekends, statutory holidays and non-routine	
Postal Code:		Email 3:	jdvong@vsb.bc.ca	Date and Time Required for all E&P TATs:	
Invoice To:	Same as Report To ☒ YES ☐ NO	Invoice Recipients		For all tests with rush TATs requested, please call	
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution:	☐ EMAIL ☐ MAIL ☐ FAX	Analysis Required	
Company:		Email 1 or Fax:		Indicate Filtered (F), Preserved (P) or Filtered and	
Contact:		Email 2:		NUMBER OF CONTAINERS	
Project Information		Oil and Gas Required Fields (client use)		Lead	
ALS Account # / Quote #		AFE/Cost Center:		PO#	
Job #: David Thompson Secondary		Major/Minor Code:		Routing Code:	
PO / AFE:		Requisitioner:			
LSD:		Location:			
ALS Lab Work Order # (ALS use only): 771		ALS Contact: T. Tarasov		Sampler: R. Lenay	
ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	
	Corr. 100 Rm. 112c S.S.D.F.	21-12-22	11:58am	water	
	Corr. 100 Rm. 109 D.F.	21-12-22	12:01pm	water	
	Corr. 100 Rm. 101 D.F.	21-12-22	12:04pm	water	
	Corr. 250 Rm. 210d F.G.D.F.	21-12-22	12:10	water	
	Corr. 250 Rm. 214 F.G.D.F.	21-12-22	12:15	water	
	Corr. 282 Rm. 281 Bottle Filler	21-12-22	12:19	water	
	Rm. 264 A D.F.	21-12-22	12:23	water	
	Rm. 277A Left D.F.	21-12-22	12:26	water	
	Rm. 277A Right D.F.	21-12-22	12:28	water	
	Girls Change Rm. 269 D.F.	21-12-22	12:33	water	
	Boys Change Rm. 273 S.S.D.F.	21-12-22	12:36	water	
	Rm. 226 bubbler	21-12-22	12:41	water	
Drinking Water (DW) Samples (client use)		Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)		SAMPLE RECEIPT DETAILS (ALS use only)	
Are samples taken from a Regulated DW System?		No preservatives added		Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED	
Are samples for human consumption/ use?				Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO	
				Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A	
				INITIAL COOLER TEMPERATURES °C	
				FINAL COOLER TEMPERATURES °C	
				7	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)		FINAL SHIPMENT RECEPTION (ALS use only)	
Released by:	Date:	Time:	Received by:	Date:	Time:
				21 Dec 2022	14:55

Environmental Division
Vancouver

Work Order Reference

VA22D0771



Telephone : +1 604 253 4188

SAMPLES ON HOLD

EXTENDED STORAGE REQUIRED

SUSPECTED HAZARD (see n)

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 2202 FRONT



COC Number: 20 - 1039088

Canada Toll Free: 1 800 668 9878

Page 2 of 2

[illegible]

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**.

ALL INFORMATION FROM

Results Summary VA22D0771

Project	David Thompson Secondary																
Report To	Stephen Thomas, Vancouver School Board																
Date Received	21-Dec-2022 14:55																
Issue Date	28-Dec-2022 16:35																
Amendment	0																
Client Sample ID			Corr. 100 Rm. 112C S.S.D.F.	Corr. 100 Rm. 109 D.F.	Corr. 100 Rm. 101 D.F.	Corr. 250 Rm. 210d F.G.D.F.	Corr. 250 Rm. 214 F.G.D.F.	Corr. 282 Rm. 281 Bottle Filler	Rm. 264A D.F.	Rm. 277A Left D.F.	Rm. 277A Right D.F.	Girls Change Rm. 269 D.F.	Boys Change Rm. 273 S.S.D.F.	Rm. 226 Bubbler	Corr. 292 Rm. 233 Bottle Filler	Corr. 335 Rm. 316b D.F.	Corr. 335 Rm. 320 D.F.
Date Sampled			21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022	21-Dec-2022
Time Sampled			11:58	12:01	12:04	12:10	12:15	12:19	12:23	12:26	12:28	12:33	12:36	12:41	12:45	12:55	12:58
ALS Sample ID			VA22D0771-001	VA22D0771-002	VA22D0771-003	VA22D0771-004	VA22D0771-005	VA22D0771-006	VA22D0771-007	VA22D0771-008	VA22D0771-009	VA22D0771-010	VA22D0771-011	VA22D0771-012	VA22D0771-013	VA22D0771-014	VA22D0771-015
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	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)																	
lead, total	0.000050	mg/L	0.000646	0.00171	0.00967	0.00172	0.0920	0.000190	0.00162	0.00577	0.00503	0.000975	0.000137	0.000743	0.000648	0.0159	0.00131



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4373**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : V-Hill

PO : ----

C-O-C number : 20-985906

Sampler : Robin LeMay

Site : ----

Quote number : DONT USE

No. of samples received : 11

No. of samples analysed : 11

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 : 02-Mar-2022 14:45

Date Analysis Commenced : 06-Mar-2022

Issue Date : 07-Mar-2022 09:28

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.

Signatories	Position	Laboratory Department
Austin Wasylyshyn	Lab Analyst	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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A4373	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	: V-Hill	Date Samples Received	: 02-Mar-2022 14:45
PO	: ----	Issue Date	: 07-Mar-2022 09:28
C-O-C number	: 20-985906		
Sampler	: Robin LeMay		
Site	: ----		
Quote number	: DONT USE		
No. of samples received	: 11		
No. of samples analysed	: 11		

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) Bottle filler Corr. 146 Rm. 148 V-Hill	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Corr. 122 R. 141 V-Hill	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Opp. 134 V-Hill	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 134 V-Hill	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 139 V-Hill	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 156 V-Hill	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 163 V-Hill	E420	02-Mar-2022	----	----	----		06-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. 212 V-Hill	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 225 V-Hill	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 241 V-Hill	E420	02-Mar-2022	----	----	----		06-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 252 V-Hill	E420	02-Mar-2022	----	----	----		06-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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	425140	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	425140	1	20	5.0	5.0	✓
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	425140	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	425140	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 : **VA22A4373**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : V-Hill
PO : ----
C-O-C number : 20-985906
Sampler : Robin LeMay
Site : ----
Quote number : DONT USE
No. of samples received : 11
No. of samples analysed : 11

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 : 02-Mar-2022 14:45
Date Analysis Commenced : 06-Mar-2022
Issue Date : 07-Mar-2022 09:28

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>
Austin Wasylyshyn	Lab Analyst	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: 425140)											
VA22A4357-020	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 425140)						
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: 425140)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	94.7	80.0	120	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: Water

					Matrix Spike (MS) Report				
					Spike		Recovery (%)	Recovery Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High
Total Metals (QCLot: 425140)									
VA22A4357-021	Anonymous	lead, total	7439-92-1	E420	0.0169 mg/L	0.02 mg/L	84.3	70.0	130



COC Number: 20 - 985906

Canada Toll Free: 1 800 668 9878

Page of

Environmental Division
Vancouver
Work Order Reference
VA22A4373



Telephone : +1 604 253 4188

NUMBER OF CONTAINERS

Lead

SAMPLES ON HOLD

EXTENDED STORAGE REQ.

SUSPECTED HAZARD (see

Results Summary VA22A4373									
Project	V-Hill								
Report To	Stephen Thomas, Vancouver School Board								
Date Received	02-Mar-2022 14:45								
Issue Date	07-Mar-2022 09:29								
Amendment	0								
Client Sample ID			Sink D.F. Rm. 163 V-Hill	Sink D.F. Rm. 156 V-Hill	Bottle filler Corr. 146 Rm. 148 V-Hill	Sink D.F. Opp. 134 V-Hill	Sink D.F. Corr. 122 R. 141 V-Hill	Sink D.F. Rm. 139 V-Hill	Sink D.F. Rm. 134 V-Hill
Date Sampled			02-Mar-2022	02-Mar-2022	02-Mar-2022	02-Mar-2022	02-Mar-2022	02-Mar-2022	02-Mar-2022
Time Sampled			07:04	07:07	07:10	07:14	07:17	07:19	07:22
ALS Sample ID			VA22A4373-001	VA22A4373-002	VA22A4373-003	VA22A4373-004	VA22A4373-005	VA22A4373-006	VA22A4373-007
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
Total Metals (Matrix: Water)									
lead, total	0.000050	mg/L	0.000080	0.000051	0.000075	0.000151	0.00106	0.00503	0.000390

Sink D.F. Rm. 252 V-Hill	Sink D.F. Rm. 241 V-Hill	Sink D.F. Rm. 225 V-Hill	Sink D.F. Rm. 212 V-Hill
02-Mar-2022	02-Mar-2022	02-Mar-2022	02-Mar-2022
07:28	07:32	07:35	07:37
VA22A4373-008	VA22A4373-009	VA22A4373-010	VA22A4373-011
Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water
0.00780	0.000903	0.000780	0.000631



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4675**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : Waverly Annex

PO : ----

C-O-C number : 20-985899

Sampler : RL

Site : ----

Quote number : ----

No. of samples received : 2

No. of samples analysed : 2

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 11:00

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.

Signatories	Position	Laboratory Department
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.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A4675	Page	: 1 of 5
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	: Waverly Annex	Date Samples Received	: 07-Mar-2022 15:20
PO	: ----	Issue Date	: 14-Mar-2022 11:00
C-O-C number	: 20-985899		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
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 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	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) Bottle Filler Rm.112 Waverly A.	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F. Vest. 118 Rm. 117 Waverly A.	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			Count		Frequency (%)		
	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
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 : **VA22A4675**

Page : 1 of 3

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Waverly Annex
PO : ----
C-O-C number : 20-985899
Sampler : RL
Site : ----
Quote number : ----
No. of samples received : 2
No. of samples analysed : 2

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 10:59

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>
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	D.F. Vest. 118 Rm. 117 Waverly A.	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 (QCLot: 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 >= 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
Total Metals (QCLot: 429646)									
VA22A4675-002	Bottle Filler Rm.112 Waverly A.	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 - 985899

Page of

Contact and company name below will appear on the final report

Reports / Recipients

Turnaround Time (TAT) Requested

dd-mm-yy hh:mm am/pm

Company: Vancouver School Board

Select Report Format: ☒ PDF ☐ EXCEL ☐ EDD (DIGITAL)

☒ Routine (R) if received by 3pm M-F - no surcharges apply

Contact: Stephen Thomas

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ 4 day (P4) if received by 3pm M-F - 20% rush surcharge minimum

Phone: 604 713 5634

☐ 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: 1549 Clark Drive

Select Distribution: ☒ EMAIL ☐ MAIL ☐ FAX

☐ 2 day (P2) if received by 3pm M-F - 50% rush surcharge minimum

City/Province: Vancouver B.C.

Email 1 or Fax: sstomas@usb.bc.ca

☐ 1 day (P1) if received by 3pm M-F - 100% rush surcharge minimum

Postal Code: V6L 3L4

Email 2: clemey@usb.bc.ca

☐ Same day (E2) if received by 10am M-F - 20% rush surcharge. Additional fees may apply for rush requests on weekends, statutory holidays and non-routine tests

Invoice To: Same as Report To

Email 3: carrell@usb.bc.ca

Date and Time Required for all EAP TATs:

Company: ☒ YES ☐ NO

Select Invoice Distribution: ☐ EMAIL ☐ MAIL ☐ FAX

For all tests with rush TATs requested, please contact your AAL to confirm availability.

Contact: ☒ YES ☐ NO

Email 1 or Fax: Email 2

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below

Project Information

Oil and Gas Required Fields (client use)

Analysis Request

ALS Account # / Quote #

AF/Coast Center: PO#

SAMPLES ON HOLD

Job #: Waverley Annex

Major/Minor Code: Routing Code:

EXTENDED STORAGE REQUIRED

PO / AFE:

Requisitioner: Location:

SUSPECTED HAZARD (see notes)

LSD:

ALS Lab Work Order # (ALS use only):

ALS Contact: T. Tarran

ALS Sample #

Sample Identification and/or Coordinates (This description will appear on the report)

Date (dd-mm-yy) Time (hh:mm)

ALS use only:

Sampler: R. Lemay

Sample Type

D.E. Vest, 118 Km. 117 Waverley A.

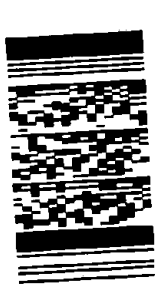
07 03 22 9:12am water

NUMBER OF CONTAINERS

Bottle Filler Km. 112 Waverley A.

07 03 22 9:13am water

Lead



Environmental Division
Vancouver
Work Order Reference
VA22A4675

Telephone: +1 604 253 4168

SHIPMENT RELEASE (client use)

Released by: Date: Time:

Received by: Date: Time:

Received by: Date: Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

FINAL SHIPMENT RECEPTION (ALS use only)

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGALLY. 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 (RDW) System, please submit using an Authorized DW COC form.

Results Summary VA22A4675				
Project	Waverly Annex			
Report To	Stephen Thomas, Vancouver School Board			
Date Received	07-Mar-2022 15:20			
Issue Date	14-Mar-2022 11:00			
Amendment	0			
Client Sample ID			D.F. Vest. 118 Rm. 117 Waverly A.	Bottle Filler Rm.112 Waverly A.
Date Sampled			07-Mar-2022	07-Mar-2022
Time Sampled			09:22	09:31
ALS Sample ID			VA22A4675-001	VA22A4675-002
Analyte	Lowest Detection Limit	Units	Sub-Matrix: Water	Sub-Matrix: Water
Total Metals (Matrix: Water)				
lead, total	0.000050	mg/L	0.00124	0.00829



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order : **VA22A4677**

Client : **Vancouver School Board**

Contact : Stephen Thomas

Address : 1549 Clark Drive
Vancouver BC Canada V5L 3L4

Telephone : ----

Project : Waverly

PO : ----

C-O-C number : 20-985898,20-985897

Sampler : RL

Site : ----

Quote number : ----

No. of samples received : 16

No. of samples analysed : 16

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 : 21-Mar-2022 16:26

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.

Signatories	Position	Laboratory Department
Austin Wasylyshyn	Lab Analyst	Metals, Edmonton, Alberta
Dan Nguyen	Team Leader - Inorganics	Metals, Edmonton, Alberta



General Comments

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Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

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	: VA22A4677	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	: Waverly	Date Samples Received	: 07-Mar-2022 15:20
PO	: ----	Issue Date	: 21-Mar-2022 16:27
C-O-C number	: 20-985898,20-985897		
Sampler	: RL		
Site	: ----		
Quote number	: ----		
No. of samples received	: 16		
No. of samples analysed	: 16		

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) Sink D.F. Rm. 182 Waverly	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. 183 Waverly	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. 184 Waverly	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. 186 Waverly	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. 187 Waverly	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. 188 Waverly	E420	07-Mar-2022	----	----	----		11-Mar-2022	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Bottle Filler Rm. 121 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 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) D.F. Rm. 113 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) D.F. Rm. 169 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S. D.F. Rm. 122 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S. D.F. Rm. 125 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S. D.F. Rm. 135 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) S.S. Recessed D.F. Rm. 159 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 181 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 189 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Sink D.F. Rm. 190 Waverly	E420	07-Mar-2022	----	----	----		13-Mar-2022	180 days	6 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			Count		Frequency (%)		
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Total Metals in Water by CRC ICPMS	E420	429646	2	40	5.0	5.0	✔
Laboratory Control Samples (LCS)							
Total Metals in Water by CRC ICPMS	E420	429646	2	40	5.0	5.0	✔
Method Blanks (MB)							
Total Metals in Water by CRC ICPMS	E420	429646	2	40	5.0	5.0	✔
Matrix Spikes (MS)							
Total Metals in Water by CRC ICPMS	E420	429646	2	40	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 : **VA22A4677**

Page : 1 of 4

Client : Vancouver School Board
Contact : Stephen Thomas
Address : 1549 Clark Drive
 Vancouver BC Canada V5L 3L4
Telephone : ----
Project : Waverly
PO : ----
C-O-C number : 20-985898,20-985897
Sampler : RL
Site : ----
Quote number : ----
No. of samples received : 16
No. of samples analysed : 16

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 : 21-Mar-2022 16:26

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>
Austin Wasylyshyn	Lab Analyst	Metals, Edmonton, Alberta
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%	----
Total Metals (QC Lot: 431130)											
EO2201567-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	0.000069	0.000075	0.000006	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
Total Metals (QCLot: 429646)						
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Total Metals (QCLot: 431130)						
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	----
Total Metals (QCLot: 431130)									
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	95.3	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 >= 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
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
Total Metals (QCLot: 431130)									
EO2201567-002	Anonymous	lead, total	7439-92-1	E420	0.0183 mg/L	0.02 mg/L	91.7	70.0	130





www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 985898

Page of

Report To Contact and company name below will appear on the final report		Reports / Recipients		Turnaround Time (TAT) Requested	
Company:	Vancouver School Board	Select Report Format:	☒ PDF ☐ EXCEL ☐ BOD (DIGITAL)	☒ Routine [R] if received by 3pm M-F - no surcharges apply	
Contact:	Stephen Thomas	Merge COC/QCI Reports with COA	☐ YES ☐ NO ☐ N/A	☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum	
Phone:	604 713 5637	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:	1549 Clark Drive	Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum	
City/Province:	Vancouver B.C.	Email 1 or Fax	55thomas@vsb.bc.ca	☐ 1 day [P1] if received by 3pm M-F - 100% rush surcharge minimum	
Postal Code:	V5L 3L4	Email 2	clenny@vsb.bc.ca	☐ Same day [E] 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	cd-mm-yy hh:mm am/pm	
Company:		Email 1 or Fax		Analysis Request	
Contact:		Email 2		For all tests with rush TATs requested, please contact your AAL to confirm availability.	
Project Information		Oil and Gas Required Fields (client use)			
ALS Account # / Quote #		A/E/Coast Center:		Indicate Filtered (F), Preserved (P) or Filtered and Preserved (FP) below	
Job #:	Waverley 1012	Major/Minor Code:			
PO/A/E:		Routing Code:			
LSD:		Requisitioner:			
ALS Lab Work Order # (ALS use only)		Location:			
ALS Sample # (ALS use only)		ALS Contact:	T. Taranen	Sampler: R. Lemay	
Sample Identification and/or Coordinates (This description will appear on the report)		Date (dd-mm-yy)	Time (hh:mm)	Sample Type	
Sink D.F.	Rm. 186	07-03-22	8:29am	water	
Sink D.F.	Rm. 187	07-03-22	8:31am	water	
Sink D.F.	Rm. 184	07-03-22	8:34am	water	
Sink D.F.	Rm. 183	07-03-22	8:36am	water	
Sink D.F.	Rm. 182	07-03-22	8:40am	water	
Sink D.F.	Rm. 188	07-03-22	8:38am	water	
Sink D.F.	Rm. 189	07-03-22	8:43am	water	
Sink D.F.	Rm. 190	07-03-22	8:45am	water	
Sink D.F.	Rm. 181	07-03-22	8:48am	water	
D.F.	Rm. 113	07-03-22	8:52am	water	
Bottle Filler	Rm. 121	07-03-22	8:54am	water	
S.S. D.F.	Rm. 122	07-03-22	8:58am	water	
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?		☒ YES ☐ NO			
Are samples for human consumption/ use?		☒ YES ☐ NO			
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (ALS use only)			
Released by:		Date:		Time:	
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 LEGITLY. 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.			

Telephone: +1 604 263 4188



Environmental Division
Vancouver
Work Order Reference
VA22A4677

SAMPLES ON HOLD
EXTENDED STORAGE REQUIRED
SUSPECTED HAZARD (see notes)

AFFIX ALS BARCODE LABEL HERE
(ALS use only)

AUG 2020 FROM

Results Summary VA22A4677																			
Project	Waverly																		
Report To	Stephen Thomas, Vancouver School Board																		
Date Received	07-Mar-2022 15:20																		
Issue Date	21-Mar-2022 16:27																		
Amendment	0																		
Client Sample ID			Sink D.F. Rm. 186 Waverly	Sink D.F. Rm. 187 Waverly	Sink D.F. Rm. 184 Waverly	Sink D.F. Rm. 183 Waverly	Sink D.F. Rm. 182 Waverly	Sink D.F. Rm. 188 Waverly	Sink D.F. Rm. 189 Waverly	Sink D.F. Rm. 190 Waverly	Sink D.F. Rm. 181 Waverly	D.F. Rm. 113 Waverly	Bottle Filler Rm. 121 Waverly	S.S. D.F. Rm. 122 Waverly	S.S. D.F. Rm. 125 Waverly	S.S. D.F. Rm. 135 Waverly	S.S. Recessed D.F. Rm. 159 Waverly	D.F. Rm. 169 Waverly	
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	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022	07-Mar-2022
Time Sampled			08:29	08:31	08:34	08:36	08:40	08:38	08:43	08:45	08:48	08:52	08:54	08:58	09:00	09:03	09:04	09:11	
ALS Sample ID			VA22A4677-001	VA22A4677-002	VA22A4677-003	VA22A4677-004	VA22A4677-005	VA22A4677-006	VA22A4677-007	VA22A4677-008	VA22A4677-009	VA22A4677-010	VA22A4677-011	VA22A4677-012	VA22A4677-013	VA22A4677-014	VA22A4677-015	VA22A4677-016	
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	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	Sub-Matrix: Water	
Total Metals (Matrix: Water)																			
lead, total	0.000050	mg/L	0.000055	0.000144	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000178	<0.000050	0.000143	<0.000050	0.000068	0.000559	0.00206	0.000237	0.00180	