

CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

Work Order	: VA22C9970	Page	: 1 of 5
Client	: Lafarge Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Stephanie Voysey	Account Manager	: Ian Chen
Address	: 2300 Rogers Ave Coquitlam BC Canada V3K 5X6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 349 9193	Telephone	: +1 604 253 4188
Project	: Van Anda - Texada Island	Date Samples Received	: 09-Dec-2022 10:30
PO	: ----	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: ----	Issue Date	: 13-Dec-2022 10:17
Sampler	: ----		
Site	: ----		
Quote number	: 2022 PRICING		
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
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Sam Silveira	Lab Assistant	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
µg/L	micrograms per litre
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.



hardness (as CaCO ₃), from total Ca/Mg	----	mg/L							
aluminum, total	7429-90-5	mg/L							
antimony, total	7440-36-0	mg/L							
arsenic, total	7440-38-2	mg/L							
barium, total	7440-39-3	mg/L							
beryllium, total	7440-41-7	mg/L							
bismuth, total	7440-69-9	mg/L							
boron, total	7440-42-8	mg/L							
cadmium, total	7440-43-9	mg/L							
calcium, total	7440-70-2	mg/L							
cesium, total	7440-46-2	mg/L							
chromium, total	7440-47-3	mg/L							
cobalt, total	7440-48-4	mg/L							
copper, total	7440-50-8	mg/L							
iron, total	7439-89-6	mg/L							
lead, total	7439-92-1	mg/L							
lithium, total	7439-93-2	mg/L							
magnesium, total	7439-95-4	mg/L							
manganese, total	7439-96-5	mg/L							
mercury, total	7439-97-6	mg/L							
molybdenum, total	7439-98-7	mg/L							
nickel, total	7440-02-0	mg/L							
phosphorus, total	7723-14-0	mg/L							
potassium, total	7440-09-7	mg/L							
rubidium, total	7440-17-7	mg/L							
selenium, total	7782-49-2	mg/L							
silicon, total	7440-21-3	mg/L							
silver, total	7440-22-4	mg/L							
sodium, total	7440-23-5	mg/L							
strontium, total	7440-24-6	mg/L							
sulfur, total	7704-34-9	mg/L							
tellurium, total	13494-80-9	mg/L							
thallium, total	7440-28-0	mg/L							
thorium, total	7440-29-1	mg/L							
tin, total	7440-31-5	mg/L							
titanium, total	7440-32-6	mg/L							
tungsten, total	7440-33-7	mg/L							
uranium, total	7440-61-1	mg/L							
vanadium, total	7440-62-2	mg/L							
zinc, total	7440-66-6	mg/L							
zirconium, total	7440-67-7	mg/L							
bromodichloromethane	75-27-4	µg/L							



bromoform	75-25-2	µg/L							
chloroform	67-66-3	µg/L							
dibromochloromethane	124-48-1	µg/L							
trihalomethanes [THMs], total	----	µg/L							

CERTIFICATE OF ANALYSIS

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Client	: Lafarge Canada Inc.	Laboratory	: Vancouver - Environmental
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Address	: 2300 Rogers Ave Coquitlam BC Canada V3K 5X6	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 349 9193	Telephone	: +1 604 253 4188
Project	: Van Anda - Texada Island	Date Samples Received	: 09-Dec-2022 10:30
PO	: ----	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: ----	Issue Date	: 13-Dec-2022 10:18
Sampler	: ----		
Site	: ----		
Quote number	: 2022 PRICING		
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
- Surrogate Control Limits

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Signatories	Position	Laboratory Department
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Sam Silveira	Lab Assistant	Metals, Burnaby, British Columbia



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.

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

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

Unit	Description
µg/L	micrograms per litre
mg/L	milligrams per litre

<: less than.

>: greater than.

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

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

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



Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					VA1-SITE#1 HOTEL	VA2-SITE#2 EARL ST	VA3-SITE#3 MARBLE BAY @VANANDA	VA4-SITE#4 MARBLE BAY @SELLENTIN	VA5 - SITE#5 SELLENTIN @STURT BAY
Client sampling date / time					07-Dec-2022 11:32	07-Dec-2022 11:48	07-Dec-2022 12:04	07-Dec-2022 11:43	07-Dec-2022 11:38
Analyte	CAS Number	Method	LOR	Unit	VA22C9970-001	VA22C9970-002	VA22C9970-003	VA22C9970-004	VA22C9970-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	125	120	121	120	122
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0031	0.0034	0.0033	<0.0030	<0.0030
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00130	0.00128	0.00134	0.00130	0.00133
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00180	0.00178	0.00184	0.00182	0.00174
barium, total	7440-39-3	E420	0.00010	mg/L	0.00656	0.00569	0.00599	0.00654	0.00603
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L	45.6	44.0	44.0	43.6	44.6
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000022	0.000019	0.000025	0.000025	0.000026
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L	0.00692	0.00411	0.00369	0.00606	0.00480
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.012	<0.010	<0.010	0.052
lead, total	7439-92-1	E420	0.000050	mg/L	0.000197	0.000124	<0.000050	0.000267	0.000118
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	2.68	2.55	2.61	2.63	2.66
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00305	0.00252	0.00318	0.00304	0.00458
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00910	0.00831	0.00936	0.00918	0.00868
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.050	mg/L	0.333	0.322	0.323	0.326	0.324
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00036	0.00041	0.00042	0.00033	0.00040
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000732	0.000713	0.000708	0.000654	0.000653
silicon, total	7440-21-3	E420	0.10	mg/L	2.24	2.18	2.22	2.20	2.18



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	VA1-SITE#1 HOTEL	VA2-SITE#2 EARL ST	VA3-SITE#3 MARBLE BAY @VANANDA	VA4-SITE#4 MARBLE BAY @SELLENTIN	VA5 - SITE#5 SELLENTIN @STURT BAY
Client sampling date / time					07-Dec-2022 11:32	07-Dec-2022 11:48	07-Dec-2022 12:04	07-Dec-2022 11:43	07-Dec-2022 11:38	
Analyte	CAS Number	Method	LOR	Unit	VA22C9970-001	VA22C9970-002	VA22C9970-003	VA22C9970-004	VA22C9970-005	
					Result	Result	Result	Result	Result	
Total Metals										
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
sodium, total	7440-23-5	E420	0.050	mg/L	6.54	6.44	6.24	6.20	6.32	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.200	0.201	0.198	0.202	0.204	
sulfur, total	7704-34-9	E420	0.50	mg/L	13.7	13.5	13.6	13.1	12.8	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0.00013	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	<0.00030	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00323	0.00316	0.00336	0.00336	0.00322	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00091	0.00080	0.00084	0.00093	0.00086	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0067	0.0135	0.0080	0.0044	0.0260	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	

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



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	VA6- SITE#6 WALL ST PUMPHOUSE	VA7-SITE#7 COPPER QUEEN@ALLAD IN	VA8 - SITE#8 TANK OUTLET	VA-DUP-SITE#4 MARBLE BAY @SELLENTIN	TANK INLET THM
Client sampling date / time					07-Dec-2022 11:58	07-Dec-2022 11:54	07-Dec-2022 12:10	07-Dec-2022 11:41	07-Dec-2022 12:11	
Analyte	CAS Number	Method	LOR	Unit	VA22C9970-006	VA22C9970-007	VA22C9970-008	VA22C9970-009	VA22C9970-010	
					Result	Result	Result	Result	Result	
Physical Tests										
hardness (as CaCO3), from total Ca/Mg		----	EC100A	0.60	mg/L	122	122	120	122	----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0035	0.0033	0.0037	0.0031	----	
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00132	0.00130	0.00133	0.00127	----	
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00190	0.00179	0.00185	0.00185	----	
barium, total	7440-39-3	E420	0.00010	mg/L	0.00594	0.00603	0.00655	0.00641	----	
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	<0.000100	----	
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----	
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	<0.010	<0.010	----	
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
calcium, total	7440-70-2	E420	0.050	mg/L	44.7	44.4	43.4	44.6	----	
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000025	0.000025	0.000026	0.000025	----	
chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
copper, total	7440-50-8	E420	0.00050	mg/L	0.00496	0.00792	0.00247	0.00348	----	
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	0.013	0.019	<0.010	----	
lead, total	7439-92-1	E420	0.000050	mg/L	0.000134	0.000113	0.000156	0.000140	----	
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	<0.0010	<0.0010	----	
magnesium, total	7439-95-4	E420	0.0050	mg/L	2.66	2.64	2.72	2.69	----	
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00308	0.00338	0.00432	0.00310	----	
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	----	
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00933	0.00912	0.00968	0.00886	----	
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	----	
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----	
potassium, total	7440-09-7	E420	0.050	mg/L	0.327	0.324	0.334	0.325	----	
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00041	0.00042	0.00046	0.00048	----	
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000644	0.000688	0.000606	0.000657	----	
silicon, total	7440-21-3	E420	0.10	mg/L	2.17	2.20	2.20	2.21	----	



Analytical Results

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Client sampling date / time					07-Dec-2022 11:58	07-Dec-2022 11:54	07-Dec-2022 12:10	07-Dec-2022 11:41	07-Dec-2022 12:11	
Analyte	CAS Number	Method	LOR	Unit	VA22C9970-006	VA22C9970-007	VA22C9970-008	VA22C9970-009	VA22C9970-010	
					Result	Result	Result	Result	Result	
Total Metals										
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
sodium, total	7440-23-5	E420	0.050	mg/L	6.55	6.38	6.21	6.33	----	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.205	0.205	0.204	0.199	----	
sulfur, total	7704-34-9	E420	0.50	mg/L	13.4	13.5	13.5	13.6	----	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	<0.00030	<0.00030	----	
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----	
uranium, total	7440-61-1	E420	0.000010	mg/L	0.00328	0.00336	0.00338	0.00332	----	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00083	0.00085	0.00096	0.00090	----	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0191	0.0071	0.0061	<0.0030	----	
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----	
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611B	1.0	µg/L	----	----	----	----	5.0	
bromoform	75-25-2	E611B	1.0	µg/L	----	----	----	----	<1.0	
chloroform	67-66-3	E611B	1.0	µg/L	----	----	----	----	83.4	
dibromochloromethane	124-48-1	E611B	1.0	µg/L	----	----	----	----	<1.0	
trihalomethanes [THMs], total	----	E611B	2.0	µg/L	----	----	----	----	88.4	
Volatile Organic Compounds [THMs] Surrogates										
bromofluorobenzene, 4-	460-00-4	E611B	1.0	%	----	----	----	----	88.8	
difluorobenzene, 1,4-	540-36-3	E611B	1.0	%	----	----	----	----	99.0	

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



Analytical Results

Sub-Matrix: Water					Client sample ID	TAANK OUTLET THM	----	----	----	----
(Matrix: Water)										
					Client sampling date / time	07-Dec-2022 12:12	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA22C9970-011	-----	-----	-----	-----	
					Result	---	---	---	---	
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611B	1.0	µg/L	4.7	----	----	----	----	
bromoform	75-25-2	E611B	1.0	µg/L	<1.0	----	----	----	----	
chloroform	67-66-3	E611B	1.0	µg/L	80.8	----	----	----	----	
dibromochloromethane	124-48-1	E611B	1.0	µg/L	<1.0	----	----	----	----	
trihalomethanes [THMs], total	----	E611B	2.0	µg/L	85.5	----	----	----	----	
Volatile Organic Compounds [THMs] Surrogates										
bromofluorobenzene, 4-	460-00-4	E611B	1.0	%	82.4	----	----	----	----	
difluorobenzene, 1,4-	540-36-3	E611B	1.0	%	98.6	----	----	----	----	

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: VA22C9970	Page	: 1 of 7
Client	: Lafarge Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Stephanie Voysey	Account Manager	: Ian Chen
Address	: 2300 Rogers Ave Coquitlam BC Canada V3K 5X6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 349 9193	Telephone	: +1 604 253 4188
Project	: Van Anda - Texada Island	Date Samples Received	: 09-Dec-2022 10:30
PO	: ----	Issue Date	: 13-Dec-2022 10:18
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: 2022 PRICING		
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 Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) VA1-SITE#1 HOTEL	E508	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) VA2-SITE#2 EARL ST	E508	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) VA3-SITE#3 MARBLE BAY @VANANDA	E508	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) VA4-SITE#4 MARBLE BAY @SELLENTIN	E508	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) VA5 - SITE#5 SELLENTIN @STURT BAY	E508	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) VA6- SITE#6 WALL ST PUMPHOUSE	E508	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) VA7-SITE#7 COPPER QUEEN@ALLADIN	E508	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 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 Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) VA8 - SITE#8 TANK OUTLET	E508	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	5 days	✔
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) VA-DUP-SITE#4 MARBLE BAY @SELLENTIN	E508	07-Dec-2022	12-Dec-2022	----	----		12-Dec-2022	28 days	5 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) VA1-SITE#1 HOTEL	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	6 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) VA2-SITE#2 EARL ST	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	6 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) VA3-SITE#3 MARBLE BAY @VANANDA	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	6 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) VA4-SITE#4 MARBLE BAY @SELLENTIN	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	6 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) VA5 - SITE#5 SELLENTIN @STURT BAY	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	6 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) VA6- SITE#6 WALL ST PUMPHOUSE	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	6 days	✔
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) VA7-SITE#7 COPPER QUEEN@ALLADIN	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	6 days	✔

Page : 5 of 7
 Work Order : VA22C9970
 Client : Lafarge Canada Inc.
 Project : Van Anda - Texada Island



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 (nitric acid) VA8 - SITE#8 TANK OUTLET	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	6 days	✓
Total Metals : Total metals in Water by CRC ICPMS										
HDPE total (nitric acid) VA-DUP-SITE#4 MARBLE BAY @SELLENTIN	E420	07-Dec-2022	12-Dec-2022	----	----		13-Dec-2022	180 days	6 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) TAANK OUTLET THM	E611B	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	14 days	3 days	✓
Volatile Organic Compounds [THMs] : THMs by Headspace GC-MS										
Glass vial (sodium thiosulfate) TANK INLET THM	E611B	07-Dec-2022	10-Dec-2022	----	----		10-Dec-2022	14 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)							
THMs by Headspace GC-MS	E611B	774750	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	775855	1	20	5.0	5.0	✔
Total metals in Water by CRC ICPMS	E420	774597	1	20	5.0	5.0	✔
Laboratory Control Samples (LCS)							
THMs by Headspace GC-MS	E611B	774750	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	775855	1	20	5.0	5.0	✔
Total metals in Water by CRC ICPMS	E420	774597	1	20	5.0	5.0	✔
Method Blanks (MB)							
THMs by Headspace GC-MS	E611B	774750	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	775855	1	20	5.0	5.0	✔
Total metals in Water by CRC ICPMS	E420	774597	1	20	5.0	5.0	✔
Matrix Spikes (MS)							
THMs by Headspace GC-MS	E611B	774750	1	14	7.1	5.0	✔
Total Mercury in Water by CVAAS	E508	775855	1	20	5.0	5.0	✔
Total metals in Water by CRC ICPMS	E420	774597	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.
Total Mercury in Water by CVAAS	E508 Vancouver - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
THMs by Headspace GC-MS	E611B Vancouver - Environmental	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO ₃), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 Vancouver - Environmental	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.

QUALITY CONTROL REPORT

Work Order	: VA22C9970	Page	: 1 of 10
Client	: Lafarge Canada Inc.	Laboratory	: Vancouver - Environmental
Contact	: Stephanie Voysey	Account Manager	: Ian Chen
Address	: 2300 Rogers Ave Coquitlam BC Canada V3K 5X6	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	:	Telephone	: +1 604 253 4188
Project	: Van Anda - Texada Island	Date Samples Received	: 09-Dec-2022 10:30
PO	: ----	Date Analysis Commenced	: 10-Dec-2022
C-O-C number	: ----	Issue Date	: 13-Dec-2022 10:18
Sampler	: ---- 604 349 9193		
Site	: ----		
Quote number	: 2022 PRICING		
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
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Sam Silveira	Lab Assistant	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: 774597)											
VA22C9998-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0260	0.0262	0.0001	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00868	0.00858	1.10%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00481	0.00483	0.317%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0434	0.0433	0.247%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	0.088	0.092	0.004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000112	0.0000116	0.0000004	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	22.8	24.2	5.90%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.00165	0.00162	1.85%	20%	----
		chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.010	<0.010	0.0001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000114	0.000116	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0572	0.0566	1.10%	20%	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	1.45	1.46	0.889%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0124	0.0123	1.23%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00784	0.00777	0.916%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	10.8	11.1	2.41%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.0130	0.0133	2.56%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000799	0.000873	8.82%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.60	1.59	0.560%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	28.8	28.6	0.852%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.485	0.476	1.73%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	21.5	20.7	3.70%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----



Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 774597) - continued											
VA22C9998-001	Anonymous	thallium, total	7440-28-0	E420	0.000010	mg/L	0.000040	0.000041	0.0000007	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00088	0.00093	0.00004	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000383	0.000393	2.55%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 775855)											
VA22C9929-004	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds [THMs] (QC Lot: 774750)											
VA22C9633-001	Anonymous	bromodichloromethane	75-27-4	E611B	1.0	µg/L	1.8	1.6	8.5%	30%	----
		bromoform	75-25-2	E611B	1.0	µg/L	<1.0	<1.0	0.0%	30%	----
		chloroform	67-66-3	E611B	1.0	µg/L	20.2	18.9	6.7%	30%	----
		dibromochloromethane	124-48-1	E611B	1.0	µg/L	<1.0	<1.0	0.0%	30%	----



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: 774597)						
aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----



Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 774597) - continued						
tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 775855)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds [THMs] (QCLot: 774750)						
bromodichloromethane	75-27-4	E611B	1	µg/L	<1.0	----
bromoform	75-25-2	E611B	1	µg/L	<1.0	----
chloroform	67-66-3	E611B	1	µg/L	<1.0	----
dibromochloromethane	124-48-1	E611B	1	µg/L	<1.0	----



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: 774597)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	97.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.9	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.3	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	104	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	103	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	101	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.1	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	93.6	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	95.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.5	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.6	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	106	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.2	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----



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: 774597) - continued									
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	102	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	98.9	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	99.4	80.0	120	----
Total Metals (QCLot: 775855)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	107	80.0	120	----
Volatile Organic Compounds [THMs] (QCLot: 774750)									
bromodichloromethane	75-27-4	E611B	1	µg/L	100 µg/L	101	70.0	130	----
bromoform	75-25-2	E611B	1	µg/L	100 µg/L	103	70.0	130	----
chloroform	67-66-3	E611B	1	µg/L	100 µg/L	102	70.0	130	----
dibromochloromethane	124-48-1	E611B	1	µg/L	100 µg/L	100	70.0	130	----



Matrix Spike (MS) Report

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

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 774597)										
VA22C9966-001	Anonymous	aluminum, total	7429-90-5	E420	0.189 mg/L	0.2 mg/L	94.4	70.0	130	----
		antimony, total	7440-36-0	E420	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0375 mg/L	0.04 mg/L	93.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00870 mg/L	0.01 mg/L	87.0	70.0	130	----
		boron, total	7440-42-8	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00366 mg/L	0.004 mg/L	91.4	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.00925 mg/L	0.01 mg/L	92.5	70.0	130	----
		chromium, total	7440-47-3	E420	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0182 mg/L	0.02 mg/L	90.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0180 mg/L	0.02 mg/L	89.9	70.0	130	----
		iron, total	7439-89-6	E420	1.76 mg/L	2 mg/L	88.0	70.0	130	----
		lead, total	7439-92-1	E420	0.0177 mg/L	0.02 mg/L	88.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.0933 mg/L	0.1 mg/L	93.3	70.0	130	----
		magnesium, total	7439-95-4	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0192 mg/L	0.02 mg/L	95.9	70.0	130	----
		nickel, total	7440-02-0	E420	0.0361 mg/L	0.04 mg/L	90.3	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.48 mg/L	10 mg/L	94.8	70.0	130	----
		potassium, total	7440-09-7	E420	3.83 mg/L	4 mg/L	95.8	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		selenium, total	7782-49-2	E420	0.0366 mg/L	0.04 mg/L	91.5	70.0	130	----
		silicon, total	7440-21-3	E420	9.23 mg/L	10 mg/L	92.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00358 mg/L	0.004 mg/L	89.5	70.0	130	----
		sodium, total	7440-23-5	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	18.5 mg/L	20 mg/L	92.3	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0376 mg/L	0.04 mg/L	94.0	70.0	130	----
		thallium, total	7440-28-0	E420	0.00363 mg/L	0.004 mg/L	90.8	70.0	130	----



Sub-Matrix: Water					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 774597) - continued										
VA22C9966-001	Anonymous	thorium, total	7440-29-1	E420	0.0184 mg/L	0.02 mg/L	92.0	70.0	130	----
		tin, total	7440-31-5	E420	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0183 mg/L	0.02 mg/L	91.7	70.0	130	----
		uranium, total	7440-61-1	E420	0.00360 mg/L	0.004 mg/L	90.0	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0942 mg/L	0.1 mg/L	94.2	70.0	130	----
		zinc, total	7440-66-6	E420	0.350 mg/L	0.4 mg/L	87.6	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
Total Metals (QCLot: 775855)										
VA22C9929-005	Anonymous	mercury, total	7439-97-6	E508	0.0000979 mg/L	0.0001 mg/L	97.9	70.0	130	----
Volatile Organic Compounds [THMs] (QCLot: 774750)										
VA22C9635-006	Anonymous	bromodichloromethane	75-27-4	E611B	114 µg/L	100 µg/L	114	60.0	140	----
		bromoform	75-25-2	E611B	114 µg/L	100 µg/L	114	60.0	140	----
		chloroform	67-66-3	E611B	110 µg/L	100 µg/L	110	60.0	140	----
		dibromochloromethane	124-48-1	E611B	111 µg/L	100 µg/L	111	60.0	140	----



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Company:	Lafarge	Select Report Format:	☒ PDF ☒ EXCEL ☐ EDD (DIGITAL)	Regular [R] ☒ Standard TAT if received by 3 pm - business days - no surcharges apply	
Contact:	Stephanie Voysey	Quality Control (QC) Report with Report	☒ YES ☐ NO	4 day [P4] ☐	
Phone:	804 340 6320	☐ Compare Results to Criteria on Report - provide details below if box checked		3 day [P3] ☐	
Company address below will appear on the final report		Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX	2 day [P2] ☐	
Street:	2300 Rogers Avenue	Email 1 or Fax	stephanie.voysey@lafargeholcim.com	1 Business day [E1] ☐	
City/Province:	Coquitlam, BC	Email 2		Same Day, Weekend or Statutory holiday [E0] ☐	
Postal Code:	V3K 5X6	Email 3	lafargeholcim@esdat.net	Date and Time Required for all E&P TATs: _____	
Invoice To	Same as Report To ☒ YES ☐ NO	Invoice Distribution		For tests that can not be performed according to the service level selected, you will be contacted.	
	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		Environmental Division Vancouver Work Order Reference VA22C9970  Telephone: +1 604 253 4188	
Project Information		Oil and Gas Required Fields (client use)		Number of Containers	
ALS Account # / Quote #:		AFE/Cost Center:			
Job #:		Major/Minor Code:			
PO / AFE:		Routing Code:			
LSD:		Location:			
ALS Lab Work Order # (lab use only)		ALS Contact:		Sampler:	
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	
VA1	SITE#1 HOTEL	07/12/22	11:38 AM		
VA2	SITE#2 EARLST	"	11:48 AM		
VA3	SITE#3 MARBLE BAY @ VANANDA	"	12:04 PM		
VA4	SITE#4 MARBLE BAY @ SELKUTIN	"	11:43 AM		
VA5	SITE#5 SELKUTIN @ STUART BAY	"	11:38 AM		
VA6	SITE#6 WALL ST PUMPHOUSE	"	11:58 AM		
VA7	SITE#7 COPPER QUEBEN @ ALLADIN	"	11:54 AM		
VA8	SITE#8 TANK OUTLET	"	12:10 PM		
VA-DUP	SITE#9 MARBLE BAY @ SELKUTIN	"	11:41 AM		
	TANK INLET THM	"	12:11 PM	THM	
	TANK OUTLET THM	"	12:12 PM	THM	
Drinking Water (DW) Samples (client use)		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)		SAMPLE CONDITION AS RECEIVED (lab use only)	
Are samples taken from a Regulated DW System? ☒ YES ☐ NO				Frozen ☐ SIF Observations Yes ☐ No ☐	
Are samples for human drinking water use? ☒ YES ☐ NO				Ice Packs ☒ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐	
				Cooling Initiated ☐	
				INITIAL COOLER TEMPERATURES °C	
				FINAL COOLER TEMPERATURES °C	
				3	
SHIPMENT RELEASE (client use)		INITIAL SHIPMENT RECEPTION (lab use only)		FINAL SHIPMENT RECEPTION (lab use only)	
Released by:	Date:	Time:	Received by:	Date:	Time:
				CW	Dec 9 10:30

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.

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