



CERTIFICATE OF ANALYSIS

Work Order	: VA22A7149
Client	: Lafarge Canada Inc.
Contact	: Stephanie Voysey
Address	: 2300 Rogers Ave Coquitlam BC Canada V3K 5X6
Telephone	: 604 349 9193
Project	: Van Anda - Texada Island
PO	: ----
C-O-C number	: ----
Sampler	: ----
Site	: ----
Quote number	: 2022 Pricing
No. of samples received	: 11
No. of samples analysed	: 11

Page : 1 of 7

Laboratory : Vancouver - Environmental

Account Manager : Carla Fuginski

Address : 8081 Lougheed Highway
Burnaby BC Canada V5A 1W9

Telephone : +1 604 253 4188

Date Samples Received : 06-Apr-2022 10:50

Date Analysis Commenced : 08-Apr-2022

Issue Date : 22-Apr-2022 14:28

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
- Surrogate Control Limits

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

Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Kaitlyn Gardner	Account Manager Assistant	Administration, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Rebecca Sit	Supervisor - Organics Extractions	Organics, Burnaby, British Columbia
Woochan Song	Lab Analyst	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.

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
pH units	pH units

<: less than.

>: greater than.

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

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

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

Workorder Comments

Please note: for THM Improper preservative received. Please note the vials contained sodium bisulfate preservative instead of sodium thiosulfate.



Analytical Results

Sub-Matrix: Water					Client sample ID				
(Matrix: Water)					VA1	VA2	VA3	VA4	VA5
Client sampling date / time					01-Apr-2022 13:25	01-Apr-2022 13:42	01-Apr-2022 14:02	01-Apr-2022 14:36	01-Apr-2022 14:30
Analyte	CAS Number	Method	LOR	Unit	VA22A7149-001	VA22A7149-002	VA22A7149-003	VA22A7149-004	VA22A7149-005
					Result	Result	Result	Result	Result
Field Tests									
pH, field	----	EF001	0.10	pH units	7.01	6.87	7.00	6.92	6.93
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	115	113	116	105	116
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0232	0.0250	0.0214	0.0201	0.0252
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00127	0.00121	0.00122	0.00110	0.00121
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00219	0.00214	0.00214	0.00187	0.00217
barium, total	7440-39-3	E420	0.00010	mg/L	0.00523	0.00477	0.00512	0.00463	0.00504
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	42.5	41.8	42.8	38.6	42.8
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000022	0.000020	0.000023	0.000018	0.000020
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	0.00600	0.00277	0.00932	0.00280	0.00263
iron, total	7439-89-6	E420	0.010	mg/L	0.024	0.038	0.023	0.020	0.040
lead, total	7439-92-1	E420	0.000050	mg/L	0.000234	0.000178	0.000307	0.000148	0.000057
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	2.24	2.17	2.21	2.03	2.24
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00132	0.00137	0.00122	0.00120	0.00225
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	0.00427	0.00397	0.00487	0.00389	0.00389
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0.00052	<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	0.288	0.280	0.276	0.246	0.278
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00036	0.00037	0.00038	0.00034	0.00041
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000750	0.000618	0.000665	0.000633	0.000512
silicon, total	7440-21-3	E420	0.10	mg/L	3.03	2.92	2.93	2.72	2.98



Analytical Results

Sub-Matrix: Water					Client sample ID	VA1	VA2	VA3	VA4	VA5
(Matrix: Water)										
Client sampling date / time					01-Apr-2022 13:25	01-Apr-2022 13:42	01-Apr-2022 14:02	01-Apr-2022 14:36	01-Apr-2022 14:30	
Analyte	CAS Number	Method	LOR	Unit	VA22A7149-001	VA22A7149-002	VA22A7149-003	VA22A7149-004	VA22A7149-005	
					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	<0.000010
sodium, total	7440-23-5	E420	0.050	mg/L	5.80	5.60	5.57	5.17	5.73	
strontium, total	7440-24-6	E420	0.00020	mg/L	0.182	0.169	0.171	0.157	0.171	
sulfur, total	7704-34-9	E420	0.50	mg/L	10.2	9.69	10.7	9.12	9.28	
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00032	0.00032	0.00033	<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	0.00150	0.00145	0.00142	0.00127	0.00151	
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00087	0.00085	0.00085	0.00079	0.00081	
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0088	0.0149	0.0102	0.0033	0.0107	
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	VA7	VA8	VA-DUP	TANK INLET
Client sampling date / time						01-Apr-2022 13:56	01-Apr-2022 13:51	01-Apr-2022 14:10	01-Apr-2022 13:45	01-Apr-2022
Analyte	CAS Number	Method	LOR	Unit	VA22A7149-006	VA22A7149-007	VA22A7149-008	VA22A7149-009	VA22A7149-010	
					Result	Result	Result	Result	Result	
Field Tests										
pH, field	----	EF001	0.10	pH units	6.97	6.92	6.97	6.87		----
Physical Tests										
hardness (as CaCO ₃), from total Ca/Mg	----	EC100A	0.60	mg/L	116	112	112	120		----
Total Metals										
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0230	0.0298	0.0234	0.0224		----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00124	0.00120	0.00119	0.00123		----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00221	0.00233	0.00214	0.00227		----
barium, total	7440-39-3	E420	0.00010	mg/L	0.00513	0.00518	0.00528	0.00513		----
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	0.0000054		----
calcium, total	7440-70-2	E420	0.050	mg/L	43.0	41.2	41.1	44.5		----
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000022	0.000021	0.000021	0.000019		----
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	0.00338	0.0102	0.00108	0.00276		----
iron, total	7439-89-6	E420	0.010	mg/L	0.026	0.049	0.026	0.025		----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000104	0.000241	<0.000050	0.000080		----
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	2.24	2.25	2.30	2.29		----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00127	0.00313	0.00135	0.00162		----
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	0.00432	0.00446	0.00536	0.00397		----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00096	<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	0.287	0.287	0.287	0.293		----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00040	0.00036	0.00041	0.00038		----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000673	0.000714	0.000708	0.000691		----
silicon, total	7440-21-3	E420	0.10	mg/L	2.96	3.11	3.06	3.17		----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010		----



Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	VA6	VA7	VA8	VA-DUP	TANK INLET
Client sampling date / time						01-Apr-2022 13:56	01-Apr-2022 13:51	01-Apr-2022 14:10	01-Apr-2022 13:45	01-Apr-2022
Analyte	CAS Number	Method	LOR	Unit	VA22A7149-006	VA22A7149-007	VA22A7149-008	VA22A7149-009	VA22A7149-010	
					Result	Result	Result	Result	Result	
Total Metals										
sodium, total	7440-23-5	E420	0.050	mg/L	5.78	5.68	5.81	5.72	---	---
strontium, total	7440-24-6	E420	0.00020	mg/L	0.180	0.171	0.171	0.176	---	---
sulfur, total	7704-34-9	E420	0.50	mg/L	9.67	10.2	11.5	10.5	---	---
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	0.00047	<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	0.00152	0.00152	0.00151	0.00149	---	---
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00086	0.00092	0.00089	0.00086	---	---
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0050	0.0099	<0.0030	0.0136	---	---
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	---	---	---	---	---	<1.0
bromoform	75-25-2	E611B	1.0	µg/L	---	---	---	---	---	<1.0
chloroform	67-66-3	E611B	1.0	µg/L	---	---	---	---	---	19.7
dibromochloromethane	124-48-1	E611B	1.0	µg/L	---	---	---	---	---	<1.0
trihalomethanes [THMs], total	---	E611B	2.0	µg/L	---	---	---	---	---	19.7
Volatile Organic Compounds [THMs] Surrogates										
bromofluorobenzene, 4-	460-00-4	E611B	1.0	%	---	---	---	---	---	93.8
difluorobenzene, 1,4-	540-36-3	E611B	1.0	%	---	---	---	---	---	99.5

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



Analytical Results

Sub-Matrix: Water					Client sample ID	TANK OUTLET	---	---	---	---
(Matrix: Water)										
					Client sampling date / time	01-Apr-2022	---	---	---	---
Analyte	CAS Number	Method	LOR	Unit	VA22A7149-011	Result	---	---	---	---
Volatile Organic Compounds [THMs]										
bromodichloromethane	75-27-4	E611B	1.0	µg/L	1.8	---	---	---	---	---
bromoform	75-25-2	E611B	1.0	µg/L	<1.0	---	---	---	---	---
chloroform	67-66-3	E611B	1.0	µg/L	56.2	---	---	---	---	---
dibromochloromethane	124-48-1	E611B	1.0	µg/L	<1.0	---	---	---	---	---
trihalomethanes [THMs], total	---	E611B	2.0	µg/L	58.0	---	---	---	---	---
Volatile Organic Compounds [THMs] Surrogates										
bromofluorobenzene, 4-	460-00-4	E611B	1.0	%	94.7	---	---	---	---	---
difluorobenzene, 1,4-	540-36-3	E611B	1.0	%	99.9	---	---	---	---	---

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