APPENDIX A

Raw Stream Flow Data

Sampling Details			Flow										
Site	Sample Date (d/mmm/yy)	Field Staff	Total Discharge (m3/sec)	Staff gauge Height (m)	Staff gauge height post (if raining)	Rod depth at staff gauge (m)	Staff gauge height at zero flow (m)	Start Time	End Time	Uncertainty (%)	Machine	Corrected Gauge Height	Comments/Control
B-01	21-May-20	LW	0.0013	0.120		0.050							Zero flow depth estimated in April
B-01	23-Jun-20	LW	0.0008	0.082		0		15:40	16:10	13.23			Control: 0.30 m downstream from Stg, fines
B-01	22-Jul-20	LW/NL	0.0001	0.070	N/A	0.01		13:10	14:55	N/A	FH950		
B-01	12-Aug-20	KP/LW	0.000185	0.058	N/A	0		10:05	11:05	N/A	FH950		0.3 m down from stg. Fines
B-01	16-Sep-20	LW/KP	0.0025	0.086	NA	0.01		14:10	14:40	N/A	FH950		1 m ds of stg, fines
B-01	20-Oct-20	LW,DJ	0.0006775	0.088	N/a	0.025		12:56	13:36	N/a	FH950		0.5 m ds of stg, fines
B-01	21-Jan-21	KP	0.0019	0.458	N/A	0.31	0.414	10:32	0:00		FT		Staff gauge gone, reestablished staff gauge from 8:30-9:30, screwed to plate and zap strapped, will need surveying, height at no flow 0.200 , height of water from substrate 0.33, height of staff gauge at substrate 0.120. Control 2 m down from stg. Fines. Water levels much higher, very stagnant, possible beaver jams DS.
B-02	21-May-20	LW	0.0128	0.244		0.210	0.134						Zero flow depth estimated in May
B-02	22-Jul-20	LW/NL	0.0089	0.236	N/A	0.19		11:57	12:45	9.86	FT		Control 2 m down from stg. Gravel.
B-02	18-Sep-20	KP	0.010907	0.252	NA	0.22		12:40	13:07	N/A			1m ds of stg. gravel/ LWD. STG knocked over and bent, does not appear to be vandalism, logger also fell over. Reinstalled on sept 18/2020. Depth from top of pvc to water surface: 0.688 m. FH950
B-02	21-Jan-21	KP	0.0213	0.258	N/A	0.17	0.596	14:48	9:07		FT		Control 2 m down from stg. Gravel.
D-01	25-May-20	LW	0.2844	0.188	0.190	0.180							Zero flow depth estimated in April
D-01	23-Jun-20	LW	0.0717	0.110		0.095		11:52	12:30	7.5			Control: 1m downstream from Stg, gravel/cobble
D-01	20-Jul-20	LW/NL	0.0622	0.080	N/A	0.085		11:06	12:05	8.7	FT		Control 0.5 m down fro staff gauge. Cobble
D-01	13-Aug-20	KP/LW	0.043308	0.120	N/A	0.1		9:49	10:33	NA	FH950		1m down from stg. Gravel
D-01	17-Sep-20	LW/KP	0.05316	0.112	NA	0.08		16:25	17:01	N/A	FH950		1 m DS of STG, gravel
D-01	19-Oct-20	NL	0.0929	0.146	0.146	0.13		12:24	13:14	5.97	FT2		5m ds Of culvert. 90% gravel, 5% cobble, 5% fines. time was
D-01	20-Jan-21	KP	0.1181	0.256	N/A	0.135	0.346	8:54	2:52		FT		Control 0.3 m down fro staff gauge. Gravel; start time incorrect for FT data
D-01 culvert inlet	25-May-20	LW		0.346	0.348	0.280							Zero flow depth estimated in April
D-01 culvert inlet	23-Jun-20	LW		0.234		0.2							
D-01 culvert inlet	20-Jul-20	LW/NL		0.222	N/A	0.17		10:52					
D-01 culvert inlet	13-Aug-20	KP/LW		0.212	NA	0.18		9:44	NA	NA			NA
D-01 culvert inlet	17-Sep-20	LW/KP	/	0.214	N/A	0.17		NA	NA	N/A	NA		NA
D-01 culvert inlet	19-Oct-20	NL	NA	0.250	0.25	0.16		10:49	12:06	N/A			N/a
D-01 culvert inlet	20-Jan-21	KP		0.258	N/A	0.21	0.328	NA	NA	NA			
D-02	25-May-20	LW	0.0807	0.440	0.436	0.300							Zero flow depth estimated in April
D-02	22-Jun-20	LW	0.0428	0.392		0.25							
D-02	20-Jul-20	LW /NL	0.0334	0.390	N/A	0.19		13:04	13:49	8.95	FT		Control 2 m down from staff gauge. gravel
D-02	17-Sep-20	LW/KP	0.037236	0.382	N/A	0.24		15:25	15:48	N/A	FH950		1 m DS of STG, gravel
D-02	20-Jan-21	KP	0.0219	0.398	N/A	0.3	0.393	9:57	7:55		FT		Control 1.5 m down from staff gauge. gravel/fines
D-03	25-May-20	LW	0.0091	0.178	0.182	0.100	0.045						Zero flow depth estimated in May
D-03	21-Jul-20	LW/NL	0.0007	0.154	N/A	0.035		12:09	12:38	N/A	FH950		Control 2m ds from staff gauge gravel . Use Fh950
D-03	17-Sep-20	LW/KP	0.001115	0.112	NA	0.06		13:50	14:10	N/A	FH950		4 m DS of STG, gravel
D-03	20-Jan-21	KP	0.0020	0.078	N/A	0.07	0.544	13:36	21:36		FT		Control 2m ds from staff gauge. gravel
D-04	25-May-20	LW	0.0244	0.268	0.240	0.210	0.028						Zero flow depth estimated in May
D-04	21-Jul-20	LW/NL	0.0010	0.162	N/A	0.075		15:39	16:04	N/A	FH950		Control 2.5mdownfrom stg. Gravel
D-04	17-Sep-20	LW/KP	0.00113	0.178	NA	0.16		12:30	13:05	N/A	FH950		2.5 m DS of STG, gravel

Sampling Details			Flow										
Site	Sample Date (d/mmm/yy)	Field Staff	Total Discharge (m3/sec)	Staff gauge Height (m)	Staff gauge height post (if raining)	Rod depth at staff gauge (m)	Staff gauge height at zero flow (m)	Start Time	End Time	Uncertainty (%)	Machine	Corrected Gauge Height	Comments/Control
D-04	20-Jan-21	KP	0.0025	0.162	N/A	0.17	0.473	11:54	21:07		FT		Control 2.5m down from stg. Gravel
F-01	22-May-20	LW	0.0216	0.716		0.665	0.146						Zero flow depth estimated in May
F-01	23-Jun-20	LW	0.0154	0.430		0.31		18:00	18:34	9.87			Control: 3 m downstream from Stg, gravel/organics
F-01	23-Jul-20	LW/NL	0.0084	0.284	N/A	0.1		9:46	10:37	8.32	FT		Control 3 m down from stg. Fines/gravel
F-01	14-Aug-20	LW	0.00374	0.306	NA	0.25		10:05	10:38	NA	FH950		2.5m downstream from stg, gravel
F-01	18-Sep-20	KP	0.00313	0.298	NA	0.25		10:45	11:09	N/A	FH950		2.5 m DS of STG, gravel
F-01	21-Oct-20	NL	0.0271	0.568	N/a	0.5		9:16	9:50	8.79	FT		3m ds of sg, gravel
F-01	22-Jan-21	KP	0.0413	0.570	N/A	0.51	0.346	8:45	4:19		FT		Control 3 m down from stg. Fines/gravel. Control very difficult to see/determine, water levels are very high at stg
F-02B	22-May-20	LW	0.1060	0.634		0.325	0.334						Zero flow depth estimated in May
F-02B	23-Jun-20	LW	0.0672	0.682	-	0.35		19:14	19:49	10.14			difficult to see control, fines.
F-02B	23-Jul-20	LW/NL	0.0314	0.750	N/A	0.43		17:53	18:32	8.4	FT		Control 10 m down from stg. Organics
F-02B	14-Aug-20	LW	0.0092	0.738	NA	0.415		13:05	13:39	10.12	FT2		5m downtreamnfrom stg. Fines
F-02B	18-Sep-20	KP	-0.000324	0.518	NA	0.22		15:10	15:40	N/A	FH950		1 m ds from stg, fines (beaver dam). Newly constructed
F-02B	21-Oct-20	NL	0.1676	0.888	N/a	0.4		11:44	12:27	4.51	FT		5m ds sg, fines (beaver dam), dams 1m from sg are no loner present , dampresent at sg
F-02B	22-Jan-21	KP	0.2588	0.912	N/A	0.44	0.409	10:22	14:24		FT		Control 10 m down from stg. Organics. Control is beaver dam. Water levels very high, stg almost submerged. Site selection not the best, too deep in other areas. Second staff gauge installed upstream in front of cement culvert.
F-04	22-May-20	LW	0.2422	0.368		0.430	0.000						Zero flow depth estimated in May
F-04	23-Jul-20	LW/NL	0.0768	0.298	N/A	0.21		16:17	16:58	7.52	FT		Control 10m down from st. Gravel
F-04	18-Sep-20	KP	0.010822	0.228	NA	0.18		16:52	17:30	NA			3m DS of STG, gravel
F-04	22-Jan-21	KP	0.5059	0.750	N/A	0.72	0.474	11:55	11:45		FT		Control 10 m down from stg. Gravel. Water levels very high, difficult to determine control
H-01	21-May-20	LW	0.0038	0.102		0.060							Zero flow depth estimated in April
H-01	23-Jun-20	LW	0.0038	0.080		0.05		14:25	15:06	8.85			Control: 1m downstream from Stg, gravel/cobble
H-01	22-Jul-20	LW/NL	0.0035	0.100	N/A	0.05		19:29	20:02	13.8	FT		control 1 m down from stg. gravel
H-01	11-Aug-20	KP/LW	0.0031	0.106	N/A	0.06		17:10	17:54	9.09	FT2		Control at stg, cobble
H-01	17-Sep-20	LW/KP	0.001926	0.102	NA	0.04		10:25	11:00	N/A	FH950		1 m ds from stg, gravel
H-01	20-Oct-20	NL/LW/DJ	0.004324	0.088	N/A	0.04		14:13	14:46	N/A	FH950		At sg, gravel
H-01	21-Jan-21	KP	0.0056	0.106	N/A	0.055	0.494	12:19	4:19		FT		control 1 m down from stg. gravel
H-02	21-May-20	LW	0.0519	0.656		0.390							Zero flow depth estimated in April
H-02	23-Jun-20	LW	0.0444	0.654		0.39		9:35	10:10	5.35			Control: 2m downstream from Stg, gravel/cobble
H-02	22-Jul-20	LW/NL	0.0320	0.652	N/A	0.3		9:58	10:53	14.6	FT		Control 3 m down from stg. Gravel
H-02	11-Aug-20	LW/KP	0.0361	0.650	N/A	0.35		11:31	12:41	5.16	FT2		1m downstream from stg, gravel
H-02	16-Sep-20	LW/KP	0.036924	0.720	NA	0.56		9:50	10:33	N/A	FH950,		9 m DS of STG , gravel, pool around staff gauge partially infilled, lots of sediment accumulated
H-02	20-Oct-20	LW	0.0353	0.684	N/a	0.36		10:05	10:47	4.69	FT2		1.5 m ds from stg, gravel
H-02	21-Jan-21	KP	0.0583	0.696	N/A	0.435	0.547	15:38	14:38		FT		Control 3 m down from stg. Gravel/fines. Lots of fines accumulated
H-03	21-May-20	LW	0.0084	0.228		0.205							Zero flow depth estimated in April
H-03	23-Jun-20	LW	0.0128	0.230		0.21		13:25	14:06	6.92			Control: 3 m downstream from Stg, gravel/cobble
H-03	22-Jul-20	LW/NL	0.0072	0.228	N/A	0.21		18:21	19:04	6.38	FT		Control 4 m down from stg. Gravel/cobble
H-03	11-Aug-20	LW/KP	0.0071	0.224	N/A	0.19		15:27	16:08	4.86	FT2		6 m downstream, cobble
H-03	16-Sep-20	LW/KP	0.015408	0.152	NA	0.05		15:40	16:10	N/A			8 m DS Of STG, cobble. Lots of new sand/gravel accumulation

Sampling Details			Flow										
Site	Sample Date (d/mmm/yy)	Field Staff	Total Discharge (m3/sec)	Staff gauge Height (m)	Staff gauge height post (if raining)	Rod depth at staff gauge (m)	Staff gauge height at zero flow (m)	Start Time	End Time	Uncertainty (%)	Machine	Corrected Gauge Height	Comments/Control
H-03	20-Oct-20	NL	0.002584	0.128	N/a	0.06		15:00	15:46	N/a	FH950		3 m ds of stg, gravel
H-03	21-Jan-21	KP	0.0079	0.150	N/A	0.09	0.526	13:10	18:14		FT		Control 4 m down from stg. Gravel/cobble
W-01	21-May-20	LW	0.0423	0.126		0.280							Zero flow depth estimated in April
W-01	23-Jun-20	LW	0.0353	0.100		0.24		17:00	17:30	2.94			Control: 3 m downstream from Stg, fines. Very very light rain
W-01	22-Jul-20	LW/NL	0.0314	0.102	N/A	0.22		15:47	17:26	2.49	FT		Control at stg. Fines
W-01	12-Aug-20	KP/LW	0.0303	0.104	N/A	0.23		17:19	17:59	2.5	FT2		3m downstrea from stg, fines
W-01	16-Sep-20	LW/KP	0.024056	0.124	NA	0.26		12:55	13:22	N/A	FH950		3 m DS Of stg, fine and gravel
W-01	20-Oct-20	NL	0.0445	0.172	N/a	0.22		12:06	12:46	3.15	FT2		2 m ds Of staff gauge. Gravel
W-01	20-Jan-21	KP	0.0587	0.160	N/A	0.26	0.626	15:33	8:38		FT		Control 1.5 m down stg. Fines/gravel
WT-01	22-May-20	LW	0.0201	0.408	NA	0.320	0.075						Zero flow depth estimated in May. Juvenile salmonids observed in channel
WT-01	22-Jun-20	LW	0.0078	0.350		0.26							
WT-01	23-Jul-20	LW/NL	0.0001	0.150	N/A	0.9		11:50	12:35	N/A	FH950		Control 1 m down from sg. Organics
WT-01	18-Sep-20	LW/KP	NA	NA	NA	NA		NA	NA	NA			3m DS of STG, gravel. Channel dry, could not sample, fish mortality
WT-01	22-Jan-21	KP	N/A	N/A	N/A	N/A	N/A	N/A	N/A		FT		Landowner spraying field, did not want anyone on the property. Skipped site this month.

APPENDIX B

Horn Creek Flow Monitoring Site Event Log

Horn Creek flow monitoring site event log

Item	Date	Decription	Notes
1	2011-09-22	Voltage & flow in Historian	Q=0.00654 * (H3 - 548.5)^2.106; where Q in L/s, H3 in mm
2	Apr-13	Flow available to Flowworks	
3	2013-07-22	Level in Historian	
4	2014-01-09	Flow Calculation clarified	Q=0.00654 * (H3 - 427.85)^2.106; where Q in L/s, H3 in mm
5	2014-04-15	Flow sensor downstream removed	
6	Apr-14	Flow sensor relocated	Better location to improve flow accuracy
7	2014-05-22	Flow Calculation revised	Q=0.13 * (level + 0.89)^13.94; where Q in m^3/s, level in m
8	2014-05-26	Level available to Flowworks	
9	2014-10-20	Heavy rain damaged flow sensor	Flow sensor to be rebuilt
10	2014-11-07	flow sensor rebuilt	
11	2015-05-06	Flow Calculation revised	Q=(17.71 * (Raw level + 0.413 - 0.283)^4.22) * 1000; where Q=L/s, level/offset in m
12	2015-06-12	Flow Calculation revised	Q=(17.71 * (Raw level + 0.419 - 0.283)^4.22) * 1000; where Q=L/s, level/offset in m
13	2015-08-29	Windstorm damaged the flow sensor	Flow sensor to be rebuilt
14	2015-11-23	Flow sensor restored	
15	2015-12-18	Battery failed intermittently	Loss level and flow data intermittently
16	2016-01-20	Hydro power connected to flow sensor	
17	2017-02-28	Flow Calculation revised	Q=16.35 * (Raw level + 0.45 - 0.450) ^ 2.14 * 1000; where Q=L/s, level/offset in m
18	2/29/2017	Flow Calculation revised for offset	Q=16.35 * (Raw level + 0.36 - 0.450) ^ 2.14 * 1000; where Q=L/s, level/offset in m
19	2017-03-14	Flow data corrected in Historian	Flow data in Historian between Aug 26, 2014 and May 6, 2015 were re-populated by the preliminary flow from Flowworks which was based on Q=16.35 * (Raw level+offset+0.45) with various offsets
20	2017-05-12	Flow Calculation revised for offset	Q=16.35 * (Raw level + 0.356 - 0.450) ^ 2.14 * 1000; where Q=L/s, level/offset in m
21	2017-07-18	Flow Calculation revised for offset	Q=16.35 * (Raw level + 0.36 - 0.450) ^ 2.14 * 1000; where Q=L/s, level/offset in m
22	2017-09-05	Flow Calculation revised for offset	Q=16.35 * (Raw level + 0.419 - 0.450) ^ 2.14 * 1000; where Q=L/s, level/offset in m
23	2017-09-22	Flow Calculation revised for offset	Q=16.35 * (Raw level + 0.364 - 0.450) ^ 2.14 * 1000; where Q=L/s, level/offset in m
24	2017-11-17	Level Sensor Failed	Level Sensor Failed, readings became erratic
25	2017-12-27	Ice Storm, Power Lost. Flow Calc initialized to offset of 0.45m	Q=16.35 * (Raw level + 0.45 - 0.450) ^ 2.14 * 1000; where Q=L/s, level/offset in m
26	2018-04-25	New Level Sensor Installed	
27	2018-05-01	Flow Calculation revised for offset	Q=16.35 * (Raw level + 0.36 - 0.450) ^ 2.14 * 1000; where Q=L/s, level/offset in m
28	2018-08-16	Flow formula changed to provide more accurate low flow calculation	For h<0.65, Q=20.53 * (h - 0.47) ^ 2.53; For h>=0.65, Q=78.89 * (h - 0.31) ^ 4.81; where h=Raw level + **0.349**, Q=L/s, h=Raw level + KWL offset in meters
29	2019-03-22	KWL Offset Updated	New offset = 0.384m.
30	2019-05-15	KWL Cleaned Sediment and Debris	Cleaned around sensor. Caused sensor reading to drop by 4cm. Flow didn't change, so offset will be updated at a later date

Horn Creek flow monitoring site event log

Item	Date	Decription	Notes
31	2019-05-29	KWL Offset Updated	New offset = 0.436m
32	2019-06-07	Storm even impacted sensor	Sensor buried under large amount of sediment. Stilling well full of sediment.
33	2019-06-11	Sensor relocated	Due to storm event 6/7/2019, to facilitate cleaning KWL had to uninstall and reinstall this part of the site. Stilling well reinstalled slightly angled downsteam and closer to the bank.
34	2019-06-17	Flow formula changed, offset updated	For h<0.65, Q=6.23 * (h - 0.5) ^ 2.2 For h>0.65, Q=78.89 * (h - 0.31) ^ 4.81 Where h=Raw Level + KWL Offset in Meters. New offset = 0.4594m
35	2019-07-10	Storm event	
36	2019-07-25	Sensor relocated closer to the water surface to mitigate sediment issues.	
37	2019-07-31	KWL Offset Updated, Flow formula changed	New offset = 0.601m. Resulted in higher than actual flows, so KWL shifted the stage elevation for high flow calculation. For h<0.73, Q=6.23 * (h - 0.54) ^ 2.2 For h>0.73. Q=78.89 * (h - 0.31) ^ 4.81
38	2019-12-02	KWL Offset Updated	New offset = 0.580m.
39	2019-12-11	KWL Offset Updated	Offset updated to 0.564m first, then KWL corrected offset and Offset updated to 0.581m
40	2020-12-08	Calculation changed	Q=16.16(A-0.641)^1.75
41	2021-07-21	KWL Offset Updated	Offset updated from 0.601m to 0.670m

Details about the Horn Creek Data Set between the following dates as provided by KWL:

Nov 22, 2019 – Aug 21, 2020

- Rating curve had 2 equations an low flow and high flow curve
- 0.650 m was the base flow stage threshold for when the low flow curve would transition to the high flow curve. After review of the stage for base flows for this period Aaron Thompson has modified the base flow stage threshold to be 0.665m. This was done to more accurately reflect that the base flow stage for this period was 0.65-0.66 m rather than the previously determined 0.649m. Base flow for this period are no longer subject to the jump documented below:
    - 0.649 m in stage would show approximately 45 l/s which would be fairly accurate
    - 0.651 m in stage would show approximately 450 l/s which would not be accurate
        - The high flow section of the curve in this equation is not as well developed as the low flow curve for the following reasons:
            - Primary focus was on low flows during this and previous time periods
            - Moving streambed causing erosion and/or sedimentation over numerous events creating new baseflow stages which cause the high flow rating curve to activate before it should.
        - For large periods of time during Nov 2019 – Aug 2020, stage was reading approximately 0.653 m which gives a much higher discharge than what is was actually happening on site. This has been adjusted so the base flows now are more accurate than previous. The FlowWorks Preliminary Stage and Discharge channels now reflect this change and should be used for data export.
        - Peak flows have now been restricted to a Maximum of 2600 L/s to reflect the uncertainty in the high flow rating curve and that the creek at higher water levels breaks it banks. A new rating curve under development will address the issues with the uncertainty of high flows of the existing high flow rating curve.

August 19, 2020

- **Flow measurement: discharge = 31 l/**s
- Site seemed stable

August 21, 2020

- Storm event occurred
- Heavy sedimentation impacting SG
    - Shift in base flow stage went from a stage of 0.647 m to a new stage of 0.730 m. An 8.3 cm increase.
- New rating curve equation was implemented taking this shift into account.

August 25

- Site visit due to change in stage on FlowWorks
- Observations made on site visit were:
    - Very unstable streambed

    - Recent storm event flooded banks causing large amounts of erosion
    - Large amounts of debris (large tree limbs, etc.) present in creek
    - Sand bars being created, creating pooling in all sections of the site (upstream, at the site and downstream of the site)
    - Stream still active with sediment transport even at baseflows which is uncommon for this site
- Rating curve between August 22, 2020 and August 25, 2020 shows that the discharge went below 25 l/s which is not accurate for the following reasons:
    - Flow measurements were completed on **August 19th and 31st** which show discharge of approximately 30 l/s
    - After cleaning the pressure transducer area from debris on **August 25th**, the sensor value better matched the staff gauge (water level increased 2 cm at sensor after cleaning), bringing the discharge value on FlowWorks from 8 l/s to 30 l/s

August 31

- **Flow measurement x2: discharge =**
    - **Flow 1: 28 l/s**
    - **Flow 2: 29 l/s**

October 1, 2020

- New rating curve equation due to recent rainfall events causing a shift in base flow stage.
- Horn Creek has become more stable than was in August but is still actively responding to shifting sediment during rainfall events

December 1, 2020

- New rating curve equation due to recent rainfall events causing a shift in base flow stage.
- Horn Creek appears to be mostly stable now with minimal shifting

APPENDIX C

Year 10 Water Quality Data

Parameter	Units	Lowest Detection Limit	B-01	B-01	B-01	B-01	B-01	B-01	B-01	B-01
			25-May-2020	24-Jun-2020	22-Jul-2020	12-Aug-2020	29-Sep-2020	20-Oct-2020	20-Nov-2020	17-Dec-2020
Time Sampled			13:32	13:26	13:15	09:49	18:20	12:33	11:15	11:26
pH	pH units	0.10	6.93	7.20	7.15	7.01	7.40	7.16	7.01	6.98
ammonia, total (as N)	mg/L	0.0050	0.290	0.171	0.0382	0.0472	0.0977	0.112	0.0965	0.0207
phosphorus, total	mg/L	0.0020	0.0608	0.0322	0.0166	0.0187	0.0932	0.0547	0.0344	0.0085
nitrate (as N)	mg/L	0.0050	0.220	1.50	2.41	2.37	0.139	0.639	0.401	2.29
nitrite (as N)	mg/L	0.0010	0.0187	0.0338	0.0185	0.0087	0.0025	0.0048	0.0075	<0.0010
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	11.0	69.8	77.5	75.7	47.6	56.3	27.2	112
fluoride	mg/L	0.020	0.033	0.036	0.035	0.034	0.171	0.064	0.023	0.067
aluminum, total	µg/L	3.0	298	46	18.7	20.8	30.7	100.0	110	131
antimony, total	µg/L	0.10	0.77	0.12	0.12	0.18	0.26	0.37	0.31	0.18
arsenic, total	µg/L	0.10	0.68	0.45	0.25	0.34	9.06	3.72	0.72	0.51
barium, total	µg/L	0.10	10.6	23.7	19.8	20.5	23.4	29.3	16.5	12.4
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	<10	14	14	16	144	33	<10	<10
cadmium, total	µg/L	0.0050	0.0228	0.0178	0.022	0.0244	0.0171	0.0561	0.0268	0.019
chromium, total	µg/L	0.10	1.99	1.09	0.92	1.23	0.38	1.91	0.99	0.94
cobalt, total	µg/L	0.10	0.25	0.33	0.14	0.14	0.13	0.98	0.36	0.27
copper, total	µg/L	0.50	7.76	1.42	0.57	0.70	2.09	4.54	4.17	2.64
iron, total	µg/L	10	574	844	272	233	196	900	914	504
lead, total	µg/L	0.050	1.56	0.84	0.268	0.263	0.880	2.850	1.17	0.918
lithium, total	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
manganese, total	µg/L	0.10	30.9	171	67.5	73.2	25.4	338.0	132	65.4
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0051
molybdenum, total	µg/L	0.050	0.428	0.287	0.176	0.249	5.910	1.08	0.29	0.233
nickel, total	µg/L	0.50	0.99	1.40	0.860	0.89	<0.50	1.94	1.31	0.86
selenium, total	µg/L	0.050	0.071	0.078	0.106	0.053	<0.050	0.087	<0.050	<0.050
silicon, total	µg/L	100	1390	10000	10900	10200	7460	6670	3200	2510
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
strontium, total	µg/L	0.20	25.3	183	228	224	76.1	143	68	53.8
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	0.24	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	16.8	1.9	0.860	0.75	1.07	3.84	5.09	4.16
uranium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	0.040	0.016	<0.010	<0.010
vanadium, total	µg/L	0.50	1.34	0.76	0.580	0.92	1.22	2.06	0.95	1.01
zinc, total	µg/L	3.0	29.3	7.5	5.3	11.2	10.0	29.4	32.8	26.8
zirconium, total	µg/L	0.20	<0.60	<0.20	<0.20	<0.20	<0.20	0.33	0.23	0.21
calcium, total	mg/L	0.050	3.47	19.2	21.0	21.5	11.2	14.9	8.12	6.50
magnesium, total	mg/L	0.0050	0.56	5.29	6.11	5.37	4.75	4.65	1.68	1.24
potassium, total	mg/L	0.050	0.603	1.18	1.06	1.17	5.49	2.32	0.842	0.598
sodium, total	mg/L	0.050	3.73	16.6	14.5	16.4	60.6	23.1	8.53	7.46
sulfur, total	mg/L	0.50	0.55	2.37	3.40	3.97	7.05	1.14	0.83	0.85
pH	pH units	--	6.58	6.43	6.35	6.13	7.38	6.49	6.42	6.16
Temperature	ºC	--	15.9	13.9	14.5	13.2	12.6	11.3	8.6	7.7
Specific Conductance	µS/cm	--	45.0	239	251	259	345	216	102	98.7
Dissolved Oxygen	%	--	7.98	3.99	5.36	5.78	6.99	3.86	7.56	7.48
Turbidity	NTU	--	11.74	2.82	1.71	1.50	1.03	2.57	2.80	4.09

Parameter	Units	Lowest Detection Limit	B-01 Dup	B-01	B-01	B-01	B-01	B-02	B-02	B-02
			17-Dec-2020	20-Jan-2021	19-Feb-2021	17-Mar-2021	15-Apr-2021	25-May-2020	24-Jun-2020	22-Jul-2020
Time Sampled			11:26	12:40	11:40	13:55	15:05	12:54	12:02	11:16
pH	pH units	0.10	7.57	7.38	7.23	7.56	7.65	7.38	7.87	7.98
ammonia, total (as N)	mg/L	0.0050	0.039	0.13	0.14	0.075	0.083	0.158	0.0323	0.0297
phosphorus, total	mg/L	0.0020	0.0264	0.0073	0.016	0.011	0.016	0.0498	0.0143	0.0132
nitrate (as N)	mg/L	0.0050	0.730	2.07	1.75	2.27	1.88	0.475	1.75	1.75
nitrite (as N)	mg/L	0.0010	0.0067	0.0126	0.0082	0.0094	0.0163	0.0176	0.0084	0.0069
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	45.3	73.7	62.3	72.4	75.1	26.3	106	112
fluoride	mg/L	0.020	0.025	<0.050	<0.050	<0.050	<0.050	0.023	0.033	0.036
aluminum, total	µg/L	3.0	125	84.5	72.1	35.1	45.3	279	46	48.2
antimony, total	µg/L	0.10	0.18	<0.50	<0.50	<0.50	<0.50	0.25	<0.10	<0.10
arsenic, total	µg/L	0.10	0.50	0.41	0.31	0.26	0.41	0.63	0.66	0.79
barium, total	µg/L	0.10	12.5	39.0	35.1	27.7	29.4	9.84	16.5	16.8
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<1.0	<1.0	<1.0	<1.0	<0.050	<0.050	<0.050
boron, total	µg/L	10	<10	<50	<50	<50	<50	<10	11	11
cadmium, total	µg/L	0.0050	0.024	0.026	0.036	0.017	0.024	0.0196	0.0071	0.006
chromium, total	µg/L	0.10	0.96	1.5	1.3	1.6	1.2	1.05	0.53	0.65
cobalt, total	µg/L	0.10	0.25	0.37	0.47	0.22	0.29	0.29	0.10	<0.10
copper, total	µg/L	0.50	2.61	1.86	1.85	0.96	1.56	3.68	0.52	<0.50
iron, total	µg/L	10	495	850	1140	557	624	577	431	283
lead, total	µg/L	0.050	0.912	0.8	0.44	0.57	0.86	0.873	0.07	0.058
lithium, total	µg/L	1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<1.0	1.2	1.2
manganese, total	µg/L	0.10	64.3	121	137	97.2	106	56.0	119	116
mercury, total	µg/L	0.0050	<0.0050	<0.0019	<0.0019	<0.0019	<0.0019	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	0.222	<1.0	<1.0	<1.0	<1.0	0.202	0.442	0.408
nickel, total	µg/L	0.50	0.87	1.5	1.3	1.3	1.5	1.00	<0.50	<0.50
selenium, total	µg/L	0.050	<0.050	<0.10	<0.10	<0.10	<0.10	0.100	0.201	0.286
silicon, total	µg/L	100	2540	8130	6960	9240	8530	2730	10800	11100
silver, total	µg/L	0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.010	<0.010	<0.010
strontium, total	µg/L	0.20	53.0	232	185	207	218	44.0	162	164
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<5.0	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	4.10	<5.0	<5.0	<5.0	<5.0	9.42	1.8	2.050
uranium, total	µg/L	0.010	<0.010	<0.10	<0.10	<0.10	<0.10	0.025	0.041	0.049
vanadium, total	µg/L	0.50	0.99	<5.0	<5.0	<5.0	<5.0	1.67	0.89	0.980
zinc, total	µg/L	3.0	26.3	14	24.6	9.6	12	11.2	8.6	<3.0
zirconium, total	µg/L	0.20	0.20	0.23	0.17	0.12	<0.10	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	6.60	21.8	18.6	21.2	21.5	7.54	28.8	30.7
magnesium, total	mg/L	0.0050	1.22	4.64	3.84	4.76	5.17	1.82	8.41	8.66
potassium, total	mg/L	0.050	0.596	1.41	1.4	1.45	1.60	0.712	1.51	1.62
sodium, total	mg/L	0.050	7.42	19.4	67.3	22.4	22.3	3.56	9.81	9.89
sulfur, total	mg/L	0.50	0.81	3.8	3.6	3.6	4.1	0.99	4.84	5.41
pH	pH units	--	6.16	6.46	6.5	6.21	6.41	7.22	7.71	7.81
Temperature	ºC	--	7.7	8.2	6.0	8.5	11.4	14.9	13.7	14.4
Specific Conductance	µS/cm	--	99.1	271	503	302	275	75.0	266	279
Dissolved Oxygen	%	--	7.47	8.35	8.48	6.08	6.55	9.99	8.10	9.50
Turbidity	NTU	--	3.54	3.37	11.17	2.58	2.76	11.62	2.08	1.59

Parameter	Units	Lowest Detection Limit	B-02	B-02	B-02	B-02	B-02	B-02	B-02 DUP	B-02
			11-Aug-2020	18-Sep-2020	20-Oct-2020	20-Nov-2020	17-Dec-2020	20-Jan-2021	20-Jan-2021	19-Feb-2021
Time Sampled			12:04	12:15	09:50	12:27	10:54	14:01	14:01	13:08
pH	pH units	0.10	7.93	8.03	7.92	7.67	7.09	7.54	7.07	7.27
ammonia, total (as N)	mg/L	0.0050	0.0268	0.0204	0.0205	0.0425	0.0847	0.041	0.042	0.071
phosphorus, total	mg/L	0.0020	0.0128	0.021	0.0104	0.0181	0.0355	0.0043	0.0067	0.016
nitrate (as N)	mg/L	0.0050	1.73	1.23	1.27	0.771	0.521	1.71	1.68	1.61
nitrite (as N)	mg/L	0.0010	0.0074	0.0059	0.0042	0.0074	0.0077	0.0077	0.0077	0.0079
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	106	99.1	102	55.3	21.3	91.7	92.3	82.2
fluoride	mg/L	0.020	0.034	0.066	0.036	0.023	<0.020	<0.050	<0.050	<0.050
aluminum, total	µg/L	3.0	37.4	46.8	65.5	169	1290	64.1	68.5	426
antimony, total	µg/L	0.10	<0.10	0.15	0.11	0.19	0.17	<0.50	<0.50	<0.50
arsenic, total	µg/L	0.10	0.73	1.75	1.03	0.63	1.17	0.62	0.62	0.69
barium, total	µg/L	0.10	15.1	16.5	18.5	13.2	19.7	20.0	20.3	22.3
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<1.0	<1.0	<1.0
boron, total	µg/L	10	11	48	12	<10	<10	<50	<50	<50
cadmium, total	µg/L	0.0050	0.0079	0.0078	0.0092	0.0141	0.027	0.014	<0.010	0.02
chromium, total	µg/L	0.10	0.52	0.52	0.60	0.69	2.71	<1.0	<1.0	1.4
cobalt, total	µg/L	0.10	<0.10	<0.10	0.13	0.17	0.79	<0.20	<0.20	0.38
copper, total	µg/L	0.50	<0.50	0.66	0.88	1.60	3.48	0.79	0.78	1.75
iron, total	µg/L	10	278	267	324	499	1710	447	454	928
lead, total	µg/L	0.050	0.052	0.102	0.087	0.201	1.12	<0.20	<0.20	0.30
lithium, total	µg/L	1.0	1.2	1.0	<1.0	<1.0	1.1	<2.0	<2.0	<2.0
manganese, total	µg/L	0.10	102	81.1	108.0	80.5	108	121	121	126
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0061	<0.0019	<0.0019	<0.0019
molybdenum, total	µg/L	0.050	0.413	2.18	0.52	0.32	0.315	<1.0	<1.0	<1.0
nickel, total	µg/L	0.50	<0.50	<0.50	0.62	0.65	2.82	<1.0	<1.0	1.5
selenium, total	µg/L	0.050	0.175	0.181	0.153	0.084	0.090	0.14	0.14	0.14
silicon, total	µg/L	100	11100	10400	9660	5470	7080	9890	10000	9900
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020
strontium, total	µg/L	0.20	160	142	152	82	78.6	161	161	136
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<5.0	<5.0	<5.0
titanium, total	µg/L	0.30	1.65	2.11	<0.30	8.04	60.3	<5.0	<5.0	20.9
uranium, total	µg/L	0.010	0.049	0.056	0.047	0.018	0.052	<0.10	<0.10	<0.10
vanadium, total	µg/L	0.50	0.84	1.27	1.03	1.01	4.08	<5.0	<5.0	<5.0
zinc, total	µg/L	3.0	<3.0	<3.0	<3.0	7.2	11.3	6.2	6.3	9.7
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	0.56	<0.10	<0.10	0.2
calcium, total	mg/L	0.050	28.8	26.5	26.8	15.4	14.7	25.7	26	22.8
magnesium, total	mg/L	0.0050	8.26	7.98	8.43	4.12	3.98	6.68	6.67	6.13
potassium, total	mg/L	0.050	1.60	2.70	1.88	1.02	1.08	1.40	1.40	1.34
sodium, total	mg/L	0.050	9.40	25.2	10.4	6.16	6.12	11.3	11.2	30.0
sulfur, total	mg/L	0.50	5.10	5.77	5.13	2.70	2.45	4.0	4.7	4.7
pH	pH units	--	7.83	7.84	7.66	7.39	6.97	7.50	7.50	7.51
Temperature	ºC	--	13.8	14.0	10.7	8.8	7.9	8.4	8.4	7.2
Specific Conductance	µS/cm	--	289	285	250	151	142	249	249	323
Dissolved Oxygen	%	--	10.21	8.91	10.47	11.14	10.72	11.84	12.03	11.91
Turbidity	NTU	--	1.27	1.68	2.14	3.91	11.2	2.65	2.53	18.7

Parameter	Units	Lowest Detection Limit	B-02	B-02	D-01	D-01	D-01	D-01	D-01	D-01 Dup
			17-Mar-2021	15-Apr-2021	25-May-2020	24-Jun-2020	21-Jul-2020	13-Aug-2020	21-Sep-2020	21-Sep-2020
Time Sampled			13:12	14:28	12:19	09:00	09:08	09:13	13:46	13:46
pH	pH units	0.10	7.86	8.01	7.74	7.84	7.97	7.93	8.06	8.06
ammonia, total (as N)	mg/L	0.0050	0.028	0.023	0.0522	0.0142	0.0166	0.0152	0.013	0.0164
phosphorus, total	mg/L	0.0020	0.0073	0.0096	0.0453	0.0178	0.0165	0.0176	0.0214	0.0193
nitrate (as N)	mg/L	0.0050	1.72	1.68	0.489	0.887	0.879	0.872	0.844	0.816
nitrite (as N)	mg/L	0.0010	0.0071	0.0086	0.0099	0.0034	0.0041	0.0047	0.0025	0.0025
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	97.8	105	57.1	108	110	120	122	115
fluoride	mg/L	0.020	<0.050	<0.050	0.030	0.034	0.042	0.031	0.031	0.033
aluminum, total	µg/L	3.0	94.0	72.8	144	26	34.5	21.2	32.1	33.8
antimony, total	µg/L	0.10	<0.50	<0.50	0.12	<0.10	<0.10	<0.10	<0.10	<0.10
arsenic, total	µg/L	0.10	0.64	0.65	1.70	1.18	1.46	1.42	1.68	1.60
barium, total	µg/L	0.10	17.9	17.1	13.5	14.4	13.9	13.9	16.0	13.9
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<1.0	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	<50	<50	12	19	22	25	20	19
cadmium, total	µg/L	0.0050	0.012	<0.010	0.0139	<0.0050	<0.0050	<0.0050	0.0054	<0.0050
chromium, total	µg/L	0.10	<1.0	<1.0	0.66	0.39	0.51	0.36	0.45	0.47
cobalt, total	µg/L	0.10	<0.20	<0.20	0.28	0.11	<0.10	<0.10	<0.10	<0.10
copper, total	µg/L	0.50	0.64	0.58	1.59	0.57	<0.50	<0.50	<0.50	<0.50
iron, total	µg/L	10	698	474	1080	346	339	314	410	397
lead, total	µg/L	0.050	<0.20	<0.20	0.232	<0.050	<0.050	<0.050	<0.050	<0.050
lithium, total	µg/L	1.0	<2.0	<2.0	1.1	1.4	1.6	1.5	1.9	1.8
manganese, total	µg/L	0.10	155	115	165	101	129	149	151	139
mercury, total	µg/L	0.0050	<0.0019	<0.0019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	<1.0	<1.0	0.307	0.422	0.486	0.469	0.780	0.691
nickel, total	µg/L	0.50	<1.0	<1.0	0.81	0.68	0.820	0.66	0.95	0.71
selenium, total	µg/L	0.050	0.17	0.18	0.141	0.214	0.229	0.311	0.297	0.261
silicon, total	µg/L	100	10300	10600	5350	10200	10500	11100	11900	11000
silver, total	µg/L	0.010	<0.020	<0.020	<0.010	<0.010	<0.010	<0.010	0.012	<0.010
strontium, total	µg/L	0.20	158	171	92.7	156	172	155	170	165
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	5.5	<5.0	5.50	1.1	1.240	0.85	<0.30	1.36
uranium, total	µg/L	0.010	<0.10	<0.10	0.030	0.072	0.090	0.094	0.095	0.091
vanadium, total	µg/L	0.50	<5.0	<5.0	1.08	0.74	1.030	0.58	1.07	1.00
zinc, total	µg/L	3.0	<5.0	<5.0	5.6	17.2	<3.0	<3.0	<3.0	<3.0
zirconium, total	µg/L	0.20	<0.10	<0.10	0.24	<0.20	<0.20	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	27.3	29.1	15.1	28.6	29.3	30.6	31.0	29.9
magnesium, total	mg/L	0.0050	7.20	7.80	4.69	8.91	8.92	10.6	10.8	9.68
potassium, total	mg/L	0.050	1.46	1.60	1.02	1.50	1.54	1.58	1.82	1.68
sodium, total	mg/L	0.050	11.7	11.6	6.82	10.9	10.7	10.7	11.1	9.60
sulfur, total	mg/L	0.50	4.2	4.7	2.14	4.90	5.48	5.56	5.49	5.17
pH	pH units	--	7.24	7.56	7.33	7.41	7.37	7.34	7.60	7.61
Temperature	ºC	--	8.4	12.6	14.0	13.9	14.1	12.1	14.3	14.4
Specific Conductance	µS/cm	--	194	276	149	266	287	300	264	264
Dissolved Oxygen	%	--	11.93	9.82	9.57	9.42	8.61	9.39	9.91	9.89
Turbidity	NTU	--	2.16	2.40	9.35	3.38	2.31	1.64	3.41	3.39

Parameter	Units	Lowest Detection Limit	D-01	D-01	D-01	D-01	D-01	D-01	D-01	D-02
			19-Oct-2020	20-Nov-2020	17-Dec-2020	20-Jan-2021	19-Feb-2021	17-Mar-2021	15-Apr-2021	25-May-2020
Time Sampled			10:42	10:09	08:12	10:31	10:35	10:15	13:03	12:37
pH	pH units	0.10	7.88	7.72	7.19	7.71	6.57	7.95	8.00	7.72
ammonia, total (as N)	mg/L	0.0050	0.0146	0.0349	0.168	<0.015	0.028	<0.015	<0.015	0.0466
phosphorus, total	mg/L	0.0020	0.0172	0.0242	0.0257	<0.0030	0.0088	0.0058	0.0086	0.0369
nitrate (as N)	mg/L	0.0050	1.00	1.41	0.281	1.45	1.19	1.30	1.15	0.465
nitrite (as N)	mg/L	0.0010	0.0021	0.0070	0.0058	0.0056	0.0036	<0.0020	0.0039	0.0069
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	99.4	70.9	22.2	76.5	71.5	79.3	87.8	81.5
fluoride	mg/L	0.020	0.035	0.028	<0.020	<0.050	<0.050	<0.050	<0.050	0.027
aluminum, total	µg/L	3.0	36.8	214	458	51.3	62.1	26.9	34.9	85.1
antimony, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.50	<0.50	<0.50	<0.50	<0.10
arsenic, total	µg/L	0.10	0.90	0.88	0.90	0.59	0.62	0.41	0.57	2.76
barium, total	µg/L	0.10	16.6	19.4	16.3	17.1	16.7	15.3	14.8	12.5
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<1.0	<1.0	<1.0	<1.0	<0.050
boron, total	µg/L	10	20	12	<10	<50	<50	<50	<50	17
cadmium, total	µg/L	0.0050	0.0059	0.0085	0.014	<0.010	<0.010	<0.010	<0.010	0.0117
chromium, total	µg/L	0.10	0.42	0.70	1.10	<1.0	<1.0	<1.0	<1.0	0.58
cobalt, total	µg/L	0.10	<0.10	0.20	0.28	<0.20	<0.20	<0.20	<0.20	0.16
copper, total	µg/L	0.50	0.95	1.54	2.35	0.68	0.89	0.53	0.58	0.86
iron, total	µg/L	10	250	487	750	252	295	165	212	1100
lead, total	µg/L	0.050	<0.050	0.107	0.254	<0.20	<0.20	<0.20	<0.20	0.163
lithium, total	µg/L	1.0	1.2	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	2.0
manganese, total	µg/L	0.10	66.6	58.9	57.9	45.8	54.0	26.9	25.9	211
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0019	<0.0019	<0.0019	<0.0019	<0.0050
molybdenum, total	µg/L	0.050	0.42	0.39	0.305	<1.0	<1.0	<1.0	<1.0	0.403
nickel, total	µg/L	0.50	0.73	0.96	1.16	<1.0	<1.0	<1.0	<1.0	0.78
selenium, total	µg/L	0.050	0.230	0.163	0.082	0.15	0.15	0.18	0.20	0.196
silicon, total	µg/L	100	8770	6240	4450	8310	7570	8150	8450	7840
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.010
strontium, total	µg/L	0.20	134	106	72.5	120	114	124	137	124.0
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<5.0	<5.0	<5.0	<5.0	<0.10
titanium, total	µg/L	0.30	1.37	8.82	18.4	<5.0	<5.0	<5.0	<5.0	3.71
uranium, total	µg/L	0.010	0.070	0.041	0.031	<0.10	<0.10	<0.10	<0.10	0.034
vanadium, total	µg/L	0.50	0.60	1.03	1.39	<5.0	<5.0	<5.0	<5.0	0.92
zinc, total	µg/L	3.0	<3.0	3.5	5.5	<5.0	<5.0	<5.0	<5.0	5.6
zirconium, total	µg/L	0.20	<0.20	<0.20	0.22	<0.10	<0.10	<0.10	<0.10	<0.20
calcium, total	mg/L	0.050	27.4	19.6	12.3	20.5	19.2	21.1	23.3	20.9
magnesium, total	mg/L	0.0050	7.51	5.37	3.30	6.13	5.71	6.48	7.18	7.14
potassium, total	mg/L	0.050	2.10	1.89	1.56	1.57	1.51	1.40	1.63	1.06
sodium, total	mg/L	0.050	11.1	9.84	6.98	10.4	24.6	11.1	11.7	6.81
sulfur, total	mg/L	0.50	6.74	4.97	3.07	5.2	4.9	5.3	5.5	2.81
pH	pH units	--	7.39	7.41	7.05	7.48	7.46	7.20	7.52	7.43
Temperature	ºC	--	11.9	8.6	7.3	7.3	5.0	5.9	12.2	13.3
Specific Conductance	µS/cm	--	136	189	134	208	281	246	228	192
Dissolved Oxygen	%	--	10.03	10.92	10.9	11.99	12.51	12.75	9.97	8.54
Turbidity	NTU	--	1.84	3.50	7.75	2.25	2.42	2.45	1.08	8.89

Parameter	Units	Lowest Detection Limit	D-02	D-02	D-02	D-02	D-02	D-02	D-02	D-02
			24-Jun-2020	21-Jul-2020	13-Aug-2020	21-Sep-2020	19-Oct-2020	20-Nov-2020	17-Dec-2020	20-Jan-2021
Time Sampled			14:52	09:21	10:54	14:25	11:21	09:55	10:07	10:55
pH	pH units	0.10	7.95	7.89	7.93	7.99	7.88	7.66	7.66	7.77
ammonia, total (as N)	mg/L	0.0050	0.0177	0.0281	0.0226	0.0212	0.0205	0.0256	0.0256	<0.015
phosphorus, total	mg/L	0.0020	0.0211	0.0165	0.0155	0.0193	0.0166	0.0162	0.0347	0.021
nitrate (as N)	mg/L	0.0050	0.676	0.670	0.694	0.742	0.726	0.719	0.78	0.925
nitrite (as N)	mg/L	0.0010	0.0038	0.0047	0.0064	0.0034	0.0026	0.0055	0.0037	0.0046
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	119	125	134	128	120	95.2	44.3	106
fluoride	mg/L	0.020	0.026	0.030	0.025	0.027	0.024	0.023	0.025	<0.050
aluminum, total	µg/L	3.0	35	25.4	20.4	53.2	28.1	35.6	216	24.7
antimony, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.50
arsenic, total	µg/L	0.10	2.12	1.94	1.83	2.52	1.65	1.45	1.52	1.20
barium, total	µg/L	0.10	12.5	13.9	13.5	15.8	13.1	11.9	12.6	11.4
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<1.0
boron, total	µg/L	10	22	23	23	21	22	17	14	<50
cadmium, total	µg/L	0.0050	<0.0050	0.006	<0.0050	0.0093	<0.0050	<0.0050	0.0079	<0.010
chromium, total	µg/L	0.10	0.40	0.40	0.29	0.58	0.38	0.40	0.82	<1.0
cobalt, total	µg/L	0.10	<0.10	<0.10	<0.10	0.11	<0.10	<0.10	0.22	<0.20
copper, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.79	<0.50
iron, total	µg/L	10	572	449	518	772	414	405	801	288
lead, total	µg/L	0.050	<0.050	<0.050	<0.050	0.065	<0.050	<0.050	0.138	<0.20
lithium, total	µg/L	1.0	1.8	2.0	1.8	2.2	1.9	1.3	1.2	<2.0
manganese, total	µg/L	0.10	162	221	251	268	174.0	148	154	128
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0019
molybdenum, total	µg/L	0.050	0.443	0.433	0.402	0.420	0.39	0.33	0.304	<1.0
nickel, total	µg/L	0.50	0.72	0.640	0.84	0.99	0.92	0.63	1.00	<1.0
selenium, total	µg/L	0.050	0.230	0.232	0.261	0.268	0.284	0.201	0.211	0.23
silicon, total	µg/L	100	11500	11600	11800	12200	11500	9500	8420	11200
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020
strontium, total	µg/L	0.20	167	187	167	185	151	124	111	145
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<5.0
titanium, total	µg/L	0.30	1.5	0.810	0.78	2.17	1.11	1.48	9.86	<5.0
uranium, total	µg/L	0.010	0.068	0.063	0.069	0.074	0.060	0.039	0.040	<0.10
vanadium, total	µg/L	0.50	0.77	0.890	0.50	1.12	0.55	0.54	1.07	<5.0
zinc, total	µg/L	3.0	7.1	<3.0	<3.0	<3.0	<3.0	<3.0	6.0	<5.0
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.10
calcium, total	mg/L	0.050	30.5	33.8	34.6	33.3	32.2	24.8	22.0	27.7
magnesium, total	mg/L	0.0050	10.5	9.90	11.6	10.9	9.6	8.09	6.94	8.86
potassium, total	mg/L	0.050	1.29	1.37	1.52	1.68	1.68	1.35	1.27	1.39
sodium, total	mg/L	0.050	9.66	9.77	10.7	10.6	9.55	7.80	6.19	8.3
sulfur, total	mg/L	0.50	4.09	4.16	4.42	4.42	4.10	3.46	3.33	3.6
pH	pH units	--	7.41	7.27	7.35	7.41	7.24	7.18	6.79	7.26
Temperature	ºC	--	16.3	13.9	12.9	15.3	11.5	8.3	7.8	7.5
Specific Conductance	µS/cm	--	284	301	314	269	251	228	134	256
Dissolved Oxygen	%	--	7.62	7.59	8.71	8.88	8.18	8.93	6.31	10.59
Turbidity	NTU	--	2.86	2.49	2.51	5.76	1.84	2.51	4.36	2.22

Parameter	Units	Lowest Detection Limit	D-02	D-02	D-02	F-01	F-01 Dup	F-01	F-01	F-01
			19-Feb-2021	17-Mar-2021	15-Apr-2021	25-May-2020	25-May-2020	24-Jun-2020	23-Jul-2020	14-Aug-2020
Time Sampled			10:23	10:31	13:22	14:53	14:53	15:29	09:23	09:37
pH	pH units	0.10	7.45	7.71	8.06	7.57	7.55	7.93	7.93	8.10
ammonia, total (as N)	mg/L	0.0050	0.029	0.25	0.041	0.146	0.143	0.0602	0.0431	0.0212
phosphorus, total	mg/L	0.0020	0.0080	0.069	0.016	0.0452	0.0464	0.0260	0.0280	0.0292
nitrate (as N)	mg/L	0.0050	0.956	0.114	0.692	0.423	0.428	0.788	0.561	0.383
nitrite (as N)	mg/L	0.0010	0.0033	0.0127	0.0054	0.0215	0.0208	0.0138	0.0076	0.0062
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	98.1	80.7	108	37.6	36.8	119	135	121
fluoride	mg/L	0.020	<0.050	<0.050	<0.050	0.029	0.029	0.045	0.049	0.050
aluminum, total	µg/L	3.0	28.1	320	59.2	195	200	40	47.2	50.2
antimony, total	µg/L	0.10	<0.50	<0.50	<0.50	0.30	0.31	0.16	0.14	0.17
arsenic, total	µg/L	0.10	1.22	6.23	2.24	2.61	2.68	1.77	2.03	1.88
barium, total	µg/L	0.10	11.5	26.7	16.0	10.5	10.9	19.5	19.3	17.3
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<1.0	<1.0	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	<50	<50	<50	<10	<10	15	19	16
cadmium, total	µg/L	0.0050	<0.010	0.020	<0.010	0.0117	0.0101	0.0055	<0.0050	0.0054
chromium, total	µg/L	0.10	<1.0	1.2	<1.0	1.56	1.59	0.39	0.27	0.33
cobalt, total	µg/L	0.10	<0.20	0.75	<0.20	0.17	0.18	0.14	0.14	0.14
copper, total	µg/L	0.50	<0.50	1.05	<0.50	3.75	3.87	1.82	1.15	1.30
iron, total	µg/L	10	366	4580	949	619	625	643	507	465
lead, total	µg/L	0.050	<0.20	0.34	<0.20	0.254	0.270	0.05	0.052	<0.050
lithium, total	µg/L	1.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0
manganese, total	µg/L	0.10	141	1750	386	85.6	84.8	160	179	250
mercury, total	µg/L	0.0050	<0.0019	<0.0019	<0.0019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	<1.0	<1.0	<1.0	0.438	0.389	0.682	0.695	0.655
nickel, total	µg/L	0.50	<1.0	1.1	<1.0	0.57	0.61	0.56	0.590	0.58
selenium, total	µg/L	0.050	0.23	0.16	0.23	0.097	0.060	0.127	0.150	0.145
silicon, total	µg/L	100	10900	9720	11000	2330	2430	7370	7390	7650
silver, total	µg/L	0.010	<0.020	<0.020	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
strontium, total	µg/L	0.20	133	101	152	60.8	60.9	184	209	178
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	<5.0	13.9	<5.0	7.52	8.89	1.4	1.770	2.07
uranium, total	µg/L	0.010	<0.10	<0.10	<0.10	0.026	0.027	0.117	0.168	0.141
vanadium, total	µg/L	0.50	<5.0	<5.0	<5.0	1.06	1.11	0.66	0.680	0.64
zinc, total	µg/L	3.0	<5.0	6.5	<5.0	7.0	7.4	17.5	<3.0	<3.0
zirconium, total	µg/L	0.20	<0.10	0.1	<0.10	<0.20	0.22	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	25.4	21.1	27.7	10.5	10.3	31.7	34.6	31.1
magnesium, total	mg/L	0.0050	8.39	6.83	9.32	2.72	2.71	9.65	11.9	10.4
potassium, total	mg/L	0.050	1.32	1.44	1.48	0.901	0.916	1.89	2.09	1.93
sodium, total	mg/L	0.050	10.3	9.7	9.59	5.54	5.45	16.6	17.1	14.4
sulfur, total	mg/L	0.50	4.4	3.3	4.4	1.76	1.85	6.20	5.88	5.33
pH	pH units	--	7.27	6.38	6.93	7.26	--	7.54	7.50	7.61
Temperature	ºC	--	5.6	4.9	13.5	14.7	--	18.0	18.5	16.6
Specific Conductance	µS/cm	--	254	235	258	105		323	357	327
Dissolved Oxygen	%	--	10.74	3.38	7.45	9.22	--	6.45	7.63	8.78
Turbidity	NTU	--	2.25	17.5	4.89	9.41	--	3.76	4.69	2.71

Parameter	Units	Lowest Detection Limit	F-01	F-01	F-01	F-01	F-01	F-01	F-01	F-01
			18-Sep-2020	21-Oct-2020	20-Nov-2020	17-Dec-2020	20-Jan-2021	19-Feb-2021	17-Mar-2021	15-Apr-2021
Time Sampled			10:25	08:50	15:55	13:29	15:02	13:54	15:53	17:17
pH	pH units	0.10	7.93	7.85	7.54	7.74	7.76	7.50	8.04	8.02
ammonia, total (as N)	mg/L	0.0050	0.0676	0.0452	0.0348	0.0332	0.058	0.081	0.035	0.049
phosphorus, total	mg/L	0.0020	0.0238	0.0195	0.0241	0.0262	0.011	0.014	0.013	0.014
nitrate (as N)	mg/L	0.0050	0.497	1.26	1.44	0.648	0.921	0.727	0.693	0.596
nitrite (as N)	mg/L	0.0010	0.0149	0.0092	0.0135	0.0042	0.0106	0.0097	0.0077	0.0118
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	128	111	81.6	83.5	99.0	82.2	111	101
fluoride	mg/L	0.020	0.059	0.04	0.031	0.023	<0.050	<0.050	<0.050	<0.050
aluminum, total	µg/L	3.0	22.2	40.7	121	444	108	134	88.2	70.6
antimony, total	µg/L	0.10	0.20	0.18	0.16	0.13	<0.50	<0.50	<0.50	<0.50
arsenic, total	µg/L	0.10	2.09	1.54	1.43	2.17	1.48	1.73	1.20	1.08
barium, total	µg/L	0.10	17.1	20.5	19.8	17.3	19.4	22.5	18.5	15.9
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<1.0	<1.0	<1.0	<1.0
boron, total	µg/L	10	15	16	12	<10	<50	<50	<50	<50
cadmium, total	µg/L	0.0050	0.0059	0.0070	0.0116	0.012	<0.010	<0.010	<0.010	<0.010
chromium, total	µg/L	0.10	0.28	0.66	0.75	1.40	<1.0	1.0	<1.0	<1.0
cobalt, total	µg/L	0.10	0.11	0.11	0.15	0.26	0.22	<0.20	<0.20	<0.20
copper, total	µg/L	0.50	2.02	2.22	2.80	3.10	1.29	2.03	1.31	1.16
iron, total	µg/L	10	454	347	371	667	1220	539	683	724
lead, total	µg/L	0.050	<0.050	<0.050	0.071	0.161	<0.20	<0.20	<0.20	<0.20
lithium, total	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0
manganese, total	µg/L	0.10	108	117.0	98.6	79.0	191	122	172	127
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	0.0070	<0.0019	<0.0019	<0.0019	<0.0019
molybdenum, total	µg/L	0.050	0.857	0.61	0.47	0.453	<1.0	<1.0	<1.0	<1.0
nickel, total	µg/L	0.50	0.70	0.73	1.00	1.30	<1.0	<1.0	<1.0	<1.0
selenium, total	µg/L	0.050	0.118	0.195	0.141	0.087	0.14	0.11	0.14	0.16
silicon, total	µg/L	100	7680	6010	4820	4540	6750	4680	6460	5870
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020
strontium, total	µg/L	0.20	181	169	123	98.2	156	136	168	150
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<5.0	<5.0	<5.0	<5.0
titanium, total	µg/L	0.30	0.77	1.63	4.88	16.2	<5.0	6.2	<5.0	<5.0
uranium, total	µg/L	0.010	0.144	0.118	0.056	0.048	<0.10	<0.10	0.12	0.13
vanadium, total	µg/L	0.50	0.54	0.64	0.80	1.38	<5.0	<5.0	<5.0	<5.0
zinc, total	µg/L	3.0	<3.0	<3.0	5.8	6.9	<5.0	7.9	<5.0	<5.0
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	0.25	0.12	0.12	<0.10	<0.10
calcium, total	mg/L	0.050	32.9	30.3	23.3	18.5	26.9	22.7	29.5	26.8
magnesium, total	mg/L	0.0050	11.2	8.55	5.68	4.61	7.73	6.22	9.14	8.23
potassium, total	mg/L	0.050	2.51	2.34	1.84	1.54	1.77	1.64	1.71	1.63
sodium, total	mg/L	0.050	13.9	13.9	10.4	7.78	13.8	74.6	21.3	12.5
sulfur, total	mg/L	0.50	5.01	9.12	6.38	4.50	6.6	5	5.4	5.1
pH	pH units	--	7.41	7.56	7.21	6.91	7.40	7.35	7.27	7.59
Temperature	ºC	--	16.9	12.1	9.8	8.4	7.4	5.3	8.4	13.9
Specific Conductance	µS/cm	--	284	291	215	178	270	560	348	263
Dissolved Oxygen	%	--	5.90	8.72	9.67	10.15	12.03	12.38	12.24	9.89
Turbidity	NTU	--	2.63	2.41	2.92	7.55	7.41	7.59	4.63	4.03

Parameter	Units	Lowest Detection Limit	F-02	F-02	F-02 Dup	F-02	F-02	F-02	F-02	F-02
			25-May-2020	24-Jun-2020	24-Jun-2020	23-Jul-2020	14-Aug-2020	18-Sep-2020	21-Oct-2020	20-Nov-2020
Time Sampled			15:22	16:05	16:05	17:25	11:20	14:45	11:21	14:30
pH	pH units	0.10	7.49	7.57	7.66	7.54	7.63	7.69	7.29	7.16
ammonia, total (as N)	mg/L	0.0050	0.0498	0.0538	0.0623	0.0058	0.0518	0.0579	0.0124	0.011
phosphorus, total	mg/L	0.0020	0.0495	0.106	0.102	0.0981	0.0619	0.0458	0.02	0.0164
nitrate (as N)	mg/L	0.0050	0.154	0.0796	0.0752	0.0051	0.0091	0.0297	0.109	0.952
nitrite (as N)	mg/L	0.0010	0.0076	0.0023	0.0028	<0.0010	<0.0010	0.0044	0.0021	0.0067
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	53.8	83.2	82.0	108	83.9	81.0	59.5	47.7
fluoride	mg/L	0.020	0.052	0.048	0.046	0.075	0.070	0.064	0.042	0.027
aluminum, total	µg/L	3.0	181	42	38	20.6	16.5	94.6	26.6	82.4
antimony, total	µg/L	0.10	0.22	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.16
arsenic, total	µg/L	0.10	0.97	4.55	4.54	3.71	2.67	1.60	0.54	0.48
barium, total	µg/L	0.10	17.0	35.5	35.5	54.4	36.1	20.4	20.7	17.3
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	12	14	14	18	18	17	14	12
cadmium, total	µg/L	0.0050	0.0190	0.0056	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
chromium, total	µg/L	0.10	0.52	0.34	0.34	0.33	0.34	0.30	0.26	0.40
cobalt, total	µg/L	0.10	0.38	1.84	1.83	2.18	1.16	0.49	0.12	<0.10
copper, total	µg/L	0.50	2.25	0.84	0.82	0.56	<0.50	0.60	1.25	2.06
iron, total	µg/L	10	1040	5290	5140	5030	3640	2530	354	203
lead, total	µg/L	0.050	0.328	0.11	0.11	<0.050	0.050	0.076	<0.050	0.082
lithium, total	µg/L	1.0	1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
manganese, total	µg/L	0.10	186	3340	3300	5110	2080	726	39.1	12.1
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	0.462	0.884	0.914	0.665	0.340	0.522	0.47	0.37
nickel, total	µg/L	0.50	0.72	0.61	0.58	0.840	0.62	0.74	0.63	0.54
selenium, total	µg/L	0.050	0.052	0.096	0.117	0.110	0.076	0.073	0.093	0.070
silicon, total	µg/L	100	2720	4800	4790	5860	4750	5460	3820	3480
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
strontium, total	µg/L	0.20	98.2	138	137	181	139	129	92	76
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	7.27	1.7	1.5	0.840	0.85	3.44	0.96	3.20
uranium, total	µg/L	0.010	0.011	0.019	0.017	0.027	0.013	0.016	0.011	<0.010
vanadium, total	µg/L	0.50	0.71	0.54	0.50	<0.50	<0.50	0.51	<0.50	<0.50
zinc, total	µg/L	3.0	7.7	36.7	3.2	<3.0	<3.0	<3.0	3.5	7.7
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	15.4	23.2	23.1	29.9	22.9	22.1	16.8	13.7
magnesium, total	mg/L	0.0050	3.75	6.12	5.92	8.12	6.46	6.24	4.22	3.28
potassium, total	mg/L	0.050	1.17	2.07	2.06	2.86	1.90	1.95	1.90	1.63
sodium, total	mg/L	0.050	10.2	14.5	14.4	16.3	15.2	16.1	9.56	7.50
sulfur, total	mg/L	0.50	1.54	0.88	0.82	1.04	0.76	1.15	4.65	3.78
pH	pH units	--	6.87	6.90	6.90	6.92	6.92	7.33	6.75	6.96
Temperature	ºC	--	14.5	18.5	18.5	19.2	15.9	17.9	10.7	8.1
Specific Conductance	µS/cm	--	158	244	244	302	263	218	171	140
Dissolved Oxygen	%	--	5.81	2.82	2.84	1.39	3.84	6.99	5.28	7.09
Turbidity	NTU	--	9.82	13.6	13.3	8.74	6.93	7.11	2.22	1.11

Parameter	Units	Lowest Detection Limit	F-02	F-02	F-02	F-02	F-02	F-03	F-03	F-03
			17-Dec-2020	20-Jan-2021	19-Feb-2021	17-Mar-2021	15-Apr-2021	23-Jul-2020	18-Aug-2020	29-Sep-2020
Time Sampled			13:53	15:38	14:24	16:14	17:49	14:43	13:55	14:20
pH	pH units	0.10	7.77	7.47	7.33	7.74	7.71	7.54	7.71	7.31
ammonia, total (as N)	mg/L	0.0050	0.0341	0.015	0.020	0.034	<0.015	0.0207	0.039	0.0337
phosphorus, total	mg/L	0.0020	0.0321	0.016	0.0094	0.013	0.0086	0.0221	0.0247	0.0205
nitrate (as N)	mg/L	0.0050	1.08	0.863	0.845	0.926	0.749	1.06	0.0121	0.0697
nitrite (as N)	mg/L	0.0010	0.006	0.0037	0.0025	0.0026	0.0031	0.0045	0.0024	0.0017
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	65.2	58.8	69.1	74.4	73.5	97.4	100	54.8
fluoride	mg/L	0.020	0.029	<0.050	<0.050	<0.050	<0.050	0.035	0.039	0.052
aluminum, total	µg/L	3.0	236	96.4	86.4	39.4	33.0	63.9	29.8	41.7
antimony, total	µg/L	0.10	0.16	<0.50	<0.50	<0.50	<0.50	<0.10	<0.10	<0.10
arsenic, total	µg/L	0.10	0.38	0.44	0.29	0.37	0.43	0.73	1.22	1.12
barium, total	µg/L	0.10	12.2	21.0	28.4	33.1	29.8	18.5	35.5	18.3
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<1.0	<1.0	<1.0	<1.0	<0.050	<0.050	<0.050
boron, total	µg/L	10	<10	<50	<50	<50	<50	29	27	14
cadmium, total	µg/L	0.0050	0.0070	<0.010	<0.010	0.017	0.014	0.007	0.0077	<0.0050
chromium, total	µg/L	0.10	0.54	<1.0	<1.0	<1.0	<1.0	0.18	0.13	0.31
cobalt, total	µg/L	0.10	0.13	<0.20	<0.20	<0.20	<0.20	0.29	1.03	0.21
copper, total	µg/L	0.50	1.81	1.49	1.62	1.19	1.20	0.72	<0.50	1.20
iron, total	µg/L	10	427	364	310	344	505	675	813	1090
lead, total	µg/L	0.050	0.190	<0.20	<0.20	<0.20	<0.20	0.082	<0.050	0.078
lithium, total	µg/L	1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0	<1.0
manganese, total	µg/L	0.10	18.3	49.0	48.5	97.2	101	370	7000	162
mercury, total	µg/L	0.0050	<0.0050	<0.0019	<0.0019	<0.0019	<0.0019	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	0.341	13.0	<1.0	<1.0	<1.0	0.376	1.63	0.386
nickel, total	µg/L	0.50	0.60	<1.0	<1.0	<1.0	<1.0	1.55	2.18	0.85
selenium, total	µg/L	0.050	<0.050	<0.10	<0.10	<0.10	<0.10	0.156	0.137	0.074
silicon, total	µg/L	100	2650	4760	4080	3740	2890	7900	8130	4030
silver, total	µg/L	0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.010	<0.010	<0.010
strontium, total	µg/L	0.20	53.6	96.9	121	128	128	130	127	80.5
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<5.0	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	8.47	<5.0	<5.0	<5.0	<5.0	2.260	0.93	1.78
uranium, total	µg/L	0.010	0.010	<0.10	<0.10	<0.10	<0.10	0.038	0.063	0.012
vanadium, total	µg/L	0.50	0.73	<5.0	<5.0	<5.0	<5.0	<0.50	<0.50	0.53
zinc, total	µg/L	3.0	5.5	9.4	12.1	6.3	5.7	<3.0	<3.0	<3.0
zirconium, total	µg/L	0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	8.94	16.6	19.6	21.1	21.0	25.2	26.3	15.6
magnesium, total	mg/L	0.0050	2.18	4.19	4.88	5.26	5.09	8.37	8.35	3.86
potassium, total	mg/L	0.050	1.08	1.44	1.99	2.46	1.92	2.21	2.68	2.05
sodium, total	mg/L	0.050	5.52	11.6	71.6	23.3	14.5	11.5	11.5	8.50
sulfur, total	mg/L	0.50	1.94	3.8	4.1	4.6	3.7	8.67	7.24	3.20
pH	pH units	--	6.63	6.73	6.79	6.43	6.71	6.78	6.93	6.93
Temperature	ºC	--	7.2	6.4	4.7	8.2	12.6	14.8	15.9	14.2
Specific Conductance	µS/cm	--	109	188	523	288	226	260	298	142
Dissolved Oxygen	%	--	8.56	8.95	9.66	8.91	8.1	3.95	1.21	3.81
Turbidity	NTU	--	5.60	3.62	3.44	2.51	5.85	3.94	2.61	3.18

Parameter	Units	Lowest Detection Limit	F-03	F-04	F-04	F-04	F-04	FOF	FOF	FOF
			21-Oct-2020	23-Jul-2020	18-Aug-2020	18-Sep-2020	21-Oct-2020	25-May-2020	24-Jun-2020	23-Jul-2020
Time Sampled			16:39	15:42	09:34	16:30	14:24	15:43	16:40	19:05
pH	pH units	0.10	7.33	7.34	7.42	6.90	7.30	7.34	7.46	7.46
ammonia, total (as N)	mg/L	0.0050	0.0176	0.0246	0.0308	0.0125	0.0116	0.206	0.0729	0.0127
phosphorus, total	mg/L	0.0020	0.0195	0.0187	0.0110	0.0065	0.0263	0.0416	0.067	0.0747
nitrate (as N)	mg/L	0.0050	0.217	1.50	1.52	2.16	0.601	0.303	0.127	0.0957
nitrite (as N)	mg/L	0.0010	0.0023	0.0039	0.0060	0.0055	0.0035	0.0162	0.0102	0.0072
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	61.4	95.3	96.3	90.6	65.4	27.1	72.1	87.5
fluoride	mg/L	0.020	0.042	0.035	0.040	0.031	0.041	0.042	0.036	0.041
aluminum, total	µg/L	3.0	42.3	49.0	19.6	15.6	56.1	238	29	21.5
antimony, total	µg/L	0.10	0.14	<0.10	<0.10	<0.10	0.12	0.59	0.14	<0.10
arsenic, total	µg/L	0.10	0.62	0.66	0.58	0.39	0.60	1.15	4.92	6.46
barium, total	µg/L	0.10	20.5	15.6	11.1	10.7	19.0	13.8	30.5	28.4
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	16	28	27	24	16	82	13	14
cadmium, total	µg/L	0.0050	0.0053	0.009	0.0185	0.0137	0.0060	0.0222	0.0065	<0.0050
chromium, total	µg/L	0.10	0.32	0.19	0.20	0.16	0.31	1.23	0.32	0.26
cobalt, total	µg/L	0.10	0.14	0.18	0.25	0.12	0.12	0.41	0.88	0.87
copper, total	µg/L	0.50	1.41	0.71	<0.50	0.52	1.27	14.2	1.25	0.66
iron, total	µg/L	10	446	431	241	121	366	645	3220	4060
lead, total	µg/L	0.050	0.057	0.071	<0.050	<0.050	<0.050	3.63	0.23	0.107
lithium, total	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
manganese, total	µg/L	0.10	89.1	203	2140	291	75.2	78.3	1330	1640
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	0.45	0.313	0.745	0.290	0.43	0.893	1.580	0.526
nickel, total	µg/L	0.50	0.89	1.11	1.22	<0.50	0.66	1.15	0.89	0.640
selenium, total	µg/L	0.050	0.077	0.136	0.169	0.160	0.107	0.089	0.074	0.085
silicon, total	µg/L	100	4400	7480	7420	7410	5060	1830	4950	4770
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.014	<0.010	<0.010
strontium, total	µg/L	0.20	94	139	148	163	106	48.1	123	142
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.75	<0.10	<0.10
titanium, total	µg/L	0.30	1.20	1.760	0.80	0.46	2.07	10.4	0.86	0.770
uranium, total	µg/L	0.010	0.010	0.039	0.050	0.041	0.020	0.017	0.028	0.042
vanadium, total	µg/L	0.50	<0.50	<0.50	<0.50	0.50	<0.50	0.94	<0.50	<0.50
zinc, total	µg/L	3.0	4.2	<3.0	<3.0	<3.0	<3.0	26.2	11.0	4.9
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	16.6	24.9	25.6	24.4	17.7	7.77	20.20	23.5
magnesium, total	mg/L	0.0050	4.86	8.03	7.84	7.22	5.15	1.86	5.24	6.98
potassium, total	mg/L	0.050	2.18	2.45	3.07	3.24	2.40	0.892	1.18	1.10
sodium, total	mg/L	0.050	9.68	10.3	9.09	7.71	9.13	5.72	11.7	12.5
sulfur, total	mg/L	0.50	5.47	8.12	6.88	6.40	5.77	1.65	2.22	1.80
pH	pH units	--	6.74	6.72	6.50	6.51	6.72	6.92	6.72	6.76
Temperature	ºC	--	10.7	14.7	13.6	12.2	10.9	15.2	20.2	19.5
Specific Conductance	µS/cm	--	172	250	262	211	182	86.0	209	239
Dissolved Oxygen	%	--	7.03	4.78	2.89	2.02	7.22	7.58	1.53	4.06
Turbidity	NTU	--	3.65	3.33	1.72	2.27	3.05	9.12	7.87	10.35

Parameter	Units	Lowest Detection Limit	FOF	FOF	FOF	FOF	FOF	FOF	FOF	FOF
			18-Aug-2020	29-Sep-2020	21-Oct-2020	20-Nov-2020	17-Dec-2020	20-Jan-2021	19-Feb-2021	17-Mar-2021
Time Sampled			18:08	15:25	17:19	15:30	14:28	16:05	15:00	16:36
pH	pH units	0.10	7.68	7.52	7.28	7.05	7.50	7.03	7.35	7.81
ammonia, total (as N)	mg/L	0.0050	0.106	0.0606	0.0613	0.072	0.0088	0.066	0.13	0.055
phosphorus, total	mg/L	0.0020	0.0906	0.0246	0.0293	0.0225	0.0202	0.0098	0.015	0.018
nitrate (as N)	mg/L	0.0050	0.0736	0.138	0.458	0.977	0.554	1.10	0.695	0.370
nitrite (as N)	mg/L	0.0010	0.0064	0.0033	0.008	0.0117	0.0019	0.008	0.0131	0.0057
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	102	63.8	63.7	49.2	31.3	63.9	67.1	77.8
fluoride	mg/L	0.020	0.05	0.040	0.033	0.023	0.035	<0.050	<0.050	<0.050
aluminum, total	µg/L	3.0	22.8	22.8	47.6	109	362	61.4	191	65.2
antimony, total	µg/L	0.10	0.14	0.15	0.18	0.16	0.15	<0.50	<0.50	<0.50
arsenic, total	µg/L	0.10	2.87	2.01	1.39	1.05	1.50	1.22	1.15	1.01
barium, total	µg/L	0.10	25.4	20.6	21.2	17.8	14.5	24.6	25.2	20.5
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<1.0	<1.0	<1.0
boron, total	µg/L	10	16	13	13	11	<10	<50	<50	<50
cadmium, total	µg/L	0.0050	<0.0050	<0.0050	0.0066	0.0133	0.014	<0.010	0.018	<0.010
chromium, total	µg/L	0.10	0.27	0.43	0.55	0.62	1.06	<1.0	<1.0	<1.0
cobalt, total	µg/L	0.10	0.30	0.19	0.13	0.13	0.21	0.29	0.26	0.26
copper, total	µg/L	0.50	1.04	1.55	2.21	2.46	2.97	1.41	2.79	1.35
iron, total	µg/L	10	1730	1080	789	351	542	935	700	911
lead, total	µg/L	0.050	0.158	0.197	0.220	0.149	0.276	<0.20	0.40	0.35
lithium, total	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0
manganese, total	µg/L	0.10	368	140	51.8	43.1	44.5	155	130	196
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0019	<0.0019	<0.0019
molybdenum, total	µg/L	0.050	0.792	0.455	0.43	0.36	0.349	<1.0	<1.0	<1.0
nickel, total	µg/L	0.50	0.64	0.67	0.84	0.67	0.93	<1.0	<1.0	<1.0
selenium, total	µg/L	0.050	0.109	<0.050	0.076	0.066	0.058	<0.10	<0.10	<0.10
silicon, total	µg/L	100	6590	4570	4050	3370	3040	5330	3990	2960
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020
strontium, total	µg/L	0.20	151	95.4	107	80	67.5	111	115	130
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<5.0	<5.0	<5.0
titanium, total	µg/L	0.30	0.80	0.80	1.61	3.68	12.8	<5.0	10.9	<5.0
uranium, total	µg/L	0.010	0.066	0.017	0.028	0.021	0.025	<0.10	<0.10	<0.10
vanadium, total	µg/L	0.50	<0.50	<0.50	0.52	0.58	1.13	<5.0	<5.0	<5.0
zinc, total	µg/L	3.0	6.1	6.8	7.7	8.2	9.1	7.8	16.6	6.0
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.12	0.25	<0.10
calcium, total	mg/L	0.050	28.1	18.1	17.4	14.0	13.1	18.1	18.8	21.5
magnesium, total	mg/L	0.0050	7.81	4.49	4.90	3.47	3.05	4.55	4.88	5.83
potassium, total	mg/L	0.050	1.83	1.63	2.06	1.55	1.19	1.45	1.45	1.64
sodium, total	mg/L	0.050	13.5	8.73	9.97	7.63	6.19	12.5	86.0	21.2
sulfur, total	mg/L	0.50	3.68	2.61	4.35	3.69	2.96	4.0	3.8	4.3
pH	pH units	--	6.97	6.92	6.81	6.73	6.69	6.45	6.82	6.66
Temperature	ºC	--	20.4	15.4	11.7	8.2	7.8	7.1	5.5	9.1
Specific Conductance	µS/cm	--	285	154	182	145	132	198	581	290
Dissolved Oxygen	%	--	1.75	1.93	3.37	6.94	9.62	6.90	9.98	10.31
Turbidity	NTU	--	5.53	3.01	3.28	2.23	7.44	2.37	11.6	4.11

Parameter	Units	Lowest Detection Limit	FOF	H-01	H-01	H-01	H-01	H-01 Dup	H-01	H-01
			15-Apr-2021	25-May-2020	24-Jun-2020	22-Jul-2020	11-Aug-2020	11-Aug-2020	29-Sep-2020	20-Oct-2020
Time Sampled			18:20	14:00	14:25	19:10	15:18	15:18	16:25	15:09
pH	pH units	0.10	7.81	6.77	7.44	6.98	6.90	6.91	6.92	6.99
ammonia, total (as N)	mg/L	0.0050	0.15	0.206	0.0121	0.0207	0.0070	0.0059	<0.0050	0.0472
phosphorus, total	mg/L	0.0020	0.015	0.290	0.0117	0.0085	0.0073	0.0079	0.0049	0.0116
nitrate (as N)	mg/L	0.0050	0.514	0.93	2.40	2.29	2.35	2.34	2.04	2.00
nitrite (as N)	mg/L	0.0010	0.0146	0.0139	0.0025	<0.0010	0.0014	<0.0010	<0.0010	0.0024
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	92.7	40.5	110	112	118	106	108	105
fluoride	mg/L	0.020	<0.050	0.028	0.033	0.067	0.042	0.042	0.040	0.036
aluminum, total	µg/L	3.0	55.8	2010	18	10.2	6.0	5.4	5.2	23.3
antimony, total	µg/L	0.10	<0.50	0.48	<0.10	0.16	<0.10	<0.10	<0.10	0.15
arsenic, total	µg/L	0.10	1.09	1.01	0.42	0.43	0.44	0.43	0.46	0.46
barium, total	µg/L	0.10	22.5	24.2	12.4	13.2	12.2	12.1	12.1	13.9
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	<50	<10	11	12	12	12	<10	11
cadmium, total	µg/L	0.0050	<0.010	0.0767	0.0170	0.015	0.0161	0.0159	0.0203	0.0194
chromium, total	µg/L	0.10	<1.0	1.83	0.23	0.26	0.23	0.26	0.27	0.36
cobalt, total	µg/L	0.10	0.39	0.80	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
copper, total	µg/L	0.50	1.56	9.26	1.09	0.71	0.56	0.52	0.85	2.43
iron, total	µg/L	10	1300	1260	80	47	45	49	22	202
lead, total	µg/L	0.050	0.34	1.82	0.058	<0.050	<0.050	<0.050	<0.050	0.146
lithium, total	µg/L	1.0	<2.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0
manganese, total	µg/L	0.10	230	70.6	9.0	10.0	10.4	10.5	2.14	12.3
mercury, total	µg/L	0.0050	<0.0019	0.0140	0.0086	0.011	0.0083	0.0092	0.0079	0.0134
molybdenum, total	µg/L	0.050	<1.0	0.189	0.238	0.224	0.197	0.228	0.284	0.29
nickel, total	µg/L	0.50	<1.0	1.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
selenium, total	µg/L	0.050	0.11	0.194	0.209	0.277	0.257	0.235	0.254	0.180
silicon, total	µg/L	100	4730	4110	9440	9950	10400	10200	9930	9320
silver, total	µg/L	0.010	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.011
strontium, total	µg/L	0.20	151	62.6	164	163	160	156	151	143
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	<5.0	42.3	0.58	<0.30	0.35	<0.30	<0.30	0.98
uranium, total	µg/L	0.010	<0.10	0.075	0.011	0.010	0.011	<0.010	<0.010	0.011
vanadium, total	µg/L	0.50	<5.0	3.90	0.56	<0.50	0.54	<0.50	0.51	<0.50
zinc, total	µg/L	3.0	10.4	38.0	4.1	<3.0	<3.0	<3.0	3.3	11.1
zirconium, total	µg/L	0.20	<0.10	0.49	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	25.4	11.7	30.5	31.2	30.8	29.8	30.2	28.8
magnesium, total	mg/L	0.0050	7.12	2.73	8.34	8.42	9.95	7.79	7.91	7.95
potassium, total	mg/L	0.050	1.69	1.07	1.60	1.69	1.65	1.64	1.65	1.66
sodium, total	mg/L	0.050	16.0	7.35	17.9	18.2	20.9	17.1	18.0	21.5
sulfur, total	mg/L	0.50	4.7	1.64	5.21	5.80	5.88	5.78	6.16	5.38
pH	pH units	--	6.85	6.39	6.37	0.43	6.41	6.44	6.5	6.41
Temperature	ºC	--	14.9	15.6	13.4	13.4	13.5	13.5	13.5	13.2
Specific Conductance	µS/cm	--	266	121	331	334	340	339	278	301
Dissolved Oxygen	%	--	7.69	8.35	5.48	6.03	5.89	6.34	5.53	6.07
Turbidity	NTU	--	5.74	31.2	1.40	1.07	0.63	0.66	1.31	2.25

Parameter	Units	Lowest Detection Limit	H-01	H-01	H-01	H-01	H-01 DUP	H-01	H-01	H-02
			20-Nov-2020	17-Dec-2020	20-Jan-2021	19-Feb-2021	19-Feb-2021	17-Mar-2021	15-Apr-2021	25-May-2020
Time Sampled			13:51	12:15	11:46	16:14	16:14	14:47	16:47	13:14
pH	pH units	0.10	7.04	7.58	7.15	6.94	7.02	7.56	7.53	7.29
ammonia, total (as N)	mg/L	0.0050	0.0333	0.0496	<0.015	0.019	<0.015	<0.015	<0.015	0.176
phosphorus, total	mg/L	0.0020	0.0144	0.0559	0.0055	0.0080	0.0081	0.010	0.012	0.0539
nitrate (as N)	mg/L	0.0050	1.35	0.932	2.09	2.30	2.28	2.44	2.39	0.386
nitrite (as N)	mg/L	0.0010	0.014	0.0058	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0169
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	75.3	53.1	103	99.1	96.2	112	116	22.6
fluoride	mg/L	0.020	0.027	0.021	0.050	<0.050	<0.050	<0.050	<0.050	0.028
aluminum, total	µg/L	3.0	114	25.6	4.6	40.9	39.4	16.4	6.6	252
antimony, total	µg/L	0.10	0.26	<0.10	<0.50	<0.50	<0.50	<0.50	<0.50	0.69
arsenic, total	µg/L	0.10	0.48	0.46	0.46	0.59	0.53	0.47	0.54	0.75
barium, total	µg/L	0.10	11.4	9.54	12.3	13.9	13.5	13.7	13.2	7.97
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<1.0	<1.0	<1.0	<1.0	<1.0	<0.050
boron, total	µg/L	10	<10	<10	<50	<50	<50	<50	<50	<10
cadmium, total	µg/L	0.0050	0.0224	0.020	0.014	0.029	0.026	0.026	0.021	0.0178
chromium, total	µg/L	0.10	0.48	0.24	<1.0	<1.0	<1.0	<1.0	<1.0	0.95
cobalt, total	µg/L	0.10	<0.10	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20	0.16
copper, total	µg/L	0.50	6.03	1.39	<0.50	1.49	1.46	0.93	0.89	7.61
iron, total	µg/L	10	160	42	34	106	100	47	48	280
lead, total	µg/L	0.050	0.492	0.105	<0.20	<0.20	<0.20	<0.20	<0.20	0.661
lithium, total	µg/L	1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0
manganese, total	µg/L	0.10	7.5	2.82	13.8	15.3	15.6	13.2	9.2	15.6
mercury, total	µg/L	0.0050	0.0090	<0.0050	<0.0019	0.0055	0.0050	0.0104	<0.0019	0.0050
molybdenum, total	µg/L	0.050	0.29	0.256	<1.0	<1.0	<1.0	<1.0	<1.0	3.34
nickel, total	µg/L	0.50	<0.50	<0.50	<1.0	<1.0	<1.0	<1.0	<1.0	0.66
selenium, total	µg/L	0.050	0.169	0.176	0.19	0.21	0.19	0.22	0.23	0.098
silicon, total	µg/L	100	6610	7620	9570	9270	8880	10100	10100	2210
silver, total	µg/L	0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.010
strontium, total	µg/L	0.20	101	125.0	155	150	151	170	176	29.8
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<5.0	<5.0	<5.0	<5.0	<5.0	0.11
titanium, total	µg/L	0.30	7.94	0.79	<5.0	<5.0	<5.0	<5.0	<5.0	13.3
uranium, total	µg/L	0.010	0.011	<0.010	<0.10	<0.10	<0.10	<0.10	<0.10	0.023
vanadium, total	µg/L	0.50	0.62	<0.50	<5.0	<5.0	<5.0	<5.0	<5.0	1.08
zinc, total	µg/L	3.0	20.2	6.6	<5.0	8.5	8.4	<5.0	<5.0	21.0
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	0.23
calcium, total	mg/L	0.050	21.6	24.0	29.1	28.2	27.1	31.9	32.9	6.72
magnesium, total	mg/L	0.0050	5.22	6.10	7.38	6.96	6.93	7.95	8.15	1.40
potassium, total	mg/L	0.050	1.17	1.26	1.61	1.61	1.65	1.78	1.79	0.701
sodium, total	mg/L	0.050	12.0	15.2	18	41.6	41.2	18.2	18.9	3.29
sulfur, total	mg/L	0.50	3.69	4.32	4.9	4.7	4.7	5.0	5.7	1.41
pH	pH units	--	6.3	6.08	6.34	6.33	6.33	6.01	6.33	7.25
Temperature	ºC	--	11.9	9.7	12.5	11.9	11.9	13.0	12.9	15.6
Specific Conductance	µS/cm	--	209	147	327	447	449	342	340	66.0
Dissolved Oxygen	%	--	6.40	8.65	7.63	7.09	7.26	7.38	6.55	9.72
Turbidity	NTU	--	6.87	2.73	2.30	1.74	1.91	1.38	0.09	12.74

Parameter	Units	Lowest Detection Limit	H-02	H-02	H-02	H-02	H-02	H-02 Dup	H-02	H-02 Dup
			24-Jun-2020	22-Jul-2020	11-Aug-2020	18-Sep-2020	20-Oct-2020	20-Oct-2020	20-Nov-2020	20-Nov-2020
Time Sampled			11:41	09:42	09:25	13:33	09:34	09:34	12:05	12:05
pH	pH units	0.10	7.81	7.87	7.89	8.05	7.70	7.78	7.72	7.73
ammonia, total (as N)	mg/L	0.0050	0.0141	0.033	0.0138	0.0079	0.0183	0.0194	0.0198	0.0202
phosphorus, total	mg/L	0.0020	0.0146	0.0144	0.0120	0.0114	0.0118	0.0124	0.0165	0.0165
nitrate (as N)	mg/L	0.0050	1.30	1.28	1.26	1.25	1.10	1.09	0.9	0.898
nitrite (as N)	mg/L	0.0010	0.0039	0.0025	0.0019	0.0019	0.0036	0.0049	0.0088	0.0091
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	108	112	121	113	112	111	80.8	79.5
fluoride	mg/L	0.020	0.032	0.036	0.034	0.034	0.032	0.031	0.025	0.024
aluminum, total	µg/L	3.0	28	31.9	14.8	44.0	68.7	68.6	174	144
antimony, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.12	0.18	0.18
arsenic, total	µg/L	0.10	1.00	1.04	1.00	1.16	1.49	1.47	0.83	0.77
barium, total	µg/L	0.10	13.0	13.1	11.9	12.4	16.8	16.0	15.3	15.0
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	11	10	13	16	12	<10	<10	<10
cadmium, total	µg/L	0.0050	0.0084	0.008	0.0052	0.0057	0.0115	0.0120	0.0146	0.0154
chromium, total	µg/L	0.10	0.29	0.40	0.31	0.44	0.57	0.59	0.56	0.51
cobalt, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	0.20	0.20	0.13	0.12
copper, total	µg/L	0.50	1.10	0.50	0.55	0.51	1.43	1.37	3.30	3.19
iron, total	µg/L	10	154	146	92	123	284	274	285	252
lead, total	µg/L	0.050	<0.050	<0.050	<0.050	0.063	0.053	0.052	0.248	0.234
lithium, total	µg/L	1.0	1.1	1.2	1.3	1.2	<1.0	<1.0	<1.0	<1.0
manganese, total	µg/L	0.10	28.9	26.9	19.9	23.3	56.2	54.2	32.0	31.5
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	2.97	1.49	0.966	1.37	1.92	1.80	1.83	1.79
nickel, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50	0.81	0.82	0.60	0.58
selenium, total	µg/L	0.050	0.186	0.235	0.192	0.250	0.189	0.213	0.113	0.115
silicon, total	µg/L	100	9130	9410	9440	9930	8670	8520	6240	6180
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
strontium, total	µg/L	0.20	134	143	144	141	145	140	91	90
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	1.2	1.480	0.47	2.00	1.95	1.72	8.38	6.78
uranium, total	µg/L	0.010	0.060	0.074	0.066	0.095	0.090	0.089	0.046	0.047
vanadium, total	µg/L	0.50	0.70	0.650	0.55	0.91	1.15	1.14	0.84	0.79
zinc, total	µg/L	3.0	4.6	3.0	<3.0	<3.0	4.4	6.3	13.2	12.7
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.33	<0.20
calcium, total	mg/L	0.050	31.0	32.4	32.0	31.6	31.8	31	23.7	23.2
magnesium, total	mg/L	0.0050	7.52	7.67	9.99	8.24	7.83	8.05	5.24	5.23
potassium, total	mg/L	0.050	1.66	1.72	1.77	1.85	1.92	1.90	1.52	1.50
sodium, total	mg/L	0.050	10.0	9.76	12.2	11.9	9.80	9.64	7.34	7.34
sulfur, total	mg/L	0.50	5.94	6.43	6.02	6.07	7.72	7.48	4.86	4.84
pH	pH units	--	7.72	7.68	7.79	7.83	7.37	7.40	7.43	7.45
Temperature	ºC	--	14.0	14.2	13.2	13.9	11.1	11.1	9.7	9.6
Specific Conductance	µS/cm	--	277	294	299	265	268	269	202	203
Dissolved Oxygen	%	--	7.82	9.33	9.79	8.22	9.25	9.20	10.17	10.1
Turbidity	NTU	--	1.79	1.76	0.57	1.83	1.30	0.288	5.10	5.08

Parameter	Units	Lowest Detection Limit	H-02	H-02	H-02	H-02	H-02 DUP	H-02	H-03	H-03
			17-Dec-2020	20-Jan-2021	19-Feb-2021	17-Mar-2021	17-Mar-2021	15-Apr-2021	25-May-2020	24-Jun-2020
Time Sampled			10:38	13:30	12:45	12:52	12:52	14:10	13:51	14:05
pH	pH units	0.10	7.14	7.90	7.58	8.02	8.03	7.99	7.08	7.40
ammonia, total (as N)	mg/L	0.0050	0.0375	<0.015	0.015	<0.015	<0.015	<0.015	0.182	0.031
phosphorus, total	mg/L	0.0020	0.0238	0.0038	0.0096	0.0075	0.0046	0.0053	0.0590	0.0164
nitrate (as N)	mg/L	0.0050	1.47	1.39	1.24	1.17	1.14	1.37	0.418	1.94
nitrite (as N)	mg/L	0.0010	0.0026	0.0029	0.0022	0.0032	0.0028	0.0035	0.0156	0.0050
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	85.0	103	88.7	105	106	109	17.5	107
fluoride	mg/L	0.020	0.026	<0.050	<0.050	<0.050	<0.050	<0.050	0.027	0.038
aluminum, total	µg/L	3.0	252	28.4	217	25.7	26.9	22.3	410	24
antimony, total	µg/L	0.10	0.14	<0.50	<0.50	<0.50	<0.50	<0.50	0.86	0.16
arsenic, total	µg/L	0.10	0.86	0.89	0.99	0.97	0.97	1.01	0.65	0.50
barium, total	µg/L	0.10	12.3	14.0	15.9	11.5	12.0	11.9	8.96	13.8
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<1.0	<1.0	<1.0	<1.0	<1.0	<0.050	<0.050
boron, total	µg/L	10	<10	<50	<50	<50	<50	<50	<10	12
cadmium, total	µg/L	0.0050	0.016	<0.010	0.017	<0.010	<0.010	<0.010	0.0291	0.0244
chromium, total	µg/L	0.10	0.68	<1.0	<1.0	<1.0	<1.0	<1.0	1.34	0.27
cobalt, total	µg/L	0.10	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.21	<0.10
copper, total	µg/L	0.50	2.16	0.63	1.45	0.53	1.05	0.74	10.4	2.14
iron, total	µg/L	10	354	166	416	210	213	154	364	56
lead, total	µg/L	0.050	0.179	<0.20	<0.20	<0.20	<0.20	<0.20	0.860	0.09
lithium, total	µg/L	1.0	<1.0	<2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<1.0
manganese, total	µg/L	0.10	31.8	44.6	46.6	41.8	42.7	29.8	14.1	14.8
mercury, total	µg/L	0.0050	<0.0050	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0050	0.0078
molybdenum, total	µg/L	0.050	2.43	<1.0	<1.0	1.8	1.8	1.8	2.89	6.17
nickel, total	µg/L	0.50	0.98	<1.0	<1.0	<1.0	<1.0	<1.0	0.77	<0.50
selenium, total	µg/L	0.050	0.118	0.17	0.13	0.18	0.17	0.18	0.097	0.190
silicon, total	µg/L	100	5090	9010	8640	8990	9130	9190	1810	8950
silver, total	µg/L	0.010	<0.010	<0.020	<0.020	<0.020	<0.020	<0.020	<0.010	<0.010
strontium, total	µg/L	0.20	72.9	137	117	136	138	143	25.6	150
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<5.0	<5.0	<5.0	<5.0	<5.0	0.13	<0.10
titanium, total	µg/L	0.30	10.50	<5.0	10.3	<5.0	<5.0	<5.0	17.4	1.3
uranium, total	µg/L	0.010	0.037	<0.10	<0.10	<0.10	<0.10	<0.10	0.018	0.016
vanadium, total	µg/L	0.50	1.21	<5.0	<5.0	<5.0	<5.0	<5.0	1.33	0.52
zinc, total	µg/L	3.0	10.0	6.3	9.5	<5.0	<5.0	<5.0	37.5	13.2
zirconium, total	µg/L	0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	0.33	<0.20
calcium, total	mg/L	0.050	18.9	29.8	25.4	30.4	30.8	31.6	5.35	30.0
magnesium, total	mg/L	0.0050	3.94	6.98	6.12	6.99	7.14	7.27	1.01	7.68
potassium, total	mg/L	0.050	1.18	1.64	1.63	1.66	1.66	1.71	0.596	1.65
sodium, total	mg/L	0.050	6.61	10.2	38.7	12.2	12.3	10.9	3.41	15.7
sulfur, total	mg/L	0.50	3.95	6.3	5.5	5.6	5.9	5.9	0.85	5.96
pH	pH units	--	6.96	7.66	7.56	7.81	7.81	7.57	6.74	6.92
Temperature	ºC	--	8.6	9.4	8.6	9.4	9.4	13.7	16.3	14.2
Specific Conductance	µS/cm	--	173	269	391	296	296	276	58.0	315
Dissolved Oxygen	%	--	9.82	11.64	9.96	12.84	12.73	9.34	8.48	7.20
Turbidity	NTU	--	3.92	1.48	8.51	1.65	1.48	0.49	13.19	2.03

Parameter	Units	Lowest Detection Limit	H-03	H-03	H-03	H-03	H-03	H-03	H-03	H-03
			22-Jul-2020	11-Aug-2020	29-Sep-2020	20-Oct-2020	20-Nov-2020	17-Dec-2020	20-Jan-2021	19-Feb-2021
Time Sampled			15:52	13:50	16:50	14:49	13:38	11:57	11:33	16:00
pH	pH units	0.10	7.61	7.67	7.33	7.43	7.24	7.61	7.49	7.24
ammonia, total (as N)	mg/L	0.0050	0.0230	0.0077	0.0204	0.723	0.0477	0.0253	0.019	<0.015
phosphorus, total	mg/L	0.0020	0.0148	0.0098	0.0068	0.0098	0.0245	0.0179	0.0053	0.0070
nitrate (as N)	mg/L	0.0050	1.94	1.87	1.82	1.70	0.84	0.877	1.80	1.76
nitrite (as N)	mg/L	0.0010	0.0014	0.0016	0.001	0.0078	0.0173	0.0038	0.002	<0.0020
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	110	127	112	106	44.0	63.4	103	91.1
fluoride	mg/L	0.020	0.064	0.038	0.030	<0.100	0.025	0.022	<0.050	<0.050
aluminum, total	µg/L	3.0	8.70	7.2	9.5	22.9	282	159	19.6	26.8
antimony, total	µg/L	0.10	0.20	0.11	<0.10	0.31	0.50	0.18	<0.50	<0.50
arsenic, total	µg/L	0.10	0.58	0.56	0.62	0.38	0.51	0.44	0.54	0.52
barium, total	µg/L	0.10	13.4	14.5	11.0	34.7	14.3	10.0	13.6	15.7
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<1.0	<1.0
boron, total	µg/L	10	13	10	10	11	<10	<10	<50	<50
cadmium, total	µg/L	0.0050	0.020	0.0150	0.0099	0.0909	0.0274	0.019	0.013	0.025
chromium, total	µg/L	0.10	0.29	0.26	0.56	0.20	0.82	0.43	<1.0	<1.0
cobalt, total	µg/L	0.10	<0.10	<0.10	<0.10	0.84	0.16	0.10	<0.20	<0.20
copper, total	µg/L	0.50	1.06	0.85	0.53	2.12	6.64	2.99	0.87	1.64
iron, total	µg/L	10	27	18	12	696	281	146	38	48.0
lead, total	µg/L	0.050	<0.050	<0.050	<0.050	0.105	0.929	0.150	<0.20	<0.20
lithium, total	µg/L	1.0	<1.0	1.1	1.4	1.0	<1.0	<1.0	<2.0	<2.0
manganese, total	µg/L	0.10	9.75	11.4	5.18	158.0	14.2	12.6	13.8	13.1
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0058	0.0071	<0.0019	<0.0019
molybdenum, total	µg/L	0.050	12.2	1.83	0.504	7.26	4.52	6.51	4.0	<1.0
nickel, total	µg/L	0.50	<0.50	<0.50	<0.50	0.70	0.70	0.56	<1.0	<1.0
selenium, total	µg/L	0.050	0.207	0.246	0.412	0.136	0.081	<0.050	0.17	0.16
silicon, total	µg/L	100	9310	9970	10100	7640	3610	3150	8990	8180
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020
strontium, total	µg/L	0.20	155	177	138	163	58	54.1	144	133
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	0.19	<0.10	<5.0	<5.0
titanium, total	µg/L	0.30	<0.30	<0.30	0.31	1.07	19.1	5.85	<5.0	<5.0
uranium, total	µg/L	0.010	0.015	0.015	0.133	0.023	0.019	0.014	<0.10	<0.10
vanadium, total	µg/L	0.50	<0.50	0.57	1.02	<0.50	0.90	0.66	<5.0	<5.0
zinc, total	µg/L	3.0	7.6	7.9	5.8	41.6	39.5	23.2	9.4	18.1
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	0.31	<0.20	<0.10	<0.10
calcium, total	mg/L	0.050	30.7	35.0	31.0	29.9	13.0	12.8	29.5	26.1
magnesium, total	mg/L	0.0050	8.15	9.67	8.25	7.56	2.84	2.43	7.15	6.31
potassium, total	mg/L	0.050	1.75	1.9	1.47	3.36	1.53	1.22	1.92	1.86
sodium, total	mg/L	0.050	16.4	19.0	9.85	118	6.97	7.91	15.7	60.3
sulfur, total	mg/L	0.50	6.39	6.46	5.74	6.74	3.37	3.07	6.7	6.0
pH	pH units	--	7.04	7.11	7.32	6.93	6.77	6.54	7.04	6.92
Temperature	ºC	--	14.3	14.2	12.8	12.7	10.5	9.2	11.0	10.6
Specific Conductance	µS/cm	--	328	334	257	366	140	145	302	514
Dissolved Oxygen	%	--	8.05	9.09	9.25	8.07	9.17	9.85	10.36	9.62
Turbidity	NTU	--	1.12	0.54	0.76	3.49	14.8	4.48	1.02	1.38

Parameter	Units	Lowest Detection Limit	H-03	H-03	H-03 DUP	W-01	W-01	W-01	W-01 Dup	W-01
			17-Mar-2021	15-Apr-2021	15-Apr-2021	25-May-2020	24-Jun-2020	22-Jul-2020	22-Jul-2020	12-Aug-2020
Time Sampled			14:28	16:15	16:15	14:31	12:47	15:38	15:38	15:32
pH	pH units	0.10	7.90	7.91	7.86	7.37	7.58	7.60	7.60	7.64
ammonia, total (as N)	mg/L	0.0050	<0.015	<0.015	<0.015	0.0905	0.0294	0.0303	0.0313	0.0208
phosphorus, total	mg/L	0.0020	0.0084	0.011	0.011	0.0346	0.0146	0.0130	0.0140	0.0119
nitrate (as N)	mg/L	0.0050	1.88	1.91	1.91	0.838	1.55	1.59	1.59	1.59
nitrite (as N)	mg/L	0.0010	<0.0020	0.0021	0.0022	0.0143	0.0087	0.0064	0.0062	0.0070
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	114	114	113	50.9	96.5	103	102	108
fluoride	mg/L	0.020	<0.050	<0.050	<0.050	0.030	0.036	0.041	0.041	0.040
aluminum, total	µg/L	3.0	14.1	11.6	9.3	77.6	18	20.6	14.1	17.1
antimony, total	µg/L	0.10	<0.50	<0.50	<0.50	0.24	<0.10	<0.10	<0.10	<0.10
arsenic, total	µg/L	0.10	0.58	0.52	0.55	0.91	0.64	0.68	0.66	0.72
barium, total	µg/L	0.10	13.6	13.8	14.1	19.4	29.7	33.3	33.0	32.2
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<1.0	<1.0	<1.0	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	<50	<50	<50	<10	<10	10	10	12
cadmium, total	µg/L	0.0050	0.018	0.018	0.018	0.0195	0.0082	0.010	0.008	0.0072
chromium, total	µg/L	0.10	<1.0	<1.0	<1.0	0.74	0.52	0.66	0.62	0.54
cobalt, total	µg/L	0.10	<0.20	<0.20	<0.20	0.15	<0.10	<0.10	<0.10	<0.10
copper, total	µg/L	0.50	1.12	1.02	0.98	2.65	<0.50	<0.50	<0.50	<0.50
iron, total	µg/L	10	27	24	20	625	351	270	257	296
lead, total	µg/L	0.050	<0.20	<0.20	<0.20	0.349	0.083	0.053	0.064	0.055
lithium, total	µg/L	1.0	<2.0	<2.0	<2.0	<1.0	1.1	1.2	1.2	1.4
manganese, total	µg/L	0.10	10.5	10.1	10.2	43.7	38.3	34.6	34.0	39.1
mercury, total	µg/L	0.0050	0.0053	<0.0019	<0.0019	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	7.8	17.9	18	0.290	0.274	0.293	0.302	0.298
nickel, total	µg/L	0.50	<1.0	<1.0	<1.0	0.84	0.79	0.880	0.840	0.97
selenium, total	µg/L	0.050	0.19	0.21	0.20	0.120	0.121	0.116	0.150	0.114
silicon, total	µg/L	100	9550	9370	9420	5220	9900	10500	10200	10300
silver, total	µg/L	0.010	<0.020	<0.020	<0.020	<0.010	<0.010	<0.010	<0.010	<0.010
strontium, total	µg/L	0.20	162	163	166	99.9	177	194	193	193
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<5.0	<5.0	<5.0	<0.10	<0.10	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	<5.0	<5.0	<5.0	4.15	0.8	0.860	0.600	0.89
uranium, total	µg/L	0.010	<0.10	<0.10	<0.10	0.021	0.039	0.046	0.046	0.043
vanadium, total	µg/L	0.50	<5.0	<5.0	<5.0	0.70	0.57	0.530	0.500	0.71
zinc, total	µg/L	3.0	7.9	12.6	12.7	10.1	5.2	<3.0	<3.0	<3.0
zirconium, total	µg/L	0.20	<0.10	<0.10	<0.10	<0.20	<0.20	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	32.3	32.9	32.5	14.0	25.8	27.7	27.2	29.3
magnesium, total	mg/L	0.0050	8.05	7.80	7.87	3.88	7.79	8.34	8.27	8.33
potassium, total	mg/L	0.050	1.95	1.86	1.90	0.912	1.16	1.26	1.24	1.29
sodium, total	mg/L	0.050	17.3	16.0	16.1	13.60	13.0	12.8	12.6	12.1
sulfur, total	mg/L	0.50	5.9	5.8	6.5	2.55	3.99	4.72	4.30	4.30
pH	pH units	--	6.66	6.95	6.95	6.83	7.08	7.17	7.15	7.17
Temperature	ºC	--	12.3	13.8	13.8	14.1	13.2	14.2	14.2	13.2
Specific Conductance	µS/cm	--	344	325	325	178	264	288	288	301
Dissolved Oxygen	%	--	10.57	8.72	8.70	8.30	7.45	8.25	8.21	8.96
Turbidity	NTU	--	1.36	0.2	0.18	7.60	2.26	1.37	1.5	1.49

Parameter	Units	Lowest Detection Limit	W-01	W-01	W-01	W-01	W-01	W-01	W-01	W-01
			21-Sep-2020	20-Oct-2020	20-Nov-2020	17-Dec-2020	20-Jan-2021	19-Feb-2021	17-Mar-2021	15-Apr-2021
Time Sampled			15:20	11:51	10:49	12:54	14:35	11:03	15:14	15:40
pH	pH units	0.10	7.76	7.44	7.21	7.39	7.43	7.18	7.8	7.83
ammonia, total (as N)	mg/L	0.0050	0.0139	0.017	0.0539	0.0268	0.085	0.085	0.026	0.036
phosphorus, total	mg/L	0.0020	0.0104	0.0377	0.0295	0.0214	0.0074	0.015	0.0077	0.011
nitrate (as N)	mg/L	0.0050	1.53	0.782	0.344	0.807	1.21	1.12	1.64	1.67
nitrite (as N)	mg/L	0.0010	0.0019	0.0029	0.0029	0.0054	0.0111	0.0062	0.0105	0.0112
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	108	67.2	29.2	42.0	66.5	58.3	90.9	94.7
fluoride	mg/L	0.020	0.037	0.032	<0.020	<0.020	<0.050	<0.050	<0.050	<0.050
aluminum, total	µg/L	3.0	9.1	8.5	27.4	85.3	25.8	27.1	21.8	52.8
antimony, total	µg/L	0.10	<0.10	<0.10	0.15	0.18	<0.50	<0.50	<0.50	<0.50
arsenic, total	µg/L	0.10	0.58	0.74	0.71	0.76	0.64	0.64	0.57	0.77
barium, total	µg/L	0.10	32.4	23.6	14.3	12.0	23.8	20.3	29.1	31.1
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<1.0	<1.0	<1.0	<1.0
boron, total	µg/L	10	<10	<10	<10	<10	<50	<50	<50	<50
cadmium, total	µg/L	0.0050	0.0080	0.0120	<0.0050	0.008	<0.010	0.012	0.013	0.014
chromium, total	µg/L	0.10	0.46	0.45	0.38	0.48	<1.0	<1.0	<1.0	<1.0
cobalt, total	µg/L	0.10	<0.10	<0.10	<0.10	0.13	<0.20	<0.20	<0.20	<0.20
copper, total	µg/L	0.50	<0.50	<0.50	0.89	1.24	<0.50	0.77	<0.50	<0.50
iron, total	µg/L	10	191	424	718	836	461	432	315	480
lead, total	µg/L	0.050	<0.050	0.075	0.299	0.470	<0.20	<0.20	<0.20	<0.20
lithium, total	µg/L	1.0	1.5	<1.0	<1.0	<1.0	<2.0	<2.0	<2.0	<2.0
manganese, total	µg/L	0.10	34.1	43.6	41.2	52.2	50.6	46.6	46.3	46.1
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0019	<0.0019	<0.0019	<0.0019
molybdenum, total	µg/L	0.050	0.327	0.22	0.16	0.196	2.6	<1.0	<1.0	<1.0
nickel, total	µg/L	0.50	1.00	0.78	<0.50	0.54	<1.0	<1.0	<1.0	<1.0
selenium, total	µg/L	0.050	0.171	0.078	<0.050	<0.050	0.11	<0.10	0.14	0.14
silicon, total	µg/L	100	10600	6190	2670	2160	7740	6940	10200	10200
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.020	<0.020	<0.020	<0.020
strontium, total	µg/L	0.20	202	125	53	40.9	128	111	179	189
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<5.0	<5.0	<5.0	<5.0
titanium, total	µg/L	0.30	<0.30	<0.30	1.16	3.21	<5.0	<5.0	<5.0	<5.0
uranium, total	µg/L	0.010	0.045	0.022	<0.010	0.010	<0.10	<0.10	<0.10	<0.10
vanadium, total	µg/L	0.50	0.72	<0.50	<0.50	0.61	<5.0	<5.0	<5.0	<5.0
zinc, total	µg/L	3.0	<3.0	3.2	6.1	8.2	<5.0	6.3	<5.0	<5.0
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10
calcium, total	mg/L	0.050	28.9	17.8	8.17	6.31	18.1	15.7	24.8	25.8
magnesium, total	mg/L	0.0050	8.67	5.51	2.14	1.56	5.18	4.64	7.01	7.34
potassium, total	mg/L	0.050	1.31	1.11	0.762	0.687	1.03	0.979	1.15	1.30
sodium, total	mg/L	0.050	13.2	17.3	17.1	15.6	13.6	20.9	11.9	12.5
sulfur, total	mg/L	0.50	4.62	2.67	0.97	0.69	<3.0	3.0	4.1	4.2
pH	pH units	--	7.2	6.96	6.82	6.51	6.89	6.9	6.67	6.9
Temperature	ºC	--	13.3	11.7	7.6	6.7	8.9	7.0	11.0	13.0
Specific Conductance	µS/cm	--	262	222	158	149	222	241	284	269
Dissolved Oxygen	%	--	9.67	8.19	10.53	10.43	10.82	10.4	9.96	8.45
Turbidity	NTU	--	3.22	2.09	1.6	3.7	1.07	2.35	2.16	4.34

Travel Blanks

Parameter	Units	Lowest Detection Limit	Travel Blank 25-May-2020	Travel Blank 24-Jun-2020	Travel Blank 21-Jul-2020	Travel Blank 11-Aug-2020	Travel Blank 18-Sep-2020	Travel Blank 19-Oct-2020	Travel Blank 20-Nov-2020	Travel Blank 17-Dec-2020
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	**21.5**
pH	pH units	0.10	5.35	6.31	5.84	5.31	6.08	5.94	5.42	7.15
ammonia, total (as N)	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0828
fluoride	mg/L	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
nitrate (as N)	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.516
nitrite (as N)	mg/L	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0073
phosphorus, total	mg/L	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0358
aluminum, total	µg/L	3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
antimony, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
arsenic, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
barium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10
cadmium, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cesium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
chromium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
cobalt, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
copper, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
iron, total	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10
lead, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
lithium, total	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
manganese, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
nickel, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
phosphorus, total	µg/L	50	<50	<50	<50	<50	<50	<50	<50	<50
rubidium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
selenium, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
strontium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
tellurium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
thorium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
tungsten, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
uranium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
vanadium, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
zinc, total	µg/L	3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
magnesium, total	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
potassium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
silicon, total	mg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
sodium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
sulfur, total	mg/L	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Travel Blanks

Parameter	Units	Lowest Detection Limit	Travel Blank 20-Jan-2021	Travel Blank 19-Feb-2021	Travel Blank 17-Mar-2021	Travel Blank 15-Apr-2021
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	<0.50	<0.50	<0.50	<0.50
pH	pH units	0.10	7.68	7.98	6.2	5.88
ammonia, total (as N)	mg/L	0.0050	<0.015	<0.015	<0.015	<0.015
fluoride	mg/L	0.020	<0.050	<0.050	<0.050	<0.050
nitrate (as N)	mg/L	0.0050	<0.0020	<0.0020	<0.0020	<0.0020
nitrite (as N)	mg/L	0.0010	<0.0020	<0.0020	<0.0020	<0.0020
phosphorus, total	mg/L	0.0020	<0.0030	<0.0030	<0.0030	<0.0030
aluminum, total	µg/L	3.0	<3.0	<3.0	<3.0	<3.0
antimony, total	µg/L	0.10	<0.50	<0.50	<0.50	<0.50
arsenic, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10
barium, total	µg/L	0.10	<1.0	<1.0	<1.0	<1.0
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<1.0	<1.0	<1.0	<1.0
boron, total	µg/L	10	<50	<50	<50	<50
cadmium, total	µg/L	0.0050	<0.010	<0.010	<0.010	<0.010
cesium, total	µg/L	0.010	--	--	--	--
chromium, total	µg/L	0.10	<1.0	<1.0	<1.0	<1.0
cobalt, total	µg/L	0.10	<0.20	<0.20	<0.20	<0.20
copper, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50
iron, total	µg/L	10	<10	<10	<10	<10
lead, total	µg/L	0.050	<0.20	<0.20	<0.20	<0.20
lithium, total	µg/L	1.0	<2.0	<2.0	<2.0	<2.0
manganese, total	µg/L	0.10	<1.0	<1.0	<1.0	<1.0
mercury, total	µg/L	0.0050	<0.0019	<0.0019	<0.0019	<0.0019
molybdenum, total	µg/L	0.050	<1.0	<1.0	<1.0	<1.0
nickel, total	µg/L	0.50	<1.0	<1.0	<1.0	<1.0
phosphorus, total	µg/L	50	--	--	--	--
rubidium, total	µg/L	0.20	--	--	--	--
selenium, total	µg/L	0.050	<0.10	<0.10	<0.10	<0.10
silver, total	µg/L	0.010	<0.020	<0.020	<0.020	<0.020
strontium, total	µg/L	0.20	<1.0	<1.0	<1.0	<1.0
tellurium, total	µg/L	0.20	--	--	--	--
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010
thorium, total	µg/L	0.10	--	--	--	--
tin, total	µg/L	0.10	<5.0	<5.0	<5.0	<5.0
titanium, total	µg/L	0.30	<5.0	<5.0	<5.0	<5.0
tungsten, total	µg/L	0.10	--	--	--	--
uranium, total	µg/L	0.010	<0.10	<0.10	<0.10	<0.10
vanadium, total	µg/L	0.50	<5.0	<5.0	<5.0	<5.0
zinc, total	µg/L	3.0	<5.0	<5.0	<5.0	<5.0
zirconium, total	µg/L	0.20	<0.10	<0.10	<0.10	<0.10
calcium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
magnesium, total	mg/L	0.0050	<0.050	<0.050	<0.050	<0.050
potassium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
silicon, total	mg/L	0.10	<0.10	<0.10	<0.10	<0.10
sodium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
sulfur, total	mg/L	0.50	<3.0	<3.0	<3.0	<3.0

Field Blanks

Parameter	Units	Lowest Detection Limit	Field Blank 25-May-2020	Field Blank 24-Jun-2020	Field Blank 21-Jul-2020	Field Blank 13-Aug-2020	Field Blank 21-Sep-2020	Feild blank 19-Oct-2020	Field Blank 20-Nov-2020	Field Blank 17-Dec-2020
Time Sampled			15:06	17:05	17:40	17:04	16:30	18:10	16:12	14:50
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60	<0.60
pH	pH units	0.10	5.21	6.20	5.9	5.36	5.49	6.07	5.42	5.32
ammonia, total (as N)	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
fluoride	mg/L	0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
nitrate (as N)	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
nitrite (as N)	mg/L	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
phosphorus, total	mg/L	0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
aluminum, total	µg/L	3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
antimony, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
arsenic, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
barium, total	µg/L	0.10	<0.10	**0.33**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
boron, total	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10
cadmium, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
cesium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
chromium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
cobalt, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
copper, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
iron, total	µg/L	10	<10	<10	<10	<10	<10	<10	<10	<10
lead, total	µg/L	0.050	<0.050	<0.050	**0.467**	<0.050	<0.050	<0.050	<0.050	<0.050
lithium, total	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
manganese, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
mercury, total	µg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
molybdenum, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	**0.246**
nickel, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
phosphorus, total	µg/L	50	<50	<50	<50	<50	<50	<50	<50	<50
rubidium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
selenium, total	µg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
silver, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
strontium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
tellurium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
thorium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
tin, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
titanium, total	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
tungsten, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
uranium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
vanadium, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
zinc, total	µg/L	3.0	<3.0	**80.0**	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
zirconium, total	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
calcium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
magnesium, total	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
potassium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
silicon, total	mg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
sodium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
sulfur, total	mg/L	0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Field Blanks

Parameter	Units	Lowest Detection Limit	Field Blank 20-Jan-2021	Field Blank 19-Feb-2021	Field Blank 17-Mar-2021	Field Blank 15-Apr-2021
Time Sampled			16:49	17:00	16:53	18:54
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	<0.50	<0.50	<0.50	<0.50
pH	pH units	0.10	7.46	7.79	6.02	5.27
ammonia, total (as N)	mg/L	0.0050	<0.015	<0.015	<0.015	<0.015
fluoride	mg/L	0.020	<0.050	<0.050	<0.050	<0.050
nitrate (as N)	mg/L	0.0050	<0.0020	<0.0020	<0.0020	<0.0020
nitrite (as N)	mg/L	0.0010	<0.0020	<0.0020	<0.0020	<0.0020
phosphorus, total	mg/L	0.0020	<0.0030	<0.0030	<0.0030	<0.0030
aluminum, total	µg/L	3.0	<3.0	<3.0	<3.0	<3.0
antimony, total	µg/L	0.10	<0.50	<0.50	<0.50	<0.50
arsenic, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10
barium, total	µg/L	0.10	<1.0	<1.0	<1.0	<1.0
beryllium, total	µg/L	0.10	<0.10	<0.10	<0.10	<0.10
bismuth, total	µg/L	0.050	<1.0	<1.0	<1.0	<1.0
boron, total	µg/L	10	<50	<50	<50	<50
cadmium, total	µg/L	0.0050	<0.010	<0.010	<0.010	<0.010
cesium, total	µg/L	0.010	--	--	--	--
chromium, total	µg/L	0.10	<1.0	<1.0	<1.0	<1.0
cobalt, total	µg/L	0.10	<0.20	<0.20	<0.20	<0.20
copper, total	µg/L	0.50	<0.50	<0.50	<0.50	<0.50
iron, total	µg/L	10	<10	<10	<10	<10
lead, total	µg/L	0.050	<0.20	<0.20	<0.20	<0.20
lithium, total	µg/L	1.0	<2.0	<2.0	<2.0	<2.0
manganese, total	µg/L	0.10	<1.0	<1.0	<1.0	<1.0
mercury, total	µg/L	0.0050	<0.0019	<0.0019	<0.0019	<0.0019
molybdenum, total	µg/L	0.050	<1.0	<1.0	<1.0	<1.0
nickel, total	µg/L	0.50	<1.0	<1.0	<1.0	<1.0
phosphorus, total	µg/L	50	--	--	--	--
rubidium, total	µg/L	0.20	--	--	--	--
selenium, total	µg/L	0.050	<0.10	<0.10	<0.10	<0.10
silver, total	µg/L	0.010	<0.020	<0.020	<0.020	<0.020
strontium, total	µg/L	0.20	<1.0	<1.0	<1.0	<1.0
tellurium, total	µg/L	0.20	--	--	--	--
thallium, total	µg/L	0.010	<0.010	<0.010	<0.010	<0.010
thorium, total	µg/L	0.10	--	--	--	--
tin, total	µg/L	0.10	<5.0	<5.0	<5.0	<5.0
titanium, total	µg/L	0.30	<5.0	<5.0	<5.0	<5.0
tungsten, total	µg/L	0.10	--	--	--	--
uranium, total	µg/L	0.010	<0.10	<0.10	<0.10	<0.10
vanadium, total	µg/L	0.50	<5.0	<5.0	<5.0	<5.0
zinc, total	µg/L	3.0	<5.0	<5.0	<5.0	<5.0
zirconium, total	µg/L	0.20	<0.10	<0.10	<0.10	<0.10
calcium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
magnesium, total	mg/L	0.0050	<0.050	<0.050	<0.050	<0.050
potassium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
silicon, total	mg/L	0.10	<0.10	<0.10	<0.10	<0.10
sodium, total	mg/L	0.050	<0.050	<0.050	<0.050	<0.050
sulfur, total	mg/L	0.50	<3.0	<3.0	<3.0	<3.0

Duplicate Samples

Parameter	Units	Lowest Detection Limit	B-01	B-01 Dup	RPD
Time Sampled			17-Dec-2020 11:26	17-Dec-2020 11:26	17-Dec-2020
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	112	45.3	**85%**
pH	pH units	0.10	6.98	7.57	8%
ammonia, total (as N)	mg/L	0.0050	0.0207	0.039	**61%**
fluoride	mg/L	0.020	0.067	0.025	*91%*
nitrate plus nitrite (as N)	mg/L	--	--	--	--
nitrate (as N)	mg/L	0.0050	2.29	0.730	**103%**
nitrite (as N)	mg/L	0.0010	<0.0010	0.0067	nc
phosphorus, total	mg/L	0.0020	0.0085	0.0264	*103%*
aluminum, total	µg/L	3.0	131	125	5%
antimony, total	µg/L	0.10	0.18	0.18	0%
arsenic, total	µg/L	0.10	0.51	0.50	2%
barium, total	µg/L	0.10	12.4	12.5	1%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<0.050	<0.050	nc
boron, total	µg/L	10	<10	<10	nc
cadmium, total	µg/L	0.0050	0.019	0.024	21%
cesium, total	µg/L	0.010	<0.010	<0.010	nc
chromium, total	µg/L	0.10	0.94	0.96	2%
cobalt, total	µg/L	0.10	0.27	0.25	8%
copper, total	µg/L	0.50	2.64	2.61	1%
iron, total	µg/L	10	504	495	2%
lead, total	µg/L	0.050	0.918	0.912	1%
lithium, total	µg/L	1.0	<1.0	<1.0	nc
manganese, total	µg/L	0.10	65.4	64.3	2%
mercury, total	µg/L	0.0050	0.0051	<0.0050	nc
molybdenum, total	µg/L	0.050	0.233	0.222	5%
nickel, total	µg/L	0.50	0.86	0.87	1%
phosphorus, total	µg/L	50	<50	<50	nc
rubidium, total	µg/L	0.20	0.43	0.40	7%
selenium, total	µg/L	0.050	<0.050	<0.050	nc
silver, total	µg/L	0.010	<0.010	<0.010	nc
strontium, total	µg/L	0.20	53.8	53.0	1%
tellurium, total	µg/L	0.20	<0.20	<0.20	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	<0.10	<0.10	nc
tin, total	µg/L	0.10	<0.10	<0.10	nc
titanium, total	µg/L	0.30	4.16	4.10	1%
tungsten, total	µg/L	0.10	<0.10	<0.10	nc
uranium, total	µg/L	0.010	<0.010	<0.010	nc
vanadium, total	µg/L	0.50	1.01	0.99	2%
zinc, total	µg/L	3.0	26.8	26.3	2%
zirconium, total	µg/L	0.20	0.21	0.20	5%
calcium, total	mg/L	0.050	6.50	6.60	2%
magnesium, total	mg/L	0.0050	1.24	1.22	2%
potassium, total	mg/L	0.050	0.598	0.596	0%
silicon, total	mg/L	0.10	2.51	2.54	1%
sodium, total	mg/L	0.050	7.46	7.42	1%
sulfur, total	mg/L	0.50	0.85	0.81	5%
Field Data					
Temperature	ºC	--	7.7	7.7	0%
Dissolved Oxygen	%	--	63.0	62.7	0%
Dissolved Oxygen	mg/L	--	7.48	7.47	0%
Specific Conductance	µS/cm	--	98.7	99.1	0%
Salinity		--	0.05	0.05	0%
pH	pH units	--	6.16	6.16	0%
Turbidity	NTU	--	4.09	3.54	14%

Duplicate Samples

Parameter	Units	Lowest Detection Limit	B-02	B-02 DUP	RPD
Time Sampled			20-Jan-2021 14:01	20-Jan-2021 14:01	20-Jan-2021
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	91.7	92.3	1%
pH	pH units	0.10	7.54	7.07	6%
ammonia, total (as N)	mg/L	0.0050	0.041	0.042	2%
fluoride	mg/L	0.020	<0.050	<0.050	nc
nitrate plus nitrite (as N)	mg/L	--	1.72	1.69	2%
nitrate (as N)	mg/L	0.0050	1.71	1.68	2%
nitrite (as N)	mg/L	0.0010	0.0077	0.0077	0%
phosphorus, total	mg/L	0.0020	0.0043	0.0067	*44%*
aluminum, total	µg/L	3.0	64.1	68.5	7%
antimony, total	µg/L	0.10	<0.50	<0.50	nc
arsenic, total	µg/L	0.10	0.62	0.62	0%
barium, total	µg/L	0.10	20.0	20.3	1%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<1.0	<1.0	nc
boron, total	µg/L	10	<50	<50	nc
cadmium, total	µg/L	0.0050	0.014	<0.010	nc
cesium, total	µg/L	0.010	--	--	nc
chromium, total	µg/L	0.10	<1.0	<1.0	nc
cobalt, total	µg/L	0.10	<0.20	<0.20	nc
copper, total	µg/L	0.50	0.79	0.78	1%
iron, total	µg/L	10	447	454	2%
lead, total	µg/L	0.050	<0.20	<0.20	nc
lithium, total	µg/L	1.0	<2.0	<2.0	nc
manganese, total	µg/L	0.10	121	121	0%
mercury, total	µg/L	0.0050	<0.0019	<0.0019	nc
molybdenum, total	µg/L	0.050	<1.0	<1.0	nc
nickel, total	µg/L	0.50	<1.0	<1.0	nc
phosphorus, total	µg/L	50	--	--	nc
rubidium, total	µg/L	0.20	--	--	nc
selenium, total	µg/L	0.050	0.14	0.14	0%
silver, total	µg/L	0.010	<0.020	<0.020	nc
strontium, total	µg/L	0.20	161	161	0%
tellurium, total	µg/L	0.20	--	--	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	--	--	nc
tin, total	µg/L	0.10	<5.0	<5.0	nc
titanium, total	µg/L	0.30	<5.0	<5.0	nc
tungsten, total	µg/L	0.10	--	--	nc
uranium, total	µg/L	0.010	<0.10	<0.10	nc
vanadium, total	µg/L	0.50	<5.0	<5.0	nc
zinc, total	µg/L	3.0	6.2	6.3	2%
zirconium, total	µg/L	0.20	<0.10	<0.10	nc
calcium, total	mg/L	0.050	25.7	26	1%
magnesium, total	mg/L	0.0050	6.68	6.67	0%
potassium, total	mg/L	0.050	1.40	1.40	0%
silicon, total	mg/L	0.10	9.89	10.0	1%
sodium, total	mg/L	0.050	11.3	11.2	1%
sulfur, total	mg/L	0.50	4.0	4.7	16%
Field Data					
Temperature	ºC	--	8.4	8.4	0%
Dissolved Oxygen	%	--	96.4	98.9	3%
Dissolved Oxygen	mg/L	--	12.03	11.84	2%
Specific Conductance	µS/cm	--	249	249	0%
Salinity		--	0.12	0.12	0%
pH	pH units	--	7.50	7.50	0%
Turbidity	NTU	--	2.65	2.53	5%

Duplicate Samples

Parameter	Units	Lowest Detection Limit	D-01 21-Sep-2020	D-01 Dup 21-Sep-2020	RPD 21-Sep-2020
Time Sampled			13:46	13:46	
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	122	115	6%
pH	pH units	0.10	8.06	8.06	0%
ammonia, total (as N)	mg/L	0.0050	0.013	0.0164	23%
fluoride	mg/L	0.020	0.031	0.033	6%
nitrate plus nitrite (as N)	mg/L	--	--	--	--
nitrate (as N)	mg/L	0.0050	0.844	0.816	3%
nitrite (as N)	mg/L	0.0010	0.0025	0.0025	0%
phosphorus, total	mg/L	0.0020	0.0214	0.0193	10%
aluminum, total	µg/L	3.0	32.1	33.8	5%
antimony, total	µg/L	0.10	<0.10	<0.10	nc
arsenic, total	µg/L	0.10	1.68	1.60	5%
barium, total	µg/L	0.10	16.0	13.9	14%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<0.050	<0.050	nc
boron, total	µg/L	10	20	19	5%
cadmium, total	µg/L	0.0050	0.0054	<0.0050	nc
cesium, total	µg/L	0.010	<0.010	<0.010	nc
chromium, total	µg/L	0.10	0.45	0.47	4%
cobalt, total	µg/L	0.10	<0.10	<0.10	nc
copper, total	µg/L	0.50	<0.50	<0.50	nc
iron, total	µg/L	10	410	397	3%
lead, total	µg/L	0.050	<0.050	<0.050	nc
lithium, total	µg/L	1.0	1.9	1.8	5%
manganese, total	µg/L	0.10	151	139	8%
mercury, total	µg/L	0.0050	<0.0050	<0.0050	nc
molybdenum, total	µg/L	0.050	0.780	0.691	12%
nickel, total	µg/L	0.50	0.95	0.71	*29%*
phosphorus, total	µg/L	50	<50	<50	nc
rubidium, total	µg/L	0.20	0.63	0.57	10%
selenium, total	µg/L	0.050	0.297	0.261	13%
silver, total	µg/L	0.010	0.012	<0.010	nc
strontium, total	µg/L	0.20	170	165	3%
tellurium, total	µg/L	0.20	<0.20	<0.20	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	<0.10	<0.10	nc
tin, total	µg/L	0.10	<0.10	<0.10	nc
titanium, total	µg/L	0.30	<0.30	1.36	nc
tungsten, total	µg/L	0.10	<0.10	<0.10	nc
uranium, total	µg/L	0.010	0.095	0.091	4%
vanadium, total	µg/L	0.50	1.07	1.00	7%
zinc, total	µg/L	3.0	<3.0	<3.0	nc
zirconium, total	µg/L	0.20	<0.20	<0.20	nc
calcium, total	mg/L	0.050	31.0	29.9	4%
magnesium, total	mg/L	0.0050	10.8	9.68	11%
potassium, total	mg/L	0.050	1.82	1.68	8%
silicon, total	mg/L	0.10	11.9	11.0	8%
sodium, total	mg/L	0.050	11.1	9.60	14%
sulfur, total	mg/L	0.50	5.49	5.17	6%
Field Data					
Temperature	ºC	--	14.3	14.4	1%
Dissolved Oxygen	%	--	96.9	96.9	0%
Dissolved Oxygen	mg/L	--	9.91	9.89	0%
Specific Conductance	µS/cm	--	264	264	0%
Salinity		--	0.13	0.13	0%
pH	pH units	--	7.60	7.61	0%
Turbidity	NTU	--	3.41	3.39	1%

Duplicate Samples

Parameter	Units	Lowest Detection Limit	F-01 25-May-2020	F-01 Dup 25-May-2020	RPD 25-May-2020
Time Sampled			14:53	14:53	
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	37.6	36.8	2%
pH	pH units	0.10	7.57	7.55	0%
ammonia, total (as N)	mg/L	0.0050	0.146	0.143	2%
fluoride	mg/L	0.020	0.029	0.029	0%
nitrate plus nitrite (as N)	mg/L	--	--	--	--
nitrate (as N)	mg/L	0.0050	0.423	0.428	1%
nitrite (as N)	mg/L	0.0010	0.0215	0.0208	3%
phosphorus, total	mg/L	0.0020	0.0452	0.0464	3%
aluminum, total	µg/L	3.0	195	200	3%
antimony, total	µg/L	0.10	0.30	0.31	3%
arsenic, total	µg/L	0.10	2.61	2.68	3%
barium, total	µg/L	0.10	10.5	10.9	4%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<0.050	<0.050	nc
boron, total	µg/L	10	<10	<10	nc
cadmium, total	µg/L	0.0050	0.0117	0.0101	15%
cesium, total	µg/L	0.010	<0.010	0.010	nc
chromium, total	µg/L	0.10	1.56	1.59	2%
cobalt, total	µg/L	0.10	0.17	0.18	6%
copper, total	µg/L	0.50	3.75	3.87	3%
iron, total	µg/L	10	619	625	1%
lead, total	µg/L	0.050	0.254	0.270	6%
lithium, total	µg/L	1.0	<1.0	<1.0	nc
manganese, total	µg/L	0.10	85.6	84.8	1%
mercury, total	µg/L	0.0050	<0.0050	<0.0050	nc
molybdenum, total	µg/L	0.050	0.438	0.389	12%
nickel, total	µg/L	0.50	0.57	0.61	7%
phosphorus, total	µg/L	50	<50	<50	nc
rubidium, total	µg/L	0.20	0.62	0.52	18%
selenium, total	µg/L	0.050	0.097	0.060	*47%*
silver, total	µg/L	0.010	<0.010	<0.010	nc
strontium, total	µg/L	0.20	60.8	60.9	0%
tellurium, total	µg/L	0.20	<0.20	<0.20	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	<0.10	<0.10	nc
tin, total	µg/L	0.10	<0.10	<0.10	nc
titanium, total	µg/L	0.30	7.52	8.89	17%
tungsten, total	µg/L	0.10	<0.10	<0.10	nc
uranium, total	µg/L	0.010	0.026	0.027	4%
vanadium, total	µg/L	0.50	1.06	1.11	5%
zinc, total	µg/L	3.0	7.0	7.4	6%
zirconium, total	µg/L	0.20	<0.20	0.22	nc
calcium, total	mg/L	0.050	10.5	10.3	2%
magnesium, total	mg/L	0.0050	2.72	2.71	0%
potassium, total	mg/L	0.050	0.901	0.916	2%
silicon, total	mg/L	0.10	2.33	2.43	4%
sodium, total	mg/L	0.050	5.54	5.45	2%
sulfur, total	mg/L	0.50	1.76	1.85	5%
Field Data					
Temperature	ºC	--	14.7	--	--
Dissolved Oxygen	%	--	90.9	--	--
Dissolved Oxygen	mg/L	--	9.22	--	--
Specific Conductance	µS/cm	--	105	--	--
Salinity		--	0.05	--	--
pH	pH units	--	7.26	--	--
Turbidity	NTU	--	9.41	--	--

Duplicate Samples

Parameter	Units	Lowest Detection Limit	F-02 24-Jun-2020	F-02 Dup 24-Jun-2020	RPD 24-Jun-2020
Time Sampled			16:05	16:05	
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	83.2	82.0	1%
pH	pH units	0.10	7.57	7.66	1%
ammonia, total (as N)	mg/L	0.0050	0.0538	0.0623	15%
fluoride	mg/L	0.020	0.048	0.046	4%
nitrate plus nitrite (as N)	mg/L	--	--	--	--
nitrate (as N)	mg/L	0.0050	0.0796	0.0752	6%
nitrite (as N)	mg/L	0.0010	0.0023	0.0028	20%
phosphorus, total	mg/L	0.0020	0.106	0.102	4%
aluminum, total	µg/L	3.0	42	38	11%
antimony, total	µg/L	0.10	<0.10	<0.10	nc
arsenic, total	µg/L	0.10	4.55	4.54	0%
barium, total	µg/L	0.10	35.5	35.5	0%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<0.050	<0.050	nc
boron, total	µg/L	10	14	14	0%
cadmium, total	µg/L	0.0050	0.0056	<0.0050	nc
cesium, total	µg/L	0.010	<0.010	<0.010	nc
chromium, total	µg/L	0.10	0.34	0.34	0%
cobalt, total	µg/L	0.10	1.84	1.83	1%
copper, total	µg/L	0.50	0.84	0.82	2%
iron, total	µg/L	10	5290	5140	3%
lead, total	µg/L	0.050	0.11	0.11	2%
lithium, total	µg/L	1.0	<1.0	<1.0	nc
manganese, total	µg/L	0.10	3340	3300	1%
mercury, total	µg/L	0.0050	<0.0050	<0.0050	nc
molybdenum, total	µg/L	0.050	0.884	0.914	3%
nickel, total	µg/L	0.50	0.61	0.58	5%
phosphorus, total	µg/L	50	127	98	**26%**
rubidium, total	µg/L	0.20	1.47	1.44	2%
selenium, total	µg/L	0.050	0.096	0.117	20%
silver, total	µg/L	0.010	<0.010	<0.010	nc
strontium, total	µg/L	0.20	138	137	1%
tellurium, total	µg/L	0.20	<0.20	<0.20	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	<0.10	<0.10	nc
tin, total	µg/L	0.10	<0.10	<0.10	nc
titanium, total	µg/L	0.30	1.7	1.5	11%
tungsten, total	µg/L	0.10	0.27	0.26	4%
uranium, total	µg/L	0.010	0.019	0.017	11%
vanadium, total	µg/L	0.50	0.54	0.50	8%
zinc, total	µg/L	3.0	36.7	3.2	**168%**
zirconium, total	µg/L	0.20	<0.20	<0.20	nc
calcium, total	mg/L	0.050	23.2	23.1	0%
magnesium, total	mg/L	0.0050	6.12	5.92	3%
potassium, total	mg/L	0.050	2.07	2.06	0%
silicon, total	mg/L	0.10	4.80	4.79	0%
sodium, total	mg/L	0.050	14.5	14.4	1%
sulfur, total	mg/L	0.50	0.88	0.82	7%
Field Data					
Temperature	ºC	--	18.5	18.5	0%
Dissolved Oxygen	%	--	30.3	30.4	0%
Dissolved Oxygen	mg/L	--	2.82	2.84	1%
Specific Conductance	µS/cm	--	244	244	0%
Salinity		--	0.12	0.12	0%
pH	pH units	--	6.90	6.90	0%
Turbidity	NTU	--	13.6	13.3	2%

Duplicate Samples

Parameter	Units	Lowest Detection Limit	H-01 11-Aug-2020	H-01 Dup 11-Aug-2020	RPD 11-Aug-2020
Time Sampled			15:18	15:18	
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	118	106	11%
pH	pH units	0.10	6.90	6.91	0%
ammonia, total (as N)	mg/L	0.0050	0.0070	0.0059	17%
fluoride	mg/L	0.020	0.042	0.042	0%
nitrate plus nitrite (as N)	mg/L	--	--	--	--
nitrate (as N)	mg/L	0.0050	2.35	2.34	0%
nitrite (as N)	mg/L	0.0010	0.0014	<0.0010	nc
phosphorus, total	mg/L	0.0020	0.0073	0.0079	8%
aluminum, total	µg/L	3.0	6.0	5.4	11%
antimony, total	µg/L	0.10	<0.10	<0.10	nc
arsenic, total	µg/L	0.10	0.44	0.43	2%
barium, total	µg/L	0.10	12.2	12.1	1%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<0.050	<0.050	nc
boron, total	µg/L	10	12	12	0%
cadmium, total	µg/L	0.0050	0.0161	0.0159	1%
cesium, total	µg/L	0.010	<0.010	<0.010	nc
chromium, total	µg/L	0.10	0.23	0.26	12%
cobalt, total	µg/L	0.10	<0.10	<0.10	nc
copper, total	µg/L	0.50	0.56	0.52	7%
iron, total	µg/L	10	45	49	9%
lead, total	µg/L	0.050	<0.050	<0.050	nc
lithium, total	µg/L	1.0	1.0	<1.0	nc
manganese, total	µg/L	0.10	10.4	10.5	1%
mercury, total	µg/L	0.0050	0.0083	0.0092	10%
molybdenum, total	µg/L	0.050	0.197	0.228	15%
nickel, total	µg/L	0.50	<0.50	<0.50	nc
phosphorus, total	µg/L	50	<50	<50	nc
rubidium, total	µg/L	0.20	<0.20	<0.20	nc
selenium, total	µg/L	0.050	0.257	0.235	9%
silver, total	µg/L	0.010	<0.010	<0.010	nc
strontium, total	µg/L	0.20	160	156	3%
tellurium, total	µg/L	0.20	<0.20	<0.20	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	<0.10	<0.10	nc
tin, total	µg/L	0.10	<0.10	<0.10	nc
titanium, total	µg/L	0.30	0.35	<0.30	nc
tungsten, total	µg/L	0.10	<0.10	<0.10	nc
uranium, total	µg/L	0.010	0.011	<0.010	nc
vanadium, total	µg/L	0.50	0.54	<0.50	nc
zinc, total	µg/L	3.0	<3.0	<3.0	nc
zirconium, total	µg/L	0.20	<0.20	<0.20	nc
calcium, total	mg/L	0.050	30.8	29.8	3%
magnesium, total	mg/L	0.0050	9.95	7.79	24%
potassium, total	mg/L	0.050	1.65	1.64	1%
silicon, total	mg/L	0.10	10.4	10.2	2%
sodium, total	mg/L	0.050	20.9	17.1	20%
sulfur, total	mg/L	0.50	5.88	5.78	2%
Field Data					
Temperature	ºC	--	13.5	13.5	0%
Dissolved Oxygen	%	--	56.6	60.8	7%
Dissolved Oxygen	mg/L	--	5.89	6.34	7%
Specific Conductance	µS/cm	--	340	339	0%
Salinity		--	0.16	0.16	0%
pH	pH units	--	6.41	6.44	0%
Turbidity	NTU	--	0.63	0.66	5%

Duplicate Samples

Parameter	Units	Lowest Detection Limit	H-01	H-01 DUP	RPD
Time Sampled			19-Feb-2021 16:14	19-Feb-2021 16:14	19-Feb-2021
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	99.1	96.2	3%
pH	pH units	0.10	6.94	7.02	1%
ammonia, total (as N)	mg/L	0.0050	0.019	<0.015	nc
fluoride	mg/L	0.020	<0.050	<0.050	nc
nitrate plus nitrite (as N)	mg/L	--	2.30	2.28	1%
nitrate (as N)	mg/L	0.0050	2.30	2.28	1%
nitrite (as N)	mg/L	0.0010	<0.0020	<0.0020	nc
phosphorus, total	mg/L	0.0020	0.0080	0.0081	1%
aluminum, total	µg/L	3.0	40.9	39.4	4%
antimony, total	µg/L	0.10	<0.50	<0.50	nc
arsenic, total	µg/L	0.10	0.59	0.53	11%
barium, total	µg/L	0.10	13.9	13.5	3%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<1.0	<1.0	nc
boron, total	µg/L	10	<50	<50	nc
cadmium, total	µg/L	0.0050	0.029	0.026	11%
cesium, total	µg/L	0.010	--	--	nc
chromium, total	µg/L	0.10	<1.0	<1.0	nc
cobalt, total	µg/L	0.10	<0.20	<0.20	nc
copper, total	µg/L	0.50	1.49	1.46	2%
iron, total	µg/L	10	106	100	6%
lead, total	µg/L	0.050	<0.20	<0.20	nc
lithium, total	µg/L	1.0	<2.0	<2.0	nc
manganese, total	µg/L	0.10	15.3	15.6	2%
mercury, total	µg/L	0.0050	0.0055	0.0050	10%
molybdenum, total	µg/L	0.050	<1.0	<1.0	nc
nickel, total	µg/L	0.50	<1.0	<1.0	nc
phosphorus, total	µg/L	50	--	--	nc
rubidium, total	µg/L	0.20	--	--	nc
selenium, total	µg/L	0.050	0.21	0.19	10%
silver, total	µg/L	0.010	<0.020	<0.020	nc
strontium, total	µg/L	0.20	150	151	1%
tellurium, total	µg/L	0.20	--	--	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	--	--	nc
tin, total	µg/L	0.10	<5.0	<5.0	nc
titanium, total	µg/L	0.30	<5.0	<5.0	nc
tungsten, total	µg/L	0.10	--	--	nc
uranium, total	µg/L	0.010	<0.10	<0.10	nc
vanadium, total	µg/L	0.50	<5.0	<5.0	nc
zinc, total	µg/L	3.0	8.5	8.4	1%
zirconium, total	µg/L	0.20	<0.10	<0.10	nc
calcium, total	mg/L	0.050	28.2	27.1	4%
magnesium, total	mg/L	0.0050	6.96	6.93	0%
potassium, total	mg/L	0.050	1.61	1.65	2%
silicon, total	mg/L	0.10	9.27	8.88	4%
sodium, total	mg/L	0.050	41.6	41.2	1%
sulfur, total	mg/L	0.50	4.7	4.7	0%
Field Data					
Temperature	ºC	--	11.9	11.9	0%
Dissolved Oxygen	%	--	65.7	67.3	2%
Dissolved Oxygen	mg/L	--	7.09	7.26	2%
Specific Conductance	µS/cm	--	447	449	0%
Salinity		--	0.22	0.22	0%
pH	pH units	--	6.33	6.33	0%
Turbidity	NTU	--	1.74	1.91	9%

Duplicate Samples

Parameter	Units	Lowest Detection Limit	H-02 20-Oct-2020 09:34	H-02 Dup 20-Oct-2020 09:34	RPD 20-Oct-2020
Time Sampled					
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	112	111	1%
pH	pH units	0.10	7.70	7.78	1%
ammonia, total (as N)	mg/L	0.0050	0.0183	0.0194	6%
fluoride	mg/L	0.020	0.032	0.031	3%
nitrate plus nitrite (as N)	mg/L	--	--	--	--
nitrate (as N)	mg/L	0.0050	1.10	1.09	1%
nitrite (as N)	mg/L	0.0010	0.0036	0.0049	*31%*
phosphorus, total	mg/L	0.0020	0.0118	0.0124	5%
aluminum, total	µg/L	3.0	68.7	68.6	0%
antimony, total	µg/L	0.10	0.12	0.12	0%
arsenic, total	µg/L	0.10	1.49	1.47	1%
barium, total	µg/L	0.10	16.8	16.0	5%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<0.050	<0.050	nc
boron, total	µg/L	10	12	<10	nc
cadmium, total	µg/L	0.0050	0.0115	0.0120	4%
cesium, total	µg/L	0.010	<0.010	<0.010	nc
chromium, total	µg/L	0.10	0.57	0.59	3%
cobalt, total	µg/L	0.10	0.20	0.20	0%
copper, total	µg/L	0.50	1.43	1.37	4%
iron, total	µg/L	10	284	274	4%
lead, total	µg/L	0.050	0.053	0.052	2%
lithium, total	µg/L	1.0	<1.0	<1.0	nc
manganese, total	µg/L	0.10	56.2	54.2	4%
mercury, total	µg/L	0.0050	<0.0050	<0.0050	nc
molybdenum, total	µg/L	0.050	1.92	1.80	6%
nickel, total	µg/L	0.50	0.81	0.82	1%
phosphorus, total	µg/L	50	<50	<50	nc
rubidium, total	µg/L	0.20	0.76	0.66	14%
selenium, total	µg/L	0.050	0.189	0.213	12%
silver, total	µg/L	0.010	<0.010	<0.010	nc
strontium, total	µg/L	0.20	145	140	4%
tellurium, total	µg/L	0.20	<0.20	<0.20	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	<0.10	<0.10	nc
tin, total	µg/L	0.10	<0.10	<0.10	nc
titanium, total	µg/L	0.30	1.95	1.72	13%
tungsten, total	µg/L	0.10	<0.10	<0.10	nc
uranium, total	µg/L	0.010	0.090	0.089	1%
vanadium, total	µg/L	0.50	1.15	1.14	1%
zinc, total	µg/L	3.0	4.4	6.3	*36%*
zirconium, total	µg/L	0.20	<0.20	<0.20	nc
calcium, total	mg/L	0.050	31.8	31	3%
magnesium, total	mg/L	0.0050	7.83	8.05	3%
potassium, total	mg/L	0.050	1.92	1.90	1%
silicon, total	mg/L	0.10	8.67	8.52	2%
sodium, total	mg/L	0.050	9.80	9.64	2%
sulfur, total	mg/L	0.50	7.72	7.48	3%
Field Data					
Temperature	ºC	--	11.1	11.1	0%
Dissolved Oxygen	%	--	83.9	84.0	0%
Dissolved Oxygen	mg/L	--	9.25	9.20	1%
Specific Conductance	µS/cm	--	268	269	0%
Salinity		--	0.13	0.13	0%
pH	pH units	--	7.37	7.40	0%
Turbidity	NTU	--	1.30	0.288	**127%**

Duplicate Samples

Parameter	Units	Lowest Detection Limit	H-02 20-Nov-2020	H-02 Dup 20-Nov-2020	RPD 20-Nov-2020
Time Sampled			12:05	12:05	
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	80.8	79.5	2%
pH	pH units	0.10	7.72	7.73	0%
ammonia, total (as N)	mg/L	0.0050	0.0198	0.0202	2%
fluoride	mg/L	0.020	0.025	0.024	4%
nitrate plus nitrite (as N)	mg/L	--	--	--	--
nitrate (as N)	mg/L	0.0050	0.9	0.898	0%
nitrite (as N)	mg/L	0.0010	0.0088	0.0091	3%
phosphorus, total	mg/L	0.0020	0.0165	0.0165	0%
aluminum, total	µg/L	3.0	174	144	19%
antimony, total	µg/L	0.10	0.18	0.18	0%
arsenic, total	µg/L	0.10	0.83	0.77	8%
barium, total	µg/L	0.10	15.3	15.0	2%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<0.050	<0.050	nc
boron, total	µg/L	10	<10	<10	nc
cadmium, total	µg/L	0.0050	0.0146	0.0154	5%
cesium, total	µg/L	0.010	<0.010	<0.010	nc
chromium, total	µg/L	0.10	0.56	0.51	9%
cobalt, total	µg/L	0.10	0.13	0.12	8%
copper, total	µg/L	0.50	3.30	3.19	3%
iron, total	µg/L	10	285	252	12%
lead, total	µg/L	0.050	0.248	0.234	6%
lithium, total	µg/L	1.0	<1.0	<1.0	nc
manganese, total	µg/L	0.10	32.0	31.5	2%
mercury, total	µg/L	0.0050	<0.0050	<0.0050	nc
molybdenum, total	µg/L	0.050	1.83	1.79	2%
nickel, total	µg/L	0.50	0.60	0.58	3%
phosphorus, total	µg/L	50	<50	<50	nc
rubidium, total	µg/L	0.20	0.61	0.59	3%
selenium, total	µg/L	0.050	0.113	0.115	2%
silver, total	µg/L	0.010	<0.010	<0.010	nc
strontium, total	µg/L	0.20	91	90	1%
tellurium, total	µg/L	0.20	<0.20	<0.20	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	<0.10	<0.10	nc
tin, total	µg/L	0.10	<0.10	<0.10	nc
titanium, total	µg/L	0.30	8.38	6.78	21%
tungsten, total	µg/L	0.10	<0.10	<0.10	nc
uranium, total	µg/L	0.010	0.046	0.047	2%
vanadium, total	µg/L	0.50	0.84	0.79	6%
zinc, total	µg/L	3.0	13.2	12.7	4%
zirconium, total	µg/L	0.20	0.33	<0.20	nc
calcium, total	mg/L	0.050	23.7	23.2	2%
magnesium, total	mg/L	0.0050	5.24	5.23	0%
potassium, total	mg/L	0.050	1.52	1.50	1%
silicon, total	mg/L	0.10	6.24	6.18	1%
sodium, total	mg/L	0.050	7.34	7.34	0%
sulfur, total	mg/L	0.50	4.86	4.84	0%
Field Data					
Temperature	ºC	--	9.7	9.6	1%
Dissolved Oxygen	%	--	90.3	88.6	2%
Dissolved Oxygen	mg/L	--	10.17	10.1	1%
Specific Conductance	µS/cm	--	202	203	0%
Salinity		--	0.10	0.10	0%
pH	pH units	--	7.43	7.45	0%
Turbidity	NTU	--	5.10	5.08	0%

Duplicate Samples

Parameter	Units	Lowest Detection Limit	H-02	H-02 DUP	RPD
Time Sampled			17-Mar-2021 12:52	17-Mar-2021 12:52	17-Mar-2021
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	105	106	1%
pH	pH units	0.10	8.02	8.03	0%
ammonia, total (as N)	mg/L	0.0050	<0.015	<0.015	nc
fluoride	mg/L	0.020	<0.050	<0.050	nc
nitrate plus nitrite (as N)	mg/L	--	1.18	1.15	3%
nitrate (as N)	mg/L	0.0050	1.17	1.14	3%
nitrite (as N)	mg/L	0.0010	0.0032	0.0028	13%
phosphorus, total	mg/L	0.0020	0.0075	0.0046	*48%*
aluminum, total	µg/L	3.0	25.7	26.9	5%
antimony, total	µg/L	0.10	<0.50	<0.50	nc
arsenic, total	µg/L	0.10	0.97	0.97	0%
barium, total	µg/L	0.10	11.5	12.0	4%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<1.0	<1.0	nc
boron, total	µg/L	10	<50	<50	nc
cadmium, total	µg/L	0.0050	<0.010	<0.010	nc
cesium, total	µg/L	0.010	--	--	nc
chromium, total	µg/L	0.10	<1.0	<1.0	nc
cobalt, total	µg/L	0.10	<0.20	<0.20	nc
copper, total	µg/L	0.50	0.53	1.05	*66%*
iron, total	µg/L	10	210	213	1%
lead, total	µg/L	0.050	<0.20	<0.20	nc
lithium, total	µg/L	1.0	<2.0	<2.0	nc
manganese, total	µg/L	0.10	41.8	42.7	2%
mercury, total	µg/L	0.0050	<0.0019	<0.0019	nc
molybdenum, total	µg/L	0.050	1.8	1.8	0%
nickel, total	µg/L	0.50	<1.0	<1.0	nc
phosphorus, total	µg/L	50	--	--	nc
rubidium, total	µg/L	0.20	--	--	nc
selenium, total	µg/L	0.050	0.18	0.17	6%
silver, total	µg/L	0.010	<0.020	<0.020	nc
strontium, total	µg/L	0.20	136	138	1%
tellurium, total	µg/L	0.20	--	--	--
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	--	--	nc
tin, total	µg/L	0.10	<5.0	<5.0	nc
titanium, total	µg/L	0.30	<5.0	<5.0	nc
tungsten, total	µg/L	0.10	--	--	--
uranium, total	µg/L	0.010	<0.10	<0.10	nc
vanadium, total	µg/L	0.50	<5.0	<5.0	nc
zinc, total	µg/L	3.0	<5.0	<5.0	nc
zirconium, total	µg/L	0.20	<0.10	<0.10	nc
calcium, total	mg/L	0.050	30.4	30.8	1%
magnesium, total	mg/L	0.0050	6.99	7.14	2%
potassium, total	mg/L	0.050	1.66	1.66	0%
silicon, total	mg/L	0.10	8.99	9.13	2%
sodium, total	mg/L	0.050	12.2	12.3	1%
sulfur, total	mg/L	0.50	5.6	5.9	5%
Field Data					
Temperature	ºC	--	9.4	9.4	0%
Dissolved Oxygen	%	--	112.3	109.2	3%
Dissolved Oxygen	mg/L	--	12.84	12.73	1%
Specific Conductance	µS/cm	--	296	296	0%
Salinity		--	0.14	0.14	0%
pH	pH units	--	7.81	7.81	0%
Turbidity	NTU	--	1.65	1.48	11%

Duplicate Samples

Parameter	Units	Lowest Detection Limit	H-03	H-03 DUP	RPD
Time Sampled			15-Apr-2021 16:15	15-Apr-2021 16:15	15-Apr-2021
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	114	113	1%
pH	pH units	0.10	7.91	7.86	1%
ammonia, total (as N)	mg/L	0.0050	<0.015	<0.015	nc
fluoride	mg/L	0.020	<0.050	<0.050	nc
nitrate plus nitrite (as N)	mg/L	--	1.92	1.92	0%
nitrate (as N)	mg/L	0.0050	1.91	1.91	0%
nitrite (as N)	mg/L	0.0010	0.0021	0.0022	5%
phosphorus, total	mg/L	0.0020	0.011	0.011	0%
aluminum, total	µg/L	3.0	11.6	9.3	22%
antimony, total	µg/L	0.10	<0.50	<0.50	nc
arsenic, total	µg/L	0.10	0.52	0.55	6%
barium, total	µg/L	0.10	13.8	14.1	2%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<1.0	<1.0	nc
boron, total	µg/L	10	<50	<50	nc
cadmium, total	µg/L	0.0050	0.018	0.018	0%
cesium, total	µg/L	0.010	--	--	nc
chromium, total	µg/L	0.10	<1.0	<1.0	nc
cobalt, total	µg/L	0.10	<0.20	<0.20	nc
copper, total	µg/L	0.50	1.02	0.98	4%
iron, total	µg/L	10	24	20	18%
lead, total	µg/L	0.050	<0.20	<0.20	nc
lithium, total	µg/L	1.0	<2.0	<2.0	nc
manganese, total	µg/L	0.10	10.1	10.2	1%
mercury, total	µg/L	0.0050	<0.0019	<0.0019	nc
molybdenum, total	µg/L	0.050	17.9	18	1%
nickel, total	µg/L	0.50	<1.0	<1.0	nc
phosphorus, total	µg/L	50	--	--	nc
rubidium, total	µg/L	0.20	--	--	nc
selenium, total	µg/L	0.050	0.21	0.20	5%
silver, total	µg/L	0.010	<0.020	<0.020	nc
strontium, total	µg/L	0.20	163	166	2%
tellurium, total	µg/L	0.20	--	--	--
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	--	--	nc
tin, total	µg/L	0.10	<5.0	<5.0	nc
titanium, total	µg/L	0.30	<5.0	<5.0	nc
tungsten, total	µg/L	0.10	--	--	--
uranium, total	µg/L	0.010	<0.10	<0.10	nc
vanadium, total	µg/L	0.50	<5.0	<5.0	nc
zinc, total	µg/L	3.0	12.6	12.7	1%
zirconium, total	µg/L	0.20	<0.10	<0.10	nc
calcium, total	mg/L	0.050	32.9	32.5	1%
magnesium, total	mg/L	0.0050	7.80	7.87	1%
potassium, total	mg/L	0.050	1.86	1.90	2%
silicon, total	mg/L	0.10	9.37	9.42	1%
sodium, total	mg/L	0.050	16.0	16.1	1%
sulfur, total	mg/L	0.50	5.8	6.5	11%
Field Data					
Temperature	ºC	--	13.8	13.8	0%
Dissolved Oxygen	%	--	84.3	84.1	0%
Dissolved Oxygen	mg/L	--	8.72	8.70	0%
Specific Conductance	µS/cm	--	325	325	0%
Salinity		--	0.16	0.16	0%
pH	pH units	--	6.95	6.95	0%
Turbidity	NTU	--	0.20	0.18	11%

Duplicate Samples

Parameter	Units	Lowest Detection Limit	W-01 22-Jul-2020	W-01 Dup 22-Jul-2020	RPD 22-Jul-2020
Time Sampled			15:38	15:38	
hardness (as CaCO3), from total Ca/Mg	mg/L	0.60	103	102	1%
pH	pH units	0.10	7.60	7.60	0%
ammonia, total (as N)	mg/L	0.0050	0.0303	0.0313	3%
fluoride	mg/L	0.020	0.041	0.041	0%
nitrate plus nitrite (as N)	mg/L	--	--	--	--
nitrate (as N)	mg/L	0.0050	1.59	1.59	0%
nitrite (as N)	mg/L	0.0010	0.0064	0.0062	3%
phosphorus, total	mg/L	0.0020	0.0130	0.0140	7%
aluminum, total	µg/L	3.0	20.6	14.1	**37%**
antimony, total	µg/L	0.10	<0.10	<0.10	nc
arsenic, total	µg/L	0.10	0.68	0.66	3%
barium, total	µg/L	0.10	33.3	33.0	1%
beryllium, total	µg/L	0.10	<0.10	<0.10	nc
bismuth, total	µg/L	0.050	<0.050	<0.050	nc
boron, total	µg/L	10	10	10	0%
cadmium, total	µg/L	0.0050	0.010	0.008	20%
cesium, total	µg/L	0.010	<0.010	<0.010	nc
chromium, total	µg/L	0.10	0.66	0.62	6%
cobalt, total	µg/L	0.10	<0.10	<0.10	nc
copper, total	µg/L	0.50	<0.50	<0.50	nc
iron, total	µg/L	10	270	257	5%
lead, total	µg/L	0.050	0.053	0.064	19%
lithium, total	µg/L	1.0	1.2	1.2	0%
manganese, total	µg/L	0.10	34.6	34.0	2%
mercury, total	µg/L	0.0050	<0.0050	<0.0050	nc
molybdenum, total	µg/L	0.050	0.293	0.302	3%
nickel, total	µg/L	0.50	0.880	0.840	5%
phosphorus, total	µg/L	50	<50	<50	nc
rubidium, total	µg/L	0.20	0.47	0.44	7%
selenium, total	µg/L	0.050	0.116	0.150	*26%*
silver, total	µg/L	0.010	<0.010	<0.010	nc
strontium, total	µg/L	0.20	194	193	1%
tellurium, total	µg/L	0.20	<0.20	<0.20	nc
thallium, total	µg/L	0.010	<0.010	<0.010	nc
thorium, total	µg/L	0.10	<0.10	<0.10	nc
tin, total	µg/L	0.10	<0.10	<0.10	nc
titanium, total	µg/L	0.30	0.860	0.600	*36%*
tungsten, total	µg/L	0.10	<0.10	<0.10	nc
uranium, total	µg/L	0.010	0.046	0.046	0%
vanadium, total	µg/L	0.50	0.530	0.500	6%
zinc, total	µg/L	3.0	<3.0	<3.0	nc
zirconium, total	µg/L	0.20	<0.20	<0.20	nc
calcium, total	mg/L	0.050	27.7	27.2	2%
magnesium, total	mg/L	0.0050	8.34	8.27	1%
potassium, total	mg/L	0.050	1.26	1.24	2%
silicon, total	mg/L	0.10	10.5	10.2	3%
sodium, total	mg/L	0.050	12.8	12.6	2%
sulfur, total	mg/L	0.50	4.72	4.30	9%
Field Data					
Temperature	ºC	--	14.2	14.2	0%
Dissolved Oxygen	%	--	80.3	79.9	0%
Dissolved Oxygen	mg/L	--	8.25	8.21	0%
Specific Conductance	µS/cm	--	288	288	0%
Salinity		--	0.14	0.14	0%
pH	pH units	--	7.17	7.15	0%
Turbidity	NTU	--	1.37	1.50	9%

APPENDIX D

Analytical Laboratory Reports

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A6991**	Page	: 1 of 8
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 25-May-2020 16:39
PO	: 176044	Date Analysis Commenced	: 26-May-2020
C-O-C number	: ----	Issue Date	: 01-Jun-2020 09:39
Sampler	: E. Koga		
Site	: ----		
Quote number	: Standing Offer		
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

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*
Erick Magalhaes	Laboratory Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Metals, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Robin Weeks	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.

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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	H01	H02	H03	B01	B02
				Client sampling date / time	25-May-2020 14:00	25-May-2020 13:14	25-May-2020 13:51	25-May-2020 13:32	25-May-2020 12:54
Analyte	CAS Number	Method	LOR	Unit	VA20A6991-001	VA20A6991-002	VA20A6991-003	VA20A6991-004	VA20A6991-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	40.5	22.6	17.5	11.0	26.3
pH	----	E108	0.10	pH units	6.77	7.29	7.08	6.93	7.38
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.206	0.176	0.182	0.290	0.158
fluoride	16984-48-8	E235.F	0.020	mg/L	0.028	0.028	0.027	0.033	0.023
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.930	0.386	0.418	0.220	0.475
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0139	0.0169	0.0156	0.0187	0.0176
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.290	0.0539	0.0590	0.0608	0.0498
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	2.01	0.252	0.410	0.298	0.279
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00048	0.00069	0.00086	0.00077	0.00025
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00101	0.00075	0.00065	0.00068	0.00063
barium, total	7440-39-3	E420	0.00010	mg/L	0.0242	0.00797	0.00896	0.0106	0.00984
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	0.0000767	0.0000178	0.0000291	0.0000228	0.0000196
calcium, total	7440-70-2	E420	0.050	mg/L	11.7	6.72	5.35	3.47	7.54
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000027	0.000010	0.000015	0.000014	0.000012
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00183	0.00095	0.00134	0.00199	0.00105
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00080	0.00016	0.00021	0.00025	0.00029
copper, total	7440-50-8	E420	0.00050	mg/L	0.00926	0.00761	0.0104	0.00776	0.00368
iron, total	7439-89-6	E420	0.010	mg/L	1.26	0.280	0.364	0.574	0.577
lead, total	7439-92-1	E420	0.000050	mg/L	0.00182	0.000661	0.000860	0.00156	0.000873
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	2.73	1.40	1.01	0.560	1.82
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0706	0.0156	0.0141	0.0309	0.0560
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000140	0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000189	0.00334	0.00289	0.000428	0.000202
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00150	0.00066	0.00077	0.00099	0.00100

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	H01	H02	H03	B01	B02
				Client sampling date / time	25-May-2020 14:00	25-May-2020 13:14	25-May-2020 13:51	25-May-2020 13:32	25-May-2020 12:54
Analyte	CAS Number	Method	LOR	Unit	VA20A6991-001	VA20A6991-002	VA20A6991-003	VA20A6991-004	VA20A6991-005
					Result	Result	Result	Result	Result
Total Metals									
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.153	<0.050	<0.050	0.060	<0.050
potassium, total	7440-09-7	E420	0.050	mg/L	1.07	0.701	0.596	0.603	0.712
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00081	0.00050	0.00053	0.00052	0.00051
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000194	0.000098	0.000097	0.000071	0.000100
silicon, total	7440-21-3	E420	0.10	mg/L	4.11	2.21	1.81	1.39	2.73
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	7.35	3.29	3.41	3.73	3.56
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0626	0.0298	0.0256	0.0253	0.0440
sulfur, total	7704-34-9	E420	0.50	mg/L	1.64	1.41	0.85	0.55	0.99
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	0.00011	0.00013	0.00024	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0423	0.0133	0.0174	0.0168	0.00942
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	0.000075	0.000023	0.000018	<0.000010	0.000025
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00390	0.00108	0.00133	0.00134	0.00167
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0380	0.0210	0.0375	0.0293	0.0112
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00049	0.00023	0.00033	<0.00060 DLM	<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	W01	D01	D02	F01	F02
				Client sampling date / time	25-May-2020 14:31	25-May-2020 12:19	25-May-2020 12:37	25-May-2020 14:53	25-May-2020 15:22
Analyte	CAS Number	Method	LOR	Unit	VA20A6991-006	VA20A6991-007	VA20A6991-008	VA20A6991-009	VA20A6991-010
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	50.9	57.1	81.5	37.6	53.8
pH	----	E108	0.10	pH units	7.37	7.74	7.72	7.57	7.49
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0905	0.0522	0.0466	0.146	0.0498
fluoride	16984-48-8	E235.F	0.020	mg/L	0.030	0.030	0.027	0.029	0.052
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.838	0.489	0.465	0.423	0.154
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0143	0.0099	0.0069	0.0215	0.0076
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0346	0.0453	0.0369	0.0452	0.0495
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0776	0.144	0.0851	0.195	0.181
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00024	0.00012	<0.00010	0.00030	0.00022
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00091	0.00170	0.00276	0.00261	0.00097
barium, total	7440-39-3	E420	0.00010	mg/L	0.0194	0.0135	0.0125	0.0105	0.0170
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	0.012	0.017	<0.010	0.012
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000195	0.0000139	0.0000117	0.0000117	0.0000190
calcium, total	7440-70-2	E420	0.050	mg/L	14.0	15.1	20.9	10.5	15.4
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00074	0.00066	0.00058	0.00156	0.00052
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00015	0.00028	0.00016	0.00017	0.00038
copper, total	7440-50-8	E420	0.00050	mg/L	0.00265	0.00159	0.00086	0.00375	0.00225
iron, total	7439-89-6	E420	0.010	mg/L	0.625	1.08	1.10	0.619	1.04
lead, total	7439-92-1	E420	0.000050	mg/L	0.000349	0.000232	0.000163	0.000254	0.000328
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0011	0.0020	<0.0010	0.0012
magnesium, total	7439-95-4	E420	0.0050	mg/L	3.88	4.69	7.14	2.72	3.75
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0437	0.165	0.211	0.0856	0.186
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	0.000290	0.000307	0.000403	0.000438	0.000462
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00084	0.00081	0.00078	0.00057	0.00072
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	W01	D01	D02	F01	F02
				Client sampling date / time	25-May-2020 14:31	25-May-2020 12:19	25-May-2020 12:37	25-May-2020 14:53	25-May-2020 15:22
Analyte	CAS Number	Method	LOR	Unit	VA20A6991-006	VA20A6991-007	VA20A6991-008	VA20A6991-009	VA20A6991-010
					Result	Result	Result	Result	Result
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	0.912	1.02	1.06	0.901	1.17
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00057	0.00058	0.00041	0.00062	0.00098
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000120	0.000141	0.000196	0.000097	0.000052
silicon, total	7440-21-3	E420	0.10	mg/L	5.22	5.35	7.84	2.33	2.72
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	13.6	6.82	6.81	5.54	10.2
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0999	0.0927	0.124	0.0608	0.0982
sulfur, total	7704-34-9	E420	0.50	mg/L	2.55	2.14	2.81	1.76	1.54
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	0.00415	0.00550	0.00371	0.00752	0.00727
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	0.000021	0.000030	0.000034	0.000026	0.000011
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00070	0.00108	0.00092	0.00106	0.00071
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0101	0.0056	0.0056	0.0070	0.0077
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	0.00024	<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	FOF	Dup - F01	Travel Blank	Field Blank	----
				Client sampling date / time	25-May-2020 15:43	25-May-2020 14:53	25-May-2020	25-May-2020 15:06	----
Analyte	CAS Number	Method	LOR	Unit	VA20A6991-011	VA20A6991-012	VA20A6991-013	VA20A6991-014	--------
					Result	Result	Result	Result	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	27.1	36.8	<0.60	<0.60	----
pH	----	E108	0.10	pH units	7.34	7.55	5.35	5.21	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.206	0.143	<0.0050	<0.0050	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.042	0.029	<0.020	<0.020	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.303	0.428	<0.0050	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0162	0.0208	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0416	0.0464	<0.0020	<0.0020	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.238	0.200	<0.0030	<0.0030	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00059	0.00031	<0.00010	<0.00010	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00115	0.00268	<0.00010	<0.00010	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0138	0.0109	<0.00010	<0.00010	----
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	0.082	<0.010	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000222	0.0000101	<0.0000050	<0.0000050	----
calcium, total	7440-70-2	E420	0.050	mg/L	7.77	10.3	<0.050	<0.050	----
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000012	0.000010	<0.000010	<0.000010	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00123	0.00159	<0.00010	<0.00010	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00041	0.00018	<0.00010	<0.00010	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.0142	0.00387	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	0.645	0.625	<0.010	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.00363	0.000270	<0.000050	<0.000050	----
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	1.86	2.71	<0.0050	<0.0050	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0783	0.0848	<0.00010	<0.00010	----
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	0.000893	0.000389	<0.000050	<0.000050	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00115	0.00061	<0.00050	<0.00050	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	FOF	Dup - F01	Travel Blank	Field Blank	----
				Client sampling date / time	25-May-2020 15:43	25-May-2020 14:53	25-May-2020	25-May-2020 15:06	----
Analyte	CAS Number	Method	LOR	Unit	VA20A6991-011	VA20A6991-012	VA20A6991-013	VA20A6991-014	--------
					Result	Result	Result	Result	----
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	0.892	0.916	<0.050	<0.050	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00069	0.00052	<0.00020	<0.00020	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000089	0.000060	<0.000050	<0.000050	----
silicon, total	7440-21-3	E420	0.10	mg/L	1.83	2.43	<0.10	<0.10	----
silver, total	7440-22-4	E420	0.000010	mg/L	0.000014	<0.000010	<0.000010	<0.000010	----
sodium, total	7440-23-5	E420	0.050	mg/L	5.72	5.45	<0.050	<0.050	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0481	0.0609	<0.00020	<0.00020	----
sulfur, total	7704-34-9	E420	0.50	mg/L	1.65	1.85	<0.50	<0.50	----
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	0.00075	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0104	0.00889	<0.00030	<0.00030	----
tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00075	<0.00010	<0.00010	<0.00010	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000017	0.000027	<0.000010	<0.000010	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00094	0.00111	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0262	0.0074	<0.0030	<0.0030	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	0.00022	<0.00020	<0.00020	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20A6991**	Page	: 1 of 14
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 25-May-2020 16:39
PO	: 176044	Date Analysis Commenced	: 26-May-2020
C-O-C number	: ----	Issue Date	: 01-Jun-2020 09:39
Sampler	: E. Koga		
Site	: ----		
Quote number	: Standing Offer		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Erick Magalhaes	Laboratory Analyst	Inorganics - Water Quality, Burnaby, British Columbia
Erick Magalhaes	Laboratory Analyst	Metals, Burnaby, British Columbia
Evan Ben-Oliel	Metal Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Robin Weeks	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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 43030)											
VA20A6981-001	Anonymous	pH	----	E108	0.10	pH units	6.82	6.82	0.00%	3%	----
Anions and Nutrients (QC Lot: 43026)											
VA20A6981-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.261	0.260	0.534%	20%	----
Anions and Nutrients (QC Lot: 43027)											
VA20A6981-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 43028)											
VA20A6981-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 43360)											
VA20A6991-001	H01	phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.290	0.301	3.98%	20%	----
Anions and Nutrients (QC Lot: 43361)											
VA20A6991-001	H01	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.206	0.206	0.466%	20%	----
Total Metals (QC Lot: 43478)											
KS2000490-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 43479)											
VA20A6991-007	D01	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 43881)											
VA20A6991-001	H01	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00183	0.00183	0.0180%	20%	----
Total Metals (QC Lot: 43882)											
VA20A6991-001	H01	aluminum, total	7429-90-5	E420	0.0030	mg/L	2.01	1.99	0.641%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00048	0.00048	0.000004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00101	0.00097	0.00004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0242	0.0235	2.97%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000767	0.0000685	11.3%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	11.7	11.9	2.00%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000027	0.000027	0.0000006	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00080	0.00078	0.00002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00926	0.00916	1.03%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	1.26	1.22	2.54%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 43882) - continued											
VA20A6991-001	H01	lead, total	7439-92-1	E420	0.000050	mg/L	0.00182	0.00184	0.768%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	2.73	2.71	0.668%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0706	0.0703	0.320%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000189	0.000159	0.000030	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00150	0.00153	0.00003	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.050	mg/L	0.153	0.165	0.011	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.07	1.05	1.69%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00081	0.00083	0.00002	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000194	0.000124	0.000070	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.11	3.98	3.28%	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	7.35	7.43	1.07%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0626	0.0626	0.138%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	1.64	1.76	0.12	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.0423	0.0426	0.767%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000075	0.000075	0.0000002	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00390	0.00389	0.000009	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0380	0.0377	0.638%	20%	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00049	0.00052	0.00003	Diff <2x LOR	----
Total Metals (QC Lot: 44206)											
KS2000475-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00048	0.00060	0.00012	Diff <2x LOR	----
Total Metals (QC Lot: 44207)											
KS2000475-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.0698	0.0746	6.68%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00074	0.00076	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0611	0.0608	0.462%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000562	0.0000497	12.2%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 44207) - continued											
KS2000475-001	Anonymous	calcium, total	7440-70-2	E420	0.050	mg/L	143	142	0.468%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	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	0.00273	0.00269	0.00005	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000074	0.000076	0.000002	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0039	0.0037	0.0001	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	99.9	95.8	4.19%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00194	0.00177	9.43%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00731	0.00735	0.659%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00053	<0.00050	0.00003	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.300	mg/L	<0.300	<0.300	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	1.83	1.75	4.50%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00045	0.00041	0.00003	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.00395	0.00406	2.81%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	5.53	5.40	2.38%	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	2.60	2.37	9.08%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.446	0.460	3.12%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	204	200	2.32%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00178	0.00184	3.55%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00064	0.00062	0.00002	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0184	0.0183	0.0001	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	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
Anions and Nutrients (QCLot: 43026)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 43027)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 43028)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 43360)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 43361)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 43478)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 43479)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 43881)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 43882)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 43882) - continued						
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	----
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: 44206)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 44207)						
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	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 44207) - continued						
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
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	----
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	----

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
Physical Tests (QCLot: 43030)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 43026)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 43027)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.6	90.0	110	----
Anions and Nutrients (QCLot: 43028)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 43360)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	97.9	80.0	120	----
Anions and Nutrients (QCLot: 43361)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	97.7	85.0	115	----
Total Metals (QCLot: 43478)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	101	80.0	120	----
Total Metals (QCLot: 43479)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
Total Metals (QCLot: 43881)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Total Metals (QCLot: 43882)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	107	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	112	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.1	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	107	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	108	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----

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: 43882) - continued									
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	104	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	103	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	107	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	108	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	101	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	110	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	105	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	107	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Total Metals (QCLot: 44206)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
Total Metals (QCLot: 44207)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	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	120	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	110	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 44207) - continued									
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	88.7	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	105	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	116	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	107	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	113	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	111	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	97.6	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	107	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	99.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	103	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 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.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 43026)									
VA20A6991-001	H01	nitrate (as N)	14797-55-8	E235.NO3-L	2.5 mg/L	99.1	75.0	125	----
Anions and Nutrients (QCLot: 43027)									
VA20A6991-001	H01	nitrite (as N)	14797-65-0	E235.NO2-L	0.5 mg/L	97.8	75.0	125	----
Anions and Nutrients (QCLot: 43028)									
VA20A6991-001	H01	fluoride	16984-48-8	E235.F	1 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 43360)									
VA20A6991-002	H02	phosphorus, total	7723-14-0	E372-U	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 43361)									
VA20A6991-002	H02	ammonia, total (as N)	7664-41-7	E298	0.2 mg/L	96.8	75.0	125	----
Total Metals (QCLot: 43478)									
KS2000491-001	Anonymous	mercury, total	7439-97-6	E508	0.0001 mg/L	101	70.0	130	----
Total Metals (QCLot: 43479)									
VA20A6991-008	D02	mercury, total	7439-97-6	E508	0.0001 mg/L	102	70.0	130	----
Total Metals (QCLot: 43881)									
VA20A6991-002	H02	chromium, total	7440-47-3	E420.Cr-L	0.04 mg/L	100	70.0	130	----
Total Metals (QCLot: 43882)									
VA20A6991-002	H02	aluminum, total	7429-90-5	E420	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.02 mg/L	106	70.0	130	----
		arsenic, total	7440-38-2	E420	0.02 mg/L	97.0	70.0	130	----
		barium, total	7440-39-3	E420	0.02 mg/L	96.0	70.0	130	----
		beryllium, total	7440-41-7	E420	0.04 mg/L	97.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.01 mg/L	105	70.0	130	----
		boron, total	7440-42-8	E420	0.1 mg/L	96.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.004 mg/L	104	70.0	130	----
		calcium, total	7440-70-2	E420	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.01 mg/L	104	70.0	130	----
		cobalt, total	7440-48-4	E420	0.02 mg/L	101	70.0	130	----
		copper, total	7440-50-8	E420	0.02 mg/L	97.4	70.0	130	----
		iron, total	7439-89-6	E420	2 mg/L	102	70.0	130	----
		lead, total	7439-92-1	E420	0.02 mg/L	101	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	MS	Low	High	Qualifier
Total Metals (QCLot: 43882) - continued									
VA20A6991-002	H02	lithium, total	7439-93-2	E420	0.1 mg/L	97.0	70.0	130	----
		magnesium, total	7439-95-4	E420	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.02 mg/L	99.9	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.04 mg/L	99.0	70.0	130	----
		phosphorus, total	7723-14-0	E420	10 mg/L	97.5	70.0	130	----
		potassium, total	7440-09-7	E420	4 mg/L	99.3	70.0	130	----
		rubidium, total	7440-17-7	E420	0.02 mg/L	104	70.0	130	----
		selenium, total	7782-49-2	E420	0.04 mg/L	105	70.0	130	----
		silicon, total	7440-21-3	E420	10 mg/L	97.0	70.0	130	----
		silver, total	7440-22-4	E420	0.004 mg/L	107	70.0	130	----
		sodium, total	7440-23-5	E420	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20 mg/L	102	70.0	130	----
		tellurium, total	13494-80-9	E420	0.04 mg/L	106	70.0	130	----
		thallium, total	7440-28-0	E420	0.004 mg/L	102	70.0	130	----
		thorium, total	7440-29-1	E420	0.02 mg/L	107	70.0	130	----
		tin, total	7440-31-5	E420	0.02 mg/L	102	70.0	130	----
		titanium, total	7440-32-6	E420	0.04 mg/L	94.6	70.0	130	----
		tungsten, total	7440-33-7	E420	0.02 mg/L	103	70.0	130	----
		uranium, total	7440-61-1	E420	0.004 mg/L	97.4	70.0	130	----
		vanadium, total	7440-62-2	E420	0.1 mg/L	99.7	70.0	130	----
		zinc, total	7440-66-6	E420	0.4 mg/L	96.9	70.0	130	----
		zirconium, total	7440-67-7	E420	0.04 mg/L	104	70.0	130	----
Total Metals (QCLot: 44206)									
VA20A6991-013	Travel Blank	chromium, total	7440-47-3	E420.Cr-L	0.04 mg/L	97.8	70.0	130	----
Total Metals (QCLot: 44207)									
VA20A6991-013	Travel Blank	aluminum, total	7429-90-5	E420	0.2 mg/L	95.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.02 mg/L	99.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.02 mg/L	92.3	70.0	130	----
		barium, total	7440-39-3	E420	0.02 mg/L	100	70.0	130	----
		beryllium, total	7440-41-7	E420	0.04 mg/L	98.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.01 mg/L	108	70.0	130	----
		boron, total	7440-42-8	E420	0.1 mg/L	88.2	70.0	130	----
		cadmium, total	7440-43-9	E420	0.004 mg/L	97.2	70.0	130	----
		calcium, total	7440-70-2	E420	4 mg/L	94.8	70.0	130	----
		cesium, total	7440-46-2	E420	0.01 mg/L	105	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	MS	Low	High	Qualifier
Total Metals (QCLot: 44207) - continued									
VA20A6991-013	Travel Blank	cobalt, total	7440-48-4	E420	0.02 mg/L	98.2	70.0	130	----
		copper, total	7440-50-8	E420	0.02 mg/L	97.8	70.0	130	----
		iron, total	7439-89-6	E420	2 mg/L	95.6	70.0	130	----
		lead, total	7439-92-1	E420	0.02 mg/L	101	70.0	130	----
		lithium, total	7439-93-2	E420	0.1 mg/L	98.7	70.0	130	----
		magnesium, total	7439-95-4	E420	1 mg/L	87.6	70.0	130	----
		manganese, total	7439-96-5	E420	0.02 mg/L	94.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.02 mg/L	98.8	70.0	130	----
		nickel, total	7440-02-0	E420	0.04 mg/L	97.3	70.0	130	----
		phosphorus, total	7723-14-0	E420	10 mg/L	93.4	70.0	130	----
		potassium, total	7440-09-7	E420	4 mg/L	97.4	70.0	130	----
		rubidium, total	7440-17-7	E420	0.02 mg/L	96.5	70.0	130	----
		selenium, total	7782-49-2	E420	0.04 mg/L	97.7	70.0	130	----
		silicon, total	7440-21-3	E420	10 mg/L	94.1	70.0	130	----
		silver, total	7440-22-4	E420	0.004 mg/L	106	70.0	130	----
		sodium, total	7440-23-5	E420	2 mg/L	106	70.0	130	----
		strontium, total	7440-24-6	E420	0.02 mg/L	103	70.0	130	----
		sulfur, total	7704-34-9	E420	20 mg/L	96.2	70.0	130	----
		tellurium, total	13494-80-9	E420	0.04 mg/L	97.6	70.0	130	----
		thallium, total	7440-28-0	E420	0.004 mg/L	99.1	70.0	130	----
		thorium, total	7440-29-1	E420	0.02 mg/L	114	70.0	130	----
		tin, total	7440-31-5	E420	0.02 mg/L	96.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.04 mg/L	101	70.0	130	----
		tungsten, total	7440-33-7	E420	0.02 mg/L	96.0	70.0	130	----
		uranium, total	7440-61-1	E420	0.004 mg/L	99.8	70.0	130	----
		vanadium, total	7440-62-2	E420	0.1 mg/L	98.1	70.0	130	----
		zinc, total	7440-66-6	E420	0.4 mg/L	98.2	70.0	130	----
		zirconium, total	7440-67-7	E420	0.04 mg/L	108	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20A6991**	Page	: 1 of 20
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 25-May-2020 16:39
PO	: 176044	Issue Date	: 01-Jun-2020 09:39
C-O-C number	: ----		
Sampler	: E. Koga		
Site	: ----		
Quote number	: Standing Offer		
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 Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Dup - F01	E298	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F01	E298	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F02	E298	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Field Blank	E298	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
FOF	E298	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B01	E298	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B02	E298	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D01	E298	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D02	E298	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H01	E298	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H02	E298	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H03	E298	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
W01	E298	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B01	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B02	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE D01	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE D02	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Dup - F01	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F01	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F02	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Field Blank	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FOF	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE H01	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE H02	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H03	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
W01	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Travel Blank	E235.F	25-May-2020	----	----	----		26-May-2020	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B01	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B02	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D01	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D02	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Dup - F01	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F01	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F02	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Field Blank	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE FOF	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H01	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H02	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H03	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE W01	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	25-May-2020	----	----	----		26-May-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B01	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B02	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D01	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D02	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Dup - F01	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F01	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F02	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE FOF	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H01	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
H02	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
H03	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
W01	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO2-L	25-May-2020	----	----	----		26-May-2020	3 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
B01	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
B02	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
D01	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
D02	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
Dup - F01	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F01	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F02	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Field Blank	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) FOF	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H01	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H02	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H03	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) W01	E372-U	25-May-2020	27-May-2020	28 days	1 days	✓	27-May-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Travel Blank	E372-U	25-May-2020	27-May-2020	28 days	2 days	✓	27-May-2020	25 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE F02	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	24 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	24 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE FOF	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	24 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Dup - F01	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE F01	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H01	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE W01	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE B01	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H02	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	26 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE H03	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	26 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE B02	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	27 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D01	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	27 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D02	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	27 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	25-May-2020	----	----	----		26-May-2020	0.25 hrs	39 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B01	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B02	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D01	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D02	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Dup - F01	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F01	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F02	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Field Blank	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) FOF	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H01	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H02	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H03	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) W01	E420.Cr-L	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
Travel Blank	E420.Cr-L	25-May-2020	----	----	----		29-May-2020	180 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B01	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B02	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D01	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D02	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Dup - F01	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F01	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F02	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Field Blank	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
FOF	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H01	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H02	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H03	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
W01	E508	25-May-2020	----	----	----		27-May-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Travel Blank	E508	25-May-2020	----	----	----		27-May-2020	28 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
B01	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
B02	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D01	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) D02	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Dup - F01	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F01	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F02	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Field Blank	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) FOF	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H01	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H02	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H03	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
W01	E420	25-May-2020	----	----	----		28-May-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Travel Blank	E420	25-May-2020	----	----	----		29-May-2020	180 days	4 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	43361	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	43028	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	43026	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	43027	1	15	6.6	5.0	✓
pH by Meter	E108	43030	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	44206	2	26	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	43479	2	28	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	44207	2	39	5.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	43360	1	14	7.1	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	43361	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	43028	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	43026	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	43027	1	15	6.6	5.0	✓
pH by Meter	E108	43030	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	44206	2	26	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	43479	2	28	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	44207	2	39	5.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	43360	1	14	7.1	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	43361	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	43028	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	43026	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	43027	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	44206	2	26	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	43479	2	28	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	44207	2	39	5.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	43360	1	14	7.1	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	43361	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	43028	1	15	6.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	43026	1	15	6.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	43027	1	15	6.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	44206	2	26	7.6	5.0	✓
Total Mercury in Water by CVAAS	E508	43479	2	28	7.1	5.0	✓
Total Metals in Water by CRC ICPMS	E420	44207	2	39	5.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	43360	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20A9075**	Page	: 1 of 8
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 24-Jun-2020 18:35
PO	: 176044	Date Analysis Commenced	: 25-Jun-2020
C-O-C number	: ----	Issue Date	: 03-Jul-2020 17:09
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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

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*
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	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.

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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	H01	H02	H03	B01	B02
				Client sampling date / time	24-Jun-2020 14:25	24-Jun-2020 11:41	24-Jun-2020 14:05	24-Jun-2020 13:26	24-Jun-2020 12:02
Analyte	CAS Number	Method	LOR	Unit	VA20A9075-001	VA20A9075-002	VA20A9075-003	VA20A9075-004	VA20A9075-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	110	108	107	69.8	106
pH	----	E108	0.10	pH units	7.44	7.81	7.40	7.20	7.87
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0121	0.0141	0.0310	0.171	0.0323
fluoride	16984-48-8	E235.F	0.020	mg/L	0.033	0.032	0.038	0.036	0.033
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.40	1.30	1.94	1.50	1.75
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0025	0.0039	0.0050	0.0338	0.0084
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0117	0.0146	0.0164	0.0322	0.0143
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0177	0.0284	0.0244	0.0462	0.0460
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0.00016	0.00012	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00042	0.00100	0.00050	0.00045	0.00066
barium, total	7440-39-3	E420	0.00010	mg/L	0.0124	0.0130	0.0138	0.0237	0.0165
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	0.011	0.011	0.012	0.014	0.011
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000170	0.0000084	0.0000244	0.0000178	0.0000071
calcium, total	7440-70-2	E420	0.050	mg/L	30.5	31.0	30.0	19.2	28.8
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00023	0.00029	0.00027	0.00109	0.00053
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00033	0.00010
copper, total	7440-50-8	E420	0.00050	mg/L	0.00109	0.00110	0.00214	0.00142	0.00052
iron, total	7439-89-6	E420	0.010	mg/L	0.080	0.154	0.056	0.844	0.431
lead, total	7439-92-1	E420	0.000050	mg/L	0.000058	<0.000050	0.000089	0.000837	0.000068
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0011	<0.0010	<0.0010	0.0012
magnesium, total	7439-95-4	E420	0.0050	mg/L	8.34	7.52	7.68	5.29	8.41
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00904	0.0289	0.0148	0.171	0.119
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000086	<0.0000050	0.0000078	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000238	0.00297	0.00617	0.000287	0.000442
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	0.00140	<0.00050

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	H01	H02	H03	B01	B02
				Client sampling date / time	24-Jun-2020 14:25	24-Jun-2020 11:41	24-Jun-2020 14:05	24-Jun-2020 13:26	24-Jun-2020 12:02
Analyte	CAS Number	Method	LOR	Unit	VA20A9075-001	VA20A9075-002	VA20A9075-003	VA20A9075-004	VA20A9075-005
					Result	Result	Result	Result	Result
Total Metals									
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	1.60	1.66	1.65	1.18	1.51
rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	0.00053	0.00030	0.00068	0.00050
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000209	0.000186	0.000190	0.000078	0.000201
silicon, total	7440-21-3	E420	0.10	mg/L	9.44	9.13	8.95	10.0	10.8
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	17.9	10.0	15.7	16.6	9.81
strontium, total	7440-24-6	E420	0.00020	mg/L	0.164	0.134	0.150	0.183	0.162
sulfur, total	7704-34-9	E420	0.50	mg/L	5.21	5.94	5.96	2.37	4.84
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	0.00058	0.00118	0.00133	0.00191	0.00179
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	0.000011	0.000060	0.000016	<0.000010	0.000041
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00056	0.00070	0.00052	0.00076	0.00089
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0041	0.0046	0.0132	0.0075	0.0086
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	W01	D01	D02	F01	F02
				Client sampling date / time	24-Jun-2020 12:47	24-Jun-2020 09:00	24-Jun-2020 14:52	24-Jun-2020 15:29	24-Jun-2020 16:05
Analyte	CAS Number	Method	LOR	Unit	VA20A9075-006	VA20A9075-007	VA20A9075-008	VA20A9075-009	VA20A9075-010
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	96.5	108	119	119	83.2
pH	----	E108	0.10	pH units	7.58	7.84	7.95	7.93	7.57
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0294	0.0142	0.0177	0.0602	0.0538
fluoride	16984-48-8	E235.F	0.020	mg/L	0.036	0.034	0.026	0.045	0.048
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.55	0.887	0.676	0.788	0.0796
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0087	0.0034	0.0038	0.0138	0.0023
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0146	0.0178	0.0211	0.0260	0.106
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0176	0.0263	0.0348	0.0395	0.0424
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	0.00016	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00064	0.00118	0.00212	0.00177	0.00455
barium, total	7440-39-3	E420	0.00010	mg/L	0.0297	0.0144	0.0125	0.0195	0.0355
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	0.019	0.022	0.015	0.014
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000082	<0.0000050	<0.0000050	0.0000055	0.0000056
calcium, total	7440-70-2	E420	0.050	mg/L	25.8	28.6	30.5	31.7	23.2
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00052	0.00039	0.00040	0.00039	0.00034
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	0.00011	<0.00010	0.00014	0.00184
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	0.00057	<0.00050	0.00182	0.00084
iron, total	7439-89-6	E420	0.010	mg/L	0.351	0.346	0.572	0.643	5.29
lead, total	7439-92-1	E420	0.000050	mg/L	0.000083	<0.000050	<0.000050	0.000051	0.000106
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0011	0.0014	0.0018	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	7.79	8.91	10.5	9.65	6.12
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0383	0.101	0.162	0.160	3.34
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	0.000274	0.000422	0.000443	0.000682	0.000884
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00079	0.00068	0.00072	0.00056	0.00061
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	0.127

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	W01	D01	D02	F01	F02
				Client sampling date / time	24-Jun-2020 12:47	24-Jun-2020 09:00	24-Jun-2020 14:52	24-Jun-2020 15:29	24-Jun-2020 16:05
Analyte	CAS Number	Method	LOR	Unit	VA20A9075-006	VA20A9075-007	VA20A9075-008	VA20A9075-009	VA20A9075-010
					Result	Result	Result	Result	Result
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	1.16	1.50	1.29	1.89	2.07
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00045	0.00062	0.00035	0.00074	0.00147
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000121	0.000214	0.000230	0.000127	0.000096
silicon, total	7440-21-3	E420	0.10	mg/L	9.90	10.2	11.5	7.37	4.80
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	13.0	10.9	9.66	16.6	14.5
strontium, total	7440-24-6	E420	0.00020	mg/L	0.177	0.156	0.167	0.184	0.138
sulfur, total	7704-34-9	E420	0.50	mg/L	3.99	4.90	4.09	6.20	0.88
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	0.00078	0.00106	0.00146	0.00144	0.00170
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00027
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000039	0.000072	0.000068	0.000117	0.000019
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00057	0.00074	0.00077	0.00066	0.00054
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0052	0.0172	0.0071	0.0175	0.0367
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	FOF	Dup-F02	Travel Blank	Field Blank	----
				Client sampling date / time	24-Jun-2020 16:40	24-Jun-2020 16:05	24-Jun-2020	24-Jun-2020 17:05	----
Analyte	CAS Number	Method	LOR	Unit	VA20A9075-011	VA20A9075-012	VA20A9075-013	VA20A9075-014	--------
					Result	Result	Result	Result	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	72.1	82.0	<0.60	<0.60	----
pH	----	E108	0.10	pH units	7.46	7.66	6.31	6.20	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0729	0.0623	<0.0050	<0.0050	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.036	0.046	<0.020	<0.020	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.127	0.0752	<0.0050	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0102	0.0028	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0670	0.102	<0.0020	<0.0020	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0291	0.0378	<0.0030	<0.0030	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	<0.00010	<0.00010	<0.00010	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00492	0.00454	<0.00010	<0.00010	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0305	0.0355	<0.00010	0.00033 RRV	----
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	0.013	0.014	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000065	<0.0000050	<0.0000050	<0.0000050	----
calcium, total	7440-70-2	E420	0.050	mg/L	20.2	23.1	<0.050	<0.050	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00032	0.00034	<0.00010	<0.00010	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00088	0.00183	<0.00010	<0.00010	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00125	0.00082	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	3.22	5.14	<0.010	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000225	0.000108	<0.000050	<0.000050	----
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	5.24	5.92	<0.0050	<0.0050	----
manganese, total	7439-96-5	E420	0.00010	mg/L	1.33	3.30	<0.00010	<0.00010	----
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	0.00158	0.000914	<0.000050	<0.000050	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00089	0.00058	<0.00050	<0.00050	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	0.072	0.098	<0.050	<0.050	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	FOF	Dup-F02	Travel Blank	Field Blank	----
				Client sampling date / time	24-Jun-2020 16:40	24-Jun-2020 16:05	24-Jun-2020	24-Jun-2020 17:05	----
Analyte	CAS Number	Method	LOR	Unit	VA20A9075-011	VA20A9075-012	VA20A9075-013	VA20A9075-014	--------
					Result	Result	Result	Result	----
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	1.18	2.06	<0.050	<0.050	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00080	0.00144	<0.00020	<0.00020	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000074	0.000117	<0.000050	<0.000050	----
silicon, total	7440-21-3	E420	0.10	mg/L	4.95	4.79	<0.10	<0.10	----
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	11.7	14.4	<0.050	<0.050	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.123	0.137	<0.00020	<0.00020	----
sulfur, total	7704-34-9	E420	0.50	mg/L	2.22	0.82	<0.50	<0.50	----
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	0.00086	0.00152	<0.00030	<0.00030	----
tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00018	0.00026	<0.00010	<0.00010	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000028	0.000017	<0.000010	<0.000010	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	0.00050	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0110	0.0032	<0.0030	0.0800 RRV	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20A9075**	Page	: 1 of 16
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 24-Jun-2020 18:35
PO	: 176044	Date Analysis Commenced	: 25-Jun-2020
C-O-C number	: ----	Issue Date	: 03-Jul-2020 17:09
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 53813)											
VA20A8985-002	Anonymous	pH	----	E108	0.10	pH units	6.84	6.86	0.292%	4%	----
Physical Tests (QC Lot: 55727)											
VA20A9075-001	H01	pH	----	E108	0.10	pH units	7.44	7.47	0.402%	4%	----
Anions and Nutrients (QC Lot: 53770)											
KS2000798-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.139	0.137	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 53772)											
KS2000798-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.524	0.522	0.263%	20%	----
Anions and Nutrients (QC Lot: 53773)											
KS2000798-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 53903)											
KS2000811-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.114	0.114	0.442%	20%	----
Anions and Nutrients (QC Lot: 53904)											
KS2000811-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 53905)											
KS2000811-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.168	0.169	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 55431)											
VA20A9075-001	H01	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0117	0.0110	0.0007	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 55432)											
VA20A9075-001	H01	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0121	0.0126	0.0004	Diff <2x LOR	----
Total Metals (QC Lot: 54813)											
VA20A9031-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Total Metals (QC Lot: 54814)											
VA20A9031-002	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.544	0.541	0.633%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00013	0.00012	0.000006	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0541	0.0541	0.0251%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	0.030	0.030	0.0004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000354	0.0000378	0.0000024	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	39.0	38.8	0.658%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 54814) - continued											
VA20A9031-002	Anonymous	cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00454	0.00454	0.0869%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00934	0.00931	0.341%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	2.47	2.41	2.53%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	3.85	3.75	2.47%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.861	0.838	2.76%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00347	0.00334	3.83%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00140	0.00147	0.00006	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	3.76	3.70	1.62%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00372	0.00370	0.425%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000064	<0.000050	0.000014	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.67	4.70	0.622%	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	18.2	18.0	1.26%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.262	0.262	0.171%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	19.8	19.5	1.15%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000053	0.000049	0.000004	Diff <2x LOR	----
		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	0.0039	0.0039	0.00001	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: 54899)											
VA20A9075-013	Travel Blank	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 54899) - continued											
VA20A9075-013	Travel Blank	boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	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	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		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	<0.050	<0.050	0	Diff <2x LOR	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		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	<0.050	<0.050	0	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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: 54900)											
VA20A9075-013	Travel Blank	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Total Metals (QC Lot: 55573)											
KS2000843-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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: 55574)											
VA20A9075-014	Field Blank	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 53770)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 53772)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 53773)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 53903)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 53904)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 53905)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 55431)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 55432)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 54813)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 54814)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 54814) - continued						
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	----
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: 54899)						
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	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 54899) - continued						
iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
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	----
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: 54900)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 55573)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 55574)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 53813)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 55727)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 53770)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 53772)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 53773)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 53903)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 53904)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100.0	90.0	110	----
Anions and Nutrients (QCLot: 53905)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.9	90.0	110	----
Anions and Nutrients (QCLot: 55431)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	101	80.0	120	----
Anions and Nutrients (QCLot: 55432)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	102	85.0	115	----
Total Metals (QCLot: 54813)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	97.6	80.0	120	----
Total Metals (QCLot: 54814)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.6	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	105	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.2	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	100	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.8	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	97.0	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	97.0	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 54814) - continued									
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	96.9	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	96.7	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100.0	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	97.8	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.1	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	95.1	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	99.8	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	95.8	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	95.5	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.4	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.2	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	95.7	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	95.4	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	95.5	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.9	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.6	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.1	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	90.8	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	92.7	80.0	120	----
Total Metals (QCLot: 54899)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	98.4	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	100.0	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	96.2	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	99.9	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	96.1	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	95.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	98.2	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 54899) - continued									
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	96.2	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	96.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	95.5	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	95.5	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	100	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	96.1	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	97.0	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	97.0	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	93.6	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	97.7	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	95.9	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	105	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.2	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	98.5	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	97.5	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	98.2	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	90.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.8	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	97.5	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.6	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	99.5	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.2	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.4	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	85.5	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	91.4	80.0	120	----
Total Metals (QCLot: 54900)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
Total Metals (QCLot: 55573)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	102	80.0	120	----
Total Metals (QCLot: 55574)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 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.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 53770)									
VA20A9012-004	Anonymous	fluoride	16984-48-8	E235.F	1 mg/L	99.5	75.0	125	----
Anions and Nutrients (QCLot: 53772)									
VA20A8985-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	125 mg/L	96.4	75.0	125	----
Anions and Nutrients (QCLot: 53773)									
VA20A9012-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 53903)									
KS2000811-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.5 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 53904)									
KS2000811-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.5 mg/L	97.2	75.0	125	----
Anions and Nutrients (QCLot: 53905)									
KS2000811-002	Anonymous	fluoride	16984-48-8	E235.F	1 mg/L	96.2	75.0	125	----
Anions and Nutrients (QCLot: 55431)									
VA20A9075-002	H02	phosphorus, total	7723-14-0	E372-U	0.05 mg/L	106	70.0	130	----
Anions and Nutrients (QCLot: 55432)									
VA20A9075-002	H02	ammonia, total (as N)	7664-41-7	E298	0.2 mg/L	109	75.0	125	----
Total Metals (QCLot: 54813)									
VA20A9031-003	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.04 mg/L	97.8	70.0	130	----
Total Metals (QCLot: 54814)									
VA20A9031-003	Anonymous	aluminum, total	7429-90-5	E420	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.02 mg/L	97.2	70.0	130	----
		arsenic, total	7440-38-2	E420	0.02 mg/L	97.9	70.0	130	----
		barium, total	7440-39-3	E420	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.04 mg/L	99.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.01 mg/L	89.6	70.0	130	----
		boron, total	7440-42-8	E420	0.1 mg/L	103	70.0	130	----
		cadmium, total	7440-43-9	E420	0.004 mg/L	99.1	70.0	130	----
		calcium, total	7440-70-2	E420	4 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.01 mg/L	96.5	70.0	130	----
		cobalt, total	7440-48-4	E420	0.02 mg/L	ND	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	MS	Low	High	Qualifier
Total Metals (QCLot: 54814) - continued									
VA20A9031-003	Anonymous	copper, total	7440-50-8	E420	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.02 mg/L	95.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.1 mg/L	103	70.0	130	----
		magnesium, total	7439-95-4	E420	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.02 mg/L	ND	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.02 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	0.04 mg/L	ND	70.0	130	----
		phosphorus, total	7723-14-0	E420	10 mg/L	100	70.0	130	----
		potassium, total	7440-09-7	E420	4 mg/L	93.1	70.0	130	----
		rubidium, total	7440-17-7	E420	0.02 mg/L	95.5	70.0	130	----
		selenium, total	7782-49-2	E420	0.04 mg/L	108	70.0	130	----
		silicon, total	7440-21-3	E420	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.004 mg/L	98.2	70.0	130	----
		sodium, total	7440-23-5	E420	2 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.04 mg/L	96.0	70.0	130	----
		thallium, total	7440-28-0	E420	0.004 mg/L	90.4	70.0	130	----
		thorium, total	7440-29-1	E420	0.02 mg/L	102	70.0	130	----
		tin, total	7440-31-5	E420	0.02 mg/L	96.3	70.0	130	----
		titanium, total	7440-32-6	E420	0.04 mg/L	94.6	70.0	130	----
		tungsten, total	7440-33-7	E420	0.02 mg/L	94.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.004 mg/L	94.4	70.0	130	----
		vanadium, total	7440-62-2	E420	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.4 mg/L	87.4	70.0	130	----
		zirconium, total	7440-67-7	E420	0.04 mg/L	102	70.0	130	----
Total Metals (QCLot: 54899)									
VA20A9076-001	Anonymous	aluminum, total	7429-90-5	E420	0.2 mg/L	97.0	70.0	130	----
		antimony, total	7440-36-0	E420	0.02 mg/L	99.2	70.0	130	----
		arsenic, total	7440-38-2	E420	0.02 mg/L	96.9	70.0	130	----
		barium, total	7440-39-3	E420	0.02 mg/L	ND	70.0	130	----
		beryllium, total	7440-41-7	E420	0.04 mg/L	104	70.0	130	----
		bismuth, total	7440-69-9	E420	0.01 mg/L	90.0	70.0	130	----
		boron, total	7440-42-8	E420	0.1 mg/L	107	70.0	130	----
		cadmium, total	7440-43-9	E420	0.004 mg/L	99.6	70.0	130	----
		calcium, total	7440-70-2	E420	4 mg/L	ND	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	MS	Low	High	Qualifier
Total Metals (QCLot: 54899) - continued									
VA20A9076-001	Anonymous	cesium, total	7440-46-2	E420	0.01 mg/L	97.6	70.0	130	----
		cobalt, total	7440-48-4	E420	0.02 mg/L	96.0	70.0	130	----
		copper, total	7440-50-8	E420	0.02 mg/L	96.2	70.0	130	----
		iron, total	7439-89-6	E420	2 mg/L	96.9	70.0	130	----
		lead, total	7439-92-1	E420	0.02 mg/L	95.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.1 mg/L	108	70.0	130	----
		magnesium, total	7439-95-4	E420	1 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.02 mg/L	97.4	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.04 mg/L	93.6	70.0	130	----
		phosphorus, total	7723-14-0	E420	10 mg/L	104	70.0	130	----
		potassium, total	7440-09-7	E420	4 mg/L	97.8	70.0	130	----
		rubidium, total	7440-17-7	E420	0.02 mg/L	94.7	70.0	130	----
		selenium, total	7782-49-2	E420	0.04 mg/L	99.4	70.0	130	----
		silicon, total	7440-21-3	E420	10 mg/L	94.9	70.0	130	----
		silver, total	7440-22-4	E420	0.004 mg/L	99.0	70.0	130	----
		sodium, total	7440-23-5	E420	2 mg/L	99.8	70.0	130	----
		strontium, total	7440-24-6	E420	0.02 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	20 mg/L	101	70.0	130	----
		tellurium, total	13494-80-9	E420	0.04 mg/L	96.0	70.0	130	----
		thallium, total	7440-28-0	E420	0.004 mg/L	91.2	70.0	130	----
		thorium, total	7440-29-1	E420	0.02 mg/L	100	70.0	130	----
		tin, total	7440-31-5	E420	0.02 mg/L	97.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.04 mg/L	94.3	70.0	130	----
		tungsten, total	7440-33-7	E420	0.02 mg/L	95.9	70.0	130	----
		uranium, total	7440-61-1	E420	0.004 mg/L	95.1	70.0	130	----
		vanadium, total	7440-62-2	E420	0.1 mg/L	99.7	70.0	130	----
		zinc, total	7440-66-6	E420	0.4 mg/L	88.3	70.0	130	----
		zirconium, total	7440-67-7	E420	0.04 mg/L	97.4	70.0	130	----
Total Metals (QCLot: 55573)									
VA20A9071-001	Anonymous	mercury, total	7439-97-6	E508	0.0001 mg/L	103	70.0	130	----
Total Metals (QCLot: 55574)									
VA20A9076-001	Anonymous	mercury, total	7439-97-6	E508	0.0001 mg/L	104	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20A9075**	Page	: 1 of 20
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 24-Jun-2020 18:35
PO	: 176044	Issue Date	: 03-Jul-2020 17:09
C-O-C number	: ----		
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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 Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B01	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B02	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D01	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D02	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Dup-F02	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F01	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F02	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Field Blank	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
FOF	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H01	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H02	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H03	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
W01	E298	24-Jun-2020	----	----	----		03-Jul-2020	28 days	8 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Dup-F02	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F02	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Field Blank	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
FOF	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B01	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B02	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D01	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D02	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F01	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H01	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H02	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H03	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Travel Blank	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
W01	E235.F	24-Jun-2020	----	----	----		25-Jun-2020	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Dup-F02	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F02	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
FOF	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B01	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B02	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE D01	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE D02	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F01	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H01	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H02	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H03	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE W01	E235.NO3-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Dup-F02	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F02	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE FOF	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B01	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B02	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D01	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D02	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F01	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H01	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H02	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H03	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Travel Blank	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE W01	E235.NO2-L	24-Jun-2020	----	----	----		25-Jun-2020	3 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) B01	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) B02	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D01	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D02	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Dup-F02	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F01	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F02	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Field Blank	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) FOF	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H01	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H02	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H03	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Travel Blank	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) W01	E372-U	24-Jun-2020	30-Jun-2020	28 days	5 days	✓	30-Jun-2020	22 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE Field Blank	E108	24-Jun-2020	----	----	----		01-Jul-2020	0.25 hrs	159 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE FOF	E108	24-Jun-2020	----	----	----		01-Jul-2020	0.25 hrs	159 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Dup-F02	E108	24-Jun-2020	----	----	----		01-Jul-2020	0.25 hrs	160 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE F02	E108	24-Jun-2020	----	----	----		01-Jul-2020	0.25 hrs	160 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE D02	E108	24-Jun-2020	----	----	----		01-Jul-2020	0.25 hrs	161 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE F01	E108	24-Jun-2020	----	----	----		01-Jul-2020	0.25 hrs	161 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	24-Jun-2020	----	----	----		01-Jul-2020	0.25 hrs	161 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H01	E108	24-Jun-2020	----	----	----		01-Jul-2020	0.25 hrs	162 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H03	E108	24-Jun-2020	----	----	----		01-Jul-2020	0.25 hrs	162 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE B01	E108	24-Jun-2020	----	----	----		25-Jun-2020	0.25 hrs	23 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE W01	E108	24-Jun-2020	----	----	----		25-Jun-2020	0.25 hrs	24 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE B02	E108	24-Jun-2020	----	----	----		25-Jun-2020	0.25 hrs	25 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE H02	E108	24-Jun-2020	----	----	----		25-Jun-2020	0.25 hrs	25 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D01	E108	24-Jun-2020	----	----	----		25-Jun-2020	0.25 hrs	28 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B01	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D02	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Dup-F02	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F01	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F02	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Field Blank	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) FOF	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H01	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H03	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Travel Blank	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) W01	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B02	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D01	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
H02	E420.Cr-L	24-Jun-2020	----	----	----		28-Jun-2020	180 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B01	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B02	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D02	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Dup-F02	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F01	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F02	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Field Blank	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
FOF	E508	24-Jun-2020	----	----	----		30-Jun-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) H01	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) H02	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) H03	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) Travel Blank	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) W01	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) D01	E508	24-Jun-2020	----	----	----		30-Jun-2020	28 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) B01	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) D02	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Dup-F02	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F01	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F02	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Field Blank	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) FOF	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H01	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H03	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Travel Blank	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) W01	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) B02	E420	24-Jun-2020	----	----	----		28-Jun-2020	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) D01	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H02	E420	24-Jun-2020	----	----	----		28-Jun-2020	180 days	4 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: ✗ = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	55432	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	53770	2	25	8.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	53772	2	32	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	53773	2	32	6.2	5.0	✓
pH by Meter	E108	53813	2	27	7.4	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	54813	2	21	9.5	5.0	✓
Total Mercury in Water by CVAAS	E508	55573	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	54814	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	55431	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	55432	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	53770	2	25	8.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	53772	2	32	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	53773	2	32	6.2	5.0	✓
pH by Meter	E108	53813	2	27	7.4	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	54813	2	21	9.5	5.0	✓
Total Mercury in Water by CVAAS	E508	55573	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	54814	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	55431	1	20	5.0	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	55432	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	53770	2	25	8.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	53772	2	32	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	53773	2	32	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	54813	2	21	9.5	5.0	✓
Total Mercury in Water by CVAAS	E508	55573	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	54814	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	55431	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	55432	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	53770	2	25	8.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	53772	2	32	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	53773	2	32	6.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	54813	1	21	4.7	5.0	✗
Total Mercury in Water by CVAAS	E508	55573	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	54814	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	55431	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B0836**	Page	: 1 of 4
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 21-Jul-2020 19:05
PO	: 176044	Date Analysis Commenced	: 22-Jul-2020
C-O-C number	: ----	Issue Date	: 28-Jul-2020 11:59
Sampler	: L.Willams		
Site	: ----		
Quote number	: Standing Offer		
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

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	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Muneeb Alam	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, 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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	D01	D02	Field Blank	Travel Blank	----
				Client sampling date / time	21-Jul-2020 09:08	21-Jul-2020 09:21	21-Jul-2020 17:40	21-Jul-2020	----
Analyte	CAS Number	Method	LOR	Unit	VA20B0836-001	VA20B0836-002	VA20B0836-003	VA20B0836-004	--------
					Result	Result	Result	Result	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	110	125	<0.60	<0.60	----
pH	----	E108	0.10	pH units	7.97	7.89	5.90	5.84	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0166	0.0281	<0.0050	<0.0050	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.042	0.030	<0.020	<0.020	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.879	0.670	<0.0050	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0041	0.0047	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0165	0.0165	<0.0020	<0.0020	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0345	0.0254	<0.0030	<0.0030	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00146	0.00194	<0.00010	<0.00010	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0139	0.0139	<0.00010	<0.00010	----
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	0.022	0.023	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	0.0000058	<0.0000050	<0.0000050	----
calcium, total	7440-70-2	E420	0.050	mg/L	29.3	33.8	<0.050	<0.050	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00051	0.00040	<0.00010	<0.00010	----
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	<0.00050	<0.00050	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	0.339	0.449	<0.010	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0.000467 RRV	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0016	0.0020	<0.0010	<0.0010	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	8.92	9.90	<0.0050	<0.0050	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.129	0.221	<0.00010	<0.00010	----
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	0.000486	0.000433	<0.000050	<0.000050	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00082	0.00064	<0.00050	<0.00050	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	D01	D02	Field Blank	Travel Blank	----
				Client sampling date / time	21-Jul-2020 09:08	21-Jul-2020 09:21	21-Jul-2020 17:40	21-Jul-2020	----
Analyte	CAS Number	Method	LOR	Unit	VA20B0836-001	VA20B0836-002	VA20B0836-003	VA20B0836-004	--------
					Result	Result	Result	Result	----
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	1.54	1.37	<0.050	<0.050	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00067	0.00037	<0.00020	<0.00020	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000229	0.000232	<0.000050	<0.000050	----
silicon, total	7440-21-3	E420	0.10	mg/L	10.5	11.6	<0.10	<0.10	----
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	10.7	9.77	<0.050	<0.050	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.172	0.187	<0.00020	<0.00020	----
sulfur, total	7704-34-9	E420	0.50	mg/L	5.48	4.16	<0.50	<0.50	----
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	0.00124	0.00081	<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	0.000090	0.000063	<0.000010	<0.000010	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00103	0.00089	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20B0836**	Page	: 1 of 14
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 21-Jul-2020 19:05
PO	: 176044	Date Analysis Commenced	: 22-Jul-2020
C-O-C number	: ----	Issue Date	: 28-Jul-2020 11:59
Sampler	: L.Willams		
Site	: ----		
Quote number	: Standing Offer		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Muneeb Alam	Analyst	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, 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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 62935)											
VA20B0801-001	Anonymous	pH	----	E108	0.10	pH units	7.29	7.30	0.137%	4%	----
Anions and Nutrients (QC Lot: 62939)											
VA20B0823-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 62940)											
VA20B0823-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.500	mg/L	<0.500	0.521	0.0211	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 62942)											
VA20B0823-003	Anonymous	fluoride	16984-48-8	E235.F	2.00	mg/L	<2.00	<2.00	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 62956)											
VA20B0791-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 62959)											
VA20B0836-001	D01	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0165	0.0176	0.0011	Diff <2x LOR	----
Total Metals (QC Lot: 63069)											
VA20B0799-008	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.676	0.633	6.59%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00075	0.00075	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00466	0.00438	5.99%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0302	0.0286	5.64%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	0.481	0.464	3.65%	20%	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000670	0.000677	1.12%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	196	188	4.06%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000085	0.000087	0.000002	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.0253	0.0241	4.97%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.0218	0.0208	5.00%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	5.29	5.02	5.28%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000803	0.000796	0.883%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0097	0.0097	0.00007	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	71.2	67.8	4.91%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	1.45	1.40	3.33%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.232	0.229	1.18%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.101	0.0959	4.87%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 63069) - continued											
VA20B0799-008	Anonymous	phosphorus, total	7723-14-0	E420	0.050	mg/L	5.85	5.55	5.14%	20%	----
		potassium, total	7440-09-7	E420	0.050	mg/L	114	109	5.10%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.0242	0.0230	5.01%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000132	0.000133	0.0000009	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	6.46	6.14	5.10%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	0.000011	0.000001	Diff <2x LOR	----
		sodium, total	7440-23-5	E420	0.050	mg/L	37.2	35.3	5.34%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	1.96	1.92	1.95%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	129	126	2.39%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	0.00038	0.00035	0.00003	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000010	0.0000002	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	0.00011	<0.00010	0.000008	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	0.0309	0.0301	2.63%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	0.00010	<0.00010	0.000005	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000195	0.000194	0.322%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00826	0.00790	4.36%	20%	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.833	0.790	5.29%	20%	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00086	0.00069	0.00017	Diff <2x LOR	----
Total Metals (QC Lot: 63070)											
VA20B0799-008	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00211	0.00217	2.71%	20%	----
Total Metals (QC Lot: 63659)											
VA20B0810-003	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 64448)											
VA20B1010-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.126	0.128	1.93%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	0.00019	0.00002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00524	0.00545	4.08%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0161	0.0170	5.59%	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	0.113	0.111	1.88%	20%	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000098	0.0000076	0.0000022	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	1.27	1.29	1.82%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.00128	0.00130	1.35%	20%	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	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: 64448) - continued											
VA20B1010-001	Anonymous	copper, total	7440-50-8	E420	0.00050	mg/L	0.00171	0.00178	0.00007	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.110	0.114	3.15%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000106	0.000118	0.000012	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0872	0.0827	5.26%	20%	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	0.400	0.407	0.0076	Diff <2x LOR	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00626	0.00678	8.08%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00282	0.00278	1.51%	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	0.055	0.005	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.100	mg/L	0.886	0.927	0.041	Diff <2x LOR	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00131	0.00140	0.00009	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000097	0.000102	0.000006	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.88	3.67	5.50%	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	145	148	1.94%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0738	0.0773	4.59%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	9.90	9.57	3.33%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00343	0.00368	6.83%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	0.00011	0.000007	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000068	0.000072	0.000004	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00069	0.00066	0.00003	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Total Metals (QC Lot: 64449)											
VA20B1010-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00014	0.00014	0.000007	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
Anions and Nutrients (QCLot: 62939)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 62940)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 62942)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 62956)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 62959)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Total Metals (QCLot: 63069)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 63069) - continued						
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	----
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: 63070)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 63659)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 64448)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 64448) - continued						
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	----
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: 64449)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----

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
Physical Tests (QCLot: 62935)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 62939)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 62940)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 62942)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 62956)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	98.4	85.0	115	----
Anions and Nutrients (QCLot: 62959)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	95.6	80.0	120	----
Total Metals (QCLot: 63069)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	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	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.4	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.5	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	103	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	91.5	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 63069) - continued									
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	101	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	105	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	100.0	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	97.9	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	100	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	107	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Total Metals (QCLot: 63070)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Total Metals (QCLot: 63659)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.2	80.0	120	----
Total Metals (QCLot: 64448)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	108	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.8	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.6	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.3	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.0	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.0	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	99.4	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	97.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.0	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.6	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 64448) - continued									
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.9	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.5	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	105	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	97.7	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	108	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	100	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	88.2	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	98.3	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.3	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.9	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	98.4	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	101	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	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	103	80.0	120	----
Total Metals (QCLot: 64449)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	99.0	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	Qualifier
Anions and Nutrients (QCLot: 62939)										
VA20B0823-003	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	48.1 mg/L	50 mg/L	96.3	75.0	125	----
Anions and Nutrients (QCLot: 62940)										
VA20B0823-003	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	233 mg/L	250 mg/L	93.4	75.0	125	----
Anions and Nutrients (QCLot: 62942)										
VA20B0823-003	Anonymous	fluoride	16984-48-8	E235.F	96.4 mg/L	100 mg/L	96.4	75.0	125	----
Anions and Nutrients (QCLot: 62956)										
VA20B0791-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.203 mg/L	0.2 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 62959)										
VA20B0836-002	D02	phosphorus, total	7723-14-0	E372-U	0.0465 mg/L	0.05 mg/L	92.9	70.0	130	----
Total Metals (QCLot: 63069)										
VA20B0799-009	Anonymous	aluminum, total	7429-90-5	E420	0.196 mg/L	0.2 mg/L	98.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0198 mg/L	0.02 mg/L	99.3	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00937 mg/L	0.01 mg/L	93.7	70.0	130	----
		boron, total	7440-42-8	E420	0.095 mg/L	0.1 mg/L	94.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00399 mg/L	0.004 mg/L	99.8	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	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		copper, total	7440-50-8	E420	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		lithium, total	7439-93-2	E420	0.0958 mg/L	0.1 mg/L	95.8	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	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		nickel, total	7440-02-0	E420	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.0 mg/L	10 mg/L	100	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: 63069) - continued										
VA20B0799-009	Anonymous	potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		selenium, total	7782-49-2	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		silicon, total	7440-21-3	E420	9.18 mg/L	10 mg/L	91.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00417 mg/L	0.004 mg/L	104	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	20.6 mg/L	20 mg/L	103	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		thallium, total	7440-28-0	E420	0.00376 mg/L	0.004 mg/L	94.1	70.0	130	----
		thorium, total	7440-29-1	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		tin, total	7440-31-5	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0199 mg/L	0.02 mg/L	99.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.404 mg/L	0.4 mg/L	101	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
Total Metals (QCLot: 63070)										
VA20B0799-009	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0398 mg/L	0.04 mg/L	99.4	70.0	130	----
Total Metals (QCLot: 63659)										
VA20B0810-004	Anonymous	mercury, total	7439-97-6	E508	0.0000946 mg/L	0.0001 mg/L	94.6	70.0	130	----
Total Metals (QCLot: 64448)										
VA20B1010-002	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0203 mg/L	0.02 mg/L	101	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	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00960 mg/L	0.01 mg/L	96.0	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	0.1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00403 mg/L	0.004 mg/L	101	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	0.00972 mg/L	0.01 mg/L	97.2	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0200 mg/L	0.02 mg/L	100.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		iron, total	7439-89-6	E420	1.98 mg/L	2 mg/L	99.0	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: 64448) - continued										
VA20B1010-002	Anonymous	lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.0930 mg/L	0.1 mg/L	93.0	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	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0390 mg/L	0.04 mg/L	97.6	70.0	130	----
		phosphorus, total	7723-14-0	E420	11.0 mg/L	10 mg/L	110	70.0	130	----
		potassium, total	7440-09-7	E420	4.22 mg/L	4 mg/L	105	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0211 mg/L	0.02 mg/L	106	70.0	130	----
		selenium, total	7782-49-2	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.75 mg/L	10 mg/L	97.5	70.0	130	----
		silver, total	7440-22-4	E420	0.00398 mg/L	0.004 mg/L	99.4	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	21.6 mg/L	20 mg/L	108	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		thallium, total	7440-28-0	E420	0.00383 mg/L	0.004 mg/L	95.9	70.0	130	----
		thorium, total	7440-29-1	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0198 mg/L	0.02 mg/L	99.1	70.0	130	----
		uranium, total	7440-61-1	E420	0.00408 mg/L	0.004 mg/L	102	70.0	130	----
		vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.410 mg/L	0.4 mg/L	102	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
Total Metals (QCLot: 64449)										
VA20B1010-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0401 mg/L	0.04 mg/L	100	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B0836**	Page	: 1 of 10
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 21-Jul-2020 19:05
PO	: 176044	Issue Date	: 28-Jul-2020 12:00
C-O-C number	: ----		
Sampler	: L.Willams		
Site	: ----		
Quote number	: Standing Offer		
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.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Field Blank	E298	21-Jul-2020	----	----	----		27-Jul-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	21-Jul-2020	----	----	----		27-Jul-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D01	E298	21-Jul-2020	----	----	----		27-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D02	E298	21-Jul-2020	----	----	----		27-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D01	E235.F	21-Jul-2020	----	----	----		22-Jul-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D02	E235.F	21-Jul-2020	----	----	----		22-Jul-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Field Blank	E235.F	21-Jul-2020	----	----	----		22-Jul-2020	28 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Travel Blank	E235.F	21-Jul-2020	----	----	----		22-Jul-2020	28 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D01	E235.NO3-L	21-Jul-2020	----	----	----		22-Jul-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D02	E235.NO3-L	21-Jul-2020	----	----	----		22-Jul-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO3-L	21-Jul-2020	----	----	----		22-Jul-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO3-L	21-Jul-2020	----	----	----		22-Jul-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
D01	E235.NO2-L	21-Jul-2020	----	----	----		22-Jul-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
D02	E235.NO2-L	21-Jul-2020	----	----	----		22-Jul-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO2-L	21-Jul-2020	----	----	----		22-Jul-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO2-L	21-Jul-2020	----	----	----		22-Jul-2020	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D01	E372-U	21-Jul-2020	22-Jul-2020	28 days	0 days	✓	22-Jul-2020	27 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D02	E372-U	21-Jul-2020	22-Jul-2020	28 days	0 days	✓	22-Jul-2020	27 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Field Blank	E372-U	21-Jul-2020	22-Jul-2020	28 days	0 days	✓	22-Jul-2020	27 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Travel Blank	E372-U	21-Jul-2020	22-Jul-2020	28 days	0 days	✓	22-Jul-2020	27 days	0 days	✓
Physical Tests : pH by Meter										
HDPE Field Blank	E108	21-Jul-2020	----	----	----		22-Jul-2020	0.25 hrs	19 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	21-Jul-2020	----	----	----		22-Jul-2020	0.25 hrs	22 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE D01	E108	21-Jul-2020	----	----	----		22-Jul-2020	0.25 hrs	28 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE D02	E108	21-Jul-2020	----	----	----		22-Jul-2020	0.25 hrs	28 hrs	× EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D01	E420.Cr-L	21-Jul-2020	----	----	----		25-Jul-2020	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
D02	E420.Cr-L	21-Jul-2020	----	----	----		25-Jul-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
Field Blank	E420.Cr-L	21-Jul-2020	----	----	----		25-Jul-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
Travel Blank	E420.Cr-L	21-Jul-2020	----	----	----		26-Jul-2020	180 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Field Blank	E508	21-Jul-2020	----	----	----		23-Jul-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Travel Blank	E508	21-Jul-2020	----	----	----		23-Jul-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D01	E508	21-Jul-2020	----	----	----		23-Jul-2020	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D02	E508	21-Jul-2020	----	----	----		23-Jul-2020	28 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D01	E420	21-Jul-2020	----	----	----		25-Jul-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D02	E420	21-Jul-2020	----	----	----		25-Jul-2020	180 days	3 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Field Blank	E420	21-Jul-2020	----	----	----		25-Jul-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Travel Blank	E420	21-Jul-2020	----	----	----		26-Jul-2020	180 days	5 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	62956	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	62942	1	5	20.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	62940	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	62939	1	12	8.3	5.0	✓
pH by Meter	E108	62935	1	7	14.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	64449	2	19	10.5	5.0	✓
Total Mercury in Water by CVAAS	E508	63659	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	64448	2	29	6.9	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	62959	1	4	25.0	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	62956	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	62942	1	5	20.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	62940	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	62939	1	12	8.3	5.0	✓
pH by Meter	E108	62935	1	7	14.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	64449	2	19	10.5	5.0	✓
Total Mercury in Water by CVAAS	E508	63659	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	64448	2	29	6.9	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	62959	1	4	25.0	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	62956	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	62942	1	5	20.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	62940	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	62939	1	12	8.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	64449	2	19	10.5	5.0	✓
Total Mercury in Water by CVAAS	E508	63659	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	64448	3	29	10.3	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	62959	1	4	25.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	62956	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	62942	1	5	20.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	62940	1	13	7.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	62939	1	12	8.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	64449	2	19	10.5	5.0	✓
Total Mercury in Water by CVAAS	E508	63659	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	64448	2	29	6.9	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	62959	1	4	25.0	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B0956**	Page	: 1 of 6
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 22-Jul-2020 21:45
PO	: 176044	Date Analysis Commenced	: 23-Jul-2020
C-O-C number	: ----	Issue Date	: 30-Jul-2020 11:53
Sampler	: L.Williams		
Site	: ----		
Quote number	: Standing Offer		
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

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*
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Mae Soropia	Laboratory 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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	H01	H02	H03	W01	DUP-W01
				Client sampling date / time	22-Jul-2020 19:10	22-Jul-2020 09:42	22-Jul-2020 15:52	22-Jul-2020 15:38	22-Jul-2020 15:38
Analyte	CAS Number	Method	LOR	Unit	VA20B0956-001	VA20B0956-002	VA20B0956-003	VA20B0956-004	VA20B0956-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	112	112	110	103	102
pH	----	E108	0.10	pH units	6.98	7.87	7.61	7.60	7.60
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0207	0.0330	0.0230	0.0303	0.0313
fluoride	16984-48-8	E235.F	0.020	mg/L	0.067	0.036	0.064	0.041	0.041
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.29	1.28	1.94	1.59	1.59
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0025	0.0014	0.0064	0.0062
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0085	0.0144	0.0148	0.0130	0.0140
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0102	0.0319	0.0087	0.0206	0.0141
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	<0.00010	0.00020	<0.00010	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00043	0.00104	0.00058	0.00068	0.00066
barium, total	7440-39-3	E420	0.00010	mg/L	0.0132	0.0131	0.0134	0.0333	0.0330
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	0.012	0.010	0.013	0.010	0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000148	0.0000075	0.0000204	0.0000095	0.0000078
calcium, total	7440-70-2	E420	0.050	mg/L	31.2	32.4	30.7	27.7	27.2
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00026	0.00040	0.00029	0.00066	0.00062
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	0.00071	0.00050	0.00106	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	0.047	0.146	0.027	0.270	0.257
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	0.000053	0.000064
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0012	<0.0010	0.0012	0.0012
magnesium, total	7439-95-4	E420	0.0050	mg/L	8.42	7.67	8.15	8.34	8.27
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0100	0.0269	0.00975	0.0346	0.0340
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000106	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000224	0.00149	0.0122	0.000293	0.000302
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	0.00088	0.00084
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	H01	H02	H03	W01	DUP-W01
				Client sampling date / time	22-Jul-2020 19:10	22-Jul-2020 09:42	22-Jul-2020 15:52	22-Jul-2020 15:38	22-Jul-2020 15:38
Analyte	CAS Number	Method	LOR	Unit	VA20B0956-001	VA20B0956-002	VA20B0956-003	VA20B0956-004	VA20B0956-005
					Result	Result	Result	Result	Result
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	1.69	1.72	1.75	1.26	1.24
rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	0.00053	0.00031	0.00047	0.00044
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000277	0.000235	0.000207	0.000116	0.000150
silicon, total	7440-21-3	E420	0.10	mg/L	9.95	9.41	9.31	10.5	10.2
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	18.2	9.76	16.4	12.8	12.6
strontium, total	7440-24-6	E420	0.00020	mg/L	0.163	0.143	0.155	0.194	0.193
sulfur, total	7704-34-9	E420	0.50	mg/L	5.80	6.43	6.39	4.72	4.30
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	<0.00030	0.00148	<0.00120 DLM	0.00086	0.00060
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	0.000010	0.000074	0.000015	0.000046	0.000046
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	0.00065	<0.00050	0.00053	0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0030	0.0076	<0.0030	<0.0030
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	B01	B02	----	----	----
				Client sampling date / time	22-Jul-2020 13:15	22-Jul-2020 11:16	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B0956-006	VA20B0956-007	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	77.5	112	----	----	----
pH	----	E108	0.10	pH units	7.15	7.98	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0382	0.0297	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.035	0.036	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.41	1.75	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0185	0.0069	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0166	0.0132	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0187	0.0482	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00012	<0.00010	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00025	0.00079	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0198	0.0168	----	----	----
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.014	0.011	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000221	0.0000057	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	21.0	30.7	----	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00092	0.00065	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00014	<0.00010	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00057	<0.00050	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.272	0.283	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000268	0.000058	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0012	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	6.11	8.66	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0675	0.116	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000176	0.000408	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00086	<0.00050	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.06	1.62	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	B01	B02	----	----	----
				Client sampling date / time	22-Jul-2020 13:15	22-Jul-2020 11:16	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B0956-006	VA20B0956-007	--------	--------	--------
					Result	Result	----	----	----
Total Metals									
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00069	0.00048	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000106	0.000286	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	10.9	11.1	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	14.5	9.89	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.228	0.164	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	3.40	5.41	----	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00086	0.00205	----	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	0.000049	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00058	0.00098	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0053	<0.0030	----	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20B0956**	Page	: 1 of 10
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 22-Jul-2020 21:45
PO	: 176044	Date Analysis Commenced	: 23-Jul-2020
C-O-C number	: ----	Issue Date	: 30-Jul-2020 11:53
Sampler	: L.Williams		
Site	: ----		
Quote number	: Standing Offer		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Mae Soropia	Laboratory Analyst	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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 63714)											
VA20B0971-001	Anonymous	pH	----	E108	0.10	pH units	8.24	8.23	0.121%	4%	----
Anions and Nutrients (QC Lot: 63640)											
VA20B0971-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	0.155	0.154	0.0009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 63641)											
VA20B0971-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 63642)											
VA20B0971-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.910	0.933	0.023	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 65114)											
KS2001145-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	8.71	8.69	0.201%	20%	----
Anions and Nutrients (QC Lot: 65131)											
KS2001161-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0104	0.0054	Diff <2x LOR	----
Total Metals (QC Lot: 63627)											
VA20B0956-001	H01	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0102	0.0083	0.0019	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	0.00016	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00043	0.00043	0.000001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0132	0.0129	2.37%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	0.012	0.012	0.0001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000148	0.0000172	0.0000023	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	31.2	31.6	1.50%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	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	0.00071	0.00072	0.000004	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.047	0.050	0.003	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	8.42	8.64	2.54%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0100	0.00996	0.407%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000224	0.000254	0.000030	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 63627) - continued											
VA20B0956-001	H01	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	1.69	1.68	0.339%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000277	0.000251	0.000026	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	9.95	10.0	0.452%	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	18.2	18.6	2.29%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.163	0.165	1.26%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	5.80	5.91	1.83%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00032	0.00002	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000010	0.000010	0.0000004	Diff <2x LOR	----
		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: 63628)											
VA20B0956-001	H01	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00026	0.00026	0.000003	Diff <2x LOR	----
Total Metals (QC Lot: 64309)											
VA20B0924-007	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 63640)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 63641)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 63642)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 65114)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 65131)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 63627)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 63627) - continued						
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	----
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: 63628)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 64309)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 63714)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 63640)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 63641)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	105	90.0	110	----
Anions and Nutrients (QCLot: 63642)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	107	90.0	110	----
Anions and Nutrients (QCLot: 65114)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	90.8	80.0	120	----
Anions and Nutrients (QCLot: 65131)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	103	85.0	115	----
Total Metals (QCLot: 63627)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	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	99.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	109	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	106	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	106	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	103	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	106	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 63627) - continued									
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	100	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	111	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	93.1	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
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	104	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	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	102	80.0	120	----
Total Metals (QCLot: 63628)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Total Metals (QCLot: 64309)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 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	Qualifier
Anions and Nutrients (QCLot: 63640)										
VA20B0971-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	50.4 mg/L	50 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 63641)										
VA20B0971-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	10.4 mg/L	10 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 63642)										
VA20B0971-002	Anonymous	fluoride	16984-48-8	E235.F	21.3 mg/L	20 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 65114)										
VA20B0945-001	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 65131)										
KS2001161-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.197 mg/L	0.2 mg/L	98.7	75.0	125	----
Total Metals (QCLot: 63627)										
VA20B0956-002	H02	aluminum, total	7429-90-5	E420	0.196 mg/L	0.2 mg/L	98.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		barium, total	7440-39-3	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00997 mg/L	0.01 mg/L	99.7	70.0	130	----
		boron, total	7440-42-8	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00397 mg/L	0.004 mg/L	99.2	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	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		iron, total	7439-89-6	E420	1.91 mg/L	2 mg/L	95.7	70.0	130	----
		lead, total	7439-92-1	E420	0.0194 mg/L	0.02 mg/L	97.2	70.0	130	----
		lithium, total	7439-93-2	E420	0.103 mg/L	0.1 mg/L	103	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	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0383 mg/L	0.04 mg/L	95.7	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.5 mg/L	10 mg/L	105	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: 63627) - continued										
VA20B0956-002	H02	potassium, total	7440-09-7	E420	3.48 mg/L	4 mg/L	87.0	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		selenium, total	7782-49-2	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.48 mg/L	10 mg/L	94.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00406 mg/L	0.004 mg/L	102	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	20.2 mg/L	20 mg/L	101	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		thallium, total	7440-28-0	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		thorium, total	7440-29-1	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		titanium, total	7440-32-6	E420	0.0398 mg/L	0.04 mg/L	99.5	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		uranium, total	7440-61-1	E420	0.00425 mg/L	0.004 mg/L	106	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.1	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
Total Metals (QCLot: 63628)										
VA20B0956-002	H02	chromium, total	7440-47-3	E420.Cr-L	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
Total Metals (QCLot: 64309)										
VA20B0924-008	Anonymous	mercury, total	7439-97-6	E508	0.000105 mg/L	0.0001 mg/L	105	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B0956**	Page	: 1 of 13
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 22-Jul-2020 21:45
PO	: 176044	Issue Date	: 30-Jul-2020 11:53
C-O-C number	: ----		
Sampler	: L.Williams		
Site	: ----		
Quote number	: Standing Offer		
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 Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
DUP-W01	E298	22-Jul-2020	----	----	----		29-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H01	E298	22-Jul-2020	----	----	----		29-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H03	E298	22-Jul-2020	----	----	----		29-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
W01	E298	22-Jul-2020	----	----	----		29-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B01	E298	22-Jul-2020	----	----	----		29-Jul-2020	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B02	E298	22-Jul-2020	----	----	----		29-Jul-2020	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H02	E298	22-Jul-2020	----	----	----		29-Jul-2020	28 days	7 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE H01	E235.F	22-Jul-2020	----	----	----		23-Jul-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE B01	E235.F	22-Jul-2020	----	----	----		23-Jul-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE B02	E235.F	22-Jul-2020	----	----	----		23-Jul-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DUP-W01	E235.F	22-Jul-2020	----	----	----		23-Jul-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE H02	E235.F	22-Jul-2020	----	----	----		23-Jul-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE H03	E235.F	22-Jul-2020	----	----	----		23-Jul-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE W01	E235.F	22-Jul-2020	----	----	----		23-Jul-2020	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H01	E235.NO3-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE B01	E235.NO3-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE B02	E235.NO3-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DUP-W01	E235.NO3-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H02	E235.NO3-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H03	E235.NO3-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE W01	E235.NO3-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H01	E235.NO2-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B01	E235.NO2-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B02	E235.NO2-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DUP-W01	E235.NO2-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H02	E235.NO2-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H03	E235.NO2-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE W01	E235.NO2-L	22-Jul-2020	----	----	----		23-Jul-2020	3 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) B01	E372-U	22-Jul-2020	28-Jul-2020	28 days	5 days	✓	29-Jul-2020	22 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) B02	E372-U	22-Jul-2020	28-Jul-2020	28 days	5 days	✓	29-Jul-2020	22 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) DUP-W01	E372-U	22-Jul-2020	28-Jul-2020	28 days	5 days	✓	29-Jul-2020	22 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H01	E372-U	22-Jul-2020	28-Jul-2020	28 days	5 days	✓	29-Jul-2020	22 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H02	E372-U	22-Jul-2020	28-Jul-2020	28 days	5 days	✓	29-Jul-2020	22 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H03	E372-U	22-Jul-2020	28-Jul-2020	28 days	5 days	✓	29-Jul-2020	22 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) W01	E372-U	22-Jul-2020	28-Jul-2020	28 days	5 days	✓	29-Jul-2020	22 days	1 days	✓
Physical Tests : pH by Meter										
HDPE H01	E108	22-Jul-2020	----	----	----		23-Jul-2020	0.25 hrs	22 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DUP-W01	E108	22-Jul-2020	----	----	----		23-Jul-2020	0.25 hrs	26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H03	E108	22-Jul-2020	----	----	----		23-Jul-2020	0.25 hrs	26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE W01	E108	22-Jul-2020	----	----	----		23-Jul-2020	0.25 hrs	26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE B01	E108	22-Jul-2020	----	----	----		23-Jul-2020	0.25 hrs	28 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE B02	E108	22-Jul-2020	----	----	----		23-Jul-2020	0.25 hrs	30 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H02	E108	22-Jul-2020	----	----	----		23-Jul-2020	0.25 hrs	32 hrs	× EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B01	E420.Cr-L	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B02	E420.Cr-L	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) DUP-W01	E420.Cr-L	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H01	E420.Cr-L	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H02	E420.Cr-L	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H03	E420.Cr-L	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) W01	E420.Cr-L	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) H01	E508	22-Jul-2020	----	----	----		24-Jul-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) B01	E508	22-Jul-2020	----	----	----		24-Jul-2020	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) B02	E508	22-Jul-2020	----	----	----		24-Jul-2020	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
DUP-W01	E508	22-Jul-2020	----	----	----		24-Jul-2020	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H02	E508	22-Jul-2020	----	----	----		24-Jul-2020	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H03	E508	22-Jul-2020	----	----	----		24-Jul-2020	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
W01	E508	22-Jul-2020	----	----	----		24-Jul-2020	28 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
B01	E420	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
B02	E420	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
DUP-W01	E420	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
H01	E420	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
H02	E420	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H03	E420	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) W01	E420	22-Jul-2020	----	----	----		24-Jul-2020	180 days	2 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	65131	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	63642	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	63640	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	63641	1	11	9.0	5.0	✓
pH by Meter	E108	63714	1	12	8.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	63628	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	64309	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	63627	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	65114	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	65131	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	63642	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	63640	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	63641	1	11	9.0	5.0	✓
pH by Meter	E108	63714	1	12	8.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	63628	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	64309	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	63627	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	65114	1	20	5.0	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	65131	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	63642	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	63640	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	63641	1	11	9.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	63628	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	64309	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	63627	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	65114	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	65131	1	17	5.8	5.0	✓
Fluoride in Water by IC	E235.F	63642	1	11	9.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	63640	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	63641	1	11	9.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	63628	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	64309	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	63627	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	65114	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B1071**	Page	: 1 of 4
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 23-Jul-2020 20:40
PO	: 176044	Date Analysis Commenced	: 24-Jul-2020
C-O-C number	: ----	Issue Date	: 30-Jul-2020 12:01
Sampler	: L Williams		
Site	: ----		
Quote number	: Standing Offer		
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

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
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Owen Cheng		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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	F01	F02	F03	F04	FOF
				Client sampling date / time	23-Jul-2020 09:23	23-Jul-2020 17:25	23-Jul-2020 14:43	23-Jul-2020 15:42	23-Jul-2020 19:05
Analyte	CAS Number	Method	LOR	Unit	VA20B1071-001	VA20B1071-002	VA20B1071-003	VA20B1071-004	VA20B1071-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	135	108	97.4	95.3	87.5
pH	----	E108	0.10	pH units	7.93	7.54	7.54	7.34	7.46
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0431	0.0058	0.0207	0.0246	0.0127
fluoride	16984-48-8	E235.F	0.020	mg/L	0.049	0.075	0.035	0.035	0.041
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.561	0.0051	1.06	1.50	0.0957
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0076	<0.0010	0.0045	0.0039	0.0072
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0280	0.0981	0.0221	0.0187	0.0747
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0472	0.0206	0.0639	0.0490	0.0215
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00203	0.00371	0.00073	0.00066	0.00646
barium, total	7440-39-3	E420	0.00010	mg/L	0.0193	0.0544	0.0185	0.0156	0.0284
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	0.019	0.018	0.029	0.028	0.014
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0.0000071	0.0000092	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L	34.6	29.9	25.2	24.9	23.5
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00027	0.00033	0.00018	0.00019	0.00026
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00014	0.00218	0.00029	0.00018	0.00087
copper, total	7440-50-8	E420	0.00050	mg/L	0.00115	0.00056	0.00072	0.00071	0.00066
iron, total	7439-89-6	E420	0.010	mg/L	0.507	5.03	0.675	0.431	4.06
lead, total	7439-92-1	E420	0.000050	mg/L	0.000052	<0.000050	0.000082	0.000071	0.000107
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	11.9	8.12	8.37	8.03	6.98
manganese, total	7439-96-5	E420	0.00010	mg/L	0.179	5.11	0.370	0.203	1.64
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	0.000695	0.000665	0.000376	0.000313	0.000526
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00059	0.00084	0.00155	0.00111	0.00064
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	0.105	<0.050	<0.050	0.058

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	F01	F02	F03	F04	FOF
				Client sampling date / time	23-Jul-2020 09:23	23-Jul-2020 17:25	23-Jul-2020 14:43	23-Jul-2020 15:42	23-Jul-2020 19:05
Analyte	CAS Number	Method	LOR	Unit	VA20B1071-001	VA20B1071-002	VA20B1071-003	VA20B1071-004	VA20B1071-005
					Result	Result	Result	Result	Result
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	2.09	2.86	2.21	2.45	1.10
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00091	0.00252	0.00106	0.00109	0.00067
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000150	0.000110	0.000156	0.000136	0.000085
silicon, total	7440-21-3	E420	0.10	mg/L	7.39	5.86	7.90	7.48	4.77
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	17.1	16.3	11.5	10.3	12.5
strontium, total	7440-24-6	E420	0.00020	mg/L	0.209	0.181	0.130	0.139	0.142
sulfur, total	7704-34-9	E420	0.50	mg/L	5.88	1.04	8.67	8.12	1.80
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	0.00177	0.00084	0.00226	0.00176	0.00077
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	0.00019	<0.00010	<0.00010	0.00016
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000168	0.000027	0.000038	0.000039	0.000042
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00068	<0.00050	<0.00050	<0.00050	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	0.0049
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.

QUALITY CONTROL REPORT

Work Order	: **VA20B1071**	Page	: 1 of 10
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 23-Jul-2020 20:40
PO	: 176044	Date Analysis Commenced	: 24-Jul-2020
C-O-C number	: ----	Issue Date	: 30-Jul-2020 12:01
Sampler	: L Williams		
Site	: ----		
Quote number	: Standing Offer		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Owen Cheng		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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 65117)											
VA20B1230-001	Anonymous	pH	----	E108	0.10	pH units	7.50	7.56	0.863%	4%	----
Physical Tests (QC Lot: 65165)											
VA20B1138-001	Anonymous	pH	----	E108	0.10	pH units	7.83	7.81	0.256%	4%	----
Anions and Nutrients (QC Lot: 64675)											
VA20B1138-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.252	0.244	2.93%	20%	----
Anions and Nutrients (QC Lot: 64676)											
VA20B1138-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 64677)											
VA20B1138-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.476	0.474	0.541%	20%	----
Anions and Nutrients (QC Lot: 65311)											
KS2001168-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0428	0.0419	2.24%	20%	----
Anions and Nutrients (QC Lot: 65312)											
VA20B1038-006	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0380	0.0378	0.0002	Diff <2x LOR	----
Total Metals (QC Lot: 64151)											
VA20B1071-001	F01	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0472	0.0464	1.66%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00014	0.00013	0.000008	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00203	0.00212	4.16%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0193	0.0200	3.47%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	0.019	0.019	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	34.6	36.0	4.05%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00014	0.00015	0.000008	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00115	0.00120	0.00006	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.507	0.521	2.63%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000052	0.000050	0.000001	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	11.9	12.0	0.295%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.179	0.177	0.834%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 64151) - continued											
VA20B1071-001	F01	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000695	0.000721	3.58%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00059	0.00061	0.00002	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	2.09	2.10	0.589%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00091	0.00096	0.00004	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000150	0.000157	0.000007	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.39	7.32	0.936%	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	17.1	17.4	1.56%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.209	0.213	1.97%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	5.88	6.05	2.96%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00177	0.00180	0.00004	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000168	0.000165	1.98%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00068	0.00067	0.000006	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: 64152)											
VA20B1071-001	F01	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00027	0.00026	0.000002	Diff <2x LOR	----
Total Metals (QC Lot: 64921)											
VA20B1063-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 64675)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 64676)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 64677)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 65311)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 65312)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 64151)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 64151) - continued						
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	----
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: 64152)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 64921)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 65117)									
pH	----	E108	----	pH units	7 pH units	99.9	98.0	102	----
Physical Tests (QCLot: 65165)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 64675)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.3	90.0	110	----
Anions and Nutrients (QCLot: 64676)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.9	90.0	110	----
Anions and Nutrients (QCLot: 64677)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 65311)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.1	80.0	120	----
Anions and Nutrients (QCLot: 65312)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	104	85.0	115	----
Total Metals (QCLot: 64151)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	111	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	112	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	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	109	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	114	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	109	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	106	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	107	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	111	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	111	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 64151) - continued									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	110	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	110	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	110	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	109	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	107	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	114	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	111	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	97.9	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	104	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	101	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	106	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	110	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	107	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	112	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
Total Metals (QCLot: 64152)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Total Metals (QCLot: 64921)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 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	Qualifier
Anions and Nutrients (QCLot: 64675)										
VA20B1071-002	F02	fluoride	16984-48-8	E235.F	0.978 mg/L	1 mg/L	97.8	75.0	125	----
Anions and Nutrients (QCLot: 64676)										
VA20B1071-002	F02	nitrite (as N)	14797-65-0	E235.NO2-L	0.459 mg/L	0.5 mg/L	91.9	75.0	125	----
Anions and Nutrients (QCLot: 64677)										
VA20B1071-002	F02	nitrate (as N)	14797-55-8	E235.NO3-L	2.48 mg/L	2.5 mg/L	99.4	75.0	125	----
Anions and Nutrients (QCLot: 65311)										
VA20B1061-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0493 mg/L	0.05 mg/L	98.7	70.0	130	----
Anions and Nutrients (QCLot: 65312)										
VA20B1038-008	Anonymous	ammonia, total (as N)	7664-41-7	E298	10.3 mg/L	10 mg/L	103	75.0	125	----
Total Metals (QCLot: 64151)										
VA20B1071-002	F02	aluminum, total	7429-90-5	E420	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		antimony, total	7440-36-0	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0199 mg/L	0.02 mg/L	99.6	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	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00996 mg/L	0.01 mg/L	99.6	70.0	130	----
		boron, total	7440-42-8	E420	0.098 mg/L	0.1 mg/L	98.5	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00410 mg/L	0.004 mg/L	103	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	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		copper, total	7440-50-8	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		lithium, total	7439-93-2	E420	0.106 mg/L	0.1 mg/L	106	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	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		nickel, total	7440-02-0	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		phosphorus, total	7723-14-0	E420	11.3 mg/L	10 mg/L	113	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: 64151) - continued										
VA20B1071-002	F02	potassium, total	7440-09-7	E420	3.99 mg/L	4 mg/L	99.8	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		selenium, total	7782-49-2	E420	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		silicon, total	7440-21-3	E420	9.26 mg/L	10 mg/L	92.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00407 mg/L	0.004 mg/L	102	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	21.3 mg/L	20 mg/L	106	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	0.00382 mg/L	0.004 mg/L	95.4	70.0	130	----
		thorium, total	7440-29-1	E420	0.0214 mg/L	0.02 mg/L	107	70.0	130	----
		tin, total	7440-31-5	E420	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		titanium, total	7440-32-6	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		uranium, total	7440-61-1	E420	0.00418 mg/L	0.004 mg/L	105	70.0	130	----
		vanadium, total	7440-62-2	E420	0.104 mg/L	0.1 mg/L	104	70.0	130	----
		zinc, total	7440-66-6	E420	0.384 mg/L	0.4 mg/L	96.0	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
Total Metals (QCLot: 64152)										
VA20B1071-002	F02	chromium, total	7440-47-3	E420.Cr-L	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
Total Metals (QCLot: 64921)										
VA20B1063-002	Anonymous	mercury, total	7439-97-6	E508	0.0000993 mg/L	0.0001 mg/L	99.3	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B1071**	Page	: 1 of 11
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 23-Jul-2020 20:40
PO	: 176044	Issue Date	: 30-Jul-2020 12:01
C-O-C number	: ----		
Sampler	: L Williams		
Site	: ----		
Quote number	: Standing Offer		
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.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
FOF	E298	23-Jul-2020	----	----	----		29-Jul-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F01	E298	23-Jul-2020	----	----	----		29-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F02	E298	23-Jul-2020	----	----	----		29-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F03	E298	23-Jul-2020	----	----	----		29-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F04	E298	23-Jul-2020	----	----	----		29-Jul-2020	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F02	E235.F	23-Jul-2020	----	----	----		26-Jul-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F03	E235.F	23-Jul-2020	----	----	----		26-Jul-2020	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE F04	E235.F	23-Jul-2020	----	----	----		26-Jul-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FOF	E235.F	23-Jul-2020	----	----	----		26-Jul-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F01	E235.F	23-Jul-2020	----	----	----		26-Jul-2020	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F02	E235.NO3-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F03	E235.NO3-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F04	E235.NO3-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE FOF	E235.NO3-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F01	E235.NO3-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F02	E235.NO2-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F03	E235.NO2-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F04	E235.NO2-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE FOF	E235.NO2-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F01	E235.NO2-L	23-Jul-2020	----	----	----		26-Jul-2020	3 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F02	E372-U	23-Jul-2020	28-Jul-2020	28 days	4 days	✓	29-Jul-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F03	E372-U	23-Jul-2020	28-Jul-2020	28 days	4 days	✓	29-Jul-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F04	E372-U	23-Jul-2020	28-Jul-2020	28 days	4 days	✓	29-Jul-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) FOF	E372-U	23-Jul-2020	28-Jul-2020	28 days	4 days	✓	29-Jul-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F01	E372-U	23-Jul-2020	28-Jul-2020	28 days	5 days	✓	29-Jul-2020	22 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE F0F	E108	23-Jul-2020	----	----	----		28-Jul-2020	0.25 hrs	122 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE F02	E108	23-Jul-2020	----	----	----		28-Jul-2020	0.25 hrs	124 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE F04	E108	23-Jul-2020	----	----	----		28-Jul-2020	0.25 hrs	126 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE F03	E108	23-Jul-2020	----	----	----		28-Jul-2020	0.25 hrs	127 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE F01	E108	23-Jul-2020	----	----	----		28-Jul-2020	0.25 hrs	133 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F01	E420.Cr-L	23-Jul-2020	----	----	----		27-Jul-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F02	E420.Cr-L	23-Jul-2020	----	----	----		27-Jul-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F03	E420.Cr-L	23-Jul-2020	----	----	----		27-Jul-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F04	E420.Cr-L	23-Jul-2020	----	----	----		27-Jul-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F0F	E420.Cr-L	23-Jul-2020	----	----	----		27-Jul-2020	180 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F02	E508	23-Jul-2020	----	----	----		27-Jul-2020	28 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F0F	E508	23-Jul-2020	----	----	----		27-Jul-2020	28 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F01	E508	23-Jul-2020	----	----	----		27-Jul-2020	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F03	E508	23-Jul-2020	----	----	----		27-Jul-2020	28 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F04	E508	23-Jul-2020	----	----	----		27-Jul-2020	28 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F01	E420	23-Jul-2020	----	----	----		27-Jul-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F02	E420	23-Jul-2020	----	----	----		27-Jul-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F03	E420	23-Jul-2020	----	----	----		27-Jul-2020	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
F04	E420	23-Jul-2020	----	----	----		27-Jul-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
FOF	E420	23-Jul-2020	----	----	----		27-Jul-2020	180 days	4 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	65312	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	64675	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	64677	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	64676	1	13	7.6	5.0	✓
pH by Meter	E108	65165	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	64152	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	64921	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	64151	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	65311	1	13	7.6	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	65312	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	64675	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	64677	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	64676	1	13	7.6	5.0	✓
pH by Meter	E108	65165	2	40	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	64152	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	64921	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	64151	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	65311	1	13	7.6	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	65312	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	64675	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	64677	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	64676	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	64152	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	64921	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	64151	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	65311	1	13	7.6	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	65312	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	64675	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	64677	1	7	14.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	64676	1	13	7.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	64152	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	64921	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	64151	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	65311	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B2674**	Page	: 1 of 4
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 13-Aug-2020 18:40
PO	: 176044	Date Analysis Commenced	: 14-Aug-2020
C-O-C number	: ----	Issue Date	: 21-Aug-2020 16:46
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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

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	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, 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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	D01	D02	Field Blank	----	----
				Client sampling date / time	13-Aug-2020 09:13	13-Aug-2020 10:54	13-Aug-2020 17:04	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B2674-001	VA20B2674-002	VA20B2674-003	--------	--------
					Result	Result	Result	----	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	120	134	<0.60	----	----
pH	----	E108	0.10	pH units	7.93	7.93	5.36	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0152	0.0226	<0.0050	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.031	0.025	<0.020	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.872	0.694	<0.0050	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0047	0.0064	<0.0010	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0176	0.0155	<0.0020	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0212	0.0204	<0.0030	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00142	0.00183	<0.00010	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0139	0.0135	<0.00010	----	----
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.025	0.023	<0.010	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	30.6	34.6	<0.050	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00036	0.00029	<0.00010	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.314	0.518	<0.010	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0015	0.0018	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	10.6	11.6	<0.0050	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.149	0.251	<0.00010	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000469	0.000402	<0.000050	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00066	0.00084	<0.00050	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	D01	D02	Field Blank	----	----
				Client sampling date / time	13-Aug-2020 09:13	13-Aug-2020 10:54	13-Aug-2020 17:04	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B2674-001	VA20B2674-002	VA20B2674-003	--------	--------
					Result	Result	Result	----	----
Total Metals									
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	1.58	1.52	<0.050	----	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00049	0.00044	<0.00020	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000311	0.000261	<0.000050	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	11.1	11.8	<0.10	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	10.7	10.7	<0.050	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.155	0.167	<0.00020	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	5.56	4.42	<0.50	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00085	0.00078	<0.00030	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000094	0.000069	<0.000010	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00058	0.00050	<0.00050	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----

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

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B2674**	Page	: 1 of 9
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 13-Aug-2020 18:40
PO	: 176044	Issue Date	: 21-Aug-2020 16:46
C-O-C number	: ----		
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Field Blank	E298	13-Aug-2020	----	----	----		20-Aug-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D01	E298	13-Aug-2020	----	----	----		20-Aug-2020	28 days	7 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D02	E298	13-Aug-2020	----	----	----		20-Aug-2020	28 days	7 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Field Blank	E235.F	13-Aug-2020	----	----	----		15-Aug-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D01	E235.F	13-Aug-2020	----	----	----		15-Aug-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D02	E235.F	13-Aug-2020	----	----	----		15-Aug-2020	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO3-L	13-Aug-2020	----	----	----		15-Aug-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE D01	E235.NO3-L	13-Aug-2020	----	----	----		15-Aug-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE D02	E235.NO3-L	13-Aug-2020	----	----	----		15-Aug-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	13-Aug-2020	----	----	----		15-Aug-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D01	E235.NO2-L	13-Aug-2020	----	----	----		15-Aug-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D02	E235.NO2-L	13-Aug-2020	----	----	----		15-Aug-2020	3 days	2 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D01	E372-U	13-Aug-2020	19-Aug-2020	28 days	5 days	✓	19-Aug-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D02	E372-U	13-Aug-2020	19-Aug-2020	28 days	5 days	✓	19-Aug-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Field Blank	E372-U	13-Aug-2020	19-Aug-2020	28 days	5 days	✓	19-Aug-2020	22 days	0 days	✓
Physical Tests : pH by Meter										
HDPE Field Blank	E108	13-Aug-2020	----	----	----		15-Aug-2020	0.25 hrs	45 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE D02	E108	13-Aug-2020	----	----	----		15-Aug-2020	0.25 hrs	52 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D01	E108	13-Aug-2020	----	----	----		15-Aug-2020	0.25 hrs	53 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Field Blank	E420.Cr-L	13-Aug-2020	----	----	----		15-Aug-2020	180 days	1 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D01	E420.Cr-L	13-Aug-2020	----	----	----		15-Aug-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D02	E420.Cr-L	13-Aug-2020	----	----	----		15-Aug-2020	180 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) D02	E508	13-Aug-2020	----	----	----		17-Aug-2020	28 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) Field Blank	E508	13-Aug-2020	----	----	----		17-Aug-2020	28 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) D01	E508	13-Aug-2020	----	----	----		17-Aug-2020	28 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Field Blank	E420	13-Aug-2020	----	----	----		15-Aug-2020	180 days	1 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) D01	E420	13-Aug-2020	----	----	----		15-Aug-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) D02	E420	13-Aug-2020	----	----	----		15-Aug-2020	180 days	2 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	73622	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	72526	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	72528	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	72527	1	11	9.0	5.0	✓
pH by Meter	E108	72551	1	8	12.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	72228	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	72924	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	72227	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	73621	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	73622	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	72526	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	72528	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	72527	1	11	9.0	5.0	✓
pH by Meter	E108	72551	1	8	12.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	72228	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	72924	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	72227	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	73621	1	19	5.2	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	73622	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	72526	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	72528	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	72527	1	11	9.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	72228	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	72924	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	72227	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	73621	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	73622	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	72526	1	7	14.2	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	72528	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	72527	1	11	9.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	72228	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	72924	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	72227	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	73621	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

QUALITY CONTROL REPORT

Work Order	: **VA20B2674**	Page	: 1 of 10
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 13-Aug-2020 18:40
PO	: 176044	Date Analysis Commenced	: 14-Aug-2020
C-O-C number	: ----	Issue Date	: 21-Aug-2020 16:46
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, 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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 72551)											
VA20B2499-001	Anonymous	pH	----	E108	0.10	pH units	7.64	7.66	0.261%	4%	----
Anions and Nutrients (QC Lot: 72526)											
VA20B2643-001	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	0.196	0.206	0.009	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 72527)											
VA20B2643-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 72528)											
VA20B2643-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 73621)											
VA20B2674-001	D01	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0176	0.0164	0.0012	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 73622)											
VA20B2674-001	D01	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0152	0.0151	0.0002	Diff <2x LOR	----
Total Metals (QC Lot: 72227)											
VA20B2500-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00040	0.00042	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00016	0.00014	0.00001	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0231	0.0229	0.718%	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	0.021	0.021	0.0006	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.00306	0.00304	0.640%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	256	254	0.734%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000016	0.000015	0.000001	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	0.00112	0.00110	0.00002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0301	0.0288	4.50%	20%	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	166	161	3.03%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00190	0.00202	5.86%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00129	0.00134	3.76%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0455	0.0448	1.62%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 72227) - continued											
VA20B2500-001	Anonymous	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	2.55	2.54	0.297%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00195	0.00205	0.00010	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.0500	mg/L	333 µg/L	0.335	0.709%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.83	2.86	1.22%	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	2.17	2.16	0.317%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.166	0.170	2.81%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	313	314	0.568%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000030	0.000031	0.0000009	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	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.0131	0.0133	1.84%	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	0.124	0.122	1.17%	20%	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 72228)											
VA20B2500-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00011	<0.00010	0.000010	Diff <2x LOR	----
Total Metals (QC Lot: 72924)											
KS2001375-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 72526)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 72527)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 72528)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 73621)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 73622)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 72227)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 72227) - continued						
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	----
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: 72228)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 72924)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 72551)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 72526)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 72527)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 72528)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 73621)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	92.3	80.0	120	----
Anions and Nutrients (QCLot: 73622)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	102	85.0	115	----
Total Metals (QCLot: 72227)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	106	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	111	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.6	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	97.5	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	105	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	93.5	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	106	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	99.8	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 72227) - continued									
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	101	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.4	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	99.1	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	94.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	98.2	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	99.6	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	101	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	99.0	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	106	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.0	80.0	120	----
Total Metals (QCLot: 72228)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
Total Metals (QCLot: 72924)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	82.3	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	Qualifier
Anions and Nutrients (QCLot: 72526)										
VA20B2643-002	Anonymous	fluoride	16984-48-8	E235.F	4.93 mg/L	5 mg/L	98.5	75.0	125	----
Anions and Nutrients (QCLot: 72527)										
VA20B2643-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	2.45 mg/L	2.5 mg/L	98.1	75.0	125	----
Anions and Nutrients (QCLot: 72528)										
VA20B2643-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	12.0 mg/L	12.5 mg/L	96.3	75.0	125	----
Anions and Nutrients (QCLot: 73621)										
VA20B2674-002	D02	phosphorus, total	7723-14-0	E372-U	0.0468 mg/L	0.05 mg/L	93.6	70.0	130	----
Anions and Nutrients (QCLot: 73622)										
VA20B2674-002	D02	ammonia, total (as N)	7664-41-7	E298	0.206 mg/L	0.2 mg/L	103	75.0	125	----
Total Metals (QCLot: 72227)										
VA20B2500-002	Anonymous	aluminum, total	7429-90-5	E420	0.196 mg/L	0.2 mg/L	97.9	70.0	130	----
		antimony, total	7440-36-0	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0206 mg/L	0.02 mg/L	103	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	0.0389 mg/L	0.04 mg/L	97.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00969 mg/L	0.01 mg/L	96.9	70.0	130	----
		boron, total	7440-42-8	E420	0.096 mg/L	0.1 mg/L	96.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00395 mg/L	0.004 mg/L	98.7	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	0.00971 mg/L	0.01 mg/L	97.1	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0194 mg/L	0.02 mg/L	97.3	70.0	130	----
		copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	94.3	70.0	130	----
		iron, total	7439-89-6	E420	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.0909 mg/L	0.1 mg/L	90.9	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	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		nickel, total	7440-02-0	E420	0.0372 mg/L	0.04 mg/L	93.0	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.4 mg/L	10 mg/L	104	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: 72227) - continued										
VA20B2500-002	Anonymous	potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	98.0	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		selenium, total	7782-49-2	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		silicon, total	7440-21-3	E420	9.43 mg/L	10 mg/L	94.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00383 mg/L	0.004 mg/L	95.6	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	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		thallium, total	7440-28-0	E420	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		thorium, total	7440-29-1	E420	0.0213 mg/L	0.02 mg/L	107	70.0	130	----
		tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		titanium, total	7440-32-6	E420	0.0397 mg/L	0.04 mg/L	99.4	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		uranium, total	7440-61-1	E420	0.00416 mg/L	0.004 mg/L	104	70.0	130	----
		vanadium, total	7440-62-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	0.391 mg/L	0.4 mg/L	97.8	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
Total Metals (QCLot: 72228)										
VA20B2500-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0400 mg/L	0.04 mg/L	99.9	70.0	130	----
Total Metals (QCLot: 72924)										
KS2001375-002	Anonymous	mercury, total	7439-97-6	E508	0.0000834 mg/L	0.0001 mg/L	83.4	70.0	130	----

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B2997**	Page	: 1 of 4
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 18-Aug-2020 19:50
PO	: 176044	Date Analysis Commenced	: 19-Aug-2020
C-O-C number	: ----	Issue Date	: 26-Aug-2020 10:52
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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

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*
Cindy Tang	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, 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*
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.

Analytical results in reports identified as “Preliminary Report” are considered authorized for use.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	F04	F03	F0F	----	----
				Client sampling date / time	18-Aug-2020 09:34	18-Aug-2020 13:55	18-Aug-2020 18:08	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B2997-001	VA20B2997-002	VA20B2997-003	--------	--------
					Result	Result	Result	----	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	96.3	100	102	----	----
pH	----	E108	0.10	pH units	7.42	7.71	7.68	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0308	0.0390	0.106	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.040	0.039	0.050	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.52	0.0121	0.0736	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0060	0.0024	0.0064	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0110	0.0247	0.0906	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0196	0.0298	0.0228	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0.00014	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00058	0.00122	0.00287	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0111	0.0355	0.0254	----	----
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	<0.000100	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.027	0.027	0.016	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000185	0.0000077	<0.0000050	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	25.6	26.3	28.1	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00020	0.00013	0.00027	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00025	0.00103	0.00030	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0.00104	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.241	0.813	1.73	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0.000158	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	<0.0010	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	7.84	8.35	7.81	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	2.14	7.00	0.368	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000745	0.00163	0.000792	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00122	0.00218	0.00064	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	F04	F03	F0F	----	----
				Client sampling date / time	18-Aug-2020 09:34	18-Aug-2020 13:55	18-Aug-2020 18:08	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B2997-001	VA20B2997-002	VA20B2997-003	--------	--------
					Result	Result	Result	----	----
Total Metals									
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0.102	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	3.07	2.68	1.83	----	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00112	0.00144	0.00115	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000169	0.000137	0.000109	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	7.42	8.13	6.59	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
sodium, total	7440-23-5	E420	0.050	mg/L	9.09	11.5	13.5	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.148	0.127	0.151	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	6.88	7.24	3.68	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	----	----
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00080	0.00093	0.00080	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0.00010	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000050	0.000063	0.000066	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0.0061	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	----	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20B2997**	Page	: 1 of 10
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 18-Aug-2020 19:50
PO	: 176044	Date Analysis Commenced	: 19-Aug-2020
C-O-C number	: ----	Issue Date	: 26-Aug-2020 10:52
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Cindy Tang	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, 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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 73928)											
VA20B2973-001	Anonymous	pH	----	E108	0.10	pH units	4.21	4.21	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 73922)											
VA20B2963-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 73925)											
VA20B2997-001	F04	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0060	0.0062	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 73926)											
VA20B2997-001	F04	fluoride	16984-48-8	E235.F	0.020	mg/L	0.040	0.040	0.00006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 75085)											
VA20B2880-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.119	0.118	0.0017	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 75102)											
VA20B2961-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0149	0.0140	0.0008	Diff <2x LOR	----
Total Metals (QC Lot: 73999)											
VA20B2959-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Total Metals (QC Lot: 74000)											
VA20B2959-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0174	0.0168	0.0006	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.00294	0.00296	0.866%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	2.57	2.46	4.23%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	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	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	0.226	0.226	0.0600%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00036	0.00043	0.00006	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 74000) - continued											
VA20B2959-001	Anonymous	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000163	0.000170	0.000007	Diff <2x LOR	----
		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	0.058	0.058	0.0002	Diff <2x LOR	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	0.66	0.65	0.009	Diff <2x LOR	----
		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	0.290	0.295	0.005	Diff <2x LOR	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0120	0.0119	0.510%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		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: 74411)											
VA20B2982-003	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 73922)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 73925)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 73926)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 75085)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 75102)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 73999)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 74000)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 74000) - continued						
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	----
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: 74411)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 73928)									
pH	----	E108	----	pH units	7 pH units	101	98.0	102	----
Anions and Nutrients (QCLot: 73922)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 73925)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 73926)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 75085)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	90.2	80.0	120	----
Anions and Nutrients (QCLot: 75102)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	96.0	85.0	115	----
Total Metals (QCLot: 73999)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
Total Metals (QCLot: 74000)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.8	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	104	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.1	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.3	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	95.6	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.0	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.3	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	100	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	106	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.2	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.2	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 74000) - continued									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.7	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	103	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	98.6	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	100	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.8	80.0	120	----
sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	99.4	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	98.4	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	85.5	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	95.3	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.6	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	95.0	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	90.3	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	98.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	103	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	97.1	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.9	80.0	120	----
Total Metals (QCLot: 74411)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 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	Qualifier
Anions and Nutrients (QCLot: 73922)										
VA20B2963-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.29 mg/L	2.5 mg/L	91.6	75.0	125	----
Anions and Nutrients (QCLot: 73925)										
VA20B2997-002	F03	nitrite (as N)	14797-65-0	E235.NO2-L	0.488 mg/L	0.5 mg/L	97.5	75.0	125	----
Anions and Nutrients (QCLot: 73926)										
VA20B2997-002	F03	fluoride	16984-48-8	E235.F	0.988 mg/L	1 mg/L	98.8	75.0	125	----
Anions and Nutrients (QCLot: 75085)										
VA20B2880-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 75102)										
VA20B2961-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.214 mg/L	0.2 mg/L	107	75.0	125	----
Total Metals (QCLot: 73999)										
VA20B2959-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0381 mg/L	0.04 mg/L	95.3	70.0	130	----
Total Metals (QCLot: 74000)										
VA20B2959-002	Anonymous	aluminum, total	7429-90-5	E420	0.199 mg/L	0.2 mg/L	99.7	70.0	130	----
		antimony, total	7440-36-0	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00931 mg/L	0.01 mg/L	93.1	70.0	130	----
		boron, total	7440-42-8	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00392 mg/L	0.004 mg/L	98.1	70.0	130	----
		calcium, total	7440-70-2	E420	4.19 mg/L	4 mg/L	105	70.0	130	----
		cesium, total	7440-46-2	E420	0.00978 mg/L	0.01 mg/L	97.8	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		iron, total	7439-89-6	E420	1.92 mg/L	2 mg/L	96.3	70.0	130	----
		lead, total	7439-92-1	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		magnesium, total	7439-95-4	E420	0.948 mg/L	1 mg/L	94.8	70.0	130	----
		manganese, total	7439-96-5	E420	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0204 mg/L	0.02 mg/L	102	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: 74000) - continued										
VA20B2959-002	Anonymous	nickel, total	7440-02-0	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.96 mg/L	10 mg/L	99.6	70.0	130	----
		potassium, total	7440-09-7	E420	3.96 mg/L	4 mg/L	99.0	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		selenium, total	7782-49-2	E420	0.0391 mg/L	0.04 mg/L	97.7	70.0	130	----
		silicon, total	7440-21-3	E420	9.49 mg/L	10 mg/L	94.9	70.0	130	----
		silver, total	7440-22-4	E420	0.00388 mg/L	0.004 mg/L	97.0	70.0	130	----
		sodium, total	7440-23-5	E420	1.86 mg/L	2 mg/L	93.1	70.0	130	----
		strontium, total	7440-24-6	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		sulfur, total	7704-34-9	E420	21.0 mg/L	20 mg/L	105	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0387 mg/L	0.04 mg/L	96.8	70.0	130	----
		thallium, total	7440-28-0	E420	0.00398 mg/L	0.004 mg/L	99.5	70.0	130	----
		thorium, total	7440-29-1	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		tin, total	7440-31-5	E420	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.0376 mg/L	0.04 mg/L	94.1	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		uranium, total	7440-61-1	E420	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0986 mg/L	0.1 mg/L	98.6	70.0	130	----
		zinc, total	7440-66-6	E420	0.385 mg/L	0.4 mg/L	96.3	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0393 mg/L	0.04 mg/L	98.4	70.0	130	----
Total Metals (QCLot: 74411)										
VA20B2982-004	Anonymous	mercury, total	7439-97-6	E508	0.000100 mg/L	0.0001 mg/L	100	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B2997**	Page	: 1 of 9
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 18-Aug-2020 19:50
PO	: 176044	Issue Date	: 26-Aug-2020 10:52
C-O-C number	: ----		
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F03	E298	18-Aug-2020	----	----	----		21-Aug-2020	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F04	E298	18-Aug-2020	----	----	----		21-Aug-2020	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F0F	E298	18-Aug-2020	----	----	----		21-Aug-2020	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F0F	E235.F	18-Aug-2020	----	----	----		19-Aug-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F03	E235.F	18-Aug-2020	----	----	----		19-Aug-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F04	E235.F	18-Aug-2020	----	----	----		19-Aug-2020	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F0F	E235.NO3-L	18-Aug-2020	----	----	----		19-Aug-2020	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F03	E235.NO3-L	18-Aug-2020	----	----	----		19-Aug-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F04	E235.NO3-L	18-Aug-2020	----	----	----		19-Aug-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F0F	E235.NO2-L	18-Aug-2020	----	----	----		19-Aug-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F03	E235.NO2-L	18-Aug-2020	----	----	----		19-Aug-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F04	E235.NO2-L	18-Aug-2020	----	----	----		19-Aug-2020	3 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F03	E372-U	18-Aug-2020	21-Aug-2020	28 days	2 days	✓	22-Aug-2020	25 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F0F	E372-U	18-Aug-2020	21-Aug-2020	28 days	2 days	✓	22-Aug-2020	25 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F04	E372-U	18-Aug-2020	21-Aug-2020	28 days	3 days	✓	22-Aug-2020	24 days	0 days	✓
Physical Tests : pH by Meter										
HDPE F0F	E108	18-Aug-2020	----	----	----		19-Aug-2020	0.25 hrs	27 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE F03	E108	18-Aug-2020	----	----	----		19-Aug-2020	0.25 hrs	31 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE F04	E108	18-Aug-2020	----	----	----		19-Aug-2020	0.25 hrs	36 hrs	✖ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F03	E420.Cr-L	18-Aug-2020	----	----	----		21-Aug-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F04	E420.Cr-L	18-Aug-2020	----	----	----		21-Aug-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F0F	E420.Cr-L	18-Aug-2020	----	----	----		21-Aug-2020	180 days	3 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F03	E508	18-Aug-2020	----	----	----		20-Aug-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F04	E508	18-Aug-2020	----	----	----		20-Aug-2020	28 days	1 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F0F	E508	18-Aug-2020	----	----	----		20-Aug-2020	28 days	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F03	E420	18-Aug-2020	----	----	----		21-Aug-2020	180 days	3 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F04	E420	18-Aug-2020	----	----	----		21-Aug-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F0F	E420	18-Aug-2020	----	----	----		21-Aug-2020	180 days	3 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	75102	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	73926	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	73922	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	73925	1	3	33.3	5.0	✓
pH by Meter	E108	73928	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	73999	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	74411	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	74000	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	75085	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	75102	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	73926	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	73922	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	73925	1	3	33.3	5.0	✓
pH by Meter	E108	73928	1	19	5.2	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	73999	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	74411	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	74000	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	75085	1	18	5.5	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	75102	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	73926	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	73922	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	73925	1	3	33.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	73999	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	74411	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	74000	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	75085	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	75102	1	19	5.2	5.0	✓
Fluoride in Water by IC	E235.F	73926	1	3	33.3	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	73922	1	6	16.6	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	73925	1	3	33.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	73999	1	8	12.5	5.0	✓
Total Mercury in Water by CVAAS	E508	74411	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	74000	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	75085	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B5691**	Page	: 1 of 6
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 18-Sep-2020 20:00
PO	: 176044	Date Analysis Commenced	: 19-Sep-2020
C-O-C number	: ----	Issue Date	: 25-Sep-2020 17:21
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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

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
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, 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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	H-02	B-02	F-01	F-02	F-04
				Client sampling date / time	18-Sep-2020 13:33	18-Sep-2020 12:15	18-Sep-2020 10:25	18-Sep-2020 14:45	18-Sep-2020 16:30
Analyte	CAS Number	Method	LOR	Unit	VA20B5691-001	VA20B5691-002	VA20B5691-003	VA20B5691-004	VA20B5691-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	113	99.1	128	81.0	90.6
pH	----	E108	0.10	pH units	8.05	8.03	7.93	7.69	6.90
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0079	0.0204	0.0676	0.0579	0.0125
fluoride	16984-48-8	E235.F	0.020	mg/L	0.034	0.066	0.059	0.064	0.031
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.25	1.23	0.497	0.0297	2.16
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0019	0.0059	0.0149	0.0044	0.0055
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0114	0.0210	0.0238	0.0458	0.0065
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0440	0.0468	0.0222	0.0946	0.0156
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	0.00015	0.00020	<0.00010	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00116	0.00175	0.00209	0.00160	0.00039
barium, total	7440-39-3	E420	0.00010	mg/L	0.0124	0.0165	0.0171	0.0204	0.0107
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	0.016	0.048	0.015	0.017	0.024
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000057	0.0000078	0.0000059	<0.0000050	0.0000137
calcium, total	7440-70-2	E420	0.050	mg/L	31.6	26.5	32.9	22.1	24.4
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00044	0.00052	0.00028	0.00030	0.00016
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0.00011	0.00049	0.00012
copper, total	7440-50-8	E420	0.00050	mg/L	0.00051	0.00066	0.00202	0.00060	0.00052
iron, total	7439-89-6	E420	0.010	mg/L	0.123	0.267	0.454	2.53	0.121
lead, total	7439-92-1	E420	0.000050	mg/L	0.000063	0.000102	<0.000050	0.000076	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0012	0.0010	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	8.24	7.98	11.2	6.24	7.22
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0233	0.0811	0.108	0.726	0.291
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	0.00137	0.00218	0.000857	0.000522	0.000290
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0.00070	0.00074	<0.00050

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	H-02	B-02	F-01	F-02	F-04
				Client sampling date / time	18-Sep-2020 13:33	18-Sep-2020 12:15	18-Sep-2020 10:25	18-Sep-2020 14:45	18-Sep-2020 16:30
Analyte	CAS Number	Method	LOR	Unit	VA20B5691-001	VA20B5691-002	VA20B5691-003	VA20B5691-004	VA20B5691-005
					Result	Result	Result	Result	Result
Total Metals									
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	1.85	2.70	2.51	1.95	3.24
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00055	0.00068	0.00108	0.00149	0.00088
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000250	0.000181	0.000118	0.000073	0.000160
silicon, total	7440-21-3	E420	0.10	mg/L	9.93	10.4	7.68	5.46	7.41
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	11.9	25.2	13.9	16.1	7.71
strontium, total	7440-24-6	E420	0.00020	mg/L	0.141	0.142	0.181	0.129	0.163
sulfur, total	7704-34-9	E420	0.50	mg/L	6.07	5.77	5.01	1.15	6.40
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	0.00200	0.00211	0.00077	0.00344	0.00046
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	0.00017	<0.00010	<0.00010	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000095	0.000056	0.000144	0.000016	0.000041
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00091	0.00127	0.00054	0.00051	0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
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	Travel Blank	----	----	----	----
				Client sampling date / time	18-Sep-2020	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B5691-006	--------	--------	--------	--------
					Result	----	----	----	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	<0.60	----	----	----	----
pH	----	E108	0.10	pH units	6.08	----	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	----	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	----	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	----	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	----	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	----	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	----	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	----	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	----	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	----	----	----	----
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	----	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	----	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	<0.010	----	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	----	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	----	----	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	----	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	----	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	----	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	----	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	<0.010	----	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	----	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	----	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	----	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	----	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	----	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	----	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	----	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	----	----	----	----
potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Travel Blank	----	----	----	----
					Client sampling date / time	18-Sep-2020	----	----	----	----
Analyte	CAS Number	Method	LOR	Unit		VA20B5691-006	--------	--------	--------	--------
						Result	----	----	----	----
Total Metals										
rubidium, total	7440-17-7	E420	0.00020	mg/L		<0.00020	----	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L		<0.000050	----	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L		<0.10	----	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L		<0.000010	----	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L		<0.050	----	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L		<0.00020	----	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L		<0.50	----	----	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L		<0.00020	----	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L		<0.000010	----	----	----	----
thorium, total	7440-29-1	E420	0.00010	mg/L		<0.00010	----	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L		<0.00010	----	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L		<0.00030	----	----	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L		<0.00010	----	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L		<0.000010	----	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L		<0.00050	----	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L		<0.0030	----	----	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L		<0.00020	----	----	----	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20B5691**	Page	: 1 of 10
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 18-Sep-2020 20:00
PO	: 176044	Date Analysis Commenced	: 19-Sep-2020
C-O-C number	: ----	Issue Date	: 25-Sep-2020 17:21
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics - Water Quality, 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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 88674)											
VA20B5691-001	H-02	pH	----	E108	0.10	pH units	8.05	8.04	0.124%	4%	----
Anions and Nutrients (QC Lot: 88671)											
VA20B5691-001	H-02	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.25	1.26	0.564%	20%	----
Anions and Nutrients (QC Lot: 88672)											
VA20B5691-001	H-02	fluoride	16984-48-8	E235.F	0.020	mg/L	0.034	0.036	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 88673)											
VA20B5691-001	H-02	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0019	0.0014	0.0005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 91293)											
VA20B5639-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0056	0.0054	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 91294)											
VA20B5639-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0088	0.0088	0.00005	Diff <2x LOR	----
Total Metals (QC Lot: 89970)											
VA20B5691-001	H-02	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00044	0.00045	0.000009	Diff <2x LOR	----
Total Metals (QC Lot: 89971)											
VA20B5691-001	H-02	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0440	0.0466	5.69%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00116	0.00122	5.00%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0124	0.0125	1.10%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	0.016	0.016	0.0003	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000057	0.0000065	0.0000007	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	31.6	32.4	2.35%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	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	0.00051	0.00051	0.000006	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.123	0.122	0.637%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000063	0.000063	0.0000007	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0012	0.0013	0.00008	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	8.24	8.27	0.314%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0233	0.0229	1.68%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 89971) - continued											
VA20B5691-001	H-02	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00137	0.00147	6.93%	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	1.85	1.84	0.302%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00055	0.00053	0.00002	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000250	0.000244	0.000006	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	9.93	10.1	2.15%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	11.9	12.0	0.478%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.141	0.148	4.66%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	6.07	5.92	2.41%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00200	0.00196	0.00004	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000095	0.000098	0.000003	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00091	0.00095	0.00004	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: 91179)											
VA20B5689-006	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 88671)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 88672)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 88673)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 91293)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 91294)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 89970)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 89971)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 89971) - continued						
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	17341-25-2	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	----
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: 91179)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 88674)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 88671)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.1	90.0	110	----
Anions and Nutrients (QCLot: 88672)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 88673)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 91293)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	87.6	80.0	120	----
Anions and Nutrients (QCLot: 91294)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	101	85.0	115	----
Total Metals (QCLot: 89970)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
Total Metals (QCLot: 89971)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	109	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	114	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	106	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	112	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	118	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	106	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	105	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	111	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.2	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	107	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	108	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 89971) - continued									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	115	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	111	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	109	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	106	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	112	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	108	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	107	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	113	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	90.5	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	108	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	110	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	107	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	106	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	109	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	110	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
Total Metals (QCLot: 91179)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	90.1	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	Qualifier
Anions and Nutrients (QCLot: 88671)										
VA20B5691-002	B-02	nitrate (as N)	14797-55-8	E235.NO3-L	2.48 mg/L	2.5 mg/L	99.4	75.0	125	----
Anions and Nutrients (QCLot: 88672)										
VA20B5691-002	B-02	fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 88673)										
VA20B5691-002	B-02	nitrite (as N)	14797-65-0	E235.NO2-L	0.518 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 91293)										
VA20B5691-001	H-02	phosphorus, total	7723-14-0	E372-U	0.0457 mg/L	0.05 mg/L	91.4	70.0	130	----
Anions and Nutrients (QCLot: 91294)										
VA20B5665-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	18.2 mg/L	20 mg/L	91.0	75.0	125	----
Total Metals (QCLot: 89970)										
VA20B5691-002	B-02	chromium, total	7440-47-3	E420.Cr-L	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
Total Metals (QCLot: 89971)										
VA20B5691-002	B-02	aluminum, total	7429-90-5	E420	0.199 mg/L	0.2 mg/L	99.7	70.0	130	----
		antimony, total	7440-36-0	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		barium, total	7440-39-3	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0107 mg/L	0.01 mg/L	107	70.0	130	----
		boron, total	7440-42-8	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00410 mg/L	0.004 mg/L	102	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	0.0103 mg/L	0.01 mg/L	103	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		copper, total	7440-50-8	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		iron, total	7439-89-6	E420	2.03 mg/L	2 mg/L	102	70.0	130	----
		lead, total	7439-92-1	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		lithium, total	7439-93-2	E420	0.0974 mg/L	0.1 mg/L	97.4	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	0.0209 mg/L	0.02 mg/L	104	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: 89971) - continued										
VA20B5691-002	B-02	nickel, total	7440-02-0	E420	0.0397 mg/L	0.04 mg/L	99.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.4 mg/L	10 mg/L	104	70.0	130	----
		potassium, total	7440-09-7	E420	4.26 mg/L	4 mg/L	106	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		selenium, total	7782-49-2	E420	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00411 mg/L	0.004 mg/L	103	70.0	130	----
		sodium, total	17341-25-2	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	21.0 mg/L	20 mg/L	105	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		thallium, total	7440-28-0	E420	0.00399 mg/L	0.004 mg/L	99.8	70.0	130	----
		thorium, total	7440-29-1	E420	0.0219 mg/L	0.02 mg/L	110	70.0	130	----
		tin, total	7440-31-5	E420	0.0207 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, total	7440-32-6	E420	0.0402 mg/L	0.04 mg/L	101	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0211 mg/L	0.02 mg/L	105	70.0	130	----
		uranium, total	7440-61-1	E420	0.00433 mg/L	0.004 mg/L	108	70.0	130	----
		vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.409 mg/L	0.4 mg/L	102	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0447 mg/L	0.04 mg/L	112	70.0	130	----
Total Metals (QCLot: 91179)										
VA20B5689-007	Anonymous	mercury, total	7439-97-6	E508	0.0000919 mg/L	0.0001 mg/L	91.9	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B5691**	Page	: 1 of 12
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 18-Sep-2020 20:00
PO	: 176044	Issue Date	: 25-Sep-2020 17:21
C-O-C number	: ----		
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B-02	E298	18-Sep-2020	----	----	----		24-Sep-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F-01	E298	18-Sep-2020	----	----	----		24-Sep-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F-02	E298	18-Sep-2020	----	----	----		24-Sep-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F-04	E298	18-Sep-2020	----	----	----		24-Sep-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H-02	E298	18-Sep-2020	----	----	----		24-Sep-2020	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	18-Sep-2020	----	----	----		24-Sep-2020	28 days	6 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B-02	E235.F	18-Sep-2020	----	----	----		21-Sep-2020	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F-01	E235.F	18-Sep-2020	----	----	----		21-Sep-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F-02	E235.F	18-Sep-2020	----	----	----		21-Sep-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F-04	E235.F	18-Sep-2020	----	----	----		21-Sep-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H-02	E235.F	18-Sep-2020	----	----	----		21-Sep-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Travel Blank	E235.F	18-Sep-2020	----	----	----		21-Sep-2020	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B-02	E235.NO3-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F-01	E235.NO3-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F-02	E235.NO3-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F-04	E235.NO3-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
H-02	E235.NO3-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO3-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
B-02	E235.NO2-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
F-01	E235.NO2-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
F-02	E235.NO2-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
F-04	E235.NO2-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
H-02	E235.NO2-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO2-L	18-Sep-2020	----	----	----		21-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
F-02	E372-U	18-Sep-2020	24-Sep-2020	28 days	5 days	✓	25-Sep-2020	22 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F-04	E372-U	18-Sep-2020	24-Sep-2020	28 days	5 days	✓	25-Sep-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Travel Blank	E372-U	18-Sep-2020	24-Sep-2020	28 days	5 days	✓	25-Sep-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) B-02	E372-U	18-Sep-2020	24-Sep-2020	28 days	6 days	✓	25-Sep-2020	21 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F-01	E372-U	18-Sep-2020	24-Sep-2020	28 days	6 days	✓	25-Sep-2020	21 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H-02	E372-U	18-Sep-2020	24-Sep-2020	28 days	6 days	✓	25-Sep-2020	21 days	0 days	✓
Physical Tests : pH by Meter										
HDPE F-04	E108	18-Sep-2020	----	----	----		19-Sep-2020	0.25 hrs	22 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE F-02	E108	18-Sep-2020	----	----	----		19-Sep-2020	0.25 hrs	24 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	18-Sep-2020	----	----	----		19-Sep-2020	0.25 hrs	24 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H-02	E108	18-Sep-2020	----	----	----		19-Sep-2020	0.25 hrs	25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE										
B-02	E108	18-Sep-2020	----	----	----		19-Sep-2020	0.25 hrs	27 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE										
F-01	E108	18-Sep-2020	----	----	----		19-Sep-2020	0.25 hrs	29 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
B-02	E420.Cr-L	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
F-01	E420.Cr-L	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
F-02	E420.Cr-L	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
F-04	E420.Cr-L	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
H-02	E420.Cr-L	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
Travel Blank	E420.Cr-L	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B-02	E508	18-Sep-2020	----	----	----		24-Sep-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F-02	E508	18-Sep-2020	----	----	----		24-Sep-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F-04	E508	18-Sep-2020	----	----	----		24-Sep-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H-02	E508	18-Sep-2020	----	----	----		24-Sep-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Travel Blank	E508	18-Sep-2020	----	----	----		24-Sep-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F-01	E508	18-Sep-2020	----	----	----		24-Sep-2020	28 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
B-02	E420	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
F-01	E420	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
F-02	E420	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
F-04	E420	18-Sep-2020	----	----	----		23-Sep-2020	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
H-02	E420	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Travel Blank	E420	18-Sep-2020	----	----	----		23-Sep-2020	180 days	5 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	91294	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	88672	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	88671	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	88673	1	6	16.6	5.0	✓
pH by Meter	E108	88674	1	6	16.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	89970	1	6	16.6	5.0	✓
Total Mercury in Water by CVAAS	E508	91179	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	89971	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	91293	1	12	8.3	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	91294	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	88672	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	88671	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	88673	1	6	16.6	5.0	✓
pH by Meter	E108	88674	1	6	16.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	89970	1	6	16.6	5.0	✓
Total Mercury in Water by CVAAS	E508	91179	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	89971	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	91293	1	12	8.3	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	91294	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	88672	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	88671	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	88673	1	6	16.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	89970	1	6	16.6	5.0	✓
Total Mercury in Water by CVAAS	E508	91179	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	89971	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	91293	1	12	8.3	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	91294	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	88672	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	88671	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	88673	1	6	16.6	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	89970	1	6	16.6	5.0	✓
Total Mercury in Water by CVAAS	E508	91179	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	89971	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	91293	1	12	8.3	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	City of Abbotsford
Contact:	Amy Peters
Phone:	604-864-5514
	Company address below will appear on the final report
Street:	32315 South Fraser Way
City/Province:	Abbotsford, BC
Postal Code:	V2T 1W7
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

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

Quality Control (QC) Report with Report ☐ YES ☐ NO

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax apeters@abbotsford.ca

Email 2 asmith@env.enkon.com

Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX

Email 1 or Fax apeters@abbotsford.ca

Email 2

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	1220-2017-2056
Job #:	Bevan #1 Creek Water Quality
PO / AFE:	176044
LSD:	
ALS Lab Work Order # (lab use only)	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Heather McKenzie Sampler: L. Williams

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals & Mercury REG ALL (P)	Fluoride	pH (P)	Ammonia, N02, N03 (P)	Total Phosphorus (P)								Number of Containers
	H-02	18-Sep-20	13:33	Water	X	X	X	X	X								
	B-02	↓	12:15	Water	X	X	X	X	X								
	F-01	↓	10:25	Water	X	X	X	X	X								
	F-02	↓	14:45	Water	X	X	X	X	X								
	F-04	↓	16:30	Water	X	X	X	X	X								
	Travel Blank	"	NA	Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4

Environmental Division Vancouver
Work Order Reference
VA20B5691

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

WaterTrax upload is required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C	
			2.2°C	

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Katie Piper	Date: 18 Sep 2020	Time: 19:55	Received by:	Date:	Time:	Received by: MB	Date: 09/18	Time: 8PM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 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.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B5827**	Page	: 1 of 4
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 21-Sep-2020 18:04
PO	: 176044	Date Analysis Commenced	: 23-Sep-2020
C-O-C number	: ----	Issue Date	: 05-Oct-2020 14:04
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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

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	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Shaneel Dayal	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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
HTD	*Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	D-01	D-02	W-01	D-01 Dup	Field Blank
				Client sampling date / time	21-Sep-2020 13:46	21-Sep-2020 14:25	21-Sep-2020 15:20	21-Sep-2020 13:46	21-Sep-2020 16:30
Analyte	CAS Number	Method	LOR	Unit	VA20B5827-001	VA20B5827-002	VA20B5827-003	VA20B5827-004	VA20B5827-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	122	128	108	115	<0.60
pH	----	E108	0.10	pH units	8.06	7.99	7.76	8.06	5.49
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0130	0.0212	0.0139	0.0164	<0.0050
fluoride	16984-48-8	E235.F	0.020	mg/L	0.031	0.027	0.037	0.033	<0.020
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.844	0.742 HTD	1.53	0.816	<0.0050
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0025	0.0034 HTD	0.0019	0.0025	<0.0010
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0214	0.0193	0.0104	0.0193	<0.0020
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0321	0.0532	0.0091	0.0338	<0.0030
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00168	0.00252	0.00058	0.00160	<0.00010
barium, total	7440-39-3	E420	0.00010	mg/L	0.0160	0.0158	0.0324	0.0139	<0.00010
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	0.020	0.021	<0.010	0.019	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000054	0.0000093	0.0000080	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L	31.0	33.3	28.9	29.9	<0.050
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00045	0.00058	0.00046	0.00047	<0.00010
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	0.00011	<0.00010	<0.00010	<0.00010
copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
iron, total	7439-89-6	E420	0.010	mg/L	0.410	0.772	0.191	0.397	<0.010
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	0.000065	<0.000050	<0.000050	<0.000050
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0019	0.0022	0.0015	0.0018	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	10.8	10.9	8.67	9.68	<0.0050
manganese, total	7439-96-5	E420	0.00010	mg/L	0.151	0.268	0.0341	0.139	<0.00010
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	0.000780	0.000420	0.000327	0.000691	<0.000050
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00095	0.00099	0.00100	0.00071	<0.00050

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	D-01	D-02	W-01	D-01 Dup	Field Blank
				Client sampling date / time	21-Sep-2020 13:46	21-Sep-2020 14:25	21-Sep-2020 15:20	21-Sep-2020 13:46	21-Sep-2020 16:30
Analyte	CAS Number	Method	LOR	Unit	VA20B5827-001	VA20B5827-002	VA20B5827-003	VA20B5827-004	VA20B5827-005
					Result	Result	Result	Result	Result
Total Metals									
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	1.82	1.68	1.31	1.68	<0.050
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00063	0.00039	0.00036	0.00057	<0.00020
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000297	0.000268	0.000171	0.000261	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L	11.9	12.2	10.6	11.0	<0.10
silver, total	7440-22-4	E420	0.000010	mg/L	0.000012	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	11.1	10.6	13.2	9.60	<0.050
strontium, total	7440-24-6	E420	0.00020	mg/L	0.170	0.185	0.202	0.165	<0.00020
sulfur, total	7704-34-9	E420	0.50	mg/L	5.49	4.42	4.62	5.17	<0.50
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	<0.00150 DLM	0.00217	<0.00060 DLM	0.00136	<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	0.000095	0.000074	0.000045	0.000091	<0.000010
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00107	0.00112	0.00072	0.00100	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
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.

QUALITY CONTROL REPORT

Work Order	: **VA20B5827**	Page	: 1 of 10
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 21-Sep-2020 18:04
PO	: 176044	Date Analysis Commenced	: 23-Sep-2020
C-O-C number	: ----	Issue Date	: 05-Oct-2020 14:04
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Shaneel Dayal	Analyst	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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 90509)											
VA20B5827-001	D-01	pH	----	E108	0.10	pH units	8.06	8.06	0.0372%	4%	----
Anions and Nutrients (QC Lot: 90505)											
VA20B5826-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0426	0.0394	7.78%	20%	----
Anions and Nutrients (QC Lot: 90506)											
VA20B5826-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.48	1.47	1.04%	20%	----
Anions and Nutrients (QC Lot: 90507)											
VA20B5827-001	D-01	fluoride	16984-48-8	E235.F	0.020	mg/L	0.031	0.034	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 92162)											
VA20B5827-001	D-01	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0214	0.0184	0.0030	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 92163)											
VA20B5826-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0867	0.0881	1.52%	20%	----
Total Metals (QC Lot: 90237)											
VA20B5756-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00032	0.00031	0.00001	Diff <2x LOR	----
Total Metals (QC Lot: 90238)											
VA20B5756-002	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.168	0.186	10.5%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00272	0.00274	0.691%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.0221	0.0220	0.171%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0420	0.0410	2.35%	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	0.000079	0.000029	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000242	0.0000266	0.0000025	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	39.4	38.9	1.37%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000066	0.000074	0.000008	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00028	0.00029	0.000007	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00147	0.00141	0.00006	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.292	0.302	3.31%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000549	0.000647	16.4%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0102	0.0102	0.521%	20%	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	12.2	12.4	1.08%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0324	0.0331	2.04%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 90238) - continued											
VA20B5756-002	Anonymous	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00106	0.00108	1.26%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00164	0.00151	0.00013	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	0.100	mg/L	1.94	1.97	1.24%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00200	0.00177	0.00023	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000255	0.000310	0.000055	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.06	4.14	1.93%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000021	0.000023	0.000001	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	2.62	2.66	1.59%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.212	0.201	5.46%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	21.8	21.6	0.965%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	0.000011	0.000001	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	0.00020	0.00010	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	0.00725	0.00819	12.2%	20%	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00234	0.00227	2.79%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00078	0.00090	0.00013	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	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Total Metals (QC Lot: 91267)											
VA20B5811-012	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 90505)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 90506)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 90507)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 92162)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 92163)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 90237)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 90238)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 90238) - continued						
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	17341-25-2	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	----
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: 91267)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 90509)									
pH	----	E108	----	pH units	7 pH units	99.9	98.0	102	----
Anions and Nutrients (QCLot: 90505)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.5	90.0	110	----
Anions and Nutrients (QCLot: 90506)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	104	90.0	110	----
Anions and Nutrients (QCLot: 90507)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	93.8	90.0	110	----
Anions and Nutrients (QCLot: 92162)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	98.0	80.0	120	----
Anions and Nutrients (QCLot: 92163)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	100	85.0	115	----
Total Metals (QCLot: 90237)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Total Metals (QCLot: 90238)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	108	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	95.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	111	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.4	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	100	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	98.4	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	99.6	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	98.4	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	100	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 90238) - continued									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	110	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	105	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	102	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	99.8	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.1	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	107	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	109	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	103	80.0	120	----
Total Metals (QCLot: 91267)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 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	Qualifier
Anions and Nutrients (QCLot: 90505)										
VA20B5826-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.477 mg/L	0.5 mg/L	95.4	75.0	125	----
Anions and Nutrients (QCLot: 90506)										
VA20B5826-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 90507)										
VA20B5827-002	D-02	fluoride	16984-48-8	E235.F	0.991 mg/L	1 mg/L	99.1	75.0	125	----
Anions and Nutrients (QCLot: 92162)										
VA20B5827-002	D-02	phosphorus, total	7723-14-0	E372-U	0.0563 mg/L	0.05 mg/L	113	70.0	130	----
Anions and Nutrients (QCLot: 92163)										
VA20B5826-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.983 mg/L	1 mg/L	98.3	75.0	125	----
Total Metals (QCLot: 90237)										
VA20B5756-004	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
Total Metals (QCLot: 90238)										
VA20B5756-004	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	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0211 mg/L	0.02 mg/L	106	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	0.0386 mg/L	0.04 mg/L	96.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		boron, total	7440-42-8	E420	0.095 mg/L	0.1 mg/L	94.9	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00412 mg/L	0.004 mg/L	103	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	0.01000 mg/L	0.01 mg/L	100.0	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.6	70.0	130	----
		iron, total	7439-89-6	E420	2.00 mg/L	2 mg/L	100	70.0	130	----
		lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0986 mg/L	0.1 mg/L	98.6	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	0.0195 mg/L	0.02 mg/L	97.3	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: 90238) - continued										
VA20B5756-004	Anonymous	nickel, total	7440-02-0	E420	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, total	7440-09-7	E420	4.06 mg/L	4 mg/L	101	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0198 mg/L	0.02 mg/L	99.2	70.0	130	----
		selenium, total	7782-49-2	E420	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		silicon, total	7440-21-3	E420	9.38 mg/L	10 mg/L	93.8	70.0	130	----
		silver, total	7440-22-4	E420	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		sodium, total	17341-25-2	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	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		thallium, total	7440-28-0	E420	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		thorium, total	7440-29-1	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		tin, total	7440-31-5	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		titanium, total	7440-32-6	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		uranium, total	7440-61-1	E420	0.00384 mg/L	0.004 mg/L	95.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.414 mg/L	0.4 mg/L	104	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0424 mg/L	0.04 mg/L	106	70.0	130	----
Total Metals (QCLot: 91267)										
VA20B5811-013	Anonymous	mercury, total	7439-97-6	E508	0.0000961 mg/L	0.0001 mg/L	96.1	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B5827**	Page	: 1 of 11
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 21-Sep-2020 18:04
PO	: 176044	Issue Date	: 05-Oct-2020 14:05
C-O-C number	: ----		
Sampler	: L. Williams		
Site	: ----		
Quote number	: Standing Offer		
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.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D-01	E298	21-Sep-2020	----	----	----		25-Sep-2020	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D-01 Dup	E298	21-Sep-2020	----	----	----		25-Sep-2020	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D-02	E298	21-Sep-2020	----	----	----		25-Sep-2020	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Field Blank	E298	21-Sep-2020	----	----	----		25-Sep-2020	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
W-01	E298	21-Sep-2020	----	----	----		25-Sep-2020	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Field Blank	E235.F	21-Sep-2020	----	----	----		23-Sep-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D-01	E235.F	21-Sep-2020	----	----	----		23-Sep-2020	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D-01 Dup	E235.F	21-Sep-2020	----	----	----		23-Sep-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D-02	E235.F	21-Sep-2020	----	----	----		23-Sep-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
W-01	E235.F	21-Sep-2020	----	----	----		23-Sep-2020	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO3-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D-01	E235.NO3-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D-01 Dup	E235.NO3-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D-02	E235.NO3-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
W-01	E235.NO3-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO2-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D-01	E235.NO2-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D-01 Dup	E235.NO2-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D-02	E235.NO2-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE W-01	E235.NO2-L	21-Sep-2020	----	----	----		23-Sep-2020	3 days	2 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D-02	E372-U	21-Sep-2020	25-Sep-2020	28 days	3 days	✓	26-Sep-2020	24 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Field Blank	E372-U	21-Sep-2020	25-Sep-2020	28 days	3 days	✓	26-Sep-2020	24 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) W-01	E372-U	21-Sep-2020	25-Sep-2020	28 days	3 days	✓	26-Sep-2020	24 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D-01	E372-U	21-Sep-2020	25-Sep-2020	28 days	4 days	✓	26-Sep-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D-01 Dup	E372-U	21-Sep-2020	25-Sep-2020	28 days	4 days	✓	26-Sep-2020	23 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE										
Field Blank	E108	21-Sep-2020	----	----	----		23-Sep-2020	0.25 hrs	52 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE										
W-01	E108	21-Sep-2020	----	----	----		23-Sep-2020	0.25 hrs	53 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE										
D-01	E108	21-Sep-2020	----	----	----		23-Sep-2020	0.25 hrs	54 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE										
D-01 Dup	E108	21-Sep-2020	----	----	----		23-Sep-2020	0.25 hrs	54 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE										
D-02	E108	21-Sep-2020	----	----	----		23-Sep-2020	0.25 hrs	54 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
D-01	E420.Cr-L	21-Sep-2020	----	----	----		25-Sep-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
D-01 Dup	E420.Cr-L	21-Sep-2020	----	----	----		25-Sep-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
D-02	E420.Cr-L	21-Sep-2020	----	----	----		25-Sep-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
Field Blank	E420.Cr-L	21-Sep-2020	----	----	----		25-Sep-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
W-01	E420.Cr-L	21-Sep-2020	----	----	----		25-Sep-2020	180 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D-01	E508	21-Sep-2020	----	----	----		24-Sep-2020	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D-01 Dup	E508	21-Sep-2020	----	----	----		24-Sep-2020	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D-02	E508	21-Sep-2020	----	----	----		24-Sep-2020	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Field Blank	E508	21-Sep-2020	----	----	----		24-Sep-2020	28 days	2 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
W-01	E508	21-Sep-2020	----	----	----		24-Sep-2020	28 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D-01	E420	21-Sep-2020	----	----	----		25-Sep-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D-01 Dup	E420	21-Sep-2020	----	----	----		25-Sep-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D-02	E420	21-Sep-2020	----	----	----		25-Sep-2020	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Field Blank	E420	21-Sep-2020	----	----	----		25-Sep-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
W-01	E420	21-Sep-2020	----	----	----		25-Sep-2020	180 days	4 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	92163	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	90507	1	5	20.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	90506	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	90505	1	9	11.1	5.0	✓
pH by Meter	E108	90509	1	5	20.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	90237	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	91267	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	90238	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	92162	1	13	7.6	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	92163	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	90507	1	5	20.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	90506	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	90505	1	9	11.1	5.0	✓
pH by Meter	E108	90509	1	5	20.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	90237	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	91267	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	90238	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	92162	1	13	7.6	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	92163	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	90507	1	5	20.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	90506	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	90505	1	9	11.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	90237	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	91267	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	90238	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	92162	1	13	7.6	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	92163	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	90507	1	5	20.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	90506	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	90505	1	9	11.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	90237	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	91267	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	90238	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	92162	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 15 -

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply
Company:	City of Abbotsford	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Amy Peters	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4] ☐; 3 day [P3] ☐; 2 day [P2] ☐ — EMERGENCY: 1 Business day [E1] ☐; Same Day, Weekend or Statutory holiday [E0] ☐
Phone:	604-864-5514	☐ 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:	32315 South Fraser Way	Email 1 or Fax apeters@abbotsford.ca	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	Abbotsford, BC	Email 2 asmith@env.enkon.com	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	V2T 1W7	Email 3	
Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Distribution	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 apeters@abbotsford.ca	
Contact:		Email 2	
Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	1220-2017-2056	AFE/Cost Center:	PO#
Job #:	Bevan #1 Creek Water Quality	Major/Minor Code:	Routing Code:
PO / AFE:	176044	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)		ALS Contact: Heather McKenzie	Sampler: L. Williams

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals & Mercury REG ALL (P)	Fluoride	pH	Ammonia, N02, N03 (P)	Total Phosphorus (P)								Number of Containers
	D-01	21 Sep 20	13:46	Water	X	X	X	X	X								4
	D-02		14:25	Water	X	X	X	X	X								4
	W-01		15:20	Water	X	X	X	X	X								4
	D-01 Dup		13:46	Water	X	X	X	X	X								4
	Field Blank		16:30	Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4

Environmental Division
Vancouver
Work Order Reference
VA20B5827
Telephone : + 1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human drinking water use? ☐ YES ☑ NO	WaterTrax upload is required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐ No ☐
Ice Packs	☑ Ice Cubes ☐	Custody seal intact	Yes ☐ No ☐
Cooling Initiated	☐		

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			10		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Katie Piper	Date: 21 Sept 2020	Time: 18:05	Received by:	Date:	Time:	Received by:	Date: Sep 21	Time: 8:09

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY OCTOBER 2015 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**.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B6701**	Page	: 1 of 4
Amendment	: **1**		
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 29-Sep-2020 20:30
PO	: 176044	Date Analysis Commenced	: 01-Oct-2020
C-O-C number	: ----	Issue Date	: 09-Oct-2020 15:53
Sampler	: L. Williams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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

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	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Ruth Morrison		Inorganics, Calgary, Alberta
Ruth Morrison		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.

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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	H-01	H-03	B-01	F-03	FOF
				Client sampling date / time	29-Sep-2020 16:25	29-Sep-2020 16:50	29-Sep-2020 18:20	29-Sep-2020 14:20	29-Sep-2020 15:25
Analyte	CAS Number	Method	LOR	Unit	VA20B6701-001	VA20B6701-002	VA20B6701-003	VA20B6701-004	VA20B6701-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	108	112	47.6	54.8	63.8
pH	----	E108	0.10	pH units	6.92	7.33	7.40	7.31	7.52
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	0.0204	0.0977	0.0337	0.0606
fluoride	16984-48-8	E235.F	0.020	mg/L	0.040	0.030	0.171	0.052	0.040
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.04	1.82	0.139	0.0697	0.138
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	0.0010	0.0025	0.0017	0.0033
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0049	0.0068	0.0932	0.0205	0.0246
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0052	0.0095	0.0307	0.0417	0.0228
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0.00026	<0.00010	0.00015
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00046	0.00062	0.00906	0.00112	0.00201
barium, total	7440-39-3	E420	0.00010	mg/L	0.0121	0.0110	0.0234	0.0183	0.0206
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	0.144	0.014	0.013
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000203	0.0000099	0.0000171	<0.0000050	<0.0000050
calcium, total	7440-70-2	E420	0.050	mg/L	30.2	31.0	11.2	15.6	18.1
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00027	0.00056	0.00038	0.00031	0.00043
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0.00013	0.00021	0.00019
copper, total	7440-50-8	E420	0.00050	mg/L	0.00085	0.00053	0.00209	0.00120	0.00155
iron, total	7439-89-6	E420	0.010	mg/L	0.022	0.012	0.196	1.09	1.08
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0.000880	0.000078	0.000197
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0014	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	7.91	8.25	4.75	3.86	4.49
manganese, total	7439-96-5	E420	0.00010	mg/L	0.00214	0.00518	0.0254	0.162	0.140
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000079	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000284	0.000504	0.00591	0.000386	0.000455
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	<0.00050	0.00085	0.00067

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	H-01	H-03	B-01	F-03	FOF
				Client sampling date / time	29-Sep-2020 16:25	29-Sep-2020 16:50	29-Sep-2020 18:20	29-Sep-2020 14:20	29-Sep-2020 15:25
Analyte	CAS Number	Method	LOR	Unit	VA20B6701-001	VA20B6701-002	VA20B6701-003	VA20B6701-004	VA20B6701-005
					Result	Result	Result	Result	Result
Total Metals									
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0.123	<0.050	<0.050
potassium, total	7440-09-7	E420	0.050	mg/L	1.65	1.47	5.49	2.05	1.63
rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0.00125	0.00131	0.00098
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000254	0.000412	<0.000050	0.000074	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L	9.93	10.1	7.46	4.03	4.57
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	18.0	9.85	60.6	8.50	8.73
strontium, total	7440-24-6	E420	0.00020	mg/L	0.151	0.138	0.0761	0.0805	0.0954
sulfur, total	7704-34-9	E420	0.50	mg/L	6.16	5.74	7.05	3.20	2.61
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	<0.00030	0.00031	0.00107	0.00178	0.00080
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0.00081	<0.00010	<0.00010
uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	0.000133	0.000040	0.000012	0.000017
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00051	0.00102	0.00122	0.00053	<0.00050
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0033	0.0058	0.0100	<0.0030	0.0068
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.

QUALITY CONTROL REPORT

Work Order	: **VA20B6701**	Page	: 1 of 18
Amendment	: **1**		

Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 29-Sep-2020 20:30
PO	: 176044	Date Analysis Commenced	: 01-Oct-2020
C-O-C number	: ----	Issue Date	: 09-Oct-2020 15:53
Sampler	: L. Williams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Ruth Morrison		Inorganics, Calgary, Alberta
Ruth Morrison		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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 95948)											
VA20B6886-001	Anonymous	pH	----	E108	0.10	pH units	7.94	7.83	1.40%	4%	----
Physical Tests (QC Lot: 96236)											
VA20B6879-004	Anonymous	pH	----	E108	0.10	pH units	7.67	7.71	0.416%	4%	----
Physical Tests (QC Lot: 96272)											
VA20B7011-045	Anonymous	pH	----	E108	0.10	pH units	5.48	5.43	0.916%	4%	----
Anions and Nutrients (QC Lot: 95313)											
VA20B6319-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.500	mg/L	18.9	19.2	1.60%	20%	----
Anions and Nutrients (QC Lot: 95898)											
VA20B6700-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 95902)											
VA20B6700-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0020	0.0023	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 95903)											
VA20B6700-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 96213)											
VA20B6730-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	6.69	6.69	0.0272%	20%	----
Anions and Nutrients (QC Lot: 96214)											
VA20B6730-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 96215)											
VA20B6730-002	Anonymous	fluoride	16984-48-8	E235.F	0.100	mg/L	1.36	1.36	0.273%	20%	----
Anions and Nutrients (QC Lot: 96257)											
VA20B7011-045	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 96258)											
VA20B7011-045	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 96259)											
VA20B7011-045	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 97124)											
VA20B6723-013	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0540	0.0487	10.4%	20%	----
Total Metals (QC Lot: 95326)											
VA20B6650-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00023	0.00022	0.00001	Diff <2x LOR	----
Total Metals (QC Lot: 95327)											
VA20B6650-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.123	0.121	1.60%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
					Laboratory Duplicate (DUP) Report						
Total Metals (QC Lot: 95327) - continued											
VA20B6650-001	Anonymous	antimony, total	7440-36-0	E420	0.00010	mg/L	0.00627	0.00627	0.0970%	20%	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00748	0.00749	0.148%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0227	0.0228	0.572%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.000050	mg/L	0.000999	0.00101	1.05%	20%	----
		boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.00687	0.00680	1.11%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	18.4	18.4	0.316%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000018	0.000018	0.0000004	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00286	0.00293	2.19%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.0564	0.0556	1.60%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.052	0.051	0.001	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.134	0.133	1.28%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0019	0.0019	0.000002	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	3.60	3.70	2.53%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0102	0.0102	0.0243%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000569	0.000616	8.03%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00493	0.00504	0.00011	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	0.715	0.725	1.44%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00137	0.00133	0.00004	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.00137	0.00139	1.22%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	1.25	1.32	5.56%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000463	0.000420	9.73%	20%	----
		sodium, total	17341-25-2	E420	0.050	mg/L	3.83	3.76	1.89%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0919	0.0919	0.0274%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	3.93	4.07	0.14	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	0.000806	0.000797	1.06%	20%	----
		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	0.00034	0.00031	0.00002	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00030	mg/L	0.00072	0.00077	0.00006	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000431	0.000432	0.212%	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	0.363	0.367	0.996%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 95327) - continued											
VA20B6650-001	Anonymous	zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 95361)											
VA20B6681-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00017	<0.00010	0.00007	Diff <2x LOR	----
Total Metals (QC Lot: 95362)											
VA20B6681-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0116	0.0112	0.0004	Diff <2x LOR	----
VA20B6681-001	Anonymous	antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00014	0.000009	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00065	0.00065	0.0000008	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0914	0.0888	2.83%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000115	0.0000085	0.0000030	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	248	247	0.414%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000017	0.000017	0.0000002	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	0.00458	0.00459	0.00002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.010	0.010	0.00006	Diff <2x LOR	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0090	0.0088	0.0001	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	61.0	61.2	0.287%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.00153	0.00157	2.74%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00801	0.00780	2.65%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00052	0.00053	0.000004	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	0.300	mg/L	<0.300	<0.300	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	4.80	4.75	1.06%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00222	0.00221	0.374%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.00646	0.00643	0.410%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	12.6	12.5	0.360%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	22.4	22.1	1.38%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	1.11	1.10	0.786%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	228	229	0.180%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	----

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: 95362) - continued											
VA20B6681-001	Anonymous	titanium, total	7440-32-6	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00549	0.00557	1.46%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00137	0.00134	0.00003	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: 97795)											
KS2002025-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000228	0.0000221	0.0000007	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
Anions and Nutrients (QCLot: 95313)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 95898)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 95902)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 95903)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 96213)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 96214)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 96215)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 96257)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 96258)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 96259)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 97124)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Total Metals (QCLot: 95326)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 95327)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 95327) - continued						
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
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	17341-25-2	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	----
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: 95361)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 95362)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 95362) - continued						
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	# 0.094	B
cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
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	17341-25-2	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	----
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: 97795)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

Qualifiers

Qualifier	Description
B	Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.

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
Physical Tests (QCLot: 95948)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 96236)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Physical Tests (QCLot: 96272)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 95313)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.1 mg/L	114	85.0	115	----
Anions and Nutrients (QCLot: 95898)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.5	90.0	110	----
Anions and Nutrients (QCLot: 95902)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.9	90.0	110	----
Anions and Nutrients (QCLot: 95903)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 96213)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.7	90.0	110	----
Anions and Nutrients (QCLot: 96214)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	96.7	90.0	110	----
Anions and Nutrients (QCLot: 96215)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	97.0	90.0	110	----
Anions and Nutrients (QCLot: 96257)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 96258)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	109	90.0	110	----
Anions and Nutrients (QCLot: 96259)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 97124)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.32 mg/L	96.8	80.0	120	----
Total Metals (QCLot: 95326)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Total Metals (QCLot: 95327)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 95327) - continued									
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	101	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	105	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	99.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	88.7	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	105	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	105	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	105	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	106	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	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	98.9	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	107	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	98.1	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	101	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	102	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	99.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	96.9	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.0	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.5	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	98.3	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	105	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	102	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	98.4	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 95361)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	108	80.0	120	----
Total Metals (QCLot: 95362)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	107	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	113	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	104	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	107	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	105	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	110	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	103	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	109	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	105	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	104	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	110	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	104	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	104	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	107	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	109	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	113	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	118	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	102	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	103	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	104	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.1	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	105	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	110	80.0	120	----

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: 95362) - continued									
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	108	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	108	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----
Total Metals (QCLot: 97795)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 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	Qualifier
Anions and Nutrients (QCLot: 95313)										
VA20B6319-003	Anonymous	ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
Anions and Nutrients (QCLot: 95898)										
VA20B6700-002	Anonymous	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
Anions and Nutrients (QCLot: 95902)										
VA20B6700-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.435 mg/L	0.5 mg/L	87.1	75.0	125	----
Anions and Nutrients (QCLot: 95903)										
VA20B6700-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.39 mg/L	2.5 mg/L	95.6	75.0	125	----
Anions and Nutrients (QCLot: 96213)										
VA20B6730-004	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.42 mg/L	2.5 mg/L	96.8	75.0	125	----
Anions and Nutrients (QCLot: 96214)										
VA20B6730-004	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.488 mg/L	0.5 mg/L	97.5	75.0	125	----
Anions and Nutrients (QCLot: 96215)										
VA20B6730-004	Anonymous	fluoride	16984-48-8	E235.F	0.867 mg/L	1 mg/L	86.7	75.0	125	----
Anions and Nutrients (QCLot: 96257)										
VA20B7030-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.67 mg/L	2.5 mg/L	107	75.0	125	----
Anions and Nutrients (QCLot: 96258)										
VA20B7030-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.566 mg/L	0.5 mg/L	113	75.0	125	----
Anions and Nutrients (QCLot: 96259)										
VA20B7030-002	Anonymous	fluoride	16984-48-8	E235.F	1.09 mg/L	1 mg/L	109	75.0	125	----
Anions and Nutrients (QCLot: 97124)										
VA20B6723-013	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Total Metals (QCLot: 95326)										
VA20B6663-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
Total Metals (QCLot: 95327)										
VA20B6663-002	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		barium, total	7440-39-3	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 95327) - continued										
VA20B6663-002	Anonymous	beryllium, total	7440-41-7	E420	0.0436 mg/L	0.04 mg/L	109	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		boron, total	7440-42-8	E420	0.099 mg/L	0.1 mg/L	99.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00396 mg/L	0.004 mg/L	99.1	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	0.0103 mg/L	0.01 mg/L	103	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		copper, total	7440-50-8	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		iron, total	7439-89-6	E420	ND mg/L	2 mg/L	ND	70.0	130	----
		lead, total	7439-92-1	E420	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		lithium, total	7439-93-2	E420	0.112 mg/L	0.1 mg/L	112	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	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		nickel, total	7440-02-0	E420	0.0374 mg/L	0.04 mg/L	93.4	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.2 mg/L	10 mg/L	102	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		selenium, total	7782-49-2	E420	0.0458 mg/L	0.04 mg/L	114	70.0	130	----
		silicon, total	7440-21-3	E420	10.3 mg/L	10 mg/L	103	70.0	130	----
		silver, total	7440-22-4	E420	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		sodium, total	17341-25-2	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	20.1 mg/L	20 mg/L	100	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0387 mg/L	0.04 mg/L	96.7	70.0	130	----
		thallium, total	7440-28-0	E420	0.00373 mg/L	0.004 mg/L	93.2	70.0	130	----
		thorium, total	7440-29-1	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.6	70.0	130	----
		titanium, total	7440-32-6	E420	ND mg/L	0.04 mg/L	ND	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		uranium, total	7440-61-1	E420	0.00417 mg/L	0.004 mg/L	104	70.0	130	----
		vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		zinc, total	7440-66-6	E420	0.408 mg/L	0.4 mg/L	102	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
Total Metals (QCLot: 95361)										
VA20B6681-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0416 mg/L	0.04 mg/L	104	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: 95362)										
VA20B6681-002	Anonymous	aluminum, total	7429-90-5	E420	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0207 mg/L	0.02 mg/L	104	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	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00955 mg/L	0.01 mg/L	95.5	70.0	130	----
		boron, total	7440-42-8	E420	0.090 mg/L	0.1 mg/L	90.0	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00390 mg/L	0.004 mg/L	97.4	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	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0197 mg/L	0.02 mg/L	98.7	70.0	130	----
		copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	94.2	70.0	130	----
		iron, total	7439-89-6	E420	1.93 mg/L	2 mg/L	96.6	70.0	130	----
		lead, total	7439-92-1	E420	0.0191 mg/L	0.02 mg/L	95.6	70.0	130	----
		lithium, total	7439-93-2	E420	0.0976 mg/L	0.1 mg/L	97.6	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	0.0199 mg/L	0.02 mg/L	99.4	70.0	130	----
		molybdenum, total	7439-98-7	E420	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	0.0382 mg/L	0.04 mg/L	95.6	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.8 mg/L	10 mg/L	108	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		selenium, total	7782-49-2	E420	0.0443 mg/L	0.04 mg/L	111	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00411 mg/L	0.004 mg/L	103	70.0	130	----
		sodium, total	17341-25-2	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	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		thallium, total	7440-28-0	E420	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		thorium, total	7440-29-1	E420	0.0210 mg/L	0.02 mg/L	105	70.0	130	----
		tin, total	7440-31-5	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		titanium, total	7440-32-6	E420	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00400 mg/L	0.004 mg/L	99.9	70.0	130	----
		vanadium, total	7440-62-2	E420	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		zinc, total	7440-66-6	E420	0.386 mg/L	0.4 mg/L	96.4	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: 95362) - continued										
VA20B6681-002	Anonymous	zirconium, total	7440-67-7	E420	0.0427 mg/L	0.04 mg/L	107	70.0	130	----
Total Metals (QCLot: 97795)										
VA20B6650-001	Anonymous	mercury, total	7439-97-6	E508	ND mg/L	0.0001 mg/L	ND	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B6701**	Page	: 1 of 12
Amendment	: 1		
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 29-Sep-2020 20:30
PO	: 176044	Issue Date	: 09-Oct-2020 15:53
C-O-C number	: ----		
Sampler	: L. Williams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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.

Summary of Outliers

Outliers : Quality Control Samples

- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Method Blank value outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Method Blank (MB) Values								
Total Metals	QC-MRG2-9536100 1	----	calcium, total	7440-70-2	E420	0.094 B mg/L	0.05 mg/L	Blank result exceeds permitted value

Result Qualifiers

Qualifier	*Description*
B	*Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable.*

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B-01	E298	29-Sep-2020	----	----	----		01-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
F-03	E298	29-Sep-2020	----	----	----		01-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
FOF	E298	29-Sep-2020	----	----	----		01-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H-01	E298	29-Sep-2020	----	----	----		01-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H-03	E298	29-Sep-2020	----	----	----		01-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
FOF	E235.F	29-Sep-2020	----	----	----		02-Oct-2020	28 days	2 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B-01	E235.F	29-Sep-2020	----	----	----		02-Oct-2020	28 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F-03	E235.F	29-Sep-2020	----	----	----		03-Oct-2020	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H-01	E235.F	29-Sep-2020	----	----	----		03-Oct-2020	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H-03	E235.F	29-Sep-2020	----	----	----		02-Oct-2020	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
FOF	E235.NO3-L	29-Sep-2020	----	----	----		02-Oct-2020	3 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B-01	E235.NO3-L	29-Sep-2020	----	----	----		02-Oct-2020	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F-03	E235.NO3-L	29-Sep-2020	----	----	----		03-Oct-2020	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
H-01	E235.NO3-L	29-Sep-2020	----	----	----		03-Oct-2020	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
H-03	E235.NO3-L	29-Sep-2020	----	----	----		02-Oct-2020	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
FOF	E235.NO2-L	29-Sep-2020	----	----	----		02-Oct-2020	3 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B-01	E235.NO2-L	29-Sep-2020	----	----	----		02-Oct-2020	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F-03	E235.NO2-L	29-Sep-2020	----	----	----		03-Oct-2020	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H-01	E235.NO2-L	29-Sep-2020	----	----	----		03-Oct-2020	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H-03	E235.NO2-L	29-Sep-2020	----	----	----		02-Oct-2020	3 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) B-01	E372-U	29-Sep-2020	05-Oct-2020	28 days	5 days	✓	05-Oct-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F-03	E372-U	29-Sep-2020	05-Oct-2020	28 days	5 days	✓	05-Oct-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) FOF	E372-U	29-Sep-2020	05-Oct-2020	28 days	5 days	✓	05-Oct-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H-01	E372-U	29-Sep-2020	05-Oct-2020	28 days	5 days	✓	05-Oct-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H-03	E372-U	29-Sep-2020	05-Oct-2020	28 days	5 days	✓	05-Oct-2020	22 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE B-01	E108	29-Sep-2020	----	----	----		02-Oct-2020	0.25 hrs	73 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE H-01	E108	29-Sep-2020	----	----	----		02-Oct-2020	0.25 hrs	73 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE FOF	E108	29-Sep-2020	----	----	----		02-Oct-2020	0.25 hrs	74 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE H-03	E108	29-Sep-2020	----	----	----		02-Oct-2020	0.25 hrs	74 hrs	✖ EHTR-FM
Physical Tests : pH by Meter										
HDPE F-03	E108	29-Sep-2020	----	----	----		02-Oct-2020	0.25 hrs	75 hrs	✖ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) FOF	E420.Cr-L	29-Sep-2020	----	----	----		03-Oct-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H-01	E420.Cr-L	29-Sep-2020	----	----	----		03-Oct-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H-03	E420.Cr-L	29-Sep-2020	----	----	----		03-Oct-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B-01	E420.Cr-L	29-Sep-2020	----	----	----		04-Oct-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
F-03	E420.Cr-L	29-Sep-2020	----	----	----		03-Oct-2020	180 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B-01	E508	29-Sep-2020	----	----	----		06-Oct-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F-03	E508	29-Sep-2020	----	----	----		06-Oct-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
FOF	E508	29-Sep-2020	----	----	----		06-Oct-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H-01	E508	29-Sep-2020	----	----	----		06-Oct-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H-03	E508	29-Sep-2020	----	----	----		06-Oct-2020	28 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
FOF	E420	29-Sep-2020	----	----	----		03-Oct-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
H-01	E420	29-Sep-2020	----	----	----		03-Oct-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
H-03	E420	29-Sep-2020	----	----	----		03-Oct-2020	180 days	3 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
B-01	E420	29-Sep-2020	----	----	----		04-Oct-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
F-03	E420	29-Sep-2020	----	----	----		03-Oct-2020	180 days	4 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	95313	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	95898	3	35	8.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	95903	3	35	8.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	95902	3	41	7.3	5.0	✓
pH by Meter	E108	95948	3	28	10.7	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	95326	2	23	8.7	5.0	✓
Total Mercury in Water by CVAAS	E508	97795	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	95327	3	37	8.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	97124	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	95313	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	95898	3	35	8.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	95903	3	35	8.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	95902	3	41	7.3	5.0	✓
pH by Meter	E108	95948	3	28	10.7	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	95326	2	23	8.7	5.0	✓
Total Mercury in Water by CVAAS	E508	97795	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	95327	2	37	5.4	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	97124	1	18	5.5	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	95313	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	95898	3	35	8.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	95903	3	35	8.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	95902	3	41	7.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	95326	2	23	8.7	5.0	✓
Total Mercury in Water by CVAAS	E508	97795	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	95327	2	37	5.4	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	97124	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	95313	1	20	5.0	5.0	✓
Fluoride in Water by IC	E235.F	95898	3	35	8.5	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	95903	3	35	8.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	95902	3	41	7.3	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	95326	2	23	8.7	5.0	✓
Total Mercury in Water by CVAAS	E508	97795	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	95327	2	37	5.4	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	97124	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Calgary - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
Total Mercury in Water by CVAAS	E508 Calgary - Environmental	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
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

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Page 1 of

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply
Company:	City of Abbotsford	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Amy Peters	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4] ☐; 3 day [P3] ☐; 2 day [P2] ☐ — EMERGENCY: 1 Business day [E1] ☐; Same Day, Weekend or Statutory holiday [E0] ☐
Phone:	604-864-5514	☐ 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:	32315 South Fraser Way	Email 1 or Fax - apeters@abbotsford.ca	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	Abbotsford, BC	Email 2 asmith@env.enkon.com	For tests that can not be performed according to the service level selected
Postal Code:	V2T 1W7	Email 3	Analysis Request
Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Distribution	Indicate Filtered (F), Preserved (P) or Filtered and Preserved
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX	
Company:		Email 1 or Fax apeters@abbotsford.ca	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	1220-2017-2056	AFE/Cost Center:	PO#
Job #:	Bevan #1 Creek Water Quality	Major/Minor Code:	Routing Code:
PO / AFE:	176044	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	B6701	ALS Contact: Heather McKenzie	Sampler: L. Williams

Environmental Division Vancouver
Work Order Reference
VA20B6701
Telephone : +1 604 253 4188

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals & Mercury REG ALL (P)	Fluoride	pH	Ammonia, N02, N03 (P)	Total Phosphorus (P)								
1	H-01	29-Sep-20	16:25	Water	X	X	X	X	X								4
2	H-03	↓	16:50	Water	X	X	X	X	X								4
3	B-01		18:20	Water	X	X	X	X	X								4
4	F-03		14:20	Water	X	X	X	X	X								4
5	FOF	↓	15:25	Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4

Drinking Water (DW) Samples[1] (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	WaterTrax upload is required.	Ice Packs ☐ Ice Cubes ☑ Custody seal intact Yes ☐ No ☐
		Cooling Initiated ☐
		INITIAL COOLER TEMPERATURES °C: ; FINAL COOLER TEMPERATURES °C: 4.6

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Katie Piper	Date: 29 Sept 2020	Time:	Received by: 20:21	Date:	Time:	Received by: MB	Date: 09/29	Time: 8:30 PM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — OCTOBER 2015 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.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B8500**	Page	: 1 of 4
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 19-Oct-2020 19:30
PO	: 176044	Date Analysis Commenced	: 20-Oct-2020
C-O-C number	: ----	Issue Date	: 28-Oct-2020 17:41
Sampler	: L.Willams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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

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	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	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.

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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	D01(3956D)	D02	Feild blank	Travel Blank	----
				Client sampling date / time	19-Oct-2020 10:42	19-Oct-2020 11:21	19-Oct-2020 18:10	19-Oct-2020	----
Analyte	CAS Number	Method	LOR	Unit	VA20B8500-001	VA20B8500-002	VA20B8500-003	VA20B8500-004	--------
					Result	Result	Result	Result	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	99.4	120	<0.60	<0.60	----
pH	----	E108	0.10	pH units	7.88	7.88	6.07	5.94	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0146	0.0205	<0.0050	<0.0050	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.035	0.024	<0.020	<0.020	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.00	0.726	<0.0050	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0021	0.0026	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0172	0.0166	<0.0020	<0.0020	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0368	0.0281	<0.0030	<0.0030	----
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00090	0.00165	<0.00010	<0.00010	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0166	0.0131	<0.00010	<0.00010	----
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	0.020	0.022	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000059	<0.0000050	<0.0000050	<0.0000050	----
calcium, total	7440-70-2	E420	0.050	mg/L	27.4	32.2	<0.050	<0.050	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00042	0.00038	<0.00010	<0.00010	----
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	0.00095	<0.00050	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	0.250	0.414	<0.010	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	----
lithium, total	7439-93-2	E420	0.0010	mg/L	0.0012	0.0019	<0.0010	<0.0010	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	7.51	9.60	<0.0050	<0.0050	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0666	0.174	<0.00010	<0.00010	----
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	0.000422	0.000390	<0.000050	<0.000050	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00073	0.00092	<0.00050	<0.00050	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	D01(3956D)	D02	Feild blank	Travel Blank	----
				Client sampling date / time	19-Oct-2020 10:42	19-Oct-2020 11:21	19-Oct-2020 18:10	19-Oct-2020	----
Analyte	CAS Number	Method	LOR	Unit	VA20B8500-001	VA20B8500-002	VA20B8500-003	VA20B8500-004	--------
					Result	Result	Result	Result	----
Total Metals									
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	2.10	1.68	<0.050	<0.050	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00086	0.00044	<0.00020	<0.00020	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000230	0.000284	<0.000050	<0.000050	----
silicon, total	7440-21-3	E420	0.10	mg/L	8.77	11.5	<0.10	<0.10	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	17341-25-2	E420	0.050	mg/L	11.1	9.55	<0.050	<0.050	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.134	0.151	<0.00020	<0.00020	----
sulfur, total	7704-34-9	E420	0.50	mg/L	6.74	4.10	<0.50	<0.50	----
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	0.00137	0.00111	<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	0.000070	0.000060	<0.000010	<0.000010	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00060	0.00055	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	<0.0030	<0.0030	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20B8500**	Page	: 1 of 14
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 19-Oct-2020 19:30
PO	: 176044	Date Analysis Commenced	: 20-Oct-2020
C-O-C number	: ----	Issue Date	: 28-Oct-2020 17:41
Sampler	: L.Willams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 105149)											
VA20B8500-001	D01(3956D)	pH	----	E108	0.10	pH units	7.88	7.95	0.884%	4%	----
Anions and Nutrients (QC Lot: 105154)											
VA20B8500-001	D01(3956D)	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.00	0.991	1.07%	20%	----
Anions and Nutrients (QC Lot: 105155)											
VA20B8500-001	D01(3956D)	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0021	0.0026	0.0005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 105156)											
VA20B8500-001	D01(3956D)	fluoride	16984-48-8	E235.F	0.020	mg/L	0.035	0.034	0.0010	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 106475)											
VA20B8264-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0024	0.0022	0.0001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 106476)											
VA20B8264-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Total Metals (QC Lot: 105368)											
VA20B8485-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0150	0.0110	0.0040	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00018	0.00017	0.000006	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00064	0.00067	0.00003	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0518	0.0544	4.90%	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	55.2	53.1	3.85%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	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	0.000004	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.128	0.121	5.30%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0010	0.0010	0.00004	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	14.0	14.0	0.332%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0172	0.0171	0.624%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00129	0.00123	4.06%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00052	0.00002	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 105368) - continued											
VA20B8485-001	Anonymous	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	0.827	0.842	1.79%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00026	0.00031	0.00005	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000236	0.000211	0.000025	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	3.21	3.24	0.996%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	3.21	3.43	6.43%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.221	0.216	2.44%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	10.6	11.2	4.96%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00038	<0.00030	0.00008	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000154	0.000157	2.05%	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: 105369)											
VA20B8485-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Total Metals (QC Lot: 106599)											
VA20B8487-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0267	0.0284	0.0017	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00028	0.00027	0.000007	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00143	0.00143	0.293%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.187	0.195	4.28%	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000134	0.0000101	0.0000034	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	106	106	0.630%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00016	0.00016	0.0000006	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00074	0.00077	0.00003	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.154	0.150	2.74%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	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: 106599) - continued											
VA20B8487-001	Anonymous	lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	33.3	32.8	1.70%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.238	0.235	1.24%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00209	0.00212	1.49%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00120	0.00129	0.00009	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	2.19	2.19	0.138%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00060	0.00051	0.00009	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000420	0.000387	0.000034	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	4.15	4.06	2.29%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	16.8	16.1	3.96%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.493	0.491	0.329%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	61.8	61.7	0.178%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00067	0.00083	0.00016	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000654	0.000668	2.02%	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	0.0057	0.0065	0.0008	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: 106600)											
VA20B8487-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00018	0.00020	0.00002	Diff <2x LOR	----
Total Metals (QC Lot: 108760)											
VA20B8458-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 105154)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 105155)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 105156)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 106475)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 106476)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 105368)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 105368) - continued						
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	17341-25-2	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	----
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: 105369)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 106599)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 106599) - continued						
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	17341-25-2	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	----
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: 106600)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 108760)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 105149)									
pH	----	E108	----	pH units	7 pH units	99.8	98.0	102	----
Anions and Nutrients (QCLot: 105154)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 105155)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 105156)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 106475)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	93.2	80.0	120	----
Anions and Nutrients (QCLot: 106476)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	99.7	85.0	115	----
Total Metals (QCLot: 105368)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	98.2	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	93.6	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	105	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	109	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	97.8	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	112	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	106	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	100	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	94.7	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	107	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.6	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	90.3	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 105368) - continued									
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	107	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	92.8	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.8	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	83.8	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	98.6	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	104	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	94.8	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	89.4	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	101	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	107	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	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	95.7	80.0	120	----
Total Metals (QCLot: 105369)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	98.2	80.0	120	----
Total Metals (QCLot: 106599)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	93.9	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	92.2	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	87.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	95.8	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	105	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	102	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	97.7	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	88.3	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----

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: 106599) - continued									
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	95.4	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	97.7	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.3	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	103	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	100	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	93.3	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	97.2	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.5	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	93.1	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	100	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	90.8	80.0	120	----
Total Metals (QCLot: 106600)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Total Metals (QCLot: 108760)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 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	Qualifier
Anions and Nutrients (QCLot: 105154)										
VA20B8500-002	D02	nitrate (as N)	14797-55-8	E235.NO3-L	2.52 mg/L	2.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 105155)										
VA20B8500-002	D02	nitrite (as N)	14797-65-0	E235.NO2-L	0.506 mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 105156)										
VA20B8500-002	D02	fluoride	16984-48-8	E235.F	1.01 mg/L	1 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 106475)										
VA20B8264-002	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0491 mg/L	0.05 mg/L	98.2	70.0	130	----
Anions and Nutrients (QCLot: 106476)										
VA20B8264-002	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.204 mg/L	0.2 mg/L	102	75.0	125	----
Total Metals (QCLot: 105368)										
VA20B8485-002	Anonymous	aluminum, total	7429-90-5	E420	0.221 mg/L	0.2 mg/L	110	70.0	130	----
		antimony, total	7440-36-0	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	100	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	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00975 mg/L	0.01 mg/L	97.5	70.0	130	----
		boron, total	7440-42-8	E420	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00399 mg/L	0.004 mg/L	99.9	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	0.0101 mg/L	0.01 mg/L	101	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		copper, total	7440-50-8	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		iron, total	7439-89-6	E420	1.93 mg/L	2 mg/L	96.5	70.0	130	----
		lead, total	7439-92-1	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.101 mg/L	0.1 mg/L	101	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	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		nickel, total	7440-02-0	E420	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.57 mg/L	10 mg/L	95.7	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: 105368) - continued										
VA20B8485-002	Anonymous	potassium, total	7440-09-7	E420	3.99 mg/L	4 mg/L	99.6	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0204 mg/L	0.02 mg/L	102	70.0	130	----
		selenium, total	7782-49-2	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		silicon, total	7440-21-3	E420	9.33 mg/L	10 mg/L	93.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00396 mg/L	0.004 mg/L	98.9	70.0	130	----
		sodium, total	17341-25-2	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	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0392 mg/L	0.04 mg/L	97.9	70.0	130	----
		thallium, total	7440-28-0	E420	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		thorium, total	7440-29-1	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		tin, total	7440-31-5	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		titanium, total	7440-32-6	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		uranium, total	7440-61-1	E420	0.00396 mg/L	0.004 mg/L	99.0	70.0	130	----
		vanadium, total	7440-62-2	E420	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		zinc, total	7440-66-6	E420	0.378 mg/L	0.4 mg/L	94.4	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
Total Metals (QCLot: 105369)										
VA20B8485-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0385 mg/L	0.04 mg/L	96.3	70.0	130	----
Total Metals (QCLot: 106599)										
VA20B8487-002	Anonymous	aluminum, total	7429-90-5	E420	0.190 mg/L	0.2 mg/L	95.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0199 mg/L	0.02 mg/L	99.4	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	0.0365 mg/L	0.04 mg/L	91.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00930 mg/L	0.01 mg/L	93.0	70.0	130	----
		boron, total	7440-42-8	E420	0.090 mg/L	0.1 mg/L	89.7	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00400 mg/L	0.004 mg/L	99.9	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	0.0102 mg/L	0.01 mg/L	102	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0186 mg/L	0.02 mg/L	93.3	70.0	130	----
		iron, total	7439-89-6	E420	1.98 mg/L	2 mg/L	99.2	70.0	130	----
		lead, total	7439-92-1	E420	0.0179 mg/L	0.02 mg/L	89.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0987 mg/L	0.1 mg/L	98.7	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: 106599) - continued										
VA20B8487-002	Anonymous	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	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		nickel, total	7440-02-0	E420	0.0379 mg/L	0.04 mg/L	94.9	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.0 mg/L	10 mg/L	100	70.0	130	----
		potassium, total	7440-09-7	E420	4.13 mg/L	4 mg/L	103	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		selenium, total	7782-49-2	E420	0.0410 mg/L	0.04 mg/L	102	70.0	130	----
		silicon, total	7440-21-3	E420	9.21 mg/L	10 mg/L	92.1	70.0	130	----
		silver, total	7440-22-4	E420	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		sodium, total	17341-25-2	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	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0384 mg/L	0.04 mg/L	95.9	70.0	130	----
		thallium, total	7440-28-0	E420	0.00371 mg/L	0.004 mg/L	92.8	70.0	130	----
		thorium, total	7440-29-1	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		tin, total	7440-31-5	E420	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		titanium, total	7440-32-6	E420	0.0406 mg/L	0.04 mg/L	101	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		uranium, total	7440-61-1	E420	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		vanadium, total	7440-62-2	E420	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		zinc, total	7440-66-6	E420	0.375 mg/L	0.4 mg/L	93.7	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
Total Metals (QCLot: 106600)										
VA20B8487-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0396 mg/L	0.04 mg/L	99.0	70.0	130	----
Total Metals (QCLot: 108760)										
VA20B8458-002	Anonymous	mercury, total	7439-97-6	E508	0.000110 mg/L	0.0001 mg/L	110	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B8500**	Page	: 1 of 10
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 19-Oct-2020 19:30
PO	: 176044	Issue Date	: 28-Oct-2020 17:41
C-O-C number	: ----		
Sampler	: L.Willams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Feild blank	E298	19-Oct-2020	----	----	----		22-Oct-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	19-Oct-2020	----	----	----		22-Oct-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D01(3956D)	E298	19-Oct-2020	----	----	----		22-Oct-2020	28 days	3 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
D02	E298	19-Oct-2020	----	----	----		22-Oct-2020	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D01(3956D)	E235.F	19-Oct-2020	----	----	----		20-Oct-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D02	E235.F	19-Oct-2020	----	----	----		20-Oct-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Feild blank	E235.F	19-Oct-2020	----	----	----		20-Oct-2020	28 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Travel Blank	E235.F	19-Oct-2020	----	----	----		20-Oct-2020	28 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D01(3956D)	E235.NO3-L	19-Oct-2020	----	----	----		20-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D02	E235.NO3-L	19-Oct-2020	----	----	----		20-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Feild blank	E235.NO3-L	19-Oct-2020	----	----	----		20-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO3-L	19-Oct-2020	----	----	----		20-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
D01(3956D)	E235.NO2-L	19-Oct-2020	----	----	----		20-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
D02	E235.NO2-L	19-Oct-2020	----	----	----		20-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Feild blank	E235.NO2-L	19-Oct-2020	----	----	----		20-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO2-L	19-Oct-2020	----	----	----		20-Oct-2020	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D01(3956D)	E372-U	19-Oct-2020	22-Oct-2020	28 days	2 days	✓	23-Oct-2020	25 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D02	E372-U	19-Oct-2020	22-Oct-2020	28 days	2 days	✓	23-Oct-2020	25 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Feild blank	E372-U	19-Oct-2020	22-Oct-2020	28 days	2 days	✓	23-Oct-2020	25 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Travel Blank	E372-U	19-Oct-2020	22-Oct-2020	28 days	2 days	✓	23-Oct-2020	25 days	0 days	✓
Physical Tests : pH by Meter										
HDPE Feild blank	E108	19-Oct-2020	----	----	----		20-Oct-2020	0.25 hrs	14 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	19-Oct-2020	----	----	----		20-Oct-2020	0.25 hrs	18 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D02	E108	19-Oct-2020	----	----	----		20-Oct-2020	0.25 hrs	21 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D01(3956D)	E108	19-Oct-2020	----	----	----		20-Oct-2020	0.25 hrs	22 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D01(3956D)	E420.Cr-L	19-Oct-2020	----	----	----		22-Oct-2020	180 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
D02	E420.Cr-L	19-Oct-2020	----	----	----		22-Oct-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
Feild blank	E420.Cr-L	19-Oct-2020	----	----	----		22-Oct-2020	180 days	2 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
Travel Blank	E420.Cr-L	19-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Feild blank	E508	19-Oct-2020	----	----	----		27-Oct-2020	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Travel Blank	E508	19-Oct-2020	----	----	----		27-Oct-2020	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D01(3956D)	E508	19-Oct-2020	----	----	----		27-Oct-2020	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D02	E508	19-Oct-2020	----	----	----		27-Oct-2020	28 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D01(3956D)	E420	19-Oct-2020	----	----	----		22-Oct-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D02	E420	19-Oct-2020	----	----	----		22-Oct-2020	180 days	2 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Feild blank	E420	19-Oct-2020	----	----	----		22-Oct-2020	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Travel Blank	E420	19-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	106476	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	105156	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	105154	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	105155	1	4	25.0	5.0	✓
pH by Meter	E108	105149	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106600	2	14	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	108760	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106599	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	106475	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	106476	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	105156	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	105154	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	105155	1	4	25.0	5.0	✓
pH by Meter	E108	105149	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106600	2	14	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	108760	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106599	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	106475	1	16	6.2	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	106476	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	105156	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	105154	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	105155	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106600	2	14	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	108760	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106599	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	106475	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	106476	1	16	6.2	5.0	✓
Fluoride in Water by IC	E235.F	105156	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	105154	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	105155	1	4	25.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106600	2	14	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	108760	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106599	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	106475	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Report To	Contact and company name below will appear on the final report
Company:	City of Abbotsford
Contact:	Amy Peters
Phone:	604-864-5514
	Company address below will appear on the final report
Street:	32315 South Fraser Way
City/Province:	Abbotsford, BC
Postal Code:	V2T 1W7
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax apeters@abbotsford.ca
Email 2 asmith@env.enkon.com
Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX
Email 1 or Fax apeters@abbotsford.ca
Email 2

Project Information

ALS Account # / Quote #:	1220-2017-2056
Job #:	Bevan #1 Creek Water Quality
PO / AFE:	176044
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only)

ALS Contact: Heather McKenzie

Sampler: L. Williams

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals & Mercury REG ALL	Fluoride	pH	Ammonia, N02, N03	Total Phosphorus								Number of Containers
					P			P	P								
	D01 (3956D)	19-Oct-20	10:42	Water	X	X	X	X	X								4
	D02	19	11:21	Water	X	X	X	X	X								4
	Field blank		18:10	Water	X	X	X	X	X								4
	Travel blank		—	Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4

Environmental Division
Vancouver
Work Order Reference
VA20B8500
Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO

Are samples for human drinking water use?
☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

WaterTrax upload is required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☑ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Laurya Williams	Date: 19-Oct-20	Time: 19:29	Received by:	Date:	Time:	Received by: LC	Date: Oct 19	Time: 7:39

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 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.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B8627**	Page	: 1 of 6
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 20-Oct-2020 18:15
PO	: 176044	Date Analysis Commenced	: 21-Oct-2020
C-O-C number	: ----	Issue Date	: 28-Oct-2020 17:48
Sampler	: L. Williams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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

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*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	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.

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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	H01	H02	H03	W01	B01
				Client sampling date / time	20-Oct-2020 15:09	20-Oct-2020 09:34	20-Oct-2020 14:49	20-Oct-2020 11:51	20-Oct-2020 12:33
Analyte	CAS Number	Method	LOR	Unit	VA20B8627-001	VA20B8627-002	VA20B8627-003	VA20B8627-004	VA20B8627-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	105	112	106	67.2	56.3
pH	----	E108	0.10	pH units	6.99	7.70	7.43	7.44	7.16
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0472	0.0183	0.723	0.0170	0.112
fluoride	16984-48-8	E235.F	0.020	mg/L	0.036	0.032	<0.100 DLDS	0.032	0.064 DLDS
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.00	1.10	1.70	0.782	0.639
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0024	0.0036	0.0078	0.0029	0.0048
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0116	0.0118	0.0098	0.0377	0.0547
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0233	0.0687	0.0229	0.0085	0.100
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00012	0.00031	<0.00010	0.00037
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00046	0.00149	0.00038	0.00074	0.00372
barium, total	7440-39-3	E420	0.00010	mg/L	0.0139	0.0168	0.0347	0.0236	0.0293
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	0.011	0.012	0.011	<0.010	0.033
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000194	0.0000115	0.0000909	0.0000120	0.0000561
calcium, total	7440-70-2	E420	0.050	mg/L	28.8	31.8	29.9	17.8	14.9
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0.000015	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00036	0.00057	0.00020	0.00045	0.00191
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	0.00020	0.00084	<0.00010	0.00098
copper, total	7440-50-8	E420	0.00050	mg/L	0.00243	0.00143	0.00212	<0.00050	0.00454
iron, total	7439-89-6	E420	0.010	mg/L	0.202	0.284	0.696	0.424	0.900
lead, total	7439-92-1	E420	0.000050	mg/L	0.000146	0.000053	0.000105	0.000075	0.00285
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	7.95	7.83	7.56	5.51	4.65
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0123	0.0562	0.158	0.0436	0.338
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000134	<0.0000050	<0.0000050	<0.0000050	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000286	0.00192	0.00726	0.000216	0.00108
nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	0.00081	0.00070	0.00078	0.00194

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	H01	H02	H03	W01	B01
				Client sampling date / time	20-Oct-2020 15:09	20-Oct-2020 09:34	20-Oct-2020 14:49	20-Oct-2020 11:51	20-Oct-2020 12:33
Analyte	CAS Number	Method	LOR	Unit	VA20B8627-001	VA20B8627-002	VA20B8627-003	VA20B8627-004	VA20B8627-005
					Result	Result	Result	Result	Result
Total Metals									
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	0.060
potassium, total	7440-09-7	E420	0.050	mg/L	1.66	1.92	3.36	1.11	2.32
rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	0.00076	0.00093	0.00054	0.00103
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000180	0.000189	0.000136	0.000078	0.000087
silicon, total	7440-21-3	E420	0.10	mg/L	9.32	8.67	7.64	6.19	6.67
silver, total	7440-22-4	E420	0.000010	mg/L	0.000011	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	21.5	9.80	118	17.3	23.1
strontium, total	7440-24-6	E420	0.00020	mg/L	0.143	0.145	0.163	0.125	0.143
sulfur, total	7704-34-9	E420	0.50	mg/L	5.38	7.72	6.74	2.67	1.14
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	0.00098	0.00195	0.00107	<0.00030	0.00384
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00015
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000011	0.000090	0.000023	0.000022	0.000016
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	0.00115	<0.00050	<0.00050	0.00206
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0111	0.0044	0.0416	0.0032	0.0294
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00033

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

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	B02	DUP-H02	----	----	----
				Client sampling date / time	20-Oct-2020 09:50	20-Oct-2020 09:34	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B8627-006	VA20B8627-007	--------	--------	--------
					Result	Result	----	----	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	102	111	----	----	----
pH	----	E108	0.10	pH units	7.92	7.78	----	----	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0205	0.0194	----	----	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.036	0.031	----	----	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.27	1.09	----	----	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0042	0.0049	----	----	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0104	0.0124	----	----	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0655	0.0686	----	----	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	0.00012	----	----	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00103	0.00147	----	----	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0185	0.0160	----	----	----
beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	----	----	----
bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	----	----	----
boron, total	7440-42-8	E420	0.010	mg/L	0.012	<0.010	----	----	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000092	0.0000120	----	----	----
calcium, total	7440-70-2	E420	0.050	mg/L	26.8	31.0	----	----	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00060	0.00059	----	----	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00013	0.00020	----	----	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00088	0.00137	----	----	----
iron, total	7439-89-6	E420	0.010	mg/L	0.324	0.274	----	----	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000087	0.000052	----	----	----
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	----	----	----
magnesium, total	7439-95-4	E420	0.0050	mg/L	8.43	8.05	----	----	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.108	0.0542	----	----	----
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	----	----	----
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000524	0.00180	----	----	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00062	0.00082	----	----	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	B02	DUP-H02	----	----	----
				Client sampling date / time	20-Oct-2020 09:50	20-Oct-2020 09:34	----	----	----
Analyte	CAS Number	Method	LOR	Unit	VA20B8627-006	VA20B8627-007	--------	--------	--------
					Result	Result	----	----	----
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	1.88	1.90	----	----	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00066	0.00066	----	----	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000153	0.000213	----	----	----
silicon, total	7440-21-3	E420	0.10	mg/L	9.66	8.52	----	----	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
sodium, total	17341-25-2	E420	0.050	mg/L	10.4	9.64	----	----	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.152	0.140	----	----	----
sulfur, total	7704-34-9	E420	0.50	mg/L	5.13	7.48	----	----	----
tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----
thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	----	----	----
thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00270 DLM	0.00172	----	----	----
tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	----	----	----
uranium, total	7440-61-1	E420	0.000010	mg/L	0.000047	0.000089	----	----	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00103	0.00114	----	----	----
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0063	----	----	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	----	----	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20B8627**	Page	: 1 of 10
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 20-Oct-2020 18:15
PO	: 176044	Date Analysis Commenced	: 21-Oct-2020
C-O-C number	: ----	Issue Date	: 28-Oct-2020 17:48
Sampler	: L. Williams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Aaron Yu	Laboratory Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 105971)											
VA20B8631-001	Anonymous	pH	----	E108	0.10	pH units	5.03	5.02	0.0597%	4%	----
Anions and Nutrients (QC Lot: 105981)											
VA20B8627-001	H01	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	2.00	2.01	0.633%	20%	----
Anions and Nutrients (QC Lot: 105982)											
VA20B8627-001	H01	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0024	0.0030	0.0006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 105983)											
VA20B8627-001	H01	fluoride	16984-48-8	E235.F	0.020	mg/L	0.036	0.034	0.001	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 106689)											
VA20B8602-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 106690)											
VA20B8602-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Total Metals (QC Lot: 106649)											
VA20B8627-001	H01	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0233	0.0234	0.00004	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00015	0.000005	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00046	0.00047	0.000009	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0139	0.0148	6.39%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	0.011	0.011	0.0004	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000194	0.0000227	0.0000033	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	28.8	27.6	4.40%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	0.00011	0.000010	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00243	0.00239	0.00003	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.202	0.205	1.30%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000146	0.000148	0.000003	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	7.95	7.70	3.27%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0123	0.0124	0.937%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000286	0.000291	0.000005	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 106649) - continued											
VA20B8627-001	H01	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	1.66	1.67	0.575%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	0.00023	0.00003	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000180	0.000257	0.000077	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	9.32	9.38	0.625%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000011	<0.000010	0.000001	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	21.5	20.9	2.78%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.143	0.148	3.44%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	5.38	5.84	8.24%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00098	0.00094	0.00004	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000011	0.000012	0.0000007	Diff <2x LOR	----
		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	0.0111	0.0103	0.0007	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: 106650)											
VA20B8627-001	H01	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00036	0.00033	0.00003	Diff <2x LOR	----
Total Metals (QC Lot: 108924)											
VA20B8627-001	H01	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000134	0.0000133	0.00000004	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
Anions and Nutrients (QCLot: 105981)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 105982)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 105983)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 106689)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 106690)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 106649)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 106649) - continued						
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	17341-25-2	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	----
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: 106650)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 108924)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 105971)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 105981)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.8	90.0	110	----
Anions and Nutrients (QCLot: 105982)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.4	90.0	110	----
Anions and Nutrients (QCLot: 105983)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 106689)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.7	80.0	120	----
Anions and Nutrients (QCLot: 106690)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	97.2	85.0	115	----
Total Metals (QCLot: 106649)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	103	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	96.7	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	87.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	105	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	86.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	96.2	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	104	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	105	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	108	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	83.6	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	105	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	97.2	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	99.6	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 106649) - continued									
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	108	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	111	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.9	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.3	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	106	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	109	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	110	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	91.8	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	94.8	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	109	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	95.8	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.8	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	97.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	106	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	107	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	110	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	93.4	80.0	120	----
Total Metals (QCLot: 106650)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Total Metals (QCLot: 108924)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	98.3	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	Qualifier
Anions and Nutrients (QCLot: 105981)										
VA20B8627-002	H02	nitrate (as N)	14797-55-8	E235.NO3-L	2.54 mg/L	2.5 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 105982)										
VA20B8627-002	H02	nitrite (as N)	14797-65-0	E235.NO2-L	0.498 mg/L	0.5 mg/L	99.7	75.0	125	----
Anions and Nutrients (QCLot: 105983)										
VA20B8627-002	H02	fluoride	16984-48-8	E235.F	1.03 mg/L	1 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 106689)										
VA20B8605-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.0479 mg/L	0.05 mg/L	95.8	70.0	130	----
Anions and Nutrients (QCLot: 106690)										
VA20B8605-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	0.204 mg/L	0.2 mg/L	102	75.0	125	----
Total Metals (QCLot: 106649)										
VA20B8627-002	H02	aluminum, total	7429-90-5	E420	0.197 mg/L	0.2 mg/L	98.5	70.0	130	----
		antimony, total	7440-36-0	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		barium, total	7440-39-3	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0340 mg/L	0.04 mg/L	85.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00969 mg/L	0.01 mg/L	96.9	70.0	130	----
		boron, total	7440-42-8	E420	0.081 mg/L	0.1 mg/L	81.1	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00410 mg/L	0.004 mg/L	102	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	0.00964 mg/L	0.01 mg/L	96.4	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		copper, total	7440-50-8	E420	0.0199 mg/L	0.02 mg/L	99.5	70.0	130	----
		iron, total	7439-89-6	E420	2.00 mg/L	2 mg/L	99.8	70.0	130	----
		lead, total	7439-92-1	E420	0.0182 mg/L	0.02 mg/L	91.3	70.0	130	----
		lithium, total	7439-93-2	E420	0.0864 mg/L	0.1 mg/L	86.4	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	0.0186 mg/L	0.02 mg/L	93.0	70.0	130	----
		nickel, total	7440-02-0	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.73 mg/L	10 mg/L	97.3	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: 106649) - continued										
VA20B8627-002	H02	potassium, total	7440-09-7	E420	3.84 mg/L	4 mg/L	96.1	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0195 mg/L	0.02 mg/L	97.7	70.0	130	----
		selenium, total	7782-49-2	E420	0.0414 mg/L	0.04 mg/L	103	70.0	130	----
		silicon, total	7440-21-3	E420	8.83 mg/L	10 mg/L	88.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00380 mg/L	0.004 mg/L	94.9	70.0	130	----
		sodium, total	17341-25-2	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	19.9 mg/L	20 mg/L	99.5	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0365 mg/L	0.04 mg/L	91.2	70.0	130	----
		thallium, total	7440-28-0	E420	0.00372 mg/L	0.004 mg/L	93.0	70.0	130	----
		thorium, total	7440-29-1	E420	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		titanium, total	7440-32-6	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		uranium, total	7440-61-1	E420	0.00395 mg/L	0.004 mg/L	98.7	70.0	130	----
		vanadium, total	7440-62-2	E420	0.101 mg/L	0.1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	0.407 mg/L	0.4 mg/L	102	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0384 mg/L	0.04 mg/L	96.0	70.0	130	----
Total Metals (QCLot: 106650)										
VA20B8627-002	H02	chromium, total	7440-47-3	E420.Cr-L	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
Total Metals (QCLot: 108924)										
VA20B8627-002	H02	mercury, total	7439-97-6	E508	0.000129 mg/L	0.0001 mg/L	129	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B8627**	Page	: 1 of 13
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 20-Oct-2020 18:15
PO	: 176044	Issue Date	: 28-Oct-2020 17:48
C-O-C number	: ----		
Sampler	: L. Williams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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 Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B01	E298	20-Oct-2020	----	----	----		22-Oct-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
B02	E298	20-Oct-2020	----	----	----		22-Oct-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
DUP-H02	E298	20-Oct-2020	----	----	----		22-Oct-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H01	E298	20-Oct-2020	----	----	----		22-Oct-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H02	E298	20-Oct-2020	----	----	----		22-Oct-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H03	E298	20-Oct-2020	----	----	----		22-Oct-2020	28 days	2 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
W01	E298	20-Oct-2020	----	----	----		22-Oct-2020	28 days	2 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE H01	E235.F	20-Oct-2020	----	----	----		21-Oct-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE H03	E235.F	20-Oct-2020	----	----	----		21-Oct-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE B01	E235.F	20-Oct-2020	----	----	----		21-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE B02	E235.F	20-Oct-2020	----	----	----		21-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE DUP-H02	E235.F	20-Oct-2020	----	----	----		21-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE H02	E235.F	20-Oct-2020	----	----	----		21-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE W01	E235.F	20-Oct-2020	----	----	----		21-Oct-2020	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H01	E235.NO3-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H03	E235.NO3-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE B01	E235.NO3-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE B02	E235.NO3-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE DUP-H02	E235.NO3-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE H02	E235.NO3-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE W01	E235.NO3-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H01	E235.NO2-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H03	E235.NO2-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B01	E235.NO2-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B02	E235.NO2-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE DUP-H02	E235.NO2-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H02	E235.NO2-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE W01	E235.NO2-L	20-Oct-2020	----	----	----		21-Oct-2020	3 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H01	E372-U	20-Oct-2020	22-Oct-2020	28 days	1 days	✓	23-Oct-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H03	E372-U	20-Oct-2020	22-Oct-2020	28 days	1 days	✓	23-Oct-2020	26 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) B01	E372-U	20-Oct-2020	22-Oct-2020	28 days	2 days	✓	23-Oct-2020	25 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) B02	E372-U	20-Oct-2020	22-Oct-2020	28 days	2 days	✓	23-Oct-2020	25 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) DUP-H02	E372-U	20-Oct-2020	22-Oct-2020	28 days	2 days	✓	23-Oct-2020	25 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H02	E372-U	20-Oct-2020	22-Oct-2020	28 days	2 days	✓	23-Oct-2020	25 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) W01	E372-U	20-Oct-2020	22-Oct-2020	28 days	2 days	✓	23-Oct-2020	25 days	0 days	✓
Physical Tests : pH by Meter										
HDPE H01	E108	20-Oct-2020	----	----	----		21-Oct-2020	0.25 hrs	24 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H03	E108	20-Oct-2020	----	----	----		21-Oct-2020	0.25 hrs	24 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE B01	E108	20-Oct-2020	----	----	----		21-Oct-2020	0.25 hrs	27 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE W01	E108	20-Oct-2020	----	----	----		21-Oct-2020	0.25 hrs	27 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE B02	E108	20-Oct-2020	----	----	----		21-Oct-2020	0.25 hrs	29 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE DUP-H02	E108	20-Oct-2020	----	----	----		21-Oct-2020	0.25 hrs	30 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H02	E108	20-Oct-2020	----	----	----		21-Oct-2020	0.25 hrs	30 hrs	× EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H01	E420.Cr-L	20-Oct-2020	----	----	----		24-Oct-2020	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H03	E420.Cr-L	20-Oct-2020	----	----	----		24-Oct-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B01	E420.Cr-L	20-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B02	E420.Cr-L	20-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) DUP-H02	E420.Cr-L	20-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H02	E420.Cr-L	20-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) W01	E420.Cr-L	20-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) B01	E508	20-Oct-2020	----	----	----		27-Oct-2020	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) B02	E508	20-Oct-2020	----	----	----		27-Oct-2020	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) DUP-H02	E508	20-Oct-2020	----	----	----		27-Oct-2020	28 days	7 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) H01	E508	20-Oct-2020	----	----	----		27-Oct-2020	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) H02	E508	20-Oct-2020	----	----	----		27-Oct-2020	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) H03	E508	20-Oct-2020	----	----	----		27-Oct-2020	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) W01	E508	20-Oct-2020	----	----	----		27-Oct-2020	28 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H01	E420	20-Oct-2020	----	----	----		24-Oct-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H03	E420	20-Oct-2020	----	----	----		24-Oct-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) B01	E420	20-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) B02	E420	20-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) DUP-H02	E420	20-Oct-2020	----	----	----		24-Oct-2020	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
H02	E420	20-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
W01	E420	20-Oct-2020	----	----	----		24-Oct-2020	180 days	4 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	106690	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	105983	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	105981	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	105982	1	9	11.1	5.0	✓
pH by Meter	E108	105971	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106650	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	108924	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106649	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	106689	1	15	6.6	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	106690	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	105983	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	105981	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	105982	1	9	11.1	5.0	✓
pH by Meter	E108	105971	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106650	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	108924	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106649	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	106689	1	15	6.6	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	106690	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	105983	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	105981	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	105982	1	9	11.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106650	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	108924	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106649	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	106689	1	15	6.6	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	106690	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	105983	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	105981	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	105982	1	9	11.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106650	1	9	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	108924	1	15	6.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106649	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	106689	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Report To	Contact and company name below will appear on the final report	Report Format / Distribution	Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply
Company:	City of Abbotsford	Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)	Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Amy Peters	Quality Control (QC) Report with Report ☐ YES ☐ NO	PRIORITY (Business Days): 4 day [P4] ☐; 3 day [P3] ☐; 2 day [P2] ☐ — EMERGENCY: 1 Business day [E1] ☐; Same Day, Weekend or Statutory holiday [E0] ☐
Phone:	604-864-5514	☐ 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:	32315 South Fraser Way	Email 1 or Fax apeters@abbotsford.ca	Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm
City/Province:	Abbotsford, BC	Email 2 asmith@env.enkon.com	For tests that can not be performed according to the service level selected, you will be contacted.
Postal Code:	V2T 1W7	Email 3	
Invoice To	Same as Report To ☐ YES ☐ NO	Invoice Distribution	Analysis Request — Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below
	Copy of Invoice with Report ☐ YES ☐ NO	Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX	
Company:		Email 1 or Fax apeters@abbotsford.ca	
Contact:		Email 2	

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:	1220-2017-2056	AFE/Cost Center:	PO#
Job #:	Bevan #1 Creek Water Quality	Major/Minor Code:	Routing Code:
PO / AFE:	176044	Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only)	B8627	ALS Contact: Heather McKenzie	Sampler: L. Williams

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals & Mercury REG ALL (P)	Fluoride	pH	Ammonia, N02, N03 (P)	Total Phosphorus (P)								Number of Containers
1	H01 (39565)	20-Oct-20	15:09	Water	X	X	X	X	X								4
2	H02 (39566)		09:34	Water	X	X	X	X	X								4
3	H03 (39567)		14:49	Water	X	X	X	X	X								4
4	W01 (3956A)		11:51	Water	X	X	X	X	X								4
5	B01 (39568)		12:33	Water	X	X	X	X	X								4
6	B02 (39569)		09:50	Water	X	X	X	X	X								4
7	DUP-H02		09:34	Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4

Environmental Division
Vancouver
Work Order Reference
VA20B8627

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client add on report by clicking on the drop-down list below — electronic COC only)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

WaterTrax upload is required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☑ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			6		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Laura Williams	Date: 20-Oct-20	Time: 18:14	Received by:	Date:	Time:	Received by: MB	Date: Oct 20	Time: 6:15PM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — OCTOBER 2015 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**.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20B8729**	Page	: 1 of 4
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 21-Oct-2020 18:49
PO	: 176044	Date Analysis Commenced	: 22-Oct-2020
C-O-C number	: ----	Issue Date	: 28-Oct-2020 17:53
Sampler	: L. Williams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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

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*
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	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.

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*
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.

Analytical results in reports identified as “Preliminary Report” are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	F01 (3956B)	F02 (3956C)	F03	F04	F0F
				Client sampling date / time	21-Oct-2020 08:50	21-Oct-2020 11:21	21-Oct-2020 16:39	21-Oct-2020 14:24	21-Oct-2020 17:19
Analyte	CAS Number	Method	LOR	Unit	VA20B8729-001	VA20B8729-002	VA20B8729-003	VA20B8729-004	VA20B8729-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	111	59.5	61.4	65.4	63.7
pH	----	E108	0.10	pH units	7.85	7.29	7.33	7.30	7.28
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0452	0.0124	0.0176	0.0116	0.0613
fluoride	16984-48-8	E235.F	0.020	mg/L	0.040	0.042	0.042	0.041	0.033
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.26	0.109	0.217	0.601	0.458
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0092	0.0021	0.0023	0.0035	0.0080
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0195	0.0200	0.0195	0.0263	0.0293
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0407	0.0266	0.0423	0.0561	0.0476
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00018	0.00012	0.00014	0.00012	0.00018
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00154	0.00054	0.00062	0.00060	0.00139
barium, total	7440-39-3	E420	0.00010	mg/L	0.0205	0.0207	0.0205	0.0190	0.0212
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	0.016	0.014	0.016	0.016	0.013
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000070	<0.0000050	0.0000053	0.0000060	0.0000066
calcium, total	7440-70-2	E420	0.050	mg/L	30.3	16.8	16.6	17.7	17.4
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00066	0.00026	0.00032	0.00031	0.00055
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00011	0.00012	0.00014	0.00012	0.00013
copper, total	7440-50-8	E420	0.00050	mg/L	0.00222	0.00125	0.00141	0.00127	0.00221
iron, total	7439-89-6	E420	0.010	mg/L	0.347	0.354	0.446	0.366	0.789
lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0.000057	<0.000050	0.000220
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	8.55	4.22	4.86	5.15	4.90
manganese, total	7439-96-5	E420	0.00010	mg/L	0.117	0.0391	0.0891	0.0752	0.0518
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	0.000607	0.000467	0.000452	0.000434	0.000430
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00073	0.00063	0.00089	0.00066	0.00084

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	F01 (3956B)	F02 (3956C)	F03	F04	F0F
				Client sampling date / time	21-Oct-2020 08:50	21-Oct-2020 11:21	21-Oct-2020 16:39	21-Oct-2020 14:24	21-Oct-2020 17:19
Analyte	CAS Number	Method	LOR	Unit	VA20B8729-001	VA20B8729-002	VA20B8729-003	VA20B8729-004	VA20B8729-005
					Result	Result	Result	Result	Result
Total Metals									
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	2.34	1.90	2.18	2.40	2.06
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00096	0.00120	0.00132	0.00125	0.00114
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000195	0.000093	0.000077	0.000107	0.000076
silicon, total	7440-21-3	E420	0.10	mg/L	6.01	3.82	4.40	5.06	4.05
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	13.9	9.56	9.68	9.13	9.97
strontium, total	7440-24-6	E420	0.00020	mg/L	0.169	0.0915	0.0942	0.106	0.107
sulfur, total	7704-34-9	E420	0.50	mg/L	9.12	4.65	5.47	5.77	4.35
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	0.00163	0.00096	0.00120	0.00207	0.00161
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	0.000118	0.000011	0.000010	0.000020	0.000028
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00064	<0.00050	<0.00050	<0.00050	0.00052
zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	0.0035	0.0042	<0.0030	0.0077
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.

QUALITY CONTROL REPORT

Work Order	: **VA20B8729**	Page	: 1 of 14
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 21-Oct-2020 18:49
PO	: 176044	Date Analysis Commenced	: 22-Oct-2020
C-O-C number	: ----	Issue Date	: 28-Oct-2020 17:53
Sampler	: L. Williams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Kevin Duarte	Team Leader - Inorganics	Inorganics - Water Quality, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics - Water Quality, Burnaby, British Columbia
Robin Weeks	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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 106404)											
VA20B8667-002	Anonymous	pH	----	E108	0.10	pH units	6.74	6.73	0.148%	4%	----
Anions and Nutrients (QC Lot: 106395)											
VA20B8682-001	Anonymous	fluoride	16984-48-8	E235.F	0.020	mg/L	0.090	0.088	0.002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 106398)											
VA20B8682-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0574	0.0574	0.185%	20%	----
Anions and Nutrients (QC Lot: 106399)											
VA20B8682-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 108053)											
VA20B8729-001	F01 (3956B)	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0195	0.0189	0.0006	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 108055)											
VA20B8729-001	F01 (3956B)	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0452	0.0451	0.00007	Diff <2x LOR	----
Total Metals (QC Lot: 106864)											
VA20B8702-012	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.740	0.776	4.79%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00023	0.00024	0.00001	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00269	0.00254	5.46%	20%	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0228	0.0227	0.514%	20%	----
		beryllium, total	7440-41-7	E420	0.000020	mg/L	0.000032	0.000030	0.000002	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	0.056	0.055	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000764	0.0000646	16.8%	20%	----
		calcium, total	7440-70-2	E420	0.050	mg/L	25.9	24.6	5.23%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000026	0.000025	0.000001	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00247	0.00258	4.51%	20%	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00664	0.00672	1.12%	20%	----
		iron, total	7439-89-6	E420	0.010	mg/L	1.40	1.40	0.267%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000392	0.000402	0.000009	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0030	0.0028	0.0001	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	10.0	10.2	1.93%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.164	0.164	0.262%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00134	0.00137	2.49%	20%	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.0103	0.0104	1.05%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 106864) - continued											
VA20B8702-012	Anonymous	phosphorus, total	7723-14-0	E420	0.050	mg/L	0.351	0.365	0.013	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	7.26	7.11	2.07%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00331	0.00350	5.73%	20%	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000150	0.000127	0.000023	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	7.97	7.80	2.10%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	0.000014	0.000015	0.000001	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	26.9	26.6	1.10%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.141	0.142	0.135%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	21.8	21.2	2.77%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.0207	0.0223	7.33%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000093	0.000095	0.000002	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00314	0.00304	0.00010	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0196	0.0193	0.0003	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00035	0.00034	0.000008	Diff <2x LOR	----
Total Metals (QC Lot: 106865)											
VA20B8729-003	F03	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00032	0.00030	0.00001	Diff <2x LOR	----
Total Metals (QC Lot: 106866)											
VA20B8711-001	Anonymous	nickel, total	7440-02-0	E420	0.00050	mg/L	0.00051	0.00056	0.00005	Diff <2x LOR	----
VA20B8711-001	Anonymous	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0166	0.0181	0.0014	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00011	0.00011	0.00000004	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00061	0.00065	0.00004	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0823	0.0830	0.857%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	0.036	0.037	0.001	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000300	mg/L	<0.0000300	<0.0000300	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	163	158	2.62%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	0.000021	0.000022	0.0000006	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	0.00278	0.00270	0.00008	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.022	0.023	0.0005	Diff <2x LOR	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 106866) - continued											
VA20B8711-001	Anonymous	lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	0.0124	0.0125	1.21%	20%	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	49.4	49.0	0.886%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0123	0.0121	1.68%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0650	0.0650	0.103%	20%	----
		phosphorus, total	7723-14-0	E420	0.300	mg/L	<0.300	<0.300	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	0.050	mg/L	13.2	13.2	0.119%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00155	0.00149	0.00006	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.00168	0.00170	1.52%	20%	----
		silicon, total	7440-21-3	E420	0.10	mg/L	11.8	11.6	1.92%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	75.5	77.6	2.81%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	1.26	1.25	1.36%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	187	181	3.06%	20%	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	0.00028	0.00035	0.00006	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.00421	0.00417	0.929%	20%	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00198	0.00197	0.000006	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: 106867)											
VA20B8711-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
Total Metals (QC Lot: 109047)											
VA20B8682-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 106395)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 106398)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 106399)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 108053)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 108055)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 106864)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 106864) - continued						
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	17341-25-2	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	----
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: 106865)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 106866)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 106866) - continued						
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	17341-25-2	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	----
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: 106867)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 109047)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 106404)									
pH	----	E108	----	pH units	7 pH units	99.7	98.0	102	----
Anions and Nutrients (QCLot: 106395)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 106398)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 106399)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 108053)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	86.8	80.0	120	----
Anions and Nutrients (QCLot: 108055)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	100.0	85.0	115	----
Total Metals (QCLot: 106864)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	106	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.8	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.3	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	94.3	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	89.5	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	106	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.2	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	106	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	104	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	111	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.4	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	86.1	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	103	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	110	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	97.3	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	105	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	104	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 106864) - continued									
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	111	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	93.0	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	109	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	85.1	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	92.7	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	99.2	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	94.6	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	96.3	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	97.1	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	93.4	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	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	95.8	80.0	120	----
Total Metals (QCLot: 106865)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Total Metals (QCLot: 106866)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	96.0	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	91.9	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	107	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.6	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	108	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	81.9	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.7	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	93.8	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.6	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.9	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.3	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	97.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 106866) - continued									
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.8	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	96.8	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	99.6	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	99.8	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	97.2	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	95.2	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	97.8	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	105	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	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	102	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	94.2	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	99.5	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	91.7	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	93.8	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	97.6	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	108	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.2	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	94.7	80.0	120	----
Total Metals (QCLot: 106867)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Total Metals (QCLot: 109047)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 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	Qualifier
Anions and Nutrients (QCLot: 106395)										
VA20B8711-001	Anonymous	fluoride	16984-48-8	E235.F	4.92 mg/L	5 mg/L	98.4	75.0	125	----
Anions and Nutrients (QCLot: 106398)										
VA20B8711-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	12.3 mg/L	12.5 mg/L	98.7	75.0	125	----
Anions and Nutrients (QCLot: 106399)										
VA20B8711-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	2.46 mg/L	2.5 mg/L	98.5	75.0	125	----
Anions and Nutrients (QCLot: 108053)										
VA20B8729-002	F02 (3956C)	phosphorus, total	7723-14-0	E372-U	0.0434 mg/L	0.05 mg/L	86.8	70.0	130	----
Anions and Nutrients (QCLot: 108055)										
VA20B8729-002	F02 (3956C)	ammonia, total (as N)	7664-41-7	E298	0.206 mg/L	0.2 mg/L	103	75.0	125	----
Total Metals (QCLot: 106864)										
VA20B8702-013	Anonymous	aluminum, total	7429-90-5	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		antimony, total	7440-36-0	E420	0.0227 mg/L	0.02 mg/L	114	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0209 mg/L	0.02 mg/L	104	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	0.0354 mg/L	0.04 mg/L	88.4	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		boron, total	7440-42-8	E420	0.085 mg/L	0.1 mg/L	85.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00430 mg/L	0.004 mg/L	108	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	0.0113 mg/L	0.01 mg/L	113	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		copper, total	7440-50-8	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		iron, total	7439-89-6	E420	2.09 mg/L	2 mg/L	105	70.0	130	----
		lead, total	7439-92-1	E420	0.0198 mg/L	0.02 mg/L	98.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0820 mg/L	0.1 mg/L	82.0	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	0.0221 mg/L	0.02 mg/L	111	70.0	130	----
		nickel, total	7440-02-0	E420	0.0423 mg/L	0.04 mg/L	106	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.4 mg/L	10 mg/L	104	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: 106864) - continued										
VA20B8702-013	Anonymous	potassium, total	7440-09-7	E420	4.19 mg/L	4 mg/L	105	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0217 mg/L	0.02 mg/L	108	70.0	130	----
		selenium, total	7782-49-2	E420	0.0430 mg/L	0.04 mg/L	108	70.0	130	----
		silicon, total	7440-21-3	E420	8.73 mg/L	10 mg/L	87.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00451 mg/L	0.004 mg/L	113	70.0	130	----
		sodium, total	17341-25-2	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	20.7 mg/L	20 mg/L	104	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0415 mg/L	0.04 mg/L	104	70.0	130	----
		thallium, total	7440-28-0	E420	0.00390 mg/L	0.004 mg/L	97.6	70.0	130	----
		thorium, total	7440-29-1	E420	0.0196 mg/L	0.02 mg/L	97.8	70.0	130	----
		tin, total	7440-31-5	E420	0.0221 mg/L	0.02 mg/L	110	70.0	130	----
		titanium, total	7440-32-6	E420	0.0437 mg/L	0.04 mg/L	109	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0209 mg/L	0.02 mg/L	105	70.0	130	----
		uranium, total	7440-61-1	E420	0.00418 mg/L	0.004 mg/L	104	70.0	130	----
		vanadium, total	7440-62-2	E420	0.108 mg/L	0.1 mg/L	108	70.0	130	----
		zinc, total	7440-66-6	E420	0.400 mg/L	0.4 mg/L	100.0	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0456 mg/L	0.04 mg/L	114	70.0	130	----
Total Metals (QCLot: 106865)										
VA20B8729-004	F04	chromium, total	7440-47-3	E420.Cr-L	0.0426 mg/L	0.04 mg/L	106	70.0	130	----
Total Metals (QCLot: 106866)										
VA20B8711-002	Anonymous	aluminum, total	7429-90-5	E420	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		antimony, total	7440-36-0	E420	0.0188 mg/L	0.02 mg/L	93.8	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0194 mg/L	0.02 mg/L	96.8	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	0.0392 mg/L	0.04 mg/L	98.0	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00883 mg/L	0.01 mg/L	88.3	70.0	130	----
		boron, total	7440-42-8	E420	0.086 mg/L	0.1 mg/L	85.8	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00368 mg/L	0.004 mg/L	92.1	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	0.00944 mg/L	0.01 mg/L	94.4	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0182 mg/L	0.02 mg/L	91.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0179 mg/L	0.02 mg/L	89.7	70.0	130	----
		iron, total	7439-89-6	E420	1.96 mg/L	2 mg/L	98.1	70.0	130	----
		lead, total	7439-92-1	E420	0.0170 mg/L	0.02 mg/L	85.0	70.0	130	----
		lithium, total	7439-93-2	E420	0.102 mg/L	0.1 mg/L	102	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: 106866) - continued										
VA20B8711-002	Anonymous	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	ND mg/L	0.02 mg/L	ND	70.0	130	----
		nickel, total	7440-02-0	E420	0.0364 mg/L	0.04 mg/L	91.1	70.0	130	----
		phosphorus, total	7723-14-0	E420	10.5 mg/L	10 mg/L	105	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	4 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		selenium, total	7782-49-2	E420	0.0440 mg/L	0.04 mg/L	110	70.0	130	----
		silicon, total	7440-21-3	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		silver, total	7440-22-4	E420	0.00361 mg/L	0.004 mg/L	90.2	70.0	130	----
		sodium, total	17341-25-2	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	ND mg/L	20 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
		thallium, total	7440-28-0	E420	0.00351 mg/L	0.004 mg/L	87.7	70.0	130	----
		thorium, total	7440-29-1	E420	0.0230 mg/L	0.02 mg/L	115	70.0	130	----
		tin, total	7440-31-5	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		titanium, total	7440-32-6	E420	0.0417 mg/L	0.04 mg/L	104	70.0	130	----
		uranium, total	7440-61-1	E420	0.00406 mg/L	0.004 mg/L	101	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0995 mg/L	0.1 mg/L	99.5	70.0	130	----
		zinc, total	7440-66-6	E420	0.351 mg/L	0.4 mg/L	87.7	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0421 mg/L	0.04 mg/L	105	70.0	130	----
Total Metals (QCLot: 106867)										
VA20B8711-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0384 mg/L	0.04 mg/L	96.0	70.0	130	----
Total Metals (QCLot: 109047)										
VA20B8697-001	Anonymous	mercury, total	7439-97-6	E508	0.000105 mg/L	0.0001 mg/L	105	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20B8729**	Page	: 1 of 11
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 21-Oct-2020 18:49
PO	: 176044	Issue Date	: 28-Oct-2020 17:53
C-O-C number	: ----		
Sampler	: L. Williams		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F0F	E298	21-Oct-2020	----	----	----		26-Oct-2020	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F01 (3956B)	E298	21-Oct-2020	----	----	----		26-Oct-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F02 (3956C)	E298	21-Oct-2020	----	----	----		26-Oct-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F03	E298	21-Oct-2020	----	----	----		26-Oct-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F04	E298	21-Oct-2020	----	----	----		26-Oct-2020	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F01 (3956B)	E235.F	21-Oct-2020	----	----	----		22-Oct-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F02 (3956C)	E235.F	21-Oct-2020	----	----	----		22-Oct-2020	28 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE F03	E235.F	21-Oct-2020	----	----	----		22-Oct-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F04	E235.F	21-Oct-2020	----	----	----		22-Oct-2020	28 days	0 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F0F	E235.F	21-Oct-2020	----	----	----		22-Oct-2020	28 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F01 (3956B)	E235.NO3-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F02 (3956C)	E235.NO3-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F03	E235.NO3-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F04	E235.NO3-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE F0F	E235.NO3-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F01 (3956B)	E235.NO2-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F02 (3956C)	E235.NO2-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F03	E235.NO2-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F04	E235.NO2-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F0F	E235.NO2-L	21-Oct-2020	----	----	----		22-Oct-2020	3 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F03	E372-U	21-Oct-2020	25-Oct-2020	28 days	3 days	✓	26-Oct-2020	24 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F0F	E372-U	21-Oct-2020	25-Oct-2020	28 days	3 days	✓	26-Oct-2020	24 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F01 (3956B)	E372-U	21-Oct-2020	25-Oct-2020	28 days	4 days	✓	26-Oct-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F02 (3956C)	E372-U	21-Oct-2020	25-Oct-2020	28 days	4 days	✓	26-Oct-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F04	E372-U	21-Oct-2020	25-Oct-2020	28 days	4 days	✓	26-Oct-2020	23 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE F03	E108	21-Oct-2020	----	----	----		22-Oct-2020	0.25 hrs	16 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE F0F	E108	21-Oct-2020	----	----	----		22-Oct-2020	0.25 hrs	16 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE F04	E108	21-Oct-2020	----	----	----		22-Oct-2020	0.25 hrs	19 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE F02 (3956C)	E108	21-Oct-2020	----	----	----		22-Oct-2020	0.25 hrs	22 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE F01 (3956B)	E108	21-Oct-2020	----	----	----		22-Oct-2020	0.25 hrs	24 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F01 (3956B)	E420.Cr-L	21-Oct-2020	----	----	----		23-Oct-2020	180 days	1 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F02 (3956C)	E420.Cr-L	21-Oct-2020	----	----	----		23-Oct-2020	180 days	1 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F03	E420.Cr-L	21-Oct-2020	----	----	----		27-Oct-2020	180 days	6 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F04	E420.Cr-L	21-Oct-2020	----	----	----		27-Oct-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F0F	E420.Cr-L	21-Oct-2020	----	----	----		27-Oct-2020	180 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F01 (3956B)	E508	21-Oct-2020	----	----	----		27-Oct-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F02 (3956C)	E508	21-Oct-2020	----	----	----		27-Oct-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F03	E508	21-Oct-2020	----	----	----		27-Oct-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F04	E508	21-Oct-2020	----	----	----		27-Oct-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) F0F	E508	21-Oct-2020	----	----	----		27-Oct-2020	28 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F01 (3956B)	E420	21-Oct-2020	----	----	----		23-Oct-2020	180 days	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F02 (3956C)	E420	21-Oct-2020	----	----	----		23-Oct-2020	180 days	1 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F03	E420	21-Oct-2020	----	----	----		27-Oct-2020	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F04	E420	21-Oct-2020	----	----	----		27-Oct-2020	180 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F0F	E420	21-Oct-2020	----	----	----		27-Oct-2020	180 days	6 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	108055	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	106395	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	106398	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	106399	1	9	11.1	5.0	✓
pH by Meter	E108	106404	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106867	2	14	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	109047	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106866	3	26	11.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	108053	1	11	9.0	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	108055	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	106395	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	106398	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	106399	1	9	11.1	5.0	✓
pH by Meter	E108	106404	1	20	5.0	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106867	2	14	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	109047	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106866	2	26	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	108053	1	11	9.0	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	108055	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	106395	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	106398	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	106399	1	9	11.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106867	2	14	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	109047	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106866	2	26	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	108053	1	11	9.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	108055	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	106395	1	9	11.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	106398	1	9	11.1	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	106399	1	9	11.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	106867	2	14	14.2	5.0	✓
Total Mercury in Water by CVAAS	E508	109047	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	106866	2	26	7.6	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	108053	1	11	9.0	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here
(lab use only)

COC Number: 15 -

Report To	Contact and company name below will appear on the final report
Company:	City of Abbotsford
Contact:	Amy Peters
Phone:	604-864-5514
	Company address below will appear on the final report
Street:	32315 South Fraser Way
City/Province:	Abbotsford, BC
Postal Code:	V2T 1W7
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax apeters@abbotsford.ca
Email 2 asmith@env.enkon.com
Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX
Email 1 or Fax apeters@abbotsford.ca
Email 2

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
	4 day [P4] ☐		1 Business day [E1] ☐
	3 day [P3] ☐		Same Day, Weekend or Statutory holiday [E0] ☐
	2 day [P2] ☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	1220-2017-2056
Job #:	Bevan #1 Creek Water Quality
PO / AFE:	176044
LSD:	
ALS Lab Work Order # (lab use only)	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: Heather McKenzie	Sampler: L. Williams

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals & Mercury REG ALL	Fluoride	pH	Ammonia, N02, N03	Total Phosphorus								Number of Containers
					P			P	P								
	FO1 (3956B)	21-Oct-20	08:50	Water	X	X	X	X	X								4
	FO2 (3956C)	↓	11:21	Water	X	X	X	X	X								4
	FO3		16:39	Water	X	X	X	X	X								4
	FO4		14:24	Water	X	X	X	X	X								4
	FOF	↓	17:19	Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4

Environmental Division
Vancouver
Work Order Reference
VA20B8729
Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System?
☐ YES ☑ NO

Are samples for human drinking water use?
☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

WaterTrax upload is required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations 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: Lauryn Williams	Date: 21-Oct-20	Time: 18:49	Received by:	Date:	Time:	Received by: TC	Date: Oct 21	Time: 8:49

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION WHITE - LABORATORY COPY YELLOW - CLIENT COPY OCTOBER 2015 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.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20C1390**	Page	: 1 of 8
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 20-Nov-2020 17:55
PO	: 176044	Date Analysis Commenced	: 21-Nov-2020
C-O-C number	: ----	Issue Date	: 27-Nov-2020 15:56
Sampler	: ----		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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

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	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, 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*
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.

Analytical results in reports identified as “Preliminary Report” are considered authorized for use.

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	D-01	D-02	H-01	H-03	H-02
				Client sampling date / time	20-Nov-2020 10:09	20-Nov-2020 09:55	20-Nov-2020 13:51	20-Nov-2020 13:38	20-Nov-2020 12:05
Analyte	CAS Number	Method	LOR	Unit	VA20C1390-001	VA20C1390-002	VA20C1390-003	VA20C1390-004	VA20C1390-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	70.9	95.2	75.3	44.0	80.8
pH	----	E108	0.10	pH units	7.72	7.66	7.04	7.24	7.72
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0349	0.0256	0.0333	0.0477	0.0198
fluoride	16984-48-8	E235.F	0.020	mg/L	0.028	0.023	0.027	0.025	0.025
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	1.41	0.719	1.35	0.840	0.900
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0070	0.0055	0.0140	0.0173	0.0088
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0242	0.0162	0.0144	0.0245	0.0165
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.214	0.0356	0.114	0.282	0.174
antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0.00026	0.00050	0.00018
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00088	0.00145	0.00048	0.00051	0.00083
barium, total	7440-39-3	E420	0.00010	mg/L	0.0194	0.0119	0.0114	0.0143	0.0153
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	0.012	0.017	<0.010	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000085	<0.0000050	0.0000224	0.0000274	0.0000146
calcium, total	7440-70-2	E420	0.050	mg/L	19.6	24.8	21.6	13.0	23.7
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	0.000011	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00070	0.00040	0.00048	0.00082	0.00056
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00020	<0.00010	<0.00010	0.00016	0.00013
copper, total	7440-50-8	E420	0.00050	mg/L	0.00154	<0.00050	0.00603	0.00664	0.00330
iron, total	7439-89-6	E420	0.010	mg/L	0.487	0.405	0.160	0.281	0.285
lead, total	7439-92-1	E420	0.000050	mg/L	0.000107	<0.000050	0.000492	0.000929	0.000248
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0013	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	5.37	8.09	5.22	2.84	5.24
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0589	0.148	0.00746	0.0142	0.0320
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0.0000090	0.0000058	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000388	0.000327	0.000292	0.00452	0.00183
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00096	0.00063	<0.00050	0.00070	0.00060

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	D-01	D-02	H-01	H-03	H-02
				Client sampling date / time	20-Nov-2020 10:09	20-Nov-2020 09:55	20-Nov-2020 13:51	20-Nov-2020 13:38	20-Nov-2020 12:05
Analyte	CAS Number	Method	LOR	Unit	VA20C1390-001	VA20C1390-002	VA20C1390-003	VA20C1390-004	VA20C1390-005
					Result	Result	Result	Result	Result
Total Metals									
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	1.89	1.35	1.17	1.53	1.52
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00113	0.00040	0.00023	0.00052	0.00061
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000163	0.000201	0.000169	0.000081	0.000113
silicon, total	7440-21-3	E420	0.10	mg/L	6.24	9.50	6.61	3.61	6.24
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	9.84	7.80	12.0	6.97	7.34
strontium, total	7440-24-6	E420	0.00020	mg/L	0.106	0.124	0.101	0.0576	0.0909
sulfur, total	7704-34-9	E420	0.50	mg/L	4.97	3.46	3.69	3.37	4.86
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	0.00019	<0.00010
titanium, total	7440-32-6	E420	0.00030	mg/L	0.00882	0.00148	0.00794	0.0191	0.00838
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	0.000041	0.000039	0.000011	0.000019	0.000046
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00103	0.00054	0.00062	0.00090	0.00084
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0035	<0.0030	0.0202	0.0395	0.0132
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	0.00031	0.00033

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

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	Dup	B-02	B-01	W-01	F-01
				Client sampling date / time	20-Nov-2020 12:05	20-Nov-2020 12:27	20-Nov-2020 11:15	20-Nov-2020 10:49	20-Nov-2020 15:55
Analyte	CAS Number	Method	LOR	Unit	VA20C1390-006	VA20C1390-007	VA20C1390-008	VA20C1390-009	VA20C1390-010
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	79.5	55.3	27.2	29.2	81.6
pH	----	E108	0.10	pH units	7.73	7.67	7.01	7.21	7.54
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0202	0.0425	0.0965	0.0539	0.0348
fluoride	16984-48-8	E235.F	0.020	mg/L	0.024	0.023	0.023	<0.020	0.031
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.898	0.771	0.401	0.344	1.44
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0091	0.0074	0.0075	0.0029	0.0135
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0165	0.0181	0.0344	0.0295	0.0241
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.144	0.169	0.110	0.0274	0.121
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00018	0.00019	0.00031	0.00015	0.00016
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00077	0.00063	0.00072	0.00071	0.00143
barium, total	7440-39-3	E420	0.00010	mg/L	0.0150	0.0132	0.0165	0.0143	0.0198
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	0.012
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000154	0.0000141	0.0000268	<0.0000050	0.0000116
calcium, total	7440-70-2	E420	0.050	mg/L	23.2	15.4	8.12	8.17	23.3
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00051	0.00069	0.00099	0.00038	0.00075
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00012	0.00017	0.00036	<0.00010	0.00015
copper, total	7440-50-8	E420	0.00050	mg/L	0.00319	0.00160	0.00417	0.00089	0.00280
iron, total	7439-89-6	E420	0.010	mg/L	0.252	0.499	0.914	0.718	0.371
lead, total	7439-92-1	E420	0.000050	mg/L	0.000234	0.000201	0.00117	0.000299	0.000071
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	5.23	4.12	1.68	2.14	5.68
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0315	0.0805	0.132	0.0412	0.0986
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	0.00179	0.000323	0.000294	0.000159	0.000473
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00058	0.00065	0.00131	<0.00050	0.00100
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	Dup	B-02	B-01	W-01	F-01
				Client sampling date / time	20-Nov-2020 12:05	20-Nov-2020 12:27	20-Nov-2020 11:15	20-Nov-2020 10:49	20-Nov-2020 15:55
Analyte	CAS Number	Method	LOR	Unit	VA20C1390-006	VA20C1390-007	VA20C1390-008	VA20C1390-009	VA20C1390-010
					Result	Result	Result	Result	Result
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	1.50	1.02	0.842	0.762	1.84
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00059	0.00053	0.00056	0.00055	0.00073
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000115	0.000084	<0.000050	<0.000050	0.000141
silicon, total	7440-21-3	E420	0.10	mg/L	6.18	5.47	3.20	2.67	4.82
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	7.34	6.16	8.53	17.1	10.4
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0903	0.0819	0.0682	0.0533	0.123
sulfur, total	7704-34-9	E420	0.50	mg/L	4.84	2.70	0.83	0.97	6.38
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	0.00678	0.00804	0.00509	0.00116	0.00488
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	0.000047	0.000018	<0.000010	<0.000010	0.000056
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00079	0.00101	0.00095	<0.00050	0.00080
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0127	0.0072	0.0328	0.0061	0.0058
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0.00023	<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	F-02	FOF	Field Blank	Travel Blank	----
				Client sampling date / time	20-Nov-2020 14:30	20-Nov-2020 15:30	20-Nov-2020 16:12	20-Nov-2020	----
Analyte	CAS Number	Method	LOR	Unit	VA20C1390-011	VA20C1390-012	VA20C1390-013	VA20C1390-014	--------
					Result	Result	Result	Result	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	47.7	49.2	<0.60	<0.60	----
pH	----	E108	0.10	pH units	7.16	7.05	5.42	5.42	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0110	0.0720	<0.0050	<0.0050	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.027	0.023	<0.020	<0.020	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.952	0.977	<0.0050	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0067	0.0117	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0164	0.0225	<0.0020	<0.0020	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0824	0.109	<0.0030	<0.0030	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00016	0.00016	<0.00010	<0.00010	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00048	0.00105	<0.00010	<0.00010	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0173	0.0178	<0.00010	<0.00010	----
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	0.012	0.011	<0.010	<0.010	----
cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	0.0000133	<0.0000050	<0.0000050	----
calcium, total	7440-70-2	E420	0.050	mg/L	13.7	14.0	<0.050	<0.050	----
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00040	0.00062	<0.00010	<0.00010	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	0.00013	<0.00010	<0.00010	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00206	0.00246	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	0.203	0.351	<0.010	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000082	0.000149	<0.000050	<0.000050	----
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	3.28	3.47	<0.0050	<0.0050	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0121	0.0431	<0.00010	<0.00010	----
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	0.000366	0.000362	<0.000050	<0.000050	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00054	0.00067	<0.00050	<0.00050	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	F-02	FOF	Field Blank	Travel Blank	----
				Client sampling date / time	20-Nov-2020 14:30	20-Nov-2020 15:30	20-Nov-2020 16:12	20-Nov-2020	----
Analyte	CAS Number	Method	LOR	Unit	VA20C1390-011	VA20C1390-012	VA20C1390-013	VA20C1390-014	--------
					Result	Result	Result	Result	----
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	1.63	1.55	<0.050	<0.050	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00096	0.00103	<0.00020	<0.00020	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000070	0.000066	<0.000050	<0.000050	----
silicon, total	7440-21-3	E420	0.10	mg/L	3.48	3.37	<0.10	<0.10	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	17341-25-2	E420	0.050	mg/L	7.50	7.63	<0.050	<0.050	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0755	0.0797	<0.00020	<0.00020	----
sulfur, total	7704-34-9	E420	0.50	mg/L	3.78	3.69	<0.50	<0.50	----
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	0.00320	0.00368	<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	<0.000010	0.000021	<0.000010	<0.000010	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	0.00058	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0077	0.0082	<0.0030	<0.0030	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20C1390**	Page	: 1 of 10
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 20-Nov-2020 17:55
PO	: 176044	Date Analysis Commenced	: 21-Nov-2020
C-O-C number	: ----	Issue Date	: 27-Nov-2020 15:56
Sampler	: ----		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Kevin Duarte	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, 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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 120680)											
VA20C1390-001	D-01	pH	----	E108	0.10	pH units	7.72	7.69	0.389%	4%	----
Anions and Nutrients (QC Lot: 120674)											
VA20C1389-001	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0144	0.0139	3.32%	20%	----
Anions and Nutrients (QC Lot: 120675)											
VA20C1389-001	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.970	0.967	0.326%	20%	----
Anions and Nutrients (QC Lot: 120676)											
VA20C1390-001	D-01	fluoride	16984-48-8	E235.F	0.020	mg/L	0.028	0.029	0.0004	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 121887)											
VA20C0819-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	2.85	2.58	9.78%	20%	----
Anions and Nutrients (QC Lot: 121888)											
VA20C1088-001	Anonymous	ammonia, total (as N)	7664-41-7	E298	2.50	mg/L	16.4	16.2	0.260	Diff <2x LOR	----
Total Metals (QC Lot: 121461)											
VA20C1390-001	D-01	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00070	0.00073	0.00003	Diff <2x LOR	----
Total Metals (QC Lot: 121462)											
VA20C1390-001	D-01	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.214	0.225	5.07%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00088	0.00087	0.000008	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0194	0.0193	0.856%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	0.012	0.012	0.0002	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000085	0.0000102	0.0000017	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	19.6	19.4	0.911%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	0.000010	0.0000003	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00020	0.00020	0.000001	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00154	0.00150	0.00004	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.487	0.498	2.07%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000107	0.000106	0.0000009	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	5.37	5.12	4.61%	20%	----
		manganese, total	7439-96-5	E420	0.00010	mg/L	0.0589	0.0588	0.294%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 121462) - continued											
VA20C1390-001	D-01	molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000388	0.000383	0.000005	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.00050	mg/L	0.00096	0.00098	0.00001	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	1.89	1.88	0.248%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00113	0.00110	0.00003	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	0.000163	0.000142	0.000021	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	6.24	6.23	0.309%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	9.84	9.78	0.555%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.106	0.104	1.58%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	4.97	4.91	0.06	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00882	0.00944	6.84%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	0.000041	0.000041	0.0000002	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00103	0.00107	0.00004	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0035	0.0036	0.00006	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: 122813)											
VA20C1390-001	D-01	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	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
Anions and Nutrients (QCLot: 120674)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 120675)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 120676)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 121887)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 121888)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Total Metals (QCLot: 121461)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 121462)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 121462) - continued						
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	17341-25-2	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	----
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: 122813)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 120680)									
pH	----	E108	----	pH units	7 pH units	99.4	98.0	102	----
Anions and Nutrients (QCLot: 120674)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
Anions and Nutrients (QCLot: 120675)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 120676)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.4	90.0	110	----
Anions and Nutrients (QCLot: 121887)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	93.1	80.0	120	----
Anions and Nutrients (QCLot: 121888)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	99.6	85.0	115	----
Total Metals (QCLot: 121461)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	93.2	80.0	120	----
Total Metals (QCLot: 121462)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	94.5	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	101	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	93.9	80.0	120	----
barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	96.5	80.0	120	----
beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	93.9	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	95.0	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	88.0	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	91.6	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	91.4	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	92.1	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	94.9	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	92.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	92.2	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	91.0	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	88.4	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	95.0	80.0	120	----
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	93.9	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	98.2	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 121462) - continued									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	91.5	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	93.2	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	91.2	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	96.0	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	93.3	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	93.4	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	92.9	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	84.3	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	97.6	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	95.3	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	84.6	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	93.0	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.0	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	90.7	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	87.9	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	93.3	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	93.1	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	90.2	80.0	120	----
Total Metals (QCLot: 122813)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 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 (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 120674)										
VA20C1389-002	Anonymous	nitrite (as N)	14797-65-0	E235.NO2-L	0.519 mg/L	0.5 mg/L	104	75.0	125	----
Anions and Nutrients (QCLot: 120675)										
VA20C1389-002	Anonymous	nitrate (as N)	14797-55-8	E235.NO3-L	2.62 mg/L	2.5 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 120676)										
VA20C1390-002	D-02	fluoride	16984-48-8	E235.F	1.06 mg/L	1 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 121887)										
VA20C1088-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.495 mg/L	0.5 mg/L	99.0	70.0	130	----
Anions and Nutrients (QCLot: 121888)										
VA20C1390-001	D-01	ammonia, total (as N)	7664-41-7	E298	0.199 mg/L	0.2 mg/L	99.7	75.0	125	----
Total Metals (QCLot: 121461)										
VA20C1390-002	D-02	chromium, total	7440-47-3	E420.Cr-L	0.0378 mg/L	0.04 mg/L	94.4	70.0	130	----
Total Metals (QCLot: 121462)										
VA20C1390-002	D-02	aluminum, total	7429-90-5	E420	0.194 mg/L	0.2 mg/L	97.2	70.0	130	----
		antimony, total	7440-36-0	E420	0.0187 mg/L	0.02 mg/L	93.3	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		barium, total	7440-39-3	E420	0.0189 mg/L	0.02 mg/L	94.7	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00928 mg/L	0.01 mg/L	92.8	70.0	130	----
		boron, total	7440-42-8	E420	0.095 mg/L	0.1 mg/L	95.3	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00385 mg/L	0.004 mg/L	96.2	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	0.00941 mg/L	0.01 mg/L	94.1	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0192 mg/L	0.02 mg/L	96.0	70.0	130	----
		copper, total	7440-50-8	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		iron, total	7439-89-6	E420	1.86 mg/L	2 mg/L	92.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0186 mg/L	0.02 mg/L	92.9	70.0	130	----
		lithium, total	7439-93-2	E420	0.0978 mg/L	0.1 mg/L	97.8	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	0.0195 mg/L	0.02 mg/L	97.6	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: 121462) - continued										
VA20C1390-002	D-02	nickel, total	7440-02-0	E420	0.0374 mg/L	0.04 mg/L	93.5	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.53 mg/L	10 mg/L	95.3	70.0	130	----
		potassium, total	7440-09-7	E420	4.00 mg/L	4 mg/L	99.9	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		selenium, total	7782-49-2	E420	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		silicon, total	7440-21-3	E420	8.43 mg/L	10 mg/L	84.3	70.0	130	----
		silver, total	7440-22-4	E420	0.00373 mg/L	0.004 mg/L	93.3	70.0	130	----
		sodium, total	17341-25-2	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	19.5 mg/L	20 mg/L	97.5	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0387 mg/L	0.04 mg/L	96.6	70.0	130	----
		thallium, total	7440-28-0	E420	0.00362 mg/L	0.004 mg/L	90.6	70.0	130	----
		thorium, total	7440-29-1	E420	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		tin, total	7440-31-5	E420	0.0196 mg/L	0.02 mg/L	98.0	70.0	130	----
		titanium, total	7440-32-6	E420	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		uranium, total	7440-61-1	E420	0.00378 mg/L	0.004 mg/L	94.5	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0965 mg/L	0.1 mg/L	96.5	70.0	130	----
		zinc, total	7440-66-6	E420	0.380 mg/L	0.4 mg/L	95.0	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
Total Metals (QCLot: 122813)										
VA20C1390-002	D-02	mercury, total	7439-97-6	E508	0.0000972 mg/L	0.0001 mg/L	97.2	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20C1390**	Page	: 1 of 20
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 20-Nov-2020 17:55
PO	: 176044	Issue Date	: 27-Nov-2020 15:56
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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 Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) B-01	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) B-02	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) D-01	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) D-02	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Dup	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F-01	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F-02	E298	20-Nov-2020	----	----	----		25-Nov-2020	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: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Field Blank	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
FOF	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H-01	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H-02	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H-03	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
W-01	E298	20-Nov-2020	----	----	----		25-Nov-2020	28 days	5 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B-01	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B-02	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE D-01	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE D-02	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Dup	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F-01	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE F-02	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE Field Blank	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE FOF	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE H-01	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE H-02	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H-03	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Travel Blank	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
W-01	E235.F	20-Nov-2020	----	----	----		22-Nov-2020	28 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B-01	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B-02	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D-01	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D-02	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Dup	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F-01	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F-02	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
FOF	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
H-01	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
H-02	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
H-03	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
W-01	E235.NO3-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
B-01	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B-02	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D-01	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D-02	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Dup	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F-01	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F-02	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE FOF	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H-01	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
H-02	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
H-03	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
W-01	E235.NO2-L	20-Nov-2020	----	----	----		22-Nov-2020	3 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
F-01	E372-U	20-Nov-2020	25-Nov-2020	28 days	4 days	✓	25-Nov-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
Field Blank	E372-U	20-Nov-2020	25-Nov-2020	28 days	4 days	✓	25-Nov-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
FOF	E372-U	20-Nov-2020	25-Nov-2020	28 days	4 days	✓	25-Nov-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
Travel Blank	E372-U	20-Nov-2020	25-Nov-2020	28 days	4 days	✓	25-Nov-2020	23 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
B-01	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) B-02	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D-01	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) D-02	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Dup	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F-02	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H-01	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H-02	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H-03	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) W-01	E372-U	20-Nov-2020	25-Nov-2020	28 days	5 days	✓	25-Nov-2020	22 days	0 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE F-01	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	23 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	23 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE FOF	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	23 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	23 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE F-02	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	24 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H-01	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H-03	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE B-02	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	26 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Dup	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	27 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE H-02	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	27 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE B-01	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	28 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE W-01	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	28 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D-01	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	29 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D-02	E108	20-Nov-2020	----	----	----		21-Nov-2020	0.25 hrs	29 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B-01	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B-02	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D-01	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D-02	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Dup	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F-01	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F-02	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Field Blank	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) FOF	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H-01	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H-02	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H-03	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Travel Blank	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
W-01	E420.Cr-L	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B-01	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B-02	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D-01	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
D-02	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Dup	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F-01	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F-02	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Field Blank	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
FOF	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H-01	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H-02	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H-03	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Travel Blank	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
W-01	E508	20-Nov-2020	----	----	----		26-Nov-2020	28 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
B-01	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
B-02	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
D-01	E420	20-Nov-2020	----	----	----		24-Nov-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) D-02	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Dup	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F-01	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F-02	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Field Blank	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) FOF	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H-01	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H-02	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H-03	E420	20-Nov-2020	----	----	----		24-Nov-2020	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Travel Blank	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
W-01	E420	20-Nov-2020	----	----	----		24-Nov-2020	180 days	4 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	121888	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	120676	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	120675	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	120674	1	18	5.5	5.0	✓
pH by Meter	E108	120680	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	121461	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	122813	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	121462	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	121887	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	121888	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	120676	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	120675	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	120674	1	18	5.5	5.0	✓
pH by Meter	E108	120680	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	121461	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	122813	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	121462	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	121887	1	16	6.2	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	121888	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	120676	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	120675	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	120674	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	121461	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	122813	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	121462	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	121887	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	121888	1	15	6.6	5.0	✓
Fluoride in Water by IC	E235.F	120676	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	120675	1	18	5.5	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	120674	1	18	5.5	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	121461	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	122813	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	121462	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	121887	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

ALS Environmental

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Report To	Contact and company name below will appear on the final report
Company:	City of Abbotsford
Contact:	Amy Peters
Phone:	604-864-5514
	Company address below will appear on the final report
Street:	32315 South Fraser Way
City/Province:	Abbotsford, BC
Postal Code:	V2T 1W7
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

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

Quality Control (QC) Report with Report ☐ YES ☐ NO

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax apeters@abbotsford.ca

Email 2 asmith@env.enkon.com

Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX

Email 1 or Fax apeters@abbotsford.ca

Email 2

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	1220-2017-2056
Job #:	Bevan #1 Creek Water Quality
PO / AFE:	176044
LSD:	
ALS Lab Work Order # (lab use only)	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	
ALS Contact: Heather McKenzie	Sampler: K. Piper

Analysis Request

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

Environmental Division Vancouver
Work Order Reference
VA20C1390

Telephone : +1 604 253 4188

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals & Mercury REG ALL (P)	Fluoride	pH (P)	Ammonia, N02, N03 (P)	Total Phosphorus (P)								
	D-01	20-Nov-20	10:09	Water	X	X	X	X	X								
	D-02	20-Nov-20	09:55	Water	X	X	X	X	X								4
	H-01	20-Nov-20	13:51	Water	X	X	X	X	X								4
	H-03	20-Nov-20	13:38	Water	X	X	X	X	X								4
	H-02	20-Nov-20	12:05	Water	X	X	X	X	X								4
	~~B-02~~ Dup	20-Nov-20	12:05	Water	X	X	X	X	X								4
	B-02	20-Nov-20	12:27	Water	X	X	X	X	X								4
	B-01	20-Nov-20	11:15	Water	X	X	X	X	X								4
	W-01	20-Nov-20	10:49	Water	X	X	X	X	X								4
	F-01	20-Nov-20	15:55	Water	X	X	X	X	X								4
	F-02	20-Nov-20	14:30	Water	X	X	X	X	X								4
	FOF	20-Nov-20	15:30	Water	X	X	X	X	X								4
				Water	X	X	X	X	X								4

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

VA20-GMAB100-004

WaterTrax upload is required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
					7

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Katie Piper	Date: 20-Nov-20	Time: 17:50	Received by:	Date:	Time:	Received by: HA	Date: 11/20	Time: 8:55AM

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 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.

ALS Environmental

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Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Report To	Contact and company name below will appear on the final report
Company:	City of Abbotsford
Contact:	Amy Peters
Phone:	604-864-5514
	Company address below will appear on the final report
Street:	32315 South Fraser Way
City/Province:	Abbotsford, BC
Postal Code:	V2T 1W7
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

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

Quality Control (QC) Report with Report ☐ YES ☐ NO

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax apeters@abbotsford.ca

Email 2 asmith@env.enkon.com

Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX

Email 1 or Fax apeters@abbotsford.ca

Email 2

Project Information

ALS Account # / Quote #: 1220-2017-2056

Job #: Bevan #1 Creek Water Quality

PO / AFE: 176044

LSD:

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (lab use only)

ALS Contact: Sampler:

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☐ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	MET-T-REG-ALL	Fluoride	pH	Ammonia, N02, N03	Total Phosphorus	Number of Containers
	Field Blank	20-Nov-20	16:12	Water	X	X	X	X	X	4
	Travel Blank.	20-Nov-20	–	Water	X	X	X	X	X	4

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

VA20-GMAB100-004

WaterTrax upload is required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☐ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
					7

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Katie Piper	Date: 20-Nov-20	Time: 17:50	Received by:	Date:	Time:	Received by: HA	Date: 11/20	Time: 5:55p

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 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.

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **VA20C3642**	Page	: 1 of 8
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 17-Dec-2020 15:55
PO	: 176044	Date Analysis Commenced	: 19-Dec-2020
C-O-C number	: ----	Issue Date	: 31-Dec-2020 15:23
Sampler	: N. Lamarche		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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

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
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, 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*
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.

Analytical results in reports identified as "Preliminary Report" are considered authorized for use.

Qualifiers

Qualifier	*Description*
RRV	*Reported result verified by repeat analysis.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	B-01	B-02	H-01	H-02	H-03
				Client sampling date / time	17-Dec-2020 11:26	17-Dec-2020 10:54	17-Dec-2020 12:15	17-Dec-2020 10:38	17-Dec-2020 11:57
Analyte	CAS Number	Method	LOR	Unit	VA20C3642-001	VA20C3642-002	VA20C3642-003	VA20C3642-004	VA20C3642-005
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	21.3	53.1	85.0	63.4	42.0
pH	----	E108	0.10	pH units	7.09	7.58	7.14	7.61	7.39
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0847	0.0496	0.0375	0.0253	0.0268
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	0.021	0.026	0.022	<0.020
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.521	0.932	1.47	0.877	0.807
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0077	0.0058	0.0026	0.0038	0.0054
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0355	0.0559	0.0238	0.0179	0.0214
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.131	1.29	0.0256	0.252	0.159
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00018	0.00017	<0.00010	0.00014	0.00018
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00051	0.00117	0.00046	0.00086	0.00044
barium, total	7440-39-3	E420	0.00010	mg/L	0.0124	0.0197	0.00954	0.0123	0.00999
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	0.0000191	0.0000268	0.0000204	0.0000155	0.0000192
calcium, total	7440-70-2	E420	0.050	mg/L	6.50	14.7	24.0	18.9	12.8
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	0.000051	<0.000010	0.000010	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00094	0.00271	0.00024	0.00068	0.00043
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00027	0.00079	<0.00010	0.00020	0.00010
copper, total	7440-50-8	E420	0.00050	mg/L	0.00264	0.00348	0.00139	0.00216	0.00299
iron, total	7439-89-6	E420	0.010	mg/L	0.504	1.71	0.042	0.354	0.146
lead, total	7439-92-1	E420	0.000050	mg/L	0.000918	0.00112	0.000105	0.000179	0.000150
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	0.0011	<0.0010	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	1.24	3.98	6.10	3.94	2.43
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0654	0.108	0.00282	0.0318	0.0126
mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000051	0.0000061	<0.0000050	<0.0000050	0.0000071
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000233	0.000315	0.000256	0.00243	0.00651
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00086	0.00282	<0.00050	0.00098	0.00056

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	B-01	B-02	H-01	H-02	H-03
				Client sampling date / time	17-Dec-2020 11:26	17-Dec-2020 10:54	17-Dec-2020 12:15	17-Dec-2020 10:38	17-Dec-2020 11:57
Analyte	CAS Number	Method	LOR	Unit	VA20C3642-001	VA20C3642-002	VA20C3642-003	VA20C3642-004	VA20C3642-005
					Result	Result	Result	Result	Result
Total Metals									
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	0.058	<0.050	<0.050	<0.050
potassium, total	7440-09-7	E420	0.050	mg/L	0.598	1.08	1.26	1.18	1.22
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00043	0.00112	<0.00020	0.00056	0.00043
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	0.000090	0.000176	0.000118	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L	2.51	7.08	7.62	5.09	3.15
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	7.46	6.12	15.2	6.61	7.91
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0538	0.0786	0.125	0.0729	0.0541
sulfur, total	7704-34-9	E420	0.50	mg/L	0.85	2.45	4.32	3.95	3.07
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	0.00416	0.0603	0.00079	0.0105	0.00585
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	<0.000010	0.000052	<0.000010	0.000037	0.000014
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00101	0.00408	<0.00050	0.00121	0.00066
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0268	0.0113	0.0066	0.0100	0.0232
zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00021	0.00056	<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	W-01	D-01	D-02	F-01	F-02
				Client sampling date / time	17-Dec-2020 12:54	17-Dec-2020 08:12	17-Dec-2020 10:07	17-Dec-2020 13:29	17-Dec-2020 13:53
Analyte	CAS Number	Method	LOR	Unit	VA20C3642-006	VA20C3642-007	VA20C3642-008	VA20C3642-009	VA20C3642-010
					Result	Result	Result	Result	Result
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	22.2	44.3	83.5	65.2	31.3
pH	----	E108	0.10	pH units	7.19	7.66	7.74	7.77	7.50
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.168	0.0256	0.0332	0.0341	0.0088
fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	0.025	0.023	0.029	0.035
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.281	0.780	0.648	1.08	0.554
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0058	0.0037	0.0042	0.0060	0.0019
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0257	0.0347	0.0262	0.0321	0.0202
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0853	0.458	0.216	0.444	0.236
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00018	<0.00010	<0.00010	0.00013	0.00016
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00076	0.00090	0.00152	0.00217	0.00038
barium, total	7440-39-3	E420	0.00010	mg/L	0.0120	0.0163	0.0126	0.0173	0.0122
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	0.014	<0.010	<0.010
cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000082	0.0000142	0.0000079	0.0000119	0.0000070
calcium, total	7440-70-2	E420	0.050	mg/L	6.31	12.3	22.0	18.5	8.94
cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	0.000016	<0.000010	0.000015	<0.000010
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00048	0.00110	0.00082	0.00140	0.00054
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00013	0.00028	0.00022	0.00026	0.00013
copper, total	7440-50-8	E420	0.00050	mg/L	0.00124	0.00235	0.00079	0.00310	0.00181
iron, total	7439-89-6	E420	0.010	mg/L	0.836	0.750	0.801	0.667	0.427
lead, total	7439-92-1	E420	0.000050	mg/L	0.000470	0.000254	0.000138	0.000161	0.000190
lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0.0012	<0.0010	<0.0010
magnesium, total	7439-95-4	E420	0.0050	mg/L	1.56	3.30	6.94	4.61	2.18
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0522	0.0579	0.154	0.0790	0.0183
mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000070	<0.0000050
molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000196	0.000305	0.000304	0.000453	0.000341
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00054	0.00116	0.00100	0.00130	0.00060
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

				Client sample ID	W-01	D-01	D-02	F-01	F-02
				Client sampling date / time	17-Dec-2020 12:54	17-Dec-2020 08:12	17-Dec-2020 10:07	17-Dec-2020 13:29	17-Dec-2020 13:53
Analyte	CAS Number	Method	LOR	Unit	VA20C3642-006	VA20C3642-007	VA20C3642-008	VA20C3642-009	VA20C3642-010
					Result	Result	Result	Result	Result
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	0.687	1.56	1.27	1.54	1.08
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00054	0.00103	0.00054	0.00074	0.00075
selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	0.000082	0.000211	0.000087	<0.000050
silicon, total	7440-21-3	E420	0.10	mg/L	2.16	4.45	8.42	4.54	2.65
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
sodium, total	17341-25-2	E420	0.050	mg/L	15.6	6.98	6.19	7.78	5.52
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0409	0.0725	0.111	0.0982	0.0536
sulfur, total	7704-34-9	E420	0.50	mg/L	0.69	3.07	3.33	4.50	1.94
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	0.00321	0.0184	0.00986	0.0162	0.00847
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	0.000010	0.000031	0.000040	0.000048	0.000010
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00061	0.00139	0.00107	0.00138	0.00073
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0082	0.0055	0.0060	0.0069	0.0055
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	0.00022	<0.00020	0.00025	<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	FOF	Duplicate (B-01)	Travel Blank	Field Blank	----
				Client sampling date / time	17-Dec-2020 14:28	17-Dec-2020 11:26	17-Dec-2020	17-Dec-2020 14:50	----
Analyte	CAS Number	Method	LOR	Unit	VA20C3642-011	VA20C3642-012	VA20C3642-013	VA20C3642-014	--------
					Result	Result	Result	Result	----
Physical Tests									
hardness (as CaCO3), from total Ca/Mg	----	EC100A	0.60	mg/L	45.3	21.5	<0.60	<0.60	----
pH	----	E108	0.10	pH units	7.57	7.15	5.32	5.31	----
Anions and Nutrients									
ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0390	0.0828	<0.0050	<0.0050	----
fluoride	16984-48-8	E235.F	0.020	mg/L	0.025	<0.020	<0.020	<0.020	----
nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.730	0.516	<0.0050	<0.0050	----
nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0067	0.0073	<0.0010	<0.0010	----
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0264	0.0358	<0.0020	<0.0020	----
Total Metals									
aluminum, total	7429-90-5	E420	0.0030	mg/L	0.362	0.125	<0.0030	<0.0030	----
antimony, total	7440-36-0	E420	0.00010	mg/L	0.00015	0.00018	<0.00010	<0.00010	----
arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00150	0.00050	<0.00010	<0.00010	----
barium, total	7440-39-3	E420	0.00010	mg/L	0.0145	0.0125	<0.00010	<0.00010	----
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	0.0000144	0.0000237	<0.0000050	<0.0000050	----
calcium, total	7440-70-2	E420	0.050	mg/L	13.1	6.60	<0.050	<0.050	----
cesium, total	7440-46-2	E420	0.000010	mg/L	0.000013	<0.000010	<0.000010	<0.000010	----
chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00106	0.00096	<0.00010	<0.00010	----
cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00021	0.00025	<0.00010	<0.00010	----
copper, total	7440-50-8	E420	0.00050	mg/L	0.00297	0.00261	<0.00050	<0.00050	----
iron, total	7439-89-6	E420	0.010	mg/L	0.542	0.495	<0.010	<0.010	----
lead, total	7439-92-1	E420	0.000050	mg/L	0.000276	0.000912	<0.000050	<0.000050	----
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	3.05	1.22	<0.0050	<0.0050	----
manganese, total	7439-96-5	E420	0.00010	mg/L	0.0445	0.0643	<0.00010	<0.00010	----
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	0.000349	0.000222	<0.000050	0.000246 RRV	----
nickel, total	7440-02-0	E420	0.00050	mg/L	0.00093	0.00087	<0.00050	<0.00050	----
phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	<0.050	<0.050	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	FOF	Duplicate (B-01)	Travel Blank	Field Blank	----
				Client sampling date / time	17-Dec-2020 14:28	17-Dec-2020 11:26	17-Dec-2020	17-Dec-2020 14:50	----
Analyte	CAS Number	Method	LOR	Unit	VA20C3642-011	VA20C3642-012	VA20C3642-013	VA20C3642-014	--------
					Result	Result	Result	Result	----
Total Metals									
potassium, total	7440-09-7	E420	0.050	mg/L	1.19	0.596	<0.050	<0.050	----
rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00066	0.00040	<0.00020	<0.00020	----
selenium, total	7782-49-2	E420	0.000050	mg/L	0.000058	<0.000050	<0.000050	<0.000050	----
silicon, total	7440-21-3	E420	0.10	mg/L	3.04	2.54	<0.10	<0.10	----
silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	----
sodium, total	17341-25-2	E420	0.050	mg/L	6.19	7.42	<0.050	<0.050	----
strontium, total	7440-24-6	E420	0.00020	mg/L	0.0675	0.0530	<0.00020	<0.00020	----
sulfur, total	7704-34-9	E420	0.50	mg/L	2.96	0.81	<0.50	<0.50	----
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	0.00012	<0.00010	<0.00010	<0.00010	----
titanium, total	7440-32-6	E420	0.00030	mg/L	0.0128	0.00410	<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	0.000025	<0.000010	<0.000010	<0.000010	----
vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00113	0.00099	<0.00050	<0.00050	----
zinc, total	7440-66-6	E420	0.0030	mg/L	0.0091	0.0263	<0.0030	<0.0030	----
zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	0.00020	<0.00020	<0.00020	----

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

QUALITY CONTROL REPORT

Work Order	: **VA20C3642**	Page	: 1 of 14
Client	: City of Abbotsford	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 17-Dec-2020 15:55
PO	: 176044	Date Analysis Commenced	: 19-Dec-2020
C-O-C number	: ----	Issue Date	: 31-Dec-2020 15:23
Sampler	: N. Lamarche		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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 Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

Signatories

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

Signatories	*Position*	*Laboratory Department*
Angela Ren	Team Leader - Metals	Metals, Burnaby, British Columbia
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Cristina Alexandre	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Dee Lee	Analyst	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	Inorganics, 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.

Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 133228)											
VA20C3642-001	B-01	pH	----	E108	0.10	pH units	7.09	7.06	0.381%	4%	----
Anions and Nutrients (QC Lot: 133226)											
VA20C3642-001	B-01	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.521	0.518	0.611%	20%	----
Anions and Nutrients (QC Lot: 133227)											
VA20C3642-001	B-01	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0077	0.0075	0.0002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 135195)											
VA20C3642-001	B-01	phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0355	0.0327	8.24%	20%	----
Anions and Nutrients (QC Lot: 135196)											
VA20C3642-001	B-01	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0847	0.0840	0.842%	20%	----
Anions and Nutrients (QC Lot: 136392)											
VA20C3642-001	B-01	fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Total Metals (QC Lot: 133192)											
VA20C3642-001	B-01	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00094	0.00096	0.00002	Diff <2x LOR	----
Total Metals (QC Lot: 133193)											
VA20C3642-001	B-01	nickel, total	7440-02-0	E420	0.00050	mg/L	0.00086	0.00088	0.00002	Diff <2x LOR	----
VA20C3642-001	B-01	aluminum, total	7429-90-5	E420	0.0030	mg/L	0.131	0.136	3.56%	20%	----
		antimony, total	7440-36-0	E420	0.00010	mg/L	0.00018	0.00018	0.000002	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00051	0.00053	0.00002	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00010	mg/L	0.0124	0.0124	0.702%	20%	----
		beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	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	<0.010	<0.010	0	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000191	0.0000179	0.0000012	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	0.050	mg/L	6.50	6.53	0.442%	20%	----
		cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00027	0.00027	0.000002	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.00050	mg/L	0.00264	0.00264	0.00000002	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.010	mg/L	0.504	0.500	0.719%	20%	----
		lead, total	7439-92-1	E420	0.000050	mg/L	0.000918	0.000922	0.468%	20%	----
		lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.0050	mg/L	1.24	1.24	0.562%	20%	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Laboratory Duplicate (DUP) Report						
					LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 133193) - continued											
VA20C3642-001	B-01	manganese, total	7439-96-5	E420	0.00010	mg/L	0.0654	0.0652	0.232%	20%	----
		molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000233	0.000219	0.000014	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	0.598	0.600	0.324%	20%	----
		rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00043	0.00042	0.000008	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	0.10	mg/L	2.51	2.50	0.614%	20%	----
		silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	0.050	mg/L	7.46	7.42	0.486%	20%	----
		strontium, total	7440-24-6	E420	0.00020	mg/L	0.0538	0.0546	1.38%	20%	----
		sulfur, total	7704-34-9	E420	0.50	mg/L	0.85	0.84	0.01	Diff <2x LOR	----
		tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	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	0.00416	0.00430	3.53%	20%	----
		tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00101	0.00101	0.000005	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0030	mg/L	0.0268	0.0267	0.0001	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00021	0.00021	0.000005	Diff <2x LOR	----
Total Metals (QC Lot: 133204)											
VA20C3571-001	Anonymous	aluminum, total	7429-90-5	E420	0.0600	mg/L	<0.0600	<0.0600	0	Diff <2x LOR	----
		antimony, total	7440-36-0	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		arsenic, total	7440-38-2	E420	0.00200	mg/L	0.00433	0.00455	0.00022	Diff <2x LOR	----
		barium, total	7440-39-3	E420	0.00200	mg/L	0.0120	0.0118	0.00028	Diff <2x LOR	----
		beryllium, total	7440-41-7	E420	0.000400	mg/L	<0.000400	<0.000400	0	Diff <2x LOR	----
		bismuth, total	7440-69-9	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		boron, total	7440-42-8	E420	0.200	mg/L	0.901	0.881	0.020	Diff <2x LOR	----
		cadmium, total	7440-43-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		calcium, total	7440-70-2	E420	1.00	mg/L	168	169	0.591%	20%	----
		cesium, total	7440-46-2	E420	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		cobalt, total	7440-48-4	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		copper, total	7440-50-8	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		iron, total	7439-89-6	E420	0.200	mg/L	<0.200	<0.200	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: 133204) - continued											
VA20C3571-001	Anonymous	lead, total	7439-92-1	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		lithium, total	7439-93-2	E420	0.0200	mg/L	0.0300	0.0286	0.0013	Diff <2x LOR	----
		magnesium, total	7439-95-4	E420	0.100	mg/L	1790	1780	0.450%	20%	----
		manganese, total	7439-96-5	E420	0.00200	mg/L	0.0166	0.0164	0.00026	Diff <2x LOR	----
		molybdenum, total	7439-98-7	E420	0.00100	mg/L	0.00422	0.00452	0.000297	Diff <2x LOR	----
		nickel, total	7440-02-0	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		phosphorus, total	7723-14-0	E420	1.00	mg/L	<1.00	<1.00	0	Diff <2x LOR	----
		potassium, total	7440-09-7	E420	1.00	mg/L	105	106	1.76%	20%	----
		rubidium, total	7440-17-7	E420	0.00400	mg/L	0.00782	0.00624	0.00158	Diff <2x LOR	----
		selenium, total	7782-49-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		silicon, total	7440-21-3	E420	2.00	mg/L	<2.00	<2.00	0	Diff <2x LOR	----
		silver, total	7440-22-4	E420	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		sodium, total	17341-25-2	E420	1.00	mg/L	4420	4490	1.70%	20%	----
		strontium, total	7440-24-6	E420	0.00400	mg/L	4.89	4.92	0.628%	20%	----
		sulfur, total	7704-34-9	E420	10.0	mg/L	5770	5840	1.16%	20%	----
		tellurium, total	13494-80-9	E420	0.00400	mg/L	<0.00400	<0.00400	0	Diff <2x LOR	----
		thallium, total	7440-28-0	E420	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		thorium, total	7440-29-1	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		tin, total	7440-31-5	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		titanium, total	7440-32-6	E420	0.00600	mg/L	<0.00600	<0.00600	0	Diff <2x LOR	----
		tungsten, total	7440-33-7	E420	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		uranium, total	7440-61-1	E420	0.000200	mg/L	0.00499	0.00506	1.35%	20%	----
		vanadium, total	7440-62-2	E420	0.0100	mg/L	<0.0100	<0.0100	0	Diff <2x LOR	----
		zinc, total	7440-66-6	E420	0.0600	mg/L	<0.0600	<0.0600	0	Diff <2x LOR	----
		zirconium, total	7440-67-7	E420	0.00400	mg/L	<0.00400	<0.00400	0	Diff <2x LOR	----
Total Metals (QC Lot: 133206)											
VA20C3705-001	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.00010	mg/L	0.00434	0.00444	2.34%	20%	----
Total Metals (QC Lot: 134855)											
FJ2000130-001	Anonymous	mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Total Metals (QC Lot: 134856)											
VA20C3642-002	B-02	mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000061	0.0000065	0.0000005	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
Anions and Nutrients (QCLot: 133226)						
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 133227)						
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 135195)						
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 135196)						
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 136392)						
fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Total Metals (QCLot: 133192)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 133193)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 133193) - continued						
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	17341-25-2	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	----
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: 133204)						
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	----
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 133204) - continued						
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	17341-25-2	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	----
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: 133206)						
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	<0.00010	----
Total Metals (QCLot: 134855)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 134856)						
mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----

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
Physical Tests (QCLot: 133228)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 133226)									
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 133227)									
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.8	90.0	110	----
Anions and Nutrients (QCLot: 135195)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	94.2	80.0	120	----
Anions and Nutrients (QCLot: 135196)									
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.12 mg/L	97.4	85.0	115	----
Anions and Nutrients (QCLot: 136392)									
fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	99.4	90.0	110	----
Total Metals (QCLot: 133192)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
Total Metals (QCLot: 133193)									
aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	104	80.0	120	----
antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.4	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	97.2	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	104	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	97.2	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.9	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	98.2	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	89.9	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.8	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	96.5	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.2	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.2	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	97.9	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----

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: 133193) - continued									
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	97.6	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	94.1	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	97.3	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	95.3	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.9	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	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	105	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	104	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	94.1	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	93.4	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	95.1	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	94.8	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.2	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	99.7	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.0	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.4	80.0	120	----
Total Metals (QCLot: 133204)									
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	104	80.0	120	----
arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	97.6	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	101	80.0	120	----
bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	107	80.0	120	----
boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	101	80.0	120	----
cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	97.2	80.0	120	----
calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.9	80.0	120	----
cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	94.6	80.0	120	----
cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.3	80.0	120	----
copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.5	80.0	120	----
iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	94.6	80.0	120	----
lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	98.7	80.0	120	----
magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	99.2	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike Concentration	Recovery (%) LCS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 133204) - continued									
manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	99.7	80.0	120	----
molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	97.4	80.0	120	----
phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	101	80.0	120	----
potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	93.6	80.0	120	----
rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	96.4	80.0	120	----
silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	103	80.0	120	----
silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.1	80.0	120	----
sodium, total	17341-25-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	89.8	80.0	120	----
tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	107	80.0	120	----
thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.4	80.0	120	----
tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	93.1	80.0	120	----
titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.3	80.0	120	----
tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	96.9	80.0	120	----
uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	98.3	80.0	120	----
zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	96.7	80.0	120	----
zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	93.2	80.0	120	----
Total Metals (QCLot: 133206)									
chromium, total	7440-47-3	E420.Cr-L	0.0001	mg/L	0.25 mg/L	96.4	80.0	120	----
Total Metals (QCLot: 134855)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	94.8	80.0	120	----
Total Metals (QCLot: 134856)									
mercury, total	7439-97-6	E508	0.000005	mg/L	0.0001 mg/L	97.8	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	Qualifier
Anions and Nutrients (QCLot: 133226)										
VA20C3642-002	B-02	nitrate (as N)	14797-55-8	E235.NO3-L	2.44 mg/L	2.5 mg/L	97.7	75.0	125	----
Anions and Nutrients (QCLot: 133227)										
VA20C3642-002	B-02	nitrite (as N)	14797-65-0	E235.NO2-L	0.479 mg/L	0.5 mg/L	95.8	75.0	125	----
Anions and Nutrients (QCLot: 135195)										
VA20C3642-002	B-02	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 135196)										
VA20C3642-002	B-02	ammonia, total (as N)	7664-41-7	E298	0.199 mg/L	0.2 mg/L	99.4	75.0	125	----
Anions and Nutrients (QCLot: 136392)										
VA20C3642-002	B-02	fluoride	16984-48-8	E235.F	0.990 mg/L	1 mg/L	99.0	75.0	125	----
Total Metals (QCLot: 133192)										
VA20C3642-001	B-01	chromium, total	7440-47-3	E420.Cr-L	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
Total Metals (QCLot: 133193)										
VA20C3642-001	B-01	nickel, total	7440-02-0	E420	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
VA20C3642-001	B-01	aluminum, total	7429-90-5	E420	0.198 mg/L	0.2 mg/L	98.8	70.0	130	----
		antimony, total	7440-36-0	E420	0.0183 mg/L	0.02 mg/L	91.5	70.0	130	----
		arsenic, total	7440-38-2	E420	0.0190 mg/L	0.02 mg/L	94.9	70.0	130	----
		barium, total	7440-39-3	E420	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		beryllium, total	7440-41-7	E420	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		bismuth, total	7440-69-9	E420	0.00934 mg/L	0.01 mg/L	93.4	70.0	130	----
		boron, total	7440-42-8	E420	0.106 mg/L	0.1 mg/L	106	70.0	130	----
		cadmium, total	7440-43-9	E420	0.00442 mg/L	0.004 mg/L	111	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	0.00899 mg/L	0.01 mg/L	89.9	70.0	130	----
		cobalt, total	7440-48-4	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		copper, total	7440-50-8	E420	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		iron, total	7439-89-6	E420	1.90 mg/L	2 mg/L	94.9	70.0	130	----
		lead, total	7439-92-1	E420	0.0192 mg/L	0.02 mg/L	95.8	70.0	130	----
		lithium, total	7439-93-2	E420	0.0976 mg/L	0.1 mg/L	97.6	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	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 133193) - continued										
VA20C3642-001	B-01	molybdenum, total	7439-98-7	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		phosphorus, total	7723-14-0	E420	9.14 mg/L	10 mg/L	91.4	70.0	130	----
		potassium, total	7440-09-7	E420	3.86 mg/L	4 mg/L	96.4	70.0	130	----
		rubidium, total	7440-17-7	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		selenium, total	7782-49-2	E420	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		silicon, total	7440-21-3	E420	9.16 mg/L	10 mg/L	91.6	70.0	130	----
		silver, total	7440-22-4	E420	0.00373 mg/L	0.004 mg/L	93.2	70.0	130	----
		sodium, total	17341-25-2	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	20.5 mg/L	20 mg/L	102	70.0	130	----
		tellurium, total	13494-80-9	E420	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		thallium, total	7440-28-0	E420	0.00358 mg/L	0.004 mg/L	89.4	70.0	130	----
		thorium, total	7440-29-1	E420	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		tin, total	7440-31-5	E420	0.0184 mg/L	0.02 mg/L	92.1	70.0	130	----
		titanium, total	7440-32-6	E420	0.0368 mg/L	0.04 mg/L	92.0	70.0	130	----
		tungsten, total	7440-33-7	E420	0.0182 mg/L	0.02 mg/L	91.3	70.0	130	----
		uranium, total	7440-61-1	E420	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		vanadium, total	7440-62-2	E420	0.0973 mg/L	0.1 mg/L	97.3	70.0	130	----
		zinc, total	7440-66-6	E420	0.398 mg/L	0.4 mg/L	99.5	70.0	130	----
		zirconium, total	7440-67-7	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
Total Metals (QCLot: 133204)										
VA20C3571-002	Anonymous	aluminum, total	7429-90-5	E420	1.97 mg/L	2 mg/L	98.3	70.0	130	----
		antimony, total	7440-36-0	E420	0.194 mg/L	0.2 mg/L	96.9	70.0	130	----
		arsenic, total	7440-38-2	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		barium, total	7440-39-3	E420	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		beryllium, total	7440-41-7	E420	0.393 mg/L	0.4 mg/L	98.2	70.0	130	----
		bismuth, total	7440-69-9	E420	0.0887 mg/L	0.1 mg/L	88.7	70.0	130	----
		boron, total	7440-42-8	E420	ND mg/L	1 mg/L	ND	70.0	130	----
		cadmium, total	7440-43-9	E420	0.0393 mg/L	0.04 mg/L	98.2	70.0	130	----
		calcium, total	7440-70-2	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		cesium, total	7440-46-2	E420	0.0984 mg/L	0.1 mg/L	98.4	70.0	130	----
		cobalt, total	7440-48-4	E420	0.194 mg/L	0.2 mg/L	96.8	70.0	130	----
		copper, total	7440-50-8	E420	0.184 mg/L	0.2 mg/L	92.0	70.0	130	----
		iron, total	7439-89-6	E420	19.5 mg/L	20 mg/L	97.4	70.0	130	----
		lead, total	7439-92-1	E420	0.178 mg/L	0.2 mg/L	89.1	70.0	130	----
		lithium, total	7439-93-2	E420	0.952 mg/L	1 mg/L	95.2	70.0	130	----

Sub-Matrix: **Water**

Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Matrix Spike (MS) Report: Spike Concentration	Spike Target	Recovery (%) MS	Recovery Limits (%) Low	Recovery Limits (%) High	Qualifier
Total Metals (QCLot: 133204) - continued										
VA20C3571-002	Anonymous	magnesium, total	7439-95-4	E420	ND mg/L	10 mg/L	ND	70.0	130	----
		manganese, total	7439-96-5	E420	0.195 mg/L	0.2 mg/L	97.4	70.0	130	----
		molybdenum, total	7439-98-7	E420	0.213 mg/L	0.2 mg/L	106	70.0	130	----
		nickel, total	7440-02-0	E420	0.374 mg/L	0.4 mg/L	93.5	70.0	130	----
		phosphorus, total	7723-14-0	E420	108 mg/L	100 mg/L	108	70.0	130	----
		potassium, total	7440-09-7	E420	ND mg/L	40 mg/L	ND	70.0	130	----
		rubidium, total	7440-17-7	E420	0.196 mg/L	0.2 mg/L	97.8	70.0	130	----
		selenium, total	7782-49-2	E420	0.425 mg/L	0.4 mg/L	106	70.0	130	----
		silicon, total	7440-21-3	E420	98.4 mg/L	100 mg/L	98.4	70.0	130	----
		silver, total	7440-22-4	E420	0.0368 mg/L	0.04 mg/L	92.1	70.0	130	----
		sodium, total	17341-25-2	E420	ND mg/L	20 mg/L	ND	70.0	130	----
		strontium, total	7440-24-6	E420	ND mg/L	0.2 mg/L	ND	70.0	130	----
		sulfur, total	7704-34-9	E420	ND mg/L	200 mg/L	ND	70.0	130	----
		tellurium, total	13494-80-9	E420	0.422 mg/L	0.4 mg/L	105	70.0	130	----
		thallium, total	7440-28-0	E420	0.0356 mg/L	0.04 mg/L	88.9	70.0	130	----
		thorium, total	7440-29-1	E420	0.226 mg/L	0.2 mg/L	113	70.0	130	----
		tin, total	7440-31-5	E420	0.192 mg/L	0.2 mg/L	95.9	70.0	130	----
		titanium, total	7440-32-6	E420	0.425 mg/L	0.4 mg/L	106	70.0	130	----
		tungsten, total	7440-33-7	E420	0.189 mg/L	0.2 mg/L	94.4	70.0	130	----
		uranium, total	7440-61-1	E420	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		vanadium, total	7440-62-2	E420	1.01 mg/L	1 mg/L	101	70.0	130	----
		zinc, total	7440-66-6	E420	3.90 mg/L	4 mg/L	97.5	70.0	130	----
		zirconium, total	7440-67-7	E420	0.442 mg/L	0.4 mg/L	110	70.0	130	----
Total Metals (QCLot: 133206)										
VA20C3705-002	Anonymous	chromium, total	7440-47-3	E420.Cr-L	0.0377 mg/L	0.04 mg/L	94.3	70.0	130	----
Total Metals (QCLot: 134855)										
FJ2000132-001	Anonymous	mercury, total	7439-97-6	E508	0.0000998 mg/L	0.0001 mg/L	99.8	70.0	130	----
Total Metals (QCLot: 134856)										
VA20C3642-003	H-01	mercury, total	7439-97-6	E508	0.0000982 mg/L	0.0001 mg/L	98.2	70.0	130	----

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA20C3642**	Page	: 1 of 20
Client	: **City of Abbotsford**	Laboratory	: Vancouver - Environmental
Contact	: Amy Peters	Account Manager	: Heather McKenzie
Address	: 31739 King Road Abbotsford BC Canada V2T 1W7	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: 604 853 5485	Telephone	: +1 604 253 4188
Project	: Bevan #1 Creek Water Quality	Date Samples Received	: 17-Dec-2020 15:55
PO	: 176044	Issue Date	: 31-Dec-2020 15:23
C-O-C number	: ----		
Sampler	: N. Lamarche		
Site	: ----		
Quote number	: VA20-GMAB100-004		
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 Services number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

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)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) B-01	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) B-02	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) D-01	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) D-02	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) Duplicate (B-01)	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F-01	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) F-02	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Field Blank	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
FOF	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H-01	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H-02	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
H-03	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Travel Blank	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
W-01	E298	17-Dec-2020	----	----	----		30-Dec-2020	28 days	12 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B-01	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
B-02	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D-02	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Duplicate (B-01)	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F-01	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
F-02	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Field Blank	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
FOF	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H-01	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H-02	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
H-03	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Travel Blank	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
W-01	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	1 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
D-01	E235.F	17-Dec-2020	----	----	----		19-Dec-2020	28 days	2 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B-01	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
B-02	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D-02	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Duplicate (B-01)	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F-01	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
F-02	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Field Blank	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
FOF	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
H-01	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
H-02	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
H-03	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
W-01	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
D-01	E235.NO3-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	2 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
B-01	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE B-02	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE D-02	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Duplicate (B-01)	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F-01	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE F-02	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE Field Blank	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE FOF	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H-01	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE H-02	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
H-03	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Travel Blank	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
W-01	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	1 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
D-01	E235.NO2-L	17-Dec-2020	----	----	----		19-Dec-2020	3 days	2 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
B-01	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
B-02	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
D-01	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
D-02	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
Duplicate (B-01)	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F-01	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) F-02	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Field Blank	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) FOF	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H-01	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H-02	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) H-03	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) Travel Blank	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid) W-01	E372-U	17-Dec-2020	23-Dec-2020	28 days	6 days	✓	27-Dec-2020	21 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Physical Tests : pH by Meter										
HDPE Travel Blank	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	43 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Field Blank	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	44 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE FOF	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	44 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE F-01	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	45 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE F-02	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	45 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE H-01	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	46 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE W-01	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	46 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE B-01	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	47 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Duplicate (B-01)	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	47 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : pH by Meter										
HDPE H-03	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	47 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE B-02	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	48 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D-02	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	48 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE H-02	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	48 hrs	✗ EHTR-FM
Physical Tests : pH by Meter										
HDPE D-01	E108	17-Dec-2020	----	----	----		19-Dec-2020	0.25 hrs	50 hrs	✗ EHTR-FM
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F-01	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) F-02	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Field Blank	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) FOF	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times: Rec	Holding Times: Actual	Eval	Analysis: Analysis Date	Holding Times: Rec	Holding Times: Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H-01	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) H-03	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Travel Blank	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) W-01	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B-01	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) B-02	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D-01	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) D-02	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid) Duplicate (B-01)	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Chromium in Water by CRC ICPMS (Low Level)										
HDPE total (nitric acid)										
H-02	E420.Cr-L	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B-01	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
B-02	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Duplicate (B-01)	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F-01	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
F-02	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
Field Blank	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
FOF	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid)										
H-01	E508	17-Dec-2020	----	----	----		23-Dec-2020	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: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) H-02	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) H-03	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) Travel Blank	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) W-01	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	5 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) D-01	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	6 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) D-02	E508	17-Dec-2020	----	----	----		23-Dec-2020	28 days	6 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F-01	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) F-02	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Field Blank	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation: Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis: Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) FOF	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H-01	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) H-03	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) Travel Blank	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) W-01	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	3 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) B-01	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) B-02	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) D-01	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid) D-02	E420	17-Dec-2020	----	----	----		21-Dec-2020	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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
Duplicate (B-01)	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE total (nitric acid)										
H-02	E420	17-Dec-2020	----	----	----		21-Dec-2020	180 days	4 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

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

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Ammonia by Fluorescence	E298	135196	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	136392	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	133226	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	133227	1	14	7.1	5.0	✓
pH by Meter	E108	133228	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	133192	2	23	8.7	5.0	✓
Total Mercury in Water by CVAAS	E508	134856	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	133204	3	40	7.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	135195	1	14	7.1	5.0	✓
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	135196	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	136392	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	133226	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	133227	1	14	7.1	5.0	✓
pH by Meter	E108	133228	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	133192	2	23	8.7	5.0	✓
Total Mercury in Water by CVAAS	E508	134856	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	133204	2	40	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	135195	1	14	7.1	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	135196	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	136392	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	133226	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	133227	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	133192	2	23	8.7	5.0	✓
Total Mercury in Water by CVAAS	E508	134856	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	133204	3	40	7.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	135195	1	14	7.1	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	135196	1	14	7.1	5.0	✓
Fluoride in Water by IC	E235.F	136392	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	133226	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	133227	1	14	7.1	5.0	✓
Total Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L	133192	2	23	8.7	5.0	✓
Total Mercury in Water by CVAAS	E508	134856	2	40	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	133204	3	40	7.5	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	135195	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
pH by Meter	E108 Vancouver - Environmental	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Fluoride in Water by IC	E235.F Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L Vancouver - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Vancouver - Environmental	Water	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U Vancouver - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
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 Chromium in Water by CRC ICPMS (Low Level)	E420.Cr-L Vancouver - Environmental	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS.
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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Hardness (Calculated) from Total Ca/Mg	EC100A Vancouver - Environmental	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in CaCO3 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
Digestion for Total Phosphorus in water	EP372 Vancouver - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Report To	Contact and company name below will appear on the final report
Company:	City of Abbotsford
Contact:	Amy Peters
Phone:	604-864-5514
	Company address below will appear on the final report
Street:	32315 South Fraser Way
City/Province:	Abbotsford, BC
Postal Code:	V2T 1W7
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

Select Report Format: ☑ PDF ☑ EXCEL ☑ EDD (DIGITAL)
Quality Control (QC) Report with Report ☐ YES ☐ NO
☐ Compare Results to Criteria on Report - provide details below if box checked
Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax apeters@abbotsford.ca
Email 2 asmith@env.enkon.com
Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX
Email 1 or Fax apeters@abbotsford.ca
Email 2

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information

ALS Account # / Quote #:	1220-2017-2056
Job #:	Bevan #1 Creek Water Quality
PO / AFE:	176044
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only)

ALS Contact: Heather McKenzie

Sampler: N. Lamarche

Analysis Request

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

Environmental Division Vancouver
Work Order Reference
VA20C3642

Telephone : +1 604 253 4188

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals & Mercury REG ALL (P)	Fluoride	pH	Ammonia, N02, N03 (P)	Total Phosphorus (P)								
	B-01 (39568)	17-Dec-20	11:26	Water	X	X	X	X	X								
	B-02 (39569)	17-Dec-20	10:54	Water	X	X	X	X	X								4
	H-01 (39565)	17-Dec-20	12:15	Water	X	X	X	X	X								4
	H-02 (39566)	17-Dec-20	10:38	Water	X	X	X	X	X								4
	H-03 (39567)	17-Dec-20	11:57	Water	X	X	X	X	X								4
	W-01 (39564)	17-Dec-20	12:54	Water	X	X	X	X	X								4
	D-01 (39563)	17-Dec-20	08:12	Water	X	X	X	X	X								4
	D-02 (3AH06)	17-Dec-20	10:07	Water	X	X	X	X	X								4
	F-01 (39568)	17-Dec-20	13:29	Water	X	X	X	X	X								4
	F-02 (39560)	17-Dec-20	13:53	Water	X	X	X	X	X								4
	FOF	17-Dec-20	14:28	Water	X	X	X	X	X								4
	Duplicate (B-01)	17-Dec-20	11:26	Water	X	X	X	X	X								4

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

WaterTrax upload is required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐
Ice Packs ☐ Ice Cubes ☑ Custody seal intact Yes ☐ No ☐
Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Nicole Lamarche	Date: 17-Dec-20	Time:	Received by:	Date:	Time:	Received by: TL	Date: Dec 12	Time: 3:55

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

OCTOBER 2015 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.

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 15 -

Report To	Contact and company name below will appear on the final report
Company:	City of Abbotsford
Contact:	Amy Peters
Phone:	604-864-5514
	Company address below will appear on the final report
Street:	32315 South Fraser Way
City/Province:	Abbotsford, BC
Postal Code:	V2T 1W7
Invoice To	Same as Report To ☐ YES ☐ NO
	Copy of Invoice with Report ☐ YES ☐ NO
Company:	
Contact:	

Report Format / Distribution

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

Quality Control (QC) Report with Report ☐ YES ☐ NO

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

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax apeters@abbotsford.ca

Email 2 asmith@env.enkon.com

Email 3

Invoice Distribution

Select Invoice Distribution: ☑ EMAIL ☑ MAIL ☐ FAX

Email 1 or Fax apeters@abbotsford.ca

Email 2

Project Information

ALS Account # / Quote #:	1220-2017-2056
Job #:	Bevan #1 Creek Water Quality
PO / AFE:	176044
LSD:	
ALS Lab Work Order # (lab use only)	

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Heather McKenzie Sampler: N. Lamarche

Select Service Level Below - Please confirm all E&P TATs with your AM - surcharges will apply

Regular [R] ☑ Standard TAT if received by 3 pm - business days - no surcharges apply

PRIORITY (Business Days)		EMERGENCY	
4 day [P4]	☐	1 Business day [E1]	☐
3 day [P3]	☐	Same Day, Weekend or Statutory holiday [E0]	☐
2 day [P2]	☐		

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Analysis Request

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

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Total Metals & Mercury REG ALL (P)	Fluoride	pH	Ammonia, N02, N03 (P)	Total Phosphorus (P)								Number of Containers
1	Travel blank (3AF04)	17-Dec-20	—	Water	X	X	X	X	X								4
1	Field blank (3AF05)	17-Dec-20	14:56	Water	X	X	X	X	X								4

Drinking Water (DW) Samples[1] (client use)

Are samples taken from a Regulated DW System? ☐ YES ☑ NO

Are samples for human drinking water use? ☐ YES ☑ NO

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

WaterTrax upload is required.

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen ☐ SIF Observations Yes ☐ No ☐

Ice Packs ☐ Ice Cubes ☑ Custody seal intact Yes ☐ No ☐

Cooling Initiated ☐

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
			8		

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: Nicole Lamarche	Date: 17-Dec-20	Time:	Received by:	Date:	Time:	Received by: TL	Date: Dec 17	Time: 3:55

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.

Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

CITY OF ABBOTSFORD
CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 628663-01-01, 39565, 39566, 39567, 39568, 39569, 3956A, 3956D, 3656D, 3956B, 3956C

Report Date: 2021/01/27
Report #: R2980914
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C104108
Received: 2021/01/21, 08:00

Sample Matrix: Water
Samples Received: 10

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Fluoride	1	N/A	2021/01/21	BBY6SOP-00048	SM 23 4500-F C m
Fluoride	9	N/A	2021/01/22	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO3) (2)	10	N/A	2021/01/25	BBY WI-00033	Auto Calc
Mercury (Total) by CV	10	2021/01/22	2021/01/22	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	10	2021/01/21	2021/01/25	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	10	2021/01/22	2021/01/22	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Ammonia-N (Total)	9	N/A	2021/01/25	AB SOP-00007	SM 23 4500 NH3 A G m
Ammonia-N (Total)	1	N/A	2021/01/26	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate+Nitrite (N) (low level)	10	N/A	2021/01/21	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) (low level)	10	N/A	2021/01/21	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N) Low Level Calc	10	N/A	2021/01/22	BBY WI-00033	Auto Calc
pH @25°C (1, 3)	10	N/A	2021/01/25	AB SOP-00005	SM 23 4500-H+B m
Total Phosphorus (1)	6	2021/01/25	2021/01/26	AB SOP-00024	SM 23 4500-P A,B,F m
Total Phosphorus (1)	4	2021/01/26	2021/01/27	AB SOP-00024	SM 23 4500-P A,B,F m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing.

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Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

CITY OF ABBOTSFORD
CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 628663-01-01, 39565, 39566, 39567, 39568, 39569,
3956A, 3956D, 3656D, 3956B, 3956C

Report Date: 2021/01/27
Report #: R2980914
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C104108
Received: 2021/01/21, 08:00

BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by BV Labs Calgary Environmental
(2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas Laboratories endeavours to analyze samples as soon as possible after receipt.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (604) 734 7276
==========
This report has been generated and distributed using a secure automated process.
BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

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BV Labs Job #: C104108
Report Date: 2021/01/27

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID		ZE5800			ZE5801		ZE5802		
Sampling Date		2021/01/20 11:46			2021/01/20 13:30		2021/01/20 11:33		
COC Number		39565			39566		39567		
	UNITS	**H01 (39565)**	**RDL**	**QC Batch**	**H02 (39566)**	**QC Batch**	**H03 (39567)**	**RDL**	**QC Batch**
Calculated Parameters									
Nitrate (N)	mg/L	2.09	0.0040	A138153	1.39	A138153	1.80	0.0020	A138153
Misc. Inorganics									
pH	pH	7.15	N/A	A140988	7.90	A140988	7.49	N/A	A140972
Anions									
Dissolved Fluoride (F)	mg/L	0.050	0.050	A138726	<0.050	A139873	<0.050	0.050	A139873
Nutrients									
Total Ammonia (N)	mg/L	<0.015	0.015	A140954	<0.015	A140954	0.019	0.015	A140954
Total Phosphorus (P)	mg/L	0.0055	0.0030	A141746	0.0038	A141308	0.0053	0.0030	A141308
Nitrate plus Nitrite (N)	mg/L	2.09 (1)	0.0040	A138744	1.39	A138744	1.80	0.0020	A138744
Nitrite (N)	mg/L	<0.0020	0.0020	A138745	0.0029	A138745	0.0020	0.0020	A138745

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

BV Labs ID		ZE5803			ZE5804		ZE5805		ZE5806		
Sampling Date		2021/01/20 12:40			2021/01/20 14:01		2021/01/20 14:35		2021/01/20 10:31		
COC Number		39568			39569		3956A		3956D		
	UNITS	**B01 (39568)**	**RDL**	**QC Batch**	**B02 (39569)**	**QC Batch**	**W01 (3956A)**	**QC Batch**	**D01 (3956D)**	**RDL**	**QC Batch**
Calculated Parameters											
Nitrate (N)	mg/L	2.07	0.0040	A138153	1.71	A138153	1.21	A138153	1.45	0.0020	A138153
Misc. Inorganics											
pH	pH	7.38	N/A	A140988	7.54	A140977	7.43	A140977	7.71	N/A	A140988
Anions											
Dissolved Fluoride (F)	mg/L	<0.050	0.050	A139873	<0.050	A139873	<0.050	A139873	<0.050	0.050	A139873
Nutrients											
Total Ammonia (N)	mg/L	0.13	0.015	A140950	0.041	A140954	0.085	A142597	<0.015	0.015	A140954
Total Phosphorus (P)	mg/L	0.0073	0.0030	A141308	0.0043	A141746	0.0074	A141308	<0.0030	0.0030	A141308
Nitrate plus Nitrite (N)	mg/L	2.08 (1)	0.0040	A138744	1.72	A138744	1.22	A138744	1.45	0.0020	A138744
Nitrite (N)	mg/L	0.0126	0.0020	A138745	0.0077	A138745	0.0111	A138745	0.0056	0.0020	A138745

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

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BV Labs Job #: C104108
Report Date: 2021/01/27

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID		ZE5807		ZE5808		ZE5809		
Sampling Date		2021/01/20 10:55		2021/01/20 15:02		2021/01/20 15:38		
COC Number		3656D		3956B		3956C		
	UNITS	**D02 (3956D)**	**QC Batch**	**F01 (3956B)**	**QC Batch**	**F02 (3956C)**	**RDL**	**QC Batch**
Calculated Parameters								
Nitrate (N)	mg/L	0.925	A138153	0.921	A138153	0.863	0.0020	A138153
Misc. Inorganics								
pH	pH	7.77	A140988	7.76	A140988	7.47	N/A	A140988
Anions								
Dissolved Fluoride (F)	mg/L	<0.050	A139873	<0.050	A139873	<0.050	0.050	A139873
Nutrients								
Total Ammonia (N)	mg/L	<0.015	A140954	0.058	A140950	0.015	0.015	A140954
Total Phosphorus (P)	mg/L	0.021	A141746	0.011	A141308	0.016	0.0030	A141746
Nitrate plus Nitrite (N)	mg/L	0.929	A138744	0.931	A138744	0.867	0.0020	A138744
Nitrite (N)	mg/L	0.0046	A138745	0.0106	A138745	0.0037	0.0020	A138745

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: C104108
Report Date: 2021/01/27

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID		ZE5800	ZE5801	ZE5802	ZE5803	ZE5804	ZE5805		
Sampling Date		2021/01/20 11:46	2021/01/20 13:30	2021/01/20 11:33	2021/01/20 12:40	2021/01/20 14:01	2021/01/20 14:35		
COC Number		39565	39566	39567	39568	39569	3956A		
	UNITS	**H01 (39565)**	**H02 (39566)**	**H03 (39567)**	**B01 (39568)**	**B02 (39569)**	**W01 (3956A)**	**RDL**	**QC Batch**
Calculated Parameters									
Total Hardness (CaCO3)	mg/L	103	103	103	73.7	91.7	66.5	0.50	A138151
Elements									
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	0.0019	A139318
Total Metals by ICPMS									
Total Aluminum (Al)	ug/L	4.6	28.4	19.6	84.5	64.1	25.8	3.0	A139054
Total Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	A139054
Total Arsenic (As)	ug/L	0.46	0.89	0.54	0.41	0.62	0.64	0.10	A139054
Total Barium (Ba)	ug/L	12.3	14.0	13.6	39.0	20.0	23.8	1.0	A139054
Total Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A139054
Total Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	A139054
Total Boron (B)	ug/L	<50	<50	<50	<50	<50	<50	50	A139054
Total Cadmium (Cd)	ug/L	0.014	<0.010	0.013	0.026	0.014	<0.010	0.010	A139054
Total Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	1.0	A139054
Total Cobalt (Co)	ug/L	<0.20	<0.20	<0.20	0.37	<0.20	<0.20	0.20	A139054
Total Copper (Cu)	ug/L	<0.50	0.63	0.87	1.86	0.79	<0.50	0.50	A139054
Total Iron (Fe)	ug/L	34	166	38	850	447	461	10	A139054
Total Lead (Pb)	ug/L	<0.20	<0.20	<0.20	0.80	<0.20	<0.20	0.20	A139054
Total Lithium (Li)	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	A139054
Total Manganese (Mn)	ug/L	13.8	44.6	13.8	121	121	50.6	1.0	A139054
Total Molybdenum (Mo)	ug/L	<1.0	<1.0	4.0	<1.0	<1.0	2.6	1.0	A139054
Total Nickel (Ni)	ug/L	<1.0	<1.0	<1.0	1.5	<1.0	<1.0	1.0	A139054
Total Selenium (Se)	ug/L	0.19	0.17	0.17	<0.10	0.14	0.11	0.10	A139054
Total Silicon (Si)	ug/L	9570	9010	8990	8130	9890	7740	100	A139054
Total Silver (Ag)	ug/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	A139054
Total Strontium (Sr)	ug/L	155	137	144	232	161	128	1.0	A139054
Total Thallium (Tl)	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	A139054
Total Tin (Sn)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A139054
Total Titanium (Ti)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A139054
Total Uranium (U)	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A139054
Total Vanadium (V)	ug/L	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A139054
Total Zinc (Zn)	ug/L	<5.0	6.3	9.4	14.0	6.2	<5.0	5.0	A139054
Total Zirconium (Zr)	ug/L	<0.10	<0.10	<0.10	0.23	<0.10	<0.10	0.10	A139054
RDL = Reportable Detection Limit									

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BV Labs Job #: C104108
Report Date: 2021/01/27

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID		ZE5800	ZE5801	ZE5802	ZE5803	ZE5804	ZE5805		
Sampling Date		2021/01/20 11:46	2021/01/20 13:30	2021/01/20 11:33	2021/01/20 12:40	2021/01/20 14:01	2021/01/20 14:35		
COC Number		39565	39566	39567	39568	39569	3956A		
	UNITS	**H01 (39565)**	**H02 (39566)**	**H03 (39567)**	**B01 (39568)**	**B02 (39569)**	**W01 (3956A)**	**RDL**	**QC Batch**
Total Calcium (Ca)	mg/L	29.1	29.8	29.5	21.8	25.7	18.1	0.050	A138152
Total Magnesium (Mg)	mg/L	7.38	6.98	7.15	4.64	6.68	5.18	0.050	A138152
Total Potassium (K)	mg/L	1.61	1.64	1.92	1.41	1.40	1.03	0.050	A138152
Total Sodium (Na)	mg/L	18.0	10.2	15.7	19.4	11.3	13.6	0.050	A138152
Total Sulphur (S)	mg/L	4.9	6.3	6.7	3.8	4.0	<3.0	3.0	A138152
RDL = Reportable Detection Limit									

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BV Labs Job #: C104108
Report Date: 2021/01/27

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID		ZE5806	ZE5807	ZE5808	ZE5809		
Sampling Date		2021/01/20 10:31	2021/01/20 10:55	2021/01/20 15:02	2021/01/20 15:38		
COC Number		3956D	3656D	3956B	3956C		
	UNITS	**D01 (3956D)**	**D02 (3956D)**	**F01 (3956B)**	**F02 (3956C)**	**RDL**	**QC Batch**
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	76.5	106	99.0	58.8	0.50	A138151
Elements							
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	<0.0019	<0.0019	0.0019	A139484
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	51.3	24.7	108	96.4	3.0	A139054
Total Antimony (Sb)	ug/L	<0.50	<0.50	<0.50	<0.50	0.50	A139054
Total Arsenic (As)	ug/L	0.59	1.20	1.48	0.44	0.10	A139054
Total Barium (Ba)	ug/L	17.1	11.4	19.4	21.0	1.0	A139054
Total Beryllium (Be)	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	A139054
Total Bismuth (Bi)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	A139054
Total Boron (B)	ug/L	<50	<50	<50	<50	50	A139054
Total Cadmium (Cd)	ug/L	<0.010	<0.010	<0.010	<0.010	0.010	A139054
Total Chromium (Cr)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	A139054
Total Cobalt (Co)	ug/L	<0.20	<0.20	0.22	<0.20	0.20	A139054
Total Copper (Cu)	ug/L	0.68	<0.50	1.29	1.49	0.50	A139054
Total Iron (Fe)	ug/L	252	288	1220	364	10	A139054
Total Lead (Pb)	ug/L	<0.20	<0.20	<0.20	<0.20	0.20	A139054
Total Lithium (Li)	ug/L	<2.0	<2.0	<2.0	<2.0	2.0	A139054
Total Manganese (Mn)	ug/L	45.8	128	191	49.0	1.0	A139054
Total Molybdenum (Mo)	ug/L	<1.0	<1.0	<1.0	13.0	1.0	A139054
Total Nickel (Ni)	ug/L	<1.0	<1.0	<1.0	<1.0	1.0	A139054
Total Selenium (Se)	ug/L	0.15	0.23	0.14	<0.10	0.10	A139054
Total Silicon (Si)	ug/L	8310	11200	6750	4760	100	A139054
Total Silver (Ag)	ug/L	<0.020	<0.020	<0.020	<0.020	0.020	A139054
Total Strontium (Sr)	ug/L	120	145	156	96.9	1.0	A139054
Total Thallium (Tl)	ug/L	<0.010	<0.010	<0.010	<0.010	0.010	A139054
Total Tin (Sn)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	A139054
Total Titanium (Ti)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	A139054
Total Uranium (U)	ug/L	<0.10	<0.10	<0.10	<0.10	0.10	A139054
Total Vanadium (V)	ug/L	<5.0	<5.0	<5.0	<5.0	5.0	A139054
Total Zinc (Zn)	ug/L	<5.0	<5.0	<5.0	9.4	5.0	A139054
Total Zirconium (Zr)	ug/L	<0.10	<0.10	0.12	<0.10	0.10	A139054
RDL = Reportable Detection Limit							

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BV Labs Job #: C104108
Report Date: 2021/01/27

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID		ZE5806	ZE5807	ZE5808	ZE5809		
Sampling Date		2021/01/20 10:31	2021/01/20 10:55	2021/01/20 15:02	2021/01/20 15:38		
COC Number		3956D	3656D	3956B	3956C		
	UNITS	**D01 (3956D)**	**D02 (3956D)**	**F01 (3956B)**	**F02 (3956C)**	**RDL**	**QC Batch**
Total Calcium (Ca)	mg/L	20.5	27.7	26.9	16.6	0.050	A138152
Total Magnesium (Mg)	mg/L	6.13	8.86	7.73	4.19	0.050	A138152
Total Potassium (K)	mg/L	1.57	1.39	1.77	1.44	0.050	A138152
Total Sodium (Na)	mg/L	10.4	8.30	13.8	11.6	0.050	A138152
Total Sulphur (S)	mg/L	5.2	3.6	6.6	3.8	3.0	A138152
RDL = Reportable Detection Limit							

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GENERAL COMMENTS

Results relate only to the items tested.

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BV Labs Job #: C104108
Report Date: 2021/01/27

QUALITY ASSURANCE REPORT

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A138726	Dissolved Fluoride (F)	2021/01/21	106	80 - 120	106	80 - 120	<0.050	mg/L	0	20		
A138744	Nitrate plus Nitrite (N)	2021/01/21			111	80 - 120	<0.0020	mg/L				
A138745	Nitrite (N)	2021/01/21	94	80 - 120	101	80 - 120	<0.0020	mg/L	NC	25		
A139054	Total Aluminum (Al)	2021/01/22	101	80 - 120	101	80 - 120	<3.0	ug/L	2.4	20		
A139054	Total Antimony (Sb)	2021/01/22	102	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
A139054	Total Arsenic (As)	2021/01/22	102	80 - 120	99	80 - 120	<0.10	ug/L	5.9	20		
A139054	Total Barium (Ba)	2021/01/22	101	80 - 120	100	80 - 120	<1.0	ug/L	1.9	20		
A139054	Total Beryllium (Be)	2021/01/22	96	80 - 120	94	80 - 120	<0.10	ug/L	NC	20		
A139054	Total Bismuth (Bi)	2021/01/22	97	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
A139054	Total Boron (B)	2021/01/22	99	80 - 120	99	80 - 120	<50	ug/L	NC	20		
A139054	Total Cadmium (Cd)	2021/01/22	100	80 - 120	98	80 - 120	<0.010	ug/L	NC	20		
A139054	Total Chromium (Cr)	2021/01/22	98	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
A139054	Total Cobalt (Co)	2021/01/22	95	80 - 120	97	80 - 120	<0.20	ug/L	NC	20		
A139054	Total Copper (Cu)	2021/01/22	93	80 - 120	96	80 - 120	<0.50	ug/L	NC	20		
A139054	Total Iron (Fe)	2021/01/22	103	80 - 120	101	80 - 120	<10	ug/L	1.2	20		
A139054	Total Lead (Pb)	2021/01/22	99	80 - 120	102	80 - 120	<0.20	ug/L	NC	20		
A139054	Total Lithium (Li)	2021/01/22	91	80 - 120	91	80 - 120	<2.0	ug/L	NC	20		
A139054	Total Manganese (Mn)	2021/01/22	97	80 - 120	97	80 - 120	<1.0	ug/L	0.76	20		
A139054	Total Molybdenum (Mo)	2021/01/22	109	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
A139054	Total Nickel (Ni)	2021/01/22	94	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
A139054	Total Selenium (Se)	2021/01/22	102	80 - 120	98	80 - 120	<0.10	ug/L	4.4	20		
A139054	Total Silicon (Si)	2021/01/22	NC	80 - 120	103	80 - 120	<100	ug/L	0.0057	20		
A139054	Total Silver (Ag)	2021/01/22	97	80 - 120	98	80 - 120	<0.020	ug/L	NC	20		
A139054	Total Strontium (Sr)	2021/01/22	NC	80 - 120	101	80 - 120	<1.0	ug/L	2.4	20		
A139054	Total Thallium (Tl)	2021/01/22	100	80 - 120	100	80 - 120	<0.010	ug/L	NC	20		
A139054	Total Tin (Sn)	2021/01/22	102	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
A139054	Total Titanium (Ti)	2021/01/22	103	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
A139054	Total Uranium (U)	2021/01/22	103	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
A139054	Total Vanadium (V)	2021/01/22	102	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
A139054	Total Zinc (Zn)	2021/01/22	97	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
A139054	Total Zirconium (Zr)	2021/01/22	104	80 - 120	101	80 - 120	<0.10	ug/L	NC	20		

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BV Labs Job #: C104108
Report Date: 2021/01/27

QUALITY ASSURANCE REPORT(CONT'D)

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A139318	Total Mercury (Hg)	2021/01/22	121 (1)	80 - 120	94	80 - 120	<0.0019	ug/L	NC	20		
A139484	Total Mercury (Hg)	2021/01/22	106	80 - 120	101	80 - 120	<0.0019	ug/L	NC	20		
A139873	Dissolved Fluoride (F)	2021/01/22	101	80 - 120	104	80 - 120	<0.050	mg/L	NC	20		
A140950	Total Ammonia (N)	2021/01/25	102	80 - 120	107	80 - 120	<0.015	mg/L	0	20		
A140954	Total Ammonia (N)	2021/01/25			101	80 - 120	<0.015	mg/L				
A140972	pH	2021/01/26			100	97 - 103			0.69	N/A		
A140977	pH	2021/01/25			100	97 - 103			1.6	N/A		
A140988	pH	2021/01/25			101	97 - 103			15	N/A		
A141308	Total Phosphorus (P)	2021/01/26	-0.088 (1)	80 - 120	103	80 - 120	<0.0030	mg/L	NC	20	89	80 - 120
A141746	Total Phosphorus (P)	2021/01/27	99	80 - 120	94	80 - 120	<0.0030	mg/L	8.4	20	82	80 - 120
A142597	Total Ammonia (N)	2021/01/26			108	80 - 120	<0.015	mg/L				

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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BV Labs Job #: C104108
Report Date: 2021/01/27

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Harry (Peng) Liang, Senior Analyst

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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Bureau Veritas Laboratories
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel (604) 734 7276 Toll-free 800-563-6266 Fax (604) 731 2386 www.bvlabs.com

C

INVOICE TO:	
Company Name	#1414 CITY OF ABBOTSFORD
Contact Name	Amy Peters
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7
Phone	(778) 549-1240 Fax: (604) 850-6418
Email	apeters@abbotsford.ca

Report Information	
Company Name	
Contact Name	Amy Peters
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7
Phone	(778) 549-1240 Fax:
Email	apeters@abbotsford.ca

Project Information	
Quotation #	C01193
P.O. #	
Project #	Bevan #1 Creek Water Quality
Project Name	
Site #	
Sampled By	Laurin Williams

C104108_COC

Order #:

963

Manager

C#628663-01-01

Customer Solutions

Regulatory Criteria:

- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other _____

Special Instructions

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]

(will be applied if Rush TAT is not specified):

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: _____ [ ]

Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR/CCME Tot. Metals in Water w/ CV Hg	Ammonia-N (Total)	Fluoride	Nitrate+Nitrite (N) (low level)	Nitrite (N) (low level)	Nitrogen - Nitrate (as N) Low Level Calc.	pH @25°C	Total Phosphorus			# of Bottles	Comments
1		H01 (39565)	21/01/20	11:46	water	N	X	X	X	X	X	X	X	X			6	
2		H02 (39566)		13:30			X	X	X	X	X	X	X	X				
3		H03 (39567)		11:33			X	X	X	X	X	X	X	X				
4		B01 (39568)		12:40			X	X	X	X	X	X	X	X				
5		B02 (39569)		14:01			X	X	X	X	X	X	X	X				
6		W01 (3956A)		14:35			X	X	X	X	X	X	X	X				
7		D01 (3956D)		10:31			X	X	X	X	X	X	X	X				
8		D02 (3956D)		10:55			X	X	X	X	X	X	X	X				
9		F01 (3956B)		15:02			X	X	X	X	X	X	X	X				
10		F02 (3956C)		15:30			X	X	X	X	X	X	X	X				

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Laurin Williams	21/01/20	18:20	[illegible]	2021/01/21	09:00	

Lab Use Only: Time Sensitive [✓] Temperature (°C) on Receipt 8/7/8 Custody Seal Intact on Cooler? [ ] Yes [✓] No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

CITY OF ABBOTSFORD
CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 628663-02-01, 41C64, 3AF04, 3AF05

Report Date: 2021/01/29
Report #: R2981691
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C104109
Received: 2021/01/21, 08:00

Sample Matrix: Water
Samples Received: 4

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Fluoride	4	N/A	2021/01/21	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO3) (2)	2	N/A	2021/01/25	BBY WI-00033	Auto Calc
Hardness Total (calculated as CaCO3) (2)	2	N/A	2021/01/26	BBY WI-00033	Auto Calc
Mercury (Total) by CV	4	2021/01/22	2021/01/22	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	2	2021/01/21	2021/01/25	BBY WI-00033	Auto Calc
Na, K, Ca, Mg, S by CRC ICPMS (total)	2	2021/01/21	2021/01/26	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	2	2021/01/22	2021/01/22	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Elements by CRC ICPMS (total)	2	2021/01/25	2021/01/25	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Ammonia-N (Total)	3	N/A	2021/01/25	AB SOP-00007	SM 23 4500 NH3 A G m
Ammonia-N (Total)	1	N/A	2021/01/26	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate+Nitrite (N) (low level)	2	N/A	2021/01/21	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrate+Nitrite (N) (low level)	2	N/A	2021/01/27	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) (low level)	4	N/A	2021/01/21	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N) Low Level Calc	4	N/A	2021/01/22	BBY WI-00033	Auto Calc
pH @25°C (1, 3)	4	N/A	2021/01/29	AB SOP-00005	SM 23 4500-H+B m
Total Phosphorus (1)	3	2021/01/25	2021/01/26	AB SOP-00024	SM 23 4500-P A,B,F m
Total Phosphorus (1)	1	2021/01/28	2021/01/28	AB SOP-00024	SM 23 4500-P A,B,F m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

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Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

CITY OF ABBOTSFORD
CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 628663-02-01, 41C64, 3AF04, 3AF05

Report Date: 2021/01/29
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Version: 1 - Final

CERTIFICATE OF ANALYSIS

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Received: 2021/01/21, 08:00

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by BV Labs Calgary Environmental
(2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas Laboratories endeavours to analyze samples as soon as possible after receipt.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (604) 734 7276
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BV Labs Job #: C104109
Report Date: 2021/01/29

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID		ZE5810		ZE5811		ZE5812		
Sampling Date		2021/01/20 16:05		2021/01/20 14:01		2021/01/20		
COC Number		41C64		628663-02-01		3AF04		
	UNITS	**F0F (41C64)**	**QC Batch**	**DUP-B02**	**QC Batch**	**TRIP BLANK (3AF04)**	**RDL**	**QC Batch**
Calculated Parameters								
Nitrate (N)	mg/L	1.10	A138153	1.68	A138153	<0.0020	0.0020	A138153
Misc. Inorganics								
pH	pH	7.03	A144175	7.07	A144175	7.68	N/A	A144175
Anions								
Dissolved Fluoride (F)	mg/L	<0.050	A138638	<0.050	A138726	<0.050	0.050	A138726
Nutrients								
Total Ammonia (N)	mg/L	0.066	A140954	0.042	A140954	<0.015	0.015	A140950
Total Phosphorus (P)	mg/L	0.0098	A141308	0.0067	A141060	<0.0030	0.0030	A141308
Nitrate plus Nitrite (N)	mg/L	1.10	A138739	1.69	A138739	<0.0020	0.0020	A143166
Nitrite (N)	mg/L	0.0080	A138743	0.0077	A138743	<0.0020	0.0020	A138743

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID		ZE5813		
Sampling Date		2021/01/20 16:49		
COC Number		3AF05		
	UNITS	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Calculated Parameters				
Nitrate (N)	mg/L	<0.0020	0.0020	A138153
Misc. Inorganics				
pH	pH	7.46	N/A	A144175
Anions				
Dissolved Fluoride (F)	mg/L	<0.050	0.050	A138726
Nutrients				
Total Ammonia (N)	mg/L	<0.015	0.015	A142597
Total Phosphorus (P)	mg/L	<0.0030	0.0030	A141308
Nitrate plus Nitrite (N)	mg/L	<0.0020	0.0020	A143166
Nitrite (N)	mg/L	<0.0020	0.0020	A138745

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: C104109
Report Date: 2021/01/29

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID		ZE5810	ZE5811		ZE5812	ZE5813		
Sampling Date		2021/01/20 16:05	2021/01/20 14:01		2021/01/20	2021/01/20 16:49		
COC Number		41C64	628663-02-01		3AF04	3AF05		
	UNITS	**F0F (41C64)**	**DUP-B02**	**QC Batch**	**TRIP BLANK (3AF04)**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Calculated Parameters								
Total Hardness (CaCO3)	mg/L	63.9	92.3	A138151	<0.50	<0.50	0.50	A138151
Elements								
Total Mercury (Hg)	ug/L	<0.0019	<0.0019	A139484	<0.0019	<0.0019	0.0019	A139484
Total Metals by ICPMS								
Total Aluminum (Al)	ug/L	61.4	68.5	A139054	<3.0	<3.0	3.0	A140910
Total Antimony (Sb)	ug/L	<0.50	<0.50	A139054	<0.50	<0.50	0.50	A140910
Total Arsenic (As)	ug/L	1.22	0.62	A139054	<0.10	<0.10	0.10	A140910
Total Barium (Ba)	ug/L	24.6	20.3	A139054	<1.0	<1.0	1.0	A140910
Total Beryllium (Be)	ug/L	<0.10	<0.10	A139054	<0.10	<0.10	0.10	A140910
Total Bismuth (Bi)	ug/L	<1.0	<1.0	A139054	<1.0	<1.0 (1)	1.0	A140910
Total Boron (B)	ug/L	<50	<50	A139054	<50	<50	50	A140910
Total Cadmium (Cd)	ug/L	<0.010	<0.010	A139054	<0.010	<0.010	0.010	A140910
Total Chromium (Cr)	ug/L	<1.0	<1.0	A139054	<1.0	<1.0	1.0	A140910
Total Cobalt (Co)	ug/L	0.29	<0.20	A139054	<0.20	<0.20	0.20	A140910
Total Copper (Cu)	ug/L	1.41	0.78	A139054	<0.50	<0.50	0.50	A140910
Total Iron (Fe)	ug/L	935	454	A139054	<10	<10	10	A140910
Total Lead (Pb)	ug/L	<0.20	<0.20	A139054	<0.20	<0.20	0.20	A140910
Total Lithium (Li)	ug/L	<2.0	<2.0	A139054	<2.0	<2.0	2.0	A140910
Total Manganese (Mn)	ug/L	155	121	A139054	<1.0	<1.0	1.0	A140910
Total Molybdenum (Mo)	ug/L	<1.0	<1.0	A139054	<1.0	<1.0 (1)	1.0	A140910
Total Nickel (Ni)	ug/L	<1.0	<1.0	A139054	<1.0	<1.0	1.0	A140910
Total Selenium (Se)	ug/L	<0.10	0.14	A139054	<0.10	<0.10	0.10	A140910
Total Silicon (Si)	ug/L	5330	10000	A139054	<100	<100	100	A140910
Total Silver (Ag)	ug/L	<0.020	<0.020	A139054	<0.020	<0.020	0.020	A140910
Total Strontium (Sr)	ug/L	111	161	A139054	<1.0	<1.0	1.0	A140910
Total Thallium (Tl)	ug/L	<0.010	<0.010	A139054	<0.010	<0.010	0.010	A140910
Total Tin (Sn)	ug/L	<5.0	<5.0	A139054	<5.0	<5.0	5.0	A140910
Total Titanium (Ti)	ug/L	<5.0	<5.0	A139054	<5.0	<5.0	5.0	A140910
Total Uranium (U)	ug/L	<0.10	<0.10	A139054	<0.10	<0.10	0.10	A140910
Total Vanadium (V)	ug/L	<5.0	<5.0	A139054	<5.0	<5.0	5.0	A140910

RDL = Reportable Detection Limit
(1) Matrix Spike outside acceptance criteria due to sample matrix interference.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C104109
Report Date: 2021/01/29

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID		ZE5810	ZE5811		ZE5812	ZE5813		
Sampling Date		2021/01/20 16:05	2021/01/20 14:01		2021/01/20	2021/01/20 16:49		
COC Number		41C64	628663-02-01		3AF04	3AF05		
	UNITS	**F0F (41C64)**	**DUP-B02**	**QC Batch**	**TRIP BLANK (3AF04)**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Total Zinc (Zn)	ug/L	7.8	6.3	A139054	<5.0	<5.0	5.0	A140910
Total Zirconium (Zr)	ug/L	0.12	<0.10	A139054	<0.10	<0.10	0.10	A140910
Total Calcium (Ca)	mg/L	18.1	26.0	A138152	<0.050	<0.050	0.050	A138152
Total Magnesium (Mg)	mg/L	4.55	6.67	A138152	<0.050	<0.050	0.050	A138152
Total Potassium (K)	mg/L	1.45	1.40	A138152	<0.050	<0.050	0.050	A138152
Total Sodium (Na)	mg/L	12.5	11.2	A138152	<0.050	<0.050	0.050	A138152
Total Sulphur (S)	mg/L	4.0	4.7	A138152	<3.0	<3.0	3.0	A138152
RDL = Reportable Detection Limit								

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GENERAL COMMENTS

Sample ZE5812 [TRIP BLANK (3AF04)] : Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.

Sample ZE5813 [FIELD BLANK (3AF05)] : Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.

Results relate only to the items tested.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C104109
Report Date: 2021/01/29

QUALITY ASSURANCE REPORT

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A138638	Dissolved Fluoride (F)	2021/01/21	96	80 - 120	106	80 - 120	<0.050	mg/L	0	20		
A138726	Dissolved Fluoride (F)	2021/01/21	106	80 - 120	106	80 - 120	<0.050	mg/L	0	20		
A138739	Nitrate plus Nitrite (N)	2021/01/21	NC	80 - 120	112	80 - 120	<0.0020	mg/L	1.2	25		
A138743	Nitrite (N)	2021/01/21	113	80 - 120	102	80 - 120	<0.0020	mg/L	1.2	25		
A138745	Nitrite (N)	2021/01/21	94	80 - 120	101	80 - 120	<0.0020	mg/L	NC	25		
A139054	Total Aluminum (Al)	2021/01/22	101	80 - 120	101	80 - 120	<3.0	ug/L	2.4	20		
A139054	Total Antimony (Sb)	2021/01/22	102	80 - 120	99	80 - 120	<0.50	ug/L	NC	20		
A139054	Total Arsenic (As)	2021/01/22	102	80 - 120	99	80 - 120	<0.10	ug/L	5.9	20		
A139054	Total Barium (Ba)	2021/01/22	101	80 - 120	100	80 - 120	<1.0	ug/L	1.9	20		
A139054	Total Beryllium (Be)	2021/01/22	96	80 - 120	94	80 - 120	<0.10	ug/L	NC	20		
A139054	Total Bismuth (Bi)	2021/01/22	97	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
A139054	Total Boron (B)	2021/01/22	99	80 - 120	99	80 - 120	<50	ug/L	NC	20		
A139054	Total Cadmium (Cd)	2021/01/22	100	80 - 120	98	80 - 120	<0.010	ug/L	NC	20		
A139054	Total Chromium (Cr)	2021/01/22	98	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
A139054	Total Cobalt (Co)	2021/01/22	95	80 - 120	97	80 - 120	<0.20	ug/L	NC	20		
A139054	Total Copper (Cu)	2021/01/22	93	80 - 120	96	80 - 120	<0.50	ug/L	NC	20		
A139054	Total Iron (Fe)	2021/01/22	103	80 - 120	101	80 - 120	<10	ug/L	1.2	20		
A139054	Total Lead (Pb)	2021/01/22	99	80 - 120	102	80 - 120	<0.20	ug/L	NC	20		
A139054	Total Lithium (Li)	2021/01/22	91	80 - 120	91	80 - 120	<2.0	ug/L	NC	20		
A139054	Total Manganese (Mn)	2021/01/22	97	80 - 120	97	80 - 120	<1.0	ug/L	0.76	20		
A139054	Total Molybdenum (Mo)	2021/01/22	109	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
A139054	Total Nickel (Ni)	2021/01/22	94	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
A139054	Total Selenium (Se)	2021/01/22	102	80 - 120	98	80 - 120	<0.10	ug/L	4.4	20		
A139054	Total Silicon (Si)	2021/01/22	NC	80 - 120	103	80 - 120	<100	ug/L	0.0057	20		
A139054	Total Silver (Ag)	2021/01/22	97	80 - 120	98	80 - 120	<0.020	ug/L	NC	20		
A139054	Total Strontium (Sr)	2021/01/22	NC	80 - 120	101	80 - 120	<1.0	ug/L	2.4	20		
A139054	Total Thallium (Tl)	2021/01/22	100	80 - 120	100	80 - 120	<0.010	ug/L	NC	20		
A139054	Total Tin (Sn)	2021/01/22	102	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
A139054	Total Titanium (Ti)	2021/01/22	103	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
A139054	Total Uranium (U)	2021/01/22	103	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
A139054	Total Vanadium (V)	2021/01/22	102	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		

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BV Labs Job #: C104109
Report Date: 2021/01/29

QUALITY ASSURANCE REPORT(CONT'D)

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A139054	Total Zinc (Zn)	2021/01/22	97	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
A139054	Total Zirconium (Zr)	2021/01/22	104	80 - 120	101	80 - 120	<0.10	ug/L	NC	20		
A139484	Total Mercury (Hg)	2021/01/22	106	80 - 120	101	80 - 120	<0.0019	ug/L	NC	20		
A140910	Total Aluminum (Al)	2021/01/25	104	80 - 120	108	80 - 120	<3.0	ug/L	NC	20		
A140910	Total Antimony (Sb)	2021/01/25	103	80 - 120	106	80 - 120	<0.50	ug/L	NC	20		
A140910	Total Arsenic (As)	2021/01/25	100	80 - 120	101	80 - 120	<0.10	ug/L	NC	20		
A140910	Total Barium (Ba)	2021/01/25	100	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
A140910	Total Beryllium (Be)	2021/01/25	98	80 - 120	108	80 - 120	<0.10	ug/L	NC	20		
A140910	Total Bismuth (Bi)	2021/01/25	24 (1)	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
A140910	Total Boron (B)	2021/01/25	92	80 - 120	97	80 - 120	<50	ug/L	NC	20		
A140910	Total Cadmium (Cd)	2021/01/25	101	80 - 120	101	80 - 120	<0.010	ug/L	NC	20		
A140910	Total Chromium (Cr)	2021/01/25	95	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
A140910	Total Cobalt (Co)	2021/01/25	94	80 - 120	98	80 - 120	<0.20	ug/L	NC	20		
A140910	Total Copper (Cu)	2021/01/25	92	80 - 120	95	80 - 120	<0.50	ug/L	NC	20		
A140910	Total Iron (Fe)	2021/01/25	94	80 - 120	102	80 - 120	<10	ug/L	NC	20		
A140910	Total Lead (Pb)	2021/01/25	98	80 - 120	100	80 - 120	<0.20	ug/L	NC	20		
A140910	Total Lithium (Li)	2021/01/25	94	80 - 120	96	80 - 120	<2.0	ug/L	NC	20		
A140910	Total Manganese (Mn)	2021/01/25	97	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
A140910	Total Molybdenum (Mo)	2021/01/25	72 (1)	80 - 120	106	80 - 120	<1.0	ug/L	NC	20		
A140910	Total Nickel (Ni)	2021/01/25	95	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
A140910	Total Selenium (Se)	2021/01/25	98	80 - 120	99	80 - 120	<0.10	ug/L	NC	20		
A140910	Total Silicon (Si)	2021/01/25	107	80 - 120	108	80 - 120	<100	ug/L	NC	20		
A140910	Total Silver (Ag)	2021/01/25	92	80 - 120	98	80 - 120	<0.020	ug/L	NC	20		
A140910	Total Strontium (Sr)	2021/01/25	98	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
A140910	Total Thallium (Tl)	2021/01/25	97	80 - 120	104	80 - 120	<0.010	ug/L	NC	20		
A140910	Total Tin (Sn)	2021/01/25	96	80 - 120	105	80 - 120	<5.0	ug/L	NC	20		
A140910	Total Titanium (Ti)	2021/01/25	98	80 - 120	104	80 - 120	<5.0	ug/L	NC	20		
A140910	Total Uranium (U)	2021/01/25	96	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
A140910	Total Vanadium (V)	2021/01/25	98	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
A140910	Total Zinc (Zn)	2021/01/25	108	80 - 120	101	80 - 120	<5.0	ug/L	NC	20		
A140910	Total Zirconium (Zr)	2021/01/25	99	80 - 120	104	80 - 120	<0.10	ug/L	NC	20		

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BV Labs Job #: C104109
Report Date: 2021/01/29

QUALITY ASSURANCE REPORT(CONT'D)

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A140950	Total Ammonia (N)	2021/01/25	102	80 - 120	107	80 - 120	<0.015	mg/L	0	20		
A140954	Total Ammonia (N)	2021/01/25			101	80 - 120	<0.015	mg/L				
A141060	Total Phosphorus (P)	2021/01/28	NC	80 - 120	107	80 - 120	<0.0030	mg/L	1.5	20	83	80 - 120
A141308	Total Phosphorus (P)	2021/01/26	-0.088 (1)	80 - 120	103	80 - 120	<0.0030	mg/L	NC	20	89	80 - 120
A142597	Total Ammonia (N)	2021/01/26			108	80 - 120	<0.015	mg/L				
A143166	Nitrate plus Nitrite (N)	2021/01/27	109	80 - 120	107	80 - 120	<0.0020	mg/L	NC	25		
A144175	pH	2021/01/29			101	97 - 103			1.5	N/A		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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BV Labs Job #: C104109
Report Date: 2021/01/29

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Harry (Peng) Liang, Senior Analyst

Sandy (Wei) Yuan, M.Sc., QP, Scientific Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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Bureau Veritas Laboratories
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C'

C104109_COC

Order #:

#663
Manager

C#628663-02-01

Customer Solutions

INVOICE TO:		Report Information		Project Information	
Company Name	#1414 CITY OF ABBOTSFORD	Company Name		Quotation #	C01193
Contact Name	Amy Peters	Contact Name	Amy Peters	P.O. #	
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Project #	Bevan #1 Creek Water Quality
Phone	(778) 549-1240 Fax: (604) 850-6418	Phone	(778) 549-1240 Fax:	Project Name	
Email	apeters@abbotsford.ca	Email	apeters@abbotsford.ca	Site #	
				Sampled By	Lauryn Williams

Regulatory Criteria:

- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other _____

Special Instructions

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]

(will be applied if Rush TAT is not specified):

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: _____ [ ]

Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR/CCME Tot. Metals in Water w/ CV Hg	Ammonia-N (Total)	Fluoride	Nitrate+Nitrite (N) (low level)	Nitrite (N) (low level)	Nitrogen - Nitrate (as N) Low Level Calc	pH @25°C	Total Phosphorus			# of Bottles	Comments
1		F0F (41C64)	21/01/20	16:05	water		X	X	X	X	X	X	X	X			6	
2		DUP -B02	↓	14:01	↓		X	X	X	X	X	X	X	X			↓	
3		TRIP BLANK (3AF04)	↓	N/A	↓		X	X	X	X	X	X	X	X			↓	
4		FIELD BLANK (3AF05)	↓	~~N/A~~ 16:49	↓		X	X	X	X	X	X	X	X			↓	
5																		
6																		
7																		
8																		
9																		
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Lauryn Williams	21/01/20	19:20	[signature]	2021/01/21	08:00		[ ]	7/7/7	[ ] Yes [X] No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Bureau Veritas Laboratories
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C'

C104109_COC

Order #:

#663
Manager

C#628663-02-01

Customer Solutions

INVOICE TO:		Report Information		Project Information	
Company Name	#1414 CITY OF ABBOTSFORD	Company Name		Quotation #	C01193
Contact Name	Amy Peters	Contact Name	Amy Peters	P.O. #	
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Project #	Bevan #1 Creek Water Quality
Phone	(778) 549-1240 Fax: (604) 850-6418	Phone	(778) 549-1240 Fax:	Project Name	
Email	apeters@abbotsford.ca	Email	apeters@abbotsford.ca	Site #	
				Sampled By	Lauryn Williams

Regulatory Criteria:
- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other _____

Special Instructions

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified): [X]
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: _____ [ ]
Rush Confirmation Number: _____ *(call lab for #)*

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR/CCME Tot. Metals in Water w/ CV Hg	Ammonia-N (Total)	Fluoride	Nitrate+Nitrite (N) (low level)	Nitrite (N) (low level)	Nitrogen - Nitrate (as N) Low Level Calc	pH @25°C	Total Phosphorus			# of Bottles	Comments
1		F0F (41C64)	21/01/20	16:05	water		X	X	X	X	X	X	X	X			6	
2		DUP -B02	↓	14:01	↓		X	X	X	X	X	X	X	X			↓	
3		TRIP BLANK (3AF04)	↓	N/A	↓		X	X	X	X	X	X	X	X			↓	
4		FIELD BLANK (3AF05)	↓	~~N/A~~ 16:49	↓		X	X	X	X	X	X	X	X			↓	
5																		
6																		
7																		
8																		
9																		
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Lauryn Williams	21/01/20	19:20	[illegible]	2021/01/21	08:00		[ ]	7/7/7	[ ] Yes [X] No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

CITY OF ABBOTSFORD
CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 630596-01-01, 39565, 39566, 39567, 39568, 39569, 3956A, 3956D, 3956B, 3956C, 41C64, 3AF04, 3AF05

Report Date: 2021/03/01
Report #: R2991156
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C110765
Received: 2021/02/19, 18:30

Sample Matrix: Water
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Fluoride	14	N/A	2021/02/25	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO3) (2)	14	N/A	2021/02/25	BBY WI-00033	Auto Calc
Mercury (Total) by CV	14	2021/02/22	2021/02/22	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	14	2021/02/20	2021/02/25	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	14	2021/02/24	2021/02/25	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Ammonia-N (Total)	14	N/A	2021/02/23	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate+Nitrite (N) (low level)	14	N/A	2021/02/20	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) (low level)	14	N/A	2021/02/20	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N) Low Level Calc	14	N/A	2021/02/20	BBY WI-00033	Auto Calc
pH @25°C (1, 3)	14	N/A	2021/02/25	AB SOP-00005	SM 23 4500-H+B m
Total Phosphorus (1)	14	2021/02/26	2021/02/26	AB SOP-00024	SM 23 4500-P A,B,F m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope

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Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

CITY OF ABBOTSFORD
CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 630596-01-01, 39565, 39566, 39567, 39568, 39569,
3956A, 3956D, 3956B, 3956C, 41C64, 3AF04, 3AF05

Report Date: 2021/03/01
Report #: R2991156
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C110765
Received: 2021/02/19, 18:30

dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by BV Labs Calgary Environmental
(2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas Laboratories endeavours to analyze samples as soon as possible after receipt.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (604) 734 7276
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Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID				ZI6493			ZI6494		ZI6495		
Sampling Date				2021/02/19 16:14			2021/02/19 12:45		2021/02/19 16:00		
COC Number				39565			39566		39567		
	UNITS	**MAC**	**OG**	**H01 (39565)**	**RDL**	**QC Batch**	**H02 (39566)**	**QC Batch**	**H03 (39567)**	**RDL**	**QC Batch**
Calculated Parameters											
Nitrate (N)	mg/L	10	-	2.30	0.0040	A161184	1.24	A161184	1.76	0.0020	A161184
Misc. Inorganics											
pH	pH	-	7.0:10.5	**6.94**	N/A	A164815	7.58	A164816	7.24	N/A	A164815
Anions											
Dissolved Fluoride (F)	mg/L	1.5	-	<0.050	0.050	A165139	<0.050	A165139	<0.050	0.050	A165139
Nutrients											
Total Ammonia (N)	mg/L	-	-	0.019	0.015	A162862	0.015	A162862	<0.015	0.015	A162862
Total Phosphorus (P)	mg/L	-	-	0.0080	0.0030	A165907	0.0096	A165907	0.0070	0.0030	A165907
Nitrate plus Nitrite (N)	mg/L	-	-	2.30 (1)	0.0040	A161283	1.25	A161283	1.76	0.0020	A161283
Nitrite (N)	mg/L	1	-	<0.0020	0.0020	A161284	0.0022	A161284	<0.0020	0.0020	A161284

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

BV Labs ID				ZI6496		ZI6497		ZI6498		
Sampling Date				2021/02/19 11:40		2021/02/19 13:08		2021/02/19 11:03		
COC Number				39568		39569		3956A		
	UNITS	**MAC**	**OG**	**B01 (39568)**	**QC Batch**	**B02 (39569)**	**QC Batch**	**W01 (3956A)**	**RDL**	**QC Batch**
Calculated Parameters										
Nitrate (N)	mg/L	10	-	1.75	A161184	1.61	A161184	1.12	0.0020	A161184
Misc. Inorganics										
pH	pH	-	7.0:10.5	7.23	A164815	7.27	A164816	7.18	N/A	A164815
Anions										
Dissolved Fluoride (F)	mg/L	1.5	-	<0.050	A165139	<0.050	A165139	<0.050	0.050	A165139
Nutrients										
Total Ammonia (N)	mg/L	-	-	0.14	A162862	0.071	A162862	0.085	0.015	A162862
Total Phosphorus (P)	mg/L	-	-	0.016	A165907	0.016	A165907	0.015	0.0030	A165907
Nitrate plus Nitrite (N)	mg/L	-	-	1.75	A161283	1.61	A161283	1.12	0.0020	A161283
Nitrite (N)	mg/L	1	-	0.0082	A161284	0.0079	A161284	0.0062	0.0020	A161284

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID				ZI6499	ZI6500	ZI6501		ZI6502	ZI6503		
Sampling Date				2021/02/19 10:35	2021/02/19 10:23	2021/02/19 13:54		2021/02/19 14:24	2021/02/19 15:00		
COC Number				3956D	3956D	3956B		3956C	41C64		
	UNITS	**MAC**	**OG**	**D01 (3956D)**	**D02 (3956D)**	**F01 (3956B)**	**QC Batch**	**F02 (3956C)**	**F0F (41C64)**	**RDL**	**QC Batch**
Calculated Parameters											
Nitrate (N)	mg/L	10	-	1.19	0.956	0.727	A161184	0.845	0.695	0.0020	A161184
Misc. Inorganics											
pH	pH	-	7.0:10.5	**6.57 (1)**	7.45	7.50	A164816	7.33	7.35	N/A	A164815
Anions											
Dissolved Fluoride (F)	mg/L	1.5	-	<0.050	<0.050	<0.050	A165139	<0.050	<0.050	0.050	A165139
Nutrients											
Total Ammonia (N)	mg/L	-	-	0.028	0.029	0.081	A162862	0.020	0.13	0.015	A162862
Total Phosphorus (P)	mg/L	-	-	0.0088	0.0080	0.014	A165907	0.0094	0.015	0.0030	A165907
Nitrate plus Nitrite (N)	mg/L	-	-	1.20	0.959	0.736	A161283	0.847	0.708	0.0020	A161283
Nitrite (N)	mg/L	1	-	0.0036	0.0033	0.0097	A161284	0.0025	0.0131	0.0020	A161284

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Duplicate exceeds acceptance criteria. Unable to reanalyze due to insufficient sample.

BV Labs ID				ZI6504			ZI6505		
Sampling Date				2021/02/19 16:14			2021/02/19		
COC Number				39565			3AF04		
	UNITS	**MAC**	**OG**	**DUP H01**	**RDL**	**QC Batch**	**TRIP BLANK (3AF04)**	**RDL**	**QC Batch**
Calculated Parameters									
Nitrate (N)	mg/L	10	-	2.28	0.0040	A161184	<0.0020	0.0020	A161184
Misc. Inorganics									
pH	pH	-	7.0:10.5	7.02	N/A	A164816	7.98	N/A	A164816
Anions									
Dissolved Fluoride (F)	mg/L	1.5	-	<0.050	0.050	A165139	<0.050	0.050	A165139
Nutrients									
Total Ammonia (N)	mg/L	-	-	<0.015	0.015	A162862	<0.015	0.015	A162859
Total Phosphorus (P)	mg/L	-	-	0.0081	0.0030	A165907	<0.0030	0.0030	A165907
Nitrate plus Nitrite (N)	mg/L	-	-	2.28 (1)	0.0040	A161283	<0.0020	0.0020	A161283
Nitrite (N)	mg/L	1	-	<0.0020	0.0020	A161284	<0.0020	0.0020	A161284

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

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CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID				ZI6506		
Sampling Date				2021/02/19 17:00		
COC Number				3AF05		
	UNITS	**MAC**	**OG**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Calculated Parameters						
Nitrate (N)	mg/L	10	-	<0.0020	0.0020	A161184
Misc. Inorganics						
pH	pH	-	7.0:10.5	7.79	N/A	A164815
Anions						
Dissolved Fluoride (F)	mg/L	1.5	-	<0.050	0.050	A165139
Nutrients						
Total Ammonia (N)	mg/L	-	-	<0.015	0.015	A162859
Total Phosphorus (P)	mg/L	-	-	<0.0030	0.0030	A165907
Nitrate plus Nitrite (N)	mg/L	-	-	<0.0020	0.0020	A161283
Nitrite (N)	mg/L	1	-	<0.0020	0.0020	A161284

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID					ZI6493	ZI6494	ZI6495	ZI6496	ZI6497		
Sampling Date					2021/02/19 16:14	2021/02/19 12:45	2021/02/19 16:00	2021/02/19 11:40	2021/02/19 13:08		
COC Number					39565	39566	39567	39568	39569		
	UNITS	**MAC**	**AO**	**OG**	**H01 (39565)**	**H02 (39566)**	**H03 (39567)**	**B01 (39568)**	**B02 (39569)**	**RDL**	**QC Batch**
Calculated Parameters											
Total Hardness (CaCO3)	mg/L	-	-	-	99.1	88.7	91.1	62.3	82.2	0.50	A161182
Elements											
Total Mercury (Hg)	ug/L	1	-	-	0.0055	<0.0019	<0.0019	<0.0019	<0.0019	0.0019	A162272
Total Metals by ICPMS											
Total Aluminum (Al)	ug/L	-	-	100	40.9	**217**	26.8	72.1	**426**	3.0	A163483
Total Antimony (Sb)	ug/L	6	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	A163483
Total Arsenic (As)	ug/L	10	-	-	0.59	0.99	0.52	0.31	0.69	0.10	A163483
Total Barium (Ba)	ug/L	2000	-	-	13.9	15.9	15.7	35.1	22.3	1.0	A163483
Total Beryllium (Be)	ug/L	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A163483
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	A163483
Total Boron (B)	ug/L	5000	-	-	<50	<50	<50	<50	<50	50	A163483
Total Cadmium (Cd)	ug/L	7	-	-	0.029	0.017	0.025	0.036	0.020	0.010	A163483
Total Chromium (Cr)	ug/L	50	-	-	<1.0	<1.0	<1.0	1.3	1.4	1.0	A163483
Total Cobalt (Co)	ug/L	-	-	-	<0.20	<0.20	<0.20	0.47	0.38	0.20	A163483
Total Copper (Cu)	ug/L	2000	1000	-	1.49	1.45	1.64	1.85	1.75	0.50	A163483
Total Iron (Fe)	ug/L	-	300	-	106	**416**	48	**1140**	**928**	10	A163483
Total Lead (Pb)	ug/L	5	-	-	<0.20	<0.20	<0.20	0.44	0.30	0.20	A163483
Total Lithium (Li)	ug/L	-	-	-	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	A163483
Total Manganese (Mn)	ug/L	120	20	-	15.3	**46.6**	13.1	**137**	**126**	1.0	A163483
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	A163483
Total Nickel (Ni)	ug/L	-	-	-	<1.0	<1.0	<1.0	1.3	1.5	1.0	A163483
Total Selenium (Se)	ug/L	50	-	-	0.21	0.13	0.16	<0.10	0.14	0.10	A163483
Total Silicon (Si)	ug/L	-	-	-	9270	8640	8180	6960	9900	100	A163483
Total Silver (Ag)	ug/L	-	-	-	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	A163483
Total Strontium (Sr)	ug/L	7000	-	-	150	117	133	185	136	1.0	A163483
Total Thallium (Tl)	ug/L	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	A163483
Total Tin (Sn)	ug/L	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A163483
Total Titanium (Ti)	ug/L	-	-	-	<5.0	10.3	<5.0	<5.0	20.9	5.0	A163483
Total Uranium (U)	ug/L	20	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A163483
Total Vanadium (V)	ug/L	-	-	-	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A163483
Total Zinc (Zn)	ug/L	-	5000	-	8.5	9.5	18.1	24.6	9.7	5.0	A163483

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID					ZI6493	ZI6494	ZI6495	ZI6496	ZI6497		
Sampling Date					2021/02/19 16:14	2021/02/19 12:45	2021/02/19 16:00	2021/02/19 11:40	2021/02/19 13:08		
COC Number					39565	39566	39567	39568	39569		
	UNITS	**MAC**	**AO**	**OG**	**H01 (39565)**	**H02 (39566)**	**H03 (39567)**	**B01 (39568)**	**B02 (39569)**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	-	-	<0.10	<0.10	<0.10	0.17	0.20	0.10	A163483
Total Calcium (Ca)	mg/L	-	-	-	28.2	25.4	26.1	18.6	22.8	0.050	A161183
Total Magnesium (Mg)	mg/L	-	-	-	6.96	6.12	6.31	3.84	6.13	0.050	A161183
Total Potassium (K)	mg/L	-	-	-	1.61	1.63	1.86	1.40	1.34	0.050	A161183
Total Sodium (Na)	mg/L	-	200	-	41.6	38.7	60.3	67.3	30.0	0.050	A161183
Total Sulphur (S)	mg/L	-	-	-	4.7	5.5	6.0	3.6	4.7	3.0	A161183

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID					ZI6498	ZI6499	ZI6500	ZI6501		
Sampling Date					2021/02/19 11:03	2021/02/19 10:35	2021/02/19 10:23	2021/02/19 13:54		
COC Number					3956A	3956D	3956D	3956B		
	UNITS	**MAC**	**AO**	**OG**	**W01 (3956A)**	**D01 (3956D)**	**D02 (3956D)**	**F01 (3956B)**	**RDL**	**QC Batch**
Calculated Parameters										
Total Hardness (CaCO3)	mg/L	-	-	-	58.3	71.5	98.1	82.2	0.50	A161182
Elements										
Total Mercury (Hg)	ug/L	1	-	-	<0.0019	<0.0019	<0.0019	<0.0019	0.0019	A162272
Total Metals by ICPMS										
Total Aluminum (Al)	ug/L	-	-	100	27.1	62.1	28.1	**134**	3.0	A163483
Total Antimony (Sb)	ug/L	6	-	-	<0.50	<0.50	<0.50	<0.50	0.50	A163483
Total Arsenic (As)	ug/L	10	-	-	0.64	0.62	1.22	1.73	0.10	A163483
Total Barium (Ba)	ug/L	2000	-	-	20.3	16.7	11.5	22.5	1.0	A163483
Total Beryllium (Be)	ug/L	-	-	-	<0.10	<0.10	<0.10	<0.10	0.10	A163483
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	<1.0	<1.0	<1.0	1.0	A163483
Total Boron (B)	ug/L	5000	-	-	<50	<50	<50	<50	50	A163483
Total Cadmium (Cd)	ug/L	7	-	-	0.012	<0.010	<0.010	<0.010	0.010	A163483
Total Chromium (Cr)	ug/L	50	-	-	<1.0	<1.0	<1.0	1.0	1.0	A163483
Total Cobalt (Co)	ug/L	-	-	-	<0.20	<0.20	<0.20	<0.20	0.20	A163483
Total Copper (Cu)	ug/L	2000	1000	-	0.77	0.89	<0.50	2.03	0.50	A163483
Total Iron (Fe)	ug/L	-	300	-	**432**	295	**366**	**539**	10	A163483
Total Lead (Pb)	ug/L	5	-	-	<0.20	<0.20	<0.20	<0.20	0.20	A163483
Total Lithium (Li)	ug/L	-	-	-	<2.0	<2.0	<2.0	<2.0	2.0	A163483
Total Manganese (Mn)	ug/L	120	20	-	**46.6**	**54.0**	**141**	**122**	1.0	A163483
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	<1.0	<1.0	<1.0	1.0	A163483
Total Nickel (Ni)	ug/L	-	-	-	<1.0	<1.0	<1.0	<1.0	1.0	A163483
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.15	0.23	0.11	0.10	A163483
Total Silicon (Si)	ug/L	-	-	-	6940	7570	10900	4680	100	A163483
Total Silver (Ag)	ug/L	-	-	-	<0.020	<0.020	<0.020	<0.020	0.020	A163483
Total Strontium (Sr)	ug/L	7000	-	-	111	114	133	136	1.0	A163483
Total Thallium (Tl)	ug/L	-	-	-	<0.010	<0.010	<0.010	<0.010	0.010	A163483
Total Tin (Sn)	ug/L	-	-	-	<5.0	<5.0	<5.0	<5.0	5.0	A163483
Total Titanium (Ti)	ug/L	-	-	-	<5.0	<5.0	<5.0	6.2	5.0	A163483
Total Uranium (U)	ug/L	20	-	-	<0.10	<0.10	<0.10	<0.10	0.10	A163483
Total Vanadium (V)	ug/L	-	-	-	<5.0	<5.0	<5.0	<5.0	5.0	A163483
Total Zinc (Zn)	ug/L	-	5000	-	6.3	<5.0	<5.0	7.9	5.0	A163483

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID					ZI6498	ZI6499	ZI6500	ZI6501		
Sampling Date					2021/02/19 11:03	2021/02/19 10:35	2021/02/19 10:23	2021/02/19 13:54		
COC Number					3956A	3956D	3956D	3956B		
	UNITS	**MAC**	**AO**	**OG**	**W01 (3956A)**	**D01 (3956D)**	**D02 (3956D)**	**F01 (3956B)**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	-	-	<0.10	<0.10	<0.10	0.12	0.10	A163483
Total Calcium (Ca)	mg/L	-	-	-	15.7	19.2	25.4	22.7	0.050	A161183
Total Magnesium (Mg)	mg/L	-	-	-	4.64	5.71	8.39	6.22	0.050	A161183
Total Potassium (K)	mg/L	-	-	-	0.979	1.51	1.32	1.64	0.050	A161183
Total Sodium (Na)	mg/L	-	200	-	20.9	24.6	10.3	74.6	0.050	A161183
Total Sulphur (S)	mg/L	-	-	-	3.0	4.9	4.4	5.0	3.0	A161183

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID					ZI6502	ZI6503	ZI6504		ZI6505		
Sampling Date					2021/02/19 14:24	2021/02/19 15:00	2021/02/19 16:14		2021/02/19		
COC Number					3956C	41C64	39565		3AF04		
	UNITS	**MAC**	**AO**	**OG**	**F02 (3956C)**	**F0F (41C64)**	**DUP H01**	**QC Batch**	**TRIP BLANK (3AF04)**	**RDL**	**QC Batch**
Calculated Parameters											
Total Hardness (CaCO3)	mg/L	-	-	-	69.1	67.1	96.2	A161182	<0.50	0.50	A161182
Elements											
Total Mercury (Hg)	ug/L	1	-	-	<0.0019	<0.0019	0.0050	A162314	<0.0019	0.0019	A162314
Total Metals by ICPMS											
Total Aluminum (Al)	ug/L	-	-	100	86.4	**191**	39.4	A163483	<3.0	3.0	A163569
Total Antimony (Sb)	ug/L	6	-	-	<0.50	<0.50	<0.50	A163483	<0.50	0.50	A163569
Total Arsenic (As)	ug/L	10	-	-	0.29	1.15	0.53	A163483	<0.10	0.10	A163569
Total Barium (Ba)	ug/L	2000	-	-	28.4	25.2	13.5	A163483	<1.0	1.0	A163569
Total Beryllium (Be)	ug/L	-	-	-	<0.10	<0.10	<0.10	A163483	<0.10	0.10	A163569
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	<1.0	<1.0	A163483	<1.0	1.0	A163569
Total Boron (B)	ug/L	5000	-	-	<50	<50	<50	A163483	<50	50	A163569
Total Cadmium (Cd)	ug/L	7	-	-	<0.010	0.018	0.026	A163483	<0.010	0.010	A163569
Total Chromium (Cr)	ug/L	50	-	-	<1.0	<1.0	<1.0	A163483	<1.0	1.0	A163569
Total Cobalt (Co)	ug/L	-	-	-	<0.20	0.26	<0.20	A163483	<0.20	0.20	A163569
Total Copper (Cu)	ug/L	2000	1000	-	1.62	2.79	1.46	A163483	<0.50	0.50	A163569
Total Iron (Fe)	ug/L	-	300	-	**310**	**700**	100	A163483	<10	10	A163569
Total Lead (Pb)	ug/L	5	-	-	<0.20	0.40	<0.20	A163483	<0.20	0.20	A163569
Total Lithium (Li)	ug/L	-	-	-	<2.0	<2.0	<2.0	A163483	<2.0	2.0	A163569
Total Manganese (Mn)	ug/L	120	20	-	**48.5**	**130**	15.6	A163483	<1.0	1.0	A163569
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	<1.0	<1.0	A163483	<1.0	1.0	A163569
Total Nickel (Ni)	ug/L	-	-	-	<1.0	<1.0	<1.0	A163483	<1.0	1.0	A163569
Total Selenium (Se)	ug/L	50	-	-	<0.10	<0.10	0.19	A163483	<0.10	0.10	A163569
Total Silicon (Si)	ug/L	-	-	-	4080	3990	8880	A163483	<100	100	A163569
Total Silver (Ag)	ug/L	-	-	-	<0.020	<0.020	<0.020	A163483	<0.020	0.020	A163569
Total Strontium (Sr)	ug/L	7000	-	-	121	115	151	A163483	<1.0	1.0	A163569
Total Thallium (Tl)	ug/L	-	-	-	<0.010	<0.010	<0.010	A163483	<0.010	0.010	A163569
Total Tin (Sn)	ug/L	-	-	-	<5.0	<5.0	<5.0	A163483	<5.0	5.0	A163569
Total Titanium (Ti)	ug/L	-	-	-	<5.0	10.9	<5.0	A163483	<5.0	5.0	A163569
Total Uranium (U)	ug/L	20	-	-	<0.10	<0.10	<0.10	A163483	<0.10	0.10	A163569
Total Vanadium (V)	ug/L	-	-	-	<5.0	<5.0	<5.0	A163483	<5.0	5.0	A163569
Total Zinc (Zn)	ug/L	-	5000	-	12.1	16.6	8.4	A163483	<5.0	5.0	A163569

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID					ZI6502	ZI6503	ZI6504		ZI6505		
Sampling Date					2021/02/19 14:24	2021/02/19 15:00	2021/02/19 16:14		2021/02/19		
COC Number					3956C	41C64	39565		3AF04		
	UNITS	**MAC**	**AO**	**OG**	**F02 (3956C)**	**F0F (41C64)**	**DUP H01**	**QC Batch**	**TRIP BLANK (3AF04)**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	-	-	<0.10	0.25	<0.10	A163483	<0.10	0.10	A163569
Total Calcium (Ca)	mg/L	-	-	-	19.6	18.8	27.1	A161183	<0.050	0.050	A161183
Total Magnesium (Mg)	mg/L	-	-	-	4.88	4.88	6.93	A161183	<0.050	0.050	A161183
Total Potassium (K)	mg/L	-	-	-	1.99	1.45	1.65	A161183	<0.050	0.050	A161183
Total Sodium (Na)	mg/L	-	200	-	71.6	86.0	41.2	A161183	<0.050	0.050	A161183
Total Sulphur (S)	mg/L	-	-	-	4.1	3.8	4.7	A161183	<3.0	3.0	A161183

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID					ZI6506		
Sampling Date					2021/02/19 17:00		
COC Number					3AF05		
	UNITS	**MAC**	**AO**	**OG**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Calculated Parameters							
Total Hardness (CaCO3)	mg/L	-	-	-	<0.50	0.50	A161182
Elements							
Total Mercury (Hg)	ug/L	1	-	-	<0.0019	0.0019	A162314
Total Metals by ICPMS							
Total Aluminum (Al)	ug/L	-	-	100	<3.0	3.0	A163569
Total Antimony (Sb)	ug/L	6	-	-	<0.50	0.50	A163569
Total Arsenic (As)	ug/L	10	-	-	<0.10	0.10	A163569
Total Barium (Ba)	ug/L	2000	-	-	<1.0	1.0	A163569
Total Beryllium (Be)	ug/L	-	-	-	<0.10	0.10	A163569
Total Bismuth (Bi)	ug/L	-	-	-	<1.0	1.0	A163569
Total Boron (B)	ug/L	5000	-	-	<50	50	A163569
Total Cadmium (Cd)	ug/L	7	-	-	<0.010	0.010	A163569
Total Chromium (Cr)	ug/L	50	-	-	<1.0	1.0	A163569
Total Cobalt (Co)	ug/L	-	-	-	<0.20	0.20	A163569
Total Copper (Cu)	ug/L	2000	1000	-	<0.50	0.50	A163569
Total Iron (Fe)	ug/L	-	300	-	<10	10	A163569
Total Lead (Pb)	ug/L	5	-	-	<0.20	0.20	A163569
Total Lithium (Li)	ug/L	-	-	-	<2.0	2.0	A163569
Total Manganese (Mn)	ug/L	120	20	-	<1.0	1.0	A163569
Total Molybdenum (Mo)	ug/L	-	-	-	<1.0	1.0	A163569
Total Nickel (Ni)	ug/L	-	-	-	<1.0	1.0	A163569
Total Selenium (Se)	ug/L	50	-	-	<0.10	0.10	A163569
Total Silicon (Si)	ug/L	-	-	-	<100	100	A163569
Total Silver (Ag)	ug/L	-	-	-	<0.020	0.020	A163569
Total Strontium (Sr)	ug/L	7000	-	-	<1.0	1.0	A163569
Total Thallium (Tl)	ug/L	-	-	-	<0.010	0.010	A163569
Total Tin (Sn)	ug/L	-	-	-	<5.0	5.0	A163569
Total Titanium (Ti)	ug/L	-	-	-	<5.0	5.0	A163569
Total Uranium (U)	ug/L	20	-	-	<0.10	0.10	A163569
Total Vanadium (V)	ug/L	-	-	-	<5.0	5.0	A163569
Total Zinc (Zn)	ug/L	-	5000	-	<5.0	5.0	A163569

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID					ZI6506		
Sampling Date					2021/02/19 17:00		
COC Number					3AF05		
	UNITS	**MAC**	**AO**	**OG**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	-	-	<0.10	0.10	A163569
Total Calcium (Ca)	mg/L	-	-	-	<0.050	0.050	A161183
Total Magnesium (Mg)	mg/L	-	-	-	<0.050	0.050	A161183
Total Potassium (K)	mg/L	-	-	-	<0.050	0.050	A161183
Total Sodium (Na)	mg/L	-	200	-	<0.050	0.050	A161183
Total Sulphur (S)	mg/L	-	-	-	<3.0	3.0	A161183

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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GENERAL COMMENTS

MAC,AO,OG: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, September 2020.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:
1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.
4. To ensure effectiveness of disinfection and for good operation of the distribution system, it is recommended that water entering the distribution system have turbidity levels of 1.0 NTU or less.
Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C110765
Report Date: 2021/03/01

QUALITY ASSURANCE REPORT

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A161283	Nitrate plus Nitrite (N)	2021/02/20	NC	80 - 120	109	80 - 120	<0.0020	mg/L	0.10	25		
A161284	Nitrite (N)	2021/02/20	98	80 - 120	101	80 - 120	<0.0020	mg/L	7.4	25		
A162272	Total Mercury (Hg)	2021/02/22	113	80 - 120	117	80 - 120	<0.0019	ug/L	NC	20		
A162314	Total Mercury (Hg)	2021/02/22	112	80 - 120	114	80 - 120	<0.0019	ug/L	NC	20		
A162859	Total Ammonia (N)	2021/02/23	106	80 - 120	102	80 - 120	<0.015	mg/L	1.9	20		
A162862	Total Ammonia (N)	2021/02/23	101	80 - 120	102	80 - 120	<0.015	mg/L	3.8	20		
A163483	Total Aluminum (Al)	2021/02/25	102	80 - 120	99	80 - 120	<3.0	ug/L	0.083	20		
A163483	Total Antimony (Sb)	2021/02/25	106	80 - 120	100	80 - 120	<0.50	ug/L	NC	20		
A163483	Total Arsenic (As)	2021/02/25	106	80 - 120	99	80 - 120	<0.10	ug/L	5.4	20		
A163483	Total Barium (Ba)	2021/02/25	97	80 - 120	94	80 - 120	<1.0	ug/L	0.42	20		
A163483	Total Beryllium (Be)	2021/02/25	106	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
A163483	Total Bismuth (Bi)	2021/02/25	94	80 - 120	94	80 - 120	<1.0	ug/L	NC	20		
A163483	Total Boron (B)	2021/02/25	106	80 - 120	103	80 - 120	<50	ug/L	NC	20		
A163483	Total Cadmium (Cd)	2021/02/25	103	80 - 120	99	80 - 120	<0.010	ug/L	12	20		
A163483	Total Chromium (Cr)	2021/02/25	95	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
A163483	Total Cobalt (Co)	2021/02/25	93	80 - 120	94	80 - 120	<0.20	ug/L	NC	20		
A163483	Total Copper (Cu)	2021/02/25	90	80 - 120	93	80 - 120	<0.50	ug/L	0.86	20		
A163483	Total Iron (Fe)	2021/02/25	104	80 - 120	98	80 - 120	<10	ug/L	1.5	20		
A163483	Total Lead (Pb)	2021/02/25	96	80 - 120	95	80 - 120	<0.20	ug/L	NC	20		
A163483	Total Lithium (Li)	2021/02/25	99	80 - 120	100	80 - 120	<2.0	ug/L	NC	20		
A163483	Total Manganese (Mn)	2021/02/25	96	80 - 120	95	80 - 120	<1.0	ug/L	0.24	20		
A163483	Total Molybdenum (Mo)	2021/02/25	106	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
A163483	Total Nickel (Ni)	2021/02/25	92	80 - 120	95	80 - 120	<1.0	ug/L	NC	20		
A163483	Total Selenium (Se)	2021/02/25	106	80 - 120	101	80 - 120	<0.10	ug/L	2.5	20		
A163483	Total Silicon (Si)	2021/02/25	NC	80 - 120	104	80 - 120	<100	ug/L	0.56	20		
A163483	Total Silver (Ag)	2021/02/25	97	80 - 120	95	80 - 120	<0.020	ug/L	NC	20		
A163483	Total Strontium (Sr)	2021/02/25	NC	80 - 120	97	80 - 120	<1.0	ug/L	0.0031	20		
A163483	Total Thallium (Tl)	2021/02/25	96	80 - 120	93	80 - 120	<0.010	ug/L	NC	20		
A163483	Total Tin (Sn)	2021/02/25	99	80 - 120	96	80 - 120	<5.0	ug/L	NC	20		
A163483	Total Titanium (Ti)	2021/02/25	102	80 - 120	98	80 - 120	<5.0	ug/L	NC	20		
A163483	Total Uranium (U)	2021/02/25	103	80 - 120	96	80 - 120	<0.10	ug/L	NC	20		

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BV Labs Job #: C110765
Report Date: 2021/03/01

QUALITY ASSURANCE REPORT(CONT'D)

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A163483	Total Vanadium (V)	2021/02/25	99	80 - 120	95	80 - 120	<5.0	ug/L	NC	20		
A163483	Total Zinc (Zn)	2021/02/25	101	80 - 120	100	80 - 120	<5.0	ug/L	2.3	20		
A163483	Total Zirconium (Zr)	2021/02/25	105	80 - 120	100	80 - 120	<0.10	ug/L	NC	20		
A163569	Total Aluminum (Al)	2021/02/25	105	80 - 120	101	80 - 120	<3.0	ug/L	NC	20		
A163569	Total Antimony (Sb)	2021/02/25	110	80 - 120	109	80 - 120	<0.50	ug/L	NC	20		
A163569	Total Arsenic (As)	2021/02/25	106	80 - 120	106	80 - 120	<0.10	ug/L	NC	20		
A163569	Total Barium (Ba)	2021/02/25	102	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
A163569	Total Beryllium (Be)	2021/02/25	111	80 - 120	108	80 - 120	<0.10	ug/L	NC	20		
A163569	Total Bismuth (Bi)	2021/02/25	101	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
A163569	Total Boron (B)	2021/02/25	117	80 - 120	113	80 - 120	<50	ug/L	NC	20		
A163569	Total Cadmium (Cd)	2021/02/25	108	80 - 120	106	80 - 120	<0.010	ug/L	NC	20		
A163569	Total Chromium (Cr)	2021/02/25	102	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
A163569	Total Cobalt (Co)	2021/02/25	101	80 - 120	98	80 - 120	<0.20	ug/L	NC	20		
A163569	Total Copper (Cu)	2021/02/25	101	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
A163569	Total Iron (Fe)	2021/02/25	106	80 - 120	103	80 - 120	<10	ug/L	NC	20		
A163569	Total Lead (Pb)	2021/02/25	100	80 - 120	99	80 - 120	<0.20	ug/L	NC	20		
A163569	Total Lithium (Li)	2021/02/25	104	80 - 120	102	80 - 120	<2.0	ug/L	NC	20		
A163569	Total Manganese (Mn)	2021/02/25	102	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
A163569	Total Molybdenum (Mo)	2021/02/25	105	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
A163569	Total Nickel (Ni)	2021/02/25	101	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
A163569	Total Selenium (Se)	2021/02/25	109	80 - 120	107	80 - 120	<0.10	ug/L	NC	20		
A163569	Total Silicon (Si)	2021/02/25	111	80 - 120	110	80 - 120	<100	ug/L	NC	20		
A163569	Total Silver (Ag)	2021/02/25	102	80 - 120	101	80 - 120	<0.020	ug/L	NC	20		
A163569	Total Strontium (Sr)	2021/02/25	102	80 - 120	102	80 - 120	<1.0	ug/L	NC	20		
A163569	Total Thallium (Tl)	2021/02/25	99	80 - 120	99	80 - 120	<0.010	ug/L	NC	20		
A163569	Total Tin (Sn)	2021/02/25	104	80 - 120	103	80 - 120	<5.0	ug/L	NC	20		
A163569	Total Titanium (Ti)	2021/02/25	106	80 - 120	101	80 - 120	<5.0	ug/L	NC	20		
A163569	Total Uranium (U)	2021/02/25	103	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
A163569	Total Vanadium (V)	2021/02/25	103	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
A163569	Total Zinc (Zn)	2021/02/25	109	80 - 120	108	80 - 120	<5.0	ug/L	NC	20		
A163569	Total Zirconium (Zr)	2021/02/25	104	80 - 120	104	80 - 120	<0.10	ug/L	NC	20		

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Report Date: 2021/03/01

QUALITY ASSURANCE REPORT(CONT'D)

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A164815	pH	2021/02/25			100	97 - 103			4.4	N/A		
A164816	pH	2021/02/25			100	97 - 103			5.5	N/A		
A165139	Dissolved Fluoride (F)	2021/02/25	108	80 - 120	102	80 - 120	<0.050	mg/L	NC	20		
A165907	Total Phosphorus (P)	2021/02/26	105	80 - 120	103	80 - 120	<0.0030	mg/L	2.6	20	93	80 - 120

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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BV Labs Job #: C110765
Report Date: 2021/03/01

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: KP

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

Harry (Peng) Liang, Senior Analyst, B.Sc., QP

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C110765_COC

Bottle Order #: 630596

INVOICE TO:		Report Information		Project Information	
Company Name	#1414 CITY OF ABBOTSFORD	Company Name		Quotation #	C01193
Contact Name	Amy Peters	Contact Name	Amy Peters	P.O. #	
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Project #	Bevan #1 Creek Water Quality
Phone	(778) 549-1240 Fax (604) 850-6418	Phone	(778) 549-1240 Fax	Project Name	
Email	apeters@abbotsford.ca	Email	apeters@abbotsford.ca	Site #	
				Sampled By	Katie Piper

Chain Of Custody Record: C#630596-02-01

Project Manager: Customer Solutions

Regulatory Criteria:
- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other _____

Special Instructions

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: _____ [ ]
Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR/CCME Tot. Metals in Water w/ CV Hg	Ammonia-N (Total)	Fluoride	Nitrate+Nitrite (N) (low level)	Nitrite (N) (low level)	Nitrogen - Nitrate (as N) Low Level Calc	pH @25°C	Total Phosphorus			# of Bottles	Comments
1		F0F (41C64)	21/02/19	15:00	water	N	X	X	X	X	X	X	X	X			6	
2		DUP H01	↓	16:14	↓	↓	X	X	X	X	X	X	X	X			↓	
3		TRIP BLANK (3AF04)	↓	—	↓	↓	X	X	X	X	X	X	X	X			↓	
4		FIELD BLANK (3AF05)	↓	17:00	↓	↓	X	X	X	X	X	X	X	X			↓	
5																		
6																		
7																		
8																		
9																		
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Katie Piper	21/02/19	18:17	PEDRO TAOC	2021/02/19	18:30	

Lab Use Only: Time Sensitive [ ] | Temperature (°C) on Receipt: 3.5, 7 / 3.0, 2 / 7.3, 8 | Custody Seal Intact on Cooler? [ ] Yes [X] No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
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White: BV Labs Yellow: Client

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Page 1 of 2

C110765_COC

Bottle Order #: 630596

INVOICE TO:		Report Information		Project Information	
Company Name	#1414 CITY OF ABBOTSFORD	Company Name		Quotation #	C01193
Contact Name	Amy Peters	Contact Name	Amy Peters	P.O. #	
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Project #	Bevan #1 Creek Water Quality
Phone	(778) 549-1240 Fax: (604) 850-6418	Phone	(778) 549-1240 Fax:	Project Name	
Email	apeters@abbotsford.ca	Email	apeters@abbotsford.ca	Site #	
				Sampled By	Kathe Piper

Chain Of Custody Record: C#630596-01-01

Project Manager: Customer Solutions

Regulatory Criteria:
- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other _____

Special Instructions:

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified)
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: _____ [ ]
Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR/CCME Tot. Metals in Water w/ CV Hg	Ammonia-N (Total)	Fluoride	Nitrate+Nitrite (N) (low level)	Nitrite (N) (low level)	Nitrogen - Nitrate (as N) Low Level Calc	pH @25°C	Total Phosphorus			# of Bottles	Comments
1		H01 (39565)	21/02/19	16:14	Water	N	X	X	X	X	X	X	X	X			6	
2		H02 (39566)		12:45			X	X	X	X	X	X	X	X				
3		H03 (39567)		16:00			X	X	X	X	X	X	X	X				
4		B01 (39568)		11:40			X	X	X	X	X	X	X	X				
5		B02 (39569)		13:08			X	X	X	X	X	X	X	X				
6		W01 (3956A)		11:03			X	X	X	X	X	X	X	X				
7		D01 (3956D)		10:35			X	X	X	X	X	X	X	X				
8		D02 (3956D)		10:23			X	X	X	X	X	X	X	X				
9		F01 (3956B)		13:54			X	X	X	X	X	X	X	X				
10		F02 (3956C)		14:24			X	X	X	X	X	X	X	X				

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Kathe Piper	21/02/19	18:17	PEDRO TACE	2021/02/19	18:30	

Lab Use Only: Time Sensitive [ ] Temperature (°C) on Receipt 3,5,7 Custody Seal Intact on Cooler? [ ] Yes [X] No

3,0,2
7,3,8

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
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White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

CITY OF ABBOTSFORD
CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 632103-01-01, 39565, 39566, 39567, 39568, 39569, 3956A, 3956D, 3956B, 3956C, 41C64, 632103-02-01, 3AF04, 3SF05

Report Date: 2021/03/24
Report #: R3001670
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C117428
Received: 2021/03/17, 18:00

Sample Matrix: Water
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Fluoride	14	N/A	2021/03/19	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO3) (2)	14	N/A	2021/03/22	BBY WI-00033	Auto Calc
Mercury (Total) by CV	14	2021/03/22	2021/03/22	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	14	2021/03/18	2021/03/22	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	14	2021/03/19	2021/03/20	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Ammonia-N (Total)	14	N/A	2021/03/24	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate+Nitrite (N) (low level)	14	N/A	2021/03/18	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) (low level)	14	N/A	2021/03/18	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N) Low Level Calc	14	N/A	2021/03/18	BBY WI-00033	Auto Calc
pH @25°C (3)	14	N/A	2021/03/19	BBY6SOP-00026	SM 23 4500-H+ B m
Total Phosphorus (1)	2	2021/03/22	2021/03/22	AB SOP-00024	SM 23 4500-P A,B,F m
Total Phosphorus (1)	7	2021/03/22	2021/03/23	AB SOP-00024	SM 23 4500-P A,B,F m
Total Phosphorus (1)	5	2021/03/23	2021/03/23	AB SOP-00024	SM 23 4500-P A,B,F m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the

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Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

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CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 632103-01-01, 39565, 39566, 39567, 39568, 39569,
3956A, 3956D, 3956B, 3956C, 41C64, 632103-02-01, 3AF04, 3SF05

Report Date: 2021/03/24
Report #: R3001670
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C117428
Received: 2021/03/17, 18:00
customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by BV Labs Calgary Environmental
(2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas Laboratories endeavours to analyze samples as soon as possible after receipt.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (604) 734 7276
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BV Labs Job #: C117428
Report Date: 2021/03/24

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID			ZM5633			ZM5634		ZM5635		
Sampling Date			2021/03/17 14:47			2021/03/17 12:52		2021/03/17 14:28		
COC Number			39565			39566		39567		
	UNITS	**Criteria**	**H01 (39565)**	**RDL**	**QC Batch**	**H02 (39566)**	**QC Batch**	**H03 (39567)**	**RDL**	**QC Batch**
Calculated Parameters										
Nitrate (N)	mg/L	-	2.44	0.0040	A182588	1.17	A182588	1.88	0.0020	A182588
Misc. Inorganics										
pH	pH	6.5:9.0	7.56	N/A	A184849	8.02	A184849	7.90	N/A	A184849
Anions										
Dissolved Fluoride (F)	mg/L	0.12	<0.050	0.050	A183663	<0.050	A183663	<0.050	0.050	A183663
Nutrients										
Total Ammonia (N)	mg/L	-	<0.015	0.015	A186505	<0.015	A186505	<0.015	0.015	A186507
Total Phosphorus (P)	mg/L	-	0.010	0.0030	A184625	0.0075	A185291	0.0084	0.0030	A184625
Nitrate plus Nitrite (N)	mg/L	-	2.44 (1)	0.0040	A183006	1.18	A183006	1.88	0.0020	A183006
Nitrite (N)	mg/L	0.06	<0.0020	0.0020	A183007	0.0032	A183007	<0.0020	0.0020	A183007

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

BV Labs ID			ZM5636			ZM5637	ZM5638		ZM5639		
Sampling Date			2021/03/17 13:55			2021/03/17 13:12	2021/03/17 15:14		2021/03/17 10:15		
COC Number			39568			39569	3956A		3956D		
	UNITS	**Criteria**	**B01 (39568)**	**RDL**	**QC Batch**	**B02 (39569)**	**W01 (3956A)**	**QC Batch**	**D01 (3956D)**	**RDL**	**QC Batch**
Calculated Parameters											
Nitrate (N)	mg/L	-	2.27	0.0040	A182588	1.72	1.64	A182588	1.30	0.0020	A182588
Misc. Inorganics											
pH	pH	6.5:9.0	7.56	N/A	A184849	7.86	7.80	A184860	7.95	N/A	A184860
Anions											
Dissolved Fluoride (F)	mg/L	0.12	<0.050	0.050	A183663	<0.050	<0.050	A183663	<0.050	0.050	A183663
Nutrients											
Total Ammonia (N)	mg/L	-	0.075	0.015	A186505	0.028	0.026	A186507	<0.015	0.015	A186505
Total Phosphorus (P)	mg/L	-	0.011	0.0030	A185291	0.0073	0.0077	A184625	0.0058	0.0030	A184625
Nitrate plus Nitrite (N)	mg/L	-	2.28 (1)	0.0040	A183006	1.72	1.65	A183006	1.30	0.0020	A183006
Nitrite (N)	mg/L	0.06	0.0094	0.0020	A183007	0.0071	0.0105	A183007	<0.0020	0.0020	A183007

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

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BV Labs Job #: C117428
Report Date: 2021/03/24

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID			ZM5640		ZM5641		ZM5642		ZM5643		
Sampling Date			2021/03/17 10:31		2021/03/17 15:53		2021/03/17 16:14		2021/03/17 16:36		
COC Number			3956D		3956B		3956C		41C64		
	UNITS	**Criteria**	**D02 (3956D)**	**QC Batch**	**F01 (3956B)**	**QC Batch**	**F02 (3956C)**	**QC Batch**	**F0F (41C64)**	**RDL**	**QC Batch**
Calculated Parameters											
Nitrate (N)	mg/L	-	0.114	A182588	0.693	A182588	0.926	A182588	0.370	0.0020	A182588
Misc. Inorganics											
pH	pH	6.5:9.0	7.71	A184860	8.04	A184860	7.74	A184860	7.81	N/A	A184860
Anions											
Dissolved Fluoride (F)	mg/L	0.12	<0.050	A183663	<0.050	A183663	<0.050	A183663	<0.050	0.050	A183663
Nutrients											
Total Ammonia (N)	mg/L	-	0.25	A186505	0.035	A186505	0.034	A186505	0.055	0.015	A186507
Total Phosphorus (P)	mg/L	-	0.069	A184593	0.013	A184625	0.013	A185291	0.018	0.0030	A184625
Nitrate plus Nitrite (N)	mg/L	-	0.127	A183006	0.701	A183006	0.929	A183006	0.376	0.0020	A183006
Nitrite (N)	mg/L	0.06	0.0127	A183007	0.0077	A183007	0.0026	A183007	0.0057	0.0020	A183007

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID			ZM5644	ZM5645		ZM5646		
Sampling Date			2021/03/17 12:52	2021/03/17		2021/03/17 16:53		
COC Number			632103-02-01	3AF04		3SF05		
	UNITS	**Criteria**	**DUP**	**TRIP BLANK (3AF04)**	**QC Batch**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Calculated Parameters								
Nitrate (N)	mg/L	-	1.14	<0.0020	A182588	<0.0020	0.0020	A182588
Misc. Inorganics								
pH	pH	6.5:9.0	8.03	**6.20**	A184860	**6.02**	N/A	A184860
Anions								
Dissolved Fluoride (F)	mg/L	0.12	<0.050	<0.050	A183663	<0.050	0.050	A183663
Nutrients								
Total Ammonia (N)	mg/L	-	<0.015	<0.015	A186505	<0.015	0.015	A186505
Total Phosphorus (P)	mg/L	-	0.0046	<0.0030	A185291	<0.0030	0.0030	A184593
Nitrate plus Nitrite (N)	mg/L	-	1.15	<0.0020	A183006	<0.0020	0.0020	A183006
Nitrite (N)	mg/L	0.06	0.0028	<0.0020	A183007	<0.0020	0.0020	A183007

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable

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BV Labs Job #: C117428
Report Date: 2021/03/24

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZM5633	ZM5634	ZM5635	ZM5636	ZM5637	ZM5638		
Sampling Date			2021/03/17 14:47	2021/03/17 12:52	2021/03/17 14:28	2021/03/17 13:55	2021/03/17 13:12	2021/03/17 15:14		
COC Number			39565	39566	39567	39568	39569	3956A		
	UNITS	**Criteria**	**H01 (39565)**	**H02 (39566)**	**H03 (39567)**	**B01 (39568)**	**B02 (39569)**	**W01 (3956A)**	**RDL**	**QC Batch**
Calculated Parameters										
Total Hardness (CaCO3)	mg/L	-	112	105	114	72.4	97.8	90.9	0.50	A182585
Elements										
Total Mercury (Hg)	ug/L	0.026	0.0104	<0.0019	0.0053	<0.0019	<0.0019	<0.0019	0.0019	A185127
Total Metals by ICPMS										
Total Aluminum (Al)	ug/L	-	16.4	25.7	14.1	35.1	94.0	21.8	3.0	A183140
Total Antimony (Sb)	ug/L	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	A183140
Total Arsenic (As)	ug/L	5	0.47	0.97	0.58	0.26	0.64	0.57	0.10	A183140
Total Barium (Ba)	ug/L	-	13.7	11.5	13.6	27.7	17.9	29.1	1.0	A183140
Total Beryllium (Be)	ug/L	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A183140
Total Bismuth (Bi)	ug/L	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	A183140
Total Boron (B)	ug/L	1500	<50	<50	<50	<50	<50	<50	50	A183140
Total Cadmium (Cd)	ug/L	-	0.026	<0.010	0.018	0.017	0.012	0.013	0.010	A183140
Total Chromium (Cr)	ug/L	-	<1.0	<1.0	<1.0	1.6	<1.0	<1.0	1.0	A183140
Total Cobalt (Co)	ug/L	-	<0.20	<0.20	<0.20	0.22	<0.20	<0.20	0.20	A183140
Total Copper (Cu)	ug/L	-	0.93	0.53	1.12	0.96	0.64	<0.50	0.50	A183140
Total Iron (Fe)	ug/L	300	47	210	27	**557**	**698**	**315**	10	A183140
Total Lead (Pb)	ug/L	-	<0.20	<0.20	<0.20	0.57	<0.20	<0.20	0.20	A183140
Total Lithium (Li)	ug/L	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	A183140
Total Manganese (Mn)	ug/L	-	13.2	41.8	10.5	97.2	155	46.3	1.0	A183140
Total Molybdenum (Mo)	ug/L	73	<1.0	1.8	7.8	<1.0	<1.0	<1.0	1.0	A183140
Total Nickel (Ni)	ug/L	-	<1.0	<1.0	<1.0	1.3	<1.0	<1.0	1.0	A183140
Total Selenium (Se)	ug/L	1	0.22	0.18	0.19	<0.10	0.17	0.14	0.10	A183140
Total Silicon (Si)	ug/L	-	10100	8990	9550	9240	10300	10200	100	A183140
Total Silver (Ag)	ug/L	0.25	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	A183140
Total Strontium (Sr)	ug/L	-	170	136	162	207	158	179	1.0	A183140
Total Thallium (Tl)	ug/L	0.8	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	A183140
Total Tin (Sn)	ug/L	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A183140
Total Titanium (Ti)	ug/L	-	<5.0	<5.0	<5.0	<5.0	5.5	<5.0	5.0	A183140
Total Uranium (U)	ug/L	15	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A183140
Total Vanadium (V)	ug/L	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A183140
Total Zinc (Zn)	ug/L	30	<5.0	<5.0	7.9	9.6	<5.0	<5.0	5.0	A183140

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C117428
Report Date: 2021/03/24

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZM5633	ZM5634	ZM5635	ZM5636	ZM5637	ZM5638		
Sampling Date			2021/03/17 14:47	2021/03/17 12:52	2021/03/17 14:28	2021/03/17 13:55	2021/03/17 13:12	2021/03/17 15:14		
COC Number			39565	39566	39567	39568	39569	3956A		
	UNITS	**Criteria**	**H01 (39565)**	**H02 (39566)**	**H03 (39567)**	**B01 (39568)**	**B02 (39569)**	**W01 (3956A)**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	<0.10	<0.10	<0.10	0.12	<0.10	<0.10	0.10	A183140
Total Calcium (Ca)	mg/L	-	31.9	30.4	32.3	21.2	27.3	24.8	0.050	A182586
Total Magnesium (Mg)	mg/L	-	7.95	6.99	8.05	4.76	7.20	7.01	0.050	A182586
Total Potassium (K)	mg/L	-	1.78	1.66	1.95	1.45	1.46	1.15	0.050	A182586
Total Sodium (Na)	mg/L	-	18.2	12.2	17.3	22.4	11.7	11.9	0.050	A182586
Total Sulphur (S)	mg/L	-	5.0	5.6	5.9	3.6	4.2	4.1	3.0	A182586

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C117428
Report Date: 2021/03/24

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZM5639	ZM5640	ZM5641	ZM5642	ZM5643	ZM5644		
Sampling Date			2021/03/17 10:15	2021/03/17 10:31	2021/03/17 15:53	2021/03/17 16:14	2021/03/17 16:36	2021/03/17 12:52		
COC Number			3956D	3956D	3956B	3956C	41C64	632103-02-01		
	UNITS	**Criteria**	**D01 (3956D)**	**D02 (3956D)**	**F01 (3956B)**	**F02 (3956C)**	**F0F (41C64)**	**DUP**	**RDL**	**QC Batch**
Calculated Parameters										
Total Hardness (CaCO3)	mg/L	-	79.3	80.7	111	74.4	77.8	106	0.50	A182585
Elements										
Total Mercury (Hg)	ug/L	0.026	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	<0.0019	0.0019	A185127
Total Metals by ICPMS										
Total Aluminum (Al)	ug/L	-	26.9	320	88.2	39.4	65.2	26.9	3.0	A183140
Total Antimony (Sb)	ug/L	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.50	A183140
Total Arsenic (As)	ug/L	5	0.41	**6.23**	1.20	0.37	1.01	0.97	0.10	A183140
Total Barium (Ba)	ug/L	-	15.3	26.7	18.5	33.1	20.5	12.0	1.0	A183140
Total Beryllium (Be)	ug/L	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.10	A183140
Total Bismuth (Bi)	ug/L	-	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	A183140
Total Boron (B)	ug/L	1500	<50	<50	<50	<50	<50	<50	50	A183140
Total Cadmium (Cd)	ug/L	-	<0.010	0.020	<0.010	0.017	<0.010	<0.010	0.010	A183140
Total Chromium (Cr)	ug/L	-	<1.0	1.2	<1.0	<1.0	<1.0	<1.0	1.0	A183140
Total Cobalt (Co)	ug/L	-	<0.20	0.75	<0.20	<0.20	0.26	<0.20	0.20	A183140
Total Copper (Cu)	ug/L	-	0.53	1.05	1.31	1.19	1.35	1.05	0.50	A183140
Total Iron (Fe)	ug/L	300	165	**4580**	**683**	**344**	**911**	213	10	A183140
Total Lead (Pb)	ug/L	-	<0.20	0.34	<0.20	<0.20	0.35	<0.20	0.20	A183140
Total Lithium (Li)	ug/L	-	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	2.0	A183140
Total Manganese (Mn)	ug/L	-	26.9	1750	172	97.2	196	42.7	1.0	A183140
Total Molybdenum (Mo)	ug/L	73	<1.0	<1.0	<1.0	<1.0	<1.0	1.8	1.0	A183140
Total Nickel (Ni)	ug/L	-	<1.0	1.1	<1.0	<1.0	<1.0	<1.0	1.0	A183140
Total Selenium (Se)	ug/L	1	0.18	0.16	0.14	<0.10	<0.10	0.17	0.10	A183140
Total Silicon (Si)	ug/L	-	8150	9720	6460	3740	2960	9130	100	A183140
Total Silver (Ag)	ug/L	0.25	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.020	A183140
Total Strontium (Sr)	ug/L	-	124	101	168	128	130	138	1.0	A183140
Total Thallium (Tl)	ug/L	0.8	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	A183140
Total Tin (Sn)	ug/L	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A183140
Total Titanium (Ti)	ug/L	-	<5.0	13.9	<5.0	<5.0	<5.0	<5.0	5.0	A183140
Total Uranium (U)	ug/L	15	<0.10	<0.10	0.12	<0.10	<0.10	<0.10	0.10	A183140
Total Vanadium (V)	ug/L	-	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	5.0	A183140
Total Zinc (Zn)	ug/L	30	<5.0	6.5	<5.0	6.3	6.0	<5.0	5.0	A183140

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C117428
Report Date: 2021/03/24

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZM5639	ZM5640	ZM5641	ZM5642	ZM5643	ZM5644		
Sampling Date			2021/03/17 10:15	2021/03/17 10:31	2021/03/17 15:53	2021/03/17 16:14	2021/03/17 16:36	2021/03/17 12:52		
COC Number			3956D	3956D	3956B	3956C	41C64	632103-02-01		
	UNITS	**Criteria**	**D01 (3956D)**	**D02 (3956D)**	**F01 (3956B)**	**F02 (3956C)**	**F0F (41C64)**	**DUP**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	0.10	A183140
Total Calcium (Ca)	mg/L	-	21.1	21.1	29.5	21.1	21.5	30.8	0.050	A182586
Total Magnesium (Mg)	mg/L	-	6.48	6.83	9.14	5.26	5.83	7.14	0.050	A182586
Total Potassium (K)	mg/L	-	1.40	1.44	1.71	2.46	1.64	1.66	0.050	A182586
Total Sodium (Na)	mg/L	-	11.1	9.70	21.3	23.3	21.2	12.3	0.050	A182586
Total Sulphur (S)	mg/L	-	5.3	3.3	5.4	4.6	4.3	5.9	3.0	A182586

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C117428
Report Date: 2021/03/24

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZM5645	ZM5646		
Sampling Date			2021/03/17	2021/03/17 16:53		
COC Number			3AF04	3SF05		
	UNITS	**Criteria**	**TRIP BLANK (3AF04)**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Calculated Parameters						
Total Hardness (CaCO3)	mg/L	-	<0.50	<0.50	0.50	A182585
Elements						
Total Mercury (Hg)	ug/L	0.026	<0.0019	<0.0019	0.0019	A185127
Total Metals by ICPMS						
Total Aluminum (Al)	ug/L	-	<3.0	<3.0	3.0	A183234
Total Antimony (Sb)	ug/L	-	<0.50	<0.50	0.50	A183234
Total Arsenic (As)	ug/L	5	<0.10	<0.10	0.10	A183234
Total Barium (Ba)	ug/L	-	<1.0	<1.0	1.0	A183234
Total Beryllium (Be)	ug/L	-	<0.10	<0.10	0.10	A183234
Total Bismuth (Bi)	ug/L	-	<1.0	<1.0	1.0	A183234
Total Boron (B)	ug/L	1500	<50	<50	50	A183234
Total Cadmium (Cd)	ug/L	-	<0.010	<0.010	0.010	A183234
Total Chromium (Cr)	ug/L	-	<1.0	<1.0	1.0	A183234
Total Cobalt (Co)	ug/L	-	<0.20	<0.20	0.20	A183234
Total Copper (Cu)	ug/L	-	<0.50	<0.50	0.50	A183234
Total Iron (Fe)	ug/L	300	<10	<10	10	A183234
Total Lead (Pb)	ug/L	-	<0.20	<0.20	0.20	A183234
Total Lithium (Li)	ug/L	-	<2.0	<2.0	2.0	A183234
Total Manganese (Mn)	ug/L	-	<1.0	<1.0	1.0	A183234
Total Molybdenum (Mo)	ug/L	73	<1.0	<1.0	1.0	A183234
Total Nickel (Ni)	ug/L	-	<1.0	<1.0	1.0	A183234
Total Selenium (Se)	ug/L	1	<0.10	<0.10	0.10	A183234
Total Silicon (Si)	ug/L	-	<100	<100	100	A183234
Total Silver (Ag)	ug/L	0.25	<0.020	<0.020	0.020	A183234
Total Strontium (Sr)	ug/L	-	<1.0	<1.0	1.0	A183234
Total Thallium (Tl)	ug/L	0.8	<0.010	<0.010	0.010	A183234
Total Tin (Sn)	ug/L	-	<5.0	<5.0	5.0	A183234
Total Titanium (Ti)	ug/L	-	<5.0	<5.0	5.0	A183234
Total Uranium (U)	ug/L	15	<0.10	<0.10	0.10	A183234
Total Vanadium (V)	ug/L	-	<5.0	<5.0	5.0	A183234
Total Zinc (Zn)	ug/L	30	<5.0	<5.0	5.0	A183234

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C117428
Report Date: 2021/03/24

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZM5645	ZM5646		
Sampling Date			2021/03/17	2021/03/17 16:53		
COC Number			3AF04	3SF05		
	UNITS	**Criteria**	**TRIP BLANK (3AF04)**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	<0.10	<0.10	0.10	A183234
Total Calcium (Ca)	mg/L	-	<0.050	<0.050	0.050	A182586
Total Magnesium (Mg)	mg/L	-	<0.050	<0.050	0.050	A182586
Total Potassium (K)	mg/L	-	<0.050	<0.050	0.050	A182586
Total Sodium (Na)	mg/L	-	<0.050	<0.050	0.050	A182586
Total Sulphur (S)	mg/L	-	<3.0	<3.0	3.0	A182586

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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GENERAL COMMENTS

Criteria: Canadian Environmental Quality Guidelines for the Protection of Aquatic Life (CCME). Freshwater Long Term Guidelines.
Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C117428
Report Date: 2021/03/24

QUALITY ASSURANCE REPORT

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A183006	Nitrate plus Nitrite (N)	2021/03/18	NC	80 - 120	109	80 - 120	<0.0020	mg/L	0.47	25		
A183007	Nitrite (N)	2021/03/18	99	80 - 120	98	80 - 120	<0.0020	mg/L	NC	25		
A183140	Total Aluminum (Al)	2021/03/20	101	80 - 120	101	80 - 120	<3.0	ug/L	12	20		
A183140	Total Antimony (Sb)	2021/03/20	105	80 - 120	103	80 - 120	<0.50	ug/L	NC	20		
A183140	Total Arsenic (As)	2021/03/20	104	80 - 120	101	80 - 120	<0.10	ug/L	7.3	20		
A183140	Total Barium (Ba)	2021/03/20	101	80 - 120	100	80 - 120	<1.0	ug/L	0.71	20		
A183140	Total Beryllium (Be)	2021/03/20	102	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
A183140	Total Bismuth (Bi)	2021/03/20	100	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
A183140	Total Boron (B)	2021/03/20	103	80 - 120	103	80 - 120	<50	ug/L	NC	20		
A183140	Total Cadmium (Cd)	2021/03/20	100	80 - 120	101	80 - 120	<0.010	ug/L	NC	20		
A183140	Total Chromium (Cr)	2021/03/20	99	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
A183140	Total Cobalt (Co)	2021/03/20	97	80 - 120	99	80 - 120	<0.20	ug/L	NC	20		
A183140	Total Copper (Cu)	2021/03/20	96	80 - 120	98	80 - 120	<0.50	ug/L	2.1	20		
A183140	Total Iron (Fe)	2021/03/20	104	80 - 120	101	80 - 120	<10	ug/L	0.64	20		
A183140	Total Lead (Pb)	2021/03/20	97	80 - 120	96	80 - 120	<0.20	ug/L	NC	20		
A183140	Total Lithium (Li)	2021/03/20	104	80 - 120	102	80 - 120	<2.0	ug/L	NC	20		
A183140	Total Manganese (Mn)	2021/03/20	99	80 - 120	100	80 - 120	<1.0	ug/L	3.4	20		
A183140	Total Molybdenum (Mo)	2021/03/20	106	80 - 120	105	80 - 120	<1.0	ug/L	NC	20		
A183140	Total Nickel (Ni)	2021/03/20	96	80 - 120	99	80 - 120	<1.0	ug/L	NC	20		
A183140	Total Selenium (Se)	2021/03/20	105	80 - 120	100	80 - 120	<0.10	ug/L	7.1	20		
A183140	Total Silicon (Si)	2021/03/20	NC	80 - 120	105	80 - 120	<100	ug/L	0.25	20		
A183140	Total Silver (Ag)	2021/03/20	99	80 - 120	101	80 - 120	<0.020	ug/L	NC	20		
A183140	Total Strontium (Sr)	2021/03/20	NC	80 - 120	105	80 - 120	<1.0	ug/L	0.085	20		
A183140	Total Thallium (Tl)	2021/03/20	104	80 - 120	102	80 - 120	<0.010	ug/L	NC	20		
A183140	Total Tin (Sn)	2021/03/20	102	80 - 120	102	80 - 120	<5.0	ug/L	NC	20		
A183140	Total Titanium (Ti)	2021/03/20	103	80 - 120	102	80 - 120	<5.0	ug/L	NC	20		
A183140	Total Uranium (U)	2021/03/20	106	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
A183140	Total Vanadium (V)	2021/03/20	101	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
A183140	Total Zinc (Zn)	2021/03/20	97	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
A183140	Total Zirconium (Zr)	2021/03/20	106	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
A183234	Total Aluminum (Al)	2021/03/20	97	80 - 120	101	80 - 120	<3.0	ug/L	NC	20		

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BV Labs Job #: C117428
Report Date: 2021/03/24

QUALITY ASSURANCE REPORT(CONT'D)

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A183234	Total Antimony (Sb)	2021/03/20	104	80 - 120	107	80 - 120	<0.50	ug/L	NC	20		
A183234	Total Arsenic (As)	2021/03/20	99	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
A183234	Total Barium (Ba)	2021/03/20	104	80 - 120	106	80 - 120	<1.0	ug/L	NC	20		
A183234	Total Beryllium (Be)	2021/03/20	98	80 - 120	101	80 - 120	<0.10	ug/L	NC	20		
A183234	Total Bismuth (Bi)	2021/03/20	102	80 - 120	106	80 - 120	<1.0	ug/L	NC	20		
A183234	Total Boron (B)	2021/03/20	96	80 - 120	102	80 - 120	<50	ug/L	NC	20		
A183234	Total Cadmium (Cd)	2021/03/20	98	80 - 120	100	80 - 120	<0.010	ug/L	NC	20		
A183234	Total Chromium (Cr)	2021/03/20	100	80 - 120	105	80 - 120	<1.0	ug/L	NC	20		
A183234	Total Cobalt (Co)	2021/03/20	100	80 - 120	103	80 - 120	<0.20	ug/L	NC	20		
A183234	Total Copper (Cu)	2021/03/20	98	80 - 120	102	80 - 120	<0.50	ug/L	NC	20		
A183234	Total Iron (Fe)	2021/03/20	100	80 - 120	104	80 - 120	<10	ug/L	NC	20		
A183234	Total Lead (Pb)	2021/03/20	97	80 - 120	100	80 - 120	<0.20	ug/L	NC	20		
A183234	Total Lithium (Li)	2021/03/20	96	80 - 120	102	80 - 120	<2.0	ug/L	NC	20		
A183234	Total Manganese (Mn)	2021/03/20	100	80 - 120	105	80 - 120	<1.0	ug/L	NC	20		
A183234	Total Molybdenum (Mo)	2021/03/20	104	80 - 120	106	80 - 120	<1.0	ug/L	NC	20		
A183234	Total Nickel (Ni)	2021/03/20	99	80 - 120	103	80 - 120	<1.0	ug/L	NC	20		
A183234	Total Selenium (Se)	2021/03/20	98	80 - 120	102	80 - 120	<0.10	ug/L	NC	20		
A183234	Total Silicon (Si)	2021/03/20	102	80 - 120	106	80 - 120	<100	ug/L	NC	20		
A183234	Total Silver (Ag)	2021/03/20	98	80 - 120	102	80 - 120	<0.020	ug/L	NC	20		
A183234	Total Strontium (Sr)	2021/03/20	102	80 - 120	104	80 - 120	<1.0	ug/L	NC	20		
A183234	Total Thallium (Tl)	2021/03/20	103	80 - 120	107	80 - 120	<0.010	ug/L	NC	20		
A183234	Total Tin (Sn)	2021/03/20	103	80 - 120	107	80 - 120	<5.0	ug/L	NC	20		
A183234	Total Titanium (Ti)	2021/03/20	104	80 - 120	106	80 - 120	<5.0	ug/L	NC	20		
A183234	Total Uranium (U)	2021/03/20	101	80 - 120	106	80 - 120	<0.10	ug/L	NC	20		
A183234	Total Vanadium (V)	2021/03/20	101	80 - 120	104	80 - 120	<5.0	ug/L	NC	20		
A183234	Total Zinc (Zn)	2021/03/20	96	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
A183234	Total Zirconium (Zr)	2021/03/20	104	80 - 120	105	80 - 120	<0.10	ug/L	NC	20		
A183663	Dissolved Fluoride (F)	2021/03/19	114	80 - 120	100	80 - 120	<0.050	mg/L	0	20		
A184593	Total Phosphorus (P)	2021/03/22	96	80 - 120	95	80 - 120	<0.0030	mg/L	6.9	20	95	80 - 120
A184625	Total Phosphorus (P)	2021/03/23	60 (1)	80 - 120	97	80 - 120	<0.0030	mg/L	NC	20	87	80 - 120
A184849	pH	2021/03/19			102	97 - 103						

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BV Labs Job #: C117428
Report Date: 2021/03/24

QUALITY ASSURANCE REPORT(CONT'D)

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A184860	pH	2021/03/19			102	97 - 103			0.13	N/A		
A185127	Total Mercury (Hg)	2021/03/22	97	80 - 120	103	80 - 120	<0.0019	ug/L	NC	20		
A185291	Total Phosphorus (P)	2021/03/23	93	80 - 120	92	80 - 120	<0.0030	mg/L	14	20	92	80 - 120
A186505	Total Ammonia (N)	2021/03/24			102	80 - 120	<0.015	mg/L				
A186507	Total Ammonia (N)	2021/03/24	96	80 - 120	99	80 - 120	<0.015	mg/L	3.7	20		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

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BV Labs Job #: C117428
Report Date: 2021/03/24

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: NL

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

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Bureau Veritas Laboratories
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel (604) 734 7276 Toll-free 800-563-6266 Fax (604) 731 2386 www.bvlabs.com

C117428_COC

INVOICE TO:		Report Information		Project Information	
Company Name	#1414 CITY OF ABBOTSFORD	Company Name		Quotation #	C01193
Contact Name	Amy Peters	Contact Name	Amy Peters	P.O. #	
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Project #	Bevan #1 Creek Water Quality
Phone	(778) 549-1240 Fax: (604) 850-6418	Phone	(778) 549-1240 Fax:	Project Name	
Email	apeters@abbotsford.ca	Email	apeters@abbotsford.ca	Site #	
				Sampled By	Nicole Lamarche

tle Order #: 632103
ect Manager
C#632103-01-01
Customer Solutions

Regulatory Criteria:
- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other

Special Instructions

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: [ ]
Rush Confirmation Number: (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR/CCME Tot. Metals in Water w/ CV Hg	Ammonia-N (Total)	Fluoride	Nitrate+Nitrite (N) (low level)	Nitrite (N) (low level)	Nitrogen - Nitrate (as N) Low Level Calc	pH @25°C	Total Phosphorus			# of Bottles	Comments
1		H01 (39565)	21/03/17	14:47	water	N	X	X	X	X	X	X	X	X			6	
2		H02 (39566)		12:52		N	X	X	X	X	X	X	X	X				
3		H03 (39567)		14:28		N	X	X	X	X	X	X	X	X				
4		B01 (39568)		13:55		N	X	X	X	X	X	X	X	X				
5		B02 (39569)		13:12		N	X	X	X	X	X	X	X	X				
6		W01 (3956A)		15:14		N	X	X	X	X	X	X	X	X				
7		D01 (3956D)		10:15		N	X	X	X	X	X	X	X	X				
8		D02 (3956D)		10:31		N	X	X	X	X	X	X	X	X				
9		F01 (3956B)		15.53		N	X	X	X	X	X	X	X	X				
10		F02 (3956C)		16:14		N	X	X	X	X	X	X	X	X				

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Nicole Lamarche	21/03/17	18:00	[illegible]	[illegible]	18:00	

Lab Use Only: Time Sensitive [ ] | Temperature (°C) on Receipt: 5.5 | Custody Seal Intact on Cooler? [ ] Yes [X] No

Ice: Y

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: BV Labs Yellow: Client

Bureau Veritas Canada (2019) Inc.

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C117428_COC

Order #:

1103

Customer Solutions

C#632103-02-01

INVOICE TO:		Report Information		Project Information	
Company Name	#1414 CITY OF ABBOTSFORD	Company Name		Quotation #	C01193
Contact Name	Amy Peters	Contact Name	Amy Peters	P.O. #	
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Project #	Bevan #1 Creek Water Quality
Phone	(778) 549-1240 Fax: (604) 850-6418	Phone	(778) 549-1240 Fax:	Project Name	
Email	apeters@abbotsford.ca	Email	apeters@abbotsford.ca	Site #	
				Sampled By	Nicole Lamarche

Regulatory Criteria:
- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other

Special Instructions

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: [ ]
Rush Confirmation Number: (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR/CCME Tot. Metals in Water w/ CV Hg	Ammonia-N (Total)	Fluoride	Nitrate+Nitrite (N) (low level)	Nitrite (N) (low level)	Nitrogen - Nitrate (as N) Low Level Calc	pH @25°C	Total Phosphorus			# of Bottles	Comments
1		F0F (41C64)	21/03/17	16:36	water	N	X	X	X	X	X	X	X	X			6	
2		DUP	↓	12:52	↓	N	X	X	X	X	X	X	X	X			6	
3		TRIP BLANK (3AF04)	↓	N/A	↓	N	X	X	X	X	X	X	X	X			6	
4		FIELD BLANK (3AF05)	↓	16:53	↓	N	X	X	X	X	X	X	X	X			6	
5																		
6																		
7																		
8																		
9																		
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Nicole Lamarche	21/03/17	18:00	[illegible]	22/03/17	18:00		[ ]	7.9, 8 / 8.9, 9	[ ] Yes [X] No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

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White: BV Labs Yellow: Client

Ice: Y

Bureau Veritas Canada (2019) Inc.

Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

CITY OF ABBOTSFORD
CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 634157-01-01, 39565, 39566, 39567, 39568, 39569, 3956A, 3956D, 3956B, 3956C, 41C64, 634157-02-01, 3AF04, 3AF05

Report Date: 2021/04/23
Report #: R3011799
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C124434
Received: 2021/04/16, 08:00

Sample Matrix: Water
Samples Received: 14

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Fluoride	14	N/A	2021/04/17	BBY6SOP-00048	SM 23 4500-F C m
Hardness Total (calculated as CaCO3) (2)	12	N/A	2021/04/22	BBY WI-00033	Auto Calc
Hardness Total (calculated as CaCO3) (2)	2	N/A	2021/04/23	BBY WI-00033	Auto Calc
Mercury (Total) by CV	14	2021/04/19	2021/04/19	AB SOP-00084	BCMOE BCLM Oct2013 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	12	2021/04/16	2021/04/22	BBY WI-00033	Auto Calc
Na, K, Ca, Mg, S by CRC ICPMS (total)	2	2021/04/16	2021/04/23	BBY WI-00033	Auto Calc
Elements by CRC ICPMS (total)	12	2021/04/20	2021/04/21	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Elements by CRC ICPMS (total)	2	2021/04/20	2021/04/22	BBY7SOP-00003 / BBY7SOP-00002	EPA 6020b R2 m
Ammonia-N (Total)	14	N/A	2021/04/16	AB SOP-00007	SM 23 4500 NH3 A G m
Nitrate+Nitrite (N) (low level)	14	N/A	2021/04/16	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrite (N) (low level)	14	N/A	2021/04/16	BBY6SOP-00010	SM 23 4500-NO3- I m
Nitrogen - Nitrate (as N) Low Level Calc	14	N/A	2021/04/20	BBY WI-00033	Auto Calc
pH @25°C (3)	14	N/A	2021/04/20	BBY6SOP-00026	SM 23 4500-H+ B m
Total Phosphorus (1)	14	2021/04/21	2021/04/21	AB SOP-00024	SM 23 4500-P A,B,F m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report.

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Your Project #: Bevan #1 Creek Water Quality

Attention: Amy Peters

CITY OF ABBOTSFORD
CITYOABB-ABB
32315 SOUTH FRASER WAY
ABBOTSFORD, BC
Canada V2T 1W7

Your C.O.C. #: 634157-01-01, 39565, 39566, 39567, 39568, 39569,
3956A, 3956D, 3956B, 3956C, 41C64, 634157-02-01, 3AF04, 3AF05

Report Date: 2021/04/23
Report #: R3011799
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BV LABS JOB #: C124434
Received: 2021/04/16, 08:00

Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.
Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.
This Certificate shall not be reproduced except in full, without the written approval of the laboratory.
Reference Method suffix “m” indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.
(1) This test was performed by BV Labs Calgary Environmental
(2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
(3) The CCME method requires pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the CCME holding time. Bureau Veritas Laboratories endeavours to analyze samples as soon as possible after receipt.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Customer Solutions, Western Canada Customer Experience Team
Email: customersolutionswest@bureauveritas.com
Phone# (604) 734 7276
==========
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BV Labs Job #: C124434
Report Date: 2021/04/23

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID			ZP9605			ZP9606	ZP9607	ZP9608	ZP9609		
Sampling Date			2021/04/15 16:47			2021/04/15 14:10	2021/04/15 16:15	2021/04/15 15:05	2021/04/15 14:28		
COC Number			39565			39566	39567	39568	39569		
	UNITS	**Criteria**	**H01 (39565)**	**RDL**	**QC Batch**	**H02 (39566)**	**H03 (39567)**	**B01 (39568)**	**B02 (39569)**	**RDL**	**QC Batch**
Calculated Parameters											
Nitrate (N)	mg/L	-	2.39	0.0040	A201839	1.37	1.91	1.88	1.68	0.0020	A201839
Misc. Inorganics											
pH	pH	6.5:9.0	7.53	N/A	A205288	7.99	7.91	7.65	8.01	N/A	A205288
Anions											
Dissolved Fluoride (F)	mg/L	0.12	<0.050	0.050	A202600	<0.050	<0.050	<0.050	<0.050	0.050	A202549
Nutrients											
Total Ammonia (N)	mg/L	-	<0.015	0.015	A202089	<0.015	<0.015	0.083	0.023	0.015	A202089
Total Phosphorus (P)	mg/L	-	0.012	0.0030	A205300	0.0053	0.011	0.016	0.0096	0.0030	A205315
Nitrate plus Nitrite (N)	mg/L	-	2.39 (1)	0.0040	A202156	1.38	1.92	1.89	1.69	0.0020	A202156
Nitrite (N)	mg/L	0.06	<0.0020	0.0020	A202159	0.0035	0.0021	0.0163	0.0086	0.0020	A202159

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

BV Labs ID			ZP9610		ZP9611		ZP9612		ZP9613		
Sampling Date			2021/04/15 15:40		2021/04/15 13:03		2021/04/15 13:22		2021/04/15 17:17		
COC Number			3956A		3956D		3956D		3956B		
	UNITS	**Criteria**	**W01 (3956A)**	**QC Batch**	**D01 (3956D)**	**QC Batch**	**D02 (3956D)**	**QC Batch**	**F01 (3956B)**	**RDL**	**QC Batch**
Calculated Parameters											
Nitrate (N)	mg/L	-	1.67	A201839	1.15	A201839	0.692	A201839	0.596	0.0020	A201839
Misc. Inorganics											
pH	pH	6.5:9.0	7.83	A205288	8.00	A205288	8.06	A205288	8.02	N/A	A205273
Anions											
Dissolved Fluoride (F)	mg/L	0.12	<0.050	A202600	<0.050	A202549	<0.050	A202549	<0.050	0.050	A202600
Nutrients											
Total Ammonia (N)	mg/L	-	0.036	A202089	<0.015	A202089	0.041	A202090	0.049	0.015	A202089
Total Phosphorus (P)	mg/L	-	0.011	A205315	0.0086	A205315	0.016	A205315	0.014	0.0030	A205315
Nitrate plus Nitrite (N)	mg/L	-	1.68	A202156	1.16	A202156	0.697	A202156	0.607	0.0020	A202156
Nitrite (N)	mg/L	0.06	0.0112	A202159	0.0039	A202159	0.0054	A202159	0.0118	0.0020	A202159

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C124434
Report Date: 2021/04/23

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

RESULTS OF CHEMICAL ANALYSES OF WATER

BV Labs ID			ZP9614	ZP9615		ZP9616		ZP9617		
Sampling Date			2021/04/15 17:49	2021/04/15 18:20		2021/04/15 16:15		2021/04/15		
COC Number			3956C	41C64		634157-02-01		3AF04		
	UNITS	**Criteria**	**F02 (3956C)**	**F0F (41C64)**	**QC Batch**	**DUP H03**	**QC Batch**	**TRIP BLANK (3AF04)**	**RDL**	**QC Batch**
Calculated Parameters										
Nitrate (N)	mg/L	-	0.749	0.514	A201839	1.91	A201839	<0.0020	0.0020	A201839
Misc. Inorganics										
pH	pH	6.5:9.0	7.71	7.81	A205273	7.86	A205273	**5.88**	N/A	A205273
Anions										
Dissolved Fluoride (F)	mg/L	0.12	<0.050	<0.050	A202600	<0.050	A202661	<0.050	0.050	A202600
Nutrients										
Total Ammonia (N)	mg/L	-	<0.015	0.15	A202089	<0.015	A202089	<0.015	0.015	A202087
Total Phosphorus (P)	mg/L	-	0.0086	0.015	A205315	0.011	A205315	<0.0030	0.0030	A205315
Nitrate plus Nitrite (N)	mg/L	-	0.752	0.528	A202156	1.92	A202156	<0.0020	0.0020	A202156
Nitrite (N)	mg/L	0.06	0.0031	0.0146	A202159	0.0022	A202159	<0.0020	0.0020	A202159

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable

BV Labs ID			ZP9618		
Sampling Date			2021/04/15 18:54		
COC Number			3AF05		
	UNITS	**Criteria**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Calculated Parameters					
Nitrate (N)	mg/L	-	<0.0020	0.0020	A201839
Misc. Inorganics					
pH	pH	6.5:9.0	**5.27**	N/A	A205273
Anions					
Dissolved Fluoride (F)	mg/L	0.12	<0.050	0.050	A202600
Nutrients					
Total Ammonia (N)	mg/L	-	<0.015	0.015	A202087
Total Phosphorus (P)	mg/L	-	<0.0030	0.0030	A205315
Nitrate plus Nitrite (N)	mg/L	-	<0.0020	0.0020	A202156
Nitrite (N)	mg/L	0.06	<0.0020	0.0020	A202159

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit
N/A = Not Applicable

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C124434
Report Date: 2021/04/23

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZP9605	ZP9606	ZP9607	ZP9608		ZP9609		
Sampling Date			2021/04/15 16:47	2021/04/15 14:10	2021/04/15 16:15	2021/04/15 15:05		2021/04/15 14:28		
COC Number			39565	39566	39567	39568		39569		
	UNITS	**Criteria**	**H01 (39565)**	**H02 (39566)**	**H03 (39567)**	**B01 (39568)**	**QC Batch**	**B02 (39569)**	**RDL**	**QC Batch**
Calculated Parameters										
Total Hardness (CaCO3)	mg/L	-	116	109	114	75.1	A201787	105	0.50	A201787
Elements										
Total Mercury (Hg)	ug/L	0.026	<0.0019	<0.0019	<0.0019	<0.0019	A203308	<0.0019	0.0019	A203406
Total Metals by ICPMS										
Total Aluminum (Al)	ug/L	-	6.6	22.3	11.6	45.3	A204041	72.8	3.0	A204041
Total Antimony (Sb)	ug/L	-	<0.50	<0.50	<0.50	<0.50	A204041	<0.50	0.50	A204041
Total Arsenic (As)	ug/L	5	0.54	1.01	0.52	0.41	A204041	0.65	0.10	A204041
Total Barium (Ba)	ug/L	-	13.2	11.9	13.8	29.4	A204041	17.1	1.0	A204041
Total Beryllium (Be)	ug/L	-	<0.10	<0.10	<0.10	<0.10	A204041	<0.10	0.10	A204041
Total Bismuth (Bi)	ug/L	-	<1.0	<1.0	<1.0	<1.0	A204041	<1.0	1.0	A204041
Total Boron (B)	ug/L	1500	<50	<50	<50	<50	A204041	<50	50	A204041
Total Cadmium (Cd)	ug/L	-	0.021	<0.010	0.018	0.024	A204041	<0.010	0.010	A204041
Total Chromium (Cr)	ug/L	-	<1.0	<1.0	<1.0	1.2	A204041	<1.0	1.0	A204041
Total Cobalt (Co)	ug/L	-	<0.20	<0.20	<0.20	0.29	A204041	<0.20	0.20	A204041
Total Copper (Cu)	ug/L	-	0.89	0.74	1.02	1.56	A204041	0.58	0.50	A204041
Total Iron (Fe)	ug/L	300	48	154	24	**624**	A204041	**474**	10	A204041
Total Lead (Pb)	ug/L	-	<0.20	<0.20	<0.20	0.86	A204041	<0.20	0.20	A204041
Total Lithium (Li)	ug/L	-	<2.0	<2.0	<2.0	<2.0	A204041	<2.0	2.0	A204041
Total Manganese (Mn)	ug/L	-	9.2	29.8	10.1	106	A204041	115	1.0	A204041
Total Molybdenum (Mo)	ug/L	73	<1.0	1.8	17.9	<1.0	A204041	<1.0	1.0	A204041
Total Nickel (Ni)	ug/L	-	<1.0	<1.0	<1.0	1.5	A204041	<1.0	1.0	A204041
Total Selenium (Se)	ug/L	1	0.23	0.18	0.21	<0.10	A204041	0.18	0.10	A204041
Total Silicon (Si)	ug/L	-	10100	9190	9370	8530	A204041	10600	100	A204041
Total Silver (Ag)	ug/L	0.25	<0.020	<0.020	<0.020	<0.020	A204041	<0.020	0.020	A204041
Total Strontium (Sr)	ug/L	-	176	143	163	218	A204041	171	1.0	A204041
Total Thallium (Tl)	ug/L	0.8	<0.010	<0.010	<0.010	<0.010	A204041	<0.010	0.010	A204041
Total Tin (Sn)	ug/L	-	<5.0	<5.0	<5.0	<5.0	A204041	<5.0	5.0	A204041
Total Titanium (Ti)	ug/L	-	<5.0	<5.0	<5.0	<5.0	A204041	<5.0	5.0	A204041
Total Uranium (U)	ug/L	15	<0.10	<0.10	<0.10	<0.10	A204041	<0.10	0.10	A204041
Total Vanadium (V)	ug/L	-	<5.0	<5.0	<5.0	<5.0	A204041	<5.0	5.0	A204041
Total Zinc (Zn)	ug/L	30	<5.0	<5.0	12.6	12.0	A204041	<5.0	5.0	A204041

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C124434
Report Date: 2021/04/23

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZP9605	ZP9606	ZP9607	ZP9608		ZP9609		
Sampling Date			2021/04/15 16:47	2021/04/15 14:10	2021/04/15 16:15	2021/04/15 15:05		2021/04/15 14:28		
COC Number			39565	39566	39567	39568		39569		
	UNITS	**Criteria**	**H01 (39565)**	**H02 (39566)**	**H03 (39567)**	**B01 (39568)**	**QC Batch**	**B02 (39569)**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	<0.10	<0.10	<0.10	<0.10	A204041	<0.10	0.10	A204041
Total Calcium (Ca)	mg/L	-	32.9	31.6	32.9	21.5	A201791	29.1	0.050	A201791
Total Magnesium (Mg)	mg/L	-	8.15	7.27	7.80	5.17	A201791	7.80	0.050	A201791
Total Potassium (K)	mg/L	-	1.79	1.71	1.86	1.60	A201791	1.60	0.050	A201791
Total Sodium (Na)	mg/L	-	18.9	10.9	16.0	22.3	A201791	11.6	0.050	A201791
Total Sulphur (S)	mg/L	-	5.7	5.9	5.8	4.1	A201791	4.7	3.0	A201791

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C124434
Report Date: 2021/04/23

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZP9610	ZP9611	ZP9612	ZP9613		ZP9614		
Sampling Date			2021/04/15 15:40	2021/04/15 13:03	2021/04/15 13:22	2021/04/15 17:17		2021/04/15 17:49		
COC Number			3956A	3956D	3956D	3956B		3956C		
	UNITS	**Criteria**	**W01 (3956A)**	**D01 (3956D)**	**D02 (3956D)**	**F01 (3956B)**	**QC Batch**	**F02 (3956C)**	**RDL**	**QC Batch**
Calculated Parameters										
Total Hardness (CaCO3)	mg/L	-	94.7	87.8	108	101	A201787	73.5	0.50	A201787
Elements										
Total Mercury (Hg)	ug/L	0.026	<0.0019	<0.0019	<0.0019	<0.0019	A203308	<0.0019	0.0019	A203406
Total Metals by ICPMS										
Total Aluminum (Al)	ug/L	-	52.8	34.9	59.2	70.6	A204041	33.0	3.0	A204041
Total Antimony (Sb)	ug/L	-	<0.50	<0.50	<0.50	<0.50	A204041	<0.50	0.50	A204041
Total Arsenic (As)	ug/L	5	0.77	0.57	2.24	1.08	A204041	0.43	0.10	A204041
Total Barium (Ba)	ug/L	-	31.1	14.8	16.0	15.9	A204041	29.8	1.0	A204041
Total Beryllium (Be)	ug/L	-	<0.10	<0.10	<0.10	<0.10	A204041	<0.10	0.10	A204041
Total Bismuth (Bi)	ug/L	-	<1.0	<1.0	<1.0	<1.0	A204041	<1.0	1.0	A204041
Total Boron (B)	ug/L	1500	<50	<50	<50	<50	A204041	<50	50	A204041
Total Cadmium (Cd)	ug/L	-	0.014	<0.010	<0.010	<0.010	A204041	0.014	0.010	A204041
Total Chromium (Cr)	ug/L	-	<1.0	<1.0	<1.0	<1.0	A204041	<1.0	1.0	A204041
Total Cobalt (Co)	ug/L	-	<0.20	<0.20	<0.20	<0.20	A204041	<0.20	0.20	A204041
Total Copper (Cu)	ug/L	-	<0.50	0.58	<0.50	1.16	A204041	1.20	0.50	A204041
Total Iron (Fe)	ug/L	300	**480**	212	**949**	**724**	A204041	**505**	10	A204041
Total Lead (Pb)	ug/L	-	<0.20	<0.20	<0.20	<0.20	A204041	<0.20	0.20	A204041
Total Lithium (Li)	ug/L	-	<2.0	<2.0	<2.0	<2.0	A204041	<2.0	2.0	A204041
Total Manganese (Mn)	ug/L	-	46.1	25.9	386	127	A204041	101	1.0	A204041
Total Molybdenum (Mo)	ug/L	73	<1.0	<1.0	<1.0	<1.0	A204041	<1.0	1.0	A204041
Total Nickel (Ni)	ug/L	-	<1.0	<1.0	<1.0	<1.0	A204041	<1.0	1.0	A204041
Total Selenium (Se)	ug/L	1	0.14	0.20	0.23	0.16	A204041	<0.10	0.10	A204041
Total Silicon (Si)	ug/L	-	10200	8450	11000	5870	A204041	2890	100	A204041
Total Silver (Ag)	ug/L	0.25	<0.020	<0.020	<0.020	<0.020	A204041	<0.020	0.020	A204041
Total Strontium (Sr)	ug/L	-	189	137	152	150	A204041	128	1.0	A204041
Total Thallium (Tl)	ug/L	0.8	<0.010	<0.010	<0.010	<0.010	A204041	<0.010	0.010	A204041
Total Tin (Sn)	ug/L	-	<5.0	<5.0	<5.0	<5.0	A204041	<5.0	5.0	A204041
Total Titanium (Ti)	ug/L	-	<5.0	<5.0	<5.0	<5.0	A204041	<5.0	5.0	A204041
Total Uranium (U)	ug/L	15	<0.10	<0.10	<0.10	0.13	A204041	<0.10	0.10	A204041
Total Vanadium (V)	ug/L	-	<5.0	<5.0	<5.0	<5.0	A204041	<5.0	5.0	A204041
Total Zinc (Zn)	ug/L	30	<5.0	<5.0	<5.0	<5.0	A204041	5.7	5.0	A204041

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C124434
Report Date: 2021/04/23

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZP9610	ZP9611	ZP9612	ZP9613		ZP9614		
Sampling Date			2021/04/15 15:40	2021/04/15 13:03	2021/04/15 13:22	2021/04/15 17:17		2021/04/15 17:49		
COC Number			3956A	3956D	3956D	3956B		3956C		
	UNITS	**Criteria**	**W01 (3956A)**	**D01 (3956D)**	**D02 (3956D)**	**F01 (3956B)**	**QC Batch**	**F02 (3956C)**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	<0.10	<0.10	<0.10	<0.10	A204041	<0.10	0.10	A204041
Total Calcium (Ca)	mg/L	-	25.8	23.3	27.7	26.8	A201791	21.0	0.050	A201791
Total Magnesium (Mg)	mg/L	-	7.34	7.18	9.32	8.23	A201791	5.09	0.050	A201791
Total Potassium (K)	mg/L	-	1.30	1.63	1.48	1.63	A201791	1.92	0.050	A201791
Total Sodium (Na)	mg/L	-	12.5	11.7	9.59	12.5	A201791	14.5	0.050	A201791
Total Sulphur (S)	mg/L	-	4.2	5.5	4.4	5.1	A201791	3.7	3.0	A201791

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C124434
Report Date: 2021/04/23

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZP9615	ZP9616		ZP9617	ZP9618		
Sampling Date			2021/04/15 18:20	2021/04/15 16:15		2021/04/15	2021/04/15 18:54		
COC Number			41C64	634157-02-01		3AF04	3AF05		
	UNITS	**Criteria**	**F0F (41C64)**	**DUP H03**	**QC Batch**	**TRIP BLANK (3AF04)**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Calculated Parameters									
Total Hardness (CaCO3)	mg/L	-	92.7	113	A201787	<0.50	<0.50	0.50	A201787
Elements									
Total Mercury (Hg)	ug/L	0.026	<0.0019	<0.0019	A203406	<0.0019	<0.0019	0.0019	A203406
Total Metals by ICPMS									
Total Aluminum (Al)	ug/L	-	55.8	9.3	A204041	<3.0	<3.0	3.0	A204186
Total Antimony (Sb)	ug/L	-	<0.50	<0.50	A204041	<0.50	<0.50	0.50	A204186
Total Arsenic (As)	ug/L	5	1.09	0.55	A204041	<0.10	<0.10	0.10	A204186
Total Barium (Ba)	ug/L	-	22.5	14.1	A204041	<1.0	<1.0	1.0	A204186
Total Beryllium (Be)	ug/L	-	<0.10	<0.10	A204041	<0.10	<0.10	0.10	A204186
Total Bismuth (Bi)	ug/L	-	<1.0	<1.0	A204041	<1.0	<1.0	1.0	A204186
Total Boron (B)	ug/L	1500	<50	<50	A204041	<50	<50	50	A204186
Total Cadmium (Cd)	ug/L	-	<0.010	0.018	A204041	<0.010	<0.010	0.010	A204186
Total Chromium (Cr)	ug/L	-	<1.0	<1.0	A204041	<1.0	<1.0	1.0	A204186
Total Cobalt (Co)	ug/L	-	0.39	<0.20	A204041	<0.20	<0.20	0.20	A204186
Total Copper (Cu)	ug/L	-	1.56	0.98	A204041	<0.50	<0.50	0.50	A204186
Total Iron (Fe)	ug/L	300	**1300**	20	A204041	<10	<10	10	A204186
Total Lead (Pb)	ug/L	-	0.34	<0.20	A204041	<0.20	<0.20	0.20	A204186
Total Lithium (Li)	ug/L	-	<2.0	<2.0	A204041	<2.0	<2.0	2.0	A204186
Total Manganese (Mn)	ug/L	-	230	10.2	A204041	<1.0	<1.0	1.0	A204186
Total Molybdenum (Mo)	ug/L	73	<1.0	18.0	A204041	<1.0	<1.0	1.0	A204186
Total Nickel (Ni)	ug/L	-	<1.0	<1.0	A204041	<1.0	<1.0	1.0	A204186
Total Selenium (Se)	ug/L	1	0.11	0.20	A204041	<0.10	<0.10	0.10	A204186
Total Silicon (Si)	ug/L	-	4730	9420	A204041	<100	<100	100	A204186
Total Silver (Ag)	ug/L	0.25	<0.020	<0.020	A204041	<0.020	<0.020	0.020	A204186
Total Strontium (Sr)	ug/L	-	151	166	A204041	<1.0	<1.0	1.0	A204186
Total Thallium (Tl)	ug/L	0.8	<0.010	<0.010	A204041	<0.010	<0.010	0.010	A204186
Total Tin (Sn)	ug/L	-	<5.0	<5.0	A204041	<5.0	<5.0	5.0	A204186
Total Titanium (Ti)	ug/L	-	<5.0	<5.0	A204041	<5.0	<5.0	5.0	A204186
Total Uranium (U)	ug/L	15	<0.10	<0.10	A204041	<0.10	<0.10	0.10	A204186
Total Vanadium (V)	ug/L	-	<5.0	<5.0	A204041	<5.0	<5.0	5.0	A204186
Total Zinc (Zn)	ug/L	30	10.4	12.7	A204041	<5.0	<5.0	5.0	A204186

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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BV Labs Job #: C124434
Report Date: 2021/04/23

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

CSR/CCME TOT. METALS IN WATER W/ CV HG (WATER)

BV Labs ID			ZP9615	ZP9616		ZP9617	ZP9618		
Sampling Date			2021/04/15 18:20	2021/04/15 16:15		2021/04/15	2021/04/15 18:54		
COC Number			41C64	634157-02-01		3AF04	3AF05		
	UNITS	**Criteria**	**F0F (41C64)**	**DUP H03**	**QC Batch**	**TRIP BLANK (3AF04)**	**FIELD BLANK (3AF05)**	**RDL**	**QC Batch**
Total Zirconium (Zr)	ug/L	-	<0.10	<0.10	A204041	<0.10	<0.10	0.10	A204186
Total Calcium (Ca)	mg/L	-	25.4	32.5	A201791	<0.050	<0.050	0.050	A201791
Total Magnesium (Mg)	mg/L	-	7.12	7.87	A201791	<0.050	<0.050	0.050	A201791
Total Potassium (K)	mg/L	-	1.69	1.90	A201791	<0.050	<0.050	0.050	A201791
Total Sodium (Na)	mg/L	-	16.0	16.1	A201791	<0.050	<0.050	0.050	A201791
Total Sulphur (S)	mg/L	-	4.7	6.5	A201791	<3.0	<3.0	3.0	A201791

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

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GENERAL COMMENTS

Criteria: Canadian Environmental Quality Guidelines for the Protection of Aquatic Life (CCME). Freshwater Long Term Guidelines.
Measurement of Uncertainty has not been accounted for when stating conformity to the selected criteria, where applicable.

Results relate only to the items tested.

Bureau Veritas Laboratories Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

BV Labs Job #: C124434
Report Date: 2021/04/23

QUALITY ASSURANCE REPORT

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A202087	Total Ammonia (N)	2021/04/16	97	80 - 120	101	80 - 120	<0.015	mg/L	NC	20		
A202089	Total Ammonia (N)	2021/04/16	100	80 - 120	104	80 - 120	<0.015	mg/L	16	20		
A202090	Total Ammonia (N)	2021/04/16	98	80 - 120	96	80 - 120	<0.015	mg/L	13	20		
A202156	Nitrate plus Nitrite (N)	2021/04/16	NC	80 - 120	110	80 - 120	<0.0020	mg/L	0.33	25		
A202159	Nitrite (N)	2021/04/16	101	80 - 120	104	80 - 120	<0.0020	mg/L	NC	25		
A202549	Dissolved Fluoride (F)	2021/04/17	100	80 - 120	100	80 - 120	<0.050	mg/L				
A202600	Dissolved Fluoride (F)	2021/04/17	111	80 - 120	104	80 - 120	<0.050	mg/L	NC	20		
A202661	Dissolved Fluoride (F)	2021/04/17	112	80 - 120	104	80 - 120	<0.050	mg/L	NC	20		
A203308	Total Mercury (Hg)	2021/04/19	100	80 - 120	108	80 - 120	<0.0019	ug/L	NC	20		
A203406	Total Mercury (Hg)	2021/04/19	101	80 - 120	108	80 - 120	<0.0019	ug/L	NC	20		
A204041	Total Aluminum (Al)	2021/04/21	105	80 - 120	100	80 - 120	<3.0	ug/L	0.91	20		
A204041	Total Antimony (Sb)	2021/04/21	105	80 - 120	104	80 - 120	<0.50	ug/L	NC	20		
A204041	Total Arsenic (As)	2021/04/21	104	80 - 120	101	80 - 120	<0.10	ug/L	0.34	20		
A204041	Total Barium (Ba)	2021/04/21	102	80 - 120	102	80 - 120	<1.0	ug/L	1.0	20		
A204041	Total Beryllium (Be)	2021/04/21	100	80 - 120	100	80 - 120	<0.10	ug/L	NC	20		
A204041	Total Bismuth (Bi)	2021/04/21	102	80 - 120	100	80 - 120	<1.0	ug/L	NC	20		
A204041	Total Boron (B)	2021/04/21	103	80 - 120	101	80 - 120	<50	ug/L	NC	20		
A204041	Total Cadmium (Cd)	2021/04/21	105	80 - 120	102	80 - 120	<0.010	ug/L	NC	20		
A204041	Total Chromium (Cr)	2021/04/21	98	80 - 120	97	80 - 120	<1.0	ug/L	NC	20		
A204041	Total Cobalt (Co)	2021/04/21	96	80 - 120	96	80 - 120	<0.20	ug/L	NC	20		
A204041	Total Copper (Cu)	2021/04/21	93	80 - 120	94	80 - 120	<0.50	ug/L	NC	20		
A204041	Total Iron (Fe)	2021/04/21	NC	80 - 120	102	80 - 120	<10	ug/L	0.54	20		
A204041	Total Lead (Pb)	2021/04/21	104	80 - 120	101	80 - 120	<0.20	ug/L	NC	20		
A204041	Total Lithium (Li)	2021/04/21	99	80 - 120	97	80 - 120	<2.0	ug/L	NC	20		
A204041	Total Manganese (Mn)	2021/04/21	NC	80 - 120	100	80 - 120	<1.0	ug/L	1.0	20		
A204041	Total Molybdenum (Mo)	2021/04/21	111	80 - 120	105	80 - 120	<1.0	ug/L	NC	20		
A204041	Total Nickel (Ni)	2021/04/21	98	80 - 120	98	80 - 120	<1.0	ug/L	NC	20		
A204041	Total Selenium (Se)	2021/04/21	103	80 - 120	101	80 - 120	<0.10	ug/L	6.5	20		
A204041	Total Silicon (Si)	2021/04/21	NC	80 - 120	106	80 - 120	<100	ug/L	1.6	20		
A204041	Total Silver (Ag)	2021/04/21	102	80 - 120	101	80 - 120	<0.020	ug/L	NC	20		
A204041	Total Strontium (Sr)	2021/04/21	NC	80 - 120	98	80 - 120	<1.0	ug/L	1.3	20		

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BV Labs Job #: C124434
Report Date: 2021/04/23

QUALITY ASSURANCE REPORT(CONT'D)

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A204041	Total Thallium (Tl)	2021/04/21	106	80 - 120	101	80 - 120	<0.010	ug/L	NC	20		
A204041	Total Tin (Sn)	2021/04/21	103	80 - 120	103	80 - 120	<5.0	ug/L	NC	20		
A204041	Total Titanium (Ti)	2021/04/21	104	80 - 120	99	80 - 120	<5.0	ug/L	NC	20		
A204041	Total Uranium (U)	2021/04/21	109	80 - 120	105	80 - 120	<0.10	ug/L	NC	20		
A204041	Total Vanadium (V)	2021/04/21	99	80 - 120	95	80 - 120	<5.0	ug/L	NC	20		
A204041	Total Zinc (Zn)	2021/04/21	101	80 - 120	100	80 - 120	<5.0	ug/L	NC	20		
A204041	Total Zirconium (Zr)	2021/04/21	108	80 - 120	103	80 - 120	<0.10	ug/L	NC	20		
A204186	Total Aluminum (Al)	2021/04/22	105	80 - 120	101	80 - 120	<3.0	ug/L				
A204186	Total Antimony (Sb)	2021/04/22	107	80 - 120	102	80 - 120	<0.50	ug/L				
A204186	Total Arsenic (As)	2021/04/22	103	80 - 120	98	80 - 120	<0.10	ug/L	NC	20		
A204186	Total Barium (Ba)	2021/04/22	102	80 - 120	99	80 - 120	<1.0	ug/L				
A204186	Total Beryllium (Be)	2021/04/22	107	80 - 120	105	80 - 120	<0.10	ug/L				
A204186	Total Bismuth (Bi)	2021/04/22	103	80 - 120	99	80 - 120	<1.0	ug/L				
A204186	Total Boron (B)	2021/04/22	106	80 - 120	107	80 - 120	<50	ug/L				
A204186	Total Cadmium (Cd)	2021/04/22	106	80 - 120	100	80 - 120	<0.010	ug/L				
A204186	Total Chromium (Cr)	2021/04/22	102	80 - 120	99	80 - 120	<1.0	ug/L				
A204186	Total Cobalt (Co)	2021/04/22	103	80 - 120	100	80 - 120	<0.20	ug/L				
A204186	Total Copper (Cu)	2021/04/22	101	80 - 120	98	80 - 120	<0.50	ug/L	NC	20		
A204186	Total Iron (Fe)	2021/04/22	103	80 - 120	101	80 - 120	<10	ug/L				
A204186	Total Lead (Pb)	2021/04/22	101	80 - 120	96	80 - 120	<0.20	ug/L	NC	20		
A204186	Total Lithium (Li)	2021/04/22	103	80 - 120	104	80 - 120	<2.0	ug/L				
A204186	Total Manganese (Mn)	2021/04/22	104	80 - 120	100	80 - 120	<1.0	ug/L				
A204186	Total Molybdenum (Mo)	2021/04/22	107	80 - 120	102	80 - 120	<1.0	ug/L				
A204186	Total Nickel (Ni)	2021/04/22	103	80 - 120	101	80 - 120	<1.0	ug/L	NC	20		
A204186	Total Selenium (Se)	2021/04/22	104	80 - 120	102	80 - 120	<0.10	ug/L				
A204186	Total Silicon (Si)	2021/04/22	110	80 - 120	105	80 - 120	<100	ug/L				
A204186	Total Silver (Ag)	2021/04/22	104	80 - 120	98	80 - 120	<0.020	ug/L				
A204186	Total Strontium (Sr)	2021/04/22	101	80 - 120	96	80 - 120	<1.0	ug/L				
A204186	Total Thallium (Tl)	2021/04/22	104	80 - 120	100	80 - 120	<0.010	ug/L				
A204186	Total Tin (Sn)	2021/04/22	106	80 - 120	102	80 - 120	<5.0	ug/L				
A204186	Total Titanium (Ti)	2021/04/22	107	80 - 120	103	80 - 120	<5.0	ug/L				

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BV Labs Job #: C124434
Report Date: 2021/04/23

QUALITY ASSURANCE REPORT(CONT'D)

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

			Matrix Spike		Spiked Blank		Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
A204186	Total Uranium (U)	2021/04/22	107	80 - 120	103	80 - 120	<0.10	ug/L				
A204186	Total Vanadium (V)	2021/04/22	103	80 - 120	100	80 - 120	<5.0	ug/L				
A204186	Total Zinc (Zn)	2021/04/22	106	80 - 120	102	80 - 120	<5.0	ug/L	NC	20		
A204186	Total Zirconium (Zr)	2021/04/22	105	80 - 120	98	80 - 120	<0.10	ug/L				
A205273	pH	2021/04/20			102	97 - 103			0.83	N/A		
A205288	pH	2021/04/20			102	97 - 103						
A205300	Total Phosphorus (P)	2021/04/22	NC	80 - 120	100	80 - 120	<0.0030	mg/L	0.93	20	92	80 - 120
A205315	Total Phosphorus (P)	2021/04/21	95	80 - 120	101	80 - 120	<0.0030	mg/L	4.0	20	84	80 - 120

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

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BV Labs Job #: C124434
Report Date: 2021/04/23

CITY OF ABBOTSFORD
Client Project #: Bevan #1 Creek Water Quality

Sampler Initials: LW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

David Huang, M.Sc., P.Chem., QP, Scientific Services Manager

Ghayasuddin Khan, M.Sc., P.Chem., QP, Scientific Specialist, Inorganics

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.

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4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel (604) 734 7276 Toll-free 800-563-6266 Fax (604) 731 2386 www.bvlabs.com

C124434_COC

Bottle Order #: 634157

Project Manager

Customer Solutions

C#634157-02-01

INVOICE TO:		Report Information		Project Information	
Company Name	#1414 CITY OF ABBOTSFORD	Company Name		Quotation #	C01193
Contact Name	Amy Peters	Contact Name	Amy Peters	P.O. #	
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Project #	Bevan #1 Creek Water Quality
				Project Name	
Phone	(778) 549-1240 Fax: (604) 850-6418	Phone	(778) 549-1240 Fax:	Site #	
Email	apeters@abbotsford.ca	Email	apeters@abbotsford.ca	Sampled By	L. Williams

Regulatory Criteria:

- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other _____

Special Instructions

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests..
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: _____ [ ]
Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR/CCME Tot. Metals in Water w/ CV Hg	Ammonia-N (Total)	Fluoride	Nitrate+Nitrite (N) (low level)	Nitrite (N) (low level)	Nitrogen - Nitrate (as N) Low Level Calc	pH @25°C	Total Phosphorus			# of Bottles	Comments
1		F0F (41C64)	21/04/15	18:20	water		X	X	X	X	X	X	X	X			6	
2		DUP H03		16:15			X	X	X	X	X	X	X	X				
3		TRIP BLANK (3AF04)		n/a			X	X	X	X	X	X	X	X				
4		FIELD BLANK (3AF05)		~~n/a~~ 18:54			X	X	X	X	X	X	X	X				
5																		
6																		
7																		
8																		
9																		
10																		

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
L. Williams	21/04/15	20:25	[illegible]	2021/04/16	08:00	

Lab Use Only: Time Sensitive [ ] Temperature (°C) on Receipt 2, 3, 3 Custody Seal Intact on Cooler? [ ] Yes [X] No

6, 4, 5

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: BV Labs Yellow: Client

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C124434_COC

Bottle Order #: 6341 57

Project Manager

Customer Solutions

C#634157-01-01

INVOICE TO:		Report Information		Project Information	
Company Name	#1414 CITY OF ABBOTSFORD	Company Name		Quotation #	C01193
Contact Name	Amy Peters	Contact Name	Amy Peters	P.O. #	
Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Address	32315 SOUTH FRASER WAY ABBOTSFORD BC V2T 1W7	Project #	Bevan #1 Creek Water Quality
Phone	(778) 549-1240 Fax: (604) 850-6418	Phone	(778) 549-1240 Fax:	Project Name	
Email	apeters@abbotsford.ca	Email	apeters@abbotsford.ca	Site #	
				Sampled By	L. Williams

Regulatory Criteria:

- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other _____

Special Instructions

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]

(will be applied if Rush TAT is not specified):

Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)

1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required _____ [ ]

Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BV LABS

ANALYSIS REQUESTED (PLEASE BE SPECIFIC)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	CSR/CCME Tot. Metals in Water w/ CV Hg	Ammonia-N (Total)	Fluoride	Nitrate+Nitrite (N) (low level)	Nitrite (N) (low level)	Nitrogen - Nitrate (as N) Low Level Calc	pH @25°C	Total Phosphorus			# of Bottles	Comments
1		H01 (39565)	21/04/15	16:47	water		X	X	X	X	X	X	X	X			6	
2		H02 (39566)		14:10			X	X	X	X	X	X	X	X				
3		H03 (39567)		16:15			X	X	X	X	X	X	X	X				
4		B01 (39568)		15:05			X	X	X	X	X	X	X	X				
5		B02 (39569)		14:28			X	X	X	X	X	X	X	X				
6		W01 (3956A)		15:40			X	X	X	X	X	X	X	X				
7		D01 (3956D)		13:03			X	X	X	X	X	X	X	X				
8		D02 (3956D)		13:22			X	X	X	X	X	X	X	X				
9		F01 (3956B)		17:17			X	X	X	X	X	X	X	X				
10		F02 (3956C)		17:49			X	X	X	X	X	X	X	X				

* RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted
Lauryn Williams	21/04/15	22:25	[illegible] TAC	2021/04/16	08:00	

Lab Use Only

Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
[ ]	2, 3, 3 / 6, 4, 5	[ ] Yes [X] No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BV LABS' STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVLABS.COM/TERMS-AND-CONDITIONS.

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White: BV Labs Yellow: Client

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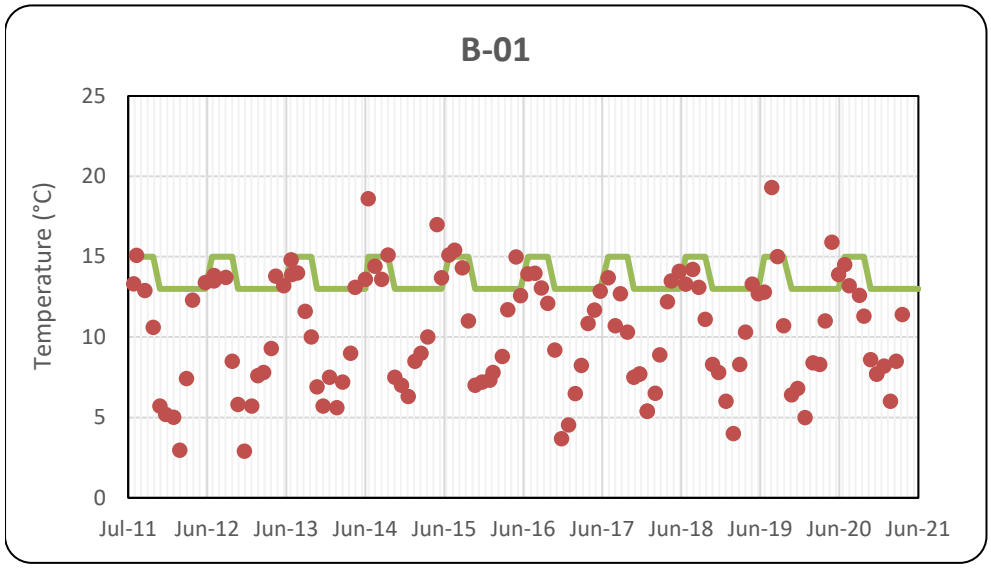
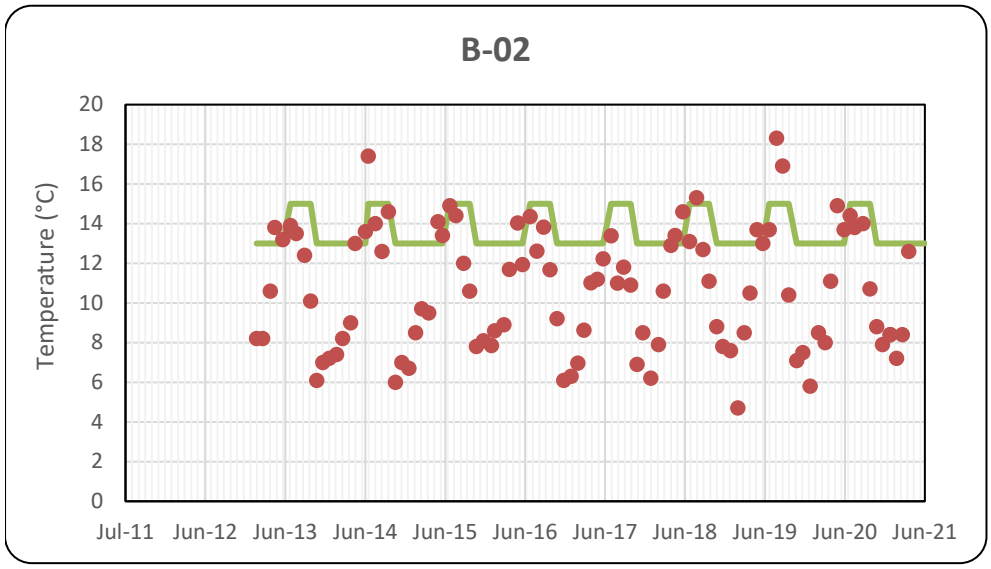
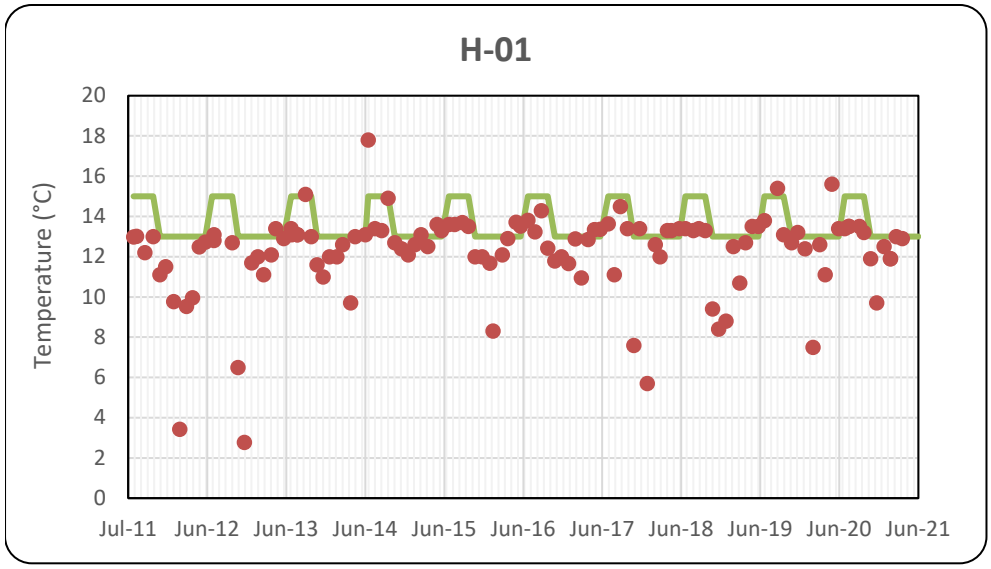
APPENDIX E

Temporal Water Quality Graphs

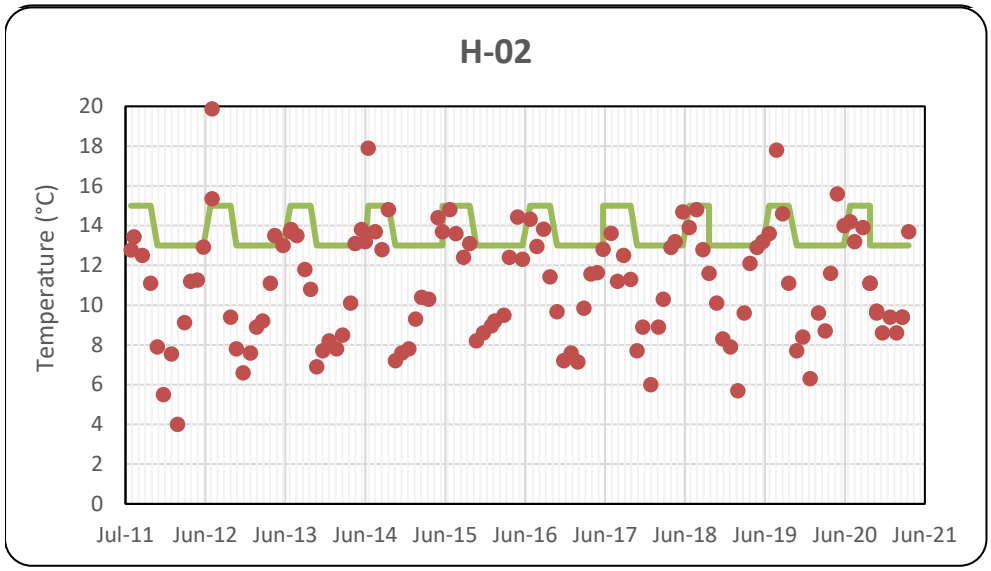
Water Temperature, 2011-2021

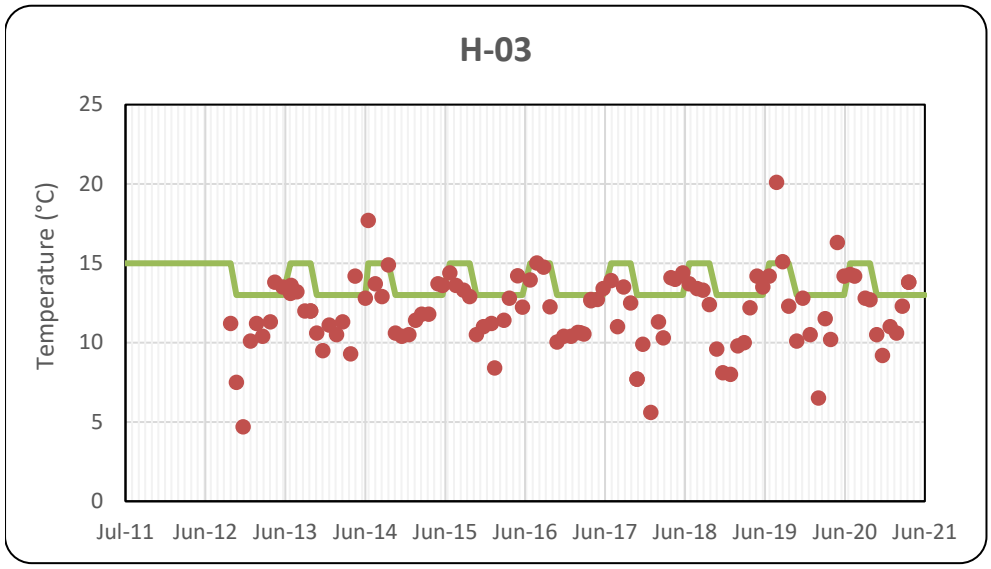


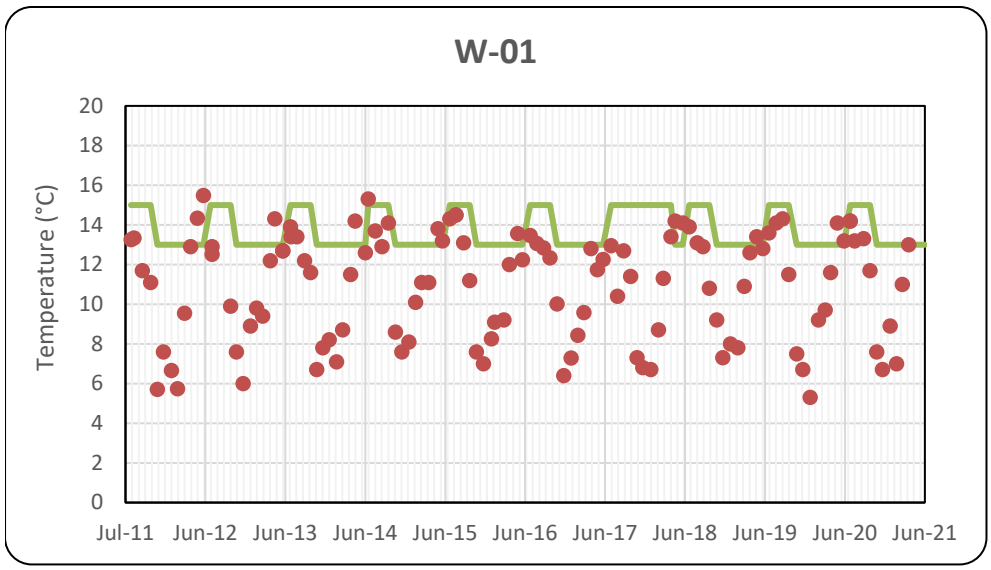




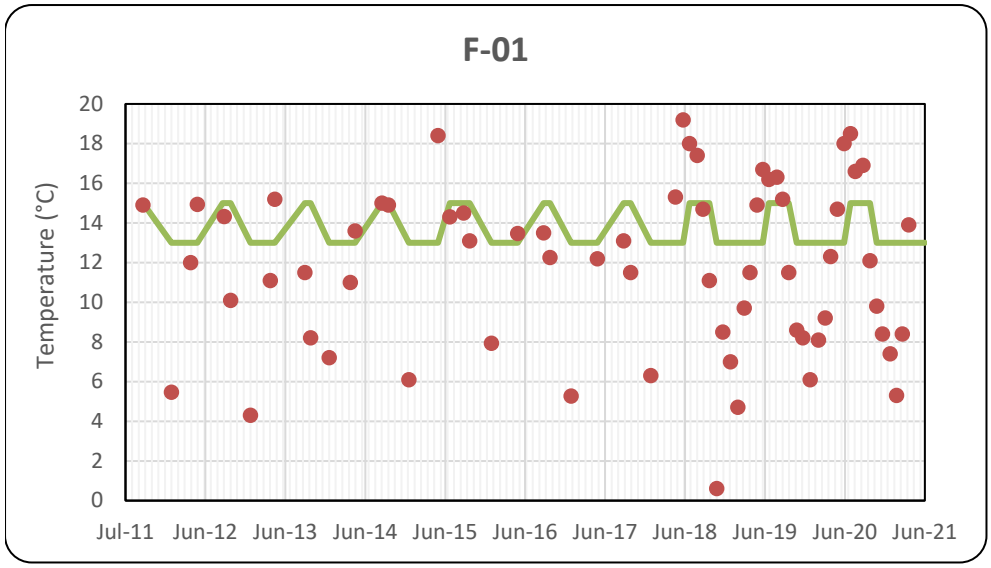
Water Temperature, 2011-2021

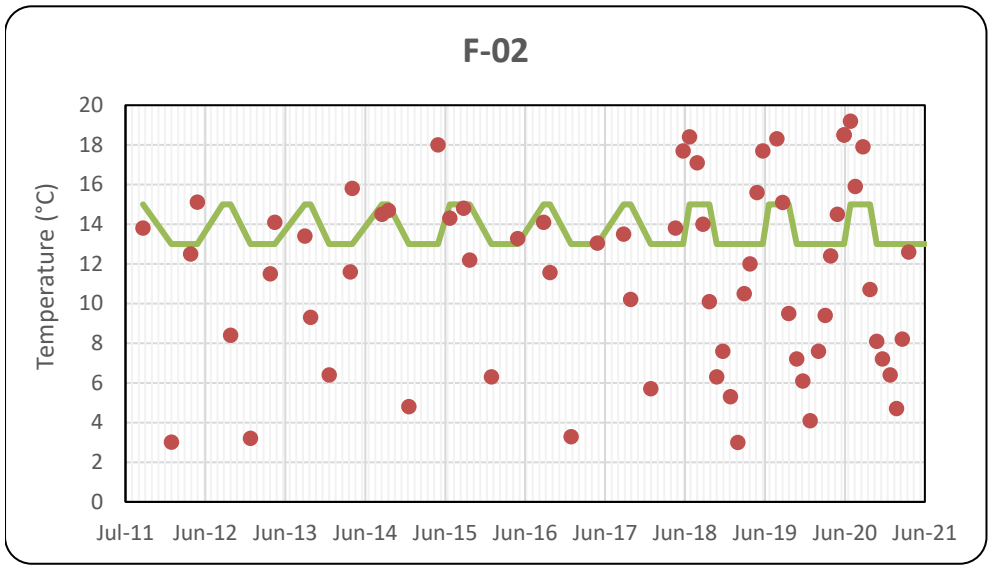


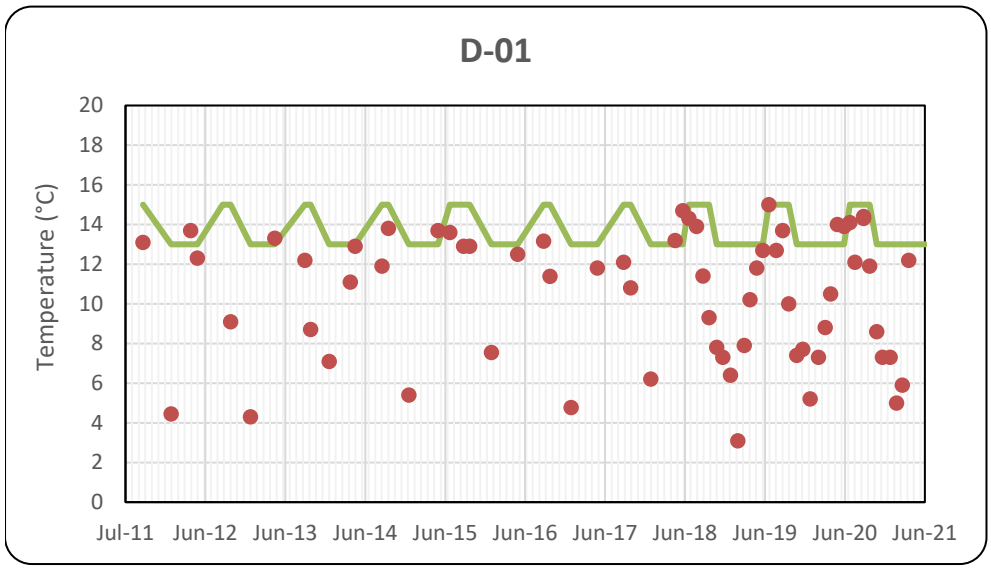




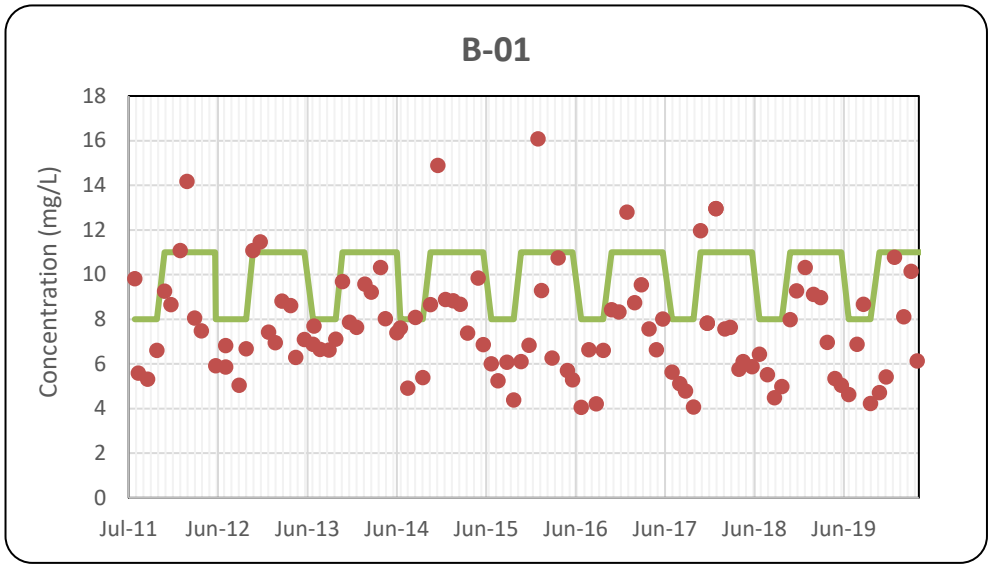
Water Temperature, 2011-2021

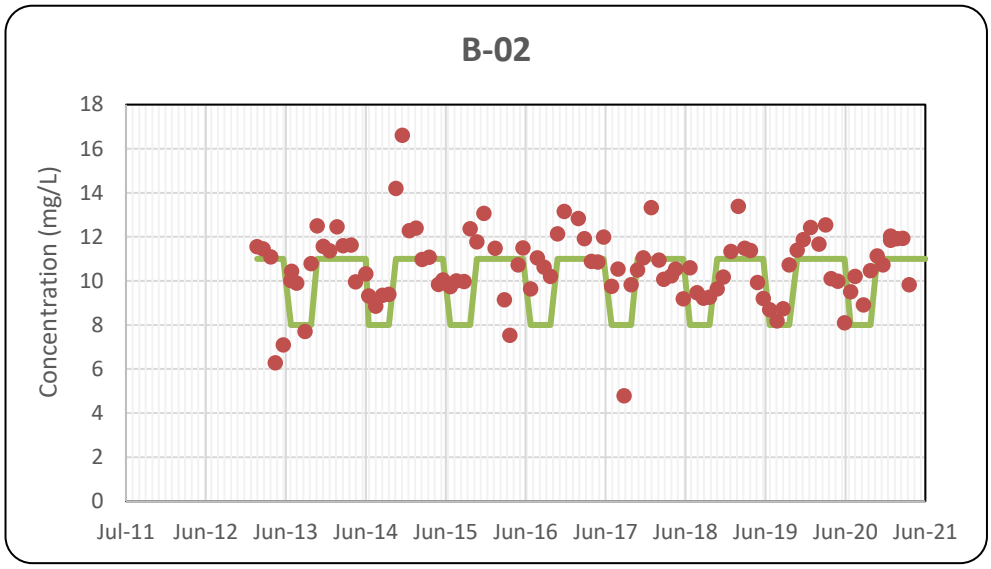


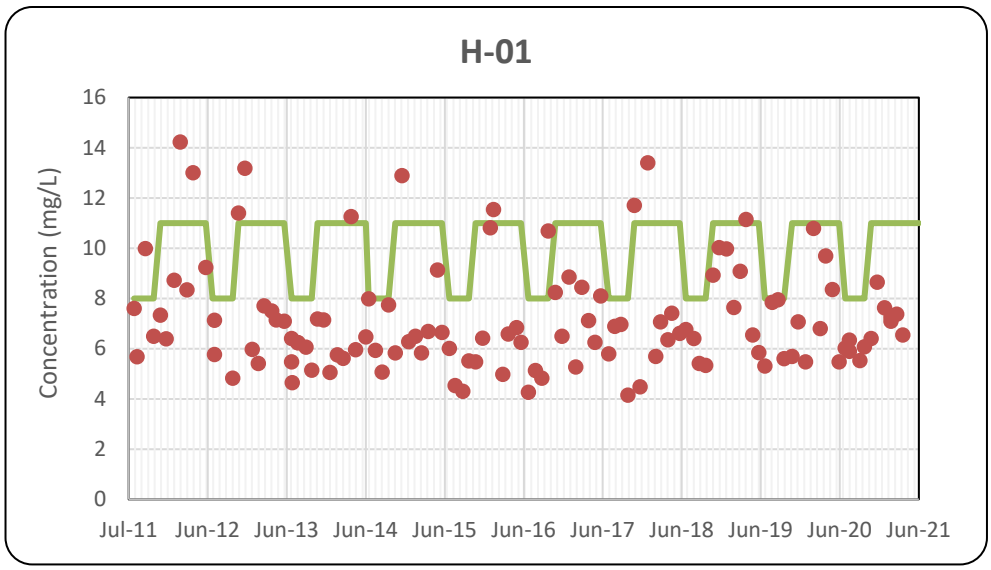




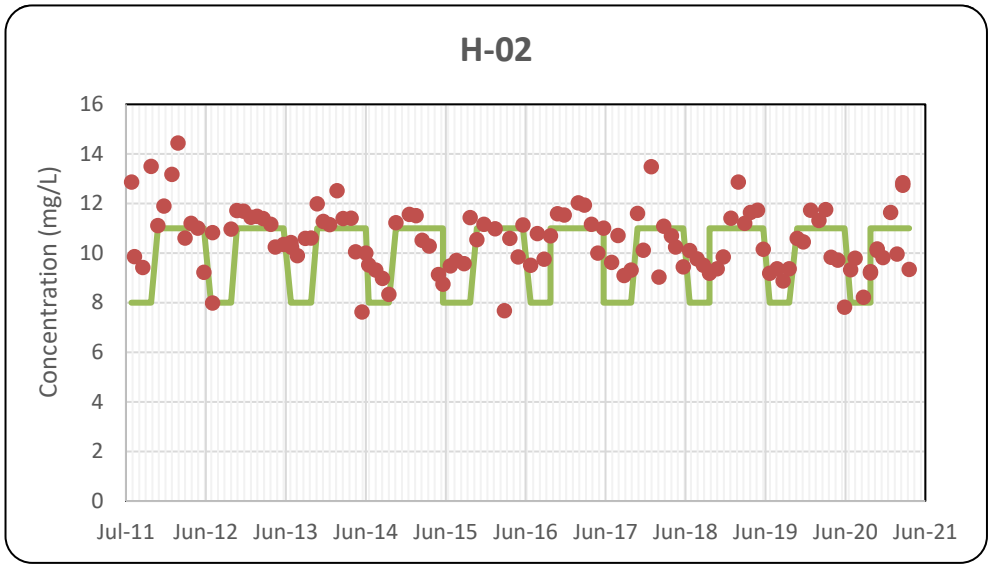
Dissolved Oxygen Concentrations, 2011-2021

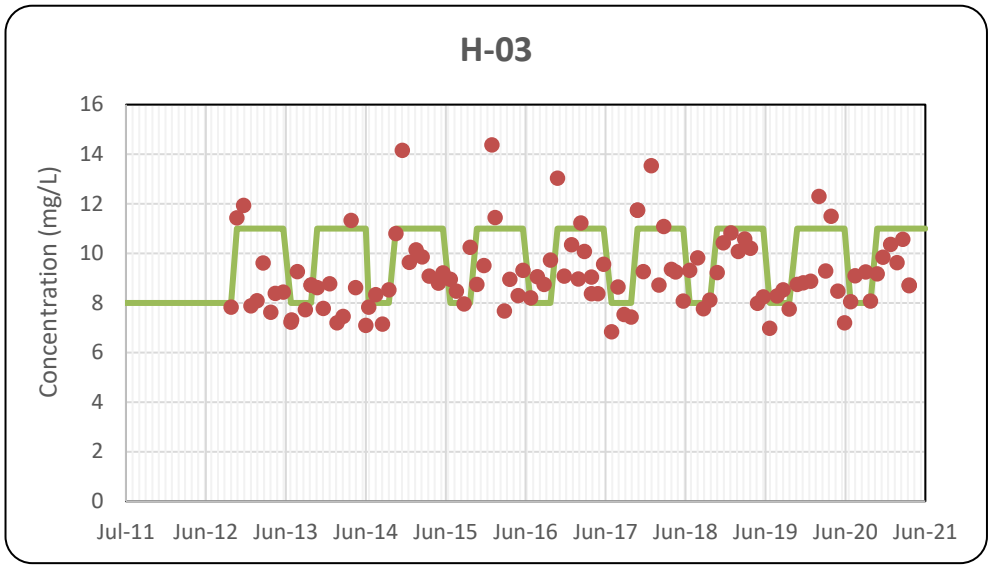


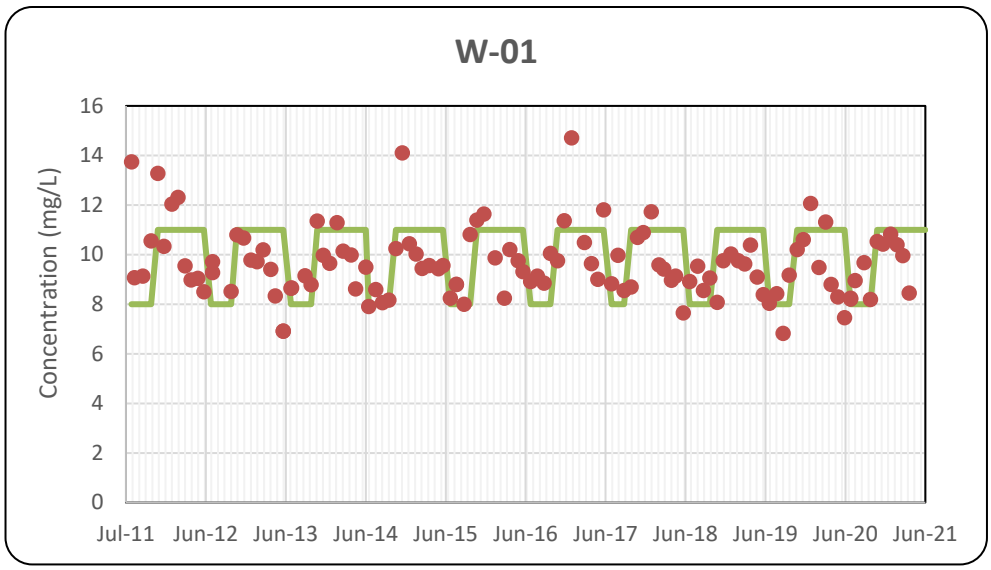




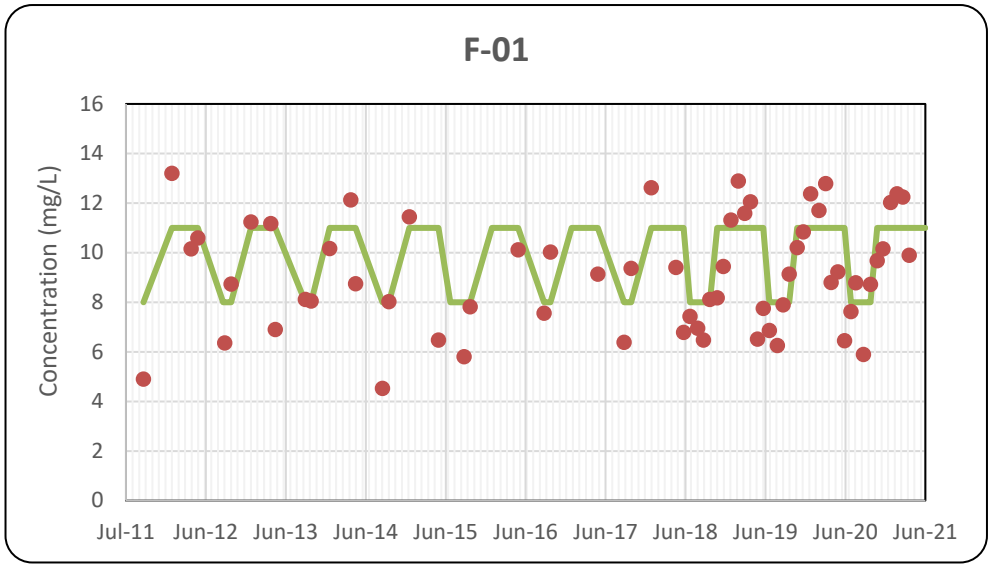
Dissolved Oxygen Concentrations, 2011-2021

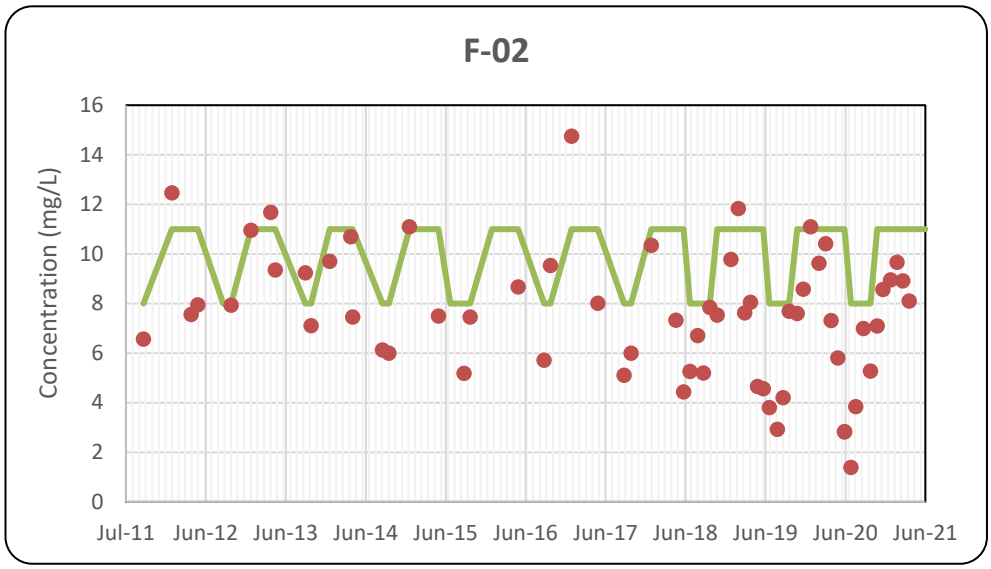


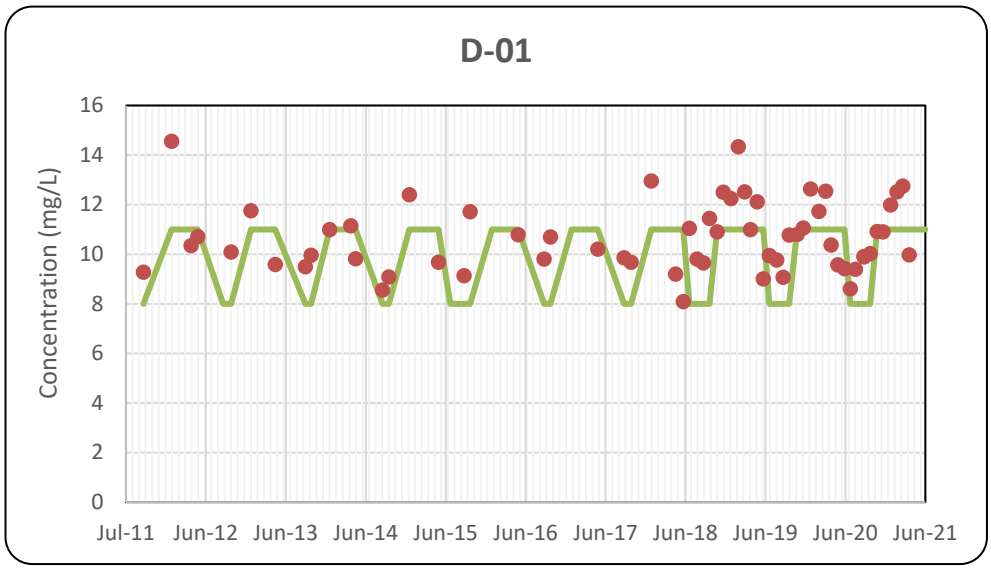




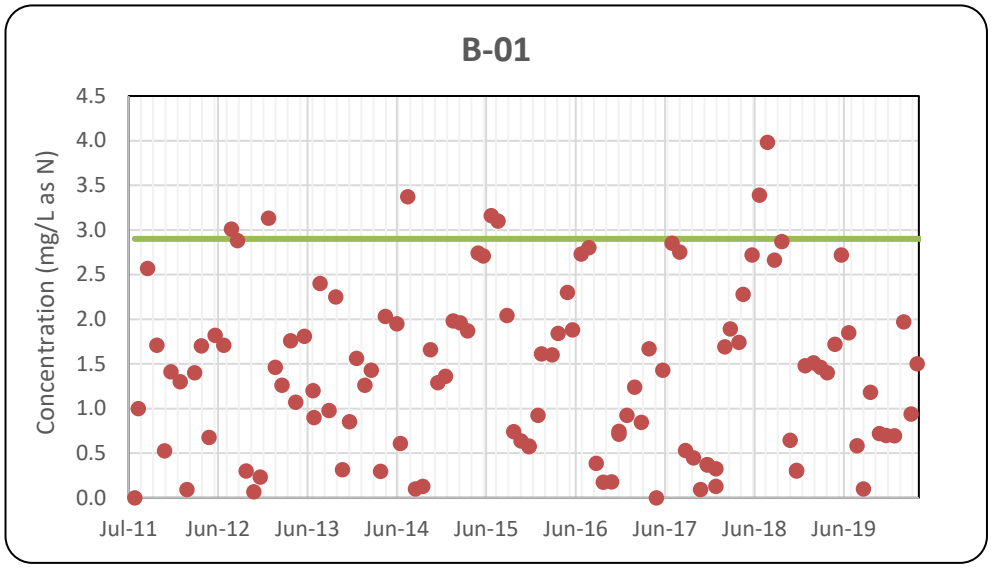
Dissolved Oxygen Concentrations, 2011-2021

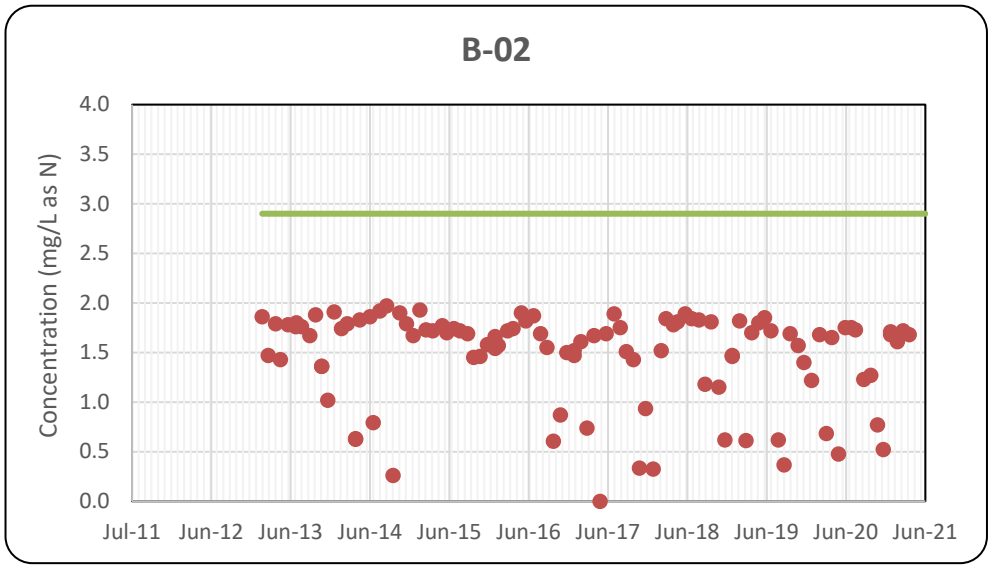


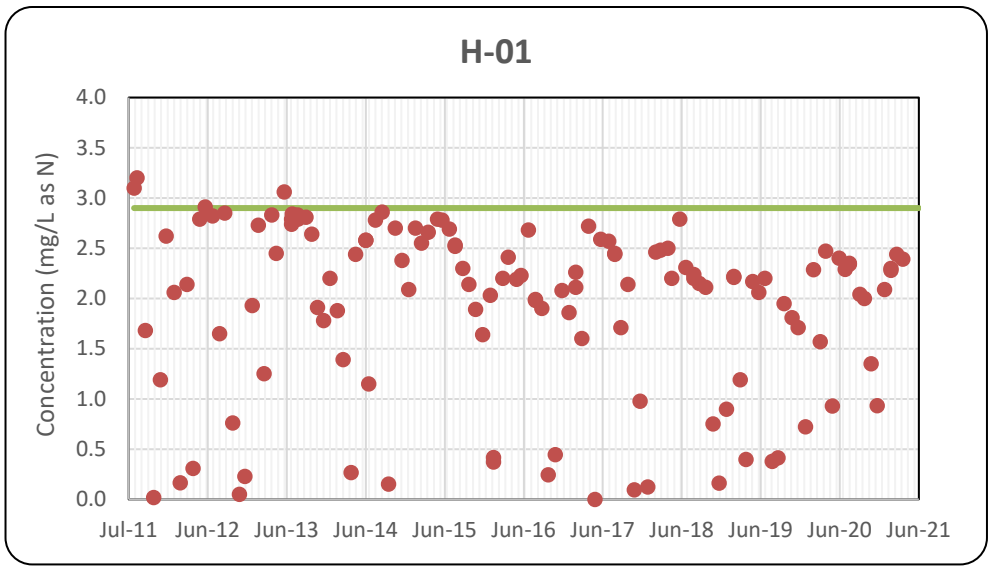




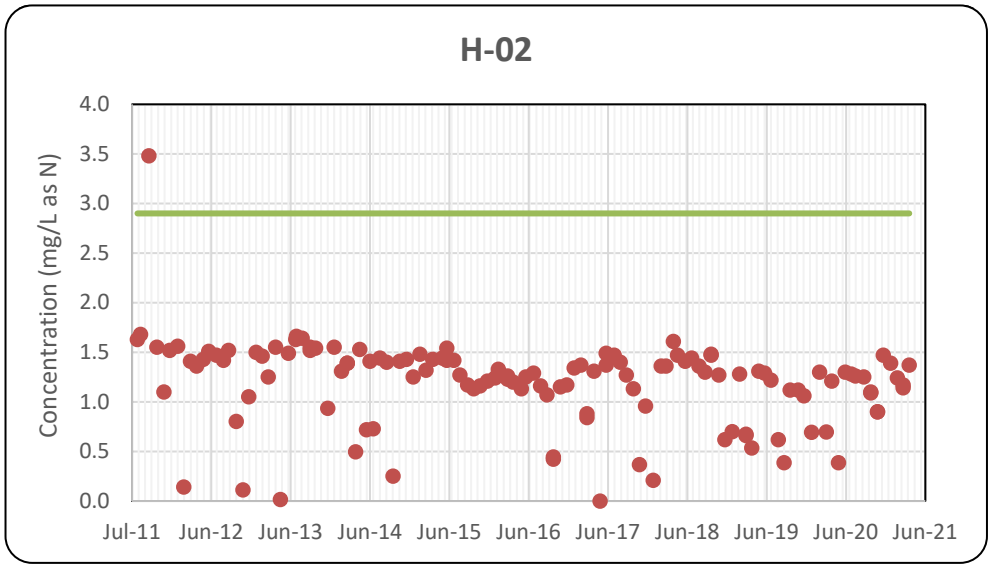
Nitrate Concentrations, 2011-2021

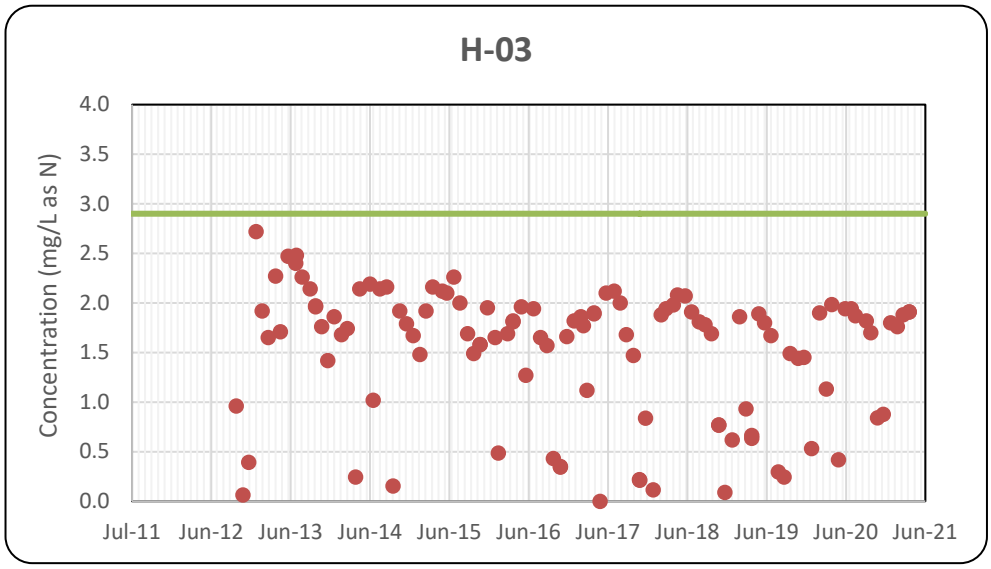


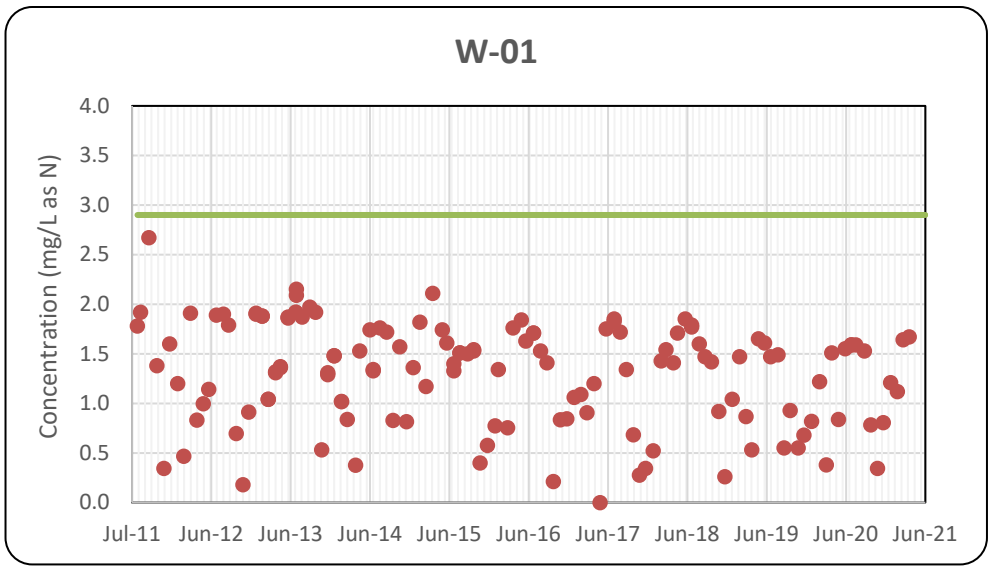




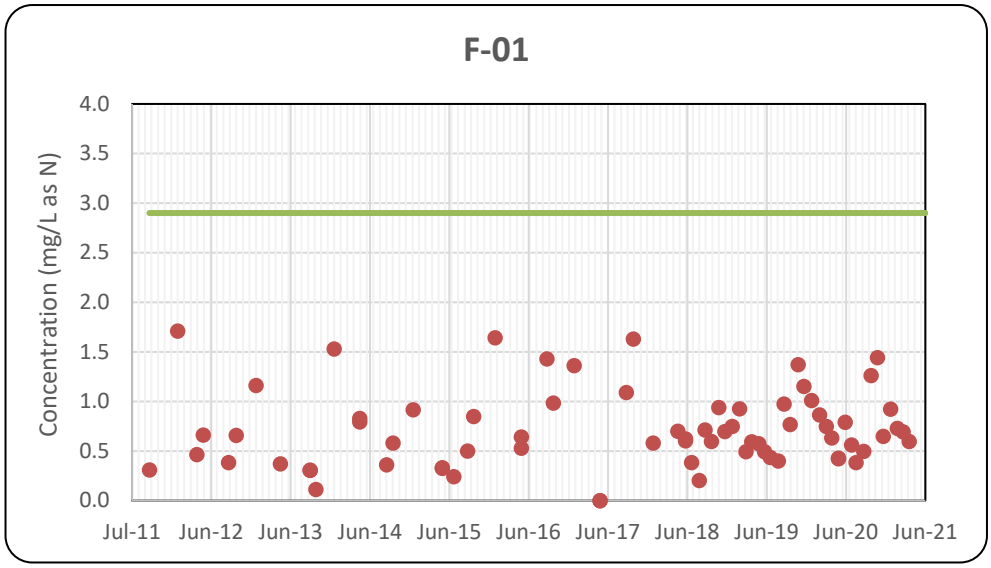
Nitrate Concentrations, 2011-2021

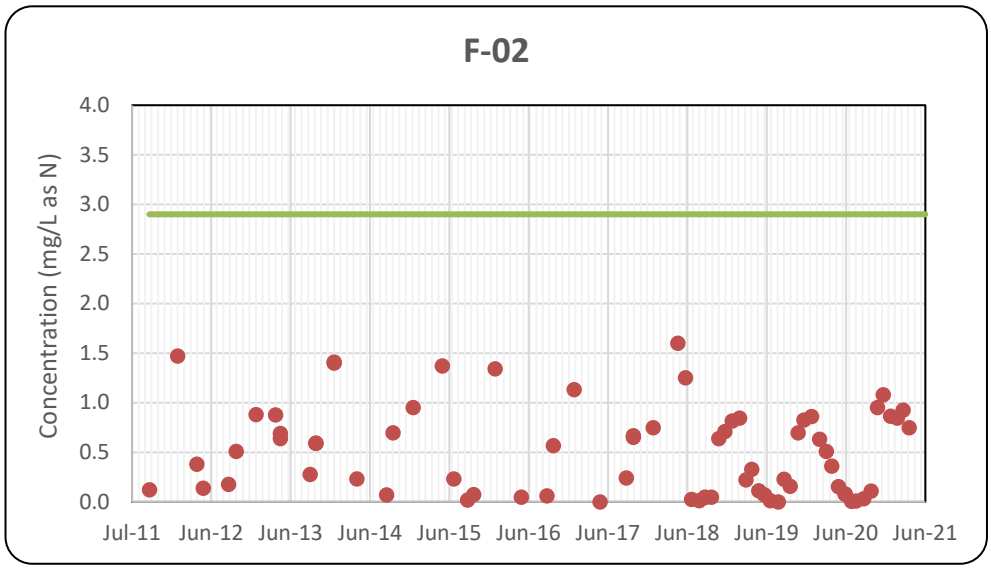


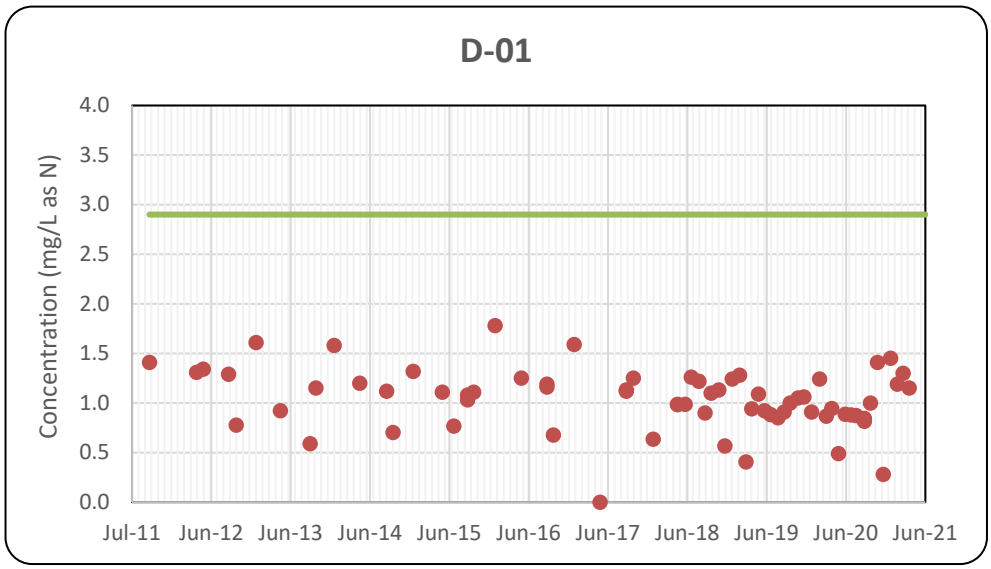




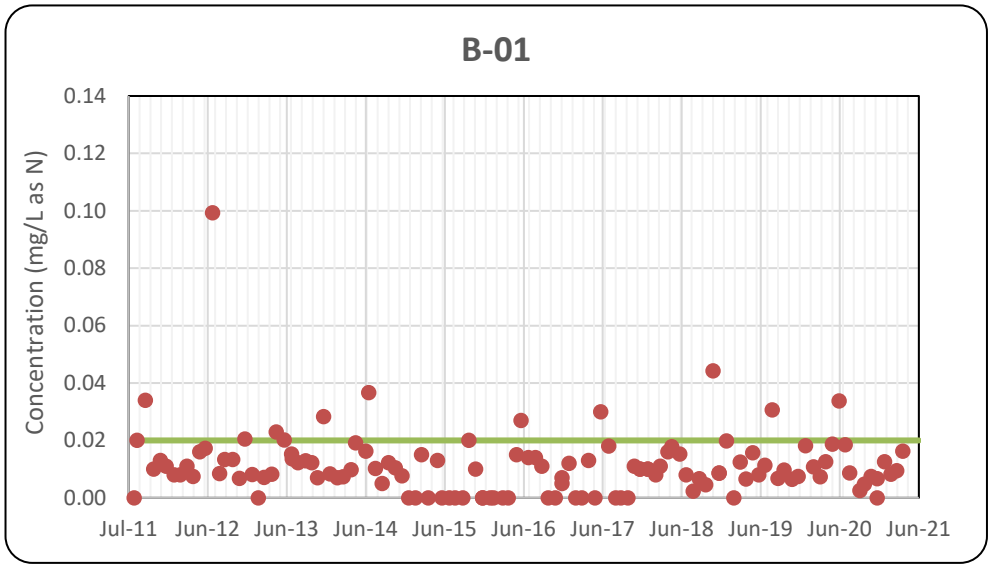
Nitrate Concentrations, 2011-2021

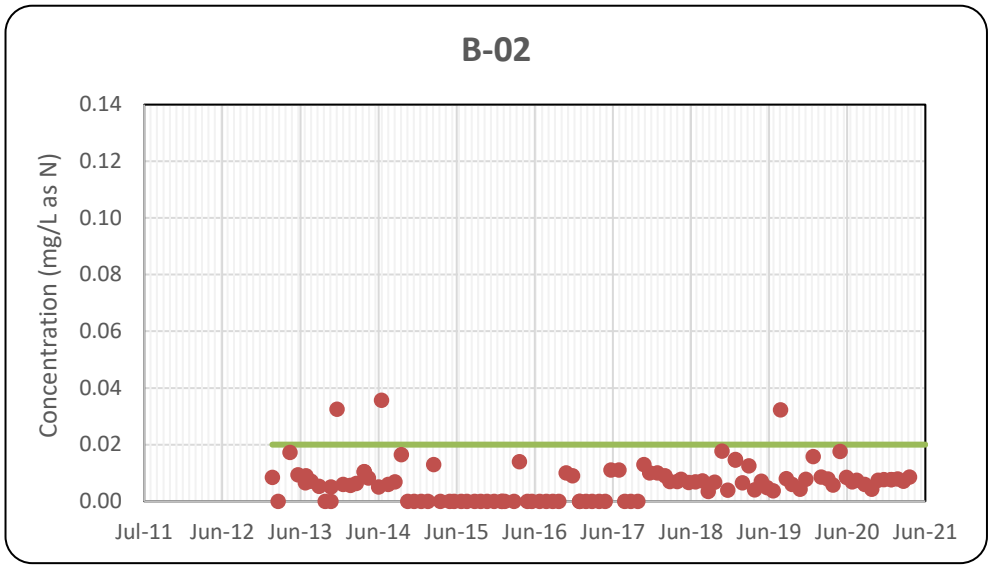


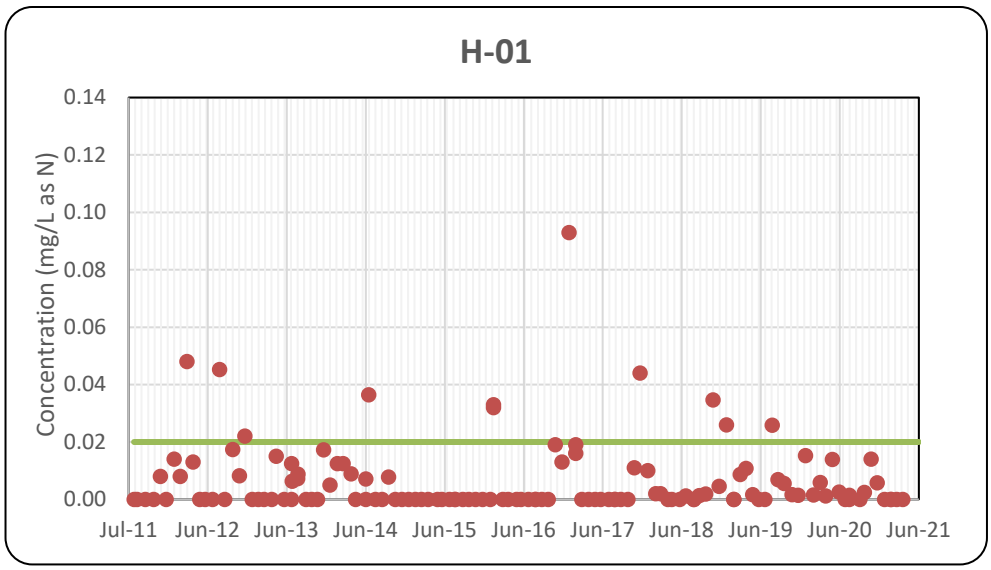




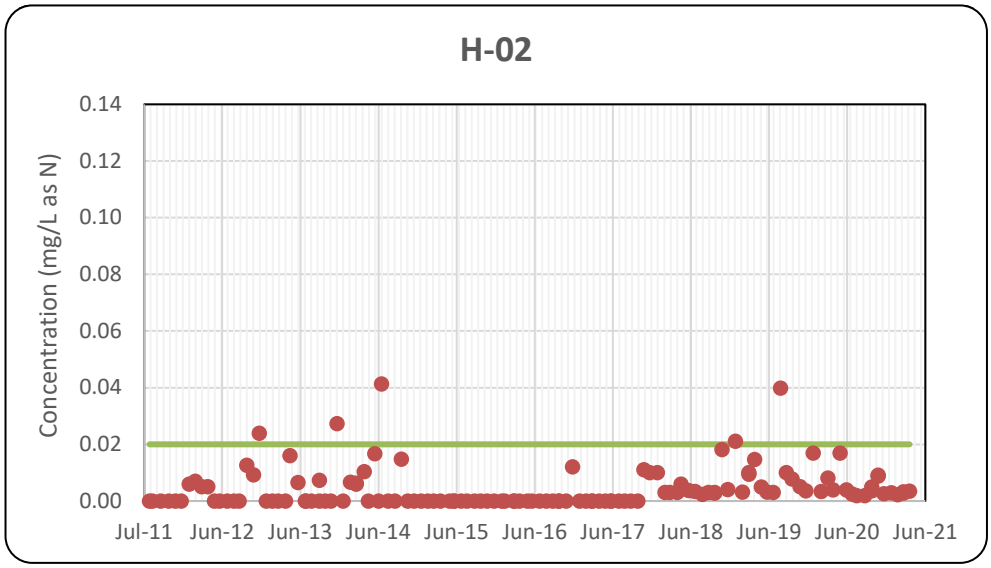
Nitrite Concentrations, 2011-2021

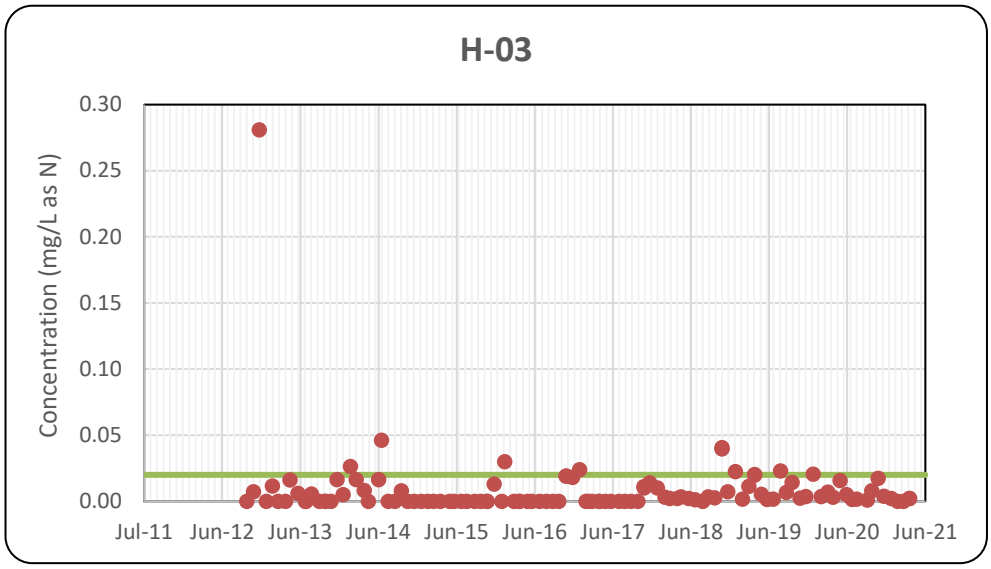


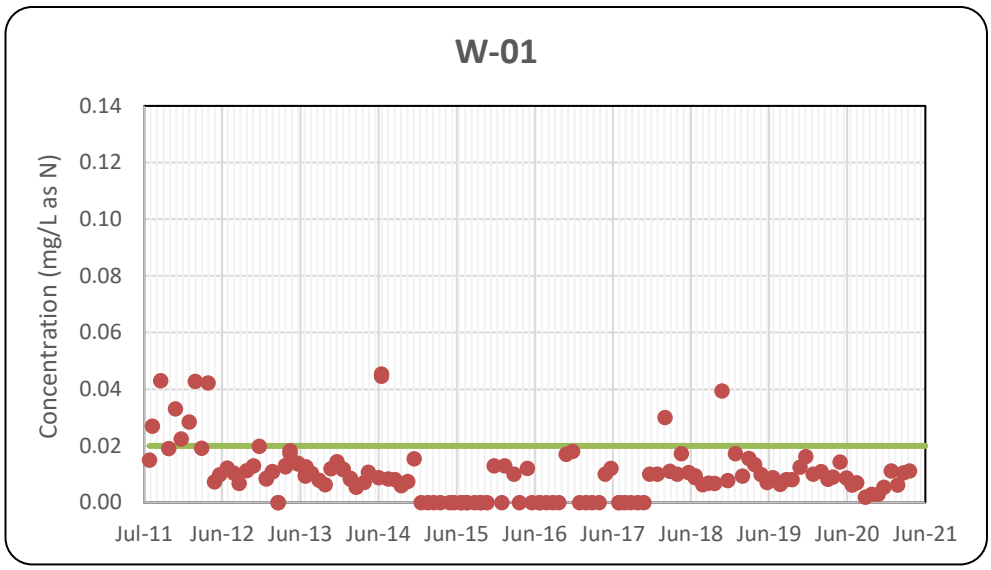




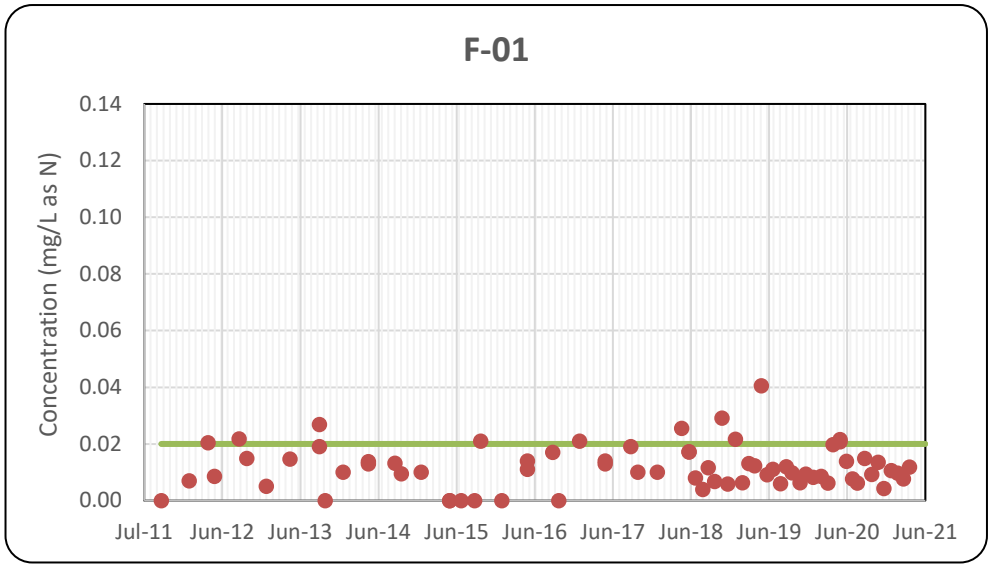
Nitrite Concentrations, 2011-2021

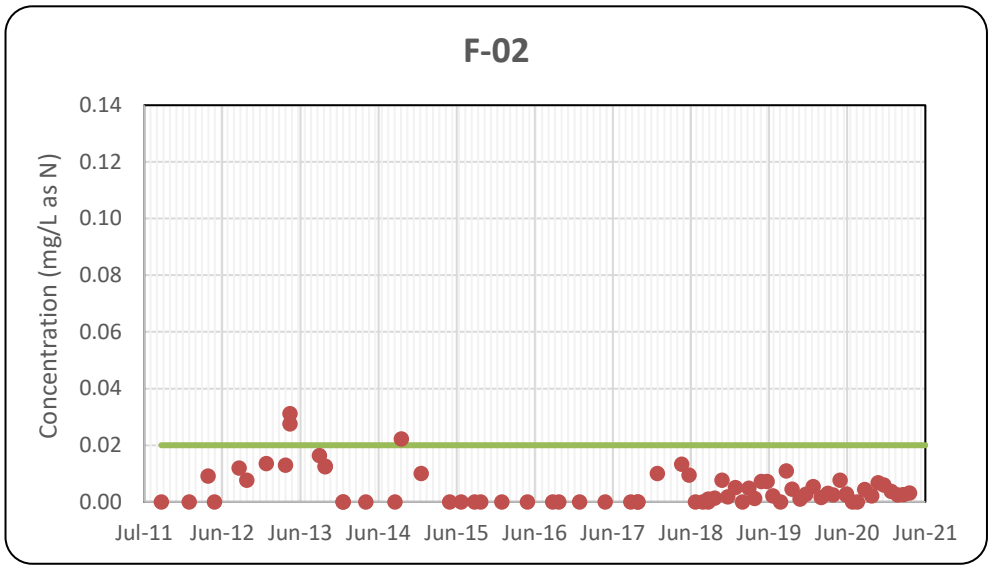


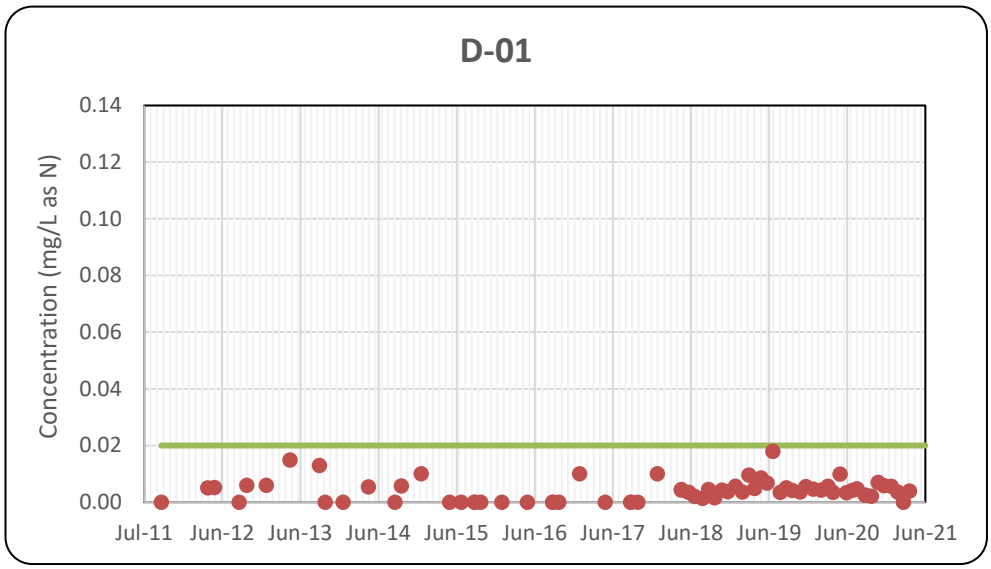




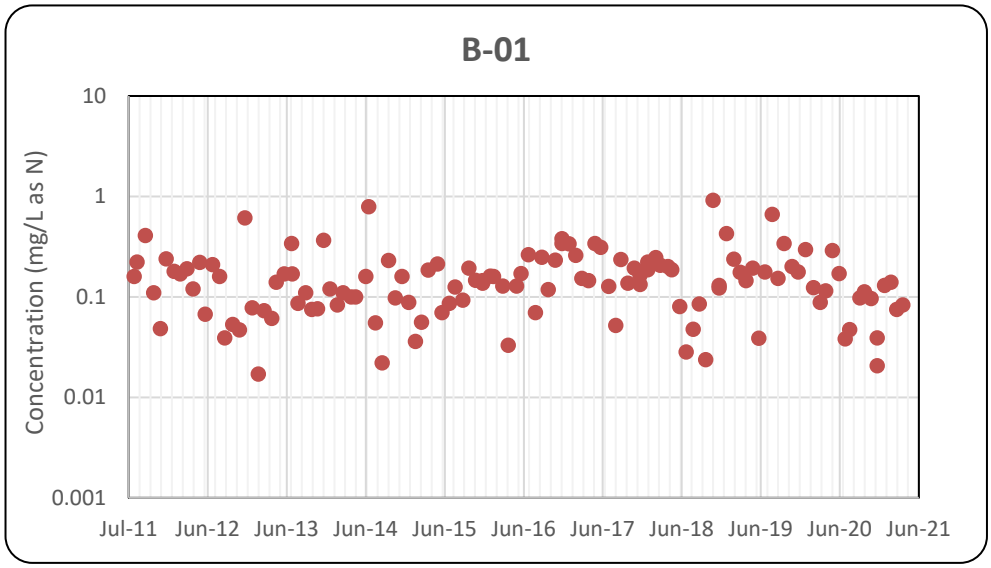
Nitrite Concentrations, 2011-2021

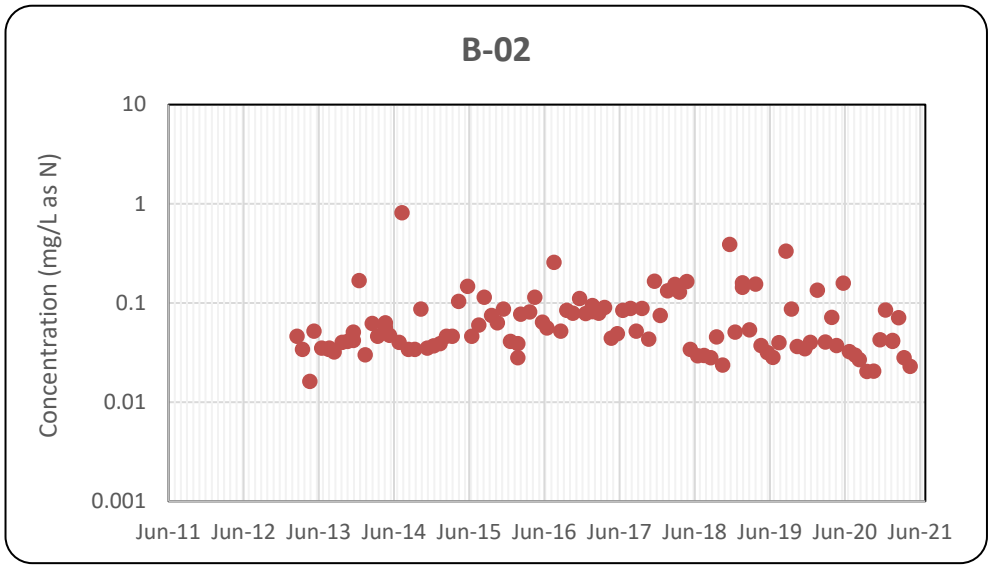


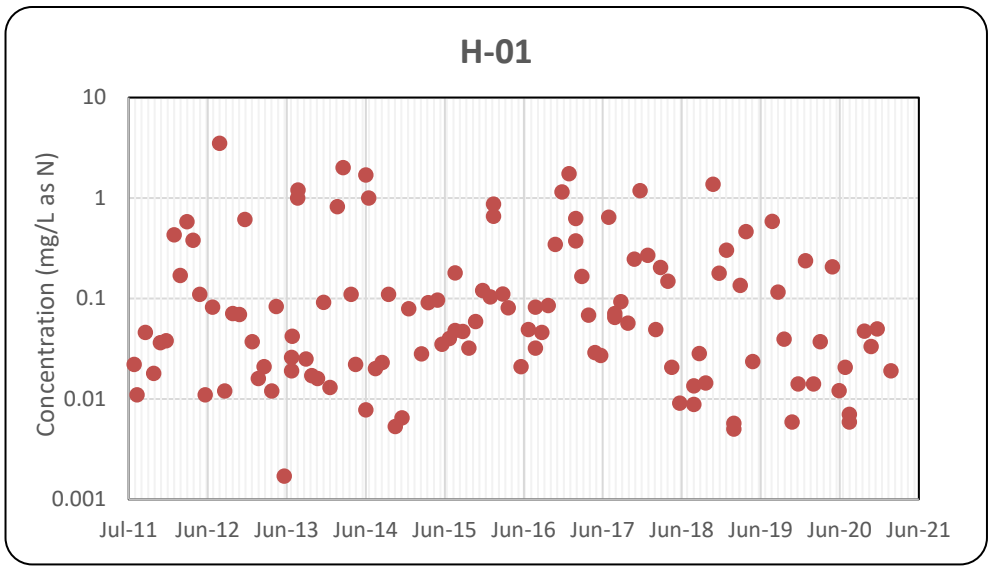




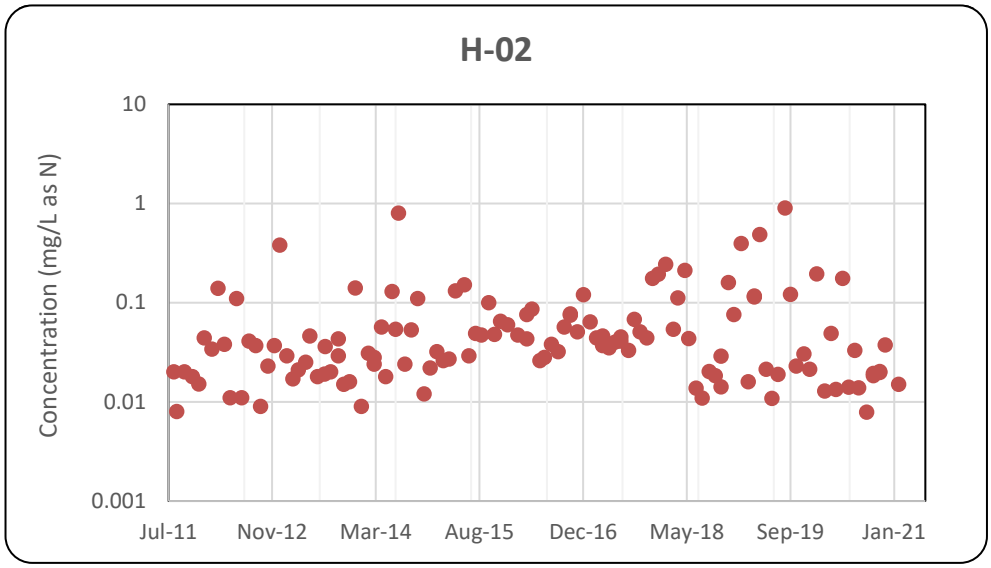
Ammonia Concentrations, 2011-2021

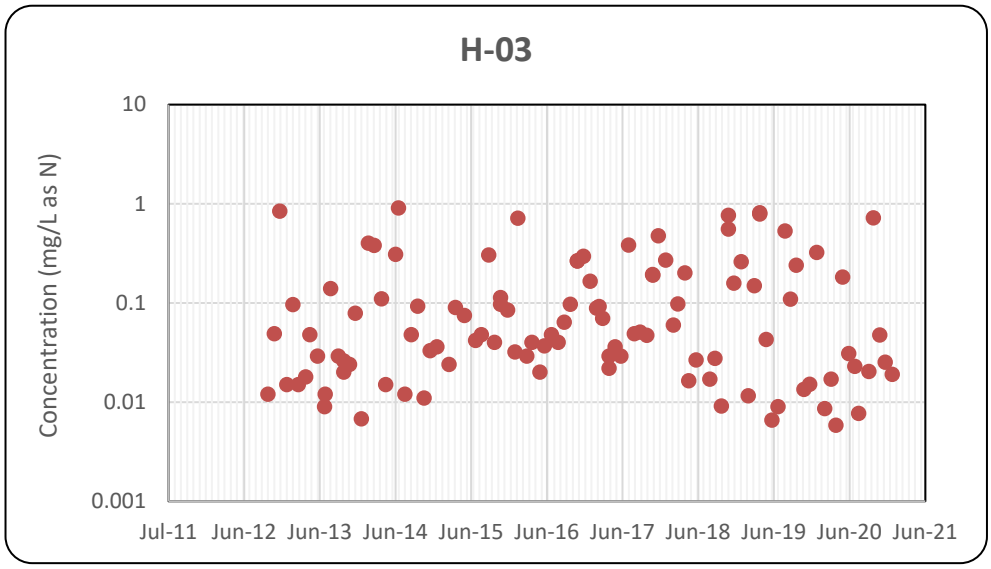


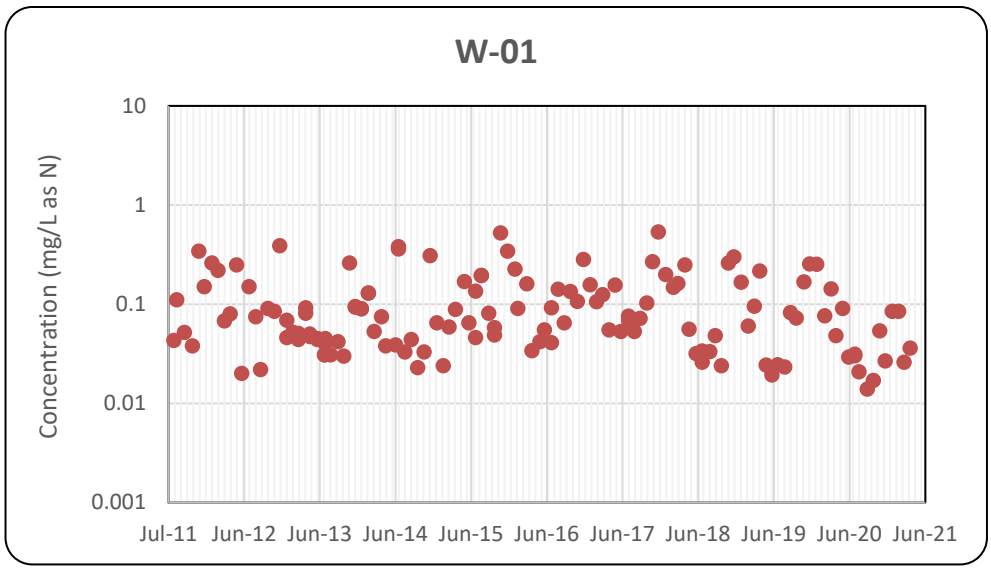




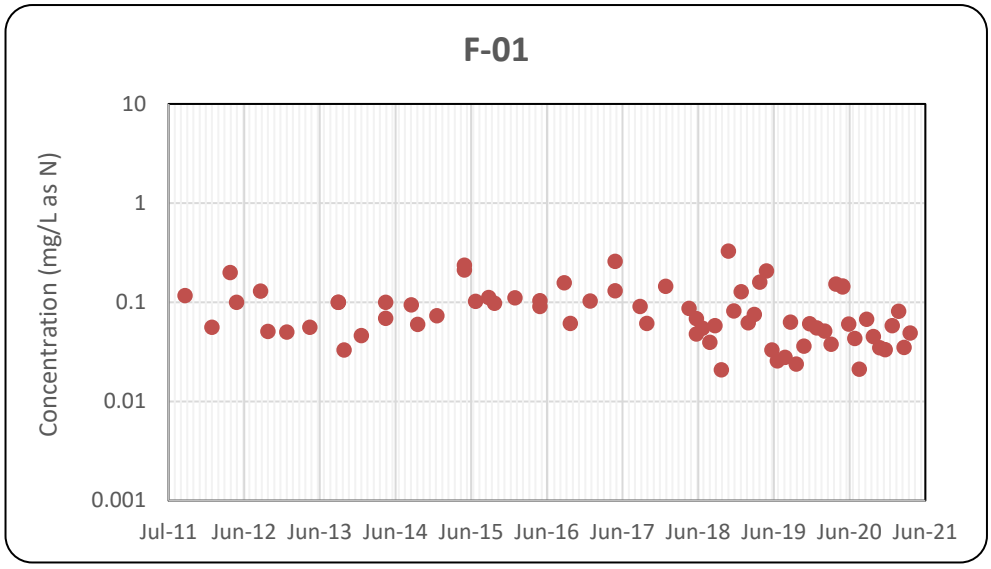
Ammonia Concentrations, 2011-2021

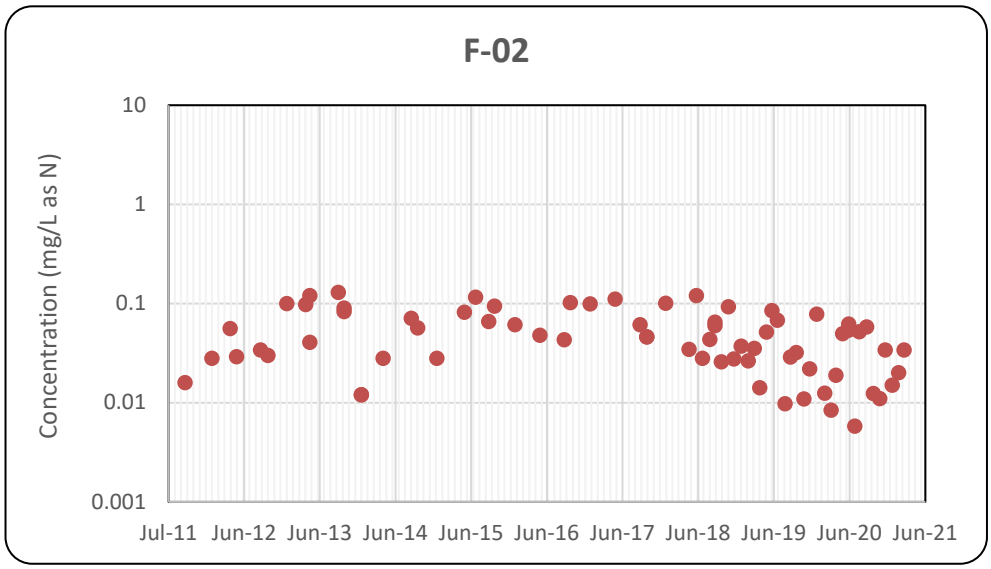


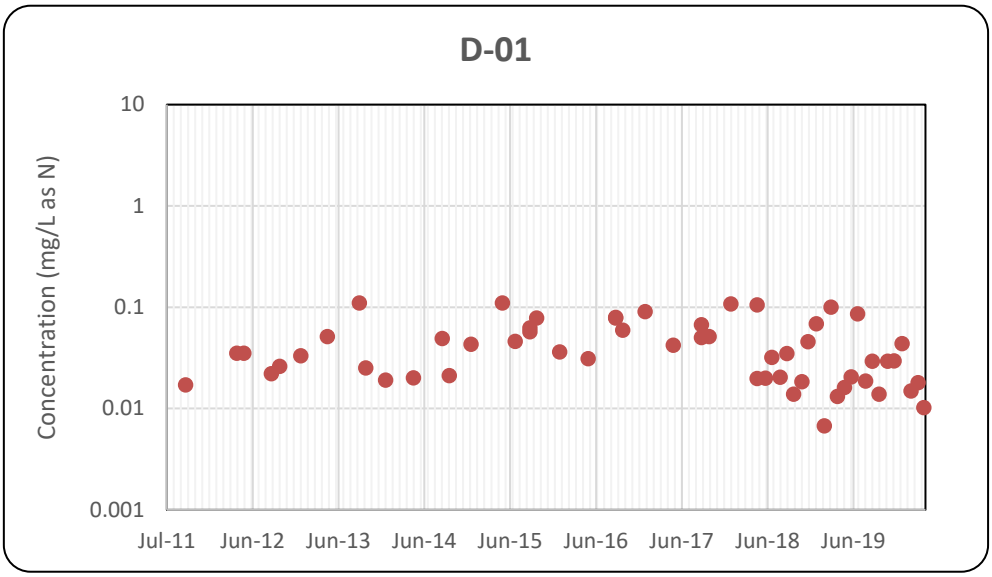




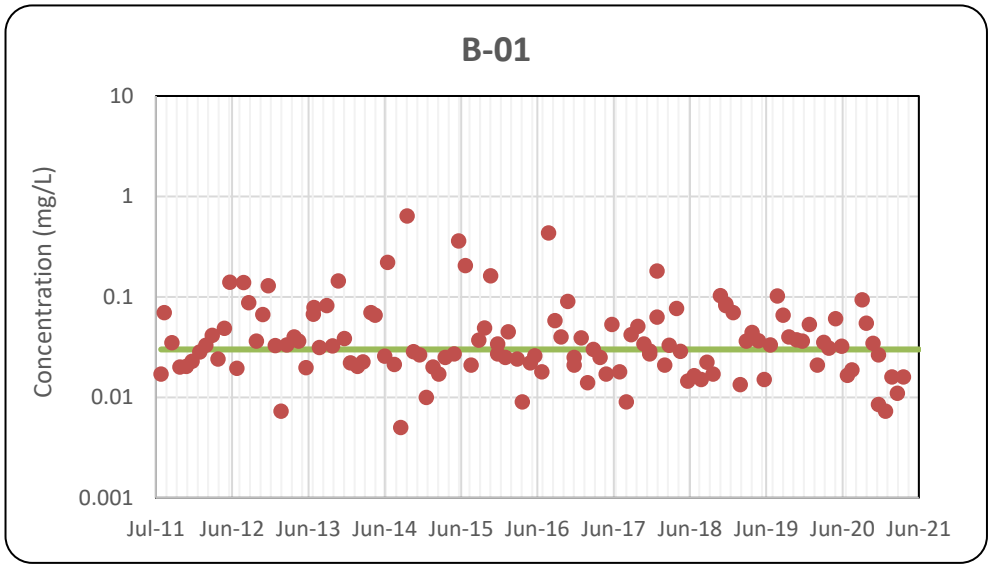
Ammonia Concentrations, 2011-2021

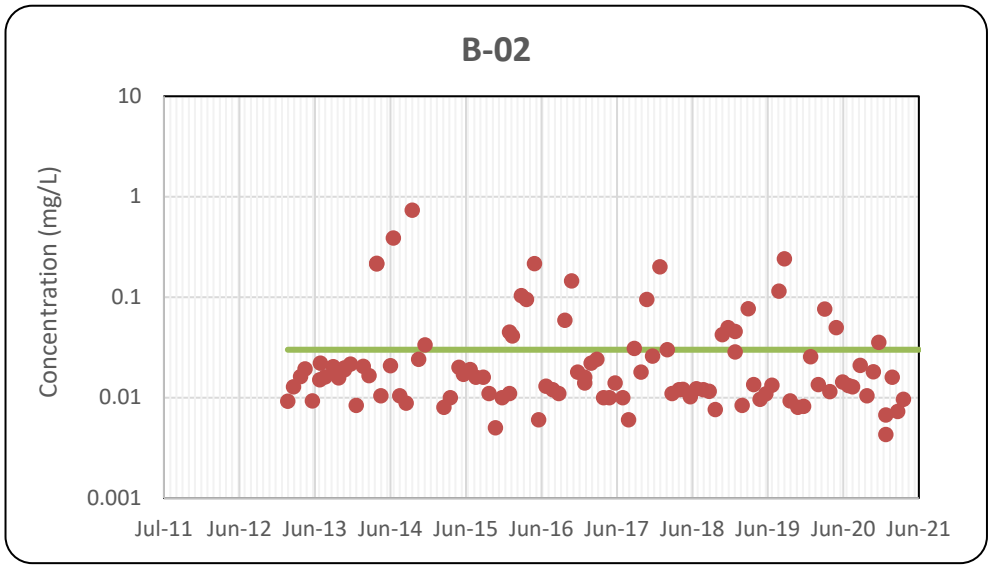


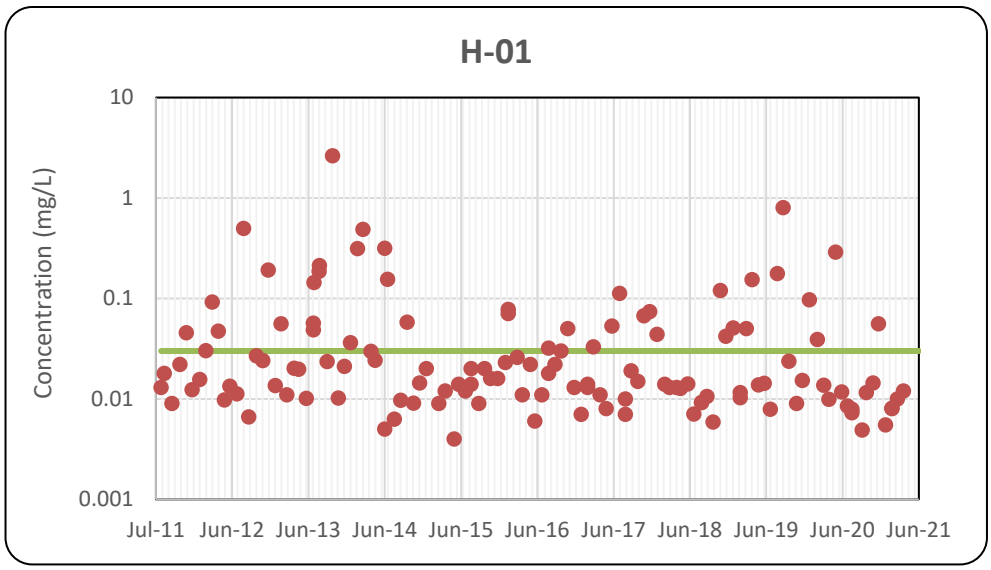




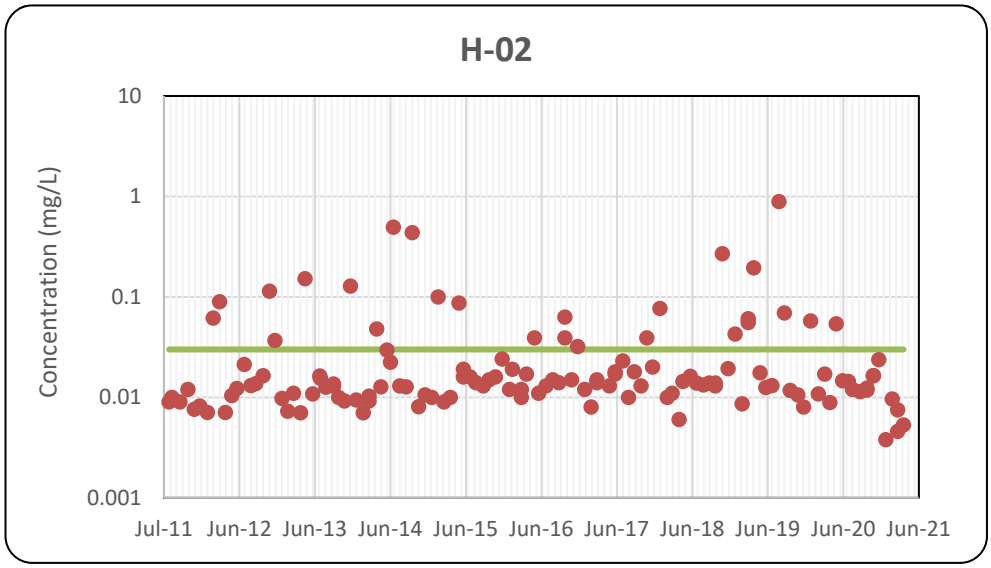
Total Phosphorus Concentrations, 2011-2021

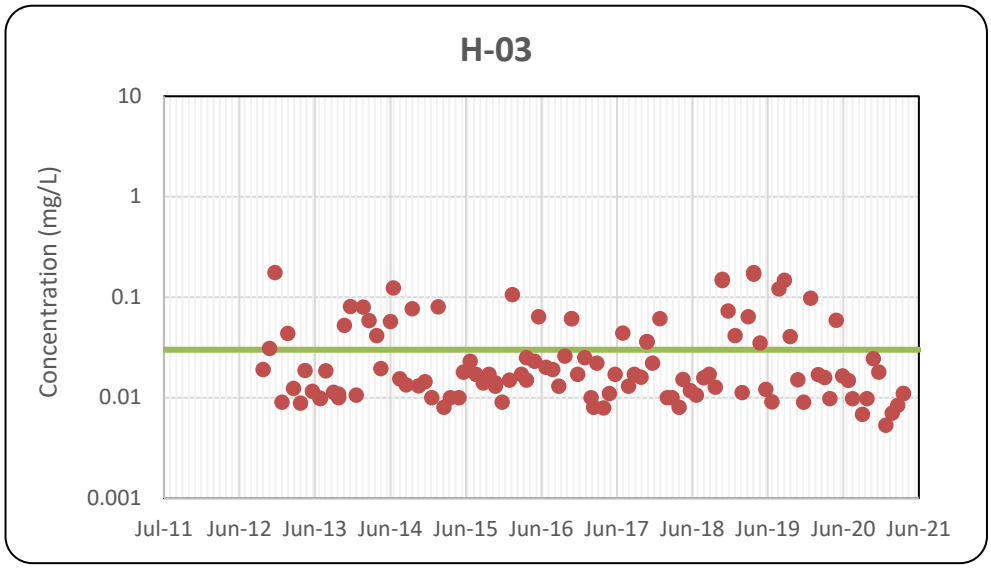


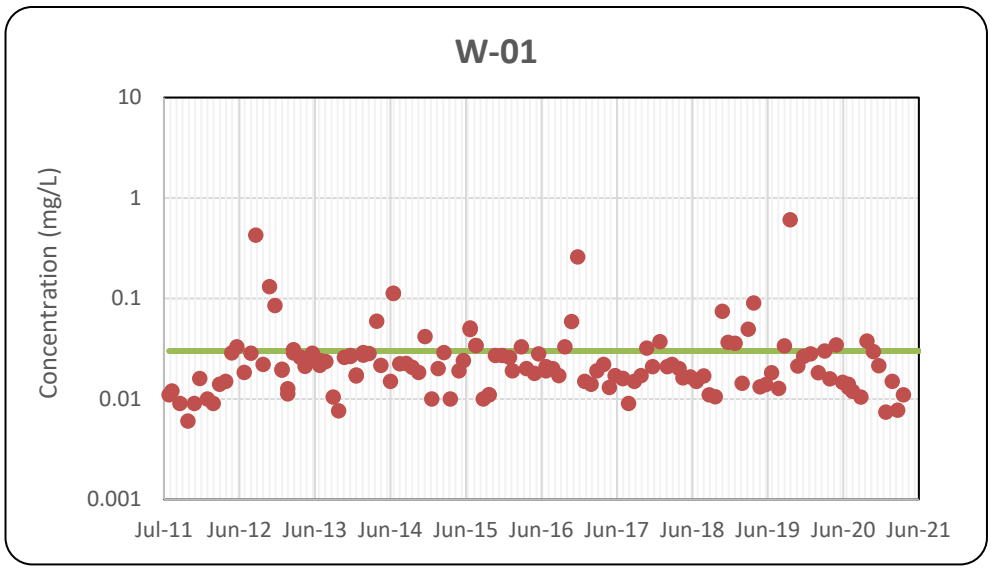




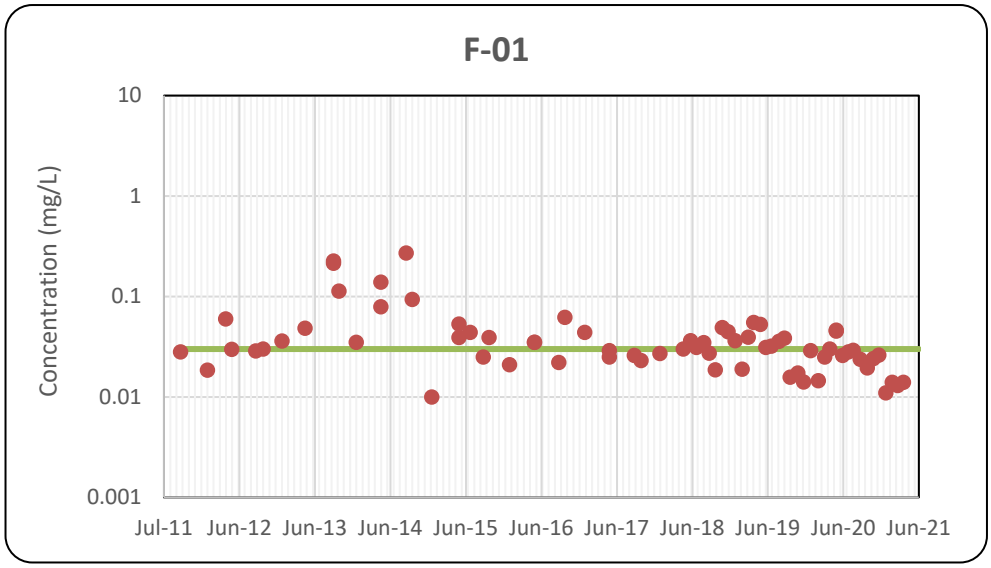
Total Phosphorus Concentrations, 2011-2021

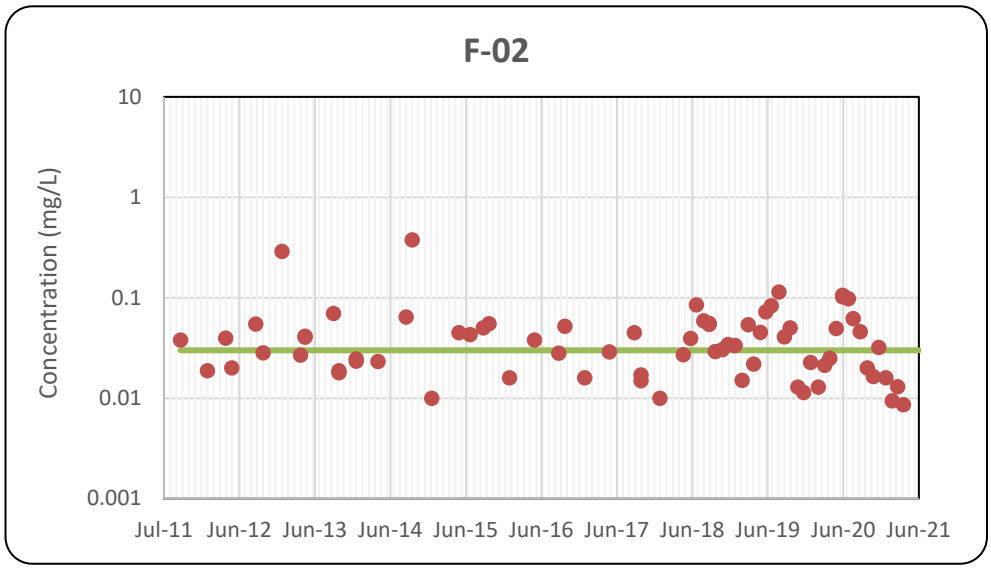


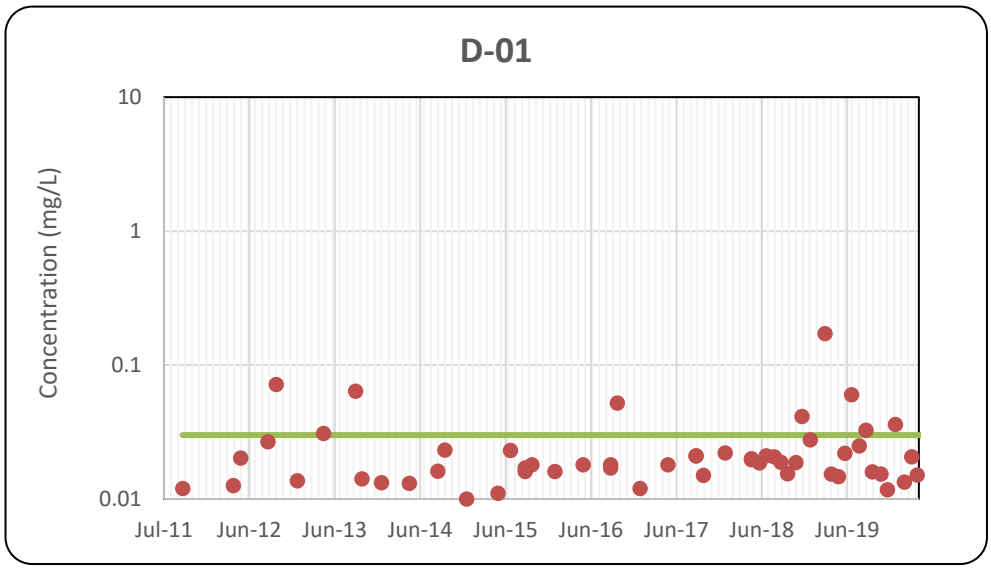




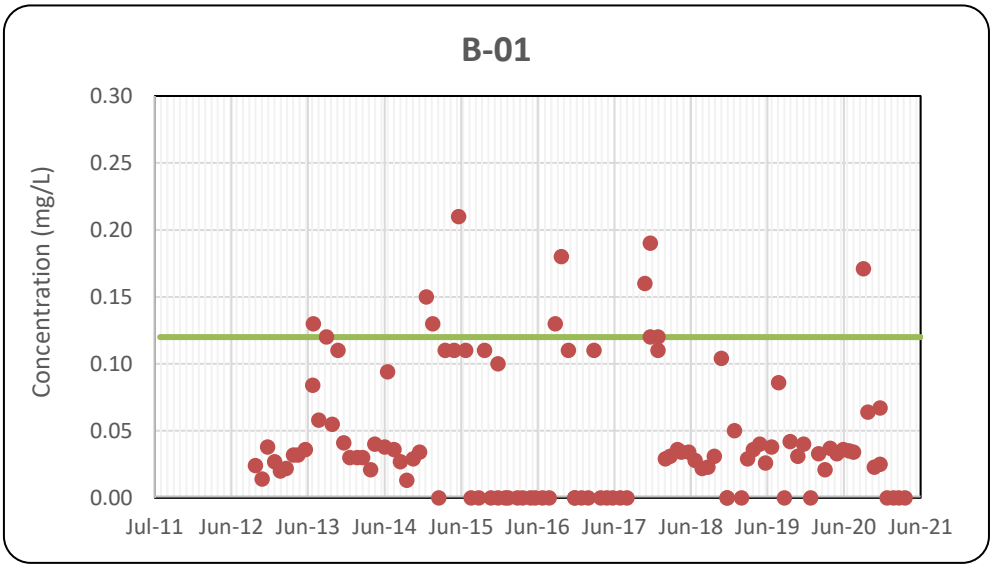
Total Phosphorus Concentrations, 2011-2021

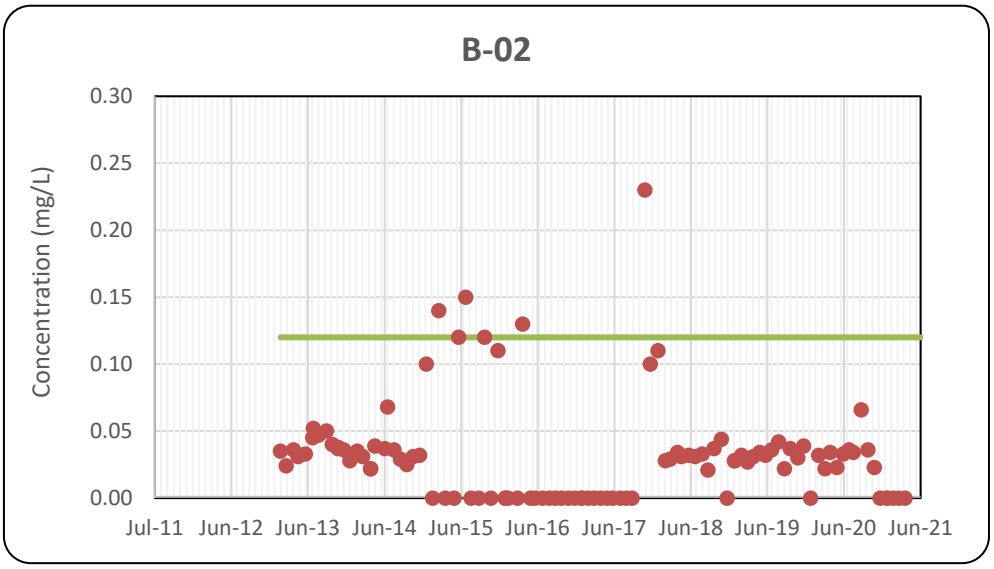


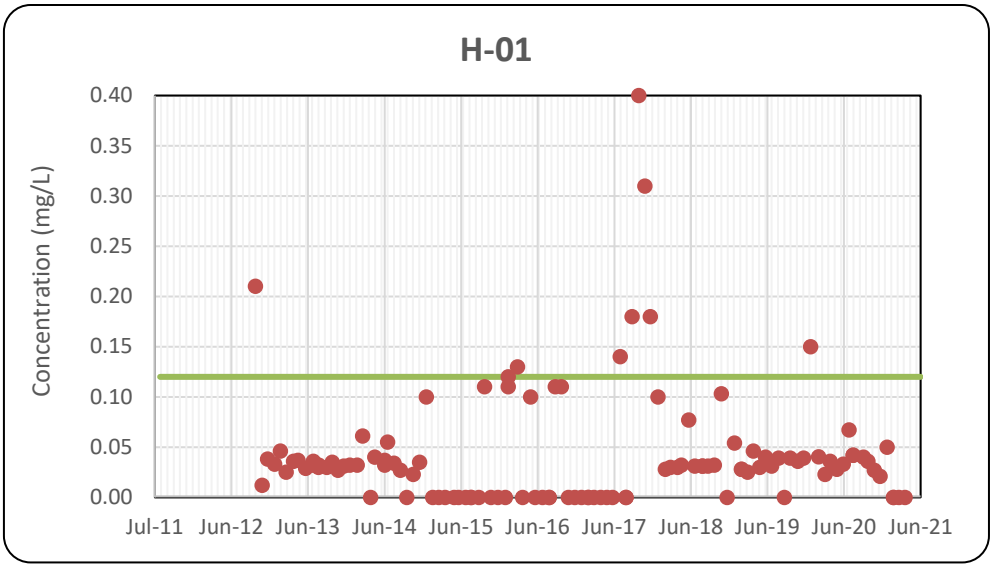




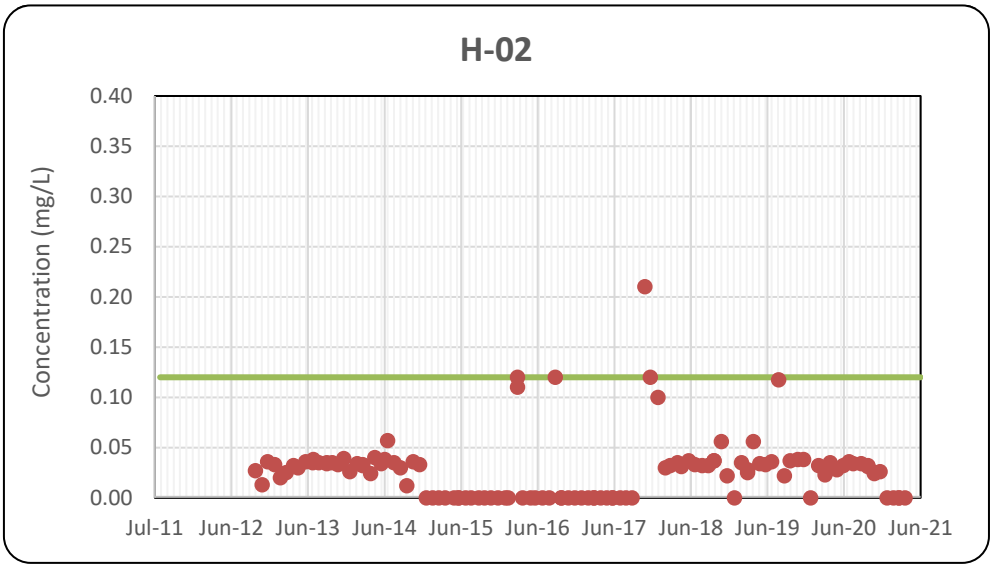
Fluoride Concentrations, 2011-2021

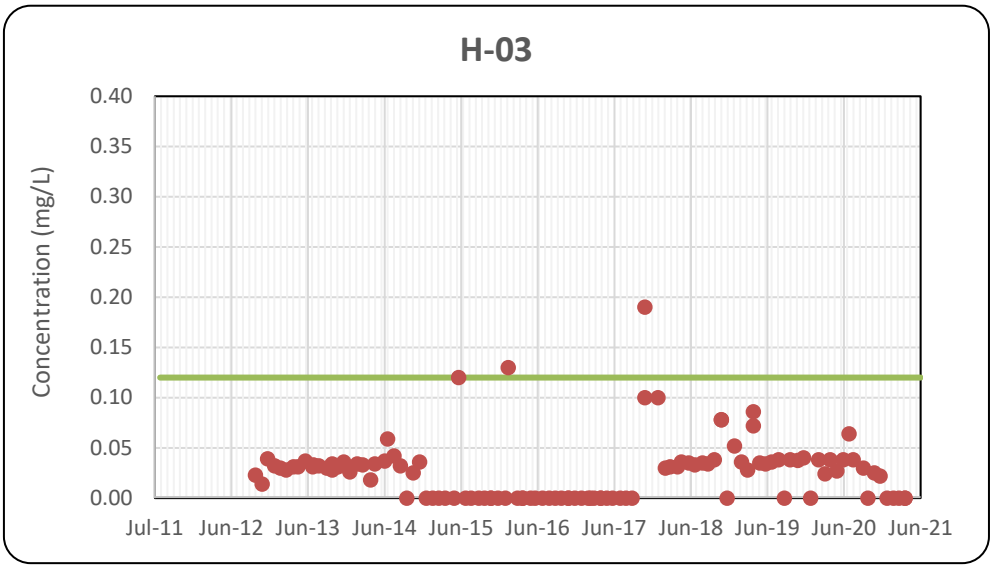


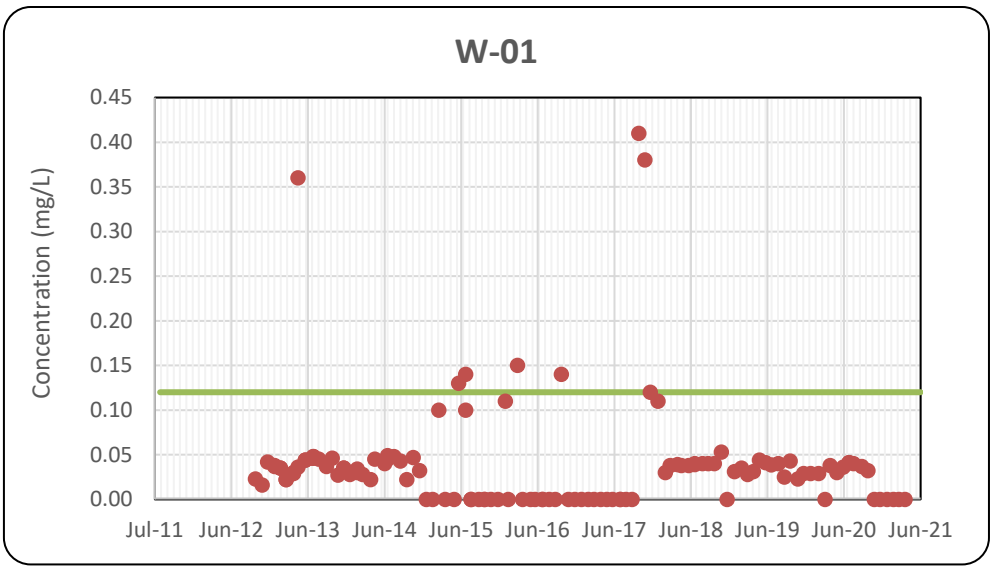




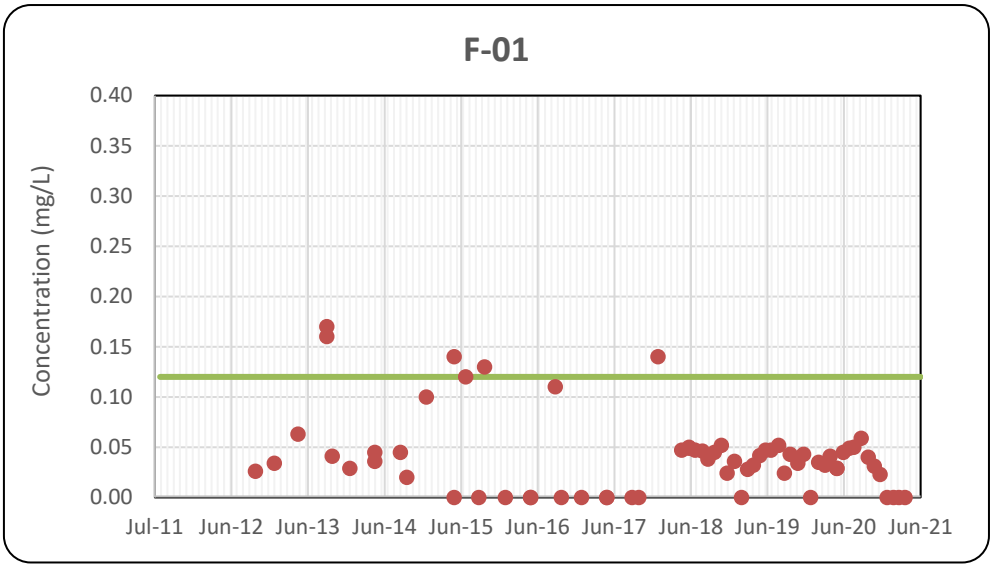
Fluoride Concentrations, 2011-2021

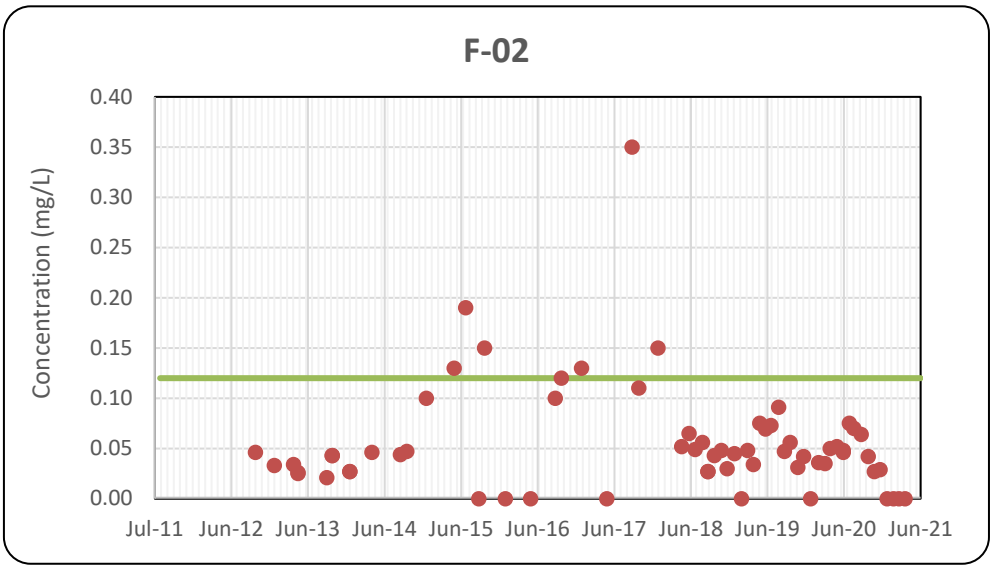


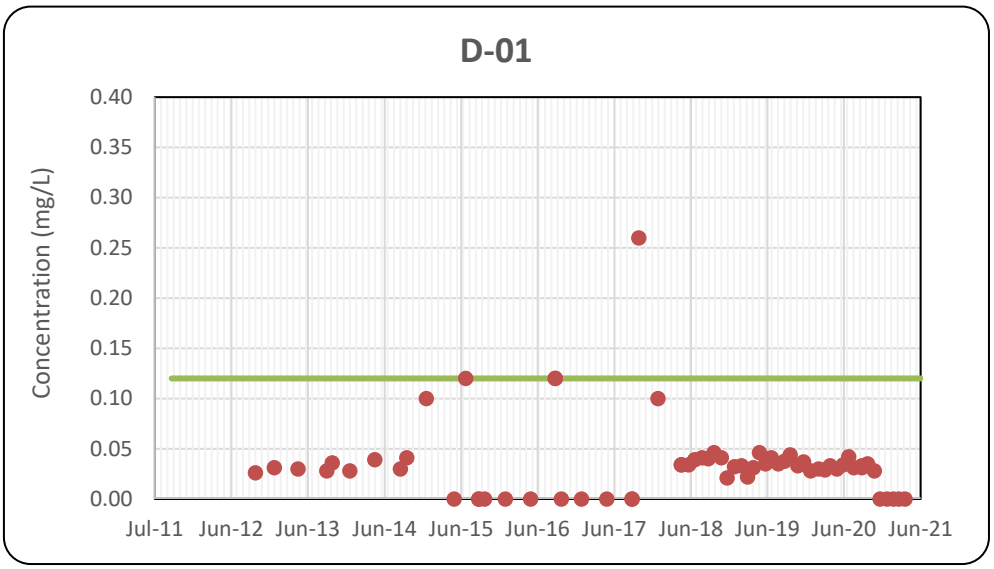




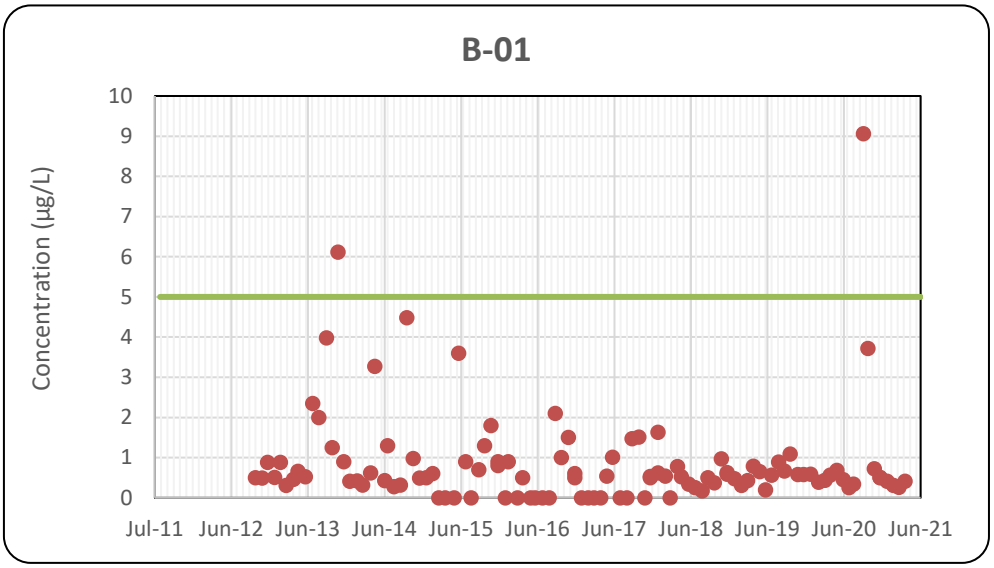
Fluoride Concentrations, 2011-2021

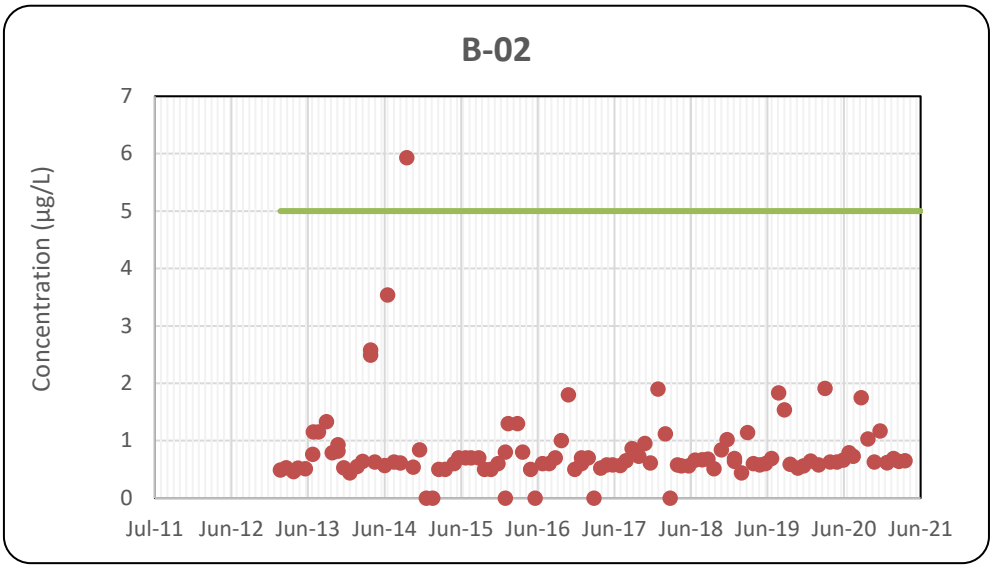


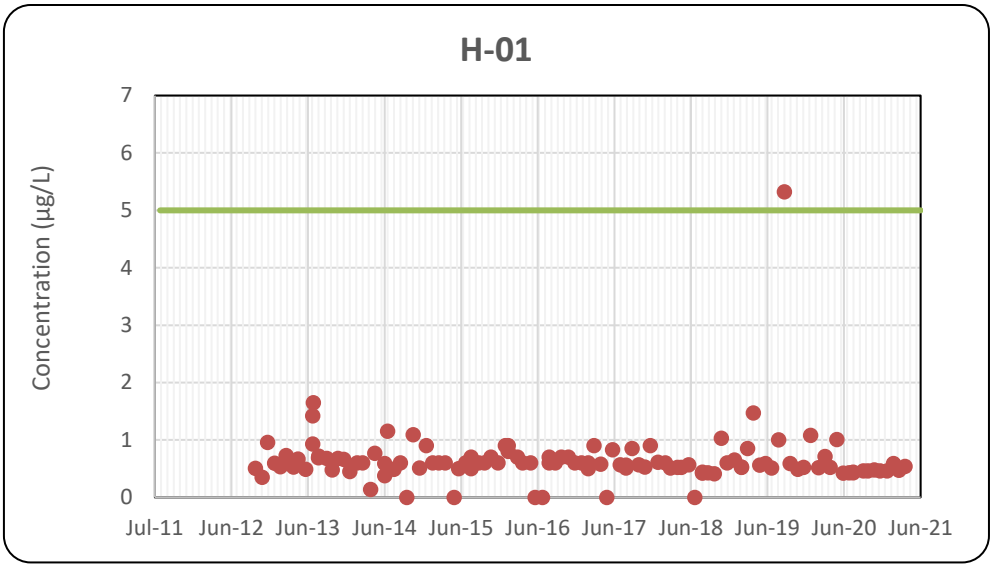




Total Arsenic Concentrations, 2011-2021







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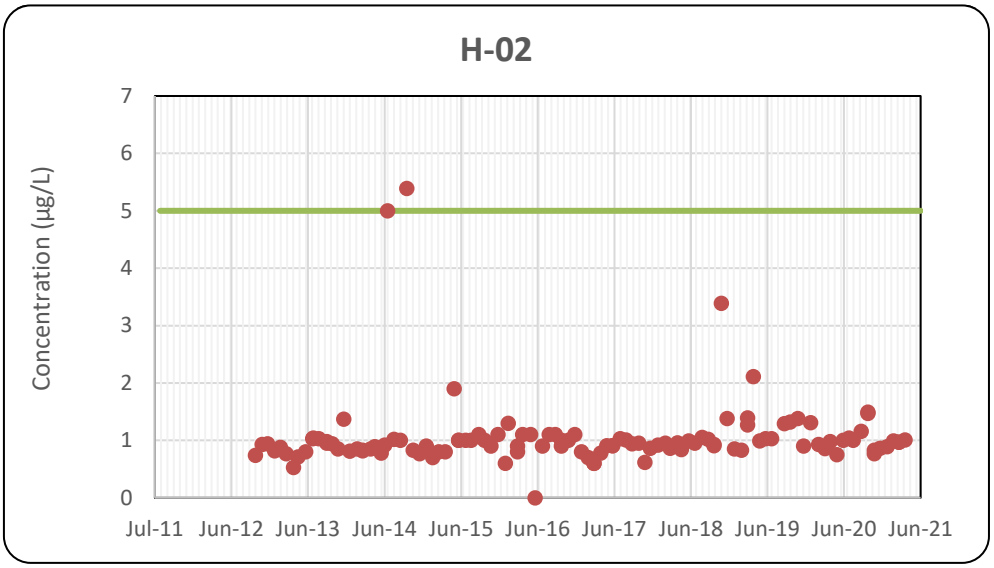

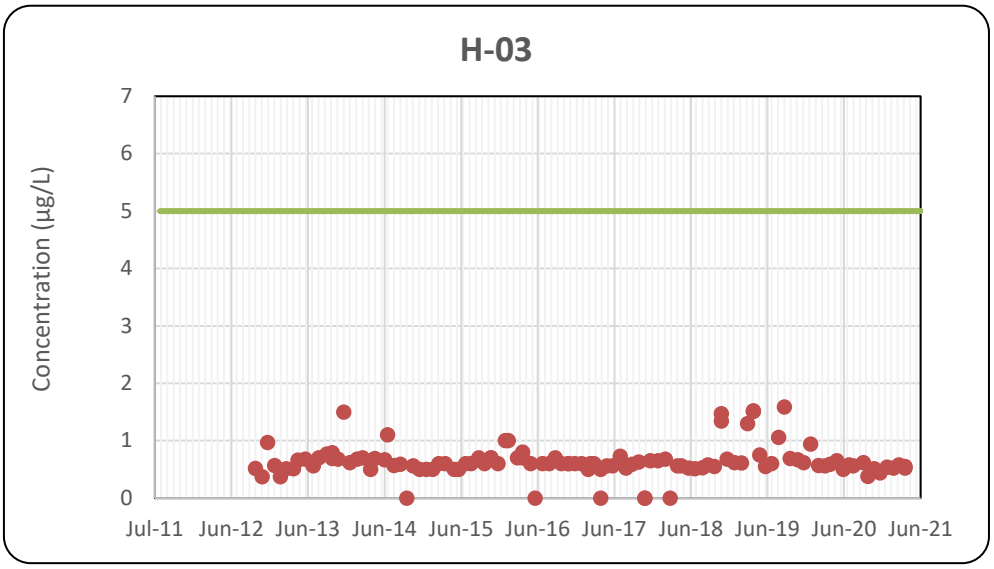

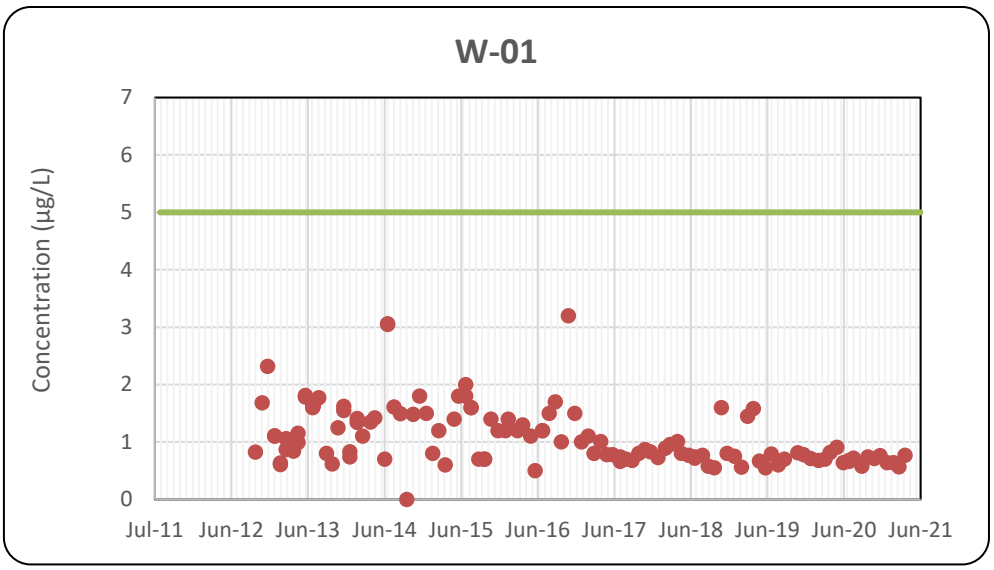

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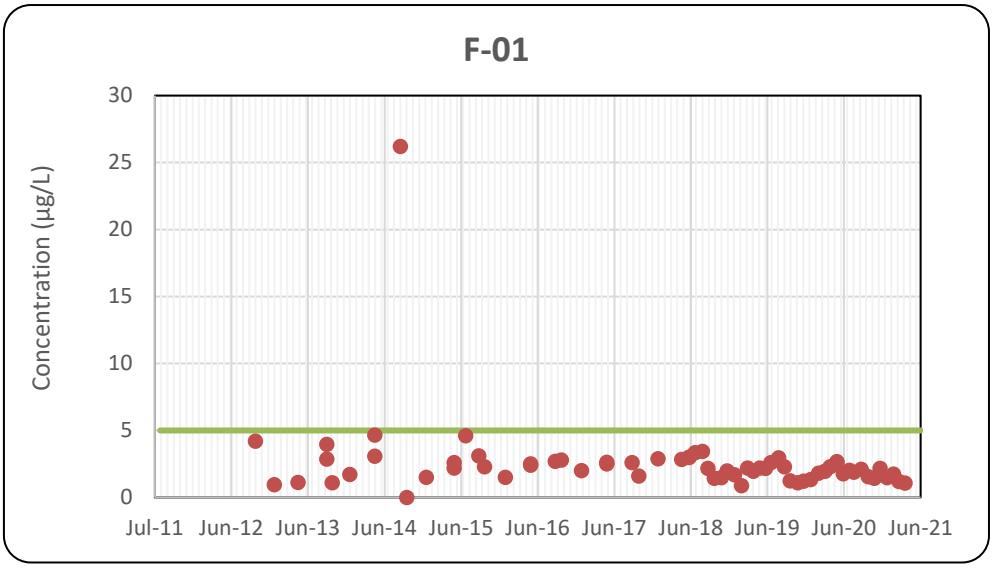

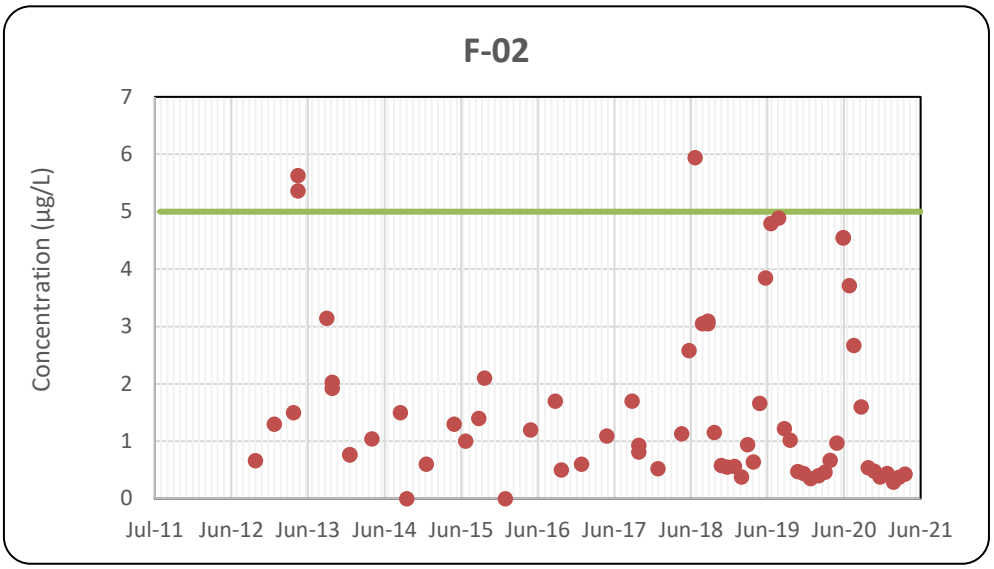

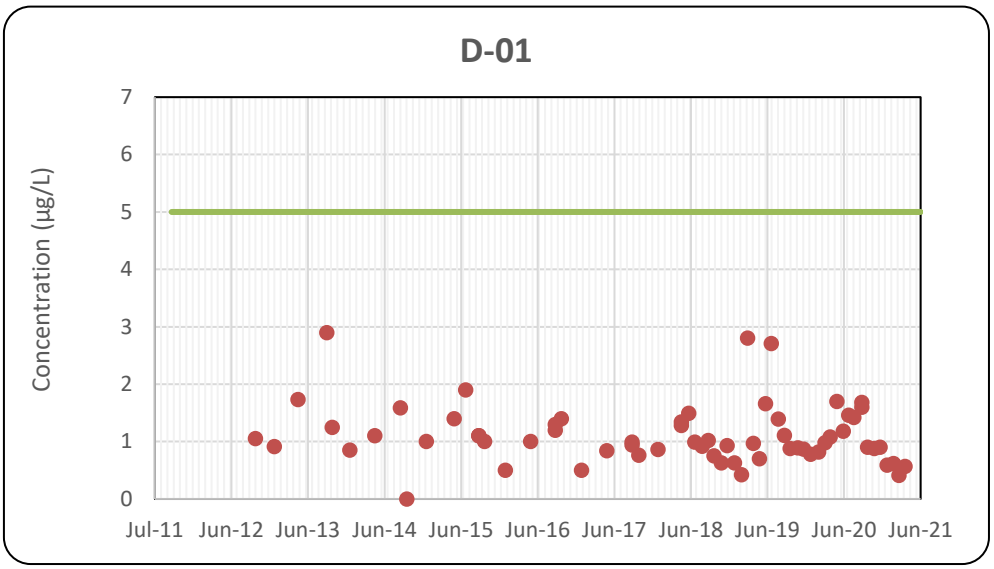

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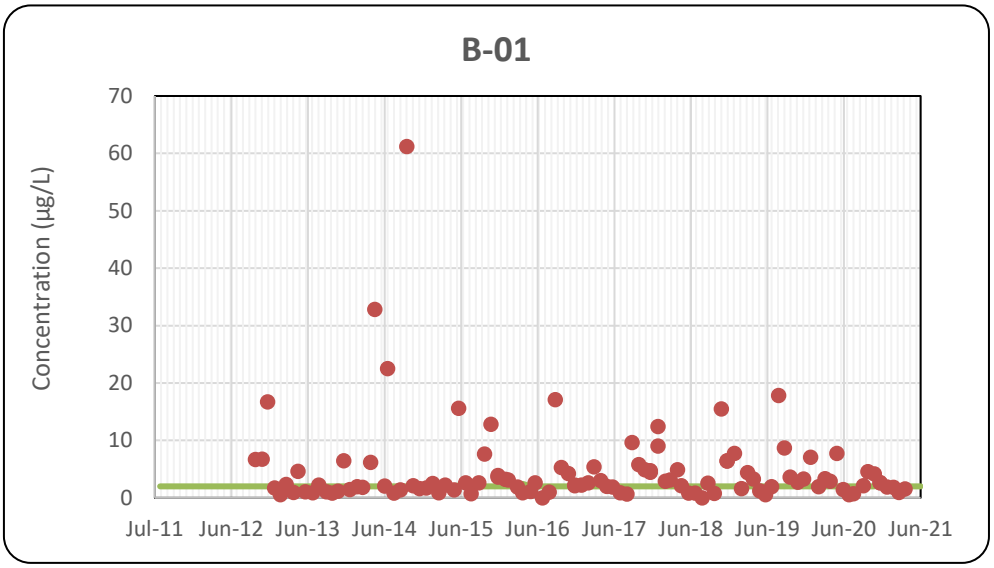

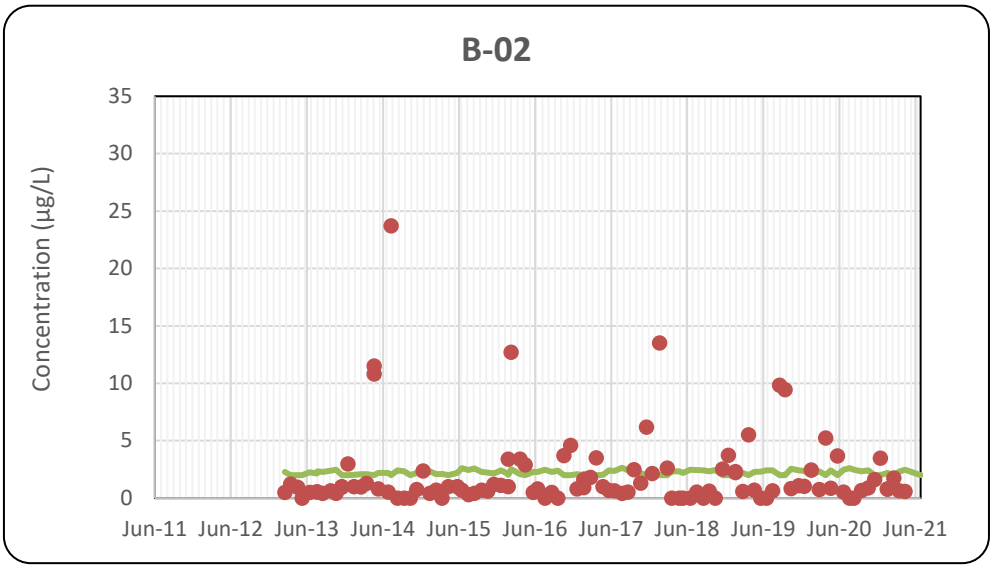

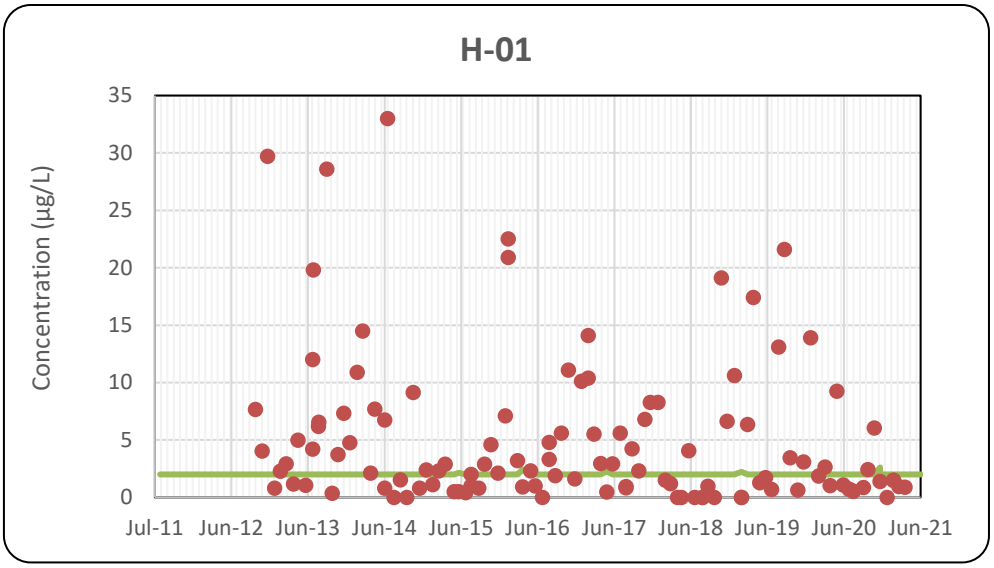

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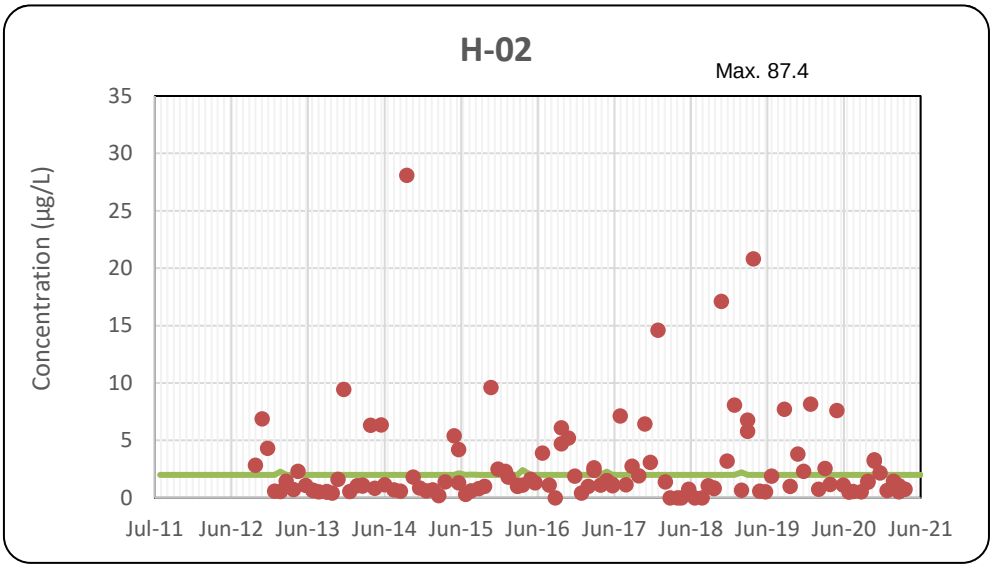

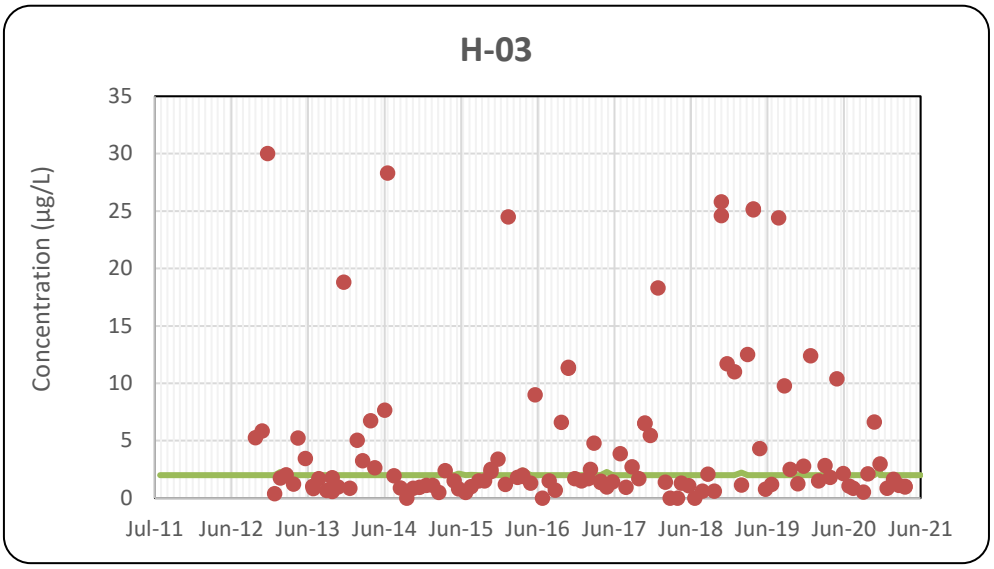

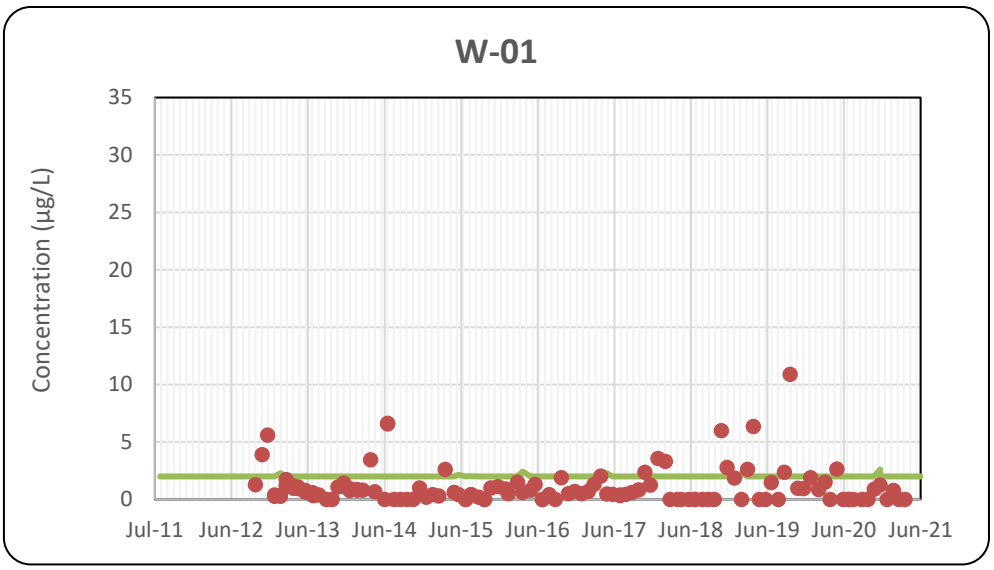

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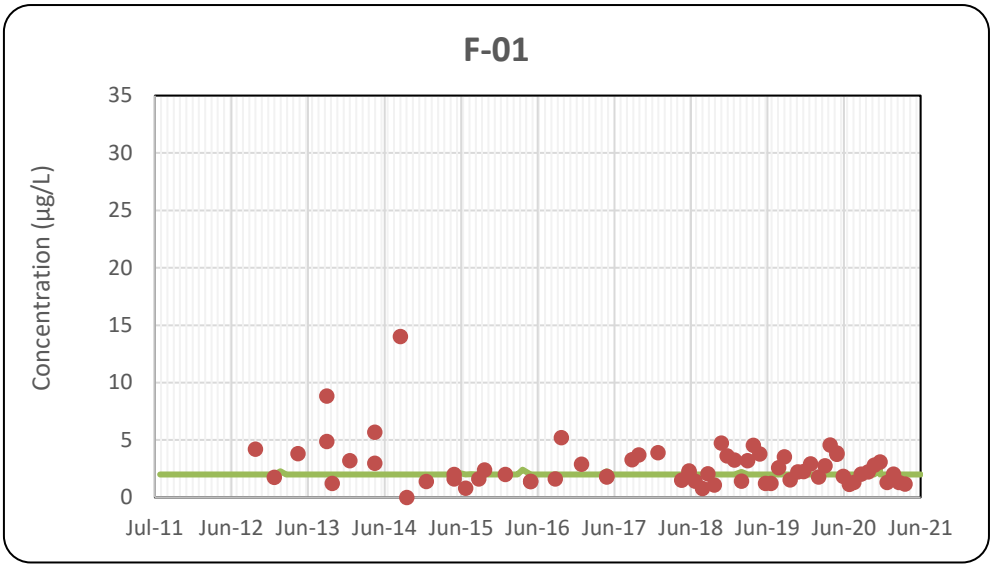

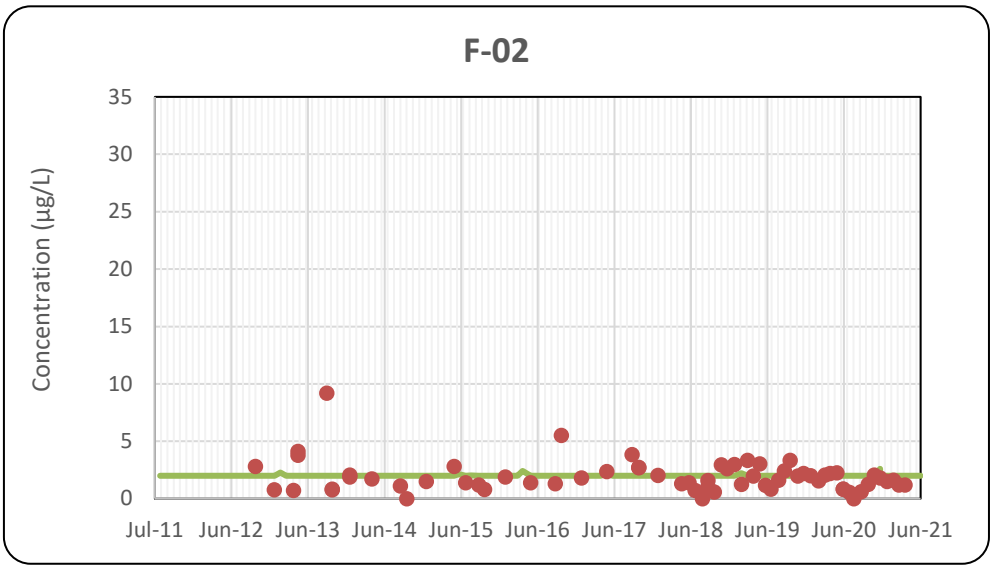

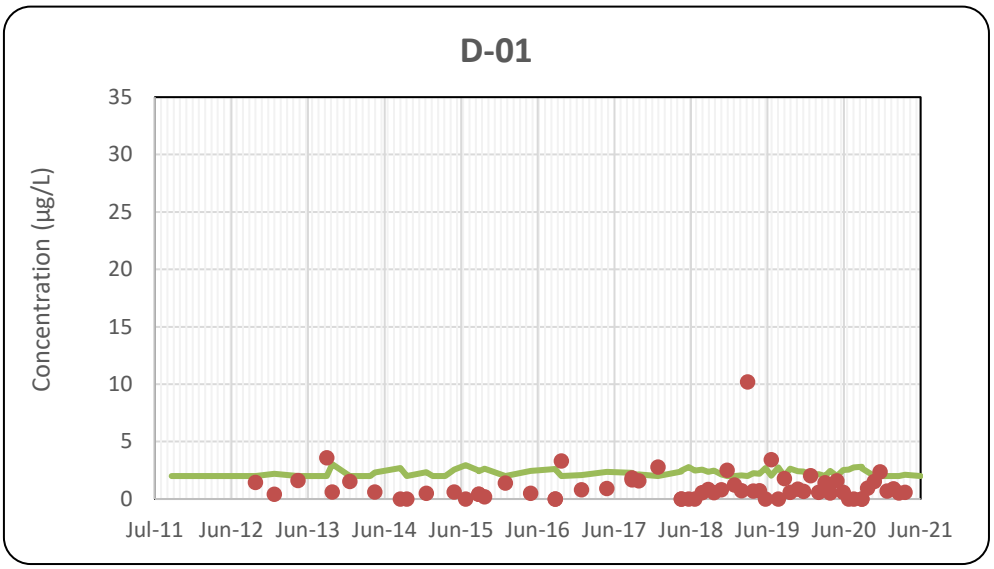

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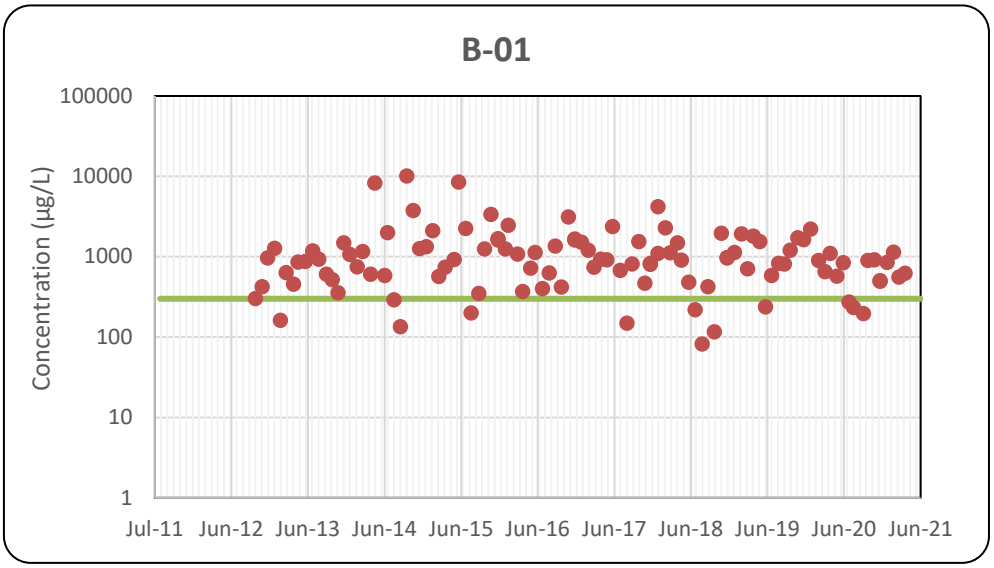

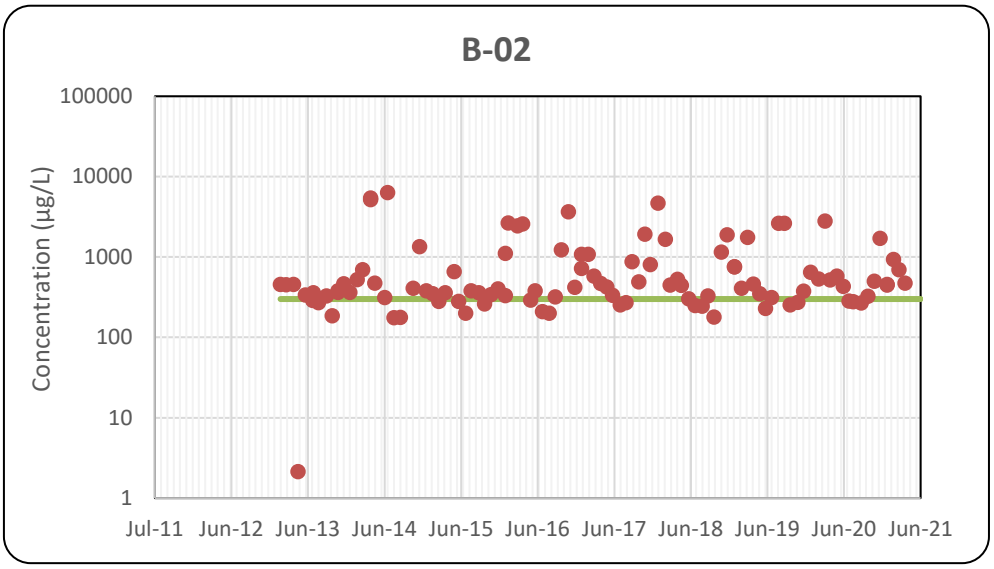

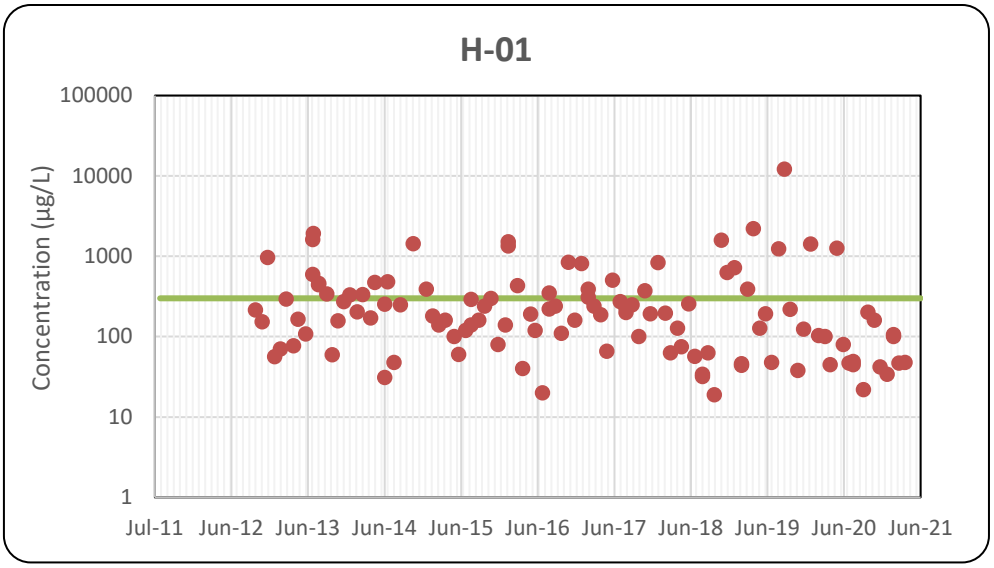

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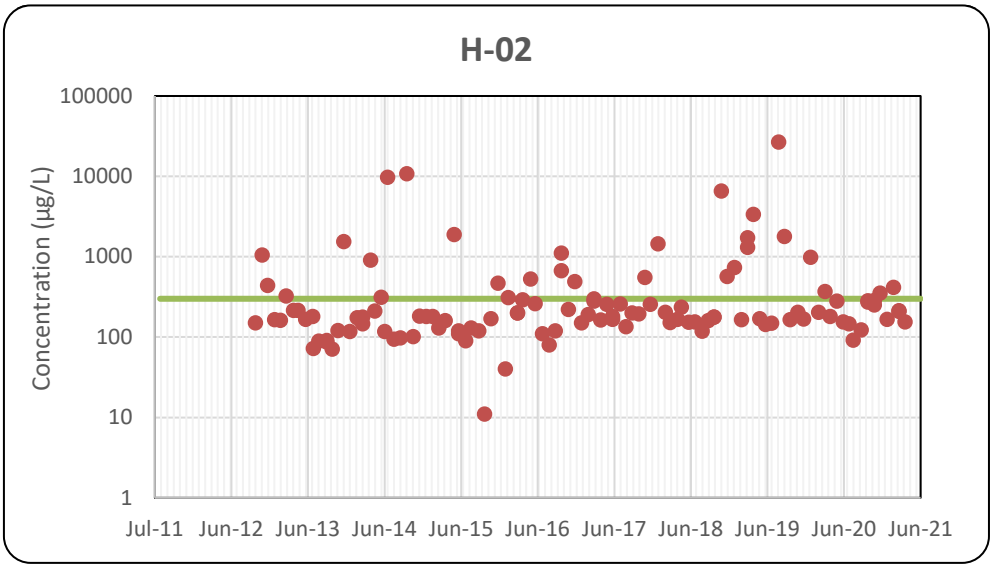

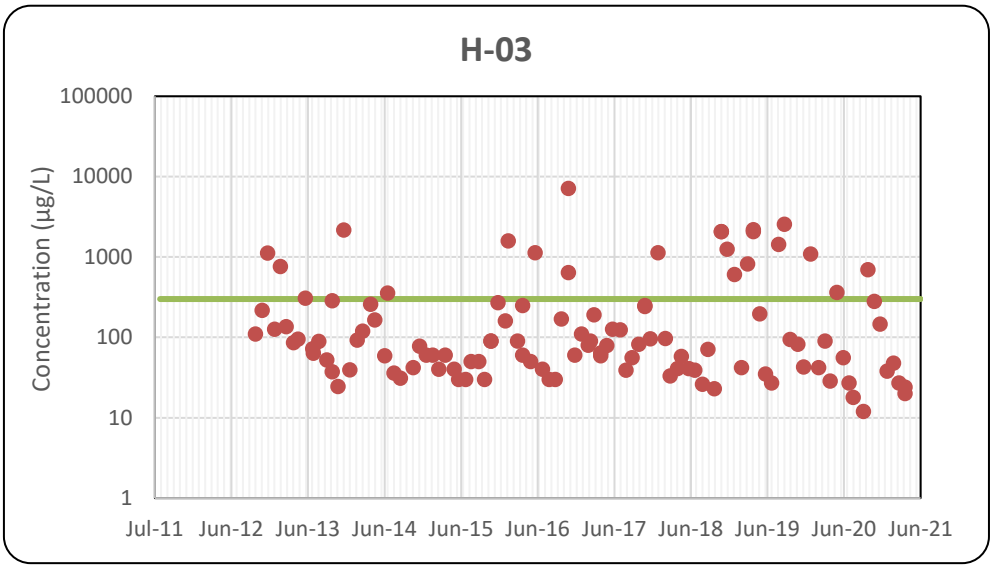

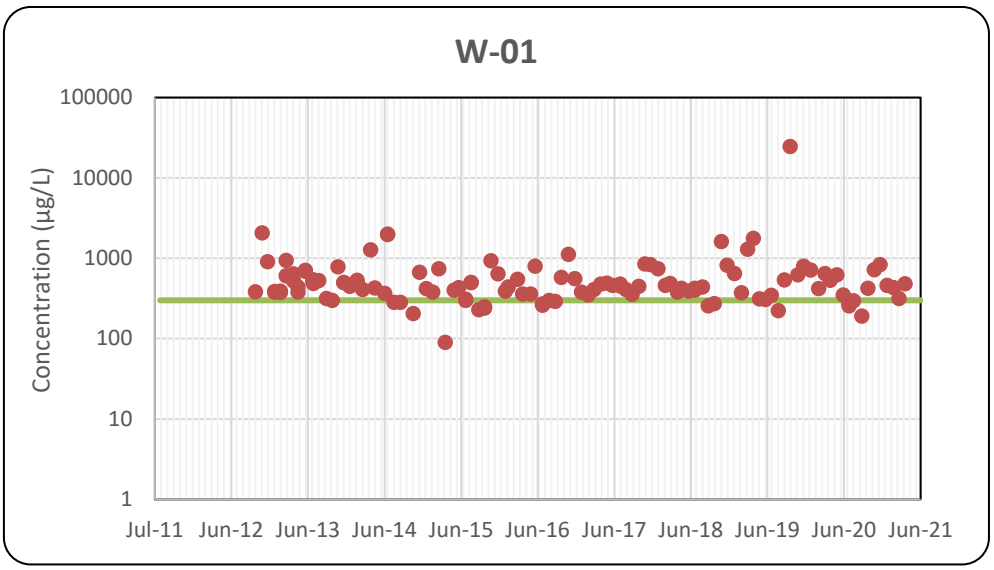

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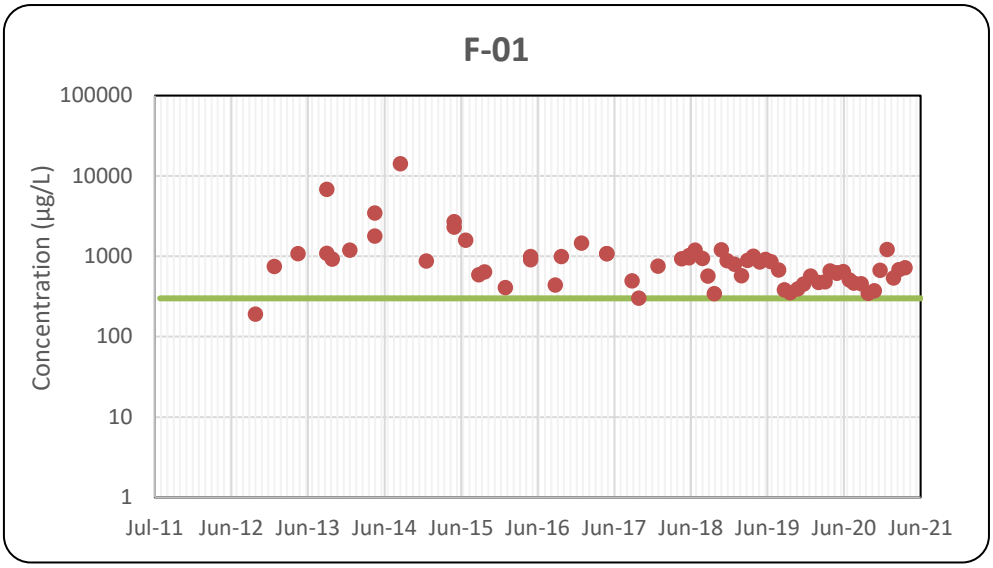

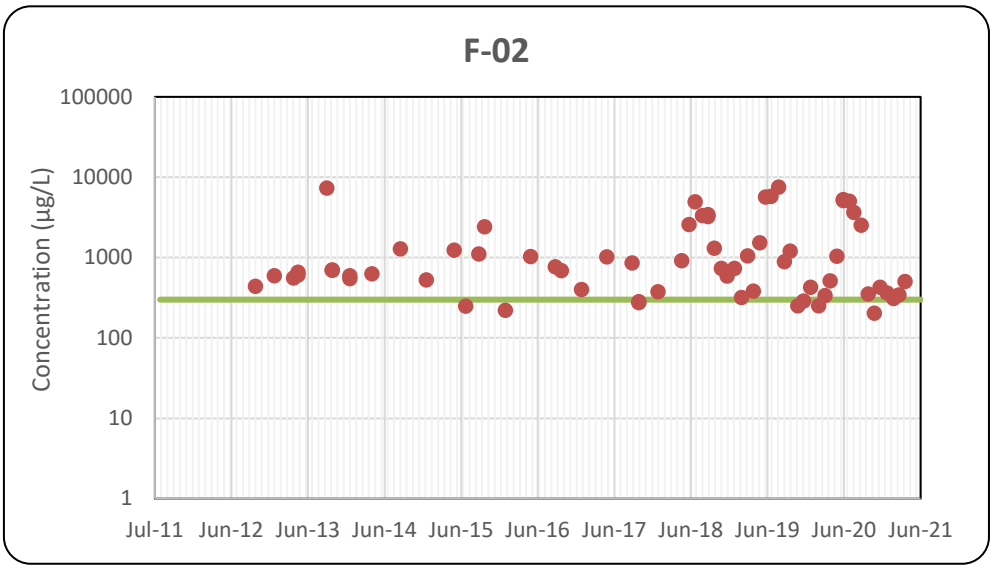

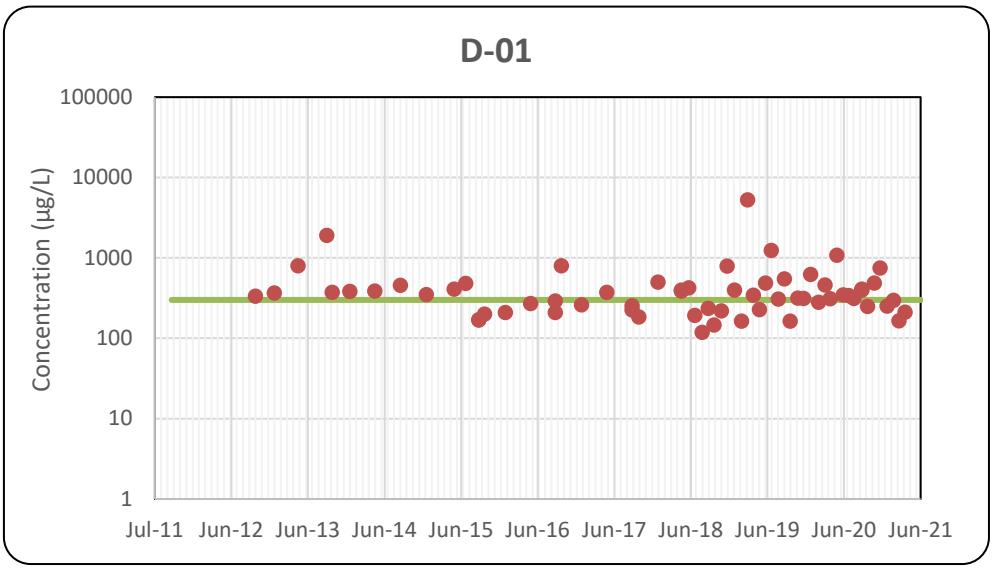

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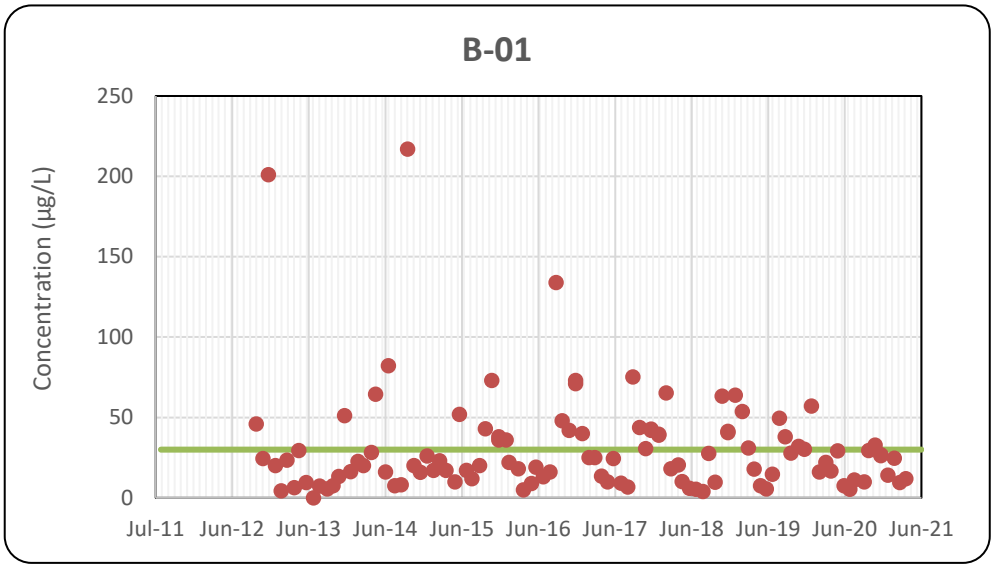
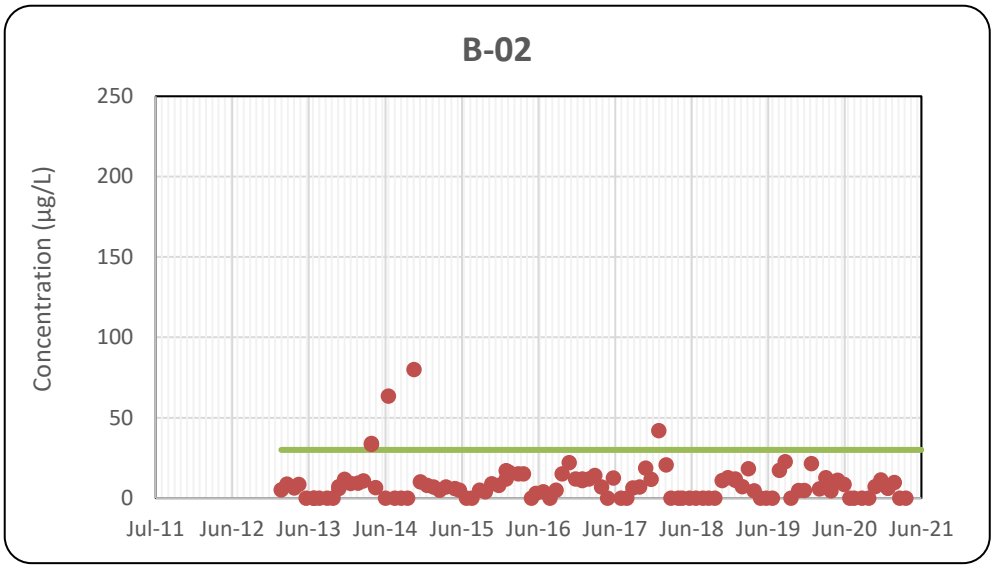
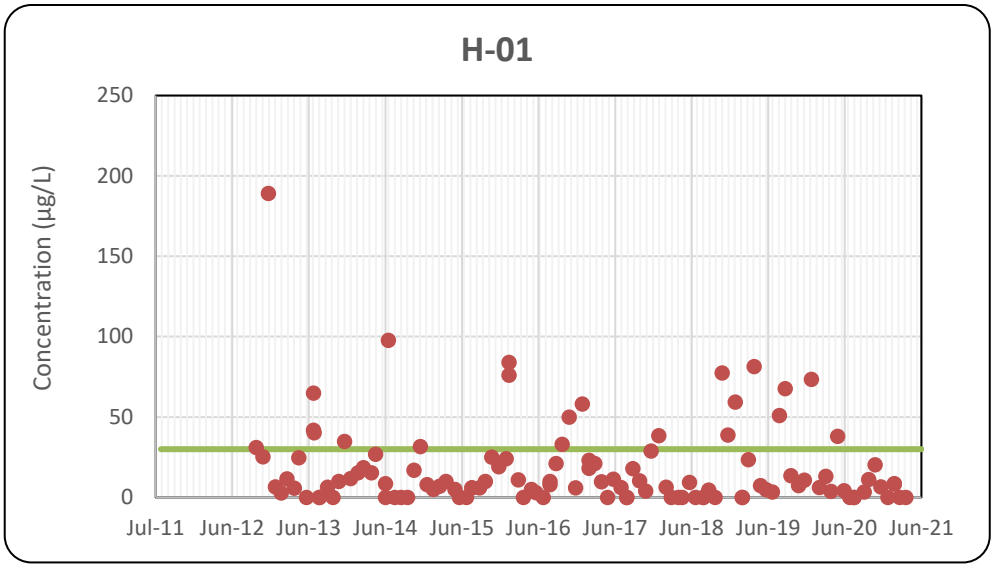
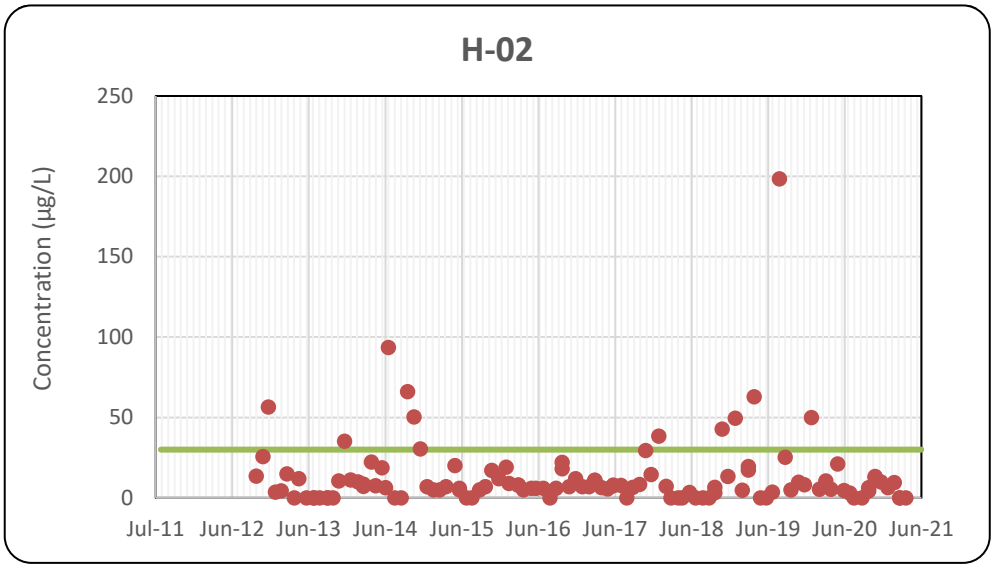
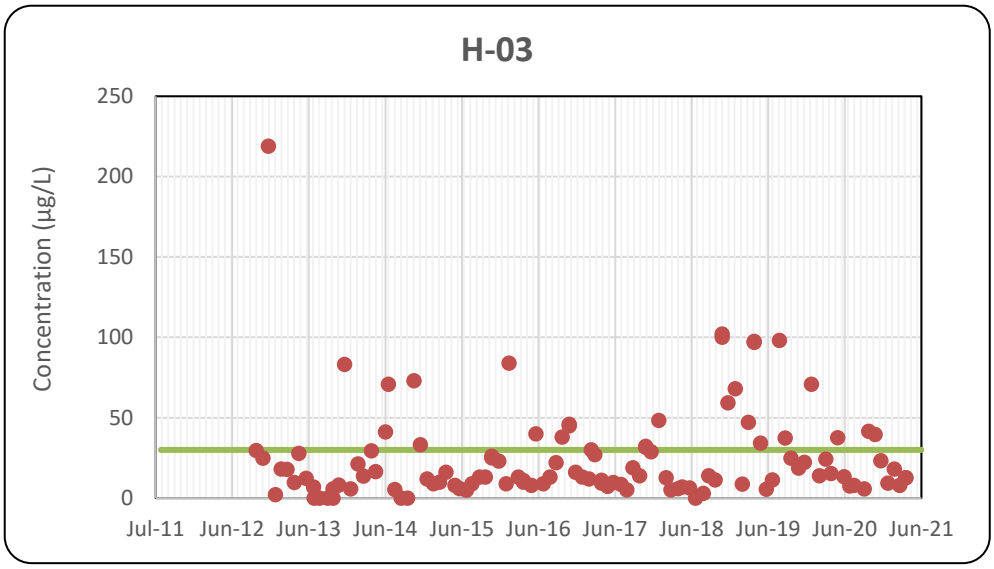


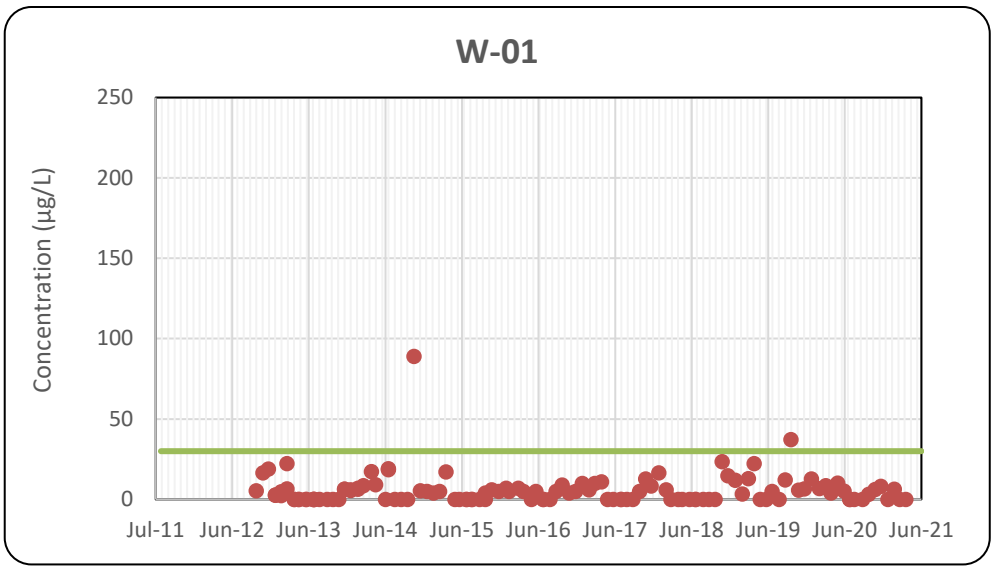




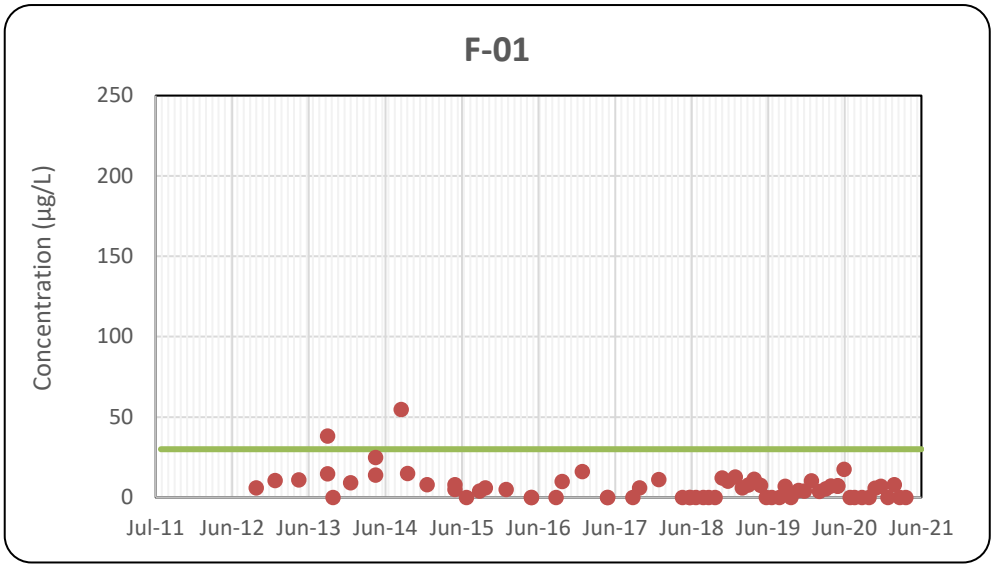
Total Zinc Concentrations, 2011-2021

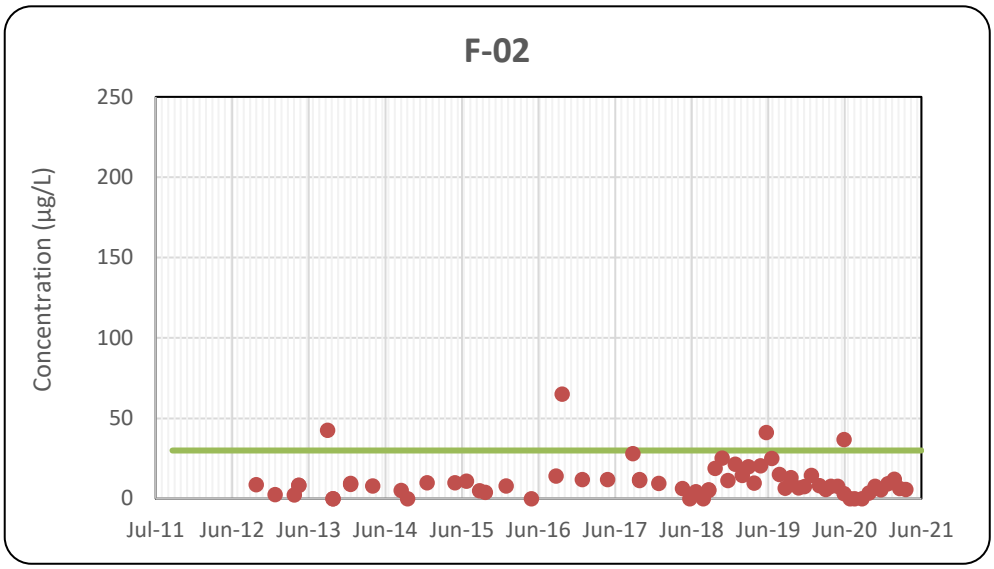


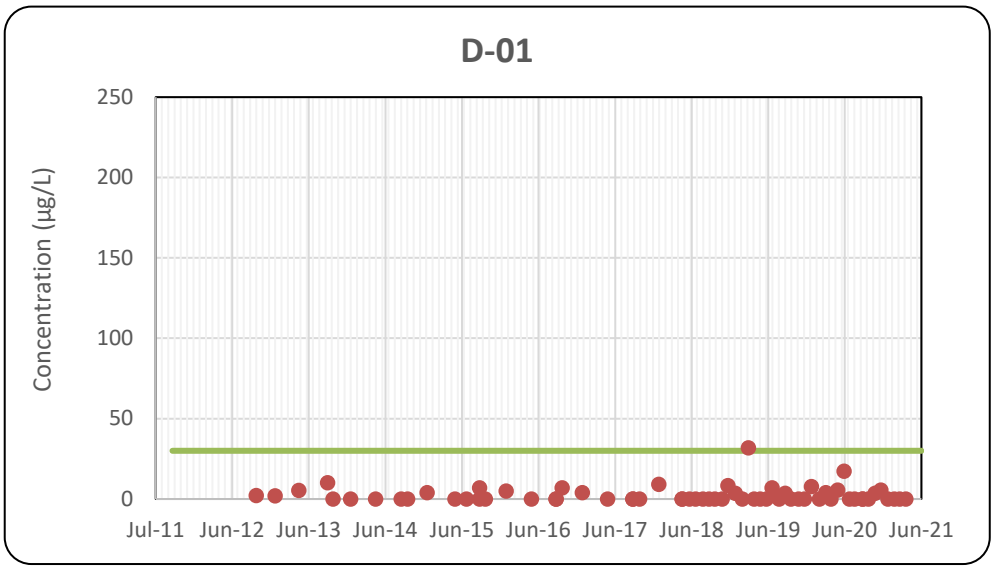




Total Zinc Concentrations, 2011-2021







APPENDIX F

Water Quality Site Exceedances

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Dissolved Oxygen	Temperature	pH	Nitrate	Nitrite	Ammonia	Phosphorus
B-01	Year 2	83.3	8.3	0	25	8.3	0	87.5
B-01	Year 3	100	16.7	0	0	0	0	66.7
B-01	Year 4	83.3	33.3	0	8.3	0	0	25
B-01	Year 5	91.7	33.3	16.7	16.7	0	0	58.3
B-01	Year 6	91.7	8.3	25	0	0	0	41.7
B-01	Year 7	83.3	0	0	0	0	0	58.3
B-01	Year 8	100	16.7	16.7	16.7	0	0	41.7
B-01	Year 9	91.7	16.7	66.7	0	0	0	83.3
B-01	Year 10	100	16.7	75	0	0	0	41.7
B-02	Year 2	0	0	0	0	33.3	0	0
B-02	Year 3	25	16.7	0	0	0	0	8.3
B-02	Year 4	25	16.7	0	0	0	0	25
B-02	Year 5	33.3	16.7	0	0	0	0	25
B-02	Year 6	16.7	8.3	0	0	0	0	25
B-02	Year 7	50	0	0	0	0	0	25
B-02	Year 8	33.3	25	0	0	0	0	33.3
B-02	Year 9	25	25	0	0	0	0	25
B-02	Year 10	33.3	16.7	0	0	0	0	16.7
H-01	Year 2	80	0	8.3	8.3	0	0	25
H-01	Year 3	91.7	16.7	8.3	8.3	0	8.3	50
H-01	Year 4	91.7	25	8.3	0	0	0	16.7
H-01	Year 5	91.7	16.7	8.3	0	0	0	8.3
H-01	Year 6	100	16.7	8.3	0	8.3	0	16.7
H-01	Year 7	83.3	33.3	16.7	0	0	0	41.7
H-01	Year 8	91.7	16.7	0	0	0	0	41.7
H-01	Year 9	100	41.7	83.3	0	0	0	33.3
H-01	Year 10	100	16.7	91.7	0	0	0	16.7
H-02	Year 2	18.2	18.2	0	8.3	0	0	25
H-02	Year 3	16.7	8.3	0	8.3	0	0	25
H-02	Year 4	38.5	30.8	0	0	0	0	23.1
H-02	Year 5	50	16.7	0	0	0	0	8.3
H-02	Year 6	8.3	8.3	0	0	0	0	25

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Dissolved Oxygen	Temperature	pH	Nitrate	Nitrite	Ammonia	Phosphorus
H-02	Year 7	33.3	0	8.3	0	0	0	16.7
H-02	Year 8	33.3	16.7	0	0	0	0	33.3
H-02	Year 9	33.3	16.7	0	0	0	0	25
H-02	Year 10	50	25	0	0	0	0	8.3
H-03	Year 2	71.4	0	0	0	0	0	66.7
H-03	Year 3	66.7	0	0	0	0	0	41.7
H-03	Year 4	75	16.7	0	0	0	0	33.3
H-03	Year 5	58.3	16.7	0	0	0	0	8.3
H-03	Year 6	58.3	16.7	0	0	0	0	16.7
H-03	Year 7	66.7	16.7	0	0	0	0	25
H-03	Year 8	75	16.7	0	0	0	0	41.7
H-03	Year 9	66.7	33.3	16.7	0	0	0	41.7
H-03	Year 10	66.7	25	0	0	0	0	8.3
D-01	Year 2	33.3	0	0	0	0	0	33.3
D-01	Year 3	50	25	0	0	0	0	50
D-01	Year 4	25	0	0	0	0	0	0
D-01	Year 5	25	20	0	0	0	0	0
D-01	Year 6	25	0	0	0	0	0	25
D-01	Year 7	25	0	0	0	0	0	0
D-01	Year 8	33.3	16.7	0	0	0	0	16.7
D-01	Year 9	25	0	0	0	0	0	25
D-01	Year 10	41.7	16.7	0	0	0	0	8.3
F-01	Year 2	40	20	0	0	0	0	33.3
F-01	Year 3	50	25	0	0	0	0	100
F-01	Year 4	50	25	0	0	0	0	75
F-01	Year 5	75	20	0	0	0	0	60
F-01	Year 6	50	25	0	0	0	0	75

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Dissolved Oxygen	Temperature	pH	Nitrate	Nitrite	Ammonia	Phosphorus
F-01	Year 7	50	0	0	0	0	0	0
F-01	Year 8	58.3	33.3	0	0	0	0	66.7
F-01	Year 9	66.7	41.7	0	0	0	0	41.7
F-01	Year 10	58.3	50	0	0	0	0	8.3
F-02	Year 2	75	25	0	0	0	0	33.3
F-02	Year 3	75	25	0	0	0	0	50
F-02	Year 4	75	25	0	0	0	0	50
F-02	Year 5	75	20	0	0	0	0	80
F-02	Year 6	50	25	0	0	0	0	50
F-02	Year 7	100	25	0	0	0	0	25
F-02	Year 8	91.7	33.3	0	0	0	0	66.7
F-02	Year 9	91.7	41.7	16.7	0	0	0	50
F-02	Year 10	100	41.7	8.3	0	0	0	50
W-01	Year 2	72.7	18.2	0	0	0	0	50
W-01	Year 3	54.5	8.3	0	0	0	0	8.3
W-01	Year 4	7	1	0	0	0	0	1
W-01	Year 5	41.7	16.7	0	0	0	0	25
W-01	Year 6	41.7	8.3	0	0	0	0	25
W-01	Year 7	50	8.3	0	0	0	0	16.7
W-01	Year 8	66.7	16.7	0	0	0	0	41.7
W-01	Year 9	58.3	8.3	8.3	0	0	0	16.7
W-01	Year 10	66.7	16.7	0	0	0	0	16.7

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Fluoride	Arsenic	Cadmium	Chromium	Copper	Mercury	Iron
B-01	Year 2	0	0	28.6	71.4	57.1	0	85.7
B-01	Year 3	0	8.3	0	83.3	33.3	0	100
B-01	Year 4	16.7	0	25	100	58.3	0	83.3
B-01	Year 5	8.3	0	16.7	91.7	66.7	0	91.7
B-01	Year 6	16.7	0	25	91.7	75	0	100
B-01	Year 7	33.3	0	16.7	100	66.7	0	91.7
B-01	Year 8	0	0	8.3	83.3	58.3	0	75
B-01	Year 9	0	0	8.3	100	66.7	0	91.7
B-01	Year 10	8.3	8.3	0	66.7	41.7	0	75
B-02	Year 2	0	0	0	0	0	0	100
B-02	Year 3	0	0	8.3	33.3	16.7	0	63.6
B-02	Year 4	8.3	8.3	16.7	25	25	0	75
B-02	Year 5	16.7	0	0	58.3	33.3	0	75
B-02	Year 6	0	0	0	58.3	25	0	75
B-02	Year 7	16.7	0	8.3	58.3	41.7	0	83.3
B-02	Year 8	0	0	0	50	33.3	0	75
B-02	Year 9	0	0	8.3	25	33.3	0	75
B-02	Year 10	0	0	0	25	16.7	0	75
H-01	Year 2	0	0	14.3	14.3	71.4	0	14.3
H-01	Year 3	0	0	0	0	83.3	8.3	41.7
H-01	Year 4	0	0	8.3	33.3	50	8.3	41.7
H-01	Year 5	8.3	0	8.3	16.7	41.7	16.7	16.7
H-01	Year 6	0	0	8.3	33.3	58.3	0	25
H-01	Year 7	41.7	0	0	33.3	58.3	0	25
H-01	Year 8	0	0	16.7	41.7	50	8.3	41.7
H-01	Year 9	8.3	8.3	16.7	25	50	0	25
H-01	Year 10	0	0	8.3	8.3	16.7	0	8.3
H-02	Year 2	0	0	14.3	28.6	42.9	0	42.9
H-02	Year 3	0	0	0	16.7	25	0	16.7
H-02	Year 4	0	7.7	15.4	23.1	23.1	7.7	23.1
H-02	Year 5	0	0	0	8.3	41.7	0	25
H-02	Year 6	0	0	0	25	33.3	0	25

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Fluoride	Arsenic	Cadmium	Chromium	Copper	Mercury	Iron
H-02	Year 7	16.7	0	0	25	41.7	0	16.7
H-02	Year 8	0	0	0	41.7	41.7	0	41.7
H-02	Year 9	0	8.3	8.3	25	41.7	8.3	33.3
H-02	Year 10	0	0	0	0	25	0	16.7
H-03	Year 2	0	0	14.3	42.9	57.1	0	28.6
H-03	Year 3	0	0	0	16.7	50	0	9.1
H-03	Year 4	0	0	16.7	16.7	41.7	0	16.7
H-03	Year 5	8.3	0	8.3	16.7	25	0	8.3
H-03	Year 6	0	0	0	16.7	33.3	0	16.7
H-03	Year 7	25	0	0	16.7	41.7	0	8.3
H-03	Year 8	0	0	16.7	50	41.7	8.3	41.7
H-03	Year 9	0	0	8.3	25	58.3	0	25
H-03	Year 10	0	0	0	8.3	25	0	16.7
D-01	Year 2	0	0	0	0	0	0	100
D-01	Year 3	0	0	0	75	25	0	100
D-01	Year 4	0	0	0	25	0	0	100
D-01	Year 5	0	0	0	0	0	0	40
D-01	Year 6	0	0	0	50	25	0	25
D-01	Year 7	25	0	0	25	25	0	50
D-01	Year 8	0	0	0	16.7	16.7	0	50
D-01	Year 9	0	0	0	8.3	16.7	0	75
D-01	Year 10	0	0	0	8.3	8.3	0	58.3
F-01	Year 2	0	0	0	50	50	0	50
F-01	Year 3	25	0	0	75	75	0	100
F-01	Year 4	0	25	0	75	75	0	100
F-01	Year 5	20	0	0	20	0	0	100
F-01	Year 6	0	0	0	75	25	0	100

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Fluoride	Arsenic	Cadmium	Chromium	Copper	Mercury	Iron
F-01	Year 7	25	0	0	50	75	0	100
F-01	Year 8	0	0	0	41.7	41.7	0	100
F-01	Year 9	0	0	0	50	50	0	100
F-01	Year 10	0	0	0	16.7	33.3	0	100
F-02	Year 2	0	0	0	0	50	0	100
F-02	Year 3	25	25	0	50	75	0	100
F-02	Year 4	0	0	25	75	25	0	100
F-02	Year 5	60	0	0	0	20	0	60
F-02	Year 6	25	0	25	25	25	0	100
F-02	Year 7	75	0	0	25	100	0	75
F-02	Year 8	0	8.3	0	25	33.3	0	100
F-02	Year 9	0	0	0	0	41.7	0	75
F-02	Year 10	0	0	0	0	16.7	0	91.7
W-01	Year 2	0	0	14.3	42.9	28.6	0	100
W-01	Year 3	0	0	0	41.7	8.3	0	91.7
W-01	Year 4	0	0	0	0	1	0	0
W-01	Year 5	16.7	0	0	8.3	0	0	83.3
W-01	Year 6	8.3	0	0	25	8.3	0	75
W-01	Year 7	16.7	0	0	41.7	25	0	100
W-01	Year 8	0	0	0	50	33.3	0	83.3
W-01	Year 9	0	8.3	0	8.3	16.7	0	91.7
W-01	Year 10	0	0	0	0	8.3	0	75

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Lead	Nickel	Selenium	Silver	Zinc
B-01	Year 2	57.1	0	0	0	28.6
B-01	Year 3	33.3	0	0	0	8.3
B-01	Year 4	41.7	0	0	0	25
B-01	Year 5	58.3	0	0	0	41.7
B-01	Year 6	50	0	0	0	41.7
B-01	Year 7	58.3	0	0	0	50
B-01	Year 8	33.3	0	0	0	41.7
B-01	Year 9	50	0	0	0	41.7
B-01	Year 10	25	0	0	0	8.3
B-02	Year 2	0	0	0	0	0
B-02	Year 3	9.1	0	0	0	8.3
B-02	Year 4	16.7	0	0	0	25
B-02	Year 5	8.3	0	0	0	0
B-02	Year 6	25	0	0	0	0
B-02	Year 7	16.7	0	0	0	8.3
B-02	Year 8	8.3	0	0	0	0
B-02	Year 9	16.7	0	0	0	0
B-02	Year 10	8.3	0	0	0	0
H-01	Year 2	42.9	0	0	0	28.6
H-01	Year 3	0	0	0	0	16.7
H-01	Year 4	25	0	0	0	25
H-01	Year 5	8.3	0	0	0	8.3
H-01	Year 6	16.7	0	0	0	25
H-01	Year 7	16.7	0	0	0	8.3
H-01	Year 8	41.7	0	0	0	33.3
H-01	Year 9	25	0	0	0	25
H-01	Year 10	8.3	0	0	0	8.3
H-02	Year 2	14.3	0	0	0	14.3
H-02	Year 3	16.7	0	0	0	8.3
H-02	Year 4	15.4	0	0	0	30.8
H-02	Year 5	0	0	0	0	0
H-02	Year 6	0	0	0	0	0

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Lead	Nickel	Selenium	Silver	Zinc
H-02	Year 7	16.7	0	0	0	8.3
H-02	Year 8	25	0	0	0	25
H-02	Year 9	25	0	0	8.3	16.7
H-02	Year 10	0	0	0	0	0
H-03	Year 2	42.9	0	0	0	14.3
H-03	Year 3	16.7	0	0	0	8.3
H-03	Year 4	16.7	0	0	0	41.7
H-03	Year 5	8.3	0	0	0	8.3
H-03	Year 6	16.7	0	0	0	25
H-03	Year 7	8.3	0	0	0	16.7
H-03	Year 8	41.7	0	0	0	41.7
H-03	Year 9	25	0	0	0	33.3
H-03	Year 10	0	0	0	0	25
D-01	Year 2	0	0	0	0	0
D-01	Year 3	0	0	0	0	0
D-01	Year 4	0	0	0	0	0
D-01	Year 5	0	0	0	0	0
D-01	Year 6	0	0	0	0	0
D-01	Year 7	0	0	0	0	0
D-01	Year 8	8.3	0	0	0	8.3
D-01	Year 9	0	0	0	0	0
D-01	Year 10	0	0	0	0	0
F-01	Year 2	0	0	0	0	0
F-01	Year 3	0	0	0	0	0
F-01	Year 4	0	0	0	0	25
F-01	Year 5	0	0	0	0	0
F-01	Year 6	0	0	0	0	0

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Lead	Nickel	Selenium	Silver	Zinc
F-01	Year 7	0	0	0	0	0
F-01	Year 8	0	0	0	0	0
F-01	Year 9	0	0	0	0	0
F-01	Year 10	0	0	0	0	0
F-02	Year 2	0	0	0	0	0
F-02	Year 3	25	0	0	0	25
F-02	Year 4	25	0	0	0	25
F-02	Year 5	0	0	0	0	0
F-02	Year 6	25	0	0	0	25
F-02	Year 7	0	0	0	0	0
F-02	Year 8	0	0	0	0	0
F-02	Year 9	0	0	0	0	8.3
F-02	Year 10	0	0	0	0	0
W-01	Year 2	28.6	0	0	0	14.3
W-01	Year 3	8.3	0	0	8.3	0
W-01	Year 4	0	0	0	0	1
W-01	Year 5	0	0	0	0	0
W-01	Year 6	0	0	0	0	0
W-01	Year 7	0	0	0	0	0
W-01	Year 8	16.7	0	0	0	0
W-01	Year 9	8.3	0	0	0	8.3
W-01	Year 10	0	0	0	0	0

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Dissolved Oxygen	Temperature	pH	Nitrate	Nitrite	Ammonia	Phosphorus	Fluoride	Arsenic	Cadmium
D-02	Year 8	83.3	33.3	0	0	0	0	16.7	0	0	0
D-02	Year 9	75	8.3	0	0	0	0	8.3	0	0	0
D-02	Year 10	75	33.3	8.3	0	0	0	25	0	8.3	0
F-03	Year 8	80	40	0	0	0	0	60	0	0	0
F-03	Year 9	100	75	75	0	0	0	75	0	0	0
F-03	Year 10	100	25	0	0	0	0	0	0	0	0
F-04	Year 8	100	0	0	0	0	0	25	0	0	0
F-04	Year 9	100	25	50	0	0	0	50	0	0	0
F-04	Year 10	100	0	0	0	0	0	0	0	0	0
FOF	Year 9	91.7	50	16.7	0	0	0	41.7	0	0	0
FOF	Year 10	100	50	8.3	0	0	0	33.3	0	8.3	0

Values are percentages.

Frequencies of Parameters Not Meeting Water Quality Guidelines

Station	Date	Chromium	Copper	Mercury	Iron	Lead	Nickel	Selenium	Silver	Zinc
D-02	Year 8	0	0	0	100	0	0	0	0	0
D-02	Year 9	0	0	0	100	0	0	0	0	0
D-02	Year 10	8.3	0	0	91.7	0	0	0	0	0
F-03	Year 8	0	20	0	100	0	0	0	0	0
F-03	Year 9	0	50	0	100	0	0	0	0	0
F-03	Year 10	0	0	0	100	0	0	0	0	0
F-04	Year 8	0	25	0	100	0	0	0	0	0
F-04	Year 9	0	50	0	100	0	0	0	0	0
F-04	Year 10	0	0	0	50	0	0	0	0	0
FOF	Year 9	8.3	75	0	100	0	0	0	0	8.3
FOF	Year 10	16.7	41.7	0	100	8.3	0	0	0	0

Values are percentages.

APPENDIX G

Fish Habitat Site Data

Notes: D = Dominant S = Subdominant T = Trace, N = None
ST = Straight SI = Sinuous IM = Intermediate Meandering
UN = Unconfined CO = Confined FC = Frequently Confined

Sampling Details											
Stream	Site	Sample Date (d/mmm/yyyy)	D95 (cm)	SWD	LWD	B	U	DP	OV	IV	Gradient (%)
Boa	4A	28/Jul/2020		S	D	N	N	N	T	N	2
Boa	4A	12/Aug/2020		S	D	N	N	S	T	N	2
Boa	4A	29/Sep/2020		D	S	N	N	N	T	N	2
Boa	4A	20/Oct/2020		D	S	N	N	N	T	N	2
Boa	4B pool	28/Jul/2020		S	S	N	D	S	N	N	1
Boa	4B pool	12/Aug/2020		S	T	N	D	S	N	N	1
Boa	4B pool	29/Sep/2020		S	T	N	S	D	N	N	1
Boa	4B pool	20/Oct/2020		S	T	N	S	D	N	N	1
Boa	5A	27/Jul/2020	7	T	S	N	D	S	S	N	0.5
Boa	5A	20/Aug/2020	7.5	T	S	N	D	N	S	T	0.5
Boa	5A	28/Sep/2020		S	S	N	D	T	S	N	0.5
Boa	5A	23/Oct/2020		T	N	N	D	N	S	T	1
Boa	5B	27/Jul/2020	9	T	N	N	D	N	S	S	2
Boa	5B	17/Aug/2020	10	T	N	N	D	N	S	T	2
Boa	5B	28/Sep/2020	10	T	N	N	D	N	T	T	2
Boa	5B	23/Oct/2020	3	T	T	N	D	N	S	T	2
Boa	5C	27/Jul/2020	11	T	N	T	D	S	S	N	2
Boa	5C	17/Aug/2020	12.5	T	N	T	D	S	S	N	2
Boa	5C	28/Sep/2020	11	T	N	N	D	N	S	N	2
Boa	5C	23/Oct/2020		T	N	N	D	N	S	N	2
Boa	5D	27/Jul/2020	9	T	N	N	D	N	S	S	2
Boa	5D	17/Aug/2020	9	T	N	N	D	N	S	S	2
Boa	5D	28/Sep/2020	10	S	N	T	D	T	S	T	2
Boa	5D	23/Oct/2020		T	N	N	D	N	S	T	
Downes	D-02 pool	20/Jul/2020		N	N	N	T	D	S	S	1
Downes	D-02 pool	13/Aug/2020		T	N	N	T	S	D	S	1
Downes	D-02 pool	21/Sep/2020		N	N	N	T	D	S	S	1

Sampling Details											
Stream	Site	Sample Date (d/mmm/yyyy)	D95 (cm)	SWD	LWD	B	U	DP	OV	IV	Gradient (%)
Downes	D-02 pool	19/Oct/2020		T	N	N	T	D	S	S	1
Downes	D-02 riffle	20/Jul/2020		N	N	N	T	N	D	S	1.5
Downes	D-02 riffle	13/Aug/2020	6	N	T	N	N	N	D	S	1.5
Downes	D-02 riffle	17/Sep/2020	6	N	N	N	N	N	D	S	1.5
Downes	D-02 riffle	19/Oct/2020	4	T	N	N	N	N	D	S	1.5
Downes	D-03 pool	21/Jul/2020	6.2	T	N	N	T	D	S	T	1
Downes	D-03 pool	17/Aug/2020	9.5	N	T	N	T	D	S	T	1
Downes	D-03 pool	21/Sep/2020	9.5	T	N	N	T	D	S	T	1
Downes	D-03 pool	19/Oct/2020	9	T	N	N	T	D	S	T	1
Downes	D-03 riffle	21/Jul/2020	6	S	N	N	S	N	D	T	4
Downes	D-03 riffle	17/Aug/2020	6.5	S	N	N	S	N	D	T	4
Downes	D-03 riffle	21/Sep/2020	6.4	S	N	N	S	N	D	T	4
Downes	D-03 riffle	19/Oct/2020	11.5	T	D	N	T	N	S	T	4
Downes	D-04 pool	21/Jul/2020	9.8	S	T	N	S	D	S	N	6
Downes	D-04 pool	17/Aug/2020	NA	NA	NA	NA	NA	NA	NA	NA	NA
Downes	D-04 pool	21/Sep/2020	10	S	T	N	S	D	S	T	6
Downes	D-04 pool	19/Oct/2020	10.5	S	T	N	S	D	S	T	6
Downes	D-04 riffle	21/Jul/2020	7.4	T	N	N	D	S	S	N	5
Downes	D-04 riffle	17/Aug/2020	NA	NA	NA	NA	NA	NA	NA	NA	NA
Downes	D-04 riffle	21/Sep/2020	9	T	N	T	D	N	S	T	5
Downes	D-04 riffle	19/Oct/2020	12.5	T	N	T	D	N	S	T	5
Fishtrap	F-01 pool	24/Jul/2020		S	N	N	T	D	S	S	1
Fishtrap	F-01 pool	19/Aug/2020		S	T	N	T	D	S	S	1
Fishtrap	F-01 pool	29/Sep/2020		S	T	N	T	D	S	S	1
Fishtrap	F-01 pool	21/Oct/2020		S	T	N	T	D	S	S	1
Fishtrap	F-01 riffle	24/Jul/2020	12	T	N	S	T	N	D	T	2
Fishtrap	F-01 riffle	19/Aug/2020	12	T	N	S	T	N	D	T	2
Fishtrap	F-01 riffle	29/Sep/2020	11	T	N	S	T	N	D	T	2
Fishtrap	F-01 riffle	21/Oct/2020	9	N	N	S	N	N	S	T	2
Fishtrap	F-02 pool	24/Jul/2020	8	T	T	N	T	D	S	S	0
Fishtrap	F-02 pool	18/Aug/2020	8	T	T	N	S	D	S	S	0

Sampling Details											
Stream	Site	Sample Date (d/mmm/yyyy)	D95 (cm)	SWD	LWD	B	U	DP	OV	IV	Gradient (%)
Fishtrap	F-02 pool	29/Sep/2020	9	T	T	N	S	D	S	S	0
Fishtrap	F-02 pool	21/Oct/2020	10	T	T	N	S	D	S	S	0
Fishtrap	F-02 riffle	24/Jul/2020		D	T	N	N	N	S	T	2.5
Fishtrap	F-02 riffle	18/Aug/2020		D	S	N	N	N	S	T	2.5
Fishtrap	F-02 riffle	29/Sep/2020		D	S	N	N	N	S	T	2.5
Fishtrap	F-02 riffle	21/Oct/2020		S	N	N	N	N	T	N	2.5
Fishtrap	F-03 pool	23/Jul/2020	5	N	N	N	S	D	S	S	0
Fishtrap	F-03 pool	18/Aug/2020	5	N	N	N	S	D	S	S	0
Fishtrap	F-03 pool	29/Sep/2020	5	N	N	N	S	D	S	S	0
Fishtrap	F-03 pool	21/Oct/2020	5	N	N	N	S	D	T	S	0
Fishtrap	F-04 pool	24/Jul/2020	5	T	N	N	S	D	S	S	0
Fishtrap	F-04 pool	18/Aug/2020	7	T	N	N	S	D	S	S	0
Fishtrap	F-04 pool	29/Sep/2020	7.5	T	N	N	S	D	S	S	0
Fishtrap	F-04 pool	21/Oct/2020	9.5	T	N	N	S	D	S	S	0
Fishtrap	F-04 riffle	24/Jul/2020	8	N	N	N	S	N	D	S	0
Fishtrap	F-04 riffle	18/Aug/2020	11.5	N	N	N	S	N	D	S	0
Fishtrap	F-04 riffle	29/Sep/2020	12	N	N	N	S	N	D	S	0
Fishtrap	F-04 riffle	21/Oct/2020	7	N	N	N	T	N	S	D	1
Horn	1A	28/Jul/2020	14	N	T	N	D	S	S	T	1
Horn	1A	19/Aug/2020	14	T	T	N	D	S	T	T	2
Horn	1A	28/Sep/2020		T	N	N	D	S	S	T	2
Horn	1A	20/Oct/2020	10.5	T	N	N	S	D	T	T	2
Horn	1B	28/Jul/2020	12	T	N	N	S	N	S	T	1
Horn	1B	19/Aug/2020	9	T	N	N	D	N	S	T	2
Horn	1B	28/Sep/2020	10	T	N	N	S	N	D	T	2
Horn	1B	22/Oct/2020	13.5	T	T	N	S	N	D	T	2
Horn	2A pool	27/Jul/2020	26	T	T	D	N	S	T	N	2
Horn	2A pool	20/Aug/2020	20	T	T	D	N	S	T	T	2
Horn	2A pool	28/Sep/2020	20	T	N	D	N	S	T	T	2

Sampling Details											
Stream	Site	Sample Date (d/mmm/yyyy)	D95 (cm)	SWD	LWD	B	U	DP	OV	IV	Gradient (%)
Horn	2A pool	22/Oct/2020	17	T	N	D	N	S	T	T	2
Horn	2B run	27/Jul/2020	13	S	T	D	T	N	S	T	2
Horn	2B run	20/Aug/2020	15	S	S	D	T	N	S	T	2
Horn	2B run	28/Sep/2020	14.5	S	S	D	T	N	T	T	2
Horn	2B run	22/Oct/2020	13	T	S	D	T	N	S	N	2
Horn	2C riffle	27/Jul/2020	13	T	N	D	S	N	S	T	2
Horn	2C riffle	20/Aug/2020	17	T	N	D	S	N	S	T	2
Horn	2C riffle	28/Sep/2020	14	S	T	D	S	N	T	T	2
Horn	2C riffle	22/Oct/2020	14	T	T	S	D	N	S	T	2
Horn	3A	27/Jul/2020	11.5	T	T	N	D	S	S	T	1
Horn	3A	19/Aug/2020	13.5	T	T	T	D	S	S	T	1
Horn	3A	28/Sep/2020	13	T	T	T	D	S	T	T	1
Horn	3A	22/Oct/2020	0.12	N	S	T	D	N	S	T	1
Horn	3B	27/Jul/2020	13	N	N	N	D	N	S	T	1
Horn	3B	19/Aug/2020	13	T	T	N	D	N	S	T	1
Horn	3B	28/Sep/2020	12	T	T	N	D	N	S	T	1
Horn	3B	22/Oct/2020	12.5	N	N	N	D	N	S	T	1
Horn	3C	27/Jul/2020	11	N	N	N	S	D	S	N	1
Horn	3C	19/Aug/2020	13	T	N	N	S	N	D	T	1
Horn	3C	28/Sep/2020	11	T	N	N	S	D	S	T	1
Horn	3C	22/Oct/2020	15	T	N	N	S	D	S	T	1
Horn	6A pool	28/Jul/2020	15	T	S	T	T	D	S	T	1
Horn	6A pool	20/Aug/2020	15	T	S	T	T	D	S	T	1
Horn	6A pool	29/Sep/2020	14	T	S	T	T	D	S	T	1
Horn	6A pool	22/Oct/2020	14.5	N	S	T	T	D	S	T	1
Horn	6B riffle	28/Jul/2020	14	N	N	D	N	N	S	T	2
Horn	6B riffle	20/Aug/2020	14	T	N	D	T	N	S	T	2
Horn	6B riffle	29/Sep/2020	15	T	N	D	T	N	S	T	2
Horn	6B riffle	22/Oct/2020	13	N	T	D	T	N	S	T	

Sampling Details			Mesohabitat								
Stream	Site	Sample Date (d/mmm/yyyy)	Pattern	Islands	Bars	Confinement	Crown Closure (%)	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)
Boa	4A	28/Jul/2020	SI	N	SIDE	CO	80	100	0	0	0
Boa	4A	12/Aug/2020	SI	N	SIDE	CO	80	100	0	0	0
Boa	4A	29/Sep/2020	SI	N	N	CO	80	100	0	0	0
Boa	4A	20/Oct/2020	SI	N	N	CO	80	100	0	0	0
Boa	4B pool	28/Jul/2020	SI	N	SIDE	CO	90	100	0	0	0
Boa	4B pool	12/Aug/2020	SI	N	SIDE	CO	75	100	0	0	0
Boa	4B pool	29/Sep/2020	SI	N	N	CO	75	100	0	0	0
Boa	4B pool	20/Oct/2020	SI	N	SIDE	CO	90	100	0	0	0
Boa	5A	27/Jul/2020	ME	N	N	FC	75	85	15	0	0
Boa	5A	20/Aug/2020	ME	N	N	FC	75	85	15	0	0
Boa	5A	28/Sep/2020	ME	N	N	FC	75	100	0	0	0
Boa	5A	23/Oct/2020	ME	N	N	FC	60	100	0	0	0
Boa	5B	27/Jul/2020	ME	N	SIDE	FC	75	30	70	0	0
Boa	5B	17/Aug/2020	ME	N	SIDE	FC	75	15	80	5	0
Boa	5B	28/Sep/2020	ME	N	SIDE	FC	75	50	45	5	0
Boa	5B	23/Oct/2020	ME	N	N	FC	75	95	5	0	0
Boa	5C	27/Jul/2020	ME	N	SIDE	FC	75	70	25	5	0
Boa	5C	17/Aug/2020	ME	N	SIDE	FC	80	70	25	5	0
Boa	5C	28/Sep/2020	ME	N	SIDE	FC	80	90	5	5	0
Boa	5C	23/Oct/2020	ME	N	N	FC	80	100	0	0	0
Boa	5D	27/Jul/2020	ME	N	SIDE	FC	75	45	45	5	5
Boa	5D	17/Aug/2020	ME	N	SIDE	FC	80	45	45	5	5
Boa	5D	28/Sep/2020	ME	N	SIDE	FC	75	80	10	5	5
Boa	5D	23/Oct/2020	ME	N	N	FC	80	100	0	0	0
Downes	D-02 pool	20/Jul/2020	ST	N	N	CO	15	100	0	0	0
Downes	D-02 pool	13/Aug/2020	ST	N	N	CO	30	100	0	0	0
Downes	D-02 pool	21/Sep/2020	ST	N	N	CO	15	100	0	0	0

Sampling Details			Mesohabitat								
Stream	Site	Sample Date (d/mmm/yyyy)	Pattern	Islands	Bars	Confinement	Crown Closure (%)	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)
Downes	D-02 pool	19/Oct/2020	ST	N	N	CO	15	100	0	0	0
Downes	D-02 riffle	20/Jul/2020	ST	N	N	CO	90	20	80	0	0
Downes	D-02 riffle	13/Aug/2020	ST	N	N	CO	90	20	80	0	0
Downes	D-02 riffle	17/Sep/2020	ST	N	N	CO	90	20	80	0	0
Downes	D-02 riffle	19/Oct/2020	ST	N	N	CO	90	60	40	0	0
Downes	D-03 pool	21/Jul/2020	ST	N	SIDE	FC	20	30	60	10	0
Downes	D-03 pool	17/Aug/2020	ST	N	SIDE	FC	20	30	60	10	0
Downes	D-03 pool	21/Sep/2020	ST	N	SIDE	FC	25	30	60	10	0
Downes	D-03 pool	19/Oct/2020	ST	N	SIDE	FC	25	35	60	5	0
Downes	D-03 riffle	21/Jul/2020	ST	N	N	CO	25	10	80	10	0
Downes	D-03 riffle	17/Aug/2020	ST	N	N	CO	25	10	80	10	0
Downes	D-03 riffle	21/Sep/2020	ST	N	N	CO	25	10	80	10	0
Downes	D-03 riffle	19/Oct/2020	ST	N	N	CO	40	15	70	15	0
Downes	D-04 pool	21/Jul/2020	SI	N	SIDE	FC	70	40	55	5	0
Downes	D-04 pool	17/Aug/2020	NA	NA	NA	NA	NA	NA	NA	NA	NA
Downes	D-04 pool	21/Sep/2020	SI	N	SIDE	FC	65	35	60	5	0
Downes	D-04 pool	19/Oct/2020	SI	N	SIDE	FC	65	25	70	5	0
Downes	D-04 riffle	21/Jul/2020	ST	N	N	FC	50	40	55	5	0
Downes	D-04 riffle	17/Aug/2020	NA	NA	NA	NA	NA	NA	NA	NA	NA
Downes	D-04 riffle	21/Sep/2020	ST	N	N	FC	40	25	60	10	5
Downes	D-04 riffle	19/Oct/2020	ST	N	N	FC	40	25	65	5	5
Fishtrap	F-01 pool	24/Jul/2020	ST	N	N	CO	30	100	0	0	0
Fishtrap	F-01 pool	19/Aug/2020	ST	N	N	CO	30	100	0	0	0
Fishtrap	F-01 pool	29/Sep/2020	ST	N	N	CO	30	100	0	0	0
Fishtrap	F-01 pool	21/Oct/2020	ST	N	N	CO	30	100	0	0	0
Fishtrap	F-01 riffle	24/Jul/2020	ST	N	N	CO	5	5	85	5	5
Fishtrap	F-01 riffle	19/Aug/2020	ST	N	N	CO	20	5	85	5	5
Fishtrap	F-01 riffle	29/Sep/2020	ST	N	N	CO	20	10	80	5	5
Fishtrap	F-01 riffle	21/Oct/2020	ST	N	N	CO	20	10	80	5	5
Fishtrap	F-02 pool	24/Jul/2020	ST	N	N	FC	0	80	5	10	0
Fishtrap	F-02 pool	18/Aug/2020	ST	N	N	FC	0	70	15	15	0

Sampling Details			Mesohabitat								
Stream	Site	Sample Date (d/mmm/yyyy)	Pattern	Islands	Bars	Confinement	Crown Closure (%)	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)
Fishtrap	F-02 pool	29/Sep/2020	ST	N	N	FC	0	35	40	25	0
Fishtrap	F-02 pool	21/Oct/2020	ST	N	N	FC	0	40	40	20	0
Fishtrap	F-02 riffle	24/Jul/2020	ST	N	N	CO	60	100	0	0	0
Fishtrap	F-02 riffle	18/Aug/2020	ST	N	N	CO	60	100	0	0	0
Fishtrap	F-02 riffle	29/Sep/2020	ST	N	N	CO	50	100	0	0	0
Fishtrap	F-02 riffle	21/Oct/2020	SI	N	N	CO	50	100	0	0	0
Fishtrap	F-03 pool	23/Jul/2020	SI	N	N	FC	0	75	20	5	0
Fishtrap	F-03 pool	18/Aug/2020	SI	N	N	FC	0	75	20	5	0
Fishtrap	F-03 pool	29/Sep/2020	SI	N	N	FC	0	75	20	5	0
Fishtrap	F-03 pool	21/Oct/2020	SI	N	N	FC	0	75	20	5	0
Fishtrap	F-04 pool	24/Jul/2020	ST	N	N	CO	0	95	5	0	0
Fishtrap	F-04 pool	18/Aug/2020	ST	N	N	CO	0	90	5	5	0
Fishtrap	F-04 pool	29/Sep/2020	ST	N	N	CO	0	90	5	5	0
Fishtrap	F-04 pool	21/Oct/2020	ST	N	N	CO	0	85	10	5	0
Fishtrap	F-04 riffle	24/Jul/2020	ST	N	N	CO	0	35	60	5	0
Fishtrap	F-04 riffle	18/Aug/2020	ST	N	N	CO	0	35	65	5	0
Fishtrap	F-04 riffle	29/Sep/2020	ST	N	N	CO	0	40	55	5	0
Fishtrap	F-04 riffle	21/Oct/2020	ST	N	N	CO	0	50	50	0	0
Horn	1A	28/Jul/2020	ST	N	N	UN	40	40	55	5	0
Horn	1A	19/Aug/2020	ST	N	N	UN	25	40	55	5	0
Horn	1A	28/Sep/2020	ST	N	N	UN	35	95	5	0	0
Horn	1A	20/Oct/2020	ST	N	N	UN	40	70	15	5	0
Horn	1B	28/Jul/2020	ST	N	N	UN	50	45	50	5	0
Horn	1B	19/Aug/2020	ST	N	N	UN	45	45	50	5	0
Horn	1B	28/Sep/2020	ST	N	N	UN	50	80	15	5	0
Horn	1B	22/Oct/2020	ST	N	N	UN	45	80	15	5	0
Horn	2A pool	27/Jul/2020	SI	N	SIDE	CO	80	5	70	15	10
Horn	2A pool	20/Aug/2020	SI	N	SIDE	CO	70	5	60	15	20
Horn	2A pool	28/Sep/2020	SI	N	SIDE	CO	80	10	60	10	20

Sampling Details			Mesohabitat								
Stream	Site	Sample Date (d/mmm/yyyy)	Pattern	Islands	Bars	Confinement	Crown Closure (%)	Fines (%)	Gravel (%)	Cobble (%)	Boulder (%)
Horn	2A pool	22/Oct/2020	SI	N	SIDE	CO	80	50	15	5	30
Horn	2B run	27/Jul/2020	ST	N	SIDE	CO	50	25	50	20	5
Horn	2B run	20/Aug/2020	ST	N	SIDE	CO	5	5	60	20	15
Horn	2B run	28/Sep/2020	ST	N	SIDE	CO	15	10	65	15	10
Horn	2B run	22/Oct/2020	ST	N	SIDE	CO	15	30	35	25	10
Horn	2C riffle	27/Jul/2020	ST	N	SIDE	CO	50	15	60	15	10
Horn	2C riffle	20/Aug/2020	ST	N	SIDE	CO	0	15	55	15	15
Horn	2C riffle	28/Sep/2020	ST	N	SIDE	CO	0	10	65	15	10
Horn	2C riffle	22/Oct/2020	ST	N	SIDE	CO	5	15	55	20	10
Horn	3A	27/Jul/2020	ST	N	SIDE	FC	40	20	65	10	5
Horn	3A	19/Aug/2020	ST	N	SIDE	FC	40	20	65	10	5
Horn	3A	28/Sep/2020	ST	N	SIDE	FC	40	25	60	10	5
Horn	3A	22/Oct/2020	ST	N	SIDE	FC	40	30	60	5	5
Horn	3B	27/Jul/2020	ST	N	SIDE	FC	25	5	40	55	0
Horn	3B	19/Aug/2020	ST	N	SIDE	FC	25	20	55	25	0
Horn	3B	28/Sep/2020	ST	N	SIDE	FC	25	25	70	5	0
Horn	3B	22/Oct/2020	ST	N	SIDE	FC	25	25	60	15	0
Horn	3C	27/Jul/2020	ST	N	SIDE	FC	0	10	40	0	0
Horn	3C	19/Aug/2020	ST	N	SIDE	FC	0	20	60	20	0
Horn	3C	28/Sep/2020	ST	N	SIDE	FC	0	85	10	5	0
Horn	3C	22/Oct/2020	ST	N	SIDE	FC	0	85	10	5	0
Horn	6A pool	28/Jul/2020	ST	N	SIDE	CO	80	15	80	5	0
Horn	6A pool	20/Aug/2020	ST	N	SIDE	CO	80	20	75	5	0
Horn	6A pool	29/Sep/2020	ST	N	SIDE	CO	80	20	70	10	0
Horn	6A pool	22/Oct/2020	ST	N	SIDE	CO	80	35	50	15	0
Horn	6B riffle	28/Jul/2020	ST	N	SIDE		35	20	45	30	5
Horn	6B riffle	20/Aug/2020	ST	N	SIDE	CO	5	20	45	25	10
Horn	6B riffle	29/Sep/2020	ST	N	SIDE	CO	5	20	45	25	10
Horn	6B riffle	22/Oct/2020	ST	N	SIDE	CO	10	15	45	35	5

Sampling Details							
Stream	Site	Sample Date (d/mmm/yyyy)	Embeddedness (%)	Channel Width (m)	Wetted Width (m)	Bankful Depth (m)	Res. Pool. Depth
Boa	4A	28/Jul/2020		5.6	1.15	0.48	N/A
Boa	4A	12/Aug/2020		5.6	1.14	0.55	NA
Boa	4A	29/Sep/2020		5.6	1.32	0.5	NA
Boa	4A	20/Oct/2020		5.62	1.25	0.55	N/A
Boa	4B pool	28/Jul/2020		7.3	2.55	0.9	0.4
Boa	4B pool	12/Aug/2020		7.3	2.66	0.9	0.4
Boa	4B pool	29/Sep/2020		7.2	2.45	0.8	0.35
Boa	4B pool	20/Oct/2020		7.2	2.7	0.75	0.3
Boa	5A	27/Jul/2020	40	3.03	1.78	0.85	0.1
Boa	5A	20/Aug/2020	40	3.19	1.78	0.95	NA
Boa	5A	28/Sep/2020		3.15	1.75	0.85	0.13
Boa	5A	23/Oct/2020		3.2	2.8	0.85	N/A
Boa	5B	27/Jul/2020	10	2.53	2.3	0.72	N/A
Boa	5B	17/Aug/2020	10	2.55	1.38	0.72	NA
Boa	5B	28/Sep/2020	25	2.53	1.6	0.64	NA
Boa	5B	23/Oct/2020	5	2.65	2.6	0.69	N/A
Boa	5C	27/Jul/2020	30	2.55	1.65	0.7	0.09
Boa	5C	17/Aug/2020	30	2.55	1.7	0.7	0.16
Boa	5C	28/Sep/2020	30	2.55	1.05	0.65	NA
Boa	5C	23/Oct/2020		2.57	2.42	0.65	N/A
Boa	5D	27/Jul/2020	10	3.17	2.3	0.85	0.05
Boa	5D	17/Aug/2020	10	3.13	2.28	0.85	0.05
Boa	5D	28/Sep/2020	25	3.17	1.35	0.85	0.13
Boa	5D	23/Oct/2020		3.2	3.2	0.85	N/A
Downes	D-02 pool	20/Jul/2020		2.78	1.8	0.65	0.24
Downes	D-02 pool	13/Aug/2020		2.7	2.05	0.65	0.2
Downes	D-02 pool	21/Sep/2020		2.77	2.2	0.65	0.24

Sampling Details							
Stream	Site	Sample Date (d/mmm/yyyy)	Embeddedness (%)	Channel Width (m)	Wetted Width (m)	Bankful Depth (m)	Res. Pool. Depth
Downes	D-02 pool	19/Oct/2020		2.75	1.82	0.65	0.23
Downes	D-02 riffle	20/Jul/2020	20	2.5	1.55	0.45	N/A
Downes	D-02 riffle	13/Aug/2020	15	2.7	1.64	0.45	NA
Downes	D-02 riffle	17/Sep/2020	15	2.7	1.65	0.45	NA
Downes	D-02 riffle	19/Oct/2020	5	2.7	1.69	0.45	N/a
Downes	D-03 pool	21/Jul/2020	40	3.5	3.1	0.6	0.26
Downes	D-03 pool	17/Aug/2020	40	3.5	3.25	0.6	0.24
Downes	D-03 pool	21/Sep/2020	35	3.5	3.15	0.6	0.25
Downes	D-03 pool	19/Oct/2020	30	3.5	3.25	0.65	0.35
Downes	D-03 riffle	21/Jul/2020	15	1.98	0.85	0.5	N/A
Downes	D-03 riffle	17/Aug/2020	15	1.98	0.92	0.5	NA
Downes	D-03 riffle	21/Sep/2020	20	1.99	0.85	0.5	NA
Downes	D-03 riffle	19/Oct/2020	30	1.75	1.1	0.4	N/A
Downes	D-04 pool	21/Jul/2020	25	2.96	1.4	0.5	0.39
Downes	D-04 pool	17/Aug/2020		NA	NA	NA	NA
Downes	D-04 pool	21/Sep/2020	25	3	2.7	0.5	0.39
Downes	D-04 pool	19/Oct/2020	20	2.98	1.45	0.55	0.38
Downes	D-04 riffle	21/Jul/2020	50	2.18	1.1	0.35	N/A
Downes	D-04 riffle	17/Aug/2020		NA	NA	NA	NA
Downes	D-04 riffle	21/Sep/2020	40	2.15	1.3	0.35	N/a
Downes	D-04 riffle	19/Oct/2020	30	2.15	1.8	0.35	N/A
Fishtrap	F-01 pool	24/Jul/2020		6.2	4.85	0.85	0.5
Fishtrap	F-01 pool	19/Aug/2020		6.2	4.9	0.85	0.5
Fishtrap	F-01 pool	29/Sep/2020		6.2	4.95	0.83	0.5
Fishtrap	F-01 pool	21/Oct/2020		6.24	5.75	0.88	0.54
Fishtrap	F-01 riffle	24/Jul/2020	20	3.7	2.45	0.55	N/A
Fishtrap	F-01 riffle	19/Aug/2020	20	3.7	2.3	0.55	NA
Fishtrap	F-01 riffle	29/Sep/2020	15	3.65	2.27	0.55	n/a
Fishtrap	F-01 riffle	21/Oct/2020	35	3.64	2.3	0.55	N/A
Fishtrap	F-02 pool	24/Jul/2020	10	4.3		0.85	0.45
Fishtrap	F-02 pool	18/Aug/2020	15	4.7	3.55	0.9	0.45

Sampling Details							
Stream	Site	Sample Date (d/mmm/yyyy)	Embeddedness (%)	Channel Width (m)	Wetted Width (m)	Bankful Depth (m)	Res. Pool. Depth
Fishtrap	F-02 pool	29/Sep/2020	15	4.7	4.1	0.9	0.5
Fishtrap	F-02 pool	21/Oct/2020	20	4.68	4.2	0.93	4.11
Fishtrap	F-02 riffle	24/Jul/2020		6.8	6.1	0.7	N/A
Fishtrap	F-02 riffle	18/Aug/2020		6.8	5.38	0.7	NA
Fishtrap	F-02 riffle	29/Sep/2020		6.95	6.19	0.8	N/A
Fishtrap	F-02 riffle	21/Oct/2020		7.1	6.45	0.8	N/A
Fishtrap	F-03 pool	23/Jul/2020	5	7.2	6.5	1.65	1.3
Fishtrap	F-03 pool	18/Aug/2020	5	7.2	6.6	1.65	1.3
Fishtrap	F-03 pool	29/Sep/2020	5	7.2	6.8	1.65	1.3
Fishtrap	F-03 pool	21/Oct/2020	5	7.2	6	1.65	1.3
Fishtrap	F-04 pool	24/Jul/2020	5	8.4	7.1	1.25	1.135
Fishtrap	F-04 pool	18/Aug/2020	5	8.4	6.85	1.55	0.95
Fishtrap	F-04 pool	29/Sep/2020	5	8.35	7.5	1.5	0.93
Fishtrap	F-04 pool	21/Oct/2020	5	8.342	7.38	1.39	0.89
Fishtrap	F-04 riffle	24/Jul/2020	40	3.1	2.96	0.65	N/A
Fishtrap	F-04 riffle	18/Aug/2020	40	3.25	3.15	0.65	NA
Fishtrap	F-04 riffle	29/Sep/2020	30	3.25	3.17	0.68	NA
Fishtrap	F-04 riffle	21/Oct/2020	30	3.25	3.1	0.68	N/A
Horn	1A	28/Jul/2020	30	5.15	4.3	0.7	0.27
Horn	1A	19/Aug/2020	30	5.15	4.25	0.7	0.29
Horn	1A	28/Sep/2020	30	5.15	4.5	0.72	0.35
Horn	1A	20/Oct/2020	20	5	4.35	0.7	0.3
Horn	1B	28/Jul/2020	30	5.6	5.5	0.44	0.2
Horn	1B	19/Aug/2020	30	5.6	5.45	0.45	NA
Horn	1B	28/Sep/2020	30	5.5	5.35	0.45	NA
Horn	1B	22/Oct/2020	20	5.5	5.3	0.45	N/A
Horn	2A pool	27/Jul/2020	10	5.9	3.1	0.7	0.25
Horn	2A pool	20/Aug/2020	10	5.9	3.2	0.7	0.25
Horn	2A pool	28/Sep/2020	15	5.9	3.03	0.75	0.26

Sampling Details							
Stream	Site	Sample Date (d/mmm/yyyy)	Embeddedness (%)	Channel Width (m)	Wetted Width (m)	Bankful Depth (m)	Res. Pool. Depth
Horn	2A pool	22/Oct/2020	40	5.9	2.85	0.8	0.25
Horn	2B run	27/Jul/2020	5	5.95	3.1	0.6	0.1
Horn	2B run	20/Aug/2020	5	5.9	3.6	0.7	NA
Horn	2B run	28/Sep/2020	25	5.9	3.65	0.64	NA
Horn	2B run	22/Oct/2020	25	5.9	2.8	0.64	N/A
Horn	2C riffle	27/Jul/2020	5	5.35	3.3	0.6	N/A
Horn	2C riffle	20/Aug/2020	5	5.3	2.77	0.7	NA
Horn	2C riffle	28/Sep/2020	25	5.35	3.65	0.65	NA
Horn	2C riffle	22/Oct/2020	25	5.35	3.72	0.65	N/A
Horn	3A	27/Jul/2020	25	5.38	2.45	0.75	0.22
Horn	3A	19/Aug/2020	25	5.38	2.53	0.75	0.22
Horn	3A	28/Sep/2020	25	5.38	4.8	0.7	0.2
Horn	3A	22/Oct/2020	25	5.05	4.8	0.7	0.18
Horn	3B	27/Jul/2020	25	5.7	3.1	0.55	N/A
Horn	3B	19/Aug/2020	25	5.7	3.15	0.55	NA
Horn	3B	28/Sep/2020	10	5.7	2.13	0.65	0.27
Horn	3B	22/Oct/2020	30	6.43	2	0.68	0.07
Horn	3C	27/Jul/2020	20	6.2	2.65	0.55	O.18
Horn	3C	19/Aug/2020	25	4.68	1.84	0.6	NA
Horn	3C	28/Sep/2020	15	4.68	2.36	0.65	0.28
Horn	3C	22/Oct/2020	15	4.7	2.4	0.8	0.3
Horn	6A pool	28/Jul/2020	5	0.75	3.3	4.65	0.22
Horn	6A pool	20/Aug/2020	5	4.5	3.22	0.75	0.25
Horn	6A pool	29/Sep/2020	5	4.5	2.7	0.7	0.18
Horn	6A pool	22/Oct/2020	10	4.5	2.5	0.7	0.26
Horn	6B riffle	28/Jul/2020	5	4.65	3.8	0.65	N/A
Horn	6B riffle	20/Aug/2020	5	4.45	3.8	0.65	NA
Horn	6B riffle	29/Sep/2020	5	4.5	3.1	0.65	NA
Horn	6B riffle	22/Oct/2020	5	4.5	3.4	0.7	N/A

Sampling Details		
Site	**Sample Date (d/mmm/yyyy)**	**Comments**
4A	28/Jul/2020	
4A	12/Aug/2020	
4A	29/Sep/2020	New log jam approximately 0.5 m upstream of survey location
4A	20/Oct/2020	log jam just upstream of station
4B pool	28/Jul/2020	
4B pool	12/Aug/2020	
4B pool	29/Sep/2020	
4B pool	20/Oct/2020	
5A	27/Jul/2020	
5A	20/Aug/2020	
5A	28/Sep/2020	Lots of new sediment deposition
5A	23/Oct/2020	Abnormally high water level. Pool infilled with sediment
5B	27/Jul/2020	
5B	17/Aug/2020	Wetted width is 1.13 + 0.3
5B	28/Sep/2020	Lots of new sediment deposition
5B	23/Oct/2020	Abnormally high water level. Major fine sediment deposition since last month.
5C	27/Jul/2020	
5C	17/Aug/2020	
5C	28/Sep/2020	Lots of new sediment deposition
5C	23/Oct/2020	
5D	27/Jul/2020	
5D	17/Aug/2020	Check July 2020 bank full depth
5D	28/Sep/2020	Lots of new sediment deposition, LB marker dislodged - re-established
5D	23/Oct/2020	Abnormally high water level, pool infille with sediment
D-02 pool	20/Jul/2020	
D-02 pool	13/Aug/2020	
D-02 pool	21/Sep/2020	

Sampling Details		
Site	Sample Date (d/mmm/yyyy)	Comments
D-02 pool	19/Oct/2020	
D-02 riffle	20/Jul/2020	
D-02 riffle	13/Aug/2020	
D-02 riffle	17/Sep/2020	
D-02 riffle	19/Oct/2020	
D-03 pool	21/Jul/2020	
D-03 pool	17/Aug/2020	
D-03 pool	21/Sep/2020	
D-03 pool	19/Oct/2020	
D-03 riffle	21/Jul/2020	
D-03 riffle	17/Aug/2020	
D-03 riffle	21/Sep/2020	
D-03 riffle	19/Oct/2020	
D-04 pool	21/Jul/2020	
D-04 pool	17/Aug/2020	Active wasp nest at sampling site. Could not sample
D-04 pool	21/Sep/2020	
D-04 pool	19/Oct/2020	
D-04 riffle	21/Jul/2020	undercut bank seemsto uave deepened
D-04 riffle	17/Aug/2020	Active wasp nest at sampling site. Could not sample
D-04 riffle	21/Sep/2020	
D-04 riffle	19/Oct/2020	
F-01 pool	24/Jul/2020	Very minimal flow
F-01 pool	19/Aug/2020	Very little flow
F-01 pool	29/Sep/2020	
F-01 pool	21/Oct/2020	Beaver activity. virtually no flow, water level higher that usual
F-01 riffle	24/Jul/2020	
F-01 riffle	19/Aug/2020	
F-01 riffle	29/Sep/2020	
F-01 riffle	21/Oct/2020	
F-02 pool	24/Jul/2020	Orange perciptate, pungent smell. see photos. Oiled not find site marker pvc, need to reestablish
F-02 pool	18/Aug/2020	Orange precipitate, pungent smell, see photos

Sampling Details		
Site	**Sample Date (d/mmm/yyyy)**	**Comments**
F-02 pool	29/Sep/2020	
F-02 pool	21/Oct/2020	
F-02 riffle	24/Jul/2020	
F-02 riffle	18/Aug/2020	
F-02 riffle	29/Sep/2020	Beaver activity. Lodge and multiple dams present hit recent storm blew out most of dams
F-02 riffle	21/Oct/2020	
F-03 pool	23/Jul/2020	Water levels very high. Top deep to wade. Evidence of beaver activity observed. Beaver dam down stream. Measurements Substrate estimated due to poor visibility
F-03 pool	18/Aug/2020	Water levels too high, no depth/velocity, estimated substrate, embeddedness, channel measurements. Multiple beaver da
F-03 pool	29/Sep/2020	Water levels too high, no depth/velocity, estimated channel measurements and substrate, multiple beaver dams observed
F-03 pool	21/Oct/2020	Water levels too high, no depth/velocity, estimated channel measurements and substrate, multiple beaver dams observed
F-04 pool	24/Jul/2020	Left bank station marker pvc is missing. Need to reestablish.
F-04 pool	18/Aug/2020	Re-established LB PVC marker
F-04 pool	29/Sep/2020	Too too deep to wade for downstream photo
F-04 pool	21/Oct/2020	
F-04 riffle	24/Jul/2020	leftbank 0.26 m undercut bank
F-04 riffle	18/Aug/2020	
F-04 riffle	29/Sep/2020	
F-04 riffle	21/Oct/2020	
1A	28/Jul/2020	
1A	19/Aug/2020	
1A	28/Sep/2020	
1A	20/Oct/2020	
1B	28/Jul/2020	
1B	19/Aug/2020	
1B	28/Sep/2020	
1B	22/Oct/2020	
2A pool	27/Jul/2020	
2A pool	20/Aug/2020	Foam/soap observed in water - see photos
2A pool	28/Sep/2020	

Sampling Details		
Site	**Sample Date (d/mmm/yyyy)**	**Comments**
2A pool	22/Oct/2020	
2B run	27/Jul/2020	
2B run	20/Aug/2020	Foam/soap observed in water - see photos
2B run	28/Sep/2020	
2B run	22/Oct/2020	
2C riffle	27/Jul/2020	
2C riffle	20/Aug/2020	Foam/soap observed in water - see photos
2C riffle	28/Sep/2020	
2C riffle	22/Oct/2020	
3A	27/Jul/2020	
3A	19/Aug/2020	
3A	28/Sep/2020	
3A	22/Oct/2020	
3B	27/Jul/2020	
3B	19/Aug/2020	Leftbank undercut
3B	28/Sep/2020	
3B	22/Oct/2020	
3C	27/Jul/2020	
3C	19/Aug/2020	
3C	28/Sep/2020	Re-established rightbank marker. Original marker blown out from storm.
3C	22/Oct/2020	
6A pool	28/Jul/2020	
6A pool	20/Aug/2020	Foam/soap observed upstream
6A pool	29/Sep/2020	Major storm last week, major sediment deposit
6A pool	22/Oct/2020	
6B riffle	28/Jul/2020	
6B riffle	20/Aug/2020	Foam/soap observed upstream
6B riffle	29/Sep/2020	Major storm last week, major sediment deposit
6B riffle	22/Oct/2020	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
1A	28-Jul-20	4.30	RB	0.0	0	N/A	N/A	N/A	start at rightbank
1A	28-Jul-20	4.30	-	0-0.40	0.15	N/A	N/A	N/A	undercut, could not sample
1A	28-Jul-20	4.30	1	0.4	0.26	0.00	0.26	0.00	
1A	28-Jul-20	4.30	2	0.8	0.22	0.03	0.22	0.04	
1A	28-Jul-20	4.30	3	1.2	0.23	0.11	0.23	0.09	
1A	28-Jul-20	4.30	4	1.6	0.08	0.01	0.08	0.00	
1A	28-Jul-20	4.30	5	2.0	0.08	0.17	0.08	0.16	
1A	28-Jul-20	4.30	6	2.4	0.08	0.18	0.08	0.16	
1A	28-Jul-20	4.30	7	2.7	0.08	0.19	0.08	0.20	
1A	28-Jul-20	4.30	8	3.1	0.08	0.08	0.08	0.08	
1A	28-Jul-20	4.30	9	3.52	0.06	0.11	0.06	0.12	
1A	28-Jul-20	4.30	10	3.91	0.04	0.04	0.04	0.05	
1A	28-Jul-20	4.30	LB	4.3	0	N/A	N/A	N/A	
1A	19-Aug-20	4.25	RB	0.0	0	N/A	N/A	N/A	start at rightbank
1A	19-Aug-20	4.25	1	0-0.25	0.15	N/A	N/A	N/A	undercut, could not sample
1A	19-Aug-20	4.25	2	0.3	0.25	0.00	0.26	0.00	root knoll immeduately upstream
1A	19-Aug-20	4.25	3	0.6	0.20	0.20	0.20	0.20	
1A	19-Aug-20	4.25	4	1.0	0.12	0.06	0.12	0.05	
1A	19-Aug-20	4.25	5	1.4	0.08	0.10	0.08	0.08	
1A	19-Aug-20	4.25	6	1.8	0.08	0.15	0.08	0.15	
1A	19-Aug-20	4.25	7	2.2	0.08	0.17	0.08	0.18	
1A	19-Aug-20	4.25	8	2.6	0.08	0.22	0.08	0.21	
1A	19-Aug-20	4.25	9	3.0	0.08	0.20	0.08	0.21	
1A	19-Aug-20	4.25	10	3.4	0.07	0.11	0.07	0.1	
1A	19-Aug-20	4.25	11	3.8	0.05	0.03	0.06	0.02	
1A	19-Aug-20	4.25	12	3.8-4.25	0.02	N/A	N/A	N/A	Too shallow to sample
1A	19-Aug-20	4.25	LB	4.25	0	N/A	N/A	N/A	
1A	28-Sep-20	4.50	RB	0.0	0	N/A	N/A	N/A	start at rightbank
1A	28-Sep-20	4.50	1	0-0.25	0.15	N/A	N/A	N/A	undercut, could not sample
1A	28-Sep-20	4.50	2	0.3	0.27	0.01	0.27	0.00	root knoll immeduately upstream
1A	28-Sep-20	4.50	3	0.7	0.32	0.08	0.32	0.09	
1A	28-Sep-20	4.50	4	1.2	0.22	0.07	0.22	0.07	
1A	28-Sep-20	4.50	5	1.6	0.14	0.08	0.14	0.08	
1A	28-Sep-20	4.50	6	2.1	0.10	0.06	0.10	0.07	
1A	28-Sep-20	4.50	7	2.5	0.09	0.06	0.09	0.06	
1A	28-Sep-20	4.50	8	3.0	0.09	0.08	0.08	0.08	
1A	28-Sep-20	4.50	9	3.4	0.09	0.01	0.09	0.09	
1A	28-Sep-20	4.50	10	3.9	0.08	0.09	0.09	0.09	
1A	28-Sep-20	4.50	11	4.3	0.08	0.05	0.08	0.04	
1A	28-Sep-20	4.50	12	4.3-4.5	0.03	N/A	N/A	N/A	Too shallow to sample
1A	28-Sep-20	4.50	LB	4.5	0	N/A	N/A	N/A	
1A	0ct 20, 2020	4.35	LB	0.0	0	N/A	N/A	N/A	
1A	0ct 20, 2020	4.35	1	0-0.7	0.2	N/A	N/A	N/A	Too shallow to sample
1A	0ct 20, 2020	4.35	2	1.0	0.05	0.08	0.05	0.12	
1A	0ct 20, 2020	4.35	3	1.3	0.06	0.09	0.06	0.09	
1A	0ct 20, 2020	4.35	4	1.6	0.07	0.10	0.07	0.09	
1A	0ct 20, 2020	4.35	5	1.9	0.08	0.05	0.08	0.06	
1A	0ct 20, 2020	4.35	6	2.2	0.08	0.07	0.08	0.09	
1A	0ct 20, 2020	4.35	7	2.5	0.13	0.05	0.13	0.06	
1A	0ct 20, 2020	4.35	8	2.8	0.12	0.07	0.12	0.06	
1A	0ct 20, 2020	4.35	9	3.1	0.13	0.08	0.14	0.03	
1A	0ct 20, 2020	4.35	10	3.4	0.20	0.04	0.20	0.03	
1A	0ct 20, 2020	4.35	11	3.7	0.24	0.01	0.24	0.01	
1A	0ct 20, 2020	4.35	12	4.0	0.32	0	0.32	0	
1A	0ct 20, 2020	4.35	13	4-4.35	0.3	N/A	N/A	N/A	Undercut bank, could not sample
1A	0ct 20, 2020	4.35	RB	4.35	0	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
1B	27-Jul-20	5.6	RB	0	0.00	N/A	N/A	N/A	start at rightbank
1B	27-Jul-20	5.6	-	0-0.35	0.16	N/A	N/A	N/A	Undercut, could not sample
1B	27-Jul-20	5.6	1	0.35	0.18	0.02	0.18	0.02	
1B	27-Jul-20	5.6	2	0.93	0.14	0.08	0.14	0.09	
1B	27-Jul-20	5.6	3	1.51	0.12	0.09	0.12	0.09	
1B	27-Jul-20	5.6	4	2.09	0.12	0.1	0.12	0.1	
1B	27-Jul-20	5.6	5	2.67	0.11	0.07	0.11	0.09	
1B	27-Jul-20	5.6	6	3.25	0.10	0.05	0.10	0.06	
1B	27-Jul-20	5.6	7	3.83	0.06	0.04	0.06	0.05	
1B	27-Jul-20	5.6	8	4.41	0.04	0.05	0.04	0.02	
1B	27-Jul-20	5.6	9	4.99	0.06	0.02	0.06	0.02	
1B	27-Jul-20	5.6	10	5.28	0.1	0.03	0.1	0.02	
1B	27-Jul-20	5.6	LB	5.6	0.00	N/A	N/A	N/A	
1B	19-Aug-20	5.6	RB	0	0.00	N/A	N/A	N/A	
1B	19-Aug-20	5.6	1	0-0.35	0.15	N/A	N/A	N/A	Undercut, could not sample
1B	19-Aug-20	5.6	2	0.35	0.18	0.07	0.18	0.07	
1B	19-Aug-20	5.6	3	0.91	0.14	0.07	0.15	0.07	
1B	19-Aug-20	5.6	4	1.47	0.12	0.08	0.12	0.07	
1B	19-Aug-20	5.6	5	2.03	0.11	0.08	0.11	0.09	
1B	19-Aug-20	5.6	6	2.59	0.11	0.05	0.11	0.04	
1B	19-Aug-20	5.6	7	3.15	0.10	0.04	0.10	0.06	
1B	19-Aug-20	5.6	8	3.71	0.07	0.06	0.07	0.06	
1B	19-Aug-20	5.6	9	4.27	0.06	0.03	0.06	0.03	
1B	19-Aug-20	5.6	10	4.83	0.06	0.01	0.05	0.01	
1B	19-Aug-20	5.6	11	5.39	0.09	0.01	0.1	0.01	
1B	19-Aug-20	5.6	12	5.45-5.6	0.03	N/A	N/A	N/A	too shallow, undercut
1B	19-Aug-20	5.6	LB	5.6	0.00	N/A	N/A	N/A	
1B	28-Sep-20	5.35	RB	0	0.00	N/A	N/A	N/A	
1B	28-Sep-20	5.35	1	0-0.2	0.18	N/A	N/A	N/A	Undercut
1B	28-Sep-20	5.35	2	0.2	0.21	0.07	0.21	0.08	
1B	28-Sep-20	5.35	3	0.75	0.11	0.09	0.11	0.09	
1B	28-Sep-20	5.35	4	1.3	0.09	0.11	0.09	0.1	
1B	28-Sep-20	5.35	5	1.85	0.09	0.11	0.09	0.11	
1B	28-Sep-20	5.35	6	2.4	0.09	0.14	0.09	0.15	
1B	28-Sep-20	5.35	7	2.95	0.08	0.11	0.08	0.09	
1B	28-Sep-20	5.35	8	3.5	0.07	0.12	0.07	0.13	
1B	28-Sep-20	5.35	9	4.05	0.06	0.09	0.07	0.09	
1B	28-Sep-20	5.35	10	4.6	0.08	0.07	0.08	0.07	
1B	28-Sep-20	5.35	11	5.15	0.06	0	0.06	0	
1B	28-Sep-20	5.35	12	5.2-5.35	0.02	N/A	N/A	N/A	too shallow
1B	28-Sep-20	5.35	LB	5.35	0.00	N/A	N/A	N/A	
1B	22-Oct-2020	5.3	LB	0	0.00	N/A	N/A	N/A	
1B	22-Oct-2020	5.3	1	0.4	0.06	0.00	0.06	0.00	
1B	22-Oct-2020	5.3	2	0.8	0.06	0.03	0.06	0.03	
1B	22-Oct-2020	5.3	3	1.2	0.06	0.04	0.06	0.06	
1B	22-Oct-2020	5.3	4	1.6	0.04	0.04	0.04	0.05	
1B	22-Oct-2020	5.3	5	2	0.08	0.05	0.08	0.05	
1B	22-Oct-2020	5.3	6	2.4	0.09	0.06	0.09	0.07	
1B	22-Oct-2020	5.3	7	2.8	0.10	0.05	0.10	0.05	
1B	22-Oct-2020	5.3	8	3.2	0.12	0.05	0.12	0.05	
1B	22-Oct-2020	5.3	9	3.6	0.12	0.07	0.12	0.06	
1B	22-Oct-2020	5.3	10	4	0.11	0.05	0.11	0.05	
1B	22-Oct-2020	5.3	11	4.4	0.1	0.03	0.1	0.02	
1B	22-Oct-2020	5.3	12	5.10-5.30	0.18	N/A	N/A	N/A	
1B	22-Oct-2020	5.3	RB	5.3	0.00	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
2A	27-Jul-20	3.1	RB	0.14	0.12	0.17	0.12	0.18	start at rightbank
2A	27-Jul-20	3.1	1	0.42	0.12	-0.01	0.12	-0.01	
2A	27-Jul-20	3.1	2	0.7	0.14	0.13	0.14	0.13	
2A	27-Jul-20	3.1	3	0.98	0.08	0.13	0.08	0.12	
2A	27-Jul-20	3.1	4	1.40	0.04	0.1	0.04	0.10	boulder, too shallow, moved station
2A	27-Jul-20	3.1	5	1.54	0.06	0.1	0.06	0.10	
2A	27-Jul-20	3.1	6	1.82	0.16	0.05	0.16	0.06	
2A	27-Jul-20	3.1	7	2.10	0.12	0.03	0.13	0.04	
2A	27-Jul-20	3.1	8	2.38	0.1	0.01	0.10	0.00	
2A	27-Jul-20	3.1	9	2.66	0.08	-0.01	0.08	0.00	
2A	27-Jul-20	3.1	10	2.8	0.06	0	0.06	0	Tooshallow at 2.95, moved station
2A	27-Jul-20	3.1	LB	3.1	0	N/A	0	N/A	
2A	20-Aug-20	3.2	RB	0	0	N/A	N/A	N/A	start at rightbank
2A	20-Aug-20	3.2	1	0-0.1	0.01	N/A	N/A	N/A	ovehanging boulder
2A	20-Aug-20	3.2	2	0.1	0.12	0.04	0.12	0.05	
2A	20-Aug-20	3.2	3	0.40	0.12	0.05	0.12	0.03	
2A	20-Aug-20	3.2	4	0.7	0.12	0.12	0.12	0.13	
2A	20-Aug-20	3.2	5	1.00	0.1	0.12	0.10	0.12	
2A	20-Aug-20	3.2	6	1.3	0.14	0.09	0.14	0.09	
2A	20-Aug-20	3.2	7	1.60	0.06	0.10	0.06	0.10	on top of boulder
2A	20-Aug-20	3.2	8	1.9	0.14	0.05	0.14	0.05	
2A	20-Aug-20	3.2	9	2.20	0.13	0.03	0.13	0.04	
2A	20-Aug-20	3.2	10	2.5	0.09	0	0.09	-0.01	
2A	20-Aug-20	3.2	11	2.80	0.06	-0.01	0.07	-0.01	
2A	20-Aug-20	3.2	12	2.8-3.2	0.03	N/A	NA	N/A	Too shallow to sample
2A	20-Aug-20	3.2	LB	3.2	0	N/A	NA	N/A	
2A	28-Sep-20	3.03	RB	0	0	N/A	N/A	N/A	start at rightbank
2A	28-Sep-20	3.03	1	0-0.1	0.01	N/A	N/A	N/A	ovehanging boulder
2A	28-Sep-20	3.03	2	0.1	0.09	0.19	0.09	0.19	
2A	28-Sep-20	3.03	3	0.40	0.09	0	0.09	0.01	behind embedded boulder
2A	28-Sep-20	3.03	4	0.7	0.1	0.28	0.10	0.26	
2A	28-Sep-20	3.03	5	1.00	0.06	0.06	0.06	0.05	
2A	28-Sep-20	3.03	6	1.3	0.07	-0.04	0.07	-0.02	On and behind embedded boulder
2A	28-Sep-20	3.03	7	1.60	0.06	0.26	0.06	0.27	on embedded boulder
2A	28-Sep-20	3.03	8	1.9	0.15	0.14	0.15	0.15	
2A	28-Sep-20	3.03	9	2.20	0.13	0.08	0.12	0.07	
2A	28-Sep-20	3.03	10	2.5	0.08	0	0.08	0.01	
2A	28-Sep-20	3.03	11	2.80	0.08	-0.03	0.08	-0.02	
2A	28-Sep-20	3.03	12	2.83-3.03	0.03	N/A	NA	N/A	Too shallow to sample
2A	28-Sep-20	3.03	LB	3.03	0	N/A	NA	N/A	
2A	22-Oct-2020	3.25	RB	0	0	N/A	N/A	N/A	
2A	22-Oct-2020	3.25	1	0.28	0.04	0.08	0.04	0.13	
2A	22-Oct-2020	3.25	2	0.56	0.09	0	0.09	0.02	Behind boulder
2A	22-Oct-2020	3.25	3	0.84	0.08	0.19	0.08	0.20	
2A	22-Oct-2020	3.25	4	1.02-1.42	0	N/A	NA	N/A	boulder, no sample
2A	22-Oct-2020	3.25	5	1.54	0.16	0.12	0.16	0.12	
2A	22-Oct-2020	3.25	6	1.68	0.2	0.08	0.20	0.09	
2A	22-Oct-2020	3.25	7	1.82	0.16	0.08	0.16	0.08	
2A	22-Oct-2020	3.25	8	1.96	0.16	0.06	0.16	0.06	
2A	22-Oct-2020	3.25	9	2.24	0.1	0.03	0.10	0.0.4	
2A	22-Oct-2020	3.25	10	2.52	0.08	0.01	0.09	0.01	
2A	22-Oct-2020	3.25	11	2.8	0.1	-0.01	0.1	0	
2A	22-Oct-2020	3.25	12	2.94	0.04	-0.02	0.04	0.01	Behind boulder
2A	22-Oct-2020	3.25	LB	3.25	0	N/A	NA	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
2B	27-Jul-20	3.1	LB	0	0.00	N/A	N/A	N/A	
2B	27-Jul-20	3.1	1	0.14	0.03	0.01	0.03	0.02	
2B	27-Jul-20	3.1	2	0.42	0.08	0.07	0.08	0.05	
2B	27-Jul-20	3.1	3	0.7	0.11	0.13	0.13	0.11	
2B	27-Jul-20	3.1	4	0.98	0.14	0.08	0.14	0.08	
2B	27-Jul-20	3.1	5	1.26	0.16	0.18	0.16	0.17	
2B	27-Jul-20	3.1	6	1.54	0.16	0.02	0.16	0.02	
2B	27-Jul-20	3.1	7	1.82	0.18	0.00	0.18	0.00	behind boulder
2B	27-Jul-20	3.1	8	2.1	0.14	0.00	0.14	0.00	behind boulder
2B	27-Jul-20	3.1	9	2.3	0.14	0.00	0.14	-0.01	behind boulder
2B	27-Jul-20	3.1	10	2.66	0.15	0.00	0.15	0.01	behind boulder
2B	27-Jul-20	3.1	RB	3.1	0.00	N/A	N/A	N/A	
2B	20-Aug-20	3.6	RB	0	0.00	N/A	N/A	N/A	
2B	20-Aug-20	3.6	1	0-0.80	0.12	N/A	N/A	N/A	no flow. directly behind large boulder. dead zone
2B	20-Aug-20	3.6	2	0.8	0.14	-0.01	0.14	0.00	
2B	20-Aug-20	3.6	3	1.06	0.14	0.00	0.15	-0.01	
2B	20-Aug-20	3.6	4	1.32	0.19	-0.01	0.20	0.00	
2B	20-Aug-20	3.6	5	1.58	0.18	0.01	0.18	0.01	
2B	20-Aug-20	3.6	6	1.84	0.22	0.18	0.22	0.16	
2B	20-Aug-20	3.6	7	2.1	0.14	0.14	0.14	0.13	
2B	20-Aug-20	3.6	8	2.36	0.13	0.15	0.13	0.15	
2B	20-Aug-20	3.6	9	2.62	0.10	0.09	0.10	0.05	
2B	20-Aug-20	3.6	10	2.88	0.06	0.08	0.06	0.10	
2B	20-Aug-20	3.6	11	3.14	0.05	0.06	0.06	0.06	
2B	20-Aug-20	3.6	12	3.15-3.6	0.02	N/A	N/A	N/A	Too shallow to sample
2B	20-Aug-20	3.6	LB	3.6	0.00	N/A	N/A	N/A	
2B	28-Sep-20	3.55	RB	0	0.00	N/A	N/A	N/A	
2B	28-Sep-20	3.55	1	0-0.85	0.08	N/A	N/A	N/A	no flow. directly behind large boulder. dead zone
2B	28-Sep-20	3.55	2	0.85	0.09	-0.02	0.09	-0.01	
2B	28-Sep-20	3.55	3	1.05	0.10	0.00	0.10	0.01	
2B	28-Sep-20	3.55	4	1.25	0.14	-0.01	0.15	-0.01	
2B	28-Sep-20	3.55	5	1.45	0.14	0.01	0.14	0.02	
2B	28-Sep-20	3.55	6	1.65	0.17	0.19	0.17	0.20	
2B	28-Sep-20	3.55	7	1.85	0.16	0.27	0.16	0.27	
2B	28-Sep-20	3.55	8	2.05	0.14	0.29	0.14	0.28	
2B	28-Sep-20	3.55	9	2.25	0.16	0.23	0.16	0.22	
2B	28-Sep-20	3.55	10	2.45	0.14	0.04	0.14	0.07	
2B	28-Sep-20	3.55	11	2.65	0.10	0.02	0.10	0.01	
2B	28-Sep-20	3.55	12	2.8-3.55	0.02	N/A	N/A	N/A	Too shallow to sample
2B	28-Sep-20	3.55	LB	3.55	0.00	N/A	N/A	N/A	
2B	Oct 22, 2020	2.8	RB	0	0.00	N/A	N/A	N/A	
2B	Oct 22, 2020	2.8	1	0-0.65	0.20	N/A	N/A	N/A	
2B	Oct 22, 2020	2.8	2	0.7	0.06	0.02	0.06	0.01	Behind boulder
2B	Oct 22, 2020	2.8	3	0.87	0.10	0.01	0.10	0.01	Behind boulder
2B	Oct 22, 2020	2.8	4	1.04	0.10	0.05	0.10	0.05	Behind boulder
2B	Oct 22, 2020	2.8	5	1.21	0.12	0.02	0.12	0.00	Behind boulder
2B	Oct 22, 2020	2.8	6	1.38	0.13	-0.01	0.13	0.00	Behind boulder
2B	Oct 22, 2020	2.8	7	1.55	0.09	0.14	0.09	0.19	
2B	Oct 22, 2020	2.8	8	1.72	0.09	0.16	0.09	0.16	
2B	Oct 22, 2020	2.8	9	1.89	0.06	0.27	0.06	0.25	
2B	Oct 22, 2020	2.8	10	2.06	0.14	0.13	0.14	0.15	
2B	Oct 22, 2020	2.8	11	2.23	0.16	0.19	0.16	0.11	
2B	Oct 22, 2020	2.8	12	2.4	0.09	0.01	0.10	0.04	
2B	Oct 22, 2020	2.8	LB	2.8					

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
2C	27-Jul-20	3.3	RB	0-1.0	0.00	0.00	0	0	start at rightbank. Too shallow
2C	27-Jul-20	3.3	1	1.09	0.03	0.08	0.03	0.07	
2C	27-Jul-20	3.3	2	1.27	0.08	0.08	0.08	0.04	
2C	27-Jul-20	3.3	3	1.45	0.12	0.20	0.12	0.18	
2C	27-Jul-20	3.3	4	1.63	0.12	0.11	0.13	0.1	
2C	27-Jul-20	3.3	5	0.81	0.14	0.07	0.14	0.07	
2C	27-Jul-20	3.3	6	0.99	0.14	0.08	0.14	0.08	
2C	27-Jul-20	3.3	7	2.17	0.12	0.11	0.11	0.1	
2C	27-Jul-20	3.3	8	2.35	0.12	0.06	0.12	0.05	
2C	27-Jul-20	3.3	LB	3.0-3.33	0.00	N/A	0	N/A	Too shallow
2C	20-Aug-20	2.77	RB	0	0.00	NA	NA	NA	
2C	20-Aug-20	2.77	1	0-0.9	0.02	NA	NA	NA	Too shallow to sample
2C	20-Aug-20	2.77	2	0.9	0.08	0.12	0.08	0.07	
2C	20-Aug-20	2.77	3	1.06	0.12	0.06	0.12	0.08	
2C	20-Aug-20	2.77	4	1.22	0.14	0.19	0.14	0.19	
2C	20-Aug-20	2.77	5	1.38	0.15	-0.01	0.15	-0.01	
2C	20-Aug-20	2.77	6	1.54	0.13	0.00	0.13	0.01	
2C	20-Aug-20	2.77	7	1.7	0.11	0.03	0.1	0.07	
2C	20-Aug-20	2.77	8	1.86	0.14	0.08	0.14	0.09	
2C	20-Aug-20	2.77	9	2.02	0.11	0.07	0.12	0.06	
2C	20-Aug-20	2.77	10	2.18	0.09	0.07	0.1	0.06	
2C	20-Aug-20	2.77	11	2.34	0.06	0.03	0.06	0.02	
2C	20-Aug-20	2.77	12	2.4-2.77	0.02	NA	NA	NA	Too shallow to sample
2C	20-Aug-20	2.77	LB	2.77	0.00	NA	NA	NA	
2C	28-Sep-20	3.65	RB	0	0.00	NA	NA	NA	
2C	28-Sep-20	3.65	1	0-0.7	0.02	NA	NA	NA	Undercut
2C	28-Sep-20	3.65	2	0.7	0.12	0.18	0.12	0.15	
2C	28-Sep-20	3.65	3	0.8-1.4	0.00	NA	NA	NA	Embedded boulder in tagline
2C	28-Sep-20	3.65	4	1.4	0.12	0.10	0.14	0.13	
2C	28-Sep-20	3.65	5	1.65	0.12	0.16	0.12	0.2	
2C	28-Sep-20	3.65	6	1.9	0.12	0.14	0.12	0.12	
2C	28-Sep-20	3.65	7	2.15	0.12	0.20	0.12	0.23	
2C	28-Sep-20	3.65	8	2.4	0.10	0.25	0.11	0.25	
2C	28-Sep-20	3.65	9	2.65	0.12	0.18	0.12	0.16	
2C	28-Sep-20	3.65	10	2.9	0.13	0.31	0.13	0.32	
2C	28-Sep-20	3.65	11	3.15	0.12	0.16	0.12	0.18	
2C	28-Sep-20	3.65	12	3.4	0.06	0.11	0.08	0.07	
2C	28-Sep-20	3.65	13	3.55-3.65	0.02	NA	NA	NA	Too shallow to sample
2C	28-Sep-20	3.65	LB	3.65	0.00	NA	NA	NA	
2C	22-Oct-2020	3.72	RB	0	0.00	NA	NA	NA	
2C	22-Oct-2020	3.72	1	0-0.7	0.08	NA	NA	NA	Undercut
2C	22-Oct-2020	3.72	2	0.70-1.40	0.04	NA	NA	NA	boulders
2C	22-Oct-2020	3.72	3	1.6	0.06	0.05	0.06	0.04	
2C	22-Oct-2020	3.72	4	1.8	0.09	0.20	0.09	0.18	
2C	22-Oct-2020	3.72	5	2	0.06	0.17	0.06	0.21	
2C	22-Oct-2020	3.72	6	2.2	0.09	0.13	0.09	0.1	
2C	22-Oct-2020	3.72	7	2.4	0.08	0.19	0.1	0.01	
2C	22-Oct-2020	3.72	8	2.6	0.08	0.28	0.08	0.26	
2C	22-Oct-2020	3.72	9	2.8	0.08	0.24	0.08	0.25	
2C	22-Oct-2020	3.72	10	3	0.05	-0.05	0.25	-0.01	Behind boulder
2C	22-Oct-2020	3.72	11	3.2	0.06	0.13	0.06	0.18	
2C	22-Oct-2020	3.72	12	3.4	0.04	0.03	0.04	0.08	
2C	22-Oct-2020	3.72	13	3.6	0.04	0.00	0.04	-0.03	
2C	22-Oct-2020	3.72	LB	3.2	0.00	NA	NA	NA	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
3A	27-Jul-2020	2.55	RB	0.00	0.00	N/A	N/A	N/A	First 5cm too shallow
3A	27-Jul-20	2.55	1	0.10	0.06	0.00	0.06	0.00	
3A	27-Jul-2020	2.55	2	0.30	0.07	0.00	0.07	0.00	
3A	27-Jul-20	2.55	3	0.50	0.06	0	0.06	0.00	
3A	27-Jul-2020	2.55	4	0.70	0.06	0	0.06	0.01	
3A	27-Jul-20	2.55	5	0.90	0.08	0.02	0.10	0.01	
3A	27-Jul-2020	2.55	6	1.10	0.14	0.04	0.14	0.03	
3A	27-Jul-20	2.55	7	1.30	0.16	0.14	0.16	0.14	
3A	27-Jul-2020	2.55	8	1.50	0.18	0.24	0.18	0.22	
3A	27-Jul-20	2.55	9	1.70	0.18	0.17	0.18	0.14	
3A	27-Jul-2020	2.55	10	1.90	0.16	0.08	0.16	0.08	
3A	27-Jul-2020	2.55	11	2.1	0.18	0.03	0.18	0.03	2.3-2.5 undercut, couldn't sample
3A	27-Jul-20	2.55	LB	2.55	0	N/A	N/A	N/A	
3A	19 Aug 2020	2.53	RB	0.00	0.00	N/A	N/A	N/A	
3A	19 Aug 2020	2.53	1	0-0.13	0.02	N/A	N/A	N/A	too shallow to sample
3A	19 Aug 2020	2.53	2	0.13	0.08	0.00	0.06	0.00	
3A	19 Aug 2020	2.53	3	0.35	0.08	0.02	0.08	0.02	
3A	19 Aug 2020	2.53	4	0.57	0.08	0.01	0.08	0.01	
3A	19 Aug 2020	2.53	5	0.79	0.06	0	0.00	0	station behind large embedded cobble
3A	19 Aug 2020	2.53	6	1.01	0.14	0.1	0.15	0.1	
3A	19 Aug 2020	2.53	7	1.23	0.16	0.15	0.16	0.12	
3A	19 Aug 2020	2.53	8	1.45	0.19	0.14	0.19	0.15	
3A	19 Aug 2020	2.53	9	1.67	0.18	0.11	0.18	0.12	
3A	19 Aug 2020	2.53	10	1.89	0.18	0.08	0.18	0.07	
3A	19 Aug 2020	2.53	11	2.03-2.53	0.1	N/A	N/A	N/A	Undercut bank and rooted vegetation, unable to sample
3A	19 Aug 2020	2.53	LB	2.53	0	N/A	N/A	N/A	
3A	28-Sep-20	4.8	RB	0.00	0.00	N/A	N/A	N/A	
3A	28-Sep-20	4.8	1	0-0.10	0.05	N/A	N/A	N/A	Undercut
3A	28-Sep-20	4.8	2	0.10	0.12	0.07	0.12	0.0.04	
3A	28-Sep-20	4.8	3	0.48	0.11	0.17	0.14	0.20	
3A	28-Sep-20	4.8	4	0.86	0.11	0.12	0.11	0.12	
3A	28-Sep-20	4.8	5	1.24	0.12	0.12	0.12	0.13	
3A	28-Sep-20	4.8	6	1.62	0.08	0.09	0.08	0.09	
3A	28-Sep-20	4.8	7	2.00	0.08	0	0.08	0	station behind Embedded bolder
3A	28-Sep-20	4.8	8	2.38	0.09	13	0.08	0.12	
3A	28-Sep-20	4.8	9	2.76	0.10	0.18	0.08	0.2	
3A	28-Sep-20	4.8	10	3.14	0.08	0.21	0.08	0.22	Flow at 90 degrees
3A	28-Sep-20	4.8	11	3.52	0.05	0.19	0.05	0.22	Flow at 90 degrees
3A	28-Sep-20	4.8	12	3.6-4.8	0.08	N/A	N/A	N/A	Too shallow, Undercut bank and rooted vegetation, unable to sample
3A	28-Sep-20	4.8	LB	4.8	0	N/A	N/A	N/A	
3A	22-Oct-2020	4.8	RB	0.00	0.00	N/A	N/A	N/A	
3A	22-Oct-2020	4.8	1	0.38	0.15	0.01	0.15	0.08	
3A	22-Oct-2020	4.8	2	0.76	0.12	0.05	0.12	0.06	
3A	22-Oct-2020	4.8	3	1.14	0.08	0.07	0.08	0.06	
3A	22-Oct-2020	4.8	4	1.52	0.08	0.18	0.08	0.18	
3A	22-Oct-2020	4.8	5	1.90	0.08	0	0.08	-0.01	Behind boulder
3A	22-Oct-2020	4.8	6	2.28	0.08	0.17	0.09	0.18	
3A	22-Oct-2020	4.8	7	2.66	0.08	0.13	0.08	0.14	
3A	22-Oct-2020	4.8	8	3.04	0.08	0.07	0.08	0.08	
3A	22-Oct-2020	4.8	9	3.42	0.06	0	0.06	0.01	
3A	22-Oct-2020	4.8	10	3.80	0.06	0.04	0.06	0.09	
3A	22-Oct-2020	4.8	11	4.18	0.1	0	0.01	0	
3A	22-Oct-2020	4.8	12	4.25-4.8	0.05	N/A	N/A	N/A	dense veg/ undercut
3A	22-Oct-2020	4.8	LB	4.8	0	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
3B	27-Jul-2020	3.1	RB	0	0.00	N/A	0.00	N/A	start at rightbank
3B	27-Jul-20	3.1	1	0-0.7	0.00	N/A	0.00	N/A	too shallow to sample
3B	27-Jul-2020	3.1	2	0.7	0.04	0.01	0.04	0.04	
3B	27-Jul-20	3.1	3	0.93	0.08	0.08	0.08	0.07	
3B	27-Jul-2020	3.1	4	1.27	0.08	0.11	0.08	0.12	boulder, moved the station
3B	27-Jul-20	3.1	5	1.39	0.08	0.16	0.08	0.15	
3B	27-Jul-2020	3.1	6	1.62	0.10	0.15	0.10	0.16	
3B	27-Jul-20	3.1	7	1.85	0.10	0.22	0.10	0.23	
3B	27-Jul-2020	3.1	8	2.08	0.08	0.26	0.09	0.28	
3B	27-Jul-20	3.1	9	2.31	0.06	0.19	0.06	0.19	
3B	27-Jul-2020	3.1	10	2.54	0.06	0.04	0.06	0.03	
3B	27-Jul-20	3.1	-	3-3.1	0	N/A	0	N/A	too shallow to sample
3B	27-Jul-20	3.1	LB	3.1	0.00	N/A	0.00	N/A	
No August Data?									
3B	28-Sep-20	2.13	RB	0	0.00	N/A	N/A	N/A	start at rightbank
3B	28-Sep-20	2.13	1	0-0.2	0.03	N/A	N/A	N/A	too shallow to sample
3B	28-Sep-20	2.13	2	0.2	0.06	-0.02	0.06	-0.01	
3B	28-Sep-20	2.13	3	0.38	0.12	-0.01	0.12	0.00	
3B	28-Sep-20	2.13	4	0.56	0.16	0.01	0.16	0.03	
3B	28-Sep-20	2.13	5	0.74	0.19	0.09	0.19	0.10	
3B	28-Sep-20	2.13	6	0.92	0.24	0.15	0.24	0.15	
3B	28-Sep-20	2.13	7	1.1	0.30	0.18	0.30	0.16	
3B	28-Sep-20	2.13	8	1.28	0.32	0.12	0.32	0.13	
3B	28-Sep-20	2.13	9	1.46	0.34	0.10	0.34	0.12	
3B	28-Sep-20	2.13	10	1.64	0.35	0.1	0.35	0.08	
3B	28-Sep-20	2.13	11	1.82	0.34	0.11	0.34	0.11	
3B	28-Sep-20	2.13	12	1.9-2.13	0.2	N/A	N/A	N/A	undercut bank
3B	28-Sep-20	2.13	LB	2.13	0.00	N/A	N/A	N/A	
3B	22-Oct-2020	2	RB	0	0.00	N/A	N/A	N/A	start at rightbank
3B	22-Oct-2020	2	1	0-0.2	0.03	N/A	N/A	N/A	too shallow to sample
3B	22-Oct-2020	2	2	0.2	0.08	0.01	0.08	-0.01	
3B	22-Oct-2020	2	3	0.36	0.11	0.11	0.11	0.09	
3B	22-Oct-2020	2	4	0.52	0.16	0.15	0.16	0.14	
3B	22-Oct-2020	2	5	0.68	0.20	0.17	0.20	0.16	
3B	22-Oct-2020	2	6	0.84	0.23	0.23	0.23	0.24	
3B	22-Oct-2020	2	7	1	0.25	0.14	0.25	0.14	
3B	22-Oct-2020	2	8	1.16	0.26	0.01	0.26	0.01	
3B	22-Oct-2020	2	9	1.32	0.28	-0.01	0.28	-0.02	
3B	22-Oct-2020	2	10	1.48	0.24	0	0.24	0	
3B	22-Oct-2020	2	11	1.64	0.22	0.01	0.22	0.00	
3B	22-Oct-2020	2	12	1.65-2	0.15	N/A	N/A	N/A	undercut bank
3B	22-Oct-2020	2	LB	2	0.00	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
3C	27-Jul-20	2.65	RB	0.00	0.00	N/A	0.00	N/A	
3C	27-Jul-20	2.65	1	0-1.05	0.00	N/A	0.00	N/A	too shallow to sample
3C	27-Jul-20	2.65	2	1.12	0.02	0.02	0.02	0.09	
3C	27-Jul-20	2.65	3	1.26	0.03	0.11	0.03	0.14	
3C	27-Jul-20	2.65	4	1.40	0.06	0.03	0.06	0.05	
3C	27-Jul-20	2.65	5	1.54	0.06	0.10	0.06	0.14	
3C	27-Jul-20	2.65	6	1.68	0.09	0.18	0.09	0.22	
3C	27-Jul-20	2.65	7	1.82	0.10	0.06	0.10	0.03	
3C	27-Jul-20	2.65	8	1.96	0.12	0.04	0.12	0.03	
3C	27-Jul-20	2.65	9	2.10	0.14	0.08	0.14	0.08	
3C	27-Jul-20	2.65	10	2.24	0.14	0.27	0.14	0.3	
3C	27-Jul-20	2.65	11	2.38	0.1	0.41	0.11	0.37	
3C	27-Jul-20	2.65	RB	2.65	0.00	N/A	0.00	N/A	
3C	19-Aug-20	1.84	RB	0.00	0.00	N/A	0.00	N/A	
3C	19-Aug-20	1.84	1	0-0.3	0.02	N/A	0.00	N/A	too shallow to sample
3C	19-Aug-20	1.84	2	0.30	0.06	0.00	0.06	0.00	
3C	19-Aug-20	1.84	3	0.47	0.06	0.05	0.06	0.04	
3C	19-Aug-20	1.84	4	0.64	0.08	0.02	0.07	0.02	
3C	19-Aug-20	1.84	5	0.81	0.08	0.07	0.08	0.07	
3C	19-Aug-20	1.84	6	0.98	0.09	0.14	0.09	0.15	
3C	19-Aug-20	1.84	7	1.15	0.12	0.10	0.13	0.11	
3C	19-Aug-20	1.84	8	1.32	0.14	0.21	0.14	0.20	
3C	19-Aug-20	1.84	9	1.49	0.14	0.22	0.14	0.19	
3C	19-Aug-20	1.84	10	1.66	0.16	0.42	0.16	0.33	
3C	19-Aug-20	1.84	11	1.83	0.18	0.11	0.18	0.21	
3C	19-Aug-20	1.84	RB	1.84	0.00	N/A	0.00	N/A	
3C	28-Sep-20	2.36	RB	0.00	0.00	N/A	0.00	N/A	
3C	28-Sep-20	2.36	1	0-0.1	0.03	N/A	0.00	N/A	too shallow to sample
3C	28-Sep-20	2.36	2	0.10	0.05	0.01	0.05	0.03	
3C	28-Sep-20	2.36	3	0.35	0.06	0.06	0.06	0.06	
3C	28-Sep-20	2.36	4	0.60	0.07	0.07	0.08	0.06	
3C	28-Sep-20	2.36	5	0.85	0.10	0.06	0.10	0.06	
3C	28-Sep-20	2.36	6	1.10	0.11	0.07	0.11	0.05	
3C	28-Sep-20	2.36	7	1.35	0.18	0.07	0.19	0.10	
3C	28-Sep-20	2.36	8	1.60	0.22	0.08	0.22	0.09	
3C	28-Sep-20	2.36	9	1.85	0.30	0.09	0.30	0.08	
3C	28-Sep-20	2.36	10	2.10	0.34	0.06	0.34	0.07	
3C	28-Sep-20	2.36	11	2.35	0.37	0.07	0.37	0.09	
3C	28-Sep-20	2.36	RB	2.36	0.00	N/A	0.00	N/A	
3C	22-Oct-2020	2.4	RB	0.00	0.00	N/A	N/A	N/A	
3C	22-Oct-2020	2.4	1	0-0.55	0.02	N/A	N/A	N/A	Too shallow to sample
3C	22-Oct-2020	2.4	2	0.55	0.06	0.00	0.06	0.00	
3C	22-Oct-2020	2.4	3	0.68	0.10	0.01	0.10	0.01	
3C	22-Oct-2020	2.4	4	0.81	0.12	0.02	0.13	0.03	
3C	22-Oct-2020	2.4	5	0.94	0.17	0.04	0.17	0.05	
3C	22-Oct-2020	2.4	6	1.07	0.22	0.04	0.22	0.03	
3C	22-Oct-2020	2.4	7	1.20	0.24	0.03	0.24	0.03	
3C	22-Oct-2020	2.4	8	1.33	0.26	0.02	0.26	0.03	
3C	22-Oct-2020	2.4	9	1.46	0.30	0.01	0.30	0.02	
3C	22-Oct-2020	2.4	10	1.59	0.34	0.02	0.34	0.05	
3C	22-Oct-2020	2.4	11	1.72	0.4	0.04	0.4	0.03	
3C	22-Oct-2020	2.4	12	2.10-2.40	0.20	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
4A	28-Jul-20	1.15	RB	0.00	0.08	-0.01	0.08	-0.04	
4A	28-Jul-20	1.15	1	0.05	0.10	0.00	0.10	0.00	
4A	28-Jul-20	1.15	2	0.15	0.12	0.01	0.14	0.01	
4A	28-Jul-20	1.15	3	0.25	0.15	0.03	0.16	0.03	
4A	28-Jul-20	1.15	4	0.35	0.15	0.03	0.15	0.03	
4A	28-Jul-20	1.15	5	0.45	0.15	0.02	0.15	0.03	
4A	28-Jul-20	1.15	6	0.55	0.08	0.11	0.08	0.12	
4A	28-Jul-20	1.15	7	0.65	0.10	0.03	0.10	0.03	
4A	28-Jul-20	1.15	8	0.75	0.10	0.01	0.10	0.00	
4A	28-Jul-20	1.15	9	0.85	0.08	0.00	0.08	0.04	
4A	28-Jul-20	1.15	10	0.95	0.04	0	0.06	0	
4A	28-Jul-20	1.15	LB	1.15	0	N/A	0	N/A	
4A	12-Aug-20	1.14	RB	0.00	0.00	NA	NA	NA	
4A	12-Aug-20	1.14	1	0.06	0.10	0.00	0.10	0.00	measurements taken behind embedded log
4A	12-Aug-20	1.14	2	0.17	0.13	0.00	0.13	0.00	measurements taken behind embedded log
4A	12-Aug-20	1.14	3	0.28	0.14	0.00	0.15	0.00	measurements taken behind embedded log
4A	12-Aug-20	1.14	4	0.39	0.15	0.00	0.15	0.00	
4A	12-Aug-20	1.14	5	0.50	0.15	0.07	0.15	0.08	
4A	12-Aug-20	1.14	6	0.61	0.15	0.00	0.15	0.05	
4A	12-Aug-20	1.14	7	0.72	0.14	0.11	0.14	0.12	
4A	12-Aug-20	1.14	8	0.83	0.12	0.05	0.12	0.05	
4A	12-Aug-20	1.14	9	0.94	0.10	0.00	0.10	0.00	
4A	12-Aug-20	1.14	10	1.05	0.065	-0.01	0.065	-0.01	
4A	12-Aug-20	1.14	LB	1.14	0	NA	NA	NA	
4A	29-Sep-20	1.32	RB	0.00	0.00	NA	NA	NA	
4A	29-Sep-20	1.32	1	0.13	0.10	0.04	0.10	0.05	measurements taken behind embedded log
4A	29-Sep-20	1.32	2	0.26	0.10	0.06	0.10	0.04	measurements taken behind embedded log
4A	29-Sep-20	1.32	3	0.39	0.10	0.04	0.10	0.03	measurements taken behind embedded log
4A	29-Sep-20	1.32	4	0.52	0.12	0.01	0.12	0.01	
4A	29-Sep-20	1.32	5	0.65	0.14	-0.01	0.15	-0.01	
4A	29-Sep-20	1.32	6	0.78	0.14	0.04	0.14	0.02	
4A	29-Sep-20	1.32	7	0.91	0.10	0.05	0.10	0.04	
4A	29-Sep-20	1.32	8	1.04	0.10	-0.01	0.10	0.01	
4A	29-Sep-20	1.32	9	1.17	0.08	-0.01	0.08	-0.01	
4A	29-Sep-20	1.32	10	1.30	0.05	0	0.05	-0.01	
4A	29-Sep-20	1.32	LB	1.32	0	NA	NA	NA	
4A	20-Oct-2020	1.25	LB	0.00	0.00	NA	NA	NA	
4A	20-Oct-2020	1.25	1	0.12	0.12	0.00	0.12	-0.01	
4A	20-Oct-2020	1.25	2	0.24	0.12	0.01	0.12	0.01	
4A	20-Oct-2020	1.25	3	0.36	0.12	0.03	0.12	0.03	
4A	20-Oct-2020	1.25	4	0.48	0.13	0.03	0.13	0.02	
4A	20-Oct-2020	1.25	5	0.60	0.15	-0.01	0.15	-0.02	
4A	20-Oct-2020	1.25	6	0.72	0.13	0.01	0.12	0.04	
4A	20-Oct-2020	1.25	7	0.84	0.10	0.05	0.10	0.03	
4A	20-Oct-2020	1.25	8	0.96	0.10	0.02	0.10	0.00	
4A	20-Oct-2020	1.25	9	1.08	0.08	0.00	0.08	0.00	
4A	20-Oct-2020	1.25	10	1.20	0.01	NA	NA	NA	Too shallow to sampe
4A	20-Oct-2020	1.25	RB	1.25	0	NA	NA	NA	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
4B	28-Jul-20	2.55	RB	0.00	0.00	N/A	N/A	N/A	
4B	28-Jul-20	2.55	1	0.18	0.08	0.00	0.08	0.00	
4B	28-Jul-20	2.55	2	0.36	0.10	0.01	0.10	0.00	
4B	28-Jul-20	2.55	3	0.54	0.11	0.00	0.11	0.00	
4B	28-Jul-20	2.55	4	0.72	0.22	0.01	0.22	0.00	
4B	28-Jul-20	2.55	5	0.90	0.28	0.00	0.30	0.00	
4B	28-Jul-20	2.55	6	1.08	0.35	0.00	0.35	0.00	
4B	28-Jul-20	2.55	7	1.26	0.38	0.00	0.38	0.00	
4B	28-Jul-20	2.55	8	1.44	0.38	0.00	0.38	0.00	
4B	28-Jul-20	2.55	9	1.62	0.37	0.01	0.37	0.01	
4B	28-Jul-20	2.55	10	1.8	0.4	0.01	0.4	0.02	
4B	28-Jul-20	2.55	-	1.85-2.55	0.27	N/A	N/A	N/A	deeply undercut, could not sample. Depth approximate.
4B	28-Jul-20	2.55	LB	2.55	0.00	N/A	N/A	N/A	
4B	12-Aug-20	2.66	RB	0.00	0.00	N/A	N/A	N/A	
4B	12-Aug-20	2.66	1	0.09	0.05	0.00	0.05	0.00	
4B	12-Aug-20	2.66	2	0.26	0.08	0.03	0.08	0.03	
4B	12-Aug-20	2.66	3	0.43	0.11	0.03	0.14	0.01	
4B	12-Aug-20	2.66	4	0.60	0.16	0.00	0.18	0.00	
4B	12-Aug-20	2.66	5	0.77	0.22	0.00	0.26	0.00	
4B	12-Aug-20	2.66	6	0.94	0.30	0.00	0.30	0.00	
4B	12-Aug-20	2.66	7	1.11	0.33	0.01	0.33	0.00	
4B	12-Aug-20	2.66	8	1.28	0.33	0.02	0.33	0.01	
4B	12-Aug-20	2.66	9	1.45	0.35	0.02	0.36	0.02	
4B	12-Aug-20	2.66	10	1.62	0.3	0.01	0.31	0.01	
4B	12-Aug-20	2.66	-	1.62-2.66	0.2	N/A	N/A	N/A	Undercut, could not sample. Estimated average depth.
4B	12-Aug-20	2.66	LB	2.66	0.00	N/A	N/A	N/A	
4B	29-Sep-20	2.45	RB	0.00	0.00	N/A	N/A	N/A	
4B	29-Sep-20	2.45	1	0-0.2	0.03	N/A	N/A	N/A	Too shallow to sample
4B	29-Sep-20	2.45	2	0.20	0.08	-0.01	0.08	-0.01	
4B	29-Sep-20	2.45	3	0.33	0.12	0.02	0.12	0.02	
4B	29-Sep-20	2.45	4	0.46	0.12	0.04	0.01	0.05	
4B	29-Sep-20	2.45	5	0.59	0.18	0.08	0.18	0.08	
4B	29-Sep-20	2.45	6	0.72	0.22	0.04	0.23	0.02	
4B	29-Sep-20	2.45	7	0.85	0.26	0.00	0.27	0.00	
4B	29-Sep-20	2.45	8	0.98	0.32	0.00	0.37	0.00	
4B	29-Sep-20	2.45	9	1.11	0.38	0.01	0.38	0.00	
4B	29-Sep-20	2.45	10	1.24	0.37	0.01	0.38	0.01	
4B	29-Sep-20	2.45	11	1.37	0.36	0.01	0.36	0.02	
4B	29-Sep-20	2.45	12	1.55-2.45	0.2	N/A	N/A	N/A	Undercut, could not sample. Estimated average depth.
4B	29-Sep-20	2.45	LB	2.45	0.00	N/A	N/A	N/A	
4B	Oct 20, 2020	2.7	RB	0.00	0.00	0.00	N/A	N/A	
4B	Oct 20, 2020	2.7	1	0-0.20	0.02	N/A	N/A	N/A	Too shallow to sample
4B	Oct 20, 2020	2.7	2	0.20	0.08	0.01	0.08	0.00	
4B	Oct 20, 2020	2.7	3	0.35	0.12	0.00	0.12	0.00	
4B	Oct 20, 2020	2.7	4	0.50	0.18	0.00	0.18	0.00	
4B	Oct 20, 2020	2.7	5	0.65	0.20	0.00	0.22	0.00	
4B	Oct 20, 2020	2.7	6	0.80	0.24	0.00	0.25	0.01	
4B	Oct 20, 2020	2.7	7	0.95	0.28	0.00	0.30	0.00	
4B	Oct 20, 2020	2.7	8	1.10	0.36	0.00	0.36	0.00	
4B	Oct 20, 2020	2.7	9	1.25	0.36	0.00	0.36	0.00	
4B	Oct 20, 2020	2.7	10	1.40	0.38	0.00	0.38	0.00	
4B	Oct 20, 2020	2.7	11	1.55	0.38	0	0.38	0.01	
4B	Oct 20, 2020	2.7	12	1.70	0.36	0.00	0.36	0.00	
4B	Oct 20, 2020	2.7	13	1.7-2.7	0.37	N/A	N/A	N/A	Undercut
4B	Oct 20, 2020	2.7	LB	2.7	0.00	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
5A	27-Jul-20	1.78	RB	0.00	0.00	N/A	N/A	N/A	
5A	27-Jul-20	1.78	1	0-0.73	0.05	N/A	N/A	N/A	0-0.73 m deep undercut. Could not sample
5A	27-Jul-20	1.78	2	0.83	0.13	0.03	0.13	0.04	
5A	27-Jul-20	1.78	3	0.93	0.12	0.05	0.12	0.06	
5A	27-Jul-20	1.78	4	1.03	0.12	0.10	0.12	0.10	
5A	27-Jul-20	1.78	5	1.13	0.10	0.09	0.10	0.09	
5A	27-Jul-20	1.78	6	1.23	0.10	0.08	0.10	0.08	
5A	27-Jul-20	1.78	7	1.33	0.10	0.09	0.10	0.09	
5A	27-Jul-20	1.78	8	1.43	0.08	0.08	0.08	0.08	
5A	27-Jul-20	1.78	9	1.53	0.06	0.06	0.06	0.05	
5A	27-Jul-20	1.78	10	1.63	0.05	0.03	0.05	0.03	
5A	27-Jul-20	1.78	11	1.73	0.05	0.02	0.04	0.02	
5A	27-Jul-20	1.78	LB	1.78	0.00	N/A	N/A	N/A	
5A	20-Aug-20	1.78	RB	0.00	0.00	N/A	N/A	N/A	
5A	20-Aug-20	1.78	1	0-0.73	0.08	N/A	N/A	N/A	0-0.73 m deep undercut. Could not sample
5A	20-Aug-20	1.78	2	0.73	0.14	0.06	0.14	0.08	
5A	20-Aug-20	1.78	3	0.84	0.12	0.09	0.12	0.09	
5A	20-Aug-20	1.78	4	0.95	0.10	0.11	0.10	0.10	
5A	20-Aug-20	1.78	5	1.06	0.10	0.12	0.10	0.13	
5A	20-Aug-20	1.78	6	1.17	0.10	0.12	0.12	0.13	
5A	20-Aug-20	1.78	7	1.28	0.09	0.09	0.10	0.10	
5A	20-Aug-20	1.78	8	1.39	0.08	0.06	0.08	0.06	
5A	20-Aug-20	1.78	9	1.50	0.07	0.04	0.07	0.04	
5A	20-Aug-20	1.78	10	1.61	0.06	0.04	0.06	0	
5A	20-Aug-20	1.78	11	1.72	0.04	0.01	0.04	0	
5A	20-Aug-20	1.78	LB	1.78	0.00	N/A	N/A	N/A	
5A	28-Sep-20	1.75	RB	0.00	0.00	N/A	N/A	N/A	
5A	28-Sep-20	1.75	1	0-0.5	0.05	N/A	N/A	N/A	deep undercut. Could not sample
5A	28-Sep-20	1.75	2	0.50	0.08	0.05	0.08	0.02	
5A	28-Sep-20	1.75	3	0.63	0.07	0.12	0.08	0.14	
5A	28-Sep-20	1.75	4	0.76	0.08	0.12	0.08	0.10	
5A	28-Sep-20	1.75	5	0.89	0.08	0.15	0.08	0.15	
5A	28-Sep-20	1.75	6	1.02	0.06	0.11	0.07	0.15	
5A	28-Sep-20	1.75	7	1.15	0.07	0.10	0.07	0.10	
5A	28-Sep-20	1.75	8	1.28	0.06	0.16	0.06	0.12	
5A	28-Sep-20	1.75	9	1.41	0.06	0.13	0.06	0.12	
5A	28-Sep-20	1.75	10	1.54	0.07	0.06	0.07	0.08	
5A	28-Sep-20	1.75	11	1.67	0.07	0.08	0.08	0.07	
5A	28-Sep-20	1.75	LB	1.75	0.00	N/A	N/A	N/A	
5A	23-Oct-2020	2.8	RB	0.00	0.00	N/A	N/A	N/A	
5A	23-Oct-2020	2.8	1	0-0.5	0.20	N/A	N/A	N/A	deep undercut. Could not sample
5A	23-Oct-2020	2.8	2	0.50	0.48	0.07	0.50	0.06	
5A	23-Oct-2020	2.8	3	0.74	0.46	0.09	0.46	0.09	
5A	23-Oct-2020	2.8	4	0.98	0.46	0.09	0.46	0.10	
5A	23-Oct-2020	2.8	5	1.22	0.46	0.08	0.46	0.07	
5A	23-Oct-2020	2.8	6	1.46	0.46	0.12	0.46	0.12	
5A	23-Oct-2020	2.8	7	1.70	0.46	0.16	0.46	0.16	
5A	23-Oct-2020	2.8	8	1.94	0.46	0.06	0.46	0.05	
5A	23-Oct-2020	2.8	9	2.18	0.46	0.01	0.46	0.00	
5A	23-Oct-2020	2.8	10	2.42	0.22	-0.01	0.22	-0.01	
5A	23-Oct-2020	2.8	11	2.66	0.12	-0.02	0.12	-0.01	
5A	23-Oct-2020	2.8	LB	2.8	0.00	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
5B	27-Jul-20	2.3	RB	0.00	0	N/A	N/A	N/A	
5B	27-Jul-20	2.3	1	0-0.20	N/A	N/A	N/A	N/A	
5B	27-Jul-20	2.3	2	0.25	0.04	0.27	0.04	0.34	
5B	27-Jul-20	2.3	3	0.30	0.04	0.28	0.04	0.28	
5B	27-Jul-20	2.3	4	0.35	0.05	0.27	0.05	0.27	
5B	27-Jul-20	2.3	5	0.40	0.04	0.3	0.05	0.25	
5B	27-Jul-20	2.3	6	0.45	0.03	0.23	0.03	0.25	
5B	27-Jul-20	2.3	7	0.5	0.03	0.18	0.03	0.2	
5B	27-Jul-20	2.3	8	0.55	0.02	0.22	0.02	0.21	
5B	27-Jul-20	2.3	9	0.6	0.02	0.17	0.02	0.22	
5B	27-Jul-20	2.3	10	0.65	0.02	0.21	0.02	0.19	
5B	27-Jul-20	2.3	11	0.70-2.35	N/A	N/A	N/A	N/A	too shallow to sample
5B	27-Jul-20	2.3	LB	2.3	0	N/A	0	N/A	
5B	17-Aug-20	1.38	RB	0.00	0	N/A	N/A	N/A	
5B	17-Aug-20	1.38	1	0-0.45	0.05	N/A	N/A	N/A	Undercut bank/too shallow
5B	17-Aug-20	1.38	2	0.45	0.05	0.24	0.05	0.25	
5B	17-Aug-20	1.38	3	0.50	0.05	0.27	0.05	0.23	
5B	17-Aug-20	1.38	4	0.55	0.05	0.19	0.05	0.21	
5B	17-Aug-20	1.38	5	0.60	0.05	0.1	0.05	0.13	
5B	17-Aug-20	1.38	6	0.65	0.05	0.16	0.05	0.21	
5B	17-Aug-20	1.38	7	0.70	0.05	0.43	0.05	0.37	
5B	17-Aug-20	1.38	8	0.75	0.04	0.21	0.04	0.24	
5B	17-Aug-20	1.38	9	0.80	0.04	0.16	0.04	0.19	
5B	17-Aug-20	1.38	10	0.8-1.08	0.02	N/A	N/A	N/A	Too shallow to sample
5B	17-Aug-20	1.38	-	-	N/A	N/A	N/A	N/A	gravel bar separating
5B	17-Aug-20	1.38	11	1.08-1.38	0.02	N/A	N/A	N/A	Too shallow to sample
5B	17-Aug-20	1.38	LB	1.38	0	N/A	0	N/A	
5B	28-Sep-20	1.6	RB	0.00	0	N/A	N/A	N/A	
5B	28-Sep-20	1.6	1	0-0.1	0.02	N/A	N/A	N/A	Undercut bank/too shallow
5B	28-Sep-20	1.6	2	0.10	0.06	0.24	0.06	0.25	
5B	28-Sep-20	1.6	3	0.19	0.06	0.32	0.06	0.33	
5B	28-Sep-20	1.6	4	0.28	0.06	0.43	0.06	0.45	
5B	28-Sep-20	1.6	5	0.37	0.06	0.31	0.06	0.33	
5B	28-Sep-20	1.6	6	0.46	0.05	0.27	0.05	0.26	
5B	28-Sep-20	1.6	7	0.55	0.05	0.17	0.05	0.15	
5B	28-Sep-20	1.6	8	0.64	0.05	0.27	0.05	0.28	
5B	28-Sep-20	1.6	9	0.73	0.05	0.41	0.05	0.45	
5B	28-Sep-20	1.6	10	0.82	0.05	0.36	0.05	0.35	
5B	28-Sep-20	1.6	11	0.91	0.05	0.2	0.05	0.21	
5B	28-Sep-20	1.6	12	0.91-1.6	0.01	N/A	N/A	N/A	Too shallow to sample
5B	28-Sep-20	1.6	LB	1.6	0	N/A	0	N/A	
5B	Oct 23, 2020	2.6	RB	0.00	0	N/A	N/A	N/A	
5B	Oct 23, 2020	2.6	1	0-0.30	0.35	N/A	N/A	N/A	Undercut
5B	Oct 23, 2020	2.6	2	0.40	0.39	0.11	0.39	0.11	
5B	Oct 23, 2020	2.6	3	0.60	0.41	0.14	0.41	0.15	
5B	Oct 23, 2020	2.6	4	0.80	0.41	0.14	0.42	0.13	
5B	Oct 23, 2020	2.6	5	1.00	0.40	0.1	0.4	0.11	
5B	Oct 23, 2020	2.6	6	1.20	0.38	0.1	0.38	0.1	
5B	Oct 23, 2020	2.6	7	1.40	0.36	0.09	0.36	0.07	
5B	Oct 23, 2020	2.6	8	1.60	0.35	0.05	0.35	0.06	
5B	Oct 23, 2020	2.6	9	1.80	0.34	0.07	0.35	0.07	
5B	Oct 23, 2020	2.6	10	2.00	0.25	0.05	0.26	0.03	
5B	Oct 23, 2020	2.6	11	2.20	0.18	0	0.18	0.01	
5B	Oct 23, 2020	2.6	12	2.40	0.20	0.03	0.2	-0.01	
5B	Oct 23, 2020	2.6	LB	2.6					

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
5C	27-Jul-20	1.65	RB	0.00	0.00	N/A	0.00	N/A	
5C	27-Jul-20	1.65	1	0-0.55	0.00	N/A	0.00	N/A	cannot sample undercut bank
5C	27-Jul-20	1.65	2	0.60	0.10	0.05	0.10	0.05	
5C	27-Jul-20	1.65	3	0.69	0.12	0.06	0.12	0.06	
5C	27-Jul-20	1.65	4	0.78	0.14	0.05	0.14	0.06	
5C	27-Jul-20	1.65	5	0.87	0.16	0.08	0.16	0.08	
5C	27-Jul-20	1.65	6	0.96	0.15	0.06	0.15	0.07	
5C	27-Jul-20	1.65	7	1.05	0.12	0.06	0.12	0.07	
5C	27-Jul-20	1.65	8	1.14	0.10	0.09	0.10	0.08	
5C	27-Jul-20	1.65	9	1.23	0.08	0.04	0.08	0.04	
5C	27-Jul-20	1.65	10	1.32	0.06	0.05	0.07	0.05	
5C	27-Jul-20	1.65	11	1.41	0.05	0.03	0.04	0.01	
5C	27-Jul-20	1.65	LB	1.65	0	N/A	0	N/A	
5C	17-Aug-20	1.7	RB	0.00	0.00	N/A	N/A	N/A	
5C	17-Aug-20	1.7	1	0-0.6	0.08	N/A	N/A	N/A	undercut bank could not sample
5C	17-Aug-20	1.7	2	0.60	0.10	0.05	0.10	0.05	
5C	17-Aug-20	1.7	3	0.68	0.10	0.05	0.10	0.05	
5C	17-Aug-20	1.7	4	0.76	0.12	0.05	0.12	0.05	
5C	17-Aug-20	1.7	5	0.84	0.12	0.04	0.13	0.04	
5C	17-Aug-20	1.7	6	0.92	0.14	0.07	0.14	0.07	
5C	17-Aug-20	1.7	7	1.00	0.16	0.07	0.16	0.08	
5C	17-Aug-20	1.7	8	1.08	0.14	0.07	0.14	0.07	
5C	17-Aug-20	1.7	9	1.16	0.12	0.07	0.12	0.07	
5C	17-Aug-20	1.7	10	1.24	0.1	0.06	0.1	0.06	
5C	17-Aug-20	1.7	11	1.32	0.08	0.05	0.08	0.04	
5C	17-Aug-20	1.7	12	1.40	0.06	0.04	0.06	0.03	
5C	17-Aug-20	1.7	13	1.40-1.7	0.03	N/A	N/A	N/A	too shallow to sample
5C	17-Aug-20	1.7	LB	1.7	0	N/A	N/A	N/A	
5C	28-Sep-20	1.66	RB	0.00	0.00	N/A	N/A	N/A	
5C	28-Sep-20	1.66	1	0-0.6	0.08	N/A	N/A	N/A	undercut bank could not sample
5C	28-Sep-20	1.66	2	0.60	0.06	-0.01	0.06	-0.01	
5C	28-Sep-20	1.66	3	0.70	0.07	0.04	0.07	0.04	
5C	28-Sep-20	1.66	4	0.80	0.08	0.13	0.08	0.12	
5C	28-Sep-20	1.66	5	0.90	0.07	0.18	0.07	0.16	
5C	28-Sep-20	1.66	6	1.00	0.08	0.15	0.08	0.14	
5C	28-Sep-20	1.66	7	1.10	0.07	0.20	0.07	0.17	
5C	28-Sep-20	1.66	8	1.20	0.06	0.23	0.06	0.22	
5C	28-Sep-20	1.66	9	1.30	0.06	0.23	0.06	0.21	
5C	28-Sep-20	1.66	10	1.40	0.06	0.15	0.06	0.18	
5C	28-Sep-20	1.66	11	1.50	0.05	0.09	0.05	0.1	
5C	28-Sep-20	1.66	12	1.54-1.66	0.03	N/A	N/A	N/A	too shallow to sample
5C	28-Sep-20	1.66	LB	1.66	0	N/A	N/A	N/A	
5C	Oct 23, 2020	3.42	LB	0.00	0.00	N/A	N/A	N/A	Water much high than usual
5C	Oct 23, 2020	3.42	1	0.17	0.10	0.00	0.10	0.00	
5C	Oct 23, 2020	3.42	2	0.34	0.18	-0.02	0.18	-0.02	
5C	Oct 23, 2020	3.42	3	0.51	0.28	0.06	0.30	0.03	
5C	Oct 23, 2020	3.42	4	0.68	0.29	0.11	0.29	0.12	
5C	Oct 23, 2020	3.42	5	0.85	0.33	0.14	0.33	0.16	
5C	Oct 23, 2020	3.42	6	1.02	0.37	0.16	0.37	0.16	
5C	Oct 23, 2020	3.42	7	1.19	0.37	0?16	0.38	0.16	
5C	Oct 23, 2020	3.42	8	1.36	0.38	0.18	0.38	0.16	
5C	Oct 23, 2020	3.42	9	1.53	0.38	0.17	0.38	0.17	
5C	Oct 23, 2020	3.42	10	1.70	0.38	0.13	0.38	0.14	
5C	Oct 23, 2020	3.42	11	1.87	0.38	0.02	0.38	0.02	
5C	Oct 23, 2020	3.42	12	1.90-2.42	0.35	N/A	N/A	N/A	Undercut
5C	Oct 23, 2020	3.42	RB	2.42	0	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
5D	27-Jul-20	2.3	RB	0.00	N/A	N/A	N/A	N/A	
5D	27-Jul-20	2.3	1	0-0.2	0.01	N/A	N/A	N/A	Undercut bank, can't sample
5D	27-Jul-20	2.3	2	0.25	0.04	0.18	0.04	0.27	
5D	27-Jul-20	2.3	3	0.30	0.04	0.52	0.04	0.53	
5D	27-Jul-20	2.3	4	0.35	0.04	0.32	0.04	0.23	
5D	27-Jul-20	2.3	5	0.40	0.04	0.25	0.04	0.28	
5D	27-Jul-20	2.3	6	0.45	0.03	0.34	0.03	0.28	
5D	27-Jul-20	2.3	7	0.50	0.03	0.30	0.03	0.30	
5D	27-Jul-20	2.3	8	0.55	0.04	0.18	0.04	0.26	
5D	27-Jul-20	2.3	9	0.60	0.04	0.23	0.04	0.37	
5D	27-Jul-20	2.3	10	0.7	0.03	0.17	0.03	0.27	
5D	27-Jul-20	2.3	11	1.6-2.3	0.01	N/A	N/A	N/A	Too shallow to sample
5D	27-Jul-20	2.3	LB	2.3	0	N/A	N/A	N/A	
5D	17-Aug-20	2.28	RB	0.00	N/A	N/A	N/A	N/A	
5D	17-Aug-20	2.28	1	0-0.15	0.02	N/A	N/A	N/A	Too shallow to sample
5D	17-Aug-20	2.28	2	0.15	0.05	0.14	0.05	0..09	
5D	17-Aug-20	2.28	3	0.27	0.04	0.17	0.04	0.16	
5D	17-Aug-20	2.28	4	0.39	0.04	0.20	0.04	0.23	
5D	17-Aug-20	2.28	5	0.51	0.04	0.06	0.04	0.05	
5D	17-Aug-20	2.28	6	0.63	0.05	0.10	0.05	0.10	
5D	17-Aug-20	2.28	7	0.75	0.04	0.16	0.04	0.13	
5D	17-Aug-20	2.28	8	0.87	0.05	0.29	0.05	0.23	
5D	17-Aug-20	2.28	9	0.99	0.05	0.13	0.05	0.09	
5D	17-Aug-20	2.28	10	1.1	0.04	0.1	0.04	0.18	
5D	17-Aug-20	2.28	11	1.1-2.28	0.08	N/A	N/A	N/A	Upstream gravel bar creating zero flow
5D	17-Aug-20	2.28	LB	2.28	0	N/A	N/A	N/A	
5D	28-Sep-20	1.65	RB	0.00	N/A	N/A	N/A	N/A	
5D	28-Sep-20	1.65	1	0-0.20	0.03	N/A	N/A	N/A	Too shallow to sample
5D	28-Sep-20	1.65	2	0.20	0.04	0.32	0.04	0.32	
5D	28-Sep-20	1.65	3	0.34	0.04	0.32	0.04	0.28	
5D	28-Sep-20	1.65	4	0.48	0.04	0.22	0.04	0.21	
5D	28-Sep-20	1.65	5	0.62	0.05	0.19	0.05	0.22	
5D	28-Sep-20	1.65	6	0.76	0.04	0.25	0.04	0.20	
5D	28-Sep-20	1.65	7	0.90	0.06	0.13	0.06	0.11	
5D	28-Sep-20	1.65	8	1.04	0.06	0.21	0.06	0.20	
5D	28-Sep-20	1.65	9	1.18	0.06	0.12	0.06	0.16	
5D	28-Sep-20	1.65	10	1.32	0.06	0.11	0.06	0.13	
5D	28-Sep-20	1.65	11	1.46	0.04	0.05	0.05	0.03	
5D	28-Sep-20	1.65	12	1.5-1.65	0.03	N/A	N/A	N/A	Too shallow to sample
5D	28-Sep-20	1.65	LB	1.65	0	N/A	N/A	N/A	
5D	23-Oct-2020	3.2	RB	0.00	N/A	N/A	N/A	N/A	
5D	23-Oct-2020	3.2	1	0-0.4	0.20	N/A	N/A	N/A	Undercut, no sample
5D	23-Oct-2020	3.2	2	0.40	0.38	0.07	0.38	0.10	
5D	23-Oct-2020	3.2	3	0.62	0.40	0.14	0.40	0.15	
5D	23-Oct-2020	3.2	4	0.84	0.40	0.12	0.40	0.12	
5D	23-Oct-2020	3.2	5	1.06	0.41	0.11	0.41	0.11	
5D	23-Oct-2020	3.2	6	1.28	0.43	0.08	0.41	0.08	
5D	23-Oct-2020	3.2	7	1.50	0.40	0.05	0.40	0.05	
5D	23-Oct-2020	3.2	8	1.72	0.38	0.07	0.38	0.05	
5D	23-Oct-2020	3.2	9	1.94	0.38	0.05	0.38	0.04	
5D	23-Oct-2020	3.2	10	2.16	0.4	,0.02	0.4	0.02	
5D	23-Oct-2020	3.2	11	2.38	0.35	-0.02	0.35	-0.02	
5D	23-Oct-2020	3.2	12	2.6-3.2	0.20	N/A	N/A	N/A	Undercut, no sample
5D	23-Oct-2020	3.2	LB	3.2	0	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
6A	28-Jul-20	3.3	RB	0.00	0.00	N/A	N/A	N/A	
6A	28-Jul-20	3.3	-	0-0.40	0.01	N/A	N/A	N/A	too shallow to sample
6A	28-Jul-20	3.3	1	0.40	0.07	-0.01	0.07	-0.03	
6A	28-Jul-20	3.3	2	0.67	0.10	0.01	0.10	0.01	
6A	28-Jul-20	3.3	3	0.94	0.14	0.01	0.14	0.01	
6A	28-Jul-20	3.3	4	1.21	0.20	0.01	0.20	0.01	
6A	28-Jul-20	3.3	5	1.48	0.22	0.02	0.22	0.02	
6A	28-Jul-20	3.3	6	1.75	0.20	0.02	0.20	0.02	
6A	28-Jul-20	3.3	7	2.02	0.22	0.02	0.22	0.02	
6A	28-Jul-20	3.3	8	2.29	0.20	0.03	0.20	0.02	
6A	28-Jul-20	3.3	9	2.56	0.18	0.02	0.18	0.02	
6A	28-Jul-20	3.3	10	2.83	0.15	0.01	0.15	0.02	
6A	28-Jul-20	3.3	-	3.2-3.3	0.01	N/A	N/A	N/A	too shallow to sample
6A	28-Jul-20	3.3	LB	3.3	0.00	N/A	N/A	N/A	
6A	20-Aug-20	3.22	RB	0.00	0.00	N/A	N/A	N/A	
6A	20-Aug-20	3.22	1	0-0.35	0.03	N/A	N/A	N/A	too shallow to sample
6A	20-Aug-20	3.22	2	0.35	0.06	0.00	0.07	0.00	
6A	20-Aug-20	3.22	3	0.65	0.12	0.01	0.12	0.01	
6A	20-Aug-20	3.22	4	0.95	0.18	0.01	0.18	0.01	
6A	20-Aug-20	3.22	5	1.25	0.20	0.02	0.20	0.01	
6A	20-Aug-20	3.22	6	1.55	0.23	0.02	0.23	0.02	
6A	20-Aug-20	3.22	7	1.85	0.23	0.02	0.23	0.02	
6A	20-Aug-20	3.22	8	2.15	0.22	0.03	0.22	0.02	
6A	20-Aug-20	3.22	9	2.45	0.20	0.03	0.30	0.02	
6A	20-Aug-20	3.22	10	2.75	0.18	0.03	0.18	0.02	
6A	20-Aug-20	3.22	11	3.05	0.06	0	0.06	0	
6A	20-Aug-20	3.22	12	3.1-3.22	0.03	N/A	N/A	N/A	too shallow to sample
6A	20-Aug-20	3.22	LB	3.22	0.00	N/A	N/A	N/A	
6A	29-Sep-20	2.7	RB	0.00	0.00	N/A	N/A	N/A	
6A	29-Sep-20	2.7	1	0-0.55	0.03	N/A	N/A	N/A	too shallow to sample
6A	29-Sep-20	2.7	2	0.55	0.08	0.02	0.08	0.02	
6A	29-Sep-20	2.7	3	0.72	0.07	0.03	0.07	0.03	
6A	29-Sep-20	2.7	4	0.89	0.08	0.05	0.08	0.03	
6A	29-Sep-20	2.7	5	1.06	0.10	0.07	0.10	0.06	
6A	29-Sep-20	2.7	6	1.23	0.10	0.10	0.10	0.08	
6A	29-Sep-20	2.7	7	1.40	0.13	0.06	0.13	0.07	
6A	29-Sep-20	2.7	8	1.57	0.13	0.09	0.13	0.07	
6A	29-Sep-20	2.7	9	1.74	0.15	0.09	0.15	0.09	
6A	29-Sep-20	2.7	10	1.91	0.16	0.07	0.16	0.08	
6A	29-Sep-20	2.7	11	2.08	0.16	0.07	0.16	0.07	
6A	29-Sep-20	2.7	12	2.3-2.7	0.03	N/A	N/A	N/A	too shallow to sample
6A	29-Sep-20	2.7	LB	2.7	0.00	N/A	N/A	N/A	
6A	22-Oct-2020	2.55	RB	0.00	0.00	N/A	N/A	N/A	
6A	22-Oct-2020	2.55	1	0-0.45	0.03	N/A	N/A	N/A	too shallow to sample
6A	22-Oct-2020	2.55	2	0.45	0.06	0.00	0.06	0.00	
6A	22-Oct-2020	2.55	3	0.63	0.08	0.03	0.08	0.03	
6A	22-Oct-2020	2.55	4	0.81	0.06	0.02	0.06	0.03	
6A	22-Oct-2020	2.55	5	0.99	0.08	0.02	0.08	0.02	
6A	22-Oct-2020	2.55	6	1.17	0.08	0.04	0.08	0.05	
6A	22-Oct-2020	2.55	7	1.35	0.12	0.02	0.12	0.02	
6A	22-Oct-2020	2.55	8	1.53	0.12	0.04	0.12	0.04	
6A	22-Oct-2020	2.55	9	1.71	0.14	0.03	0.14	0.04	
6A	22-Oct-2020	2.55	10	1.89	0.12	0.04	0.12	0.04	
6A	22-Oct-2020	2.55	11	2.07	0.05	0.04	0.05	0.05	
6A	22-Oct-2020	2.55	12	2.1-2.55	0.03	N/A	N/A	N/A	too shallow to sample
6A	22-Oct-2020	2.55	LB	2.55	0.00	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
6B	28-Jul-20	3.8	LB	0.00	0.00	N/A	0.00	N/A	
6B	28-Jul-20	3.8	1	0-0.25	0.02	N/A	0.02	N/A	too shallow to sample.
6B	28-Jul-20	3.8	2	0.25	0.12	0.02	0.12	0.01	
6B	28-Jul-20	3.8	3	0.42	0.09	0.06	0.09	0.08	
6B	28-Jul-20	3.8	4	0.59	0.08	0.00	0.08	0.00	
6B	28-Jul-20	3.8	5	0.76	0.05	0.00	0.05	-0.01	
6B	28-Jul-20	3.8	6	0.93	0.09	-0.01	0.09	-0.01	
6B	28-Jul-20	3.8	7	1.10	0.07	-0.02	0.07	-0.01	
6B	28-Jul-20	3.8	8	1.27	0.08	0.00	0.08	0.01	
6B	28-Jul-20	3.8	9	1.44	0.08	0.00	0.08	0.00	
6B	28-Jul-20	3.8	10	1.61	0.02	0.1	0.02	0.1	
6B	28-Jul-20	3.8	11	1.78	0.08	0.06	0.08	0.06	
6B	28-Jul-20	3.8	12	1.78-3.8	0.015	N/A	0.015	N/A	too shallow to sample
6B	28-Jul-20	3.8	LB	3.8	0.00	N/A	0.00	N/A	
6B	20-Aug-20	3.8	RB	0.00	0.00	N/A	0.00	N/A	
6B	20-Aug-20	3.8	1	0-2.05	0.02	N/A	NA	N/A	too shallow to sample.
6B	20-Aug-20	3.8	2	2.05	0.07	0.05	0.07	0.06	
6B	20-Aug-20	3.8	3	2.21	0.04	0.09	0.04	0.09	
6B	20-Aug-20	3.8	4	2.37	0.08	0.05	0.08	0.03	
6B	20-Aug-20	3.8	5	2.53	0.08	0.02	0.08	0.03	
6B	20-Aug-20	3.8	6	2.69	0.08	0.01	0.08	0.02	
6B	20-Aug-20	3.8	7	2.85	0.08	0.00	0.08	0.02	
6B	20-Aug-20	3.8	8	3.01	0.11	0.04	0.12	0.05	
6B	20-Aug-20	3.8	9	3.17	0.15	0.10	0.09	0.12	
6B	20-Aug-20	3.8	10	3.33	0.1	0.06	0.1	0.05	
6B	20-Aug-20	3.8	11	3.49	0.12	0.21	0.12	0.16	
6B	20-Aug-20	3.8	12	3.55-3.8	0.03	N/A	NA	N/A	too shallow to sample
6B	20-Aug-20	3.8	LB	3.8	0.00	N/A	0.00	N/A	
6B	29-Sep-20	3.1	RB	0.00	0.00	N/A	0.00	N/A	
6B	29-Sep-20	3.1	1	0-1.35	0.04	N/A	NA	N/A	too shallow to sample.
6B	29-Sep-20	3.1	2	1.35	0.08	-0.02	0.08	-0.03	
6B	29-Sep-20	3.1	3	1.51	0.06	-0.01	0.06	-0.01	
6B	29-Sep-20	3.1	4	1.67	0.06	-0.01	0.06	-0.01	
6B	29-Sep-20	3.1	5	1.83	0.10	0.03	0.10	0.30	
6B	29-Sep-20	3.1	6	1.99	0.10	0.01	0.10	0.02	
6B	29-Sep-20	3.1	7	2.15	0.13	0.12	0.14	0.15	
6B	29-Sep-20	3.1	8	2.31	0.10	0.16	0.10	0.24	
6B	29-Sep-20	3.1	9	2.47	0.09	0.32	0.09	0.28	
6B	29-Sep-20	3.1	10	2.63	0.12	0.2	0.12	0.17	
6B	29-Sep-20	3.1	11	2.79	0.06	0.15	0.06	0.12	
6B	29-Sep-20	3.1	12	2.85-3.1	0.03	N/A	NA	N/A	too shallow to sample
6B	29-Sep-20	3.1	LB	3.1	0.00	N/A	0.00	N/A	
6B	22-Oct-2020	3.4	RB	0.00	0.00	N/A	0.00	N/A	
6B	22-Oct-2020	3.4	1	0-2.2	0.04	N/A	NA	N/A	too shallow to sample.
6B	22-Oct-2020	3.4	2	2.20	0.04	0.08	0.04	0.07	
6B	22-Oct-2020	3.4	3	2.30	0.06	0.06	0.06	0.07	
6B	22-Oct-2020	3.4	4	2.40	0.04	0.08	0.04	0.07	
6B	22-Oct-2020	3.4	5	2.50	0.08	-0.02	0.08	-0.02	Behind boulder
6B	22-Oct-2020	3.4	6	2.60	0.08	0.16	0.07	0.16	
6B	22-Oct-2020	3.4	7	2.70	0.07	0.20	0.05	0.22	
6B	22-Oct-2020	3.4	8	2.80	0.05	0.12	0.06	0.12	
6B	22-Oct-2020	3.4	9	2.90	0.06	0.01	0.06	0.00	
6B	22-Oct-2020	3.4	10	3.00	0.06	0.14	0.06	0.14	
6B	22-Oct-2020	3.4	11	3.10	0.04	0.07	0.04	0.05	
6B	22-Oct-2020	3.4	12	3.15-4	0.03	N/A	NA	N/A	too shallow to sample
6B	22-Oct-2020	3.4	LB	3.4	0.00	N/A	0.00	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
D-02 Pool	20-Jul-20	1.8	RB	0.00	0.00	N/A	0.00	N/A	
D-02 Pool	20-Jul-20	1.8	1	0.08	0.15	-0.04	0.15	-0.01	
D-02 Pool	20-Jul-20	1.8	2	0.24	0.16	0.02	0.16	0.05	
D-02 Pool	20-Jul-20	1.8	3	0.40	0.13	0.02	0.13	0.01	
D-02 Pool	20-Jul-20	1.8	4	0.56	0.16	0.10	0.16	0.90	
D-02 Pool	20-Jul-20	1.8	5	0.72	0.13	0.07	0.13	0.09	
D-02 Pool	20-Jul-20	1.8	6	0.88	0.13	0.06	0.13	0.05	
D-02 Pool	20-Jul-20	1.8	7	1.04	0.14	0.02	0.14	0.02	
D-02 Pool	20-Jul-20	1.8	8	1.20	0.13	0.01	0.13	0.00	
D-02 Pool	20-Jul-20	1.8	9	1.36	0.13	0.00	0.13	0.00	
D-02 Pool	20-Jul-20	1.8	10	1.52	0.12	0.00	0.12	0.00	
D-02 Pool	20-Jul-20	1.8	LB	1.8	0.00	N/A	0.00	N/A	
D-02 Pool	13-Aug-20	2.05	RB	0.00	0.00	N/A	0.00	N/A	
D-02 Pool	13-Aug-20	2.05	1	0.09	0.11	0.00	0.11	0.00	
D-02 Pool	13-Aug-20	2.05	2	0.27	0.34	-0.01	0.34	-0.01	
D-02 Pool	13-Aug-20	2.05	3	0.45	0.36	0.00	0.35	0.00	
D-02 Pool	13-Aug-20	2.05	4	0.63	0.37	0.00	0.37	0.00	
D-02 Pool	13-Aug-20	2.05	5	0.81	0.38	0.01	0.39	0.00	
D-02 Pool	13-Aug-20	2.05	6	0.99	0.39	0.01	0.40	0.01	
D-02 Pool	13-Aug-20	2.05	7	1.17	0.39	0.06	0.39	0.02	
D-02 Pool	13-Aug-20	2.05	8	1.35	0.32	0.09	0.33	0.10	
D-02 Pool	13-Aug-20	2.05	9	1.53	0.36	0.01	0.35	0.00	
D-02 Pool	13-Aug-20	2.05	10	1.71	0.26	0.00	0.27	0.00	
D-02 Pool	13-Aug-20	2.05	LB	2.05	0.00	NA	NA	NA	
D-02 Pool	21-Sep-20	2.2	RB	0.00	0.00	N/A	0.00	N/A	
D-02 Pool	21-Sep-20	2.2	1	0.19	0.25	-0.01	0.23	-0.01	
D-02 Pool	21-Sep-20	2.2	2	0.38	0.31	-0.01	0.31	-0.01	
D-02 Pool	21-Sep-20	2.2	3	0.57	0.34	-0.01	0.34	0.00	
D-02 Pool	21-Sep-20	2.2	4	0.76	0.35	0.01	0.36	0.05	
D-02 Pool	21-Sep-20	2.2	5	0.95	0.38	0.07	0.38	0.07	
D-02 Pool	21-Sep-20	2.2	6	1.14	0.36	0.08	0.36	0.08	
D-02 Pool	21-Sep-20	2.2	7	1.33	0.34	0.08	0.34	0.07	
D-02 Pool	21-Sep-20	2.2	8	1.52	0.30	0.02	0.30	0.04	
D-02 Pool	21-Sep-20	2.2	9	1.71	0.26	0.00	0.26	-0.01	
D-02 Pool	21-Sep-20	2.2	10	1.90	0.16	-0.01	0.16	-0.01	
D-02 Pool	21-Sep-20	2.2	11	1.9-2.2	0.04	NA	NA	NA	Undercut could not sample
D-02 Pool	21-Sep-20	2.2	LB	2.2	0.00	NA	NA	NA	
D-02 Pool	19-Oct-2020	1.82	RB	0.00	0.00	N/A	0.00	N/A	
D-02 Pool	19-Oct-2020	1.82	1	0.16	0.24	-0.01	0.24	0.00	
D-02 Pool	19-Oct-2020	1.82	2	0.32	0.32	-0.01	0.32	-0.01	
D-02 Pool	19-Oct-2020	1.82	3	0.48	0.34	-0.01	0.34	-0.01	
D-02 Pool	19-Oct-2020	1.82	4	0.64	0.32	0.02	0.32	0.01	
D-02 Pool	19-Oct-2020	1.82	5	0.80	0.34	0.04	0.35	0.03	
D-02 Pool	19-Oct-2020	1.82	6	0.96	0.38	0.09	0.37	0.09	
D-02 Pool	19-Oct-2020	1.82	7	1.12	0.36	0.21	0.36	0.16	
D-02 Pool	19-Oct-2020	1.82	8	1.28	0.32	0.07	0.32	0.10	
D-02 Pool	19-Oct-2020	1.82	9	1.44	0.32	0.02	0.32	0.00	
D-02 Pool	19-Oct-2020	1.82	10	1.60	0.32	0.04	0.31	0.05	
D-02 Pool	19-Oct-2020	1.82	11	1.76	0.22	0	0.22	0.01	
D-02 Pool	19-Oct-2020	1.82	LB	1.82	0.00	NA	NA	NA	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
D-02 Riffle	20-Jul-20	1.55	RB	0	N/A	0	N/A	0	
D-02 Riffle	20-Jul-20	1.55	1	0.07	0.035	-0.04	0.035	-0.02	
D-02 Riffle	20-Jul-20	1.55	2	0.21	0.05	0.05	0.05	0.03	
D-02 Riffle	20-Jul-20	1.55	3	0.35	0.04	0.2	0.04	0.2	
D-02 Riffle	20-Jul-20	1.55	4	0.49	0.035	0.32	0.035	0.33	
D-02 Riffle	20-Jul-20	1.55	5	0.63	0.04	0.31	0.04	0.32	
D-02 Riffle	20-Jul-20	1.55	6	0.77	0.035	0.41	0.035	0.38	
D-02 Riffle	20-Jul-20	1.55	7	0.91	0.04	0.38	0.04	0.39	
D-02 Riffle	20-Jul-20	1.55	8	1.05	0.04	0.34	0.04	0.26	
D-02 Riffle	20-Jul-20	1.55	9	1.19	0.04	0.25	0.04	0.31	
D-02 Riffle	20-Jul-20	1.55	10	1.33	0.04	0.19	0.04	0.2	
D-02 Riffle	20-Jul-20	1.55	LB	1.55	0	N/A	0	N/A	
D-02 Riffle	13-Aug-20	1.64	RB	0	N/A	0	N/A	0	
D-02 Riffle	13-Aug-20	1.64	1	0.07	0.09	0	0.09	0.01	
D-02 Riffle	13-Aug-20	1.64	2	0.21	0.11	0.04	0.11	0.04	
D-02 Riffle	13-Aug-20	1.64	3	0.35	0.11	0.1	0.11	0.09	
D-02 Riffle	13-Aug-20	1.64	4	0.49	0.1	0.1	0.1	0.13	
D-02 Riffle	13-Aug-20	1.64	5	0.63	0.1	0.24	0.1	0.22	
D-02 Riffle	13-Aug-20	1.64	6	0.77	0.1	0.18	0.1	0.16	
D-02 Riffle	13-Aug-20	1.64	7	0.91	0.11	0.11	0.11	0.09	
D-02 Riffle	13-Aug-20	1.64	8	1.05	0.11	0.17	0.11	0.19	
D-02 Riffle	13-Aug-20	1.64	9	1.19	0.12	0.22	0.12	0.2	
D-02 Riffle	13-Aug-20	1.64	10	1.33	0.1	0.16	0.1	0.2	
D-02 Riffle	13-Aug-20	1.64	LB	1.64	0	NA	NA	NA	
D-02 Riffle	17-Sep-20	1.65	RB	0	0	0	N/A	0	
D-02 Riffle	17-Sep-20	1.65	1	0.16	0.09	0.01	0.1	0.01	
D-02 Riffle	17-Sep-20	1.65	2	0.32	0.1	0.18	0.1	0.17	
D-02 Riffle	17-Sep-20	1.65	3	0.48	0.1	0.28	0.1	0.3	
D-02 Riffle	17-Sep-20	1.65	4	0.64	0.1	0.23	0.1	0.23	
D-02 Riffle	17-Sep-20	1.65	5	0.8	0.1	0.4	0.1	0.41	
D-02 Riffle	17-Sep-20	1.65	6	0.96	0.1	0.31	0.1	0.33	
D-02 Riffle	17-Sep-20	1.65	7	1.12	0.11	0.23	0.11	0.23	
D-02 Riffle	17-Sep-20	1.65	8	1.28	0.1	0.2	0.1	0.2	
D-02 Riffle	17-Sep-20	1.65	9	1.44	0.08	0.13	0.09	0.12	
D-02 Riffle	17-Sep-20	1.65	10	1.6	0.05	0.09	0.05	0.06	
D-02 Riffle	17-Sep-20	1.65	LB	1.65	0	NA	NA	NA	
D-02 Riffle	Oct 19, 2020	1.69	RB	0	0	0	N/A	0	
D-02 Riffle	Oct 19, 2020	1.69	1	0.16	0.105	-0.01	0.105	-0.01	
D-02 Riffle	Oct 19, 2020	1.69	2	0.32	0.11	0.01	0.115	0.01	
D-02 Riffle	Oct 19, 2020	1.69	3	0.48	0.12	0.15	0.12	0.12	
D-02 Riffle	Oct 19, 2020	1.69	4	0.64	0.1	0.31	0.1	0.31	
D-02 Riffle	Oct 19, 2020	1.69	5	0.8	0.1	0.43	0.1	0.38	
D-02 Riffle	Oct 19, 2020	1.69	6	0.96	0.1	0.4	0.1	0.37	
D-02 Riffle	Oct 19, 2020	1.69	7	1.12	0.125	0.22	0.125	0.23	
D-02 Riffle	Oct 19, 2020	1.69	8	1.28	0.12	0.19	0.12	0.16	
D-02 Riffle	Oct 19, 2020	1.69	9	1.44	0.1	0.14	0.1	0.13	
D-02 Riffle	Oct 19, 2020	1.69	10	1.6	0.08	-0.01	0.08	0	
D-02 Riffle	Oct 19, 2020	1.69	LB	1.69	0	NA	NA	NA	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
D-03 Pool	21-Jul-20	3.1	1	0-1.6					Too shallow
D-03 Pool	21-Jul-20	3.1	2	1.6					
D-03 Pool	21-Jul-20	3.1	3	1.75					
D-03 Pool	21-Jul-20	3.1	4	1.9					
D-03 Pool	21-Jul-20	3.1	5	2.05					
D-03 Pool	21-Jul-20	3.1	6	2.2					
D-03 Pool	21-Jul-20	3.1	7	2.35					
D-03 Pool	21-Jul-20	3.1	8	2.5					
D-03 Pool	21-Jul-20	3.1	9	2.65					
D-03 Pool	21-Jul-20	3.1	10	2.8					
D-03 Pool	21-Jul-20	3.1	11	2.95					
D-03 Pool	17-Aug-20	3.25	RB	0	0.00	0.00	NA	NA	
D-03 Pool	17-Aug-20	3.25	1	0-1.55	0.01	NA	NA	NA	Too shallow
D-03 Pool	17-Aug-20	3.25	2	1.55	0.08	0.03	0.08	0.02	
D-03 Pool	17-Aug-20	3.25	3	1.71	0.14	0.01	0.14	0.01	
D-03 Pool	17-Aug-20	3.25	4	1.87	0.14	0.00	0.12	0.00	
D-03 Pool	17-Aug-20	3.25	5	2.03	0.22	0.00	0.22	0.01	
D-03 Pool	17-Aug-20	3.25	6	2.19	0.20	0.00	0.20	0.00	
D-03 Pool	17-Aug-20	3.25	7	2.35	0.17	0.00	0.20	-0.01	
D-03 Pool	17-Aug-20	3.25	8	2.51	0.21	-0.01	0.21	-0.01	
D-03 Pool	17-Aug-20	3.25	9	2.67	0.20	0.00	0.20	0.00	
D-03 Pool	17-Aug-20	3.25	10	2.83	0.18	0	0.18	-0.01	
D-03 Pool	17-Aug-20	3.25	LB	2.83-3.25	0.1	NA	NA	NA	Undercut, could not sample
D-03 Pool	21-Sep-20	3.15	RB	0	0.00	NA	NA	NA	
D-03 Pool	21-Sep-20	3.15	1	0-0.6	0.03	NA	NA	NA	Too shallow to sample
D-03 Pool	21-Sep-20	3.15	2	0.6	0.06	0.02	0.06	0.02	
D-03 Pool	21-Sep-20	3.15	3	0.86	0.06	0.02	0.06	0.02	
D-03 Pool	21-Sep-20	3.15	4	1.12	0.08	0.01	0.08	0.02	
D-03 Pool	21-Sep-20	3.15	5	1.38	0.10	0.01	0.10	0.02	
D-03 Pool	21-Sep-20	3.15	6	1.64	0.12	0.01	0.12	0.01	
D-03 Pool	21-Sep-20	3.15	7	1.9	0.20	0.00	0.20	0.00	
D-03 Pool	21-Sep-20	3.15	8	2.16	0.24	0.01	0.24	0.10	
D-03 Pool	21-Sep-20	3.15	9	2.42	0.27	-0.01	0.27	-0.01	
D-03 Pool	21-Sep-20	3.15	10	2.68	0.3	0.01	0.3	0	
D-03 Pool	21-Sep-20	3.15	11	2.94	0.26	0.01	0.25	0	
D-03 Pool	21-Sep-20	3.15	12	3-3.15	0.1	n/a	NA	NA	Undercut could not sample
D-03 Pool	21-Sep-20	3.15	LB	3.15	0	NA	NA	NA	
D-03 Pool	Oct 19,2020	3.25	RB	0	NA	NA	NA	NA	
D-03 Pool	Oct 19,2020	3.25	1	0-1.6	0.02	NA	NA	NA	too shallow to sample
D-03 Pool	Oct 19,2020	3.25	2	1.6	0.10	0.00	0.10	0.01	
D-03 Pool	Oct 19,2020	3.25	3	1.76	0.12	0.00	0.12	0.00	
D-03 Pool	Oct 19,2020	3.25	4	1.92	0.17	0.00	0.18	0.00	
D-03 Pool	Oct 19,2020	3.25	5	2.08	0.24	0.01	0.22	0.00	
D-03 Pool	Oct 19,2020	3.25	6	2.24	0.21	0.00	0.00	0.00	
D-03 Pool	Oct 19,2020	3.25	7	2.4	0.21	0.01	0.21	0.01	
D-03 Pool	Oct 19,2020	3.25	8	2.56	0.28	0.-0101	0.28	-0.01	
D-03 Pool	Oct 19,2020	3.25	9	2.72	0.28	0.01	0.28	0.01	
D-03 Pool	Oct 19,2020	3.25	10	2.88	0.28	0.01	0.28	0.03	
D-03 Pool	Oct 19,2020	3.25	11	3.04	0.26	0.03	0.26	0.02	
D-03 Pool	Oct 19,2020	3.25	12	3.05-3.25	0.06	NA	NA	NA	Undercut, could not sample
D-03 Pool	Oct 19,2020	3.25	LB	3.25	NA	NA	NA	NA	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
D-03 Riffle	21-Jul-20	0.85	RB	0	0	N/A	0	N/A	
D-03 Riffle	21-Jul-20	0.85	1	0-0.55	0	N/A	0	N/A	Too shallow - average depth 0.002
D-03 Riffle	21-Jul-20	0.85	2	0.55	0.025	0.01	0.025	0.01	
D-03 Riffle	21-Jul-20	0.85	3	0.65	0.025	0.13	0.025	0.17	
D-03 Riffle	21-Jul-20	0.85	4	0.75	0.02	0.11	0.02	0.08	
D-03 Riffle	17-Aug-20	0.92	RB	0	0	N/A	0	N/A	
D-03 Riffle	17-Aug-20	0.92	1	0-0.45	0.02	N/A	N/A	N/A	Too shallow to sample
D-03 Riffle	17-Aug-20	0.92	2	0.45	0.05	0.16	0.05	0.14	
D-03 Riffle	17-Aug-20	0.92	3	0.5	0.05	0.16	0.05	0.15	
D-03 Riffle	17-Aug-20	0.92	4	0.55	0.06	0.09	0.06	0.09	
D-03 Riffle	17-Aug-20	0.92	5	0.6	0.06	0.1	0.06	0.07	
D-03 Riffle	17-Aug-20	0.92	6	0.65	0.06	0.01	0.06	0.01	
D-03 Riffle	17-Aug-20	0.92	7	0.7	0.06	0	0.06	0	
D-03 Riffle	17-Aug-20	0.92	8	0.75	0.06	-0.01	0.06	0	
D-03 Riffle	17-Aug-20	0.92	9	0.75-0.92	0.02	N/A	N/A	N/A	Too shallow to sample
D-03 Riffle	21-Sep-20	0.85	RB	0	0	N/A	0	N/A	
D-03 Riffle	21-Sep-20	0.85	1	0-0.15	0.03	N/A	N/A	N/A	too shallow to sample
D-03 Riffle	21-Sep-20	0.85	2	0.15	0.04	0	0.04	-0.04	
D-03 Riffle	21-Sep-20	0.85	3	0.21	0.05	-0.01	0.05	-0.01	
D-03 Riffle	21-Sep-20	0.85	4	0.27	0.05	0	0.05	-0.01	
D-03 Riffle	21-Sep-20	0.85	5	0.33	0.05	0	0.05	-0.02	
D-03 Riffle	21-Sep-20	0.85	6	0.39	0.05	-0.01	0.05	-0.03	
D-03 Riffle	21-Sep-20	0.85	7	0.45	0.04	0.05	0..04	0.04	
D-03 Riffle	21-Sep-20	0.85	8	0.51	0.04	0.07	0.04	0.04	
D-03 Riffle	21-Sep-20	0.85	9	0.57	0.04	0.12	0.04	0.15	
D-03 Riffle	21-Sep-20	0.85	10	0.63	0.04	0.08	0.04	0.05	
D-03 Riffle	21-Sep-20	0.85	11	0.69	0.04	0.14	0.04	0.13	
D-03 Riffle	21-Sep-20	0.85	12	0.75	0.04	0.12	0.04	0.15	
D-03 Riffle	21-Sep-20	0.85	LB	0.85	0	NA	NA	NA	
D-03 Riffle	Oct 19, 2020	1.1	Rb	0	0	N/A	N/A	N/A	
D-03 Riffle	Oct 19, 2020	1.1	1	0-0.45	0.02	N/A	N/A	N/A	Too shallow to sample
D-03 Riffle	Oct 19, 2020	1.1	2	0.45	0.04	0.08	0.04	0.05	
D-03 Riffle	Oct 19, 2020	1.1	3	0.5	0.06	0.1	0.1	0.06	
D-03 Riffle	Oct 19, 2020	1.1	4	0.55	0.01	0.06	0.09	0.06	
D-03 Riffle	Oct 19, 2020	1.1	5	0.6	0..06	0.1	0.06	0.1	
D-03 Riffle	Oct 19, 2020	1.1	6	0.65	0.07	0.07	0.07	0.07	
D-03 Riffle	Oct 19, 2020	1.1	7	0.7	0.08	0.03	0.08	0.03	
D-03 Riffle	Oct 19, 2020	1.1	8	0.75	0.08	0.04	0.08	0.04	
D-03 Riffle	Oct 19, 2020	1.1	9	0.8	0.08	0.03	0.08	0.04	
D-03 Riffle	Oct 19, 2020	1.1	10	0.85-1.1	0.03	N/A	N/A	N/A	Top shallow to sample

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
D-04 Riffle	21-Jul-20	1.1	RB	0.00	0.00	-	-	-	
D-04 Riffle	21-Jul-20	1.1	2	0.10	0.02	0.04	0.02	0.04	
D-04 Riffle	21-Jul-20	1.1	3	0.15	0.02	0.08	0.02	0.10	
D-04 Riffle	21-Jul-20	1.1	4	0.20	0.02	0.07	0.02	0.07	
D-04 Riffle	21-Jul-20	1.1	5	0.25	0.02	0.09	0.02	0.06	
D-04 Riffle	21-Jul-20	1.1	6	0.30	0.02	0.05	0.02	0.05	
D-04 Riffle	21-Jul-20	1.1	7	0.35	0.02	0.05	0.02	0.04	
D-04 Riffle	21-Jul-20	1.1	8	0.40	0.03	0.04	0.03	0.02	
D-04 Riffle	21-Jul-20	1.1	9	0.45	0.03	0.01	0.03	0.02	
D-04 Riffle	21-Jul-20	1.1	10	0.50	0.02	0.02	0.02	0.01	
D-04 Riffle	21-Jul-20	1.1	11	0.55	0.02	0.03	0.02	0.02	
D-04 Riffle	21-Jul-20	1.1	12	0.55-1.1	0.005	-	-	-	Too shallow to sample
D-04 Riffle	21-Jul-20	1.1	13	1.1	0	-	-	-	
D-04 Riffle	17-Aug-20	No data							Active wasps nest at sampling site
D-04 Riffle	21-Sep-20	1.3	RB	0.00	0.00	NA	NA	NA	
D-04 Riffle	21-Sep-20	1.3	1	0-0.3	0.02	n/a	na	n/a	too shallow to sample
D-04 Riffle	21-Sep-20	1.3	2	0.30	0.06	0.01	0.06	0.02	
D-04 Riffle	21-Sep-20	1.3	3	0.36	0.05	0.03	0.05	0.03	
D-04 Riffle	21-Sep-20	1.3	4	0.42	0.05	0.04	0.05	0.04	
D-04 Riffle	21-Sep-20	1.3	5	0.48	0.06	0.02	0.06	0.03	
D-04 Riffle	21-Sep-20	1.3	6	0.54	0.06	0.02	0.06	0.02	
D-04 Riffle	21-Sep-20	1.3	7	0.60	0.06	0.0.02	0.06	0.03	
D-04 Riffle	21-Sep-20	1.3	8	0.66	0.06	0.01	0.06	0.01	
D-04 Riffle	21-Sep-20	1.3	9	0.72	0.06	0.04	0.06	0.04	
D-04 Riffle	21-Sep-20	1.3	10	0.78	0.06	0.03	0.06	0.04	
D-04 Riffle	21-Sep-20	1.3	11	0.84	0.06	0.04	0.06	0.04	
D-04 Riffle	21-Sep-20	1.3	12	0.90	0.06	0.04	0.06	0.05	
D-04 Riffle	21-Sep-20	1.3	13	1.1-1.3	0.03	NA	NA	NA	too shallow to sample
D-04 Riffle	21-Sep-20	1.3	LB	1.30	0.00	NA	NA	NA	
D-04 Riffle	19-Oct-2020	1.8	RB	0.00	0.00	NA	NA	NA	
D-04 Riffle	19-Oct-2020	1.8	1	0-0.2	0.03	NA	NA	NA	too shallow to sample
D-04 Riffle	19-Oct-2020	1.8	2	0.20	0.05	0.04	0.06	0.03	
D-04 Riffle	19-Oct-2020	1.8	3	0.29	0.04	0.04	0.06	0.03	
D-04 Riffle	19-Oct-2020	1.8	4	0.38	0.06	0.30	0.06	0.04	
D-04 Riffle	19-Oct-2020	1.8	5	0.47	0.06	0.03	0.06	0.03	
D-04 Riffle	19-Oct-2020	1.8	6	0.56	0.04	0.02	0.04	3.00	
D-04 Riffle	19-Oct-2020	1.8	7	0.65	0.05	0.04	0.05	0.03	
D-04 Riffle	19-Oct-2020	1.8	8	0.74	0..02	0.02	0.04	0.03	
D-04 Riffle	19-Oct-2020	1.8	9	0.83	0.06	0.04	0.06	0.05	
D-04 Riffle	19-Oct-2020	1.8	10	0.92	0.05	0.05	0.06	0.05	
D-04 Riffle	19-Oct-2020	1.8	11	1.01	0.07	0.03	0.07	0.03	
D-04 Riffle	19-Oct-2020	1.8	12	1.05-1.8	0.03	NA	NA	NA	Too shallow to sample
D-04 Riffle	19-Oct-2020	1.8	LB	1.80	0.00	NA	NA	NA	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
D-04 Pool	21-Jul-20	1.4	RB	0	0	-	-	-	
D-04 Pool	21-Jul-20	1.4	2	0.06	0.03	0.01	0.03	0.01	
D-04 Pool	21-Jul-20	1.4	3	0.18	0.03	0.00	0.03	0.02	
D-04 Pool	21-Jul-20	1.4	4	0.30	0.03	0.04	0.03	0.02	
D-04 Pool	21-Jul-20	1.4	5	0.42	0.02	0.04	0.02	0.04	
D-04 Pool	21-Jul-20	1.4	6	0.54	0.02	0.07	0.02	0.07	
D-04 Pool	21-Jul-20	1.4	7	0.66	0.02	0.03	0.02	0.06	
D-04 Pool	21-Jul-20	1.4	8	0.78	0.02	0.07	0.02	0.07	
D-04 Pool	21-Jul-20	1.4	9	0.90	0.02	0.03	0.02	0.06	
D-04 Pool	21-Jul-20	1.4	10	1.02	0.02	0.00	0.02	0.01	
D-04 Pool	21-Jul-20	1.4	11	1.14	0.02	0.02	0.02	-0.01	
D-04 Pool	21-Jul-20	1.4	12	1.26	0.02	-0.02	0.02	0.02	
D-04 Pool	21-Jul-20	1.4	LB	1.4	0	-	-	-	
D-04 Pool	17-Aug-20	No data							active wasps nest at sampling site
D-04 Pool	21-Sep-20	2.7	RB	0	NA	NA	NA	NA	
D-04 Pool	21-Sep-20	2.7	2	0-0.3	0.04	NA	NA	NA	Undercut, could not sample
D-04 Pool	21-Sep-20	2.7	3	0.3	0.06	0	0.06	0.02	
D-04 Pool	21-Sep-20	2.7	4	0.45	0.05	-0.01	0.06	0.01	
D-04 Pool	21-Sep-20	2.7	5	0.6	0.06	0	0.06	0	
D-04 Pool	21-Sep-20	2.7	6	0.75	0.05	0.03	0.05	0.05	
D-04 Pool	21-Sep-20	2.7	7	0.9	0.05	0.03	0.05	0.01	
D-04 Pool	21-Sep-20	2.7	8	1.05	0.05	0.02	0.5	0.04	
D-04 Pool	21-Sep-20	2.7	9	1.2	0.05	0.03	0.05	0.09	
D-04 Pool	21-Sep-20	2.7	10	1.35	0.04	0.06	0.04	0.04	
D-04 Pool	21-Sep-20	2.7	11	1.5	0.04	0.05	0.04	0.03	
D-04 Pool	21-Sep-20	2.7	12	1.65	0.04	0.05	0.04	0.04	
D-04 Pool	21-Sep-20	2.7	13	1.8	0.04	0.01	0.04	0.06	
D-04 Pool	21-Sep-20	2.7	14	1.9-2.7	0.01	NA	NA	NA	Too shallow, wetted side bar
D-04 Pool	21-Sep-20	2.7	LB	NA	NA	NA	NA	NA	
D-04 Pool	Oct 19,2020	1.45	1	0.1	0.06	0.01	0.06	0.01	
D-04 Pool	Oct 19,2020	1.45	2	0.2	0.06	0.03	0.06	0.03	
D-04 Pool	Oct 19,2020	1.45	3	0.3	0.08	0.03	0.08	0.02	
D-04 Pool	Oct 19,2020	1.45	4	0.4	0.07	0.02	0.07	0.03	
D-04 Pool	Oct 19,2020	1.45	5	0.5	0.06	0.03	0.06	0.00.03	
D-04 Pool	Oct 19,2020	1.45	6	0.6	0.06	0.03	0.06	0.03	
D-04 Pool	Oct 19,2020	1.45	7	0.7	0.06	0.03	0.06	0.02	
D-04 Pool	Oct 19,2020	1.45	8	0.8	0.07	0.02	0.07	0.03	
D-04 Pool	Oct 19,2020	1.45	9	0.9	0.06	0.04	0.05	0.03	
D-04 Pool	Oct 19,2020	1.45	10	1	0.06	0.03	0.06	0.03	
D-04 Pool	Oct 19,2020	1.45	11	1.1	0.06	0.03	0.06	0.03	
D-04 Pool	Oct 19,2020	1.45	12	1.2	0.06	0.05	0.06	0.04	
D-04 Pool	Oct 19,2020	1.45	13	1.3	0.06	0.03	0.06	0	
D-04 Pool	Oct 19,2020	1.45	14	1.4	0.03	-0.03	0.03	-0.03	
D-04 Pool	2.7	LB	NA	NA	NA	NA	NA		

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
F-01 Pool	24-Jul-20	4.85	RB	0.00	0.00	N/A	N/A	N/A	
F-01 Pool	24-Jul-20	4.85	1	0.22	0.12	0.00	0.12	0.00	
F-01 Pool	24-Jul-20	4.85	2	0.66	0.18	0.00	0.18	0.00	
F-01 Pool	24-Jul-20	4.85	3	1.10	0.22	0.03	0.22	0.00	
F-01 Pool	24-Jul-20	4.85	4	1.54	0.45	0.00	0.45	0.00	
F-01 Pool	24-Jul-20	4.85	5	1.98	0.49	0.00	0.50	0.00	
F-01 Pool	24-Jul-20	4.85	6	2.42	0.47	0.00	0.48	0.00	
F-01 Pool	24-Jul-20	4.85	7	2.86	0.49	0.00	0.49	0.00	
F-01 Pool	24-Jul-20	4.85	8	3.30	0.48	0.00	0.48	0.00	
F-01 Pool	24-Jul-20	4.85	9	3.74	0.48	-0.01	0.48	0.00	
F-01 Pool	24-Jul-20	4.85	10	4.18	0.37	0.00	0.37	0.00	
F-01 Pool	24-Jul-20	4.85	LB	4.85	0.00	N/A	N/A	N/A	
F-01 Pool	19-Aug-20	4.9	RB	0.00	0.00	N/A	N/A	N/A	
F-01 Pool	19-Aug-20	4.9	1	0.25	0.22	0.00	0.20	0.00	
F-01 Pool	19-Aug-20	4.9	2	0.75	0.42	0.00	0.52	0.00	
F-01 Pool	19-Aug-20	4.9	3	1.25	0.45	0.00	0.42	0.00	
F-01 Pool	19-Aug-20	4.9	4	1.75	0.49	0.00	0.49	0.00	
F-01 Pool	19-Aug-20	4.9	5	2.25	0.52	0.00	0.49	0.00	
F-01 Pool	19-Aug-20	4.9	6	2.75	0.53	0.00	0.52	0.00	
F-01 Pool	19-Aug-20	4.9	7	3.25	0.50	0.00	0.50	0.00	
F-01 Pool	19-Aug-20	4.9	8	3.75	0.45	0.01	0.45	0.00	
F-01 Pool	19-Aug-20	4.9	9	4.25	0.32	0.00	0.32	0.00	
F-01 Pool	19-Aug-20	4.9	10	4.75	0.10	0.00	0.10	0.00	
F-01 Pool	19-Aug-20	4.9	LB	4.90	0.00	N/A	N/A	N/A	
F-01 Pool	29-Sep-20	4.95	RB	0.00	0.00	N/A	N/A	N/A	
F-01 Pool	29-Sep-20	4.95	1	0.49	0.52	0.00	0.52	0.00	
F-01 Pool	29-Sep-20	4.95	2	0.98	0.60	0.00	0.60	0.00	
F-01 Pool	29-Sep-20	4.95	3	1.47	0.62	0.00	0.62	0.00	
F-01 Pool	29-Sep-20	4.95	4	1.96	0.45	-0.01	0.45	0.00	
F-01 Pool	29-Sep-20	4.95	5	2.45	0.55	-0.02	0.56	-0.01	
F-01 Pool	29-Sep-20	4.95	6	2.94	0.56	0.00	0.56	0.00	
F-01 Pool	29-Sep-20	4.95	7	3.43	0.58	0.01	0.58	0.00	
F-01 Pool	29-Sep-20	4.95	8	3.92	0.40	0.00	0.40	0.00	
F-01 Pool	29-Sep-20	4.95	9	4.41	0.48	0.00	0.48	0.00	
F-01 Pool	29-Sep-20	4.95	10	4.90	0.10	-0.02	0.10	-0.01	
F-01 Pool	29-Sep-20	4.95	LB	4.95	0.00	N/A	N/A	N/A	
F-01 Pool	21-Oct-2020	5.75	RB	0.00	0.00	N/A	N/A	N/A	
F-01 Pool	21-Oct-2020	5.75	1	0.57	0.46	0.01	0.45	0.01	
F-01 Pool	21-Oct-2020	5.75	2	1.14	0.80	0.01	0.82	0.01	
F-01 Pool	21-Oct-2020	5.75	3	1.71	0.74	-0.01	0.75	0.00	
F-01 Pool	21-Oct-2020	5.75	4	2.28	0.72	-0.01	0.73	0.00	
F-01 Pool	21-Oct-2020	5.75	5	2.85	0.80	0.00	0.82	0.00	
F-01 Pool	21-Oct-2020	5.75	6	3.42	0.77	0.00	0.78	0.00	
F-01 Pool	21-Oct-2020	5.75	7	3.99	0.70	0.00	0.70	0.00	
F-01 Pool	21-Oct-2020	5.75	8	4.56	0.74	0.00	0.72	0.00	
F-01 Pool	21-Oct-2020	5.75	9	5.13	0.46	0.00	0.48	0.00	
F-01 Pool	21-Oct-2020	5.75	10	5.70	0.18	0.00	0.16	0.00	
F-01 Pool	21-Oct-2020	5.75	LB	5.75	0.00	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
F-01 Riffle	24-Jul-20	2.45	RB	0.00	0.00	N/A	N/A	N/A	
F-01 Riffle	24-Jul-20	2.45	1	0.11	0.02	-0.01	0.02	-0.01	
F-01 Riffle	24-Jul-20	2.45	2	0.33	0.03	0.00	0.03	-0.01	
F-01 Riffle	24-Jul-20	2.45	3	0.55	0.04	0.02	0.04	0.01	
F-01 Riffle	24-Jul-20	2.45	4	0.77	0.04	0.08	0.04	0.08	
F-01 Riffle	24-Jul-20	2.45	5	0.99	0.04	0.03	0.04	0.04	
F-01 Riffle	24-Jul-20	2.45	6	1.21	0.04	0.02	0.04	0.04	
F-01 Riffle	24-Jul-20	2.45	7	1.43	0.06	0.03	0.06	0.03	
F-01 Riffle	24-Jul-20	2.45	8	1.65	0.06	0.03	0.06	0.03	
F-01 Riffle	24-Jul-20	2.45	9	1.87	0.07	0.01	2.09	0.09	
F-01 Riffle	24-Jul-20	2.45	10	2.09	0.07	0	0.07	0.01	
F-01 Riffle	24-Jul-20	2.45	11	2.31	0.03	0.01	0.03	0.03	
F-01 Riffle	24-Jul-20	2.45	LB	2.45	0	N/A	N/A	N/A	
F-01 Riffle	19-Aug-20	2.3	RB	0.00	0.00	N/A	N/A	N/A	
F-01 Riffle	19-Aug-20	2.3	1	0.11	0.06	0.00	0.06	0.00	
F-01 Riffle	19-Aug-20	2.3	2	0.32	0.07	0.00	0.07	0.01	
F-01 Riffle	19-Aug-20	2.3	3	0.54	0.07	0.04	0.07	0.03	
F-01 Riffle	19-Aug-20	2.3	4	0.75	0.08	0.04	0.08	0.03	
F-01 Riffle	19-Aug-20	2.3	5	0.97	0.07	0.04	0.07	0.04	
F-01 Riffle	19-Aug-20	2.3	6	1.18	0.10	0.02	0.10	0.01	
F-01 Riffle	19-Aug-20	2.3	7	1.40	0.12	0.02	0.12	0.02	
F-01 Riffle	19-Aug-20	2.3	8	1.51	0.13	0.01	0.13	0.00	
F-01 Riffle	19-Aug-20	2.3	9	1.62	0.13	0.00	0.13	0.00	
F-01 Riffle	19-Aug-20	2.3	10	1.83	0.12	0.01	0.12	0.01	
F-01 Riffle	19-Aug-20	2.3	11	2.04	0.06	0.02	0.06	0.01	
F-01 Riffle	19-Aug-20	2.3	LB	2.3	0	N/A	N/A	N/A	
F-01 Riffle	29-Sep-20	2.27	RB	0.00	0.00	N/A	N/A	N/A	
F-01 Riffle	29-Sep-20	2.27	1	0.22	0.06	-0.01	0.06	-0.01	
F-01 Riffle	29-Sep-20	2.27	2	0.44	0.08	0.01	0.08	0.00	
F-01 Riffle	29-Sep-20	2.27	3	0.66	0.08	0.07	0.08	0.06	
F-01 Riffle	29-Sep-20	2.27	4	0.88	0.09	0.12	0.09	0.10	
F-01 Riffle	29-Sep-20	2.27	5	1.10	0.08	0.07	0.08	0.06	
F-01 Riffle	29-Sep-20	2.27	6	1.32	0.12	0.04	0.12	0.03	
F-01 Riffle	29-Sep-20	2.27	7	1.54	0.12	0.01	0.12	0.01	
F-01 Riffle	29-Sep-20	2.27	8	1.76	0.13	0.00	0.13	0.00	
F-01 Riffle	29-Sep-20	2.27	9	1.98	0.14	0.06	0.14	0.06	
F-01 Riffle	29-Sep-20	2.27	10	2.20	0.06	0.1	0.06	0.1	
F-01 Riffle	29-Sep-20	2.27	LB	2.27	0	NA	NA	NA	
F-01 Riffle	21-Oct-2020	2.3	RB	0.00	0.00	N/A	N/A	N/A	
F-01 Riffle	21-Oct-2020	2.3	1	0.22	0.10	-0.02	0.11	-0.02	
F-01 Riffle	21-Oct-2020	2.3	2	0.44	0.12	0.00	0.12	0.00	
F-01 Riffle	21-Oct-2020	2.3	3	0.66	0.12	0.21	0.13	0.17	
F-01 Riffle	21-Oct-2020	2.3	4	0.88	0.12	0.22	0.12	0.24	
F-01 Riffle	21-Oct-2020	2.3	5	1.10	0.10	0.28	0.10	0.30	
F-01 Riffle	21-Oct-2020	2.3	6	1.32	0.14	0.16	0.14	0.15	
F-01 Riffle	21-Oct-2020	2.3	7	1.54	0.16	0.02	0.16	0.01	
F-01 Riffle	21-Oct-2020	2.3	8	1.76	0.17	-0.02	0.17	-0.02	
F-01 Riffle	21-Oct-2020	2.3	9	1.98	0.18	-0.01	0.18	-0.02	
F-01 Riffle	21-Oct-2020	2.3	10	2.20	0.16	0.05	0.16	0.05	
F-01 Riffle	21-Oct-2020	2.3	LB	2.3	0	NA	NA	NA	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
F-02 Riffle	24-Jul-20	6.1	RB	0.00	0.00	N/A	N/A	N/A	
F-02 Riffle	24-Jul-20	6.1	1	0.28	0.07	0.00	0.07	0.00	
F-02 Riffle	24-Jul-20	6.1	2	0.84	0.13	0.00	0.13	0.00	
F-02 Riffle	24-Jul-20	6.1	3	1.40	0.16	0.00	0.16	0.00	
F-02 Riffle	24-Jul-20	6.1	4	1.75	0.15	0.00	0.15	0.00	
F-02 Riffle	24-Jul-20	6.1	5	1.96	0.19	0.00	0.19	0.00	
F-02 Riffle	24-Jul-20	6.1	6	2.52	0.23	0.00	0.23	0.00	
F-02 Riffle	24-Jul-20	6.1	7	3.08	0.14	0.02	0.14	0.03	
F-02 Riffle	24-Jul-20	6.1	8	3.64	0.24	0.00	0.24	0.00	
F-02 Riffle	24-Jul-20	6.1	9	4.20	0.15	0.00	0.15	0.00	
F-02 Riffle	24-Jul-20	6.1	10	4.76	0.11	0	0.11	0	
F-02 Riffle	24-Jul-20	6.1	-	5.6-6.1	N/A	N/A	N/A	N/A	Log obstruction, couldn't sample
F-02 Riffle	24-Jul-20	6.1	LB	6.1	0	N/A	N/A	N/A	
F-02 Riffle	18-Aug-20	5.38	RB	0.00	0.00	N/A	N/A	N/A	
F-02 Riffle	18-Aug-20	5.38	1	0.53	0.20	0.00	0.21	0.00	
F-02 Riffle	18-Aug-20	5.38	2	1.06	0.21	0.00	0.18	0.01	
F-02 Riffle	18-Aug-20	5.38	3	1.59	0.18	0.02	0.18	0.01	
F-02 Riffle	18-Aug-20	5.38	4	2.12	0.22	0.00	0.22	0.00	
F-02 Riffle	18-Aug-20	5.38	5	2.65	0.28	0.01	0.28	0.01	
F-02 Riffle	18-Aug-20	5.38	6	3.18	0.33	0.01	0.32	0.01	
F-02 Riffle	18-Aug-20	5.38	7	3.71	0.33	0.00	0.33	0.01	
F-02 Riffle	18-Aug-20	5.38	8	4.24	0.18	0.00	0.18	0.00	
F-02 Riffle	18-Aug-20	5.38	9	4.77	0.10	0.00	0.10	0.00	
F-02 Riffle	18-Aug-20	5.38	10	5.30	0.08	0	0.08	0	
F-02 Riffle	18-Aug-20	5.38	LB	5.38	0	N/A	N/A	N/A	
F-02 Riffle	29-Sep-20	6.19	RB	0.00	0.00	N/A	N/A	N/A	
F-02 Riffle	29-Sep-20	6.19	1	0.61	0.36	0.02	0.35	0.03	
F-02 Riffle	29-Sep-20	6.19	2	1.22	0.40	0.05	0.40	0.07	
F-02 Riffle	29-Sep-20	6.19	3	1.83	0.35	0.06	0.36	0.07	
F-02 Riffle	29-Sep-20	6.19	4	2.44	0.22	0.03	0.22	0.01	
F-02 Riffle	29-Sep-20	6.19	5	3.05	0.28	0.10	0.29	0.07	
F-02 Riffle	29-Sep-20	6.19	6	3.66	0.51	0.04	0.51	0.04	
F-02 Riffle	29-Sep-20	6.19	7	4.27	0.51	0.00	0.51	0.00	
F-02 Riffle	29-Sep-20	6.19	8	4.88	0.24	-0.01	0.24	-0.01	
F-02 Riffle	29-Sep-20	6.19	9	5.49	0.16	-0.03	0.16	-0.01	
F-02 Riffle	29-Sep-20	6.19	10	6.10	0.06	-0.01	0.06	0	
F-02 Riffle	29-Sep-20	6.19	LB	6.19	0	N/A	N/A	N/A	
F-02 Riffle	21-Oct-20	6.45	RB	0.00	0.00	N/A	N/A	N/A	
F-02 Riffle	21-Oct-20	6.45	1	0.64	0.42	0.06	0.42	0.06	
F-02 Riffle	21-Oct-20	6.45	2	1.28	0.49	0.09	0.49	0.08	
F-02 Riffle	21-Oct-20	6.45	3	1.92	0.50	0.01	0.50	0.01	
F-02 Riffle	21-Oct-20	6.45	4	2.56	0.33	0.13	0.33	0.13	
F-02 Riffle	21-Oct-20	6.45	5	3.20	0.56	0.13	0.57	0.11	
F-02 Riffle	21-Oct-20	6.45	6	3.84	0.61	0.07	0.61	0.07	
F-02 Riffle	21-Oct-20	6.45	7	4.48	0.59	0.03	0.59	0.03	
F-02 Riffle	21-Oct-20	6.45	8	4.48	0.50	0.00	0.49	0.01	
F-02 Riffle	21-Oct-20	6.45	9	5.12	0.37	0.00	0.37	0.00	
F-02 Riffle	21-Oct-20	6.45	10	5.76	0.29	-0.02	0.29	-0.02	
F-02 Riffle	21-Oct-20	6.45	11	5.76-6.45	0.05	N/A	N/A	N/A	too shallow to sample
F-02 Riffle	21-Oct-20	6.45	LB	6.45	0	N/A	N/A	N/A	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
F-02 Pool	24-Jul-20	3.3	RB	0.00					
F-02 Pool	24-Jul-20	3.3	1	0.15	0.12	0.01	0.12	0.01	
F-02 Pool	24-Jul-20	3.3	2	0.45	0.14	0.03	0.14	0.02	
F-02 Pool	24-Jul-20	3.3	3	0.75	0.28	0.05	0.29	0.05	
F-02 Pool	24-Jul-20	3.3	4	1.05	0.36	0.03	0.36	0.03	
F-02 Pool	24-Jul-20	3.3	5	1.35	0.35	0.02	0.35	0.02	
F-02 Pool	24-Jul-20	3.3	6	1.65	0.35	0.05	0.34	0.05	
F-02 Pool	24-Jul-20	3.3	7	1.95	0.36	0.05	0.36	0.05	
F-02 Pool	24-Jul-20	3.3	8	2.25	0.34	0.04	0.34	0.04	
F-02 Pool	24-Jul-20	3.3	9	2.55	0.36	0.06	0.36	0.05	
F-02 Pool	24-Jul-20	3.3	10	2.85	0.34	0.04	0.34	0.05	
F-02 Pool	18-Aug-20	3.55	RB	0.00	0.00	NA	NA	NA	
F-02 Pool	18-Aug-20	3.55	1	0-0.25	0.03	NA	NA	NA	Too shallow to sample
F-02 Pool	18-Aug-20	3.55	2	0.25	0.08	0.00	0.08	0.00	
F-02 Pool	18-Aug-20	3.55	3	0.56	0.17	0.00	0.17	0.00	
F-02 Pool	18-Aug-20	3.55	4	0.87	0.16	0.02	0.16	0.02	
F-02 Pool	18-Aug-20	3.55	5	1.18	0.25	0.02	0.26	0.01	
F-02 Pool	18-Aug-20	3.55	6	1.49	0.28	0.01	0.28	0.01	
F-02 Pool	18-Aug-20	3.55	7	1.80	0.31	0.01	0.32	0.01	
F-02 Pool	18-Aug-20	3.55	8	2.11	0.31	0.01	0.32	0.00	
F-02 Pool	18-Aug-20	3.55	9	2.42	0.25	0.01	0.24	0.00	
F-02 Pool	18-Aug-20	3.55	10	2.73	0.25	0	0.25	0.00	
F-02 Pool	18-Aug-20	3.55	11	2.8-3.55	0.05	NA	NA	NA	Undercut bank
F-02 Pool	18-Aug-20	3.55	LB	3.55	0	NA	NA	NA	
F-02 Pool	29-Sep-20	4.1	RB	0.00	0.00	NA	NA	NA	
F-02 Pool	29-Sep-20	4.1	1	0-0.7	0.03	NA	NA	NA	Dense aquatic veg. Could not sample
F-02 Pool	29-Sep-20	4.1	2	0.70	0.14	0.00	0.14	0.00	
F-02 Pool	29-Sep-20	4.1	3	0.97	0.25	0.15	0.25	0.17	
F-02 Pool	29-Sep-20	4.1	4	1.24	0.33	0.12	0.33	0.12	
F-02 Pool	29-Sep-20	4.1	5	1.51	0.38	0.17	0.38	0.17	
F-02 Pool	29-Sep-20	4.1	6	1.78	0.38	0.10	0.38	0.10	
F-02 Pool	29-Sep-20	4.1	7	2.05	0.42	0.09	0.42	0.10	
F-02 Pool	29-Sep-20	4.1	8	2.32	0.46	0.02	0.46	0.03	
F-02 Pool	29-Sep-20	4.1	9	2.59	0.47	0.02	0.47	0.03	
F-02 Pool	29-Sep-20	4.1	10	2.86	0.46	0.01	0.46	0.01	
F-02 Pool	29-Sep-20	4.1	11	3.13	0.40	0	0.40	0	
F-02 Pool	29-Sep-20	4.1	12	3.4-4.1	0.08	NA	NA	NA	dense veg and undercut
F-02 Pool	29-Sep-20	4.1	LB	4.1	0	NA	NA	NA	
F-02 Pool	21-Oct-20	4.2	RB	0.00	0.00	NA	NA	NA	
F-02 Pool	21-Oct-20	4.2	1	0-0.6	0.10	NA	NA	NA	Dense aquatic veg. Could not sample
F-02 Pool	21-Oct-20	4.2	2	0.60	0.28	0.09	0.28	0.09	
F-02 Pool	21-Oct-20	4.2	3	0.92	0.30	0.16	0.30	0.15	
F-02 Pool	21-Oct-20	4.2	4	1.24	0.33	0.21	0.33	0.22	
F-02 Pool	21-Oct-20	4.2	5	1.56	0.40	0.21	0.40	0.22	
F-02 Pool	21-Oct-20	4.2	6	1.88	0.46	0.25	0.46	0.26	
F-02 Pool	21-Oct-20	4.2	7	2.20	0.48	0.22	0.48	0.24	
F-02 Pool	21-Oct-20	4.2	8	2.52	0.50	0.13	0.50	0.15	
F-02 Pool	21-Oct-20	4.2	9	2.84	0.50	0.06	0.50	0.08	
F-02 Pool	21-Oct-20	4.2	10	3.16	0.40	0.02	0.40	0.04	
F-02 Pool	21-Oct-20	4.2	11	3.48	0.40	0.07	0.40	0.09	
F-02 Pool	21-Oct-20	4.2	12	3.5-4.2	0.20	NA	NA	NA	dense veg and undercut
F-02 Pool	21-Oct-20	4.2	LB	4.20	0	NA	NA	NA	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
F-03 Pool	24-Jul-20	NA	NA	NA	NA	NA	NA	NA	too deep to wade
F-03 Pool	19-Aug-20	NA	NA	NA	NA	NA	NA	NA	too deep to wade
F-03 Pool	29-Sep-20	NA	NA	NA	NA	NA	NA	NA	too deep to wade
F-03 Pool	21-Oct-20	NA	NA	NA	NA	NA	NA	NA	too deep to wade

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
F-04 Pool	24-Jul-20	6.10	RB	0.00	0.00				
F-04 Pool	24-Jul-20	6.10	1	0.27	0.47	0.00	0.47	0.00	
F-04 Pool	24-Jul-20	6.10	2	0.82	0.56	0.01	0.56	0.00	
F-04 Pool	24-Jul-20	6.10	3	1.37	0.65	0.05	0.64	0.04	
F-04 Pool	24-Jul-20	6.10	4	1.93	0.61	0.06	0.62	0.07	
F-04 Pool	24-Jul-20	6.10	5	2.48	0.78	0.04	0.78	0.06	
F-04 Pool	24-Jul-20	6.10	6	3.02	0.69	0.02	0.70	0.03	
F-04 Pool	24-Jul-20	6.10	7	3.57	0.56	0.01	0.56	0.01	
F-04 Pool	24-Jul-20	6.10	8	4.12	0.49	0.01	0.49	0.00	
F-04 Pool	24-Jul-20	6.10	9	4.67	0.45	0.01	0.45	0.01	
F-04 Pool	24-Jul-20	6.10	10	5.22	0.38	0.01	0.38	0	
F-04 Pool	24-Jul-20	6.10	LB	5.77	0.1	0	0.1	0	
F-04 Pool	18-Aug-20	6.85	RB	0.00	0.00	NA	NA	NA	
F-04 Pool	18-Aug-20	6.85	1	0-0.8	0.38	0.00	0.38	0.00	
F-04 Pool	18-Aug-20	6.85	2	1.4	0.46	0.00	0.45	0.00	
F-04 Pool	18-Aug-20	6.85	3	2.00	0.62	0.01	0.63	0.02	
F-04 Pool	18-Aug-20	6.85	4	2.60	0.70	0.01	0.70	0.02	
F-04 Pool	18-Aug-20	6.85	5	3.20	0.75	0.01	0.74	0.01	
F-04 Pool	18-Aug-20	6.85	6	3.80	0.75	0.01	0.75	0.02	
F-04 Pool	18-Aug-20	6.85	7	4.40	0.35	0.02	0.35	0.02	
F-04 Pool	18-Aug-20	6.85	8	5.00	0.22	0.02	0.22	0.02	
F-04 Pool	18-Aug-20	6.85	9	5.60	0.12	0.01	0.12	0.01	
F-04 Pool	18-Aug-20	6.85	10	6.2	0.1	0	0.1	0	
F-04 Pool	18-Aug-20	6.85	LB	6.85	0	NA	NA	NA	
F-04 Pool	29-Sep-20	7.50	RB	0.00	0.00	NA	NA	NA	
F-04 Pool	29-Sep-20	7.50	1	0-1.2	0.38	NA	NA	NA	undercut and dense veg could not sample
F-04 Pool	29-Sep-20	7.50	2	1.2	0.48	0..0	0.48	0.00	
F-04 Pool	29-Sep-20	7.50	3	1.89	0.60	-0.01	0.59	-0.01	
F-04 Pool	29-Sep-20	7.50	4	2.58	0.72	0.00	0.72	0.00	
F-04 Pool	29-Sep-20	7.50	5	3.27	0.86	0.03	0.85	0.03	
F-04 Pool	29-Sep-20	7.50	6	3.96	0.83	0.06	0.83	0.05	
F-04 Pool	29-Sep-20	7.50	7	4.65	0.75	0.03	0.75	0.03	
F-04 Pool	29-Sep-20	7.50	8	5.34	0.48	0.03	0.48	0.03	
F-04 Pool	29-Sep-20	7.50	9	6.03	0.38	0.00	0.38	0.00	
F-04 Pool	29-Sep-20	7.50	10	6.72	0.34	0	0.34	0.00	
F-04 Pool	29-Sep-20	7.50	11	7.41	0.12	-0.01	0.1	-0.01	
F-04 Pool	29-Sep-20	7.50	LB	7.5	0	NA	NA	NA	
F-04 Pool	21-Oct-2020	7.38	RB	0.00	0.00	NA	NA	NA	
F-04 Pool	21-Oct-2020	7.38	1	0-0.8	0.20	NA	NA	NA	
F-04 Pool	21-Oct-2020	7.38	2	0.8	0.68	0.00	0.68	0.00	
F-04 Pool	21-Oct-2020	7.38	3	1.52	0.78	0.00	0.78	0.00	
F-04 Pool	21-Oct-2020	7.38	4	2.24	0.92	0.08	0.93	0.08	
F-04 Pool	21-Oct-2020	7.38	5	2.96	0.99	0.10	0.99	0.09	
F-04 Pool	21-Oct-2020	7.38	6	3.68	0.96	0.08	0.97	0.08	
F-04 Pool	21-Oct-2020	7.38	7	4.4	0.80	0.08	0.81	0.07	
F-04 Pool	21-Oct-2020	7.38	8	5.12	0.60	0.02	0.61	0.02	
F-04 Pool	21-Oct-2020	7.38	9	5.84	0.57	0.01	0.56	0.01	
F-04 Pool	21-Oct-2020	7.38	10	6.56	0.40	0.02	0.41	0.02	
F-04 Pool	21-Oct-2020	7.38	11	7.28	0.20	0	0.20	0	
F-04 Pool	21-Oct-2020	7.38	LB	7.38	0	NA	NA	NA	

Site	Date	Wetted Width (m)	Station	Distance (m)	Depth 1 (m)	Velocity 1 (m/s)	Depth 2 (m)	Velocity 2 (m/s)	Comment
F-04 Riffle	24-Jul-20	2.96	RB	0.00	0.00	N/A	N/A	N/A	
F-04 Riffle	24-Jul-20	2.96	1	0.13	0.08	0.02	0.08	0.02	
F-04 Riffle	24-Jul-20	2.96	2	0.40	0.09	0.01	0.09	0.00	
F-04 Riffle	24-Jul-20	2.96	3	0.67	0.09	0.05	0.09	0.05	
F-04 Riffle	24-Jul-20	2.96	4	0.94	0.09	0.08	0.09	0.07	
F-04 Riffle	24-Jul-20	2.96	5	1.21	0.08	0.23	0.08	0.20	
F-04 Riffle	24-Jul-20	2.96	6	1.48	0.09	0.20	0.09	0.18	
F-04 Riffle	24-Jul-20	2.96	7	1.75	0.09	0.09	0.09	0.07	
F-04 Riffle	24-Jul-20	2.96	8	2.02	0.10	0.11	0.10	0.13	
F-04 Riffle	24-Jul-20	2.96	9	2.29	0.10	0.07	0.10	0.10	
F-04 Riffle	24-Jul-20	2.96	10	2.56	0.095	0.07	0.095	0.08	
F-04 Riffle	24-Jul-20	2.96	-	2.7-2.96	N/A	N/A	N/A	N/A	undercut - couldnt take measurement
F-04 Riffle	24-Jul-20	2.96	LB	2.96	0	N/A	N/A	N/A	
F-04 Riffle	18-Aug-20	3.15	RB	0.00	0.00	N/A	N/A	N/A	
F-04 Riffle	18-Aug-20	3.15	1	0-0.4	0.02	N/A	N/A	N/A	undercut bank
F-04 Riffle	18-Aug-20	3.15	2	0.40	0.12	-0.06	0.12	-0.05	
F-04 Riffle	18-Aug-20	3.15	3	0.72	0.14	0.10	0.14	0.08	
F-04 Riffle	18-Aug-20	3.15	4	1.04	0.13	0.42	0.13	0.40	
F-04 Riffle	18-Aug-20	3.15	5	1.36	0.11	0.11	0.11	0.11	
F-04 Riffle	18-Aug-20	3.15	6	1.68	0.1	0.05	0.1	0.05	
F-04 Riffle	18-Aug-20	3.15	7	2.00	0.12	0.12	0.12	0.10	
F-04 Riffle	18-Aug-20	3.15	8	2.32	0.14	0.05	0.14	0.05	
F-04 Riffle	18-Aug-20	3.15	9	2.64	0.12	-0.01	0.12	-0.01	
F-04 Riffle	18-Aug-20	3.15	10	2.7-3.15	0.06	N/A	N/A	N/A	undercut bank
F-04 Riffle	18-Aug-20	3.15	LB	3.15	0	N/A	N/A	N/A	
F-04 Riffle	29-Sep-20	3.17	RB	0.00	0.00	N/A	N/A	N/A	
F-04 Riffle	29-Sep-20	3.17	1	0-0.24	0.1	NA	NA	NA	undercut bank
F-04 Riffle	29-Sep-20	3.17	2	0.24	0.22	0.05	0.22	0.04	
F-04 Riffle	29-Sep-20	3.17	3	0.48	0.26	0.02	0.25	0.03	
F-04 Riffle	29-Sep-20	3.17	4	0.72	0.25	0.03	0.25	0.03	
F-04 Riffle	29-Sep-20	3.17	5	0.96	0.24	0.12	0.24	0.14	
F-04 Riffle	29-Sep-20	3.17	6	1.20	0.24	0.19	0.24	0.22	
F-04 Riffle	29-Sep-20	3.17	7	1.44	0.24	0.60	0.23	0.65	
F-04 Riffle	29-Sep-20	3.17	8	1.68	0.24	0.31	0.23	0.29	
F-04 Riffle	29-Sep-20	3.17	9	1.92	0.25	0.12	0.25	0.14	
F-04 Riffle	29-Sep-20	3.17	10	2.16	0.27	0.06	0.27	0.06	
F-04 Riffle	29-Sep-20	3.17	11	2.40	0.26	0.04	0.26	0.03	
F-04 Riffle	29-Sep-20	3.17	12	2.45-3.17	0.2	NA	NA	NA	dense veg and endercut
F-04 Riffle	29-Sep-20	3.17	LB	3.17	0	NA	NA	NA	
F-04 Riffle	Oct 21, 2020	3.1	RB	0.00	0.00	N/A	N/A	N/A	
F-04 Riffle	Oct 21, 2020	3.1	1	0.24	0.47	0.00	0.47	0.00	
F-04 Riffle	Oct 21, 2020	3.1	2	0.48	0.49	0.02	0.49	0.06	
F-04 Riffle	Oct 21, 2020	3.1	3	0.72	0.46	0.27	0.46	0.21	
F-04 Riffle	Oct 21, 2020	3.1	4	0.96	0.46	0.43	0.46	0.36	
F-04 Riffle	Oct 21, 2020	3.1	5	1.20	0.46	0.42	0.46	0.43	
F-04 Riffle	Oct 21, 2020	3.1	6	1.44	0.48	0.43	0.48	0.41	
F-04 Riffle	Oct 21, 2020	3.1	7	1.68	0.48	0.40	0.48	0.43	
F-04 Riffle	Oct 21, 2020	3.1	8	1.92	0.49	0.11	0.49	0.06	
F-04 Riffle	Oct 21, 2020	3.1	9	2.16	0.50	0.01	0.50	0.03	
F-04 Riffle	Oct 21, 2020	3.1	10	2.40	0.48	0.02	0.48	0.00	
F-04 Riffle	Oct 21, 2020	3.1	11	2.64	0.48	-0.01	0.48	-0.01	
F-04 Riffle	Oct 21, 2020	3.1	12	2.7-3.10	0.46	N/A	N/A	N/A	Undercut
F-04 Riffle	Oct 21, 2020	3.1	LB	3.1	0	N/A	N/A	N/A	

APPENDIX H

Pressure (Level) and Temperature in Monitoring Wells

Bible College

Date	Total Pressure (m)	Temperature (°C)
May 1, 2020	14.749	12.294
May 2, 2020	14.672	12.291
May 3, 2020	14.769	12.289
May 4, 2020	14.765	12.286
May 5, 2020	14.724	12.283
May 6, 2020	14.759	12.281
May 7, 2020	14.794	12.278
May 8, 2020	14.706	12.275
May 9, 2020	14.645	12.272
May 10, 2020	14.578	12.270
May 11, 2020	14.516	12.267
May 12, 2020	14.502	12.264
May 13, 2020	14.536	12.262
May 14, 2020	14.570	12.259
May 15, 2020	14.601	12.256
May 16, 2020	14.505	12.254
May 17, 2020	14.452	12.251
May 18, 2020	14.466	12.248
May 19, 2020	14.516	12.246
May 20, 2020	14.515	12.243
May 21, 2020	14.490	12.240
May 22, 2020	14.500	12.238
May 23, 2020	14.544	12.235
May 24, 2020	14.533	12.232
May 25, 2020	14.488	12.229
May 26, 2020	14.504	12.227
May 27, 2020	14.504	12.224
May 28, 2020	14.447	12.222
May 29, 2020	14.398	12.219
May 30, 2020	14.360	12.217
May 31, 2020	14.428	12.214
June 1, 2020	14.462	12.211
June 2, 2020	14.473	12.209
June 3, 2020	14.456	12.206
June 4, 2020	14.407	12.204
June 5, 2020	14.302	12.201
June 6, 2020	14.294	12.199
June 7, 2020	14.335	12.197
June 8, 2020	14.398	12.194
June 9, 2020	14.372	12.192
June 10, 2020	14.372	12.189
June 11, 2020	14.354	12.187
June 12, 2020	14.326	12.185
June 13, 2020	14.297	12.183
June 14, 2020	14.310	12.181
June 15, 2020	14.280	12.178

June 16, 2020	14.331	12.176
June 17, 2020	14.384	12.174
June 18, 2020	14.357	12.172
June 19, 2020	14.277	12.170
June 20, 2020	14.257	12.168
June 21, 2020	14.311	12.166
June 22, 2020	14.332	12.164
June 23, 2020	14.270	12.162
June 24, 2020	14.233	12.160
June 25, 2020	14.266	12.158
June 26, 2020	14.242	12.156
June 27, 2020	14.206	12.154
June 28, 2020	14.178	12.152
June 29, 2020	14.191	12.151
June 30, 2020	14.184	12.149
July 1, 2020	14.167	12.147
July 2, 2020	14.180	12.146
July 3, 2020	14.215	12.144
July 4, 2020	14.248	12.143
July 5, 2020	14.226	12.141
July 6, 2020	14.179	12.140
July 7, 2020	14.177	12.138
July 8, 2020	14.179	12.137
July 9, 2020	14.151	12.135
July 10, 2020	14.189	12.134
July 11, 2020	14.166	12.133
July 12, 2020	14.162	12.132
July 13, 2020	14.159	12.130
July 14, 2020	14.157	12.129
July 15, 2020	14.135	12.128
July 16, 2020	14.089	12.127
July 17, 2020	14.103	12.126
July 18, 2020	14.133	12.125
July 19, 2020	14.093	12.124
July 20, 2020	14.055	12.123
July 21, 2020	14.001	12.122
July 22, 2020	13.982	12.122
July 23, 2020	14.010	12.121
July 24, 2020	14.030	12.120
July 25, 2020	14.055	12.120
July 26, 2020	14.023	12.119
July 27, 2020	13.948	12.118
July 28, 2020	13.938	12.118
July 29, 2020	13.941	12.117
July 30, 2020	13.937	12.117
July 31, 2020	13.924	12.116
August 1, 2020	13.960	12.116

August 2, 2020	13.942	12.116
August 3, 2020	13.956	12.115
August 4, 2020	13.919	12.115
August 5, 2020	13.854	12.114
August 6, 2020	13.842	12.114
August 7, 2020	13.919	12.114
August 8, 2020	13.920	12.114
August 9, 2020	13.935	12.114
August 10, 2020	13.868	12.113
August 11, 2020	13.802	12.113
August 12, 2020	13.827	12.113
August 13, 2020	13.855	12.113
August 14, 2020	13.863	12.113
August 15, 2020	13.800	12.113
August 16, 2020	13.737	12.112
August 17, 2020	13.767	12.113
August 18, 2020	13.778	12.112
August 19, 2020	13.731	12.112
August 20, 2020	13.684	12.112
August 21, 2020	13.656	12.112
August 22, 2020	13.747	12.112
August 23, 2020	13.711	12.112
August 24, 2020	13.691	12.112
August 25, 2020	13.682	12.112
August 26, 2020	13.678	12.112
August 27, 2020	13.675	12.113
August 28, 2020	13.667	12.113
August 29, 2020	13.656	12.113
August 30, 2020	13.683	12.113
August 31, 2020	13.670	12.113
September 1, 2020	13.673	12.113
September 2, 2020	13.639	12.114
September 3, 2020	13.643	12.114
September 4, 2020	13.588	12.114
September 5, 2020	13.645	12.115
September 6, 2020	13.653	12.115
September 7, 2020	13.634	12.115
September 8, 2020	13.636	12.116
September 9, 2020	13.555	12.116
September 10, 2020	13.521	12.116
September 11, 2020	13.520	12.117
September 12, 2020	13.507	12.117
September 13, 2020	13.478	12.118
September 14, 2020	13.480	12.118
September 15, 2020	13.508	12.119
September 16, 2020	13.480	12.120
September 17, 2020	13.456	12.120

September 18, 2020	13.419	12.121
September 19, 2020	13.442	12.122
September 20, 2020	13.453	12.122
September 21, 2020	13.411	12.123
September 22, 2020	13.407	12.124
September 23, 2020	13.315	12.125
September 24, 2020	13.349	12.126
September 25, 2020	13.304	12.126
September 26, 2020	13.422	12.127
September 27, 2020	13.534	12.128
September 28, 2020	13.496	12.129
September 29, 2020	13.409	12.131
September 30, 2020	13.422	12.132
October 1, 2020	13.421	12.133
October 2, 2020	13.394	12.134
October 3, 2020	13.372	12.135
October 4, 2020	13.383	12.136
October 5, 2020	13.418	12.137
October 6, 2020	13.366	12.138
October 7, 2020	13.285	12.140
October 8, 2020	13.264	12.141
October 9, 2020	13.228	12.142
October 10, 2020	13.174	12.144
October 11, 2020	13.260	12.145
October 12, 2020	13.326	12.147
October 13, 2020	13.246	12.148
October 14, 2020	13.421	12.150
October 15, 2020	13.491	12.151
October 16, 2020	13.343	12.153
October 17, 2020	13.354	12.155
October 18, 2020	13.317	12.156
October 19, 2020	13.348	12.158
October 20, 2020	13.370	12.160
October 21, 2020	13.362	12.162
October 22, 2020	13.440	12.164
October 23, 2020	13.326	12.165
October 24, 2020	13.417	12.168
October 25, 2020	13.516	12.169
October 26, 2020	13.490	12.172
October 27, 2020	13.439	12.174
October 28, 2020	13.377	12.176
October 29, 2020	13.347	12.178
October 30, 2020	13.300	12.181
October 31, 2020	13.437	12.183
November 1, 2020	13.386	12.186
November 2, 2020	13.324	12.188
November 3, 2020	13.254	12.191

November 4, 2020	13.280	12.193
November 5, 2020	13.329	12.196
November 6, 2020	13.296	12.198
November 7, 2020	13.270	12.201
November 8, 2020	13.364	12.204
November 9, 2020	13.401	12.207
November 10, 2020	13.346	12.210
November 11, 2020	13.408	12.213
November 12, 2020	13.329	12.216
November 13, 2020	13.148	12.219
November 14, 2020	13.350	12.222
November 15, 2020	13.372	12.225
November 16, 2020	13.418	12.228
November 17, 2020	13.246	12.232
November 18, 2020	13.351	12.235
November 19, 2020	13.560	12.238
November 20, 2020	13.680	12.241
November 21, 2020	13.731	12.244
November 22, 2020	13.630	12.247
November 23, 2020	13.658	12.250
November 24, 2020	13.666	12.254
November 25, 2020	13.743	12.257
November 26, 2020	13.870	12.260
November 27, 2020	13.832	12.264
November 28, 2020	13.901	12.267
November 29, 2020	13.894	12.271
November 30, 2020	13.866	12.275
December 1, 2020	14.066	12.278
December 2, 2020	13.982	12.282
December 3, 2020	14.005	12.285
December 4, 2020	14.059	12.289
December 5, 2020	13.959	12.293
December 6, 2020	14.056	12.296
December 7, 2020	14.029	12.300
December 8, 2020	14.001	12.303
December 9, 2020	14.070	12.306
December 10, 2020	14.025	12.310
December 11, 2020	14.047	12.313
December 12, 2020	14.094	12.316
December 13, 2020	14.042	12.319
December 14, 2020	14.131	12.322
December 15, 2020	14.078	12.325
December 16, 2020	14.037	12.328
December 17, 2020	14.066	12.330
December 18, 2020	14.148	12.333
December 19, 2020	14.182	12.336
December 20, 2020	14.216	12.338

December 21, 2020	14.156	12.341
December 22, 2020	14.365	12.343
December 23, 2020	14.484	12.345
December 24, 2020	14.406	12.347
December 25, 2020	14.320	12.349
December 26, 2020	14.389	12.352
December 27, 2020	14.514	12.354
December 28, 2020	14.569	12.356
December 29, 2020	14.640	12.358
December 30, 2020	14.546	12.359
December 31, 2020	14.637	12.361
January 1, 2021	14.630	12.363
January 2, 2021	14.632	12.365
January 3, 2021	14.749	12.366
January 4, 2021	14.739	12.368
January 5, 2021	14.893	12.369
January 6, 2021	14.969	12.371
January 7, 2021	15.089	12.372
January 8, 2021	15.136	12.374
January 9, 2021	15.208	12.375
January 10, 2021	15.205	12.376
January 11, 2021	15.176	12.378
January 12, 2021	15.080	12.379
January 13, 2021	15.319	12.380
January 14, 2021	15.452	12.381
January 15, 2021	15.487	12.382
January 16, 2021	15.526	12.383
January 17, 2021	15.564	12.384
January 18, 2021	15.625	12.385
January 19, 2021	15.584	12.386
January 20, 2021	15.513	12.387
January 21, 2021	15.481	12.387
January 22, 2021	15.474	12.388
January 23, 2021	15.469	12.389
January 24, 2021	15.356	12.390
January 25, 2021	15.353	12.391
January 26, 2021	15.285	12.391
January 27, 2021	15.253	12.392
January 28, 2021	15.289	12.392
January 29, 2021	15.296	12.393
January 30, 2021	15.303	12.393
January 31, 2021	15.296	12.394
February 1, 2021	15.286	12.394
February 2, 2021	15.348	12.394
February 3, 2021	15.483	12.395
February 4, 2021	15.556	12.395
February 5, 2021	15.537	12.395

February 6, 2021	15.493	12.395
February 7, 2021	15.510	12.396
February 8, 2021	15.560	12.396
February 9, 2021	15.604	12.396
February 10, 2021	15.621	12.396
February 11, 2021	15.615	12.396
February 12, 2021	15.570	12.396
February 13, 2021	15.486	12.396
February 14, 2021	15.482	12.396
February 15, 2021	15.392	12.397
February 16, 2021	15.485	12.396
February 17, 2021	15.572	12.396
February 18, 2021	15.499	12.396
February 19, 2021	15.464	12.396
February 20, 2021	15.509	12.396
February 21, 2021	15.495	12.396
February 22, 2021	15.460	12.395
February 23, 2021	15.504	12.395
February 24, 2021	15.579	12.395
February 25, 2021	15.410	12.394
February 26, 2021	15.357	12.394
February 27, 2021	15.451	12.393
February 28, 2021	15.456	12.393
March 1, 2021	15.390	12.392
March 2, 2021	15.366	12.392
March 3, 2021	15.296	12.391
March 4, 2021	15.320	12.390
March 5, 2021	15.289	12.390
March 6, 2021	15.297	12.389
March 7, 2021	15.310	12.388
March 8, 2021	15.297	12.387
March 9, 2021	15.273	12.386
March 10, 2021	15.270	12.386
March 11, 2021	15.336	12.385
March 12, 2021	15.341	12.384
March 13, 2021	15.273	12.383
March 14, 2021	15.182	12.381
March 15, 2021	15.250	12.380
March 16, 2021	15.236	12.379
March 17, 2021	15.167	12.378
March 18, 2021	15.093	12.377
March 19, 2021	15.117	12.376
March 20, 2021	15.157	12.374
March 21, 2021	15.177	12.373
March 22, 2021	15.131	12.372
March 23, 2021	15.227	12.371
March 24, 2021	15.053	12.369

March 25, 2021	15.043	12.368
March 26, 2021	15.136	12.366
March 27, 2021	15.162	12.365
March 28, 2021	15.007	12.363
March 29, 2021	15.125	12.362
March 30, 2021	15.177	12.360
March 31, 2021	15.112	12.359
April 1, 2021	14.989	12.357
April 2, 2021	15.024	12.355
April 3, 2021	15.037	12.353
April 4, 2021	15.058	12.352
April 5, 2021	15.043	12.350
April 6, 2021	14.999	12.348
April 7, 2021	14.952	12.346
April 8, 2021	15.011	12.344
April 9, 2021	14.966	12.342
April 10, 2021	14.974	12.340
April 11, 2021	15.033	12.338
April 12, 2021	15.014	12.336
April 13, 2021	15.002	12.334
April 14, 2021	14.935	12.332
April 15, 2021	14.906	12.330
April 16, 2021	14.922	12.328
April 17, 2021	14.908	12.326
April 18, 2021	14.875	12.323
April 19, 2021	14.886	12.321
April 20, 2021	14.860	12.319
April 21, 2021	14.799	12.317
April 22, 2021	14.748	12.314
April 23, 2021	14.734	12.312
April 24, 2021	14.675	12.310
April 25, 2021	14.650	12.307
April 26, 2021	14.691	12.305
April 27, 2021	14.758	12.303
April 28, 2021	14.797	12.300
April 29, 2021	14.755	12.298
April 30, 2021	14.718	12.295

DND

Date	Total Pressure (m)	Temperature (°C)
May 1, 2020	15.177	10.641
May 2, 2020	15.098	10.636
May 3, 2020	15.312	10.631
May 4, 2020	15.267	10.623
May 5, 2020	15.210	10.615
May 6, 2020	15.245	10.610
May 7, 2020	15.276	10.606
May 8, 2020	15.135	10.604
May 9, 2020	15.093	10.598
May 10, 2020	14.985	10.596
May 11, 2020	14.909	10.594
May 12, 2020	14.947	10.592
May 13, 2020	14.988	10.584
May 14, 2020	15.006	10.583
May 15, 2020	15.057	10.576
May 16, 2020	14.982	10.571
May 17, 2020	14.945	10.564
May 18, 2020	14.946	10.557
May 19, 2020	14.960	10.552
May 20, 2020	14.955	10.551
May 21, 2020	14.950	10.549
May 22, 2020	14.932	10.541
May 23, 2020	14.985	10.541
May 24, 2020	14.963	10.536
May 25, 2020	14.900	10.528
May 26, 2020	14.858	10.529
May 27, 2020	14.835	10.526
May 28, 2020	14.824	10.523
May 29, 2020	14.907	10.526
May 30, 2020	14.902	10.515
May 31, 2020	14.897	10.506
June 1, 2020	14.821	10.500
June 2, 2020	14.800	10.497
June 3, 2020	14.762	10.501
June 4, 2020	14.695	10.494
June 5, 2020	14.624	10.497
June 6, 2020	14.662	10.494
June 7, 2020	14.706	10.483
June 8, 2020	14.773	10.481
June 9, 2020	14.749	10.477
June 10, 2020	14.811	10.474
June 11, 2020	14.851	10.471
June 12, 2020	14.867	10.481
June 13, 2020	14.861	10.460
June 14, 2020	14.893	10.462
June 15, 2020	14.867	10.454

DND

Date	Total Pressure (m)	Temperature (°C)
June 16, 2020	14.928	10.454
June 17, 2020	14.986	10.451
June 18, 2020	14.966	10.446
June 19, 2020	14.843	10.446
June 20, 2020	14.711	10.439
June 21, 2020	14.746	10.432
June 22, 2020	14.734	10.428
June 23, 2020	14.651	10.431
June 24, 2020	14.539	10.425
June 25, 2020	14.540	10.427
June 26, 2020	14.493	10.426
June 27, 2020	14.484	10.427
June 28, 2020	14.479	10.428
June 29, 2020	14.465	10.420
June 30, 2020	14.441	10.423
July 1, 2020	14.472	10.424
July 2, 2020	14.473	10.420
July 3, 2020	14.510	10.420
July 4, 2020	14.558	10.417
July 5, 2020	14.544	10.417
July 6, 2020	14.470	10.416
July 7, 2020	14.445	10.412
July 8, 2020	14.424	10.417
July 9, 2020	14.363	10.413
July 10, 2020	14.415	10.411
July 11, 2020	14.395	10.414
July 12, 2020	14.429	10.411
July 13, 2020	14.517	10.415
July 14, 2020	14.543	10.417
July 15, 2020	14.532	10.413
July 16, 2020	14.482	10.411
July 17, 2020	14.490	10.413
July 18, 2020	14.521	10.413
July 19, 2020	14.474	10.414
July 20, 2020	14.429	10.415
July 21, 2020	14.363	10.419
July 22, 2020	14.327	10.415
July 23, 2020	14.346	10.415
July 24, 2020	14.357	10.419
July 25, 2020	14.376	10.421
July 26, 2020	14.333	10.422
July 27, 2020	14.243	10.424
July 28, 2020	14.217	10.426
July 29, 2020	14.209	10.428
July 30, 2020	14.195	10.431
July 31, 2020	14.171	10.436

DND

Date	Total Pressure (m)	Temperature (°C)
August 1, 2020	14.193	10.437
August 2, 2020	14.165	10.447
August 3, 2020	14.171	10.445
August 4, 2020	14.122	10.450
August 5, 2020	14.049	10.455
August 6, 2020	14.029	10.458
August 7, 2020	14.102	10.464
August 8, 2020	14.103	10.470
August 9, 2020	14.116	10.473
August 10, 2020	14.045	10.475
August 11, 2020	13.971	10.482
August 12, 2020	13.989	10.487
August 13, 2020	14.008	10.493
August 14, 2020	14.007	10.497
August 15, 2020	13.935	10.504
August 16, 2020	13.865	10.509
August 17, 2020	13.888	10.516
August 18, 2020	13.889	10.519
August 19, 2020	13.834	10.526
August 20, 2020	13.780	10.529
August 21, 2020	13.754	10.537
August 22, 2020	13.852	10.542
August 23, 2020	13.820	10.551
August 24, 2020	13.801	10.558
August 25, 2020	13.793	10.558
August 26, 2020	13.788	10.568
August 27, 2020	13.779	10.572
August 28, 2020	13.764	10.577
August 29, 2020	13.746	10.582
August 30, 2020	13.766	10.584
August 31, 2020	13.751	10.591
September 1, 2020	13.748	10.601
September 2, 2020	13.711	10.601
September 3, 2020	13.707	10.608
September 4, 2020	13.647	10.612
September 5, 2020	13.697	10.618
September 6, 2020	13.704	10.623
September 7, 2020	13.685	10.630
September 8, 2020	13.684	10.634
September 9, 2020	13.597	10.639
September 10, 2020	13.557	10.642
September 11, 2020	13.548	10.645
September 12, 2020	13.532	10.652
September 13, 2020	13.508	10.655
September 14, 2020	13.514	10.660
September 15, 2020	13.603	10.909

Date	Total Pressure (m)	Temperature (°C)
September 16, 2020	13.613	10.670
September 17, 2020	13.583	10.675
September 18, 2020	13.538	10.679
September 19, 2020	13.553	10.683
September 20, 2020	13.557	10.685
September 21, 2020	13.510	10.690
September 22, 2020	13.501	10.695
September 23, 2020	13.405	10.697
September 24, 2020	13.435	10.703
September 25, 2020	13.390	10.705
September 26, 2020	13.504	10.708
September 27, 2020	13.613	10.714
September 28, 2020	13.575	10.716
September 29, 2020	13.502	10.719
September 30, 2020	13.526	10.723
October 1, 2020	13.532	10.725
October 2, 2020	13.509	10.728
October 3, 2020	13.492	10.733
October 4, 2020	13.505	10.735
October 5, 2020	13.542	10.737
October 6, 2020	13.492	10.741
October 7, 2020	13.410	10.745
October 8, 2020	13.390	10.747
October 9, 2020	13.346	10.750
October 10, 2020	13.292	10.753
October 11, 2020	13.375	10.757
October 12, 2020	13.462	10.760
October 13, 2020	13.401	10.763
October 14, 2020	13.584	10.766
October 15, 2020	13.662	10.769
October 16, 2020	13.519	10.772
October 17, 2020	13.515	10.775
October 18, 2020	13.465	10.778
October 19, 2020	13.485	10.781
October 20, 2020	13.502	10.785
October 21, 2020	13.490	10.788
October 22, 2020	13.566	10.792
October 23, 2020	13.454	10.795
October 24, 2020	13.540	10.798
October 25, 2020	13.635	10.802
October 26, 2020	13.611	10.804
October 27, 2020	13.562	10.808
October 28, 2020	13.499	10.810
October 29, 2020	13.468	10.814
October 30, 2020	13.419	10.817
October 31, 2020	13.550	10.820

DND

Date	Total Pressure (m)	Temperature (°C)
November 1, 2020	13.500	10.823
November 2, 2020	13.442	10.827
November 3, 2020	13.388	10.830
November 4, 2020	13.418	10.833
November 5, 2020	13.468	10.836
November 6, 2020	13.448	10.839
November 7, 2020	13.438	10.842
November 8, 2020	13.543	10.845
November 9, 2020	13.593	10.848
November 10, 2020	13.551	10.850
November 11, 2020	13.619	10.853
November 12, 2020	13.551	10.855
November 13, 2020	13.398	10.858
November 14, 2020	13.633	10.861
November 15, 2020	13.692	10.864
November 16, 2020	13.784	10.868
November 17, 2020	13.665	10.871
November 18, 2020	13.813	10.875
November 19, 2020	14.061	10.878
November 20, 2020	14.232	10.882
November 21, 2020	14.349	10.886
November 22, 2020	14.303	10.889
November 23, 2020	14.362	10.893
November 24, 2020	14.387	10.896
November 25, 2020	14.460	10.900
November 26, 2020	14.581	10.904
November 27, 2020	14.545	10.908
November 28, 2020	14.606	10.912
November 29, 2020	14.588	10.916
November 30, 2020	14.543	10.920
December 1, 2020	14.730	10.924
December 2, 2020	14.642	10.928
December 3, 2020	14.656	10.932
December 4, 2020	14.704	10.936
December 5, 2020	14.601	10.941
December 6, 2020	14.685	10.945
December 7, 2020	14.655	10.949
December 8, 2020	14.631	10.952
December 9, 2020	14.695	10.956
December 10, 2020	14.650	10.960
December 11, 2020	14.674	10.964
December 12, 2020	14.736	10.968
December 13, 2020	14.705	10.971
December 14, 2020	14.808	10.975
December 15, 2020	14.768	10.978
December 16, 2020	14.735	10.981

Date	Total Pressure (m)	Temperature (°C)
December 17, 2020	14.776	10.984
December 18, 2020	14.867	10.988
December 19, 2020	14.903	10.991
December 20, 2020	14.953	10.995
December 21, 2020	14.920	10.999
December 22, 2020	15.158	11.003
December 23, 2020	15.315	11.006
December 24, 2020	15.285	11.009
December 25, 2020	15.225	11.014
December 26, 2020	15.301	11.017
December 27, 2020	15.421	11.020
December 28, 2020	15.468	11.024
December 29, 2020	15.543	11.028
December 30, 2020	15.469	11.031
December 31, 2020	15.583	11.035
January 1, 2021	15.611	11.039
January 2, 2021	15.667	11.042
January 3, 2021	15.811	11.046
January 4, 2021	15.820	11.049
January 5, 2021	15.984	11.054
January 6, 2021	16.079	11.058
January 7, 2021	16.219	11.063
January 8, 2021	16.285	11.067
January 9, 2021	16.360	11.071
January 10, 2021	16.350	11.075
January 11, 2021	16.310	11.080
January 12, 2021	16.221	11.084
January 13, 2021	16.477	11.090
January 14, 2021	16.665	11.095
January 15, 2021	16.733	11.100
January 16, 2021	16.773	11.106
January 17, 2021	16.800	11.111
January 18, 2021	16.843	11.117
January 19, 2021	16.787	11.123
January 20, 2021	16.700	11.129
January 21, 2021	16.670	11.136
January 22, 2021	16.662	11.142
January 23, 2021	16.656	11.148
January 24, 2021	16.546	11.155
January 25, 2021	16.536	11.161
January 26, 2021	16.469	11.167
January 27, 2021	16.437	11.174
January 28, 2021	16.471	11.179
January 29, 2021	16.477	11.182
January 30, 2021	16.481	11.183
January 31, 2021	16.477	11.183

Date	Total Pressure (m)	Temperature (°C)
February 1, 2021	16.495	11.184
February 2, 2021	16.598	11.184
February 3, 2021	16.804	11.183
February 4, 2021	16.938	11.181
February 5, 2021	16.949	11.180
February 6, 2021	16.917	11.179
February 7, 2021	16.938	11.178
February 8, 2021	16.989	11.179
February 9, 2021	17.037	11.181
February 10, 2021	17.056	11.182
February 11, 2021	17.046	11.183
February 12, 2021	16.980	11.186
February 13, 2021	16.880	11.189
February 14, 2021	16.861	11.194
February 15, 2021	16.758	11.197
February 16, 2021	16.840	11.201
February 17, 2021	16.920	11.204
February 18, 2021	16.854	11.207
February 19, 2021	16.804	11.209
February 20, 2021	16.849	11.212
February 21, 2021	16.842	11.214
February 22, 2021	16.800	11.214
February 23, 2021	16.830	11.215
February 24, 2021	16.895	11.218
February 25, 2021	16.740	11.220
February 26, 2021	16.705	11.221
February 27, 2021	16.798	11.221
February 28, 2021	16.814	11.220
March 1, 2021	16.757	11.221
March 2, 2021	16.733	11.220
March 3, 2021	16.665	11.220
March 4, 2021	16.686	11.220
March 5, 2021	16.657	11.221
March 6, 2021	16.660	11.220
March 7, 2021	16.671	11.220
March 8, 2021	16.658	11.219
March 9, 2021	16.632	11.220
March 10, 2021	16.626	11.219
March 11, 2021	16.686	11.219
March 12, 2021	16.689	11.219
March 13, 2021	16.621	11.218
March 14, 2021	16.530	11.216
March 15, 2021	16.592	11.216
March 16, 2021	16.576	11.215
March 17, 2021	16.506	11.214
March 18, 2021	16.431	11.212

DND

Date	Total Pressure (m)	Temperature (°C)
March 19, 2021	16.450	11.211
March 20, 2021	16.486	11.210
March 21, 2021	16.504	11.208
March 22, 2021	16.454	11.206
March 23, 2021	16.545	11.205
March 24, 2021	16.379	11.203
March 25, 2021	16.364	11.199
March 26, 2021	16.452	11.197
March 27, 2021	16.476	11.195
March 28, 2021	16.328	11.192
March 29, 2021	16.434	11.189
March 30, 2021	16.479	11.185
March 31, 2021	16.416	11.184
April 1, 2021	16.294	11.180
April 2, 2021	16.323	11.177
April 3, 2021	16.335	11.173
April 4, 2021	16.354	11.170
April 5, 2021	16.338	11.167
April 6, 2021	16.294	11.163
April 7, 2021	16.247	11.159
April 8, 2021	16.301	11.155
April 9, 2021	16.257	11.151
April 10, 2021	16.261	11.145
April 11, 2021	16.317	11.146
April 12, 2021	16.295	11.142
April 13, 2021	16.276	11.137
April 14, 2021	16.192	11.133
April 15, 2021	16.146	11.130
April 16, 2021	16.145	11.126
April 17, 2021	16.121	11.124
April 18, 2021	16.078	11.119
April 19, 2021	16.076	11.117
April 20, 2021	16.039	11.112
April 21, 2021	15.967	11.109
April 22, 2021	15.907	11.107
April 23, 2021	15.882	11.102
April 24, 2021	15.823	11.098
April 25, 2021	15.801	11.095
April 26, 2021	15.844	11.088
April 27, 2021	15.913	11.086
April 28, 2021	15.953	11.083
April 29, 2021	15.913	11.078
April 30, 2021	15.872	11.072

Date	Total Pressure (m)	Temperature (°C)
May 1, 2020	17.895	10.901
May 2, 2020	17.826	10.901
May 3, 2020	17.911	10.901
May 4, 2020	17.912	10.901
May 5, 2020	17.874	10.901
May 6, 2020	17.901	10.900
May 7, 2020	17.942	10.900
May 8, 2020	17.861	10.900
May 9, 2020	17.794	10.900
May 10, 2020	17.718	10.900
May 11, 2020	17.650	10.900
May 12, 2020	17.636	10.900
May 13, 2020	17.666	10.899
May 14, 2020	17.700	10.899
May 15, 2020	17.730	10.899
May 16, 2020	17.644	10.898
May 17, 2020	17.589	10.898
May 18, 2020	17.597	10.898
May 19, 2020	17.640	10.897
May 20, 2020	17.638	10.897
May 21, 2020	17.612	10.897
May 22, 2020	17.613	10.897
May 23, 2020	17.650	10.896
May 24, 2020	17.637	10.896
May 25, 2020	17.589	10.896
May 26, 2020	17.598	10.896
May 27, 2020	17.592	10.895
May 28, 2020	17.531	10.895
May 29, 2020	17.469	10.895
May 30, 2020	17.423	10.895
May 31, 2020	17.474	10.895
June 1, 2020	17.505	10.894
June 2, 2020	17.510	10.894
June 3, 2020	17.492	10.894
June 4, 2020	17.439	10.893
June 5, 2020	17.334	10.893
June 6, 2020	17.310	10.893
June 7, 2020	17.339	10.893
June 8, 2020	17.390	10.893
June 9, 2020	17.364	10.892
June 10, 2020	17.353	10.892
June 11, 2020	17.329	10.892
June 12, 2020	17.296	10.892
June 13, 2020	17.260	10.892
June 14, 2020	17.263	10.892
June 15, 2020	17.228	10.891

Date	Total Pressure (m)	Temperature (°C)
June 16, 2020	17.264	10.891
June 17, 2020	17.308	10.891
June 18, 2020	17.278	10.891
June 19, 2020	17.193	10.891
June 20, 2020	17.165	10.891
June 21, 2020	17.205	10.891
June 22, 2020	17.221	10.891
June 23, 2020	17.152	10.891
June 24, 2020	17.107	10.891
June 25, 2020	17.124	10.890
June 26, 2020	17.084	10.890
June 27, 2020	17.044	10.891
June 28, 2020	17.009	10.891
June 29, 2020	17.008	10.890
June 30, 2020	16.991	10.891
July 1, 2020	16.971	10.891
July 2, 2020	16.974	10.891
July 3, 2020	17.001	10.891
July 4, 2020	17.026	10.891
July 5, 2020	17.000	10.891
July 6, 2020	16.947	10.891
July 7, 2020	16.934	10.891
July 8, 2020	16.927	10.891
July 9, 2020	16.890	10.891
July 10, 2020	16.920	10.891
July 11, 2020	16.894	10.891
July 12, 2020	16.884	10.891
July 13, 2020	16.875	10.891
July 14, 2020	16.858	10.892
July 15, 2020	16.826	10.892
July 16, 2020	16.760	10.892
July 17, 2020	16.762	10.892
July 18, 2020	16.775	10.892
July 19, 2020	16.712	10.893
July 20, 2020	16.650	10.893
July 21, 2020	16.567	10.894
July 22, 2020	16.527	10.894
July 23, 2020	16.539	10.894
July 24, 2020	16.556	10.894
July 25, 2020	16.569	10.895
July 26, 2020	16.517	10.895
July 27, 2020	16.414	10.895
July 28, 2020	16.378	10.896
July 29, 2020	16.365	10.896
July 30, 2020	16.346	10.896
July 31, 2020	16.316	10.896

Date	Total Pressure (m)	Temperature (°C)
August 1, 2020	16.331	10.897
August 2, 2020	16.302	10.897
August 3, 2020	16.308	10.897
August 4, 2020	16.256	10.897
August 5, 2020	16.172	10.898
August 6, 2020	16.154	10.898
August 7, 2020	16.237	10.898
August 8, 2020	16.244	10.898
August 9, 2020	16.259	10.898
August 10, 2020	16.188	10.898
August 11, 2020	16.107	10.898
August 12, 2020	16.113	10.898
August 13, 2020	16.126	10.898
August 14, 2020	16.124	10.898
August 15, 2020	16.056	10.899
August 16, 2020	15.972	10.899
August 17, 2020	15.973	10.899
August 18, 2020	15.970	10.899
August 19, 2020	15.910	10.899
August 20, 2020	15.866	10.899
August 21, 2020	15.841	10.899
August 22, 2020	15.929	10.899
August 23, 2020	15.897	10.899
August 24, 2020	15.875	10.899
August 25, 2020	15.864	10.899
August 26, 2020	15.855	10.899
August 27, 2020	15.846	10.899
August 28, 2020	15.832	10.899
August 29, 2020	15.805	10.899
August 30, 2020	15.819	10.899
August 31, 2020	15.805	10.899
September 1, 2020	15.808	10.899
September 2, 2020	15.767	10.899
September 3, 2020	15.757	10.900
September 4, 2020	15.699	10.900
September 5, 2020	15.728	10.900
September 6, 2020	15.739	10.900
September 7, 2020	15.717	10.899
September 8, 2020	15.708	10.899
September 9, 2020	15.619	10.899
September 10, 2020	15.572	10.899
September 11, 2020	15.561	10.899
September 12, 2020	15.535	10.900
September 13, 2020	15.507	10.899
September 14, 2020	15.508	10.899
September 15, 2020	15.537	10.899

Date	Total Pressure (m)	Temperature (°C)
September 16, 2020	15.514	10.899
September 17, 2020	15.491	10.898
September 18, 2020	15.457	10.898
September 19, 2020	15.475	10.898
September 20, 2020	15.488	10.898
September 21, 2020	15.442	10.898
September 22, 2020	15.436	10.897
September 23, 2020	15.351	10.897
September 24, 2020	15.373	10.897
September 25, 2020	15.321	10.897
September 26, 2020	15.420	10.897
September 27, 2020	15.524	10.897
September 28, 2020	15.497	10.896
September 29, 2020	15.413	10.896
September 30, 2020	15.418	10.896
October 1, 2020	15.414	10.896
October 2, 2020	15.388	10.896
October 3, 2020	15.365	10.896
October 4, 2020	15.369	10.895
October 5, 2020	15.399	10.895
October 6, 2020	15.353	10.895
October 7, 2020	15.274	10.895
October 8, 2020	15.248	10.894
October 9, 2020	15.214	10.894
October 10, 2020	15.148	10.894
October 11, 2020	15.216	10.894
October 12, 2020	15.269	10.894
October 13, 2020	15.195	10.893
October 14, 2020	15.344	10.893
October 15, 2020	15.413	10.893
October 16, 2020	15.279	10.893
October 17, 2020	15.273	10.893
October 18, 2020	15.231	10.893
October 19, 2020	15.245	10.892
October 20, 2020	15.258	10.892
October 21, 2020	15.241	10.892
October 22, 2020	15.308	10.892
October 23, 2020	15.196	10.892
October 24, 2020	15.257	10.892
October 25, 2020	15.350	10.891
October 26, 2020	15.327	10.891
October 27, 2020	15.275	10.891
October 28, 2020	15.209	10.891
October 29, 2020	15.175	10.891
October 30, 2020	15.115	10.891
October 31, 2020	15.236	10.890

Date	Total Pressure (m)	Temperature (°C)
November 1, 2020	15.195	10.890
November 2, 2020	15.133	10.890
November 3, 2020	15.058	10.890
November 4, 2020	15.056	10.890
November 5, 2020	15.081	10.890
November 6, 2020	15.039	10.889
November 7, 2020	15.004	10.889
November 8, 2020	15.078	10.889
November 9, 2020	15.112	10.889
November 10, 2020	15.054	10.889
November 11, 2020	15.100	10.889
November 12, 2020	15.025	10.889
November 13, 2020	14.827	10.889
November 14, 2020	14.988	10.888
November 15, 2020	14.992	10.888
November 16, 2020	15.033	10.888
November 17, 2020	14.857	10.888
November 18, 2020	14.926	10.888
November 19, 2020	15.093	10.888
November 20, 2020	15.195	10.888
November 21, 2020	15.228	10.888
November 22, 2020	15.116	10.887
November 23, 2020	15.108	10.888
November 24, 2020	15.096	10.887
November 25, 2020	15.139	10.888
November 26, 2020	15.242	10.888
November 27, 2020	15.202	10.888
November 28, 2020	15.240	10.888
November 29, 2020	15.229	10.888
November 30, 2020	15.176	10.888
December 1, 2020	15.361	10.888
December 2, 2020	15.287	10.889
December 3, 2020	15.291	10.889
December 4, 2020	15.345	10.889
December 5, 2020	15.257	10.889
December 6, 2020	15.337	10.889
December 7, 2020	15.327	10.889
December 8, 2020	15.291	10.890
December 9, 2020	15.333	10.889
December 10, 2020	15.301	10.890
December 11, 2020	15.309	10.890
December 12, 2020	15.360	10.890
December 13, 2020	15.310	10.890
December 14, 2020	15.386	10.890
December 15, 2020	15.341	10.890
December 16, 2020	15.301	10.890

Date	Total Pressure (m)	Temperature (°C)
December 17, 2020	15.309	10.890
December 18, 2020	15.388	10.890
December 19, 2020	15.413	10.890
December 20, 2020	15.431	10.890
December 21, 2020	15.375	10.890
December 22, 2020	15.543	10.890
December 23, 2020	15.660	10.890
December 24, 2020	15.581	10.890
December 25, 2020	15.490	10.890
December 26, 2020	15.530	10.890
December 27, 2020	15.631	10.891
December 28, 2020	15.674	10.891
December 29, 2020	15.744	10.891
December 30, 2020	15.663	10.891
December 31, 2020	15.725	10.891
January 1, 2021	15.731	10.892
January 2, 2021	15.727	10.892
January 3, 2021	15.837	10.893
January 4, 2021	15.835	10.893
January 5, 2021	15.976	10.893
January 6, 2021	16.046	10.894
January 7, 2021	16.171	10.894
January 8, 2021	16.222	10.895
January 9, 2021	16.311	10.895
January 10, 2021	16.325	10.896
January 11, 2021	16.331	10.896
January 12, 2021	16.259	10.897
January 13, 2021	16.501	10.897
January 14, 2021	16.683	10.898
January 15, 2021	16.752	10.898
January 16, 2021	16.829	10.898
January 17, 2021	16.908	10.898
January 18, 2021	17.021	10.898
January 19, 2021	17.043	10.899
January 20, 2021	17.036	10.898
January 21, 2021	17.075	10.899
January 22, 2021	17.144	10.898
January 23, 2021	17.218	10.898
January 24, 2021	17.183	10.898
January 25, 2021	17.253	10.897
January 26, 2021	17.264	10.897
January 27, 2021	17.302	10.897
January 28, 2021	17.409	10.896
January 29, 2021	17.486	10.896
January 30, 2021	17.558	10.895
January 31, 2021	17.611	10.895

Date	Total Pressure (m)	Temperature (°C)
February 1, 2021	17.622	10.894
February 2, 2021	17.697	10.893
February 3, 2021	17.860	10.893
February 4, 2021	17.973	10.893
February 5, 2021	17.981	10.892
February 6, 2021	17.969	10.892
February 7, 2021	18.008	10.892
February 8, 2021	18.084	10.891
February 9, 2021	18.164	10.891
February 10, 2021	18.219	10.891
February 11, 2021	18.258	10.891
February 12, 2021	18.260	10.890
February 13, 2021	18.218	10.890
February 14, 2021	18.266	10.890
February 15, 2021	18.216	10.890
February 16, 2021	18.349	10.889
February 17, 2021	18.476	10.889
February 18, 2021	18.456	10.889
February 19, 2021	18.456	10.888
February 20, 2021	18.533	10.888
February 21, 2021	18.560	10.888
February 22, 2021	18.553	10.887
February 23, 2021	18.620	10.887
February 24, 2021	18.720	10.887
February 25, 2021	18.593	10.887
February 26, 2021	18.565	10.886
February 27, 2021	18.672	10.886
February 28, 2021	18.709	10.886
March 1, 2021	18.668	10.885
March 2, 2021	18.665	10.885
March 3, 2021	18.618	10.885
March 4, 2021	18.651	10.884
March 5, 2021	18.645	10.884
March 6, 2021	18.666	10.884
March 7, 2021	18.689	10.884
March 8, 2021	18.700	10.883
March 9, 2021	18.688	10.883
March 10, 2021	18.696	10.883
March 11, 2021	18.762	10.883
March 12, 2021	18.782	10.882
March 13, 2021	18.739	10.882
March 14, 2021	18.664	10.882
March 15, 2021	18.722	10.882
March 16, 2021	18.723	10.882
March 17, 2021	18.672	10.881
March 18, 2021	18.610	10.881

Date	Total Pressure (m)	Temperature (°C)
March 19, 2021	18.628	10.881
March 20, 2021	18.665	10.881
March 21, 2021	18.696	10.881
March 22, 2021	18.652	10.880
March 23, 2021	18.742	10.880
March 24, 2021	18.601	10.880
March 25, 2021	18.572	10.880
March 26, 2021	18.651	10.880
March 27, 2021	18.683	10.879
March 28, 2021	18.551	10.879
March 29, 2021	18.636	10.879
March 30, 2021	18.688	10.879
March 31, 2021	18.638	10.879
April 1, 2021	18.519	10.879
April 2, 2021	18.538	10.878
April 3, 2021	18.550	10.878
April 4, 2021	18.567	10.878
April 5, 2021	18.552	10.878
April 6, 2021	18.511	10.878
April 7, 2021	18.463	10.878
April 8, 2021	18.510	10.878
April 9, 2021	18.475	10.878
April 10, 2021	18.469	10.878
April 11, 2021	18.525	10.877
April 12, 2021	18.505	10.877
April 13, 2021	18.494	10.877
April 14, 2021	18.425	10.877
April 15, 2021	18.386	10.877
April 16, 2021	18.391	10.878
April 17, 2021	18.371	10.878
April 18, 2021	18.326	10.878
April 19, 2021	18.323	10.878
April 20, 2021	18.290	10.878
April 21, 2021	18.228	10.878
April 22, 2021	18.173	10.878
April 23, 2021	18.161	10.878
April 24, 2021	18.107	10.879
April 25, 2021	18.082	10.879
April 26, 2021	18.116	10.879
April 27, 2021	18.175	10.879
April 28, 2021	18.211	10.879
April 29, 2021	18.173	10.879
April 30, 2021	18.133	10.879

Date	Total Pressure (m)	Temperature (°C)
May 1, 2020	21.557	11.898
May 2, 2020	20.932	11.895
May 3, 2020	20.666	11.895
May 4, 2020	19.996	11.895
May 5, 2020	19.997	11.900
May 6, 2020	20.309	11.900
May 7, 2020	20.360	11.899
May 8, 2020	19.255	11.895
May 9, 2020	20.142	11.903
May 10, 2020	19.980	11.897
May 11, 2020	19.073	11.892
May 12, 2020	18.691	11.897
May 13, 2020	19.285	11.900
May 14, 2020	19.199	11.894
May 15, 2020	18.909	11.900
May 16, 2020	19.747	11.900
May 17, 2020	19.385	11.897
May 18, 2020	19.092	11.897
May 19, 2020	19.006	11.897
May 20, 2020	19.116	11.898
May 21, 2020	20.090	11.903
May 22, 2020	19.721	11.898
May 23, 2020	19.993	11.900
May 24, 2020	20.205	11.901
May 25, 2020	19.727	11.896
May 26, 2020	19.101	11.898
May 27, 2020	18.619	11.898
May 28, 2020	18.121	11.898
May 29, 2020	18.385	11.902
May 30, 2020	18.965	11.903
May 31, 2020	20.239	11.909
June 1, 2020	20.834	11.900
June 2, 2020	20.975	11.899
June 3, 2020	20.033	11.891
June 4, 2020	19.913	11.900
June 5, 2020	18.547	11.898
June 6, 2020	19.489	11.905
June 7, 2020	19.178	11.901
June 8, 2020	19.637	11.906
June 9, 2020	19.438	11.903
June 10, 2020	19.877	11.908
June 11, 2020	19.239	11.905
June 12, 2020	19.617	11.906
June 13, 2020	19.541	11.902
June 14, 2020	19.477	11.905
June 15, 2020	19.491	11.907

Date	Total Pressure (m)	Temperature (°C)
June 16, 2020	19.562	11.904
June 17, 2020	19.057	11.902
June 18, 2020	18.942	11.903
June 19, 2020	18.648	11.906
June 20, 2020	19.822	11.913
June 21, 2020	19.656	11.905
June 22, 2020	19.626	11.904
June 23, 2020	19.634	11.905
June 24, 2020	19.474	11.905
June 25, 2020	19.246	11.909
June 26, 2020	19.746	11.910
June 27, 2020	19.490	11.909
June 28, 2020	19.416	11.911
June 29, 2020	19.180	11.910
June 30, 2020	18.857	11.912
July 1, 2020	19.376	11.912
July 2, 2020	19.127	11.913
July 3, 2020	18.992	11.911
July 4, 2020	19.264	11.914
July 5, 2020	19.317	11.912
July 6, 2020	19.134	11.912
July 7, 2020	18.852	11.911
July 8, 2020	18.721	11.913
July 9, 2020	18.840	11.910
July 10, 2020	18.575	11.909
July 11, 2020	18.887	11.914
July 12, 2020	18.915	11.911
July 13, 2020	18.428	11.909
July 14, 2020	18.066	11.912
July 15, 2020	17.485	11.911
July 16, 2020	17.309	11.910
July 17, 2020	17.689	11.908
July 18, 2020	17.811	11.907
July 19, 2020	17.036	11.912
July 20, 2020	16.622	11.911
July 21, 2020	16.415	11.912
July 22, 2020	16.529	11.916
July 23, 2020	17.380	11.913
July 24, 2020	17.291	11.915
July 25, 2020	17.693	11.911
July 26, 2020	16.590	11.910
July 27, 2020	16.414	11.910
July 28, 2020	16.370	11.909
July 29, 2020	16.369	11.909
July 30, 2020	16.345	11.909
July 31, 2020	16.339	11.906

Date	Total Pressure (m)	Temperature (°C)
August 1, 2020	16.618	11.903
August 2, 2020	16.486	11.904
August 3, 2020	16.844	11.902
August 4, 2020	16.319	11.902
August 5, 2020	16.825	11.899
August 6, 2020	16.490	11.899
August 7, 2020	17.725	11.896
August 8, 2020	18.400	11.894
August 9, 2020	17.753	11.891
August 10, 2020	16.368	11.890
August 11, 2020	16.049	11.896
August 12, 2020	15.886	11.898
August 13, 2020	15.915	11.899
August 14, 2020	16.265	11.898
August 15, 2020	16.375	11.895
August 16, 2020	16.115	11.895
August 17, 2020	16.098	11.897
August 18, 2020	16.129	11.897
August 19, 2020	16.061	11.898
August 20, 2020	16.577	11.898
August 21, 2020	17.262	11.895
August 22, 2020	17.732	11.890
August 23, 2020	17.476	11.889
August 24, 2020	17.203	11.885
August 25, 2020	17.370	11.883
August 26, 2020	16.967	11.883
August 27, 2020	16.854	11.882
August 28, 2020	16.418	11.882
August 29, 2020	16.743	11.880
August 30, 2020	16.977	11.879
August 31, 2020	17.005	11.877
September 1, 2020	16.934	11.876
September 2, 2020	16.677	11.877
September 3, 2020	16.297	11.879
September 4, 2020	16.069	11.880
September 5, 2020	16.629	11.876
September 6, 2020	16.879	11.872
September 7, 2020	16.923	11.870
September 8, 2020	16.459	11.871
September 9, 2020	15.833	11.873
September 10, 2020	16.727	11.871
September 11, 2020	16.973	11.869
September 12, 2020	17.633	11.867
September 13, 2020	18.001	11.862
September 14, 2020	17.940	11.861
September 15, 2020	17.782	11.861

Date	Total Pressure (m)	Temperature (°C)
September 16, 2020	17.321	11.859
September 17, 2020	17.466	11.861
September 18, 2020	17.288	11.860
September 19, 2020	17.844	11.861
September 20, 2020	17.568	11.857
September 21, 2020	17.454	11.858
September 22, 2020	17.107	11.859
September 23, 2020	17.764	11.857
September 24, 2020	17.430	11.854
September 25, 2020	15.926	11.859
September 26, 2020	17.141	11.859
September 27, 2020	17.676	11.857
September 28, 2020	17.543	11.856
September 29, 2020	17.610	11.857
September 30, 2020	18.447	11.855
October 1, 2020	18.556	11.849
October 2, 2020	18.586	11.849
October 3, 2020	18.709	11.847
October 4, 2020	18.917	11.844
October 5, 2020	18.999	11.843
October 6, 2020	18.991	11.842
October 7, 2020	18.962	11.841
October 8, 2020	18.803	11.842
October 9, 2020	18.725	11.844
October 10, 2020	17.629	11.845
October 11, 2020	18.365	11.850
October 12, 2020	18.975	11.844
October 13, 2020	18.946	11.843
October 14, 2020	19.154	11.842
October 15, 2020	19.241	11.842
October 16, 2020	18.571	11.843
October 17, 2020	18.873	11.847
October 18, 2020	18.689	11.846
October 19, 2020	18.592	11.848
October 20, 2020	18.810	11.847
October 21, 2020	18.810	11.847
October 22, 2020	18.897	11.847
October 23, 2020	18.823	11.847
October 24, 2020	18.961	11.847
October 25, 2020	19.015	11.847
October 26, 2020	18.957	11.848
October 27, 2020	18.927	11.848
October 28, 2020	18.848	11.849
October 29, 2020	18.812	11.850
October 30, 2020	18.764	11.850
October 31, 2020	18.911	11.854

Date	Total Pressure (m)	Temperature (°C)
November 1, 2020	18.881	11.856
November 2, 2020	18.803	11.858
November 3, 2020	17.673	11.858
November 4, 2020	16.263	11.871
November 5, 2020	16.994	11.880
November 6, 2020	18.433	11.871
November 7, 2020	18.488	11.874
November 8, 2020	18.636	11.881
November 9, 2020	18.694	11.884
November 10, 2020	18.850	11.885
November 11, 2020	18.971	11.886
November 12, 2020	18.930	11.887
November 13, 2020	18.800	11.888
November 14, 2020	18.995	11.889
November 15, 2020	19.041	11.890
November 16, 2020	19.105	11.888
November 17, 2020	18.488	11.885
November 18, 2020	16.404	11.889
November 19, 2020	17.825	11.901
November 20, 2020	19.064	11.898
November 21, 2020	19.206	11.896
November 22, 2020	19.156	11.896
November 23, 2020	19.200	11.897
November 24, 2020	18.820	11.892
November 25, 2020	18.344	11.898
November 26, 2020	19.236	11.899
November 27, 2020	19.336	11.898
November 28, 2020	19.433	11.898
November 29, 2020	19.442	11.898
November 30, 2020	19.413	11.898
December 1, 2020	19.608	11.898
December 2, 2020	19.536	11.897
December 3, 2020	19.580	11.899
December 4, 2020	19.633	11.900
December 5, 2020	19.560	11.899
December 6, 2020	19.661	11.899
December 7, 2020	19.645	11.899
December 8, 2020	18.219	11.894
December 9, 2020	17.935	11.901
December 10, 2020	17.738	11.905
December 11, 2020	18.824	11.914
December 12, 2020	19.418	11.908
December 13, 2020	19.452	11.906
December 14, 2020	19.550	11.907
December 15, 2020	19.511	11.907
December 16, 2020	19.508	11.906

Date	Total Pressure (m)	Temperature (°C)
December 17, 2020	19.584	11.905
December 18, 2020	18.044	11.899
December 19, 2020	17.893	11.912
December 20, 2020	17.703	11.914
December 21, 2020	18.319	11.922
December 22, 2020	18.123	11.914
December 23, 2020	17.868	11.918
December 24, 2020	17.715	11.920
December 25, 2020	18.284	11.927
December 26, 2020	18.520	11.923
December 27, 2020	18.628	11.923
December 28, 2020	18.652	11.923
December 29, 2020	18.621	11.921
December 30, 2020	18.599	11.921
December 31, 2020	18.647	11.921
January 1, 2021	18.592	11.922
January 2, 2021	17.908	11.922
January 3, 2021	17.235	11.927
January 4, 2021	17.370	11.934
January 5, 2021	17.645	11.933
January 6, 2021	18.072	11.937
January 7, 2021	17.906	11.934
January 8, 2021	17.973	11.938
January 9, 2021	18.253	11.939
January 10, 2021	18.213	11.941
January 11, 2021	18.405	11.944
January 12, 2021	18.202	11.940
January 13, 2021	18.321	11.944
January 14, 2021	18.898	11.947
January 15, 2021	19.569	11.951
January 16, 2021	20.021	11.944
January 17, 2021	20.182	11.941
January 18, 2021	20.216	11.938
January 19, 2021	20.178	11.940
January 20, 2021	20.285	11.942
January 21, 2021	20.614	11.939
January 22, 2021	20.744	11.938
January 23, 2021	20.858	11.936
January 24, 2021	20.846	11.936
January 25, 2021	20.774	11.938
January 26, 2021	20.875	11.937
January 27, 2021	20.943	11.937
January 28, 2021	21.051	11.935
January 29, 2021	21.112	11.936
January 30, 2021	21.184	11.936
January 31, 2021	21.224	11.937

Date	Total Pressure (m)	Temperature (°C)
February 1, 2021	21.233	11.936
February 2, 2021	20.893	11.932
February 3, 2021	19.549	11.939
February 4, 2021	21.310	11.943
February 5, 2021	21.405	11.940
February 6, 2021	21.457	11.938
February 7, 2021	21.508	11.938
February 8, 2021	21.612	11.936
February 9, 2021	21.695	11.938
February 10, 2021	21.778	11.936
February 11, 2021	21.523	11.935
February 12, 2021	21.196	11.937
February 13, 2021	21.048	11.937
February 14, 2021	20.313	11.931
February 15, 2021	19.792	11.945
February 16, 2021	20.902	11.942
February 17, 2021	21.423	11.942
February 18, 2021	21.432	11.937
February 19, 2021	21.179	11.938
February 20, 2021	21.696	11.940
February 21, 2021	21.436	11.934
February 22, 2021	20.660	11.941
February 23, 2021	21.253	11.940
February 24, 2021	21.318	11.941
February 25, 2021	21.263	11.939
February 26, 2021	21.681	11.939
February 27, 2021	21.887	11.938
February 28, 2021	21.994	11.936
March 1, 2021	21.994	11.937
March 2, 2021	22.026	11.937
March 3, 2021	21.992	11.937
March 4, 2021	22.089	11.935
March 5, 2021	22.094	11.935
March 6, 2021	22.116	11.936
March 7, 2021	22.191	11.932
March 8, 2021	22.187	11.934
March 9, 2021	22.201	11.934
March 10, 2021	22.228	11.934
March 11, 2021	22.271	11.933
March 12, 2021	22.335	11.933
March 13, 2021	22.305	11.931
March 14, 2021	22.230	11.933
March 15, 2021	22.339	11.931
March 16, 2021	22.343	11.933
March 17, 2021	22.307	11.932
March 18, 2021	22.244	11.930

Date	Total Pressure (m)	Temperature (°C)
March 19, 2021	22.316	11.931
March 20, 2021	22.361	11.931
March 21, 2021	22.423	11.932
March 22, 2021	21.983	11.930
March 23, 2021	21.550	11.930
March 24, 2021	21.854	11.934
March 25, 2021	22.258	11.932
March 26, 2021	22.409	11.932
March 27, 2021	22.465	11.929
March 28, 2021	22.287	11.931
March 29, 2021	21.723	11.927
March 30, 2021	21.408	11.929
March 31, 2021	22.017	11.931
April 1, 2021	22.243	11.930
April 2, 2021	22.367	11.927
April 3, 2021	22.406	11.928
April 4, 2021	22.433	11.930
April 5, 2021	22.420	11.926
April 6, 2021	22.324	11.928
April 7, 2021	22.379	11.927
April 8, 2021	22.453	11.926
April 9, 2021	22.425	11.927
April 10, 2021	22.472	11.926
April 11, 2021	22.528	11.928
April 12, 2021	22.467	11.926
April 13, 2021	21.993	11.921
April 14, 2021	21.872	11.924
April 15, 2021	21.673	11.924
April 16, 2021	21.661	11.923
April 17, 2021	21.817	11.926
April 18, 2021	21.721	11.923
April 19, 2021	21.669	11.923
April 20, 2021	21.559	11.923
April 21, 2021	21.638	11.923
April 22, 2021	21.694	11.924
April 23, 2021	21.637	11.921
April 24, 2021	21.842	11.923
April 25, 2021	21.864	11.920
April 26, 2021	21.831	11.923
April 27, 2021	21.997	11.922
April 28, 2021	21.858	11.920
April 29, 2021	21.876	11.920
April 30, 2021	21.806	11.920

Date	Total Pressure (m)	Temperature (°C)
May 1, 2020	12.265	8.267
May 2, 2020	12.150	8.289
May 3, 2020	12.290	8.300
May 4, 2020	12.247	8.317
May 5, 2020	12.167	8.341
May 6, 2020	12.212	8.358
May 7, 2020	12.221	8.374
May 8, 2020	12.104	8.397
May 9, 2020	12.017	8.418
May 10, 2020	11.937	8.432
May 11, 2020	11.856	8.450
May 12, 2020	11.905	8.456
May 13, 2020	11.991	8.462
May 14, 2020	12.033	8.475
May 15, 2020	12.047	8.492
May 16, 2020	11.954	8.508
May 17, 2020	12.214	8.503
May 18, 2020	12.176	8.510
May 19, 2020	12.156	8.531
May 20, 2020	12.112	8.552
May 21, 2020	12.076	8.571
May 22, 2020	12.068	8.588
May 23, 2020	12.100	8.606
May 24, 2020	12.081	8.622
May 25, 2020	12.076	8.636
May 26, 2020	12.121	8.649
May 27, 2020	12.081	8.668
May 28, 2020	11.995	8.687
May 29, 2020	11.926	8.705
May 30, 2020	11.998	8.720
May 31, 2020	12.363	8.723
June 1, 2020	12.295	8.740
June 2, 2020	12.243	8.759
June 3, 2020	12.199	8.778
June 4, 2020	12.120	8.797
June 5, 2020	11.990	8.816
June 6, 2020	11.958	8.834
June 7, 2020	11.990	8.852
June 8, 2020	12.037	8.870
June 9, 2020	12.058	8.887
June 10, 2020	12.381	8.903
June 11, 2020	12.279	8.920
June 12, 2020	12.271	8.972
June 13, 2020	12.271	8.961
June 14, 2020	12.201	8.979
June 15, 2020	12.175	8.999

Date	Total Pressure (m)	Temperature (°C)
June 16, 2020	12.319	9.018
June 17, 2020	12.282	9.037
June 18, 2020	12.187	9.057
June 19, 2020	12.060	9.076
June 20, 2020	12.032	9.092
June 21, 2020	12.086	9.111
June 22, 2020	12.072	9.129
June 23, 2020	11.976	9.146
June 24, 2020	11.925	9.165
June 25, 2020	11.941	9.183
June 26, 2020	11.902	9.201
June 27, 2020	11.865	9.220
June 28, 2020	11.841	9.238
June 29, 2020	11.838	9.256
June 30, 2020	11.836	9.274
July 1, 2020	11.860	9.294
July 2, 2020	11.921	9.314
July 3, 2020	11.985	9.334
July 4, 2020	12.064	9.355
July 5, 2020	12.026	9.373
July 6, 2020	11.949	9.390
July 7, 2020	11.921	9.407
July 8, 2020	11.904	9.424
July 9, 2020	12.174	9.460
July 10, 2020	12.281	9.488
July 11, 2020	12.185	9.505
July 12, 2020	12.141	9.523
July 13, 2020	12.101	9.541
July 14, 2020	12.067	9.558
July 15, 2020	12.014	9.576
July 16, 2020	11.943	9.594
July 17, 2020	11.936	9.608
July 18, 2020	11.942	9.621
July 19, 2020	11.869	9.636
July 20, 2020	11.815	9.652
July 21, 2020	11.744	9.670
July 22, 2020	11.717	9.686
July 23, 2020	11.749	9.701
July 24, 2020	11.768	9.719
July 25, 2020	11.792	9.736
July 26, 2020	11.754	9.753
July 27, 2020	11.670	9.769
July 28, 2020	11.652	9.784
July 29, 2020	11.630	9.804
July 30, 2020	11.605	9.822
July 31, 2020	11.575	9.836

Date	Total Pressure (m)	Temperature (°C)
August 1, 2020	11.599	9.852
August 2, 2020	11.569	9.867
August 3, 2020	11.568	9.883
August 4, 2020	11.522	9.900
August 5, 2020	11.446	9.915
August 6, 2020	11.477	9.934
August 7, 2020	11.579	9.954
August 8, 2020	11.579	9.971
August 9, 2020	11.578	9.992
August 10, 2020	11.491	10.011
August 11, 2020	11.415	10.023
August 12, 2020	11.433	10.037
August 13, 2020	11.465	10.057
August 14, 2020	11.478	10.079
August 15, 2020	11.421	10.101
August 16, 2020	11.366	10.123
August 17, 2020	11.398	10.146
August 18, 2020	11.424	10.162
August 19, 2020	11.385	10.187
August 20, 2020	11.354	10.220
August 21, 2020	11.564	10.264
August 22, 2020	12.310	10.401
August 23, 2020	12.155	10.422
August 24, 2020	12.068	10.439
August 25, 2020	12.012	10.460
August 26, 2020	11.969	10.480
August 27, 2020	11.931	10.501
August 28, 2020	11.895	10.499
August 29, 2020	11.859	10.509
August 30, 2020	11.869	10.531
August 31, 2020	11.847	10.554
September 1, 2020	11.840	10.583
September 2, 2020	11.803	10.611
September 3, 2020	11.802	10.637
September 4, 2020	11.744	10.664
September 5, 2020	11.800	10.689
September 6, 2020	11.814	10.713
September 7, 2020	11.797	10.738
September 8, 2020	11.780	10.759
September 9, 2020	11.701	10.784
September 10, 2020	11.666	10.810
September 11, 2020	11.666	10.832
September 12, 2020	11.668	10.856
September 13, 2020	11.670	10.887
September 14, 2020	11.702	10.915
September 15, 2020	11.730	11.029

Date	Total Pressure (m)	Temperature (°C)
September 16, 2020	11.690	11.054
September 17, 2020	11.685	11.069
September 18, 2020	11.669	11.094
September 19, 2020	11.710	11.117
September 20, 2020	11.737	11.141
September 21, 2020	11.704	11.163
September 22, 2020	11.710	11.183
September 23, 2020	11.813	11.236
September 24, 2020	12.285	11.374
September 25, 2020	12.185	11.385
September 26, 2020	12.229	11.393
September 27, 2020	12.287	11.405
September 28, 2020	12.208	11.416
September 29, 2020	12.089	11.426
September 30, 2020	12.073	11.434
October 1, 2020	12.053	11.446
October 2, 2020	12.013	11.457
October 3, 2020	11.978	11.470
October 4, 2020	11.982	11.487
October 5, 2020	12.010	11.501
October 6, 2020	11.954	11.517
October 7, 2020	11.872	11.532
October 8, 2020	11.850	11.549
October 9, 2020	11.831	11.564
October 10, 2020	12.223	11.675
October 11, 2020	12.263	11.696
October 12, 2020	12.351	11.719
October 13, 2020	12.256	11.723
October 14, 2020	12.354	11.723
October 15, 2020	12.362	11.717
October 16, 2020	12.302	11.747
October 17, 2020	12.361	11.784
October 18, 2020	12.327	11.795
October 19, 2020	12.298	11.799
October 20, 2020	12.244	11.793
October 21, 2020	12.182	11.789
October 22, 2020	12.222	11.787
October 23, 2020	12.137	11.795
October 24, 2020	12.256	11.813
October 25, 2020	12.288	11.808
October 26, 2020	12.233	11.803
October 27, 2020	12.164	11.800
October 28, 2020	12.090	11.795
October 29, 2020	12.050	11.793
October 30, 2020	12.006	11.791
October 31, 2020	12.129	11.788

Date	Total Pressure (m)	Temperature (°C)
November 1, 2020	12.073	11.784
November 2, 2020	12.007	11.778
November 3, 2020	12.123	11.803
November 4, 2020	12.367	11.817
November 5, 2020	12.358	11.732
November 6, 2020	12.209	11.696
November 7, 2020	12.105	11.689
November 8, 2020	12.143	11.679
November 9, 2020	12.138	11.671
November 10, 2020	12.081	11.649
November 11, 2020	12.115	11.621
November 12, 2020	12.036	11.596
November 13, 2020	12.221	11.378
November 14, 2020	12.303	11.289
November 15, 2020	12.329	11.146
November 16, 2020	12.392	10.939
November 17, 2020	12.177	10.807
November 18, 2020	12.302	10.626
November 19, 2020	12.436	10.571
November 20, 2020	12.437	10.580
November 21, 2020	12.410	10.552
November 22, 2020	12.210	10.582
November 23, 2020	12.189	10.560
November 24, 2020	12.162	10.534
November 25, 2020	12.290	10.417
November 26, 2020	12.400	10.351
November 27, 2020	12.282	10.367
November 28, 2020	12.275	10.382
November 29, 2020	12.201	10.376
November 30, 2020	12.148	10.350
December 1, 2020	12.310	10.328
December 2, 2020	12.180	10.353
December 3, 2020	12.163	10.353
December 4, 2020	12.188	10.355
December 5, 2020	12.067	10.327
December 6, 2020	12.139	10.301
December 7, 2020	12.133	10.263
December 8, 2020	12.487	9.809
December 9, 2020	12.457	9.770
December 10, 2020	12.305	9.834
December 11, 2020	12.292	9.836
December 12, 2020	12.255	9.864
December 13, 2020	12.162	9.859
December 14, 2020	12.275	9.782
December 15, 2020	12.234	9.712
December 16, 2020	12.216	9.619

Date	Total Pressure (m)	Temperature (°C)
December 17, 2020	12.382	9.417
December 18, 2020	12.401	9.365
December 19, 2020	12.387	9.342
December 20, 2020	12.397	9.285
December 21, 2020	12.310	9.271
December 22, 2020	12.496	9.206
December 23, 2020	12.495	9.215
December 24, 2020	12.283	9.242
December 25, 2020	12.120	9.230
December 26, 2020	12.364	8.869
December 27, 2020	12.400	8.754
December 28, 2020	12.363	8.681
December 29, 2020	12.306	8.776
December 30, 2020	12.346	8.462
December 31, 2020	12.392	8.342
January 1, 2021	12.340	8.275
January 2, 2021	12.273	8.258
January 3, 2021	12.307	8.278
January 4, 2021	12.277	8.266
January 5, 2021	12.376	8.264
January 6, 2021	12.400	8.262
January 7, 2021	12.349	8.393
January 8, 2021	12.368	8.371
January 9, 2021	12.379	8.361
January 10, 2021	12.268	8.441
January 11, 2021	12.280	8.332
January 12, 2021	12.302	8.099
January 13, 2021	12.441	8.131
January 14, 2021	12.403	8.273
January 15, 2021	12.352	8.332
January 16, 2021	12.303	8.384
January 17, 2021	12.299	8.383
January 18, 2021	12.317	8.397
January 19, 2021	12.239	8.396
January 20, 2021	12.141	8.393
January 21, 2021	12.094	8.399
January 22, 2021	12.081	8.398
January 23, 2021	12.071	8.403
January 24, 2021	11.956	8.392
January 25, 2021	12.030	8.326
January 26, 2021	11.958	8.310
January 27, 2021	11.914	8.314
January 28, 2021	11.951	8.314
January 29, 2021	11.961	8.313
January 30, 2021	11.991	8.299
January 31, 2021	12.177	8.159

Date	Total Pressure (m)	Temperature (°C)
February 1, 2021	12.357	7.963
February 2, 2021	12.332	7.959
February 3, 2021	12.347	8.013
February 4, 2021	12.360	8.057
February 5, 2021	12.380	7.967
February 6, 2021	12.304	7.970
February 7, 2021	12.247	7.979
February 8, 2021	12.204	8.042
February 9, 2021	12.190	8.060
February 10, 2021	12.167	8.061
February 11, 2021	12.126	8.084
February 12, 2021	12.048	8.093
February 13, 2021	11.945	8.080
February 14, 2021	11.943	8.057
February 15, 2021	11.887	8.017
February 16, 2021	12.101	7.911
February 17, 2021	12.213	7.879
February 18, 2021	12.138	7.874
February 19, 2021	12.203	7.788
February 20, 2021	12.336	7.672
February 21, 2021	12.334	7.608
February 22, 2021	12.393	7.430
February 23, 2021	12.336	7.414
February 24, 2021	12.351	7.471
February 25, 2021	12.158	7.533
February 26, 2021	12.095	7.543
February 27, 2021	12.175	7.558
February 28, 2021	12.250	7.510
March 1, 2021	12.168	7.499
March 2, 2021	12.116	7.535
March 3, 2021	12.028	7.556
March 4, 2021	12.049	7.560
March 5, 2021	12.072	7.523
March 6, 2021	12.066	7.523
March 7, 2021	12.073	7.529
March 8, 2021	12.065	7.535
March 9, 2021	12.038	7.544
March 10, 2021	12.038	7.536
March 11, 2021	12.106	7.529
March 12, 2021	12.111	7.543
March 13, 2021	12.046	7.548
March 14, 2021	11.966	7.542
March 15, 2021	12.059	7.554
March 16, 2021	12.050	7.528
March 17, 2021	11.986	7.513
March 18, 2021	11.933	7.516

Date	Total Pressure (m)	Temperature (°C)
March 19, 2021	12.031	7.462
March 20, 2021	12.093	7.453
March 21, 2021	12.154	7.442
March 22, 2021	12.160	7.423
March 23, 2021	12.235	7.442
March 24, 2021	12.199	7.384
March 25, 2021	12.245	7.361
March 26, 2021	12.257	7.435
March 27, 2021	12.236	7.473
March 28, 2021	12.162	7.448
March 29, 2021	12.290	7.456
March 30, 2021	12.282	7.507
March 31, 2021	12.182	7.538
April 1, 2021	12.039	7.561
April 2, 2021	12.066	7.572
April 3, 2021	12.077	7.590
April 4, 2021	12.111	7.594
April 5, 2021	12.089	7.612
April 6, 2021	12.040	7.628
April 7, 2021	12.009	7.641
April 8, 2021	12.169	7.624
April 9, 2021	12.109	7.641
April 10, 2021	12.106	7.675
April 11, 2021	12.151	7.700
April 12, 2021	12.122	7.717
April 13, 2021	12.101	7.730
April 14, 2021	12.028	7.749
April 15, 2021	11.997	7.763
April 16, 2021	12.011	7.777
April 17, 2021	11.994	7.799
April 18, 2021	11.957	7.817
April 19, 2021	11.959	7.836
April 20, 2021	11.927	7.857
April 21, 2021	11.863	7.872
April 22, 2021	11.813	7.883
April 23, 2021	11.803	7.899
April 24, 2021	11.754	7.919
April 25, 2021	11.756	7.932
April 26, 2021	11.811	7.948
April 27, 2021	11.873	7.967
April 28, 2021	11.917	7.987
April 29, 2021	11.879	8.004
April 30, 2021	11.857	8.019

Date	Total Pressure (m)	Temperature (°C)
May 1, 2020	10.799	9.360
May 2, 2020	10.748	9.428
May 3, 2020	10.850	9.500
May 4, 2020	10.849	9.576
May 5, 2020	10.823	9.648
May 6, 2020	10.877	9.713
May 7, 2020	10.912	9.791
May 8, 2020	10.834	9.861
May 9, 2020	10.781	9.931
May 10, 2020	10.725	9.999
May 11, 2020	10.672	10.066
May 12, 2020	10.711	10.111
May 13, 2020	10.733	10.176
May 14, 2020	10.758	10.244
May 15, 2020	10.800	10.306
May 16, 2020	10.722	10.366
May 17, 2020	10.708	10.410
May 18, 2020	10.699	10.479
May 19, 2020	10.757	10.541
May 20, 2020	10.768	10.603
May 21, 2020	10.767	10.662
May 22, 2020	10.770	10.732
May 23, 2020	10.824	10.802
May 24, 2020	10.825	10.873
May 25, 2020	10.823	10.931
May 26, 2020	10.816	11.009
May 27, 2020	10.820	11.082
May 28, 2020	10.773	11.153
May 29, 2020	10.732	11.223
May 30, 2020	10.753	11.273
May 31, 2020	10.802	11.334
June 1, 2020	10.821	11.397
June 2, 2020	10.847	11.451
June 3, 2020	10.830	11.506
June 4, 2020	10.787	11.558
June 5, 2020	10.691	11.608
June 6, 2020	10.686	11.659
June 7, 2020	10.735	11.709
June 8, 2020	10.812	11.758
June 9, 2020	10.825	11.801
June 10, 2020	10.829	11.845
June 11, 2020	10.807	11.896
June 12, 2020	10.806	11.938
June 13, 2020	10.757	11.988
June 14, 2020	10.764	12.032
June 15, 2020	10.771	12.067

Date	Total Pressure (m)	Temperature (°C)
June 16, 2020	10.804	12.108
June 17, 2020	10.856	12.147
June 18, 2020	10.836	12.183
June 19, 2020	10.761	12.219
June 20, 2020	10.757	12.253
June 21, 2020	10.806	12.290
June 22, 2020	10.830	12.328
June 23, 2020	10.775	12.366
June 24, 2020	10.742	12.405
June 25, 2020	10.781	12.443
June 26, 2020	10.765	12.481
June 27, 2020	10.741	12.518
June 28, 2020	10.719	12.555
June 29, 2020	10.736	12.593
June 30, 2020	10.747	12.628
July 1, 2020	10.755	12.662
July 2, 2020	10.751	12.702
July 3, 2020	10.824	12.737
July 4, 2020	10.835	12.777
July 5, 2020	10.810	12.819
July 6, 2020	10.769	12.859
July 7, 2020	10.773	12.899
July 8, 2020	10.783	12.939
July 9, 2020	10.806	12.972
July 10, 2020	10.816	13.012
July 11, 2020	10.792	13.051
July 12, 2020	10.795	13.090
July 13, 2020	10.797	13.129
July 14, 2020	10.801	13.168
July 15, 2020	10.788	13.206
July 16, 2020	10.749	13.241
July 17, 2020	10.769	13.275
July 18, 2020	10.808	13.305
July 19, 2020	10.777	13.334
July 20, 2020	10.747	13.359
July 21, 2020	10.702	13.384
July 22, 2020	10.691	13.406
July 23, 2020	10.728	13.427
July 24, 2020	10.758	13.446
July 25, 2020	10.792	13.465
July 26, 2020	10.772	13.483
July 27, 2020	10.706	13.502
July 28, 2020	10.703	13.522
July 29, 2020	10.717	13.541
July 30, 2020	10.724	13.560
July 31, 2020	10.721	13.581

Date	Total Pressure (m)	Temperature (°C)
August 1, 2020	10.768	13.602
August 2, 2020	10.761	13.625
August 3, 2020	10.786	13.647
August 4, 2020	10.762	13.670
August 5, 2020	10.706	13.693
August 6, 2020	10.731	13.716
August 7, 2020	10.790	13.738
August 8, 2020	10.795	13.761
August 9, 2020	10.820	13.786
August 10, 2020	10.766	13.811
August 11, 2020	10.710	13.836
August 12, 2020	10.741	13.862
August 13, 2020	10.779	13.888
August 14, 2020	10.798	13.914
August 15, 2020	10.747	13.942
August 16, 2020	10.691	13.973
August 17, 2020	10.731	14.004
August 18, 2020	10.751	14.036
August 19, 2020	10.716	14.067
August 20, 2020	10.684	14.097
August 21, 2020	10.716	14.123
August 22, 2020	10.818	14.145
August 23, 2020	10.768	14.162
August 24, 2020	10.756	14.175
August 25, 2020	10.755	14.187
August 26, 2020	10.764	14.198
August 27, 2020	10.767	14.212
August 28, 2020	10.769	14.234
August 29, 2020	10.767	14.269
August 30, 2020	10.804	14.314
August 31, 2020	10.800	14.365
September 1, 2020	10.813	14.415
September 2, 2020	10.789	14.458
September 3, 2020	10.802	14.492
September 4, 2020	10.757	14.516
September 5, 2020	10.823	14.530
September 6, 2020	10.842	14.535
September 7, 2020	10.832	14.533
September 8, 2020	10.851	14.523
September 9, 2020	10.788	14.509
September 10, 2020	10.762	14.493
September 11, 2020	10.772	14.477
September 12, 2020	10.770	14.462
September 13, 2020	10.753	14.449
September 14, 2020	10.766	14.437
September 15, 2020	10.797	14.432

Date	Total Pressure (m)	Temperature (°C)
September 16, 2020	10.778	14.415
September 17, 2020	10.763	14.397
September 18, 2020	10.735	14.375
September 19, 2020	10.767	14.348
September 20, 2020	10.788	14.317
September 21, 2020	10.758	14.282
September 22, 2020	10.762	14.245
September 23, 2020	10.738	14.207
September 24, 2020	10.749	14.179
September 25, 2020	10.670	14.157
September 26, 2020	10.762	14.133
September 27, 2020	10.867	14.108
September 28, 2020	10.838	14.083
September 29, 2020	10.756	14.060
September 30, 2020	10.775	14.038
October 1, 2020	10.783	14.020
October 2, 2020	10.764	14.010
October 3, 2020	10.753	14.008
October 4, 2020	10.773	14.013
October 5, 2020	10.816	14.021
October 6, 2020	10.775	14.028
October 7, 2020	10.704	14.032
October 8, 2020	10.689	14.028
October 9, 2020	10.692	14.015
October 10, 2020	10.696	13.996
October 11, 2020	10.724	13.979
October 12, 2020	10.757	13.957
October 13, 2020	10.704	13.930
October 14, 2020	10.842	13.902
October 15, 2020	10.912	13.872
October 16, 2020	10.833	13.839
October 17, 2020	10.773	13.816
October 18, 2020	10.772	13.793
October 19, 2020	10.752	13.778
October 20, 2020	10.764	13.761
October 21, 2020	10.753	13.746
October 22, 2020	10.835	13.729
October 23, 2020	10.770	13.710
October 24, 2020	10.813	13.690
October 25, 2020	10.909	13.666
October 26, 2020	10.890	13.642
October 27, 2020	10.844	13.616
October 28, 2020	10.783	13.587
October 29, 2020	10.760	13.556
October 30, 2020	10.718	13.523
October 31, 2020	10.841	13.487

Date	Total Pressure (m)	Temperature (°C)
November 1, 2020	10.798	13.444
November 2, 2020	10.742	13.391
November 3, 2020	10.770	13.325
November 4, 2020	10.779	13.263
November 5, 2020	10.757	13.206
November 6, 2020	10.693	13.133
November 7, 2020	10.654	13.051
November 8, 2020	10.740	12.967
November 9, 2020	10.783	12.884
November 10, 2020	10.736	12.806
November 11, 2020	10.773	12.730
November 12, 2020	10.735	12.655
November 13, 2020	10.683	12.598
November 14, 2020	10.745	12.594
November 15, 2020	10.748	12.543
November 16, 2020	10.800	12.485
November 17, 2020	10.594	12.440
November 18, 2020	10.714	12.384
November 19, 2020	10.855	12.336
November 20, 2020	10.910	12.256
November 21, 2020	10.908	12.169
November 22, 2020	10.756	12.074
November 23, 2020	10.753	11.974
November 24, 2020	10.735	11.871
November 25, 2020	10.782	11.765
November 26, 2020	10.876	11.659
November 27, 2020	10.802	11.554
November 28, 2020	10.841	11.443
November 29, 2020	10.807	11.333
November 30, 2020	10.765	11.225
December 1, 2020	10.927	11.122
December 2, 2020	10.830	11.026
December 3, 2020	10.836	10.934
December 4, 2020	10.884	10.850
December 5, 2020	10.781	10.770
December 6, 2020	10.865	10.700
December 7, 2020	10.863	10.638
December 8, 2020	10.956	10.585
December 9, 2020	10.901	10.563
December 10, 2020	10.801	10.526
December 11, 2020	10.813	10.483
December 12, 2020	10.816	10.440
December 13, 2020	10.767	10.398
December 14, 2020	10.826	10.359
December 15, 2020	10.773	10.323
December 16, 2020	10.733	10.289

Date	Total Pressure (m)	Temperature (°C)
December 17, 2020	10.818	10.254
December 18, 2020	10.857	10.217
December 19, 2020	10.857	10.188
December 20, 2020	10.845	10.146
December 21, 2020	10.805	10.102
December 22, 2020	10.932	10.042
December 23, 2020	10.971	9.996
December 24, 2020	10.837	9.958
December 25, 2020	10.732	9.916
December 26, 2020	10.831	9.858
December 27, 2020	10.864	9.786
December 28, 2020	10.843	9.731
December 29, 2020	10.872	9.682
December 30, 2020	10.850	9.624
December 31, 2020	10.857	9.553
January 1, 2021	10.807	9.473
January 2, 2021	10.746	9.393
January 3, 2021	10.774	9.332
January 4, 2021	10.792	9.261
January 5, 2021	10.870	9.179
January 6, 2021	10.882	9.089
January 7, 2021	10.897	9.005
January 8, 2021	10.921	8.938
January 9, 2021	10.917	8.869
January 10, 2021	10.878	8.801
January 11, 2021	10.862	8.730
January 12, 2021	10.831	8.658
January 13, 2021	10.946	8.557
January 14, 2021	10.979	8.483
January 15, 2021	10.967	8.437
January 16, 2021	10.957	8.395
January 17, 2021	10.969	8.354
January 18, 2021	11.009	8.323
January 19, 2021	10.965	8.294
January 20, 2021	10.885	8.270
January 21, 2021	10.851	8.252
January 22, 2021	10.846	8.240
January 23, 2021	10.847	8.227
January 24, 2021	10.753	8.204
January 25, 2021	10.767	8.206
January 26, 2021	10.680	8.217
January 27, 2021	10.660	8.236
January 28, 2021	10.723	8.264
January 29, 2021	10.739	8.295
January 30, 2021	10.791	8.320
January 31, 2021	10.890	8.326

Date	Total Pressure (m)	Temperature (°C)
February 1, 2021	10.952	8.300
February 2, 2021	10.907	8.237
February 3, 2021	10.922	8.224
February 4, 2021	11.009	8.226
February 5, 2021	10.936	8.268
February 6, 2021	10.891	8.274
February 7, 2021	10.840	8.306
February 8, 2021	10.867	8.316
February 9, 2021	10.903	8.325
February 10, 2021	10.918	8.331
February 11, 2021	10.916	8.329
February 12, 2021	10.869	8.319
February 13, 2021	10.791	8.299
February 14, 2021	10.799	8.277
February 15, 2021	10.755	8.238
February 16, 2021	10.831	8.220
February 17, 2021	10.917	8.205
February 18, 2021	10.888	8.179
February 19, 2021	10.874	8.156
February 20, 2021	10.924	8.141
February 21, 2021	10.953	8.114
February 22, 2021	10.923	8.087
February 23, 2021	10.933	8.069
February 24, 2021	11.011	8.051
February 25, 2021	10.871	8.018
February 26, 2021	10.807	7.995
February 27, 2021	10.906	7.970
February 28, 2021	10.966	7.921
March 1, 2021	10.863	7.908
March 2, 2021	10.844	7.882
March 3, 2021	10.781	7.856
March 4, 2021	10.834	7.827
March 5, 2021	10.817	7.798
March 6, 2021	10.812	7.792
March 7, 2021	10.850	7.781
March 8, 2021	10.842	7.780
March 9, 2021	10.828	7.784
March 10, 2021	10.843	7.797
March 11, 2021	10.933	7.810
March 12, 2021	10.935	7.841
March 13, 2021	10.880	7.873
March 14, 2021	10.819	7.902
March 15, 2021	10.883	7.952
March 16, 2021	10.884	8.000
March 17, 2021	10.831	8.049
March 18, 2021	10.792	8.094

Date	Total Pressure (m)	Temperature (°C)
March 19, 2021	10.805	8.154
March 20, 2021	10.879	8.199
March 21, 2021	10.937	8.241
March 22, 2021	10.872	8.301
March 23, 2021	10.966	8.365
March 24, 2021	10.876	8.374
March 25, 2021	10.824	8.434
March 26, 2021	10.906	8.485
March 27, 2021	10.941	8.524
March 28, 2021	10.858	8.525
March 29, 2021	10.922	8.590
March 30, 2021	10.983	8.625
March 31, 2021	10.925	8.656
April 1, 2021	10.805	8.684
April 2, 2021	10.847	8.706
April 3, 2021	10.886	8.722
April 4, 2021	10.909	8.745
April 5, 2021	10.898	8.772
April 6, 2021	10.865	8.796
April 7, 2021	10.857	8.806
April 8, 2021	10.917	8.835
April 9, 2021	10.865	8.870
April 10, 2021	10.876	8.904
April 11, 2021	10.947	8.941
April 12, 2021	10.941	8.979
April 13, 2021	10.941	9.018
April 14, 2021	10.887	9.063
April 15, 2021	10.868	9.108
April 16, 2021	10.892	9.154
April 17, 2021	10.889	9.199
April 18, 2021	10.868	9.241
April 19, 2021	10.892	9.278
April 20, 2021	10.880	9.316
April 21, 2021	10.831	9.352
April 22, 2021	10.791	9.390
April 23, 2021	10.789	9.433
April 24, 2021	10.745	9.476
April 25, 2021	10.755	9.518
April 26, 2021	10.784	9.587
April 27, 2021	10.863	9.655
April 28, 2021	10.920	9.726
April 29, 2021	10.894	9.805
April 30, 2021	10.902	9.867

Exhibition Park

Date	Total Pressure (m)	Temperature (°C)
June 12, 2020	12.092	13.517
June 13, 2020	12.955	11.434
June 14, 2020	12.967	11.432
June 15, 2020	12.939	11.431
June 16, 2020	12.984	11.430
June 17, 2020	13.037	11.429
June 18, 2020	13.015	11.428
June 19, 2020	12.938	11.427
June 20, 2020	12.918	11.426
June 21, 2020	12.967	11.425
June 22, 2020	12.991	11.424
June 23, 2020	12.934	11.423
June 24, 2020	12.897	11.422
June 25, 2020	12.930	11.421
June 26, 2020	12.911	11.421
June 27, 2020	12.878	11.420
June 28, 2020	12.852	11.419
June 29, 2020	12.867	11.418
June 30, 2020	12.862	11.417
July 1, 2020	12.845	11.416
July 2, 2020	12.856	11.415
July 3, 2020	12.891	11.414
July 4, 2020	12.922	11.414
July 5, 2020	12.903	11.413
July 6, 2020	12.859	11.480
July 7, 2020	12.875	14.257
July 8, 2020	12.880	12.923
July 9, 2020	12.851	12.243
July 10, 2020	12.282	11.937
July 11, 2020	11.056	11.786
July 12, 2020	11.053	11.686
July 13, 2020	11.053	11.622
July 14, 2020	11.052	11.578
July 15, 2020	11.034	11.548
July 16, 2020	10.992	11.525
July 17, 2020	11.007	11.509
July 18, 2020	11.040	11.496
July 19, 2020	11.004	11.486
July 20, 2020	10.971	11.477
July 21, 2020	10.923	11.470
July 22, 2020	10.907	11.463
July 23, 2020	10.939	11.458
July 24, 2020	10.962	11.454
July 25, 2020	10.991	11.450
July 26, 2020	10.966	11.446
July 27, 2020	10.897	11.442
July 28, 2020	10.889	11.439

Exhibition Park

Date	Total Pressure (m)	Temperature (°C)
July 29, 2020	10.897	11.436
July 30, 2020	10.898	11.433
July 31, 2020	10.889	11.431
August 1, 2020	10.929	11.428
August 2, 2020	10.918	11.426
August 3, 2020	10.939	11.424
August 4, 2020	10.910	11.422
August 5, 2020	10.853	11.420
August 6, 2020	10.555	17.081
August 7, 2020	10.322	23.179
August 8, 2020	10.333	22.817
August 9, 2020	10.359	23.271
August 10, 2020	10.300	24.195
August 11, 2020	10.243	23.848
August 12, 2020	10.279	22.964
August 13, 2020	10.317	22.436
August 14, 2020	10.336	23.206
August 15, 2020	10.282	24.457
August 16, 2020	10.229	26.124
August 17, 2020	10.269	27.674
August 18, 2020	10.291	26.957
August 19, 2020	10.255	26.057
August 20, 2020	10.218	25.751
August 21, 2020	10.200	24.773
August 22, 2020	10.298	23.594
August 23, 2020	10.271	23.588
August 24, 2020	10.260	23.395
August 25, 2020	10.262	23.468
August 26, 2020	10.268	23.621
August 27, 2020	10.274	23.611
August 28, 2020	10.277	23.832
August 29, 2020	10.277	23.355
August 30, 2020	10.314	22.356
August 31, 2020	10.310	22.072
September 1, 2020	10.323	22.310
September 2, 2020	10.300	22.702
September 3, 2020	10.313	23.284
September 4, 2020	10.268	24.024
September 5, 2020	10.336	23.522
September 6, 2020	10.353	22.911
September 7, 2020	10.345	23.096
September 8, 2020	10.356	23.670
September 9, 2020	10.284	23.895
September 10, 2020	10.260	24.801
September 11, 2020	10.269	24.900
September 12, 2020	10.267	23.292
September 13, 2020	10.248	21.631

Exhibition Park

Date	Total Pressure (m)	Temperature (°C)
September 14, 2020	10.259	20.341
September 15, 2020	10.298	21.182
September 16, 2020	10.279	22.203
September 17, 2020	10.265	21.912
September 18, 2020	10.237	21.980
September 19, 2020	10.270	21.685
September 20, 2020	10.291	21.372
September 21, 2020	10.258	18.019
September 22, 2020	10.264	14.299
September 23, 2020	10.181	14.474
September 24, 2020	10.218	13.979
September 25, 2020	10.180	13.842
September 26, 2020	10.302	13.750
September 27, 2020	10.420	13.797
September 28, 2020	10.388	13.565
September 29, 2020	10.308	13.876
September 30, 2020	10.328	13.926
October 1, 2020	10.334	13.932
October 2, 2020	10.314	13.923
October 3, 2020	10.299	13.907
October 4, 2020	10.317	13.888
October 5, 2020	10.358	13.864
October 6, 2020	10.313	13.757
October 7, 2020	10.239	13.416
October 8, 2020	10.226	13.342
October 9, 2020	10.196	13.571
October 10, 2020	10.142	13.638
October 11, 2020	10.222	13.657
October 12, 2020	10.291	13.661
October 13, 2020	10.212	13.666
October 14, 2020	10.387	13.667
October 15, 2020	10.459	13.654
October 16, 2020	10.313	13.644
October 17, 2020	10.320	13.636
October 18, 2020	10.281	13.627
October 19, 2020	10.307	13.622
October 20, 2020	10.328	13.614
October 21, 2020	10.319	13.604
October 22, 2020	10.399	13.593
October 23, 2020	10.286	13.583
October 24, 2020	10.377	13.571
October 25, 2020	10.473	13.556
October 26, 2020	10.448	13.550
October 27, 2020	10.399	13.644
October 28, 2020	10.338	13.842
October 29, 2020	10.311	14.014
October 30, 2020	10.265	14.154

Exhibition Park

Date	Total Pressure (m)	Temperature (°C)
October 31, 2020	10.406	14.097
November 1, 2020	10.357	14.021
November 2, 2020	10.299	13.983
November 3, 2020	10.230	13.989
November 4, 2020	10.238	14.016
November 5, 2020	10.273	14.126
November 6, 2020	10.232	14.032
November 7, 2020	10.201	13.887
November 8, 2020	10.293	13.659
November 9, 2020	10.327	13.409
November 10, 2020	10.270	13.326
November 11, 2020	10.330	13.271
November 12, 2020	10.249	13.207
November 13, 2020	10.056	13.142
November 14, 2020	10.231	13.094
November 15, 2020	10.231	13.082
November 16, 2020	10.256	13.075
November 17, 2020	10.061	13.060
November 18, 2020	10.141	13.100
November 19, 2020	10.318	13.060
November 20, 2020	10.401	13.041
November 21, 2020	10.414	13.031
November 22, 2020	10.275	12.920
November 23, 2020	10.269	12.857
November 24, 2020	10.246	12.848
November 25, 2020	10.295	12.793
November 26, 2020	10.396	12.786
November 27, 2020	10.331	12.813
November 28, 2020	10.375	12.845
November 29, 2020	10.340	12.700
November 30, 2020	10.281	12.682
December 1, 2020	10.468	12.578
December 2, 2020	10.366	12.472
December 3, 2020	10.375	12.401
December 4, 2020	11.056	12.022
December 5, 2020	12.010	11.410
December 6, 2020	12.101	11.410
December 7, 2020	12.079	11.409
December 8, 2020	12.045	11.409
December 9, 2020	12.100	11.409
December 10, 2020	12.045	11.409
December 11, 2020	12.053	11.409
December 12, 2020	12.093	11.409
December 13, 2020	12.031	11.410
December 14, 2020	12.109	11.410
December 15, 2020	12.049	11.410
December 16, 2020	12.003	11.410

Exhibition Park

Date	Total Pressure (m)	Temperature (°C)
December 17, 2020	12.016	11.411
December 18, 2020	12.092	11.411
December 19, 2020	12.110	11.412
December 20, 2020	12.128	11.413
December 21, 2020	12.053	11.413
December 22, 2020	12.230	11.414
December 23, 2020	12.328	11.415
December 24, 2020	12.225	11.416
December 25, 2020	12.116	11.416
December 26, 2020	12.159	11.417
December 27, 2020	12.265	11.418
December 28, 2020	12.294	11.419
December 29, 2020	12.346	11.420
December 30, 2020	12.238	11.421
December 31, 2020	12.304	11.421
January 1, 2021	12.271	11.422
January 2, 2021	12.242	11.423
January 3, 2021	12.329	11.425
January 4, 2021	12.295	11.426
January 5, 2021	12.424	11.427
January 6, 2021	12.472	11.428
January 7, 2021	12.565	11.429
January 8, 2021	12.588	11.430
January 9, 2021	12.651	11.431
January 10, 2021	12.638	11.433
January 11, 2021	12.611	11.434
January 12, 2021	12.511	11.435
January 13, 2021	12.723	11.436
January 14, 2021	12.847	11.437
January 15, 2021	12.866	11.439
January 16, 2021	12.902	11.440
January 17, 2021	12.943	11.442
January 18, 2021	13.019	11.443
January 19, 2021	12.998	11.445
January 20, 2021	12.948	11.446
January 21, 2021	12.942	11.448
January 22, 2021	12.966	11.450
January 23, 2021	12.994	11.452
January 24, 2021	12.909	11.455
January 25, 2021	12.937	11.457
January 26, 2021	12.899	11.460
January 27, 2021	12.896	11.463
January 28, 2021	12.965	11.466
January 29, 2021	13.004	11.469
January 30, 2021	13.041	11.472
January 31, 2021	13.059	11.475
February 1, 2021	13.046	11.478

Exhibition Park

Date	Total Pressure (m)	Temperature (°C)
February 2, 2021	13.091	11.480
February 3, 2021	13.205	11.483
February 4, 2021	13.278	11.486
February 5, 2021	13.253	11.489
February 6, 2021	13.211	11.492
February 7, 2021	13.227	11.495
February 8, 2021	13.282	11.498
February 9, 2021	13.339	11.500
February 10, 2021	13.372	11.503
February 11, 2021	13.387	11.505
February 12, 2021	13.363	11.507
February 13, 2021	13.299	11.509
February 14, 2021	13.326	11.511
February 15, 2021	13.254	11.513
February 16, 2021	13.375	11.515
February 17, 2021	13.489	11.517
February 18, 2021	13.443	11.518
February 19, 2021	13.428	11.520
February 20, 2021	13.493	11.522
February 21, 2021	13.503	11.523
February 22, 2021	13.484	11.525
February 23, 2021	13.545	11.526
February 24, 2021	13.639	11.527
February 25, 2021	13.489	11.528
February 26, 2021	13.453	11.529
February 27, 2021	13.562	11.530
February 28, 2021	13.590	11.531
March 1, 2021	13.540	11.532
March 2, 2021	13.532	11.532
March 3, 2021	13.479	11.533
March 4, 2021	13.517	11.534
March 5, 2021	13.506	11.534
March 6, 2021	13.529	11.534
March 7, 2021	13.556	11.535
March 8, 2021	13.566	11.535
March 9, 2021	13.558	11.535
March 10, 2021	13.572	11.535
March 11, 2021	13.655	11.535
March 12, 2021	13.683	11.535
March 13, 2021	13.637	11.535
March 14, 2021	13.561	11.535
March 15, 2021	13.639	11.535
March 16, 2021	13.648	11.535
March 17, 2021	13.599	11.534
March 18, 2021	13.539	11.534
March 19, 2021	13.574	11.533
March 20, 2021	13.624	11.533

Exhibition Park

Date	Total Pressure (m)	Temperature (°C)
March 21, 2021	13.662	11.532
March 22, 2021	13.627	11.532
March 23, 2021	13.730	11.532
March 24, 2021	13.582	11.531
March 25, 2021	13.572	11.531
March 26, 2021	13.667	11.530
March 27, 2021	13.705	11.529
March 28, 2021	13.570	11.529
March 29, 2021	13.677	11.528
March 30, 2021	13.737	11.527
March 31, 2021	13.691	11.526
April 1, 2021	13.583	11.526
April 2, 2021	13.617	11.525
April 3, 2021	13.637	11.525
April 4, 2021	13.662	11.524
April 5, 2021	13.658	11.523
April 6, 2021	13.626	11.522
April 7, 2021	13.590	11.521
April 8, 2021	13.644	11.521
April 9, 2021	13.618	11.519
April 10, 2021	13.624	11.519
April 11, 2021	13.689	11.518
April 12, 2021	13.552	11.523
April 13, 2021	13.640	11.740
April 14, 2021	13.507	11.832
April 15, 2021	13.561	11.633
April 16, 2021	13.381	11.661
April 17, 2021	13.490	11.754
April 18, 2021	13.586	12.055
April 19, 2021	13.388	11.672
April 20, 2021	13.241	11.568
April 21, 2021	13.177	11.623
April 22, 2021	13.264	11.706
April 23, 2021	13.472	11.929
April 24, 2021	13.428	11.675
April 25, 2021	13.412	11.581
April 26, 2021	13.455	11.541
April 27, 2021	13.527	11.521
April 28, 2021	13.575	11.509
April 29, 2021	13.547	11.503
April 30, 2021	13.479	11.514

APPENDIX I

Mitigation Well Levels and Flows

Date	Allen Park Mitigation Well Flow (Boa Brook)	Allen Park Well Level	Garibaldi Park Mitigation Well Flow (Horn Creek)	Garibaldi Park Well Level	Fishtrap Creek Mitigation Well Flow Previous day's Total	Fishtrap Mitigation Well Level
	L/s	m	L/s	m	L/s	m
2020-05-01	0.001953	23.13357	-0.000916	28.98357	0	15.58091
2020-05-02	0.001953	23.16566	-0.000916	28.99903	0	15.58303
2020-05-03	0.001953	23.15667	-0.000916	28.97454	0	15.58175
2020-05-04	0.001953	23.14430	-0.000916	28.97120	Configure	15.58574
2020-05-05	0.001953	23.15667	0.001928	28.95883	Configure	15.57712
2020-05-06	0.001953	23.16904	-0.000916	28.97120	0	15.57062
2020-05-07	-0.000488	23.14278	-0.000916	28.93407	0	15.56527
2020-05-08	0.001233	23.14882	-0.000916	28.93224	0	15.55629
2020-05-09	0.001953	23.15667	-0.000916	28.91368	0	15.54787
2020-05-10	0.001953	23.15667	-0.000916	28.90522	0	15.53902
2020-05-11	0.001953	23.15667	-0.000916	28.88780	0	15.53158
2020-05-12	0.001953	23.15667	-0.000916	28.87554	0	15.56378
2020-05-13	0.000496	23.15667	-0.000916	28.81746	0	15.58658
2020-05-14	0.001953	23.13193	-0.000916	28.77316	0	15.49605
2020-05-15	0.001953	22.60887	-0.000916	28.69903	13.90002	11.25119
2020-05-16	0.001953	22.78841	-0.000916	28.69903	83.09930	11.07595
2020-05-17	0.001953	22.87948	-0.000916	28.69903	127.99862	11.04017
2020-05-18	0.000740	22.90924	-0.000916	28.69903	127.69862	11.01472
2020-05-19	0.000955	22.93399	-0.000916	28.69903	127.89862	10.98222
2020-05-20	0.001953	22.93399	-0.000916	28.68717	127.89862	10.95652
2020-05-21	0.001953	22.95873	-0.000916	28.70180	127.39863	10.95150
2020-05-22	0.001318	22.97110	-0.000916	28.72377	126.99863	10.93361
2020-05-23	0.001953	22.97110	-0.000916	28.72377	127.59863	10.91801
2020-05-24	-0.000093	22.97014	-0.000916	28.72377	127.49863	10.90639
2020-05-25	0.000740	22.98829	-0.000916	28.72377	127.59863	10.91859
2020-05-26	0.001953	22.99584	-0.000916	28.72105	127.89862	10.91440
2020-05-27	0.001953	22.99195	-0.000916	28.70236	127.69862	10.89771
2020-05-28	0.001953	22.99766	-0.000916	28.69888	127.59863	10.88328
2020-05-29	0.001953	23.00464	-0.000916	28.66602	127.59863	10.86976
2020-05-30	0.001953	23.00465	-0.000916	28.66192	127.79862	10.87393
2020-05-31	0.000968	23.00821	-0.000916	28.65973	127.49863	10.90181
2020-06-01	0.001953	22.99584	-0.000916	28.67429	128.19862	10.90368
2020-06-02	0.001953	22.99276	-0.000916	28.69616	128.79866	10.90512
2020-06-03	0.001953	22.99584	-0.000916	28.70942	128.99867	10.90287
2020-06-04	-0.000093	23.00821	-0.000916	28.71618	128.89867	10.87063
2020-06-05	0.000294	23.02122	-0.000916	28.72179	128.89867	10.85489
2020-06-06	0.001953	23.03296	-0.000916	28.69903	128.29863	10.83712
2020-06-07	0.001953	23.02059	-0.000916	28.67429	126.69864	10.81158
2020-06-08	0.001953	23.00821	-0.000916	28.66359	127.79862	10.79950
2020-06-09	0.001953	23.00345	-0.000916	28.66577	126.79864	10.80805
2020-06-10	0.001953	23.00821	-0.000916	28.66192	123.89868	10.82561

Date	Allen Park Mitigation Well Flow (Boa Brook)	Allen Park Well Level	Garibaldi Park Mitigation Well Flow (Horn Creek)	Garibaldi Park Well Level	Fishtrap Creek Mitigation Well Flow Previous day's Total	Fishtrap Mitigation Well Level
	L/s	m	L/s	m	L/s	m
2020-06-11	3.644388	9.53688	11.946362	18.61310	127.59863	10.82503
2020-06-12	0.001953	20.38594	-0.000916	28.63717	122.49870	10.82579
2020-06-13	0.001953	21.22449	-0.000916	28.66192	128.59865	10.83490
2020-06-14	0.001953	21.63994	-0.000916	28.66192	129.09868	10.82413
2020-06-15	0.001953	21.89457	-0.000916	28.66192	0.1287987	10.83075
2020-06-16	0.001953	22.08567	-0.000916	28.65909	0.1284986	10.97943
2020-06-17	0.001953	22.22196	-0.000916	28.64925	0.1287987	10.80906
2020-06-18	0.001953	22.32549	-0.000916	28.63717	0.1284986	14.64043
2020-06-19	0.001709	22.42676	-0.000916	28.62480	0.0814993	15.33777
2020-06-20	0.001953	22.51155	-0.000916	28.60733	0	15.42138
2020-06-21	0.001953	22.56285	-0.000916	28.61243	0	15.45380
2020-06-22	0.001953	22.60109	-0.000916	28.60632	0	15.46920
2020-06-23	0.001953	22.64354	-0.000916	28.59804	0	15.48055
2020-06-24	0.001953	22.68656	-0.000916	28.61243	0	15.48257
2020-06-25	0.001953	22.71130	-0.000916	28.57928	0	15.47539
2020-06-26	0.001953	22.73605	-0.000916	28.57532	0	15.47017
2020-06-27	0.001953	22.76470	-0.000916	28.58769	0	15.46120
2020-06-28	0.001953	22.79402	-0.000916	28.57532	0	15.45227
2020-06-29	0.001953	22.79790	-0.000916	28.57079	0	15.43984
2020-06-30	0.001877	22.81027	-0.000916	28.55615	0	15.44061
2020-07-01	0.001953	22.82849	-0.000916	28.55058	0	15.46936
2020-07-02	0.001387	22.84067	-0.000916	28.54586	0	15.49691
2020-07-03	0.001953	22.84280	-0.000916	28.53820	0	15.52499
2020-07-04	0.001953	22.83502	-0.000916	28.52131	0	15.53847
2020-07-05	0.001953	22.84739	-0.000916	28.51346	0	15.52692
2020-07-06	0.001919	22.84739	-0.000916	28.51345	0	15.51451
2020-07-07	0.001512	22.85976	-0.000916	28.50109	0	15.49406
2020-07-08	0.001953	22.85976	-0.000916	28.48872	0	15.47862
2020-07-09	0.001953	22.85976	-0.000916	28.46398	0	15.36420
2020-07-10	0.001953	22.23715	11.864612	18.47025	0.0254001	15.48222
2020-07-11	0.001953	22.45221	-0.000916	28.41467	0	15.48290
2020-07-12	0.001953	22.54720	-0.000916	28.42695	0	15.47482
2020-07-13	0.001953	22.60830	-0.000916	28.42935	0	15.46469
2020-07-14	0.001953	22.50467	-0.000916	28.36169	0	15.44977
2020-07-15	0.001953	22.57522	-0.000916	28.37127	0	15.43391
2020-07-16	0.001953	22.61292	-0.000916	28.34746	0	15.42582
2020-07-17	0.001953	22.63708	-0.000916	28.32507	0	15.41416
2020-07-18	0.001953	22.64945	-0.000916	28.30315	0	15.39641
2020-07-19	0.001953	22.64945	-0.000916	28.29078	0	15.38942
2020-07-20	0.001953	22.66182	-0.000916	28.26691	0	15.37810
2020-07-21	0.000535	22.67419	-0.000916	28.24424	0	15.38041

Date	Allen Park Mitigation Well Flow (Boa Brook)	Allen Park Well Level	Garibaldi Park Mitigation Well Flow (Horn Creek)	Garibaldi Park Well Level	Fishtrap Creek Mitigation Well Flow Previous day's Total	Fishtrap Mitigation Well Level
	L/s	m	L/s	m	L/s	m
2020-07-22	0.001643	22.67419	-0.000916	28.21655	0	15.37418
2020-07-23	0.001953	22.65171	-0.000916	28.19180	0	15.36355
2020-07-24	-0.000488	22.64832	-0.000916	28.17943	0	15.35168
2020-07-25	0.000353	22.63708	-0.000916	28.15469	0	15.34218
2020-07-26	0.001953	22.63031	-0.000916	28.13704	0	15.32692
2020-07-27	0.001953	22.63067	-0.000916	28.10521	0	15.31014
2020-07-28	0.000704	22.62726	-0.000916	28.04340	0	15.29982
2020-07-29	0.001953	22.60717	-0.000916	28.01861	0	15.28917
2020-07-30	0.000344	22.59174	-0.000916	27.98555	0	15.28014
2020-07-31	0.000904	22.59996	-0.000916	27.96912	0	15.26912
2020-08-01	0.001953	22.56684	-0.000916	27.94438	0	15.25906
2020-08-02	0.001953	22.56119	-0.000916	27.91117	0	15.24874
2020-08-03	0.000116	22.55048	-0.000916	27.90309	0	15.23842
2020-08-04	-0.000238	22.53931	-0.000916	27.88252	0	15.23379
2020-08-05	0.001953	22.53811	-0.000916	27.86305	0	15.22689
2020-08-06	0.001953	22.54016	-0.000916	27.85034	0	15.13793
2020-08-07	0.001953	22.12288	-0.000916	27.79973	0.0154000	15.25021
2020-08-08	-0.000488	22.25663	-0.000916	27.80855	0	15.25824
2020-08-09	0.000575	22.31542	-0.000916	27.82981	0	15.24969
2020-08-10	0.000876	22.34016	-0.000916	27.82067	0	15.24504
2020-08-11	0.001525	22.37311	-0.000916	27.77909	0	15.23186
2020-08-12	-0.000095	22.38965	-0.000916	27.75704	0	15.21501
2020-08-13	0.000116	22.37728	-0.000916	27.73132	0	15.20617
2020-08-14	0.001674	22.37728	-0.000916	27.69695	0	15.19570
2020-08-15	-0.000488	22.37728	-0.000916	27.67221	0	15.18894
2020-08-16	-0.000488	22.38965	-0.000916	27.65984	0	15.17926
2020-08-17	0.001953	22.37728	-0.000916	27.63510	0	15.16293
2020-08-18	0.003937	22.37626	-0.000916	27.60922	0	15.15421
2020-08-19	0.001953	22.36491	-0.000916	27.58561	0	15.14810
2020-08-20	-0.000175	22.36491	-0.000916	27.57324	0	15.15910
2020-08-21	0.001953	22.26001	-0.000916	27.54797	0	15.18244
2020-08-22	0.001953	22.29068	-0.000916	27.56170	0	15.20974
2020-08-23	0.001953	22.28502	-0.000916	27.57324	0	15.21758
2020-08-24	0.000194	22.30305	-0.000916	27.56168	0	15.21157
2020-08-25	0.001953	22.30305	-0.000916	27.56278	0	15.20592
2020-08-26	0.001953	22.30305	-0.000916	27.55003	0	15.19850
2020-08-27	0.001953	22.30305	-0.000916	27.54023	0	15.18519
2020-08-28	-0.000169	22.31273	-0.000916	27.53613	0	15.16086
2020-08-29	0.001953	22.30305	-0.000916	27.51138	0	15.14990
2020-08-30	0.001953	22.29225	-0.000916	27.49742	0	15.13620
2020-08-31	0.001953	22.30305	-0.000916	27.48858	0	15.12581

Date	Allen Park Mitigation Well Flow (Boa Brook)	Allen Park Well Level	Garibaldi Park Mitigation Well Flow (Horn Creek)	Garibaldi Park Well Level	Fishtrap Creek Mitigation Well Flow Previous day's Total	Fishtrap Mitigation Well Level
	L/s	m	L/s	m	L/s	m
2020-09-01	-0.000458	22.29068	-0.000916	27.48421	0	15.12983
2020-09-02	0.001953	22.29362	-0.000916	27.47075	0	15.12764
2020-09-03	0.000532	22.28341	-0.000916	27.44953	0	15.11852
2020-09-04	0.000896	22.28719	-0.000916	27.43715	0	15.10832
2020-09-05	0.001953	22.27661	-0.000916	27.41147	0	15.09067
2020-09-06	-0.000358	22.26593	-0.000916	27.40004	0	15.08431
2020-09-07	0.001953	22.26593	-0.000916	27.37941	0	15.07000
2020-09-08	0.001953	22.25356	-0.000827	27.36658	0	10.68396
2020-09-09	3.602191	8.84303	11.759033	17.49315	0.0724995	10.44310
2020-09-10	3.420979	6.94916	11.722886	17.46890	0.1435996	11.12618
2020-09-11	3.322296	6.09048	11.768468	17.39370	0.1220987	11.13117
2020-09-12	3.238981	5.18801	11.674935	17.48166	0.1037990	11.10717
2020-09-13	3.185547	4.62080	11.674037	17.48116	0.1034990	11.08825
2020-09-14	3.139810	4.19141	11.714782	17.42874	0.1025990	11.08700
2020-09-15	3.112004	3.85800	11.720229	17.40490	0.1026990	11.06462
2020-09-16	3.082257	3.63237	11.748623	17.34436	0.1018990	11.06848
2020-09-17	3.049366	3.44913	11.728271	17.38069	0.1027990	11.07271
2020-09-18	3.035838	3.31304	11.796696	17.29778	0.1018990	11.06266
2020-09-19	3.024240	3.19442	11.745028	17.32686	0.1020990	11.04117
2020-09-20	3.010003	3.07799	11.735711	17.34171	0.1023990	11.05287
2020-09-21	2.999056	2.98130	11.697621	17.30891	0.1015990	11.04149
2020-09-22	2.992171	2.90479	11.725173	17.29977	0.1018990	11.04095
2020-09-23	2.990233	2.85530	11.742640	17.27872	0.1015990	11.06972
2020-09-24	2.980582	2.83605	11.721603	17.27841	0.1013990	11.11391
2020-09-25	2.975108	2.77351	11.746181	17.25554	0.1030990	11.13235
2020-09-26	2.967112	2.72926	11.728584	17.24025	0.1032990	11.14155
2020-09-27	2.957767	2.67674	11.697393	17.23080	0.1036990	11.13352
2020-09-28	2.952848	2.64499	11.739146	17.19777	0.1034990	11.12120
2020-09-29	2.955962	2.63262	11.690369	17.21843	0.1032990	11.11340
2020-09-30	2.939736	2.62752	11.676227	17.25554	0.1032990	11.10762
2020-10-01	2.945434	2.60489	11.746950	17.17036	0.1037990	11.10081
2020-10-02	2.942245	2.57979	11.730126	17.20753	0.1029990	11.07353
2020-10-03	2.943765	2.58480	11.763879	17.15346	0.1029990	11.07819
2020-10-04	2.930146	2.57076	11.706125	17.19175	0.1032990	11.07271
2020-10-05	2.933686	2.54150	11.716603	17.22260	0.1032990	11.06836
2020-10-06	2.925933	2.55510	11.757966	17.20080	0.1025990	11.05755
2020-10-07	2.932346	2.53157	11.764740	17.15724	0.1024990	11.06655
2020-10-08	2.933799	2.52128	11.764737	17.15947	0.1022990	11.04444
2020-10-09	2.936098	2.51099	11.785378	17.13306	0.1017990	11.06247
2020-10-10	2.937775	2.53307	11.836611	17.11346	0.1021990	11.15807
2020-10-11	2.933695	2.48416	11.803464	17.12339	0.1037990	11.19731

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	L/s	m	L/s	m	L/s	m
2020-10-12	2.942794	2.50576	11.829008	17.09593	0.1042990	11.21450
2020-10-13	2.935864	2.48416	11.837608	17.11946	0.1049990	15.00276
2020-10-14	2.931214	2.48057	11.873158	17.08967	0.0382000	15.22753
2020-10-15	2.931261	2.43602	11.809032	17.12566	0	15.27896
2020-10-16	2.933986	2.44780	11.870486	17.08326	0	15.36386
2020-10-17	0.001953	13.05904	-0.000916	27.10839	0	15.40596
2020-10-18	0.001953	14.96224	-0.000916	27.14926	0	15.46513
2020-10-19	0.001953	16.17998	-0.000916	27.16290	0	15.48273
2020-10-20	0.000256	17.08112	-0.000916	27.15261	0	15.48408
2020-10-21	-0.000101	17.79925	-0.000916	27.17478	0	15.47157
2020-10-22	0.000945	18.36596	-0.000916	27.16498	0	15.46152
2020-10-23	0.000985	18.85143	-0.000916	27.17753	0	15.49000
2020-10-24	0.000431	19.28352	-0.000916	27.17702	0	15.48280
2020-10-25	0.001953	19.58557	-0.000916	27.17736	0	15.46556
2020-10-26	0.001953	19.88741	-0.000916	27.18373	0	15.45437
2020-10-27	0.001953	20.14264	-0.000916	27.16857	0	15.44567
2020-10-28	0.000050	20.37964	-0.000916	27.17736	0	15.43637
2020-10-29	0.001953	20.48757	-0.000916	27.14384	0	15.42369
2020-10-30	-0.000488	20.70279	-0.000916	27.17062	0	15.42465
2020-10-31	0.001953	20.82323	-0.000916	27.15261	0	15.40642
2020-11-01	-0.000066	20.97281	-0.000916	27.16498	0	15.39826
2020-11-02	0.001953	21.09421	-0.000916	27.15801	0	15.39262
2020-11-03	0.000893	21.21486	-0.000916	27.16498	0	15.49339
2020-11-04	0.001953	21.31979	-0.000916	27.14944	0	15.63672
2020-11-05	0.001953	21.38955	-0.000916	27.11304	0	15.68828
2020-11-06	0.001953	21.45192	-0.000916	27.10313	0	15.68662
2020-11-07	0.001953	21.51059	-0.000916	27.11550	0	15.66344
2020-11-08	0.001953	21.56077	-0.000916	27.11550	0	15.62806
2020-11-09	0.001953	21.58538	-0.000916	27.12443	0	15.60464
2020-11-10	-0.000034	21.65012	-0.000916	27.12787	0	15.60002
2020-11-11	0.000100	21.69556	-0.000500	27.12676	0	15.57891
2020-11-12	0.000702	21.72076	-0.000916	27.14024	0	15.56791
2020-11-13	0.001351	21.25488	-0.000916	27.15035	0.0015	15.88047
2020-11-14	0.001953	21.48948	-0.000916	27.16521	0	15.94536
2020-11-15	0.001953	21.62281	-0.000916	27.20210	0	15.98306
2020-11-16	0.001806	21.69532	-0.000916	27.20312	0	16.04776
2020-11-17	0.001753	21.79855	-0.000916	27.25290	0	16.09293
2020-11-18	0.001953	21.84531	-0.000916	27.25158	0	16.17861
2020-11-19	0.000509	21.87005	-0.000916	27.22684	0	16.20959
2020-11-20	0.000706	21.88543	-0.000916	27.24124	0	16.17014
2020-11-21	0.000737	21.91615	-0.000916	27.26396	0	16.12758

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	L/s	m	L/s	m	L/s	m
2020-11-22	0.001953	21.96217	-0.000916	27.30107	0	16.07794
2020-11-23	0.000583	21.99903	-0.000916	27.32136	0	16.03510
2020-11-24	0.000955	22.01188	-0.000916	27.34118	0	16.01371
2020-11-25	0.001910	22.04325	-0.000916	27.34075	0	16.00728
2020-11-26	0.001283	22.04741	-0.000916	27.34829	0	15.98916
2020-11-27	0.001422	22.08401	-0.000916	27.37530	0	15.97182
2020-11-28	0.000522	22.10511	-0.000916	27.38767	0	15.94313
2020-11-29	-0.000026	22.11673	-0.000916	27.40195	0	15.91961
2020-11-30	0.000265	22.18206	-0.000916	27.43477	0	15.90888
2020-12-01	-0.000113	22.15459	-0.000916	27.41505	0	15.88388
2020-12-02	-0.000176	22.17648	-0.000916	27.44953	0	15.87012
2020-12-03	0.001732	22.21645	-0.000916	27.45718	0	15.83841
2020-12-04	0.001953	22.21645	-0.000916	27.46190	0	15.82124
2020-12-05	-0.000488	22.24180	-0.000916	27.47905	0	15.80527
2020-12-06	0.001732	22.26256	-0.000916	27.47735	0	15.76446
2020-12-07	0.000776	22.27562	-0.000916	27.49299	0	15.75684
2020-12-08	0.001953	22.31062	-0.000916	27.51138	0	16.02245
2020-12-09	0.000744	22.32779	-0.000916	27.49699	0	16.10388
2020-12-10	0.000675	22.33059	-0.000916	27.46828	0	16.05142
2020-12-11	0.001078	21.98743	-0.000916	27.46376	0.0016	16.06549
2020-12-12	-0.000245	22.12004	-0.000916	27.48664	0	16.02411
2020-12-13	0.001614	22.19569	-0.000916	27.52375	0	15.99431
2020-12-14	0.001714	22.22325	-0.000916	27.54318	0	15.97960
2020-12-15	0.000755	22.25681	-0.000916	27.56335	0	15.98402
2020-12-15	0.000134	22.24940	-0.000916	27.55705	0	15.97643
2020-12-16	0.001261	22.27831	-0.000916	27.57797	0	15.97988
2020-12-17	0.000281	22.35253	-0.000916	27.61035	0	16.03806
2020-12-18	-0.000396	22.32829	-0.000916	27.61204	0	16.10681
2020-12-19	-0.000304	22.36704	-0.000916	27.61866	0	16.16140
2020-12-20	0.000583	22.40143	-0.000916	27.62311	0	16.21229
2020-12-21	-0.000488	22.39124	-0.000916	27.61322	0	16.22408
2020-12-22	0.001953	22.42732	-0.000916	27.63324	0	16.33777
2020-12-23	0.001889	22.37728	-0.000916	27.62272	0	16.30356
2020-12-24	0.001717	22.40202	-0.000916	27.64747	0	16.26409
2020-12-25	0.001314	22.42676	-0.000916	27.64747	0	16.21032
2020-12-26	0.001234	22.43913	-0.000916	27.65984	0	16.18892
2020-12-27	0.001953	22.42676	-0.000916	27.68458	0	16.28396
2020-12-28	0.001953	22.43284	-0.000916	27.69695	0	16.28112
2020-12-29	0.000053	22.42955	-0.000916	27.70932	0	16.22567
2020-12-30	0.001875	22.44654	-0.000916	27.72169	0	16.18645
2020-12-31	0.001931	22.48862	-0.000916	27.74644	0	16.32840

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	L/s	m	L/s	m	L/s	m
2021-01-01	-0.000488	22.48862	-0.000916	27.77327	0	16.37024
2021-01-02	-0.000488	22.51441	-0.000916	27.79692	0	16.39655
2021-01-03	0.000758	22.52806	-0.000916	27.80922	0	16.40228
2021-01-04	0.001953	22.51458	-0.000916	27.83304	0	16.36264
2021-01-05	-0.000290	22.52573	-0.000916	27.83330	0	16.42339
2021-01-06	-0.000371	22.54926	-0.000916	27.85778	0	16.45291
2021-01-07	0.001953	22.53811	-0.000916	27.86192	0	16.43091
2021-01-08	-0.000488	22.17689	-0.000916	27.87325	0	16.35818
2021-01-09	0.000361	22.30031	-0.000916	27.90726	0.0011	16.33165
2021-01-10	0.001953	22.39283	-0.000916	27.94438	0	16.28348
2021-01-11	0.000264	22.43278	-0.000916	27.96912	0	16.23191
2021-01-12	0.000191	22.50555	-0.000916	28.00330	0	16.26469
2021-01-13	0.000082	22.55048	-0.000916	28.03098	0	16.46877
2021-01-14	-0.000470	22.50617	-0.000916	28.04335	0	16.44134
2021-01-15	-0.000294	22.56285	-0.000916	28.09283	0	16.38056
2021-01-16	-0.000488	22.57522	-0.000916	28.11758	0	16.31993
2021-01-17	0.001934	22.59996	-0.000916	28.16442	0	16.26408
2021-01-18	0.001003	22.61357	-0.000916	28.19135	0	16.20738
2021-01-19	0.001050	22.63851	-0.000916	28.22175	0	16.16260
2021-01-20	0.001953	22.68595	-0.000916	28.26603	0	16.12633
2021-01-21	0.000364	22.71326	-0.000916	28.28428	0	16.09023
2021-01-22	0.001168	22.74842	-0.000916	28.33129	0	16.05452
2021-01-23	0.001439	22.77626	-0.000916	28.34773	0	16.02272
2021-01-24	-0.000488	22.80956	-0.000916	28.38705	0	15.99647
2021-01-25	0.000491	22.85263	-0.000916	28.42686	0	15.98828
2021-01-26	0.001668	22.87109	-0.000916	28.44420	0	15.98001
2021-01-27	-0.000488	22.92162	-0.000916	28.48872	0	15.96706
2021-01-28	0.000507	22.73513	-0.000916	28.50109	0	15.94306
2021-01-29	0.001574	22.82851	-0.000916	28.48609	0	15.92012
2021-01-30	-0.000488	22.88824	-0.000916	28.54516	0	15.90369
2021-01-31	0.001953	22.92615	-0.000916	28.57532	0	15.89525
2021-02-01	0.001953	22.97603	-0.000916	28.60847	0	16.03453
2021-02-02	-0.000488	23.04533	-0.000916	28.66757	0	16.29414
2021-02-03	-0.000488	23.05770	-0.000916	28.69418	0	16.35074
2021-02-04	0.001953	23.04533	-0.000916	28.68666	0	16.27969
2021-02-05	0.001953	23.08952	-0.000916	28.74166	0	16.26427
2021-02-06	0.001953	23.10212	-0.000916	28.77285	0	16.22716
2021-02-07	0.001953	23.13193	-0.000916	28.81037	0	16.23226
2021-02-08	0.001566	23.15667	-0.000916	28.82274	0	16.18475
2021-02-09	0.001953	23.16566	-0.000916	28.85222	0	16.12933
2021-02-10	0.001479	23.18302	-0.000916	28.88460	0	16.08401

Date	Allen Park Mitigation Well Flow (Boa Brook)	Allen Park Well Level	Garibaldi Park Mitigation Well Flow (Horn Creek)	Garibaldi Park Well Level	Fishtrap Creek Mitigation Well Flow Previous day's Total	Fishtrap Mitigation Well Level
	L/s	m	L/s	m	L/s	m
2021-02-11	0.000036	23.19789	-0.000916	28.91145	0	16.04267
2021-02-12	0.001953	23.17524	-0.000916	28.91180	0	16.00417
2021-02-13	0.000726	23.22558	-0.000916	28.95543	0.0007	15.98267
2021-02-14	-0.000488	23.24327	-0.000916	28.94646	0	15.94629
2021-02-15	0.000608	23.28248	-0.000916	28.96353	0	15.93118
2021-02-16	-0.000488	23.28038	-0.000916	28.93837	0	15.93346
2021-02-17	-0.000488	23.28038	-0.000916	28.96294	0	15.92458
2021-02-18	-0.000488	23.27214	-0.000916	28.98172	0	15.90857
2021-02-19	0.001953	23.31750	-0.000916	29.01912	0	15.92050
2021-02-20	0.001953	23.31750	-0.000916	29.02069	0	15.93874
2021-02-21	0.000292	23.32458	-0.000916	29.03306	0	15.92975
2021-02-22	0.001307	23.35423	-0.000916	29.07000	0	15.95174
2021-02-23	0.001953	23.35570	-0.000916	29.06241	0	15.98646
2021-02-24	0.001953	23.34311	-0.000916	29.06455	0	15.96263
2021-02-25	0.001038	23.37901	-0.000916	29.09437	0	15.93822
2021-02-26	0.001953	23.41206	-0.000916	29.10728	0	15.93433
2021-02-27	0.000121	23.37935	-0.000916	29.09491	0	15.90693
2021-02-28	0.001269	23.38354	-0.000916	29.12169	0.0005	15.88081
2021-03-01	-0.000193	23.42100	-0.000916	29.16914	0	15.88115
2021-03-02	0.000643	23.44121	-0.000916	29.18151	0	15.86298
2021-03-03	-0.000064	23.46065	-0.000916	29.21074	0	15.84538
2021-03-04	0.001571	23.47832	-0.000916	29.22356	0	15.82677
2021-03-05	-0.000488	23.49568	-0.000916	29.24669	0	15.81997
2021-03-06	0.001491	23.51433	-0.000916	29.26400	0	15.81584
2021-03-07	-0.000079	23.52323	-0.000916	29.27278	0	15.79541
2021-03-08	-0.000148	23.52399	-0.000916	29.27703	0	15.77623
2021-03-09	-0.000488	23.55255	-0.000916	29.30195	0	15.76447
2021-03-10	0.001307	23.57318	-0.000916	29.30523	0	15.74922
2021-03-11	3.714906	10.21837	12.092755	19.12574	0	11.73939
2021-03-12	0.000039	20.86311	-0.000916	29.29859	0.0673995	15.55035
2021-03-13	-0.000216	21.81372	-0.000916	29.35471	0.0508998	15.64025
2021-03-14	0.001720	22.27220	-0.000916	29.36708	0	15.65703
2021-03-15	-0.000013	22.53883	-0.000916	29.36708	0	15.66283
2021-03-16	0.001953	22.74217	-0.000916	29.37945	0	15.65670
2021-03-17	-0.000488	22.90239	-0.000916	29.40420	0	15.65652
2021-03-18	0.001274	23.04631	-0.000916	29.41859	0	15.65192
2021-03-19	0.001804	23.14923	0.001852	29.41932	0	15.66615
2021-03-20	0.000865	23.22218	-0.000916	29.43751	0	15.67235
2021-03-21	0.001953	23.27635	-0.000916	29.43401	0	15.66885
2021-03-22	-0.000488	23.35350	-0.000916	29.46605	0	15.69757
2021-03-23	0.001953	23.37352	-0.000916	29.44131	0	15.71008

Date	Allen Park Mitigation Well Flow (Boa Brook)	Allen Park Well Level	Garibaldi Park Mitigation Well Flow (Horn Creek)	Garibaldi Park Well Level	Fishtrap Creek Mitigation Well Flow Previous day's Total	Fishtrap Mitigation Well Level
	L/s	m	L/s	m	L/s	m
2021-03-24	-0.000418	23.42146	-0.000916	29.44350	0	15.71624
2021-03-25	-0.000030	23.49700	-0.000916	29.47705	0	15.79328
2021-03-26	0.001953	23.50307	-0.000916	29.46605	0	15.81314
2021-03-27	0.000989	23.51544	-0.000916	29.47842	0	15.79727
2021-03-28	0.000808	23.54756	-0.000916	29.50317	0	15.78546
2021-03-29	0.001207	23.59590	-0.000916	29.49508	0	15.82284
2021-03-30	-0.000488	23.58777	-0.000916	29.47880	0	15.81380
2021-03-31	0.001030	23.58803	-0.000916	29.46605	0	15.79102
2021-04-01	0.000973	23.63689	-0.000916	29.51554	0	15.77516
2021-04-02	0.000387	23.65152	-0.000916	29.51554	0	15.74839
2021-04-03	-0.000488	23.65152	-0.000916	29.51554	0	15.72254
2021-04-04	-0.000206	23.65152	-0.000916	29.51554	0	15.70543
2021-04-05	0.001953	23.66390	-0.000916	29.51795	0	15.68621
2021-04-06	0.000471	23.67627	-0.000916	29.52791	0	15.67111
2021-04-07	-0.000488	23.70043	-0.000916	29.54028	0	15.66102
2021-04-08	0.000356	23.71938	-0.000916	29.54523	0	15.66643
2021-04-09	-0.000488	23.71338	-0.000916	29.54817	0	15.66613
2021-04-10	0.001953	23.74529	-0.000916	29.56502	0	15.66897
2021-04-11	0.001953	23.72044	-0.000916	29.54355	0	15.64447
2021-04-12	0.001953	23.72575	-0.000916	29.56203	0	15.62840
2021-04-13	0.001066	23.73688	-0.000916	29.51810	0	15.61389
2021-04-14	0.001953	23.74777	-0.000916	29.54954	0	15.60502
2021-04-15	0.001953	23.76287	-0.000916	29.53305	0	15.59732
2021-04-16	0.001130	23.70101	-0.000916	29.49080	0	15.57645
2021-04-17	0.001953	23.71338	-0.000916	29.49097	0	15.57138
2021-04-18	0.001953	23.72561	-0.000916	29.49147	0	15.56217
2021-04-19	0.001215	23.72344	-0.000916	29.49080	0	15.54865
2021-04-20	0.001932	23.72290	-0.000916	29.48354	0	15.53903
2021-04-21	0.001953	23.72190	-0.000916	29.47462	0	15.53018
2021-04-22	0.000060	23.73161	-0.000916	29.48827	0	15.52451
2021-04-23	0.001953	23.72575	-0.000916	29.46875	0	15.51077
2021-04-24	0.001953	23.72575	-0.000916	29.47842	0	15.50294
2021-04-25	0.000212	23.73812	-0.000916	29.48107	0	15.49979
2021-04-26	0.001953	23.73812	-0.000916	29.47842	0	15.49979
2021-04-27	0.001953	23.71892	-0.000916	29.46605	0	15.49023
2021-04-28	0.001953	23.70101	-0.000916	29.45864	0	15.47674
2021-04-29	0.001953	23.70101	-0.000916	29.45368	0	15.46900
2021-04-30	-0.000488	23.71338	-0.000916	29.45387	0	15.46503

APPENDIX J

Well Depth Data (Monitoring Wells) and Lake Level Data

TW06-1		DND		Bible College		Heritage		H-02		H-03		Ex. Park	
Date	DTW (m)	Date	DTW (m)	Date	DTW (m)	Date	DTW (m)	Date	DTW (m)	Date	DTW (m)	Date	DTW (m)
12-Jun-20	19.277	12-Jun-20	7.416	12-Jun-20	4.276	12-Jun-20	14.792	12-Jun-20	0.739	12-Jun-20	2.854	12-Jun-20	11.779
15-Sep-20	22.068	15-Sep-20	8.762	15-Sep-20	5.118	15-Sep-20	16.093	15-Sep-20	1.337	15-Sep-20	2.971	15-Sep-20	12.592
4-Dec-20	19.404	4-Dec-20	7.825	4-Dec-20	4.703	4-Dec-20	16.395	4-Dec-20	1.012	4-Dec-20	3.005	4-Dec-20	12.828
10-Mar-21	16.652	10-Mar-21	5.755	10-Mar-21	3.349	10-Mar-21	12.894	10-Mar-21	0.992	10-Mar-21	2.899	10-Mar-21	11.237
24-Jun-21	20.913	24-Jun-21	7.605	24-Jun-21	4.582	24-Jun-21	14.702	24-Jun-21	1.516	24-Jun-21	2.945	24-Jun-21	11.815
16-Sep-21	20.911	16-Sep-21	9.211	16-Sep-21	dry	16-Sep-21	16.63	16-Sep-21	1.785	16-Sep-21	3.038	16-Sep-21	12.875

Judson Lake		Laxton Lake	
Date	Staff gauge (m)	Date	Staff gauge (m)
12-Jun-2020	1.85	12-Jun-2020	0.35
15-Sep-2020	0.04	15-Sep-2020	0.05
4-Dec-2020	0.799	4-Dec-2020	0.172
10-Mar-2021	0.073	10-Mar-2021	0.072
24-Jun-2021	0.01	24-Jun-2021	0.24
16-Sep-2021	0	16-Sep-2021	0

APPENDIX K

Bevan Well Extraction Data

Data	Bevan Well 1 Flow Previous Day's Total ML	Bevan Well 1 Level m	Bevan Well 2 Flow Previous Day's Total ML	Bevan Well 2 Level m	Bevan Well 3 Flow Previous Day's Total ML	Bevan Well 3 Level m	Bevan Well 4 Flow Previous Day's Total ML	Bevan Well 4 Level m
2020-05-01	0	10.27	0	12.971423	0	13.915051	0	12.971423
2020-05-02	0	10.351431	0	13.099991	0	14.01388	0	13.099991
2020-05-03	0	9.2089491	0	3.0104764	0	12.569978	4.2649999	3.0104764
2020-05-04	3.7509999	2.0065877	0	12.036011	0	12.759777	1.0369999	12.036011
2020-05-05	1.04	8.4781265	5.848	11.694333	0	12.360456	0	11.694333
2020-05-06	0.002	8.6800003	1.673	11.36424	5.401	3.6400001	0.003	11.36424
2020-05-07	0	8.9849472	0	2.8512201	1.789	12.34439	5.217	2.8512201
2020-05-08	4.3299999	1.9900848	0	11.922244	0	12.650653	1.636	11.922244
2020-05-09	5.3000002	8.589159	1.839	11.338177	2.9660001	3.539211	0.005	11.338177
2020-05-10	0	8.8750591	0	2.7523894	1.837	12.259945	4.723	2.7523894
2020-05-11	0	8.848506	0	2.6355214	0	12.20138	8.0109997	2.6355214
2020-05-12	2.5150001	8.2800951	1.998	11.004192	0	3.3	7.8130002	11.004192
2020-05-13	3.036	8.6932344	0.078	11.46306	5.0939999	12.393183	3.997	11.46306
2020-05-14	3.3870001	2	0	11.091825	0.657	11.864137	4.9159999	11.091825
2020-05-15	3.096	7.7399998	2.0480001	10.535749	0.084	2.8199999	4.309	10.535749
2020-05-16	2.7579999	9.2482119	1.7970001	12.013211	2.641	12.948212	2.849	12.013211
2020-05-17	2.4549999	9.4074459	0	12.150944	0.139	13.099535	3.03	12.150944
2020-05-18	2.3640001	9.4263105	0	12.205482	2.474	13.136278	3.3789999	12.205482
2020-05-19	2.763	8.3900003	0	11.49	3.6010001	12.29	3.9130001	11.49
2020-05-20	2.6819999	9.1439409	0	11.983941	3.99	12.882693	4.0549998	11.983941
2020-05-21	0.435	9.3082714	3.9130001	12.111028	4.1269999	13.031028	0.02	12.111028
2020-05-22	3.221	2.01	0	11.622476	0.097	12.349719	0.779	11.622476
2020-05-23	1.049	8.019907	4.598	11.230043	0	11.9199	0	11.230043
2020-05-24	0	8.4034538	0.942	11.13	4.164	3.4000001	0	11.13
2020-05-25	0	8.6668463	0	2.6818032	1.2079999	12.046317	4.1680002	2.6818032
2020-05-26	3.096	2	2.4260001	10.744927	0	11.284385	1.518	10.744927
2020-05-27	1.4119999	2.0098417	1.65	11.013861	4.3899999	11.774343	2.526	11.013861
2020-05-28	4.9429998	7.1234779	2.6559999	1.9829252	2.575	2.1415956	1.673	1.9829252
2020-05-29	2.2950001	8.0511379	3.3050001	2.1504683	3.9400001	11.451259	4.6939998	2.1504683
2020-05-30	2.6889999	7.77	3.3659999	10.56	3.983	2.77	1.159	10.56
2020-05-31	2.2119999	9.1235609	2.3729999	11.94301	0.904	12.86301	3.3699999	11.94301
2020-06-01	0.741	9.4520044	0.001	12.242584	0.276	13.164167	1.308	12.242584
2020-06-02	0.102	9.6138	0	12.387465	0	13.311929	0	12.387465
2020-06-03	0	9.725359	0	12.505206	0	13.430059	0	12.505206
2020-06-04	2.6340001	8.9399605	2.7049999	11.72504	0	12.64	0	11.72504
2020-06-05	0.527	1.9921402	0.639	1.9970317	3.135	2.0685158	1.7410001	1.9970317
2020-06-06	1.13	9.2005367	4.2420001	11.989714	4.7550001	12.918578	1.059	11.989714
2020-06-07	2.6489999	9.1077862	0.071	11.924007	0.437	12.837786	3.967	11.924007
2020-06-08	0.448	9.2266788	3.6900001	12.009249	3.757	12.947169	0.194	12.009249
2020-06-09	2.733	9.2356472	0	12.019236	0.348	12.955647	4.1469998	12.019236
2020-06-10	0.333	9.2700005	4.0320001	12.08	2.237	13	0.104	12.08
2020-06-11	0.975	1.9950484	0.132	2.1593051	0.338	11.084532	4.5830002	2.1593051

Data	Bevan Well 1 Flow Previous Day's Total ML	Bevan Well 1 Level m	Bevan Well 2 Flow Previous Day's Total ML	Bevan Well 2 Level m	Bevan Well 3 Flow Previous Day's Total ML	Bevan Well 3 Level m	Bevan Well 4 Flow Previous Day's Total ML	Bevan Well 4 Level m
2020-06-12	0.667	7.9934664	0.968	2.1093359	4.816	11.393466	2.5669999	2.1093359
2020-06-13	2.8970001	1.9989924	0	11.34447	0.596	12.086689	3.773	11.34447
2020-06-14	0.514	9.038331	3.0179999	11.828331	2.0569999	12.755877	0.44	11.828331
2020-06-15	2.1989999	9.201582	1.678	11.972862	0.739	12.911582	3.29	11.972862
2020-06-16	2.5190001	9.0137215	0	11.773722	1.716	12.723722	3.424	11.773722
2020-06-17	1.956	7.9791026	0	10.67478	1.956	3.1941078	3.648	10.67478
2020-06-18	2.7420001	8.75	0	11.56	3.4030001	12.50386	4.0630002	11.56
2020-06-19	2.79	1.9929494	2.4449999	10.008923	0.624	2.5388272	4.348	10.008923
2020-06-20	3.2149999	8.9179659	2.388	11.697938	0.729	12.636793	4.6539998	11.697938
2020-06-21	0.094	9.3038511	0	12.085795	0.464	13.023871	4.1529999	12.085795
2020-06-22	2.493	9.2411575	0	12.036736	2.9489999	12.959718	0.222	12.036736
2020-06-23	1.9859999	8.8400002	0.763	11.59	0.184	12.54	4.3000002	11.59
2020-06-24	1.2920001	6.1670785	0.156	11.376945	0.388	12.203973	4.3629999	11.376945
2020-06-25	0.502	7.77	4.4000001	10.962438	0	11.660881	0.35	10.962438
2020-06-26	0	8.7607498	0.78	11.506817	4.2820001	12.46347	3.178	11.506817
2020-06-27	3.506	1.9920475	0	11.445762	0.285	12.165068	0.553	11.445762
2020-06-28	0.789	9.1849098	4.3530002	11.950696	0	12.892714	0	11.950696
2020-06-29	0	9.0600004	0.176	11.835834	3.6489999	12.77	3.181	11.835834
2020-06-30	2.9690001	7.5799999	3.234	10.8	0	11.49	0.265	10.8
2020-07-01	2.5650001	8.9957314	0.709	11.779794	3.211	12.719793	2.467	11.779794
2020-07-02	0.263	6.8338494	3.803	9.8067255	1.378	2.3300445	0	9.8067255
2020-07-03	2.1789999	8.6286669	0.574	11.428889	0.982	12.358778	4.177	11.428889
2020-07-04	0.437	9.0916491	2.925	11.911698	3.7780001	12.83198	0.304	11.911698
2020-07-05	0	9.0200005	2.9779999	11.81	0.774	12.74	3.365	11.81
2020-07-06	0	7.7414613	0	10.440733	3.6110001	2.8499999	3.714	10.440733
2020-07-07	2.711	1.9972888	0	2.0192988	0.755	10.78	4.54	2.0192988
2020-07-08	0.812	6.6500001	4.1479998	9.7603273	2.1730001	2.21	0.744	9.7603273
2020-07-09	3.1129999	2.0090303	0.581	2.0090289	1.153	10.697423	4.8140001	2.0090289
2020-07-10	3.6440001	2.0093374	0.023	10.897639	0.102	11.657681	5.2719998	10.897639
2020-07-11	0.763	7.6116781	3.8469999	10.373127	3.984	2.75	0.498	10.373127
2020-07-12	2.9319999	8.8614874	0.399	11.645329	0.812	12.591996	4.2309999	11.645329
2020-07-13	0.215	7.4062982	3.5280001	10.126232	3.8280001	2.5010941	0	10.126232
2020-07-14	2.503	2.01	2.924	1.9615604	1.108	9.8488111	4.125	1.9615604
2020-07-15	3.296	2.01	0.757	1.9630178	3.3329999	2	4.967	1.9630178
2020-07-16	3.0480001	2.0163145	0	2.0387714	7.3769999	2	4.777	2.0387714
2020-07-17	4.586	2	0	1.9754876	5.5100002	1.9975643	5.223	1.9754876
2020-07-18	3.079	6.1613283	2.1099999	9.2860165	4.8660002	2.0007994	1.55	9.2860165
2020-07-19	2.829	1.9983997	3.7160001	1.9842396	1.3279999	9.6400003	4.1989999	1.9842396
2020-07-20	4.3449998	2.01	1.1	1.946093	5.8509998	1.9920896	4.3909998	1.946093
2020-07-21	4.0450001	2.01	2.365	8.8900003	7.053	2.0077291	3.198	8.8900003
2020-07-22	3.908	2.012238	4.6560001	8.889987	7.0799999	1.9900131	0	8.889987
2020-07-23	2.8440001	8.0777016	4.9169998	10.951107	7.1560001	11.861108	0	10.951107

Data	Bevan Well 1 Flow Previous Day's Total ML	Bevan Well 1 Level m	Bevan Well 2 Flow Previous Day's Total ML	Bevan Well 2 Level m	Bevan Well 3 Flow Previous Day's Total ML	Bevan Well 3 Level m	Bevan Well 4 Flow Previous Day's Total ML	Bevan Well 4 Level m
2020-07-24	2.9979999	1.9979738	3.7750001	2.0076053	0.327	9.5425777	5.1479998	2.0076053
2020-07-25	2.4820001	2.0080094	0.527	10.360664	6.257	11.115931	3.9949999	10.360664
2020-07-26	3.059	2	0	1.9864225	4.5190001	2.03	4.079	1.9864225
2020-07-27	3.9820001	2.000639	0	2.0270326	6.8319998	2.0383043	6.2420001	2.0270326
2020-07-28	3.8759999	2.0099092	0	1.999909	6.7420001	1.9901092	6.1360002	1.999909
2020-07-29	3.8310001	2	0	1.9736567	6.711	1.9959884	6.1090002	1.9736567
2020-07-30	3.812	1.9987696	0	2.0263081	6.6939998	2.0024612	6.1020002	2.0263081
2020-07-31	3.7820001	2.0199971	0	2.0099778	6.6700001	1.980005	6.0770001	2.0099778
2020-08-01	3.7739999	2.0270858	0	1.9748589	6.664	2.0052977	6.0799999	1.9748589
2020-08-02	1.767	5.2808309	2.7030001	1.977535	5.0539999	2.0082872	4.5580001	1.977535
2020-08-03	2.1170001	1.9934806	0.753	1.9811218	6.744	2.0043364	6.138	1.9811218
2020-08-04	4.1009998	2	2.424	8.5948582	4.6370001	1.99	1.194	8.5948582
2020-08-05	0.748	5.210845	4.5250001	1.9924625	6.7719998	1.9933792	3.346	1.9924625
2020-08-06	1.934	1.9902442	3.109	1.9424258	2.3789999	9.1905699	5.2449999	1.9424258
2020-08-07	3.7479999	7.6589866	1.836	10.51454	3.901	11.44	5.2789998	10.51454
2020-08-08	0.13	7.6768961	1.175	10.525427	3.349	11.449153	3.4690001	10.525427
2020-08-09	2.059	7.9118309	2.0829999	10.773251	0	11.684211	0	10.773251
2020-08-10	2.201	2.01	0.313	2.0031989	3.941	1.9921523	3.4319999	2.0031989
2020-08-11	3.9119999	2.0043726	3.016	8.3042946	6.0209999	1.9831276	0.93	8.3042946
2020-08-12	3.6760001	1.9959663	3.835	8.3395023	6.7280002	2.0129781	0	8.3395023
2020-08-13	3.4920001	1.9900918	3.5810001	2.0260274	6.5219998	2.0060833	2.2149999	2.0260274
2020-08-14	0.642	5.0900002	3.7820001	1.98	6.3639998	2.0009694	5.8060002	1.98
2020-08-15	1.8380001	1.9960537	0.805	1.9867824	6.5079999	2.013011	5.9450002	1.9867824
2020-08-16	3.865	2.01	2.184	2	0.996	8.8801908	6.2020001	2
2020-08-17	3.6949999	1.9930489	4.0669999	2	0	8.8556881	6.1630001	2
2020-08-18	3.632	2.01	3.9890001	1.96755	0	8.8281803	6.1009998	1.96755
2020-08-19	3.631	1.999619	3.9809999	1.9883293	0	8.8131666	6.1170001	1.9883293
2020-08-20	3.598	1.9939249	3.9059999	2.0118043	0	8.801487	6.0770001	2.0118043
2020-08-21	4.0669999	1.99	4.4349999	9.0160122	0	9.6612492	0.798	9.0160122
2020-08-22	0.658	7.4467821	1.022	10.303514	2.8099999	11.23282	3.016	10.303514
2020-08-23	2.7690001	7.1886177	2.927	10.066822	0	10.982086	0.107	10.066822
2020-08-24	0.257	6.5863638	0.444	1.9981166	4.4499998	10.089705	3.8	1.9981166
2020-08-25	2.299	7.4423146	2.4119999	10.269481	3.687	11.215618	0.771	10.269481
2020-08-26	2.51	1.9944537	1.876	9.1060829	0.376	9.7712317	4.178	9.1060829
2020-08-27	2.674	1.9992534	0.764	2.0046299	4.119	9.3033447	4.0440001	2.0046299
2020-08-28	1.704	2.0008984	2.7360001	1.9925069	2.813	8.9995146	4.3070002	1.9925069
2020-08-29	0.837	5.0714612	4.4369998	2.0191875	3.6400001	1.9938201	4.1620002	2.0191875
2020-08-30	2.342	5.4899998	2.6800001	8.5054274	4.7119999	2.01	1.075	8.5054274
2020-08-31	2.4449999	1.9929271	2.767	9.1980181	1.179	9.8342123	3.789	9.1980181
2020-09-01	2.3670001	2.0053256	0.907	2.0154605	3.9119999	9.4650116	3.5109999	2.0154605
2020-09-02	0.82	5.5999999	2.3299999	1.9956055	3.825	1.998787	3.697	1.9956055
2020-09-03	2.4660001	1.9924102	2.7090001	1.9396434	0.751	8.9300003	6.3909998	1.9396434

Data	Bevan Well 1 Flow Previous Day's Total ML	Bevan Well 1 Level m	Bevan Well 2 Flow Previous Day's Total ML	Bevan Well 2 Level m	Bevan Well 3 Flow Previous Day's Total ML	Bevan Well 3 Level m	Bevan Well 4 Flow Previous Day's Total ML	Bevan Well 4 Level m
2020-09-04	3.865	1.9930117	3.9549999	8.2813225	3.704	1.99	0.947	8.2813225
2020-09-05	0.639	4.9470325	3.911	2.0039289	6.5799999	1.9887872	2.79	2.0039289
2020-09-06	2.385	1.99	0.433	2	4.8649998	2.0077217	4.4310002	2
2020-09-07	2.448	5.4951844	0	2.0149469	4.4809999	2	3.918	2.0149469
2020-09-08	2.2550001	2	0	1.9932566	4.2919998	2	4.0180001	1.9932566
2020-09-09	2.484	1.9978979	0.006	1.9720773	4.6370001	1.9816912	5.9879999	1.9720773
2020-09-10	3.4590001	6.0459247	0	1.975059	6.217	9.5775881	4.9970002	1.975059
2020-09-11	1.845	5.9153557	2.586	2.0032048	0	9.439805	4.401	2.0032048
2020-09-12	2.675	6.8804688	2.325	9.7151728	0	10.655085	2.135	9.7151728
2020-09-13	1.332	7.1199999	0.294	9.9799995	0	10.9	2.266	9.9799995
2020-09-14	0.327	7.1399999	0.733	9.9441319	0	10.895873	1.202	9.9441319
2020-09-15	0.806	7.1080132	0.559	9.9471188	0	10.876755	1.499	9.9471188
2020-09-16	0	7.3377767	1.999	10.123838	0	11.089481	3.0699999	10.123838
2020-09-17	1.398	6.9593167	2.701	9.7831373	0	10.726381	4.145	9.7831373
2020-09-18	3.0250001	1.99	0.284	9.4606075	0	10.257875	3.8169999	9.4606075
2020-09-19	2.431	7.2612	1.903	10.050993	0	11.0123	3.506	10.050993
2020-09-20	2.7709999	7.3299999	0.102	10.156548	0	11.093912	2.0669999	10.156548
2020-09-21	0.379	7.1844053	3.0339999	9.9626598	0	10.933622	3.6059999	9.9626598
2020-09-22	0	5.7340479	3.1210001	2.0060124	0	327.67001	4.1009998	2.0060124
2020-09-23	0	7.0465207	3.6329999	9.8234987	0	327.67001	5.4289999	9.8234987
2020-09-24	0	7.253613	1.649	10.02881	0	327.67001	4.0799999	10.02881
2020-09-25	1.479	2	1.874	2.0100653	0	327.67001	3.7279999	2.0100653
2020-09-26	3.6099999	2.0138168	3.8269999	2.0493891	0	327.67001	5.9679999	2.0493891
2020-09-27	2.9690001	6.9409862	0.445	9.753849	0	327.67001	4.3559999	9.753849
2020-09-28	2.392	7.0526052	0	9.876523	0	327.67001	3.3410001	9.876523
2020-09-29	2.596	6.1629596	0	1.9985199	0	327.67001	3.8299999	1.9985199
2020-09-30	2.651	7.005487	0	9.8278704	0	327.67001	2.2620001	9.8278704
2020-10-01	0.17	7.1822171	0	9.9638882	0	327.67001	0	9.9638882
2020-10-02	0	7.2969127	0	10.097985	0	327.67001	0	10.097985
2020-10-03	0	7.2694755	0	10.03	0	327.67001	0	10.03
2020-10-04	0	7.5996389	0	10.372225	0	327.67001	0	10.372225
2020-10-05	0	7.603292	0	10.334389	0	327.67001	0	10.334389
2020-10-06	0	7.676156	0	10.39411	0	327.67001	0	10.39411
2020-10-07	0	7.7881589	0	10.538983	0	327.67001	0	10.538983
2020-10-08	0	7.7353315	0	10.447886	0	327.67001	0	10.447886
2020-10-09	0.053	7.4862909	0.061	10.22	0	327.67001	0.054	10.22
2020-10-10	0	7.4749031	0	10.191947	0	327.67001	0.05	10.191947
2020-10-11	2.7520001	2.0062194	3.1199999	9.1253662	0	327.67001	0	9.1253662
2020-10-12	0.811	7.6474352	1.011	10.381832	0	327.67001	0.077	10.381832
2020-10-13	0	7.7308688	0	10.458569	0	327.67001	0	10.458569
2020-10-14	0	7.754003	0	10.483314	0	327.67001	0	10.483314
2020-10-15	0	7.7855496	0	10.493223	0	327.67001	0	10.493223

Data	Bevan Well 1 Flow Previous Day's Total	Bevan Well 1 Level	Bevan Well 2 Flow Previous Day's Total	Bevan Well 2 Level	Bevan Well 3 Flow Previous Day's Total	Bevan Well 3 Level	Bevan Well 4 Flow Previous Day's Total	Bevan Well 4 Level
	ML	m	ML	m	ML	m	ML	m
2020-10-16	0	7.8105969	0	10.53891	0	327.67001	0	10.53891
2020-10-17	0.403	7.4511642	0.393	10.184981	0	327.67001	2.191	10.184981
2020-10-18	0	7.4899998	0	10.215863	0	327.67001	0	10.215863
2020-10-19	0.622	2.0069504	0	9.6000004	0	327.67001	0	9.6000004
2020-10-20	0.588	7.4230137	0	10.187305	0	327.67001	0	10.187305
2020-10-21	0	7.433989	0	10.19	0	327.67001	0	10.19
2020-10-22	0	7.4287171	0	10.164493	0	327.67001	0	10.164493
2020-10-23	0	7.432066	0	10.187394	0	327.67001	0	10.187394
2020-10-24	0	7.46	0	10.215487	0	327.67001	0	10.215487
2020-10-25	0	7.4739227	0	10.209012	0	327.67001	0	10.209012
2020-10-26	0	7.4646573	0	10.200875	0	327.67001	0	10.200875
2020-10-27	0	7.4331245	0	10.168168	0	327.67001	0	10.168168
2020-10-28	0	7.458405	0	10.193069	0	327.67001	0	10.193069
2020-10-29	0	7.4461336	0	10.183777	0	327.67001	0	10.183777
2020-10-30	0	7.456461	0	10.201038	0	327.67001	0	10.201038
2020-10-31	0	7.411962	0	10.148067	0	327.67001	0	10.148067
2020-11-01	0	7.5773873	0	10.309832	0	327.67001	0	10.309832
2020-11-02	0	7.432694	0	10.193903	0	327.67001	0	10.193903
2020-11-03	0	7.4400001	0	10.18	0	327.67001	0	10.18
2020-11-04	1.835	1.9896649	2.059	2.0214865	0	327.67001	2.934	2.0214865
2020-11-05	3.865	1.9925082	2.707	2.0400343	0	327.67001	6.1529999	2.0400343
2020-11-06	1.75	7.0940685	1.908	9.9008389	0	327.67001	2.9319999	9.9008389
2020-11-07	0	7.2086368	0	9.9893808	0	327.67001	0	9.9893808
2020-11-08	0	7.2421432	0	10.017092	0	327.67001	0	10.017092
2020-11-09	0	7.2914948	0	10.045445	0	327.67001	0	10.045445
2020-11-10	0	7.5296597	0	10.28	0	327.67001	0	10.28
2020-11-11	0	7.6199999	0	10.36	0	327.67001	0	10.36
2020-11-12	0	7.6699009	0	10.398011	0	327.67001	0	10.398011
2020-11-13	0.062	7.7308278	0.082	10.445811	0	327.67001	0.056	10.445811
2020-11-14	0	7.7485895	0	10.46346	0	327.67001	0	10.46346
2020-11-15	0	7.7942533	0	10.51092	0	327.67001	0	10.51092
2020-11-16	0	7.8271213	0	10.540597	0	327.67001	0	10.540597
2020-11-17	0	7.8830509	0	10.590767	0	327.67001	0	10.590767
2020-11-18	0.916	2.0054381	1.1670001	2.0790308	0	327.67001	1.4450001	2.0790308
2020-11-19	4.138	1.99	2.062	2.0098794	0	327.67001	6.3699999	2.0098794
2020-11-20	1.848	7.6399999	0.001	10.443998	0	327.67001	2.7679999	10.443998
2020-11-21	0	7.7399998	0	10.490821	0	327.67001	0	10.490821
2020-11-22	0	7.8499999	0	10.598186	0	327.67001	0	10.598186
2020-11-23	0	7.9099998	0	10.65	0	327.67001	0	10.65
2020-11-24	0	7.9499998	0	10.67698	0	327.67001	0	10.67698
2020-11-25	1.3150001	1.9764965	0.076	1.9702573	0	327.67001	1.8789999	1.9702573
2020-11-26	0.73	7.8940864	0.909	10.65	0	327.67001	1.584	10.65

Data	Bevan Well 1 Flow Previous Day's Total ML	Bevan Well 1 Level m	Bevan Well 2 Flow Previous Day's Total ML	Bevan Well 2 Level m	Bevan Well 3 Flow Previous Day's Total ML	Bevan Well 3 Level m	Bevan Well 4 Flow Previous Day's Total ML	Bevan Well 4 Level m
2020-11-27	0.055	7.9734778	0.089	10.72998	0	327.67001	0.098	10.72998
2020-11-28	0	8.0594397	0	10.794309	0	327.67001	0	10.794309
2020-11-29	0	8.0750303	0	10.796368	0	327.67001	0	10.796368
2020-11-30	0	8.1292629	0	10.834581	0	327.67001	0	10.834581
2020-12-01	0	8.1202078	0	10.836214	0	327.67001	0	10.836214
2020-12-02	0	8.2084599	0	10.924002	0	327.67001	0	10.924002
2020-12-03	0	8.2607412	0	11.009742	0	327.67001	0	11.009742
2020-12-04	0	8.216836	0	10.925651	0	327.67001	0	10.925651
2020-12-05	0	8.2395592	0	10.951466	0	327.67001	0	10.951466
2020-12-06	0	8.2534599	0	10.961096	0	327.67001	0	10.961096
2020-12-07	0	8.2769089	0	10.98	0	327.67001	0	10.98
2020-12-08	0	1.9900833	0	1.9948756	0	327.67001	0	1.9948756
2020-12-09	1.027	6.8669214	1.684	1.9738438	0	327.67001	4.4330001	1.9738438
2020-12-10	2.431	1.99817	3.3399999	9.2780018	0	327.67001	0.623	9.2780018
2020-12-11	0.6	6.490171	3.4990001	1.9948525	0	327.67001	3.3280001	1.9948525
2020-12-12	0	8.0297213	0.685	10.804091	0	327.67001	0.775	10.804091
2020-12-13	0	8.1499996	0	10.9	0	327.67001	0	10.9
2020-12-14	0	8.2104053	0	10.949692	0	327.67001	0	10.949692
2020-12-15	0	8.1803637	0	10.908054	0	327.67001	0	10.908054
2020-12-15	0	8.0220833	0	10.766856	0	327.67001	0	10.766856
2020-12-16	0	8.0938921	0	10.818115	0	327.67001	0	10.818115
2020-12-17	0	8.3560123	0	11.064116	0	327.67001	0	11.064116
2020-12-18	0	8.3731346	0	11.098425	0	327.67001	0	11.098425
2020-12-19	0	5.9309034	0	1.9454929	0	327.67001	0	1.9454929
2020-12-20	0	2.0059116	4.434	9.4041462	0	327.67001	4.198	9.4041462
2020-12-21	2.5469999	5.8160567	3.3770001	2.0233724	0	327.67001	1.102	2.0233724
2020-12-22	0.554	6.9629006	4.2459998	2.0105338	0	327.67001	3.744	2.0105338
2020-12-23	0	1.98	0.304	1.9843713	0	327.67001	4.7319999	1.9843713
2020-12-24	2.425	2.0043054	0	9.3512964	0	327.67001	5.0149999	9.3512964
2020-12-25	3.1619999	5.8115149	2.9960001	2.0551488	0	327.67001	1.224	2.0551488
2020-12-26	0.262	6.9552007	4.1100001	2	0	327.67001	3.9849999	2
2020-12-27	0	6.9974823	0.595	1.997411	0	327.67001	4.5560002	1.997411
2020-12-28	0	7.0300002	0	2.0098758	0	327.67001	4.9419999	2.0098758
2020-12-29	0	7.0604744	0	2.0271571	0	327.67001	5.0079999	2.0271571
2020-12-30	0	7.0685	0	2.0041261	0	327.67001	5.1100001	2.0041261
2020-12-31	0	7.1140294	0	1.9888308	0	327.67001	5.5560002	1.9888308
2021-01-01	0	2	0	10.19401	0	327.67001	5.2789998	10.19401
2021-01-02	3.05	6.8346663	0	9.9988699	0	327.67001	0.923	9.9988699
2021-01-03	0.427	6.0093346	3.0439999	1.9850363	0	327.67001	0	1.9850363
2021-01-04	0	5.96	4.2490001	1.95	0	327.67001	3.677	1.95
2021-01-05	0	5.96	5.7090001	1.95	0	327.67001	5.888	1.95
2021-01-06	2.921	5.9587235	3.5639999	1.9574435	0	327.67001	2.9200001	1.9574435

Data	Bevan Well 1 Flow Previous Day's Total ML	Bevan Well 1 Level m	Bevan Well 2 Flow Previous Day's Total ML	Bevan Well 2 Level m	Bevan Well 3 Flow Previous Day's Total ML	Bevan Well 3 Level m	Bevan Well 4 Flow Previous Day's Total ML	Bevan Well 4 Level m
2021-01-07	0.742	1.98	4.6739998	2	0	327.67001	3.9679999	2
2021-01-08	1.933	5.9748249	0.984	2.0274603	0	327.67001	5.2969999	2.0274603
2021-01-09	0.778	7	3.9200001	2.01	0	327.67001	4.5219998	2.01
2021-01-10	0	2	4.2789998	9.891408	0	327.67001	4.3590002	9.891408
2021-01-11	2.902	6.4093676	3.7869999	1.98	0	327.67001	0.606	1.98
2021-01-12	0.588	1.98	4.7329998	2.01	0	327.67001	3.973	2.01
2021-01-13	2.2119999	6.8299999	0.885	2.1700001	0	327.67001	5.1129999	2.1700001
2021-01-14	0.496	2.0009608	4.164	9.7430925	0	327.67001	2.687	9.7430925
2021-01-15	2.7739999	6.2199998	3.6949999	2.0096459	0	327.67001	0.68	2.0096459
2021-01-16	0.456	8.4183655	2.5350001	11.233156	0	327.67001	2.313	11.233156
2021-01-17	0	8.5370407	0.602	11.356443	0	327.67001	0.608	11.356443
2021-01-18	0	8.623476	0	11.419321	0	327.67001	0	11.419321
2021-01-19	0	8.6719332	0	11.477925	0	327.67001	0	11.477925
2021-01-20	0	8.6800003	0	11.4854	0	327.67001	0	11.4854
2021-01-21	0	9.1700001	0	11.965963	0	327.67001	0	11.965963
2021-01-22	0	9.3299999	0	12.099651	0	327.67001	0	12.099651
2021-01-23	0	9.4799995	0	12.23	0	327.67001	0	12.23
2021-01-24	0	9.5821104	0	12.32	0	327.67001	0	12.32
2021-01-25	0	9.6300001	0	12.36	0	327.67001	0	12.36
2021-01-26	0	9.6300001	0	12.36	0	327.67001	0	12.36
2021-01-27	0	9.7799997	0	12.50839	0	327.67001	0	12.50839
2021-01-28	0.016	9.8318319	0.023	12.5432	0	327.67001	0.045	12.5432
2021-01-29	0	9.8803434	0	12.6	0	327.67001	0	12.6
2021-01-30	0	9.9176035	0	12.621454	0	327.67001	0	12.621454
2021-01-31	0	9.9641809	0	12.677205	0	327.67001	0	12.677205
2021-02-01	0	10.006285	0	12.709337	0	327.67001	0	12.709337
2021-02-02	0	10.075828	0	12.785462	0	327.67001	0	12.785462
2021-02-03	0.79	2	0.155	2.2188523	0	327.67001	1.039	2.2188523
2021-02-04	3.5220001	9.8199997	0	12.583695	0	327.67001	4.4439998	12.583695
2021-02-05	3.5220001	10.028593	0	12.762736	0	327.67001	4.4439998	12.762736
2021-02-06	0	10.121703	0	12.838914	0	327.67001	0	12.838914
2021-02-07	0	10.234847	0	12.957323	0	327.67001	0	12.957323
2021-02-08	0	10.283584	0	12.989231	0	327.67001	0	12.989231
2021-02-09	0	10.333043	0	13.041662	0	327.67001	0	13.041662
2021-02-10	0	10.368081	0	13.069674	0	327.67001	0	13.069674
2021-02-11	0	10.448462	0	13.148093	0	327.67001	0	13.148093
2021-02-12	0	9.9117785	0	12.634493	0	327.67001	0	12.634493
2021-02-13	0.054	9.8487673	0.067	12.595716	0	327.67001	0.053	12.595716
2021-02-14	0	9.761632	0	12.52	0	327.67001	0	12.52
2021-02-15	0	7.3276567	0	2.1387882	0	327.67001	0	2.1387882
2021-02-16	0	9.5893202	2.2360001	12.389124	0	327.67001	2.4619999	12.389124
2021-02-17	0	9.63237	2.5139999	12.415173	0	327.67001	2.487	12.415173

Data	Bevan Well 1 Flow Previous Day's Total	Bevan Well 1 Level	Bevan Well 2 Flow Previous Day's Total	Bevan Well 2 Level	Bevan Well 3 Flow Previous Day's Total	Bevan Well 3 Level	Bevan Well 4 Flow Previous Day's Total	Bevan Well 4 Level
	ML	m	ML	m	ML	m	ML	m
2021-02-18	0	10.217631	0	12.969809	0	327.67001	0	12.969809
2021-02-19	0	9.8817263	0	12.643699	0	327.67001	0	12.643699
2021-02-20	0	10.231353	0	12.988544	0	327.67001	0	12.988544
2021-02-21	0	10.422636	0	13.151502	0	327.67001	0	13.151502
2021-02-22	0	7.7174239	0	2.3888628	0	327.67001	0	2.3888628
2021-02-23	0.072	9.9175062	1.021	12.68	0	327.67001	1.5650001	12.68
2021-02-24	0	9.850955	1.63	12.617935	0	327.67001	1.6160001	12.617935
2021-02-25	0	9.8635798	0	12.638127	0	327.67001	0	12.638127
2021-02-26	0	10.330588	0	13.085355	0	327.67001	0	13.085355
2021-02-27	0	10.503958	0	13.244999	0	327.67001	0	13.244999
2021-02-28	0	10.589007	0	13.305053	0	327.67001	0	13.305053
2021-03-01	0	10.670105	0	13.382163	0	327.67001	0	13.382163
2021-03-02	0	10.721035	0	13.421197	0	327.67001	0	13.421197
2021-03-03	0.012	10.776689	0	13.487789	0	327.67001	0.021	13.487789
2021-03-04	0	10.82	0	13.530094	0	327.67001	0	13.530094
2021-03-05	0	10.853815	0	13.552052	0	327.67001	0	13.552052
2021-03-06	0	10.880301	0	13.587537	0	327.67001	0	13.587537
2021-03-07	0	10.90337	0	13.61	0	327.67001	0	13.61
2021-03-08	0	10.910714	0	13.61	0	327.67001	0	13.61
2021-03-09	0	10.992589	0	13.705925	0	327.67001	0	13.705925
2021-03-10	0	10.959226	0	13.65	0	327.67001	0	13.65
2021-03-11	0	10.964512	0	13.646012	0	327.67001	0	13.646012
2021-03-12	0	10.952757	0	13.620788	0	327.67001	0	13.620788
2021-03-13	0.069	10.995108	0.084	13.68	0	327.67001	0.094	13.68
2021-03-14	0	11.031971	0	13.72	0	327.67001	0	13.72
2021-03-15	0	11.044899	0	13.726159	0	327.67001	0	13.726159
2021-03-16	0	11.032261	0	13.711707	0	327.67001	0	13.711707
2021-03-17	0	11.047351	0	13.719155	0	327.67001	0	13.719155
2021-03-18	0	11.09205	0	13.76	0	327.67001	0	13.76
2021-03-19	0	11.102404	0	13.790068	0	327.67001	0	13.790068
2021-03-20	0	11.1	0	13.766836	0	327.67001	0	13.766836
2021-03-21	0	11.090499	0	13.74	0	327.67001	0	13.74
2021-03-22	0	11.13	0	13.81	0	327.67001	0	13.81
2021-03-23	0	10.34	0	12.980828	0	327.67001	0	12.980828
2021-03-24	0	10.26697	0	12.93	1.921	327.67001	0	12.93
2021-03-25	0	11.03	0	13.72976	1.921	327.67001	0	13.72976
2021-03-26	0	11.044744	0	13.727324	1.825	327.67001	0	13.727324
2021-03-27	0	11.084091	0	13.784142	1.825	327.67001	0	13.784142
2021-03-28	0	11.13	0	13.815961	1.825	327.67001	0	13.815961
2021-03-29	0	10.75	0	13.44	1.825	327.67001	0	13.44
2021-03-30	0	9.8299999	0	12.480441	0	327.67001	0	12.480441
2021-03-31	0	10.174278	0	12.82541	0	327.67001	0	12.82541

Data	Bevan Well 1 Flow Previous Day's Total	Bevan Well 1 Level	Bevan Well 2 Flow Previous Day's Total	Bevan Well 2 Level	Bevan Well 3 Flow Previous Day's Total	Bevan Well 3 Level	Bevan Well 4 Flow Previous Day's Total	Bevan Well 4 Level
	ML	m	ML	m	ML	m	ML	m
2021-04-01	0	11.024773	0	13.72	0	327.67001	0	13.72
2021-04-02	0	11.0564	0	13.734727	0	327.67001	0	13.734727
2021-04-03	0	11.12	0	13.8	0	327.67001	0	13.8
2021-04-04	0	11.14	0	13.814976	0	327.67001	0	13.814976
2021-04-05	0	11.15	0	13.82	0	327.67001	0	13.82
2021-04-06	0	10.74	0	13.42877	0	327.67001	0	13.42877
2021-04-07	0	11.14	0	13.82	0	327.67001	0	13.82
2021-04-08	0	11.15	0	13.823256	0	327.67001	0	13.823256
2021-04-09	0	11.216514	0	13.91	0	327.67001	0	13.91
2021-04-10	0	11.23	0	13.927782	0	327.67001	0	13.927782
2021-04-11	0	11.173706	0	13.84	0	327.67001	0.125	13.84
2021-04-12	0	11.176598	0	13.843784	0	327.67001	0	13.843784
2021-04-13	0	10.894208	0	13.591529	0	327.67001	0	13.591529
2021-04-14	0	10.6064	0	13.32	0	327.67001	0	13.32
2021-04-15	0	10.492323	0	13.21	0	327.67001	0	13.21
2021-04-16	0	10.396694	0	13.126244	0	327.67001	0	13.126244
2021-04-17	0	10.3	0	13.031348	0	327.67001	0	13.031348
2021-04-18	0	10.36677	0	13.132463	0	327.67001	0	13.132463
2021-04-19	0	10.35212	0	13.12	0	327.67001	0	13.12
2021-04-20	0	10.275107	0	13.03	0	327.67001	0	13.03
2021-04-21	0	10.217481	0	12.96	0	13.779002	0	12.96
2021-04-22	0	10.2271	0	12.98	0.17	13.78	0	12.98
2021-04-23	0	10.247635	0	12.97	0	13.789604	0	12.97
2021-04-24	0	10.594494	0	13.32041	0	14.15	0	13.32041
2021-04-25	0	10.611285	0	13.347585	0	14.161222	0	13.347585
2021-04-26	0	10.388019	0	13.1	0	13.919107	0	13.1
2021-04-27	0	10.224779	0	12.937124	0	13.750852	0	12.937124
2021-04-28	0	10.334373	0	13.053286	0	13.852931	0	13.053286
2021-04-29	0	10.209431	0	12.92416	0	13.733827	0	12.92416
2021-04-30	0	10.218128	0	12.93	0	13.734814	0	12.93

APPENDIX L

Shallow Groundwater and Vegetation Monitoring Plot Locations

Table 1 Plot Locations for Each Study Area

Study Area	Plot Name	Easting	Northing
Fishtrap Creek	FT01	545059	5430684
Fishtrap Creek	FT02	544256	5430301
Fishtrap Creek	FT03	544404	5430240
Fishtrap Creek	FT04	544376	5430214
Fishtrap Creek	FT06	545236	5430954
Fishtrap Creek	FT07 & BEV-FT-GW3	545254	5431073
Fishtrap Creek	BEV-FT-GW1	545061	5430535
Fishtrap Creek	BEV-FT-GW2	544826	5430328
Horn Creek	H01 & H01-LA1	550823	5434340
Horn Creek	H02	550763	5434395
Boa Brook	B01	551015	5433644
Boa Brook	B02 & B02-LA1	550934	5433658
Downes Creek	D01 & D01-LA1	549030	5435581
Downes Creek	D02	549051	5435556
Downes Creek	D03	549105	5435462
Downes Creek	D04	549248	5435380
Downes Creek	D05 & D05-LA1	549290	5435368
Downes Creek	D06 & D06-LA1	548914	5435540
Downes Creek	D07	549007	543547
Downes Creek	D08 & D08-LA1	549180	5435492
Downes Creek	D09-LA1	549027	5435518
Downes Creek	D10-LA1	548988	5435368
Downes Creek	D11-LA1	549097	5435304
Downes Creek	D12-LA1	549108	5435578
Downes Creek	D13	549063	5435643
Downes Creek	D14	549151	5435549
Downes Creek	D15	548885	5435552
Downes Creek	D16	549312	5435323
Downes Creek	D17	549038	5435269

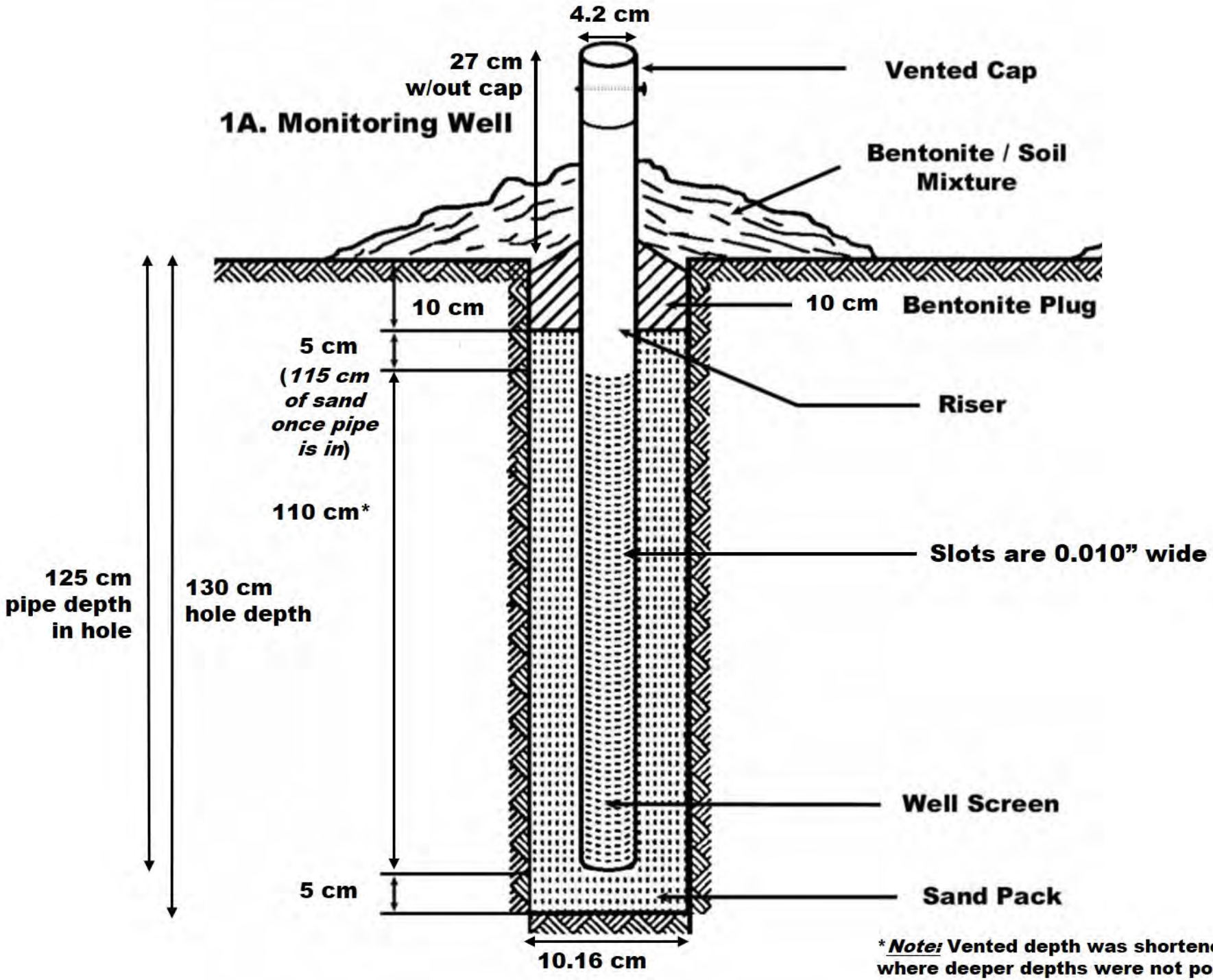
Study Area	Plot Name	Easting	Northing
Downes Creek	D18	549328	5435459
Control Wetland A	BEV-CWA-GW1	551136	5435541
Control Wetland A	BEV-CWA-GW2	551202	5435577
Control Wetland A	BEV-CWA-GW3	551052	5435558
Control Wetland B	BEV-CWB-GW1	540051	5429172
Control Wetland B	BEV-CWB-GW2	540066	5429153
Control Wetland B	BEV-CWB-GW3	540069	5429191
Control Wetland C	BEV-CWC-GW1	552837	5431799
Control Wetland C	BEV-CWC-GW2	552824	5431801
Control Wetland C	BEV-CWC-GW3	552831	5431776

**Skunk cabbage plot locations at Downes also have shallow groundwater wells.*

***Note that FT05 is missing as it was not a full TEM plot, but represented a visual inspection.*

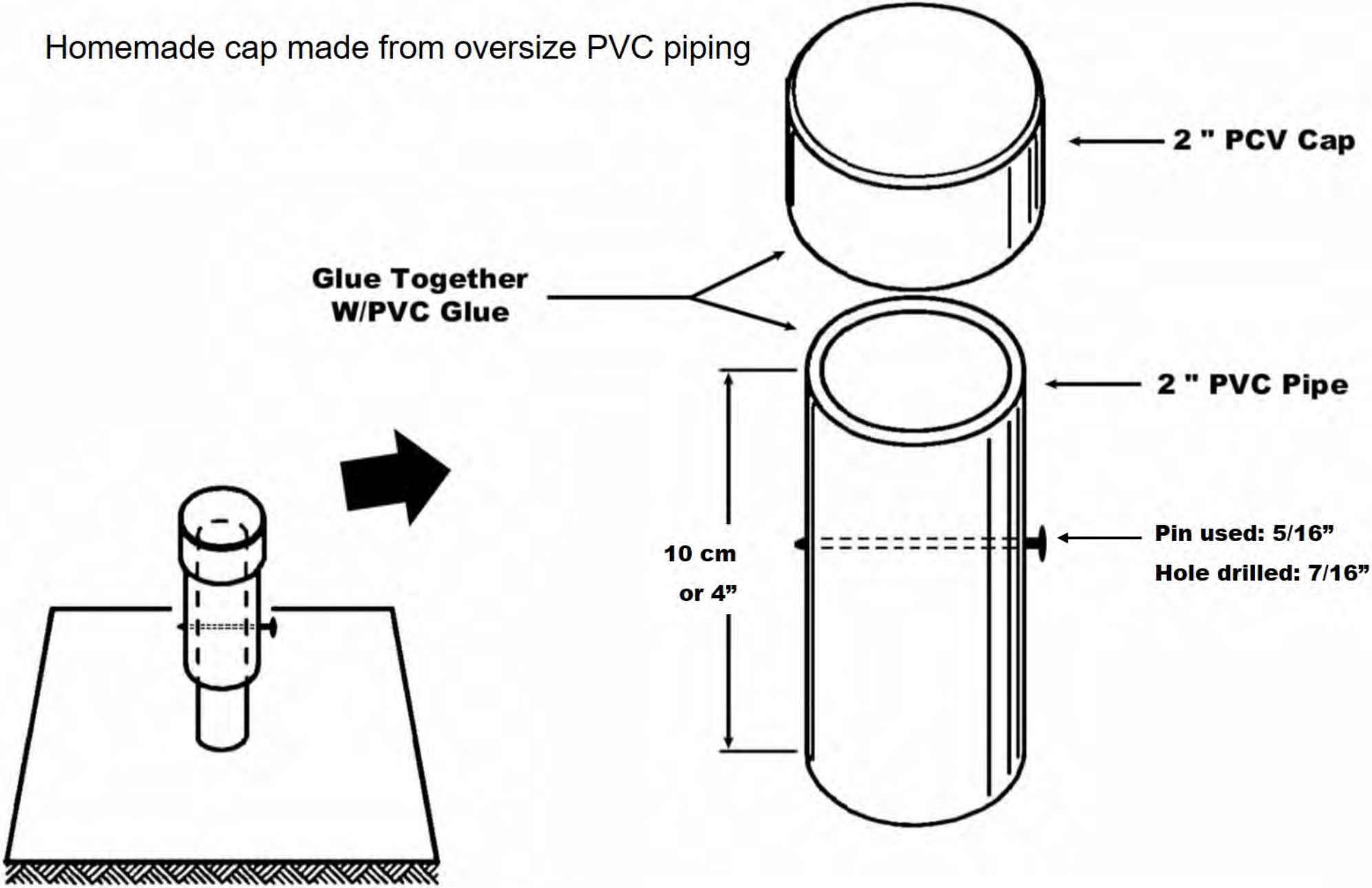
APPENDIX M

Shallow Groundwater Well Specifications



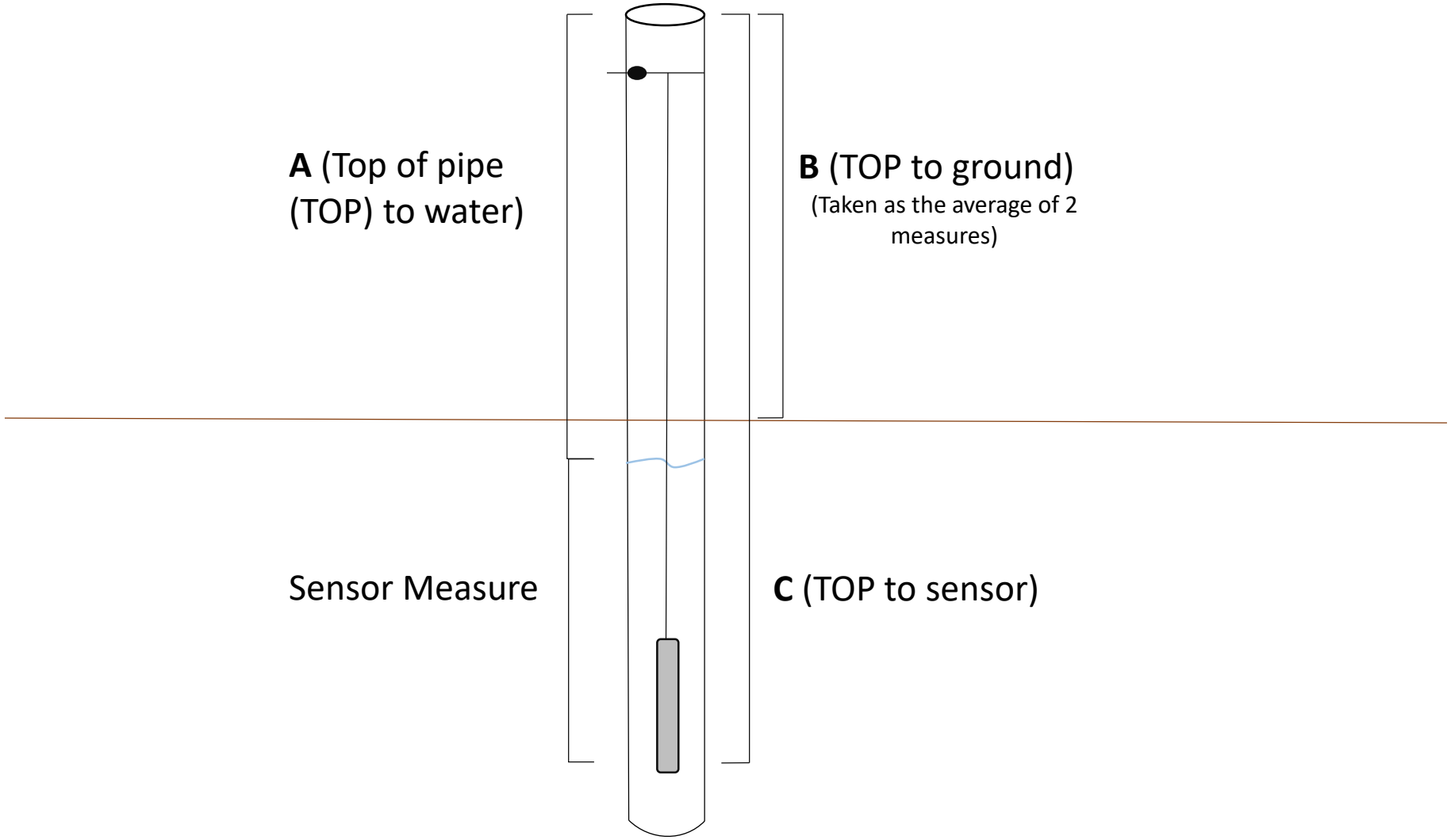
*Note: Vented depth was shortened in some Control Wetlands, where deeper depths were not possible.

Homemade cap made from oversize PVC piping

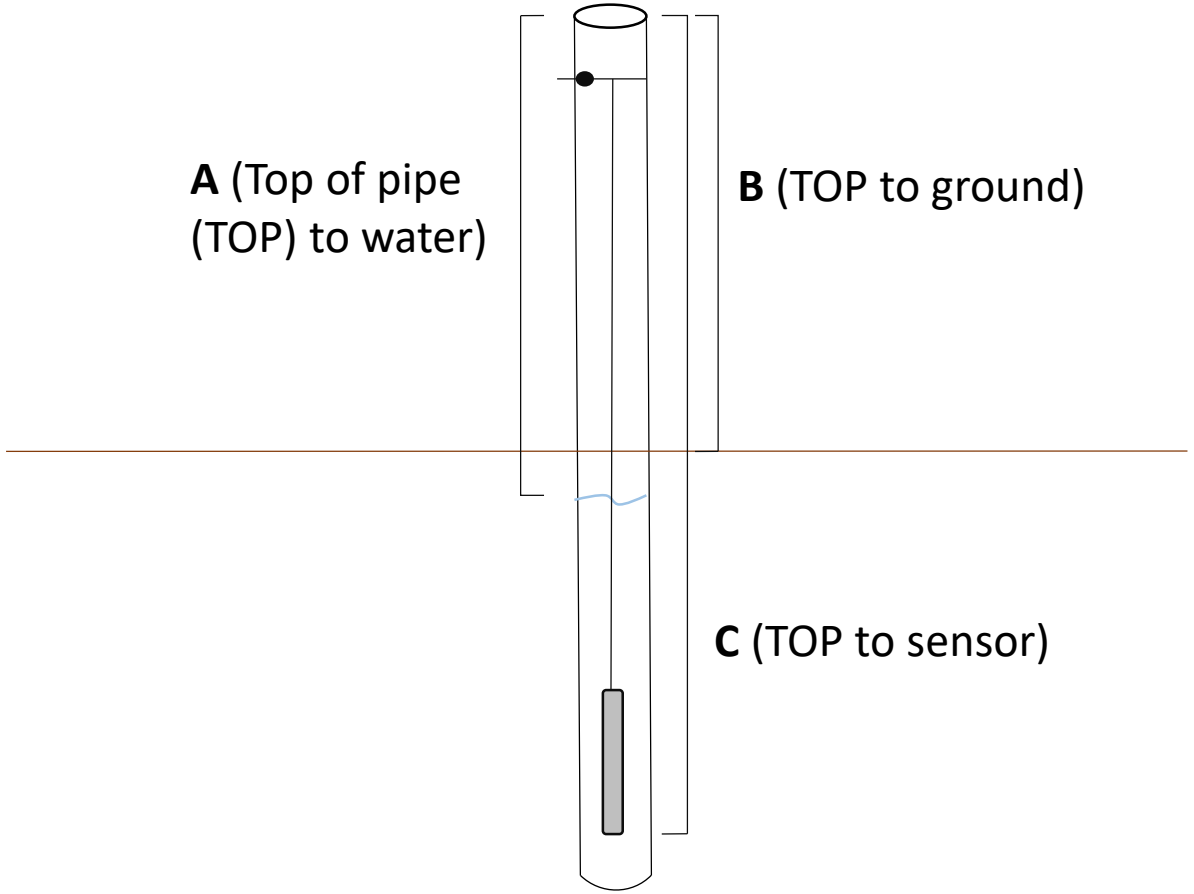


Sensor-measured water below ground formula (D1): (B+sensor measure)-C

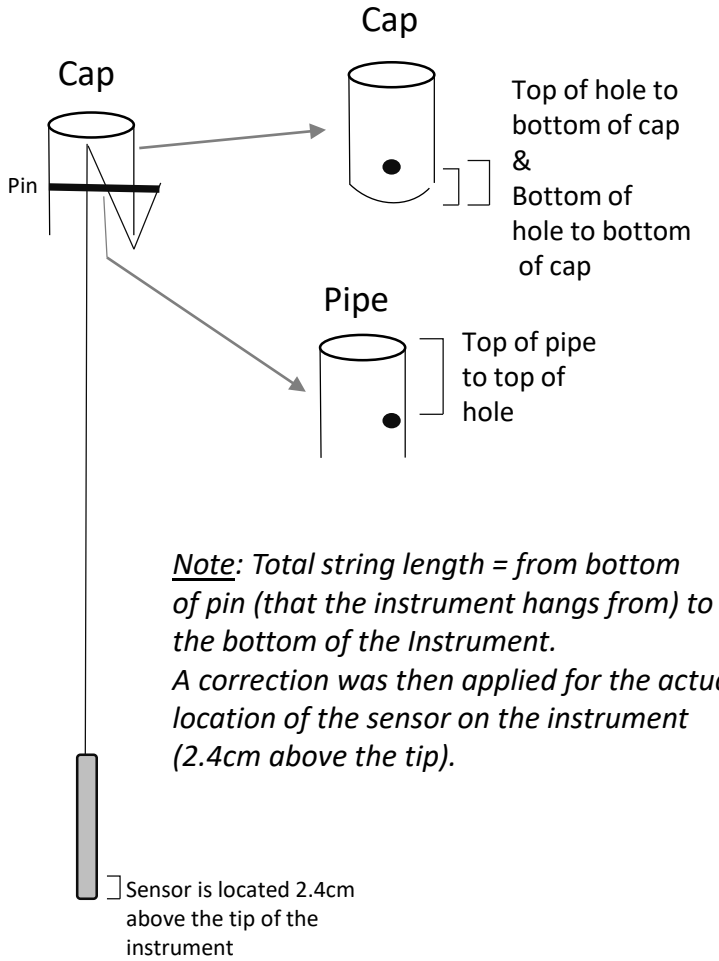
Actual water depth within pipe (D2) = B-A



Old way of getting the measures:

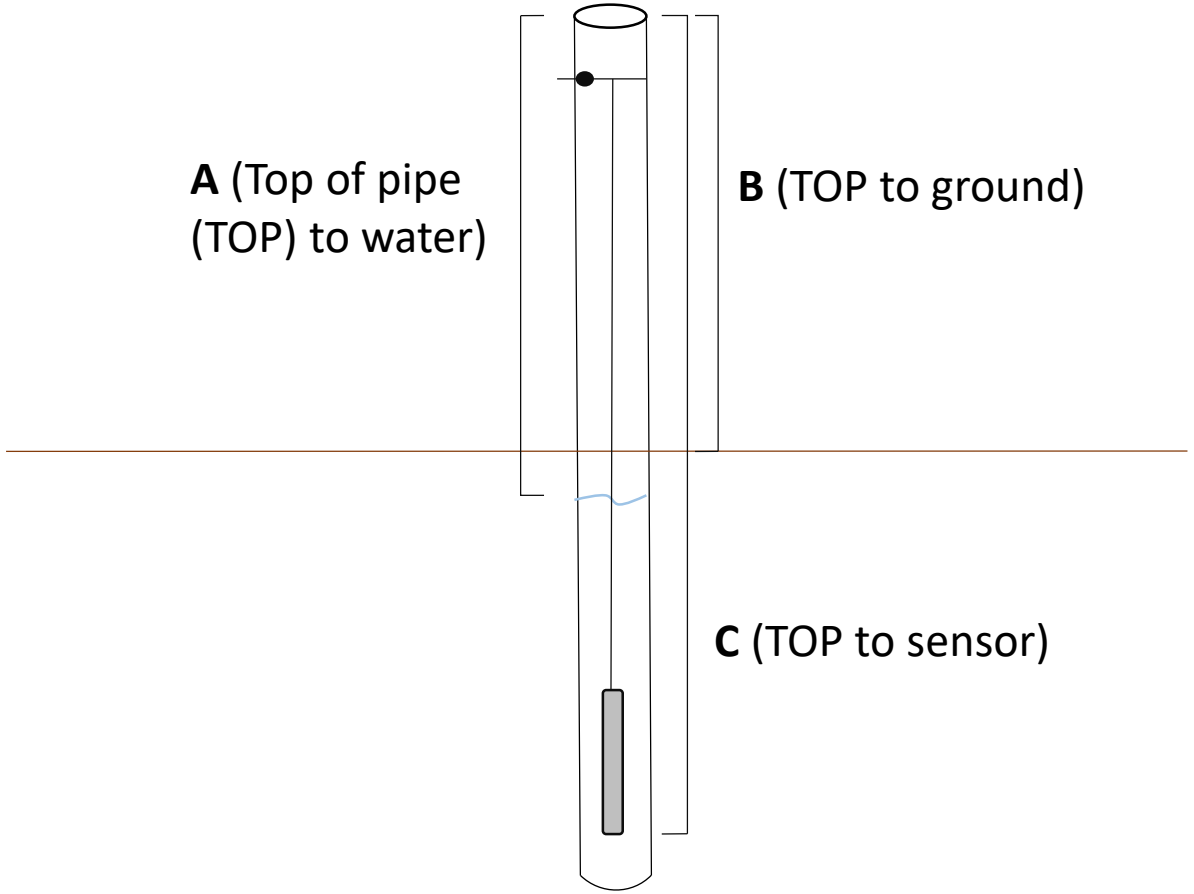


<u>Old Formula for TOP to sensor (C value)</u>: (Total string length-2.4cm) – ([TOP to top of hole on pipe] + [bottom of cap to top of hole] + [bottom of cap to bottom of hole])

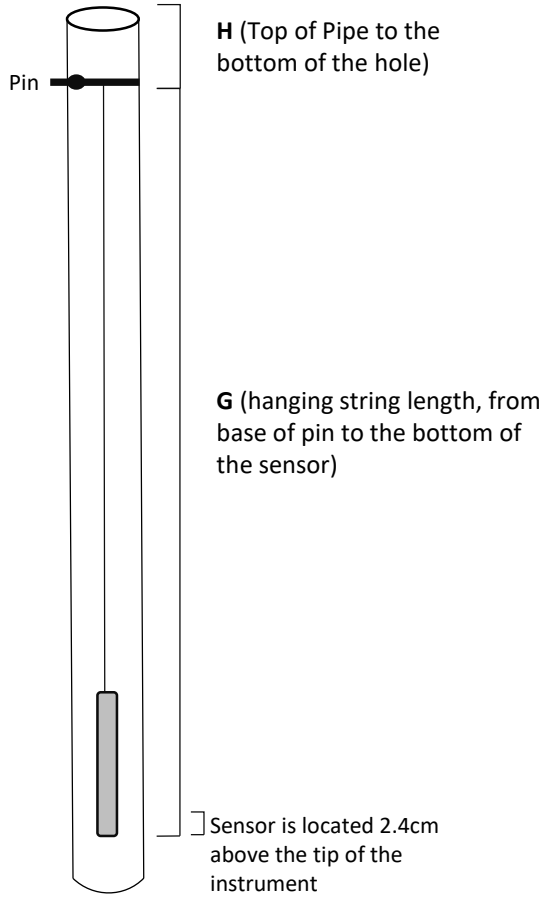


<u>Note</u>: Total string length = from bottom of pin (that the instrument hangs from) to the bottom of the Instrument.
A correction was then applied for the actual location of the sensor on the instrument (2.4cm above the tip).

New way of getting the measures:



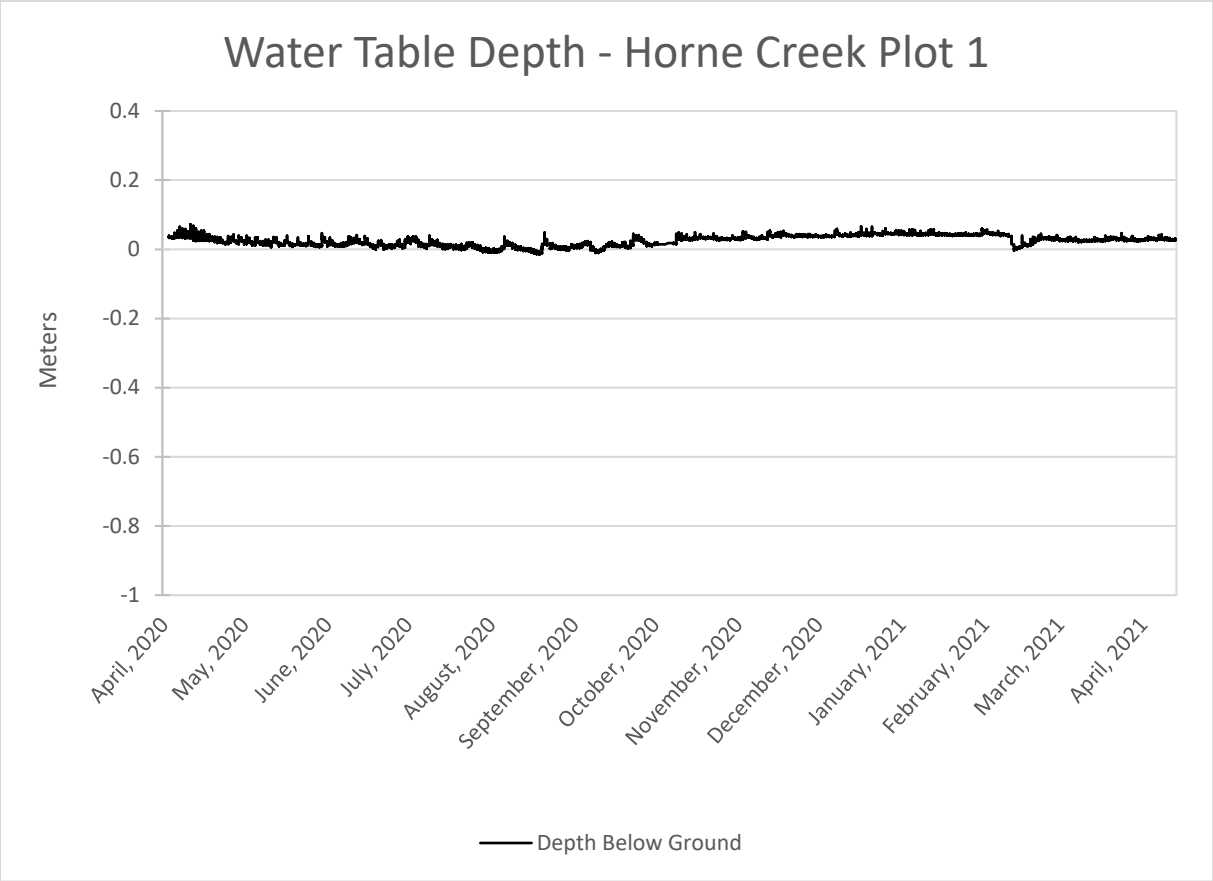
To get the **C** measure: G + H – 2.4cm

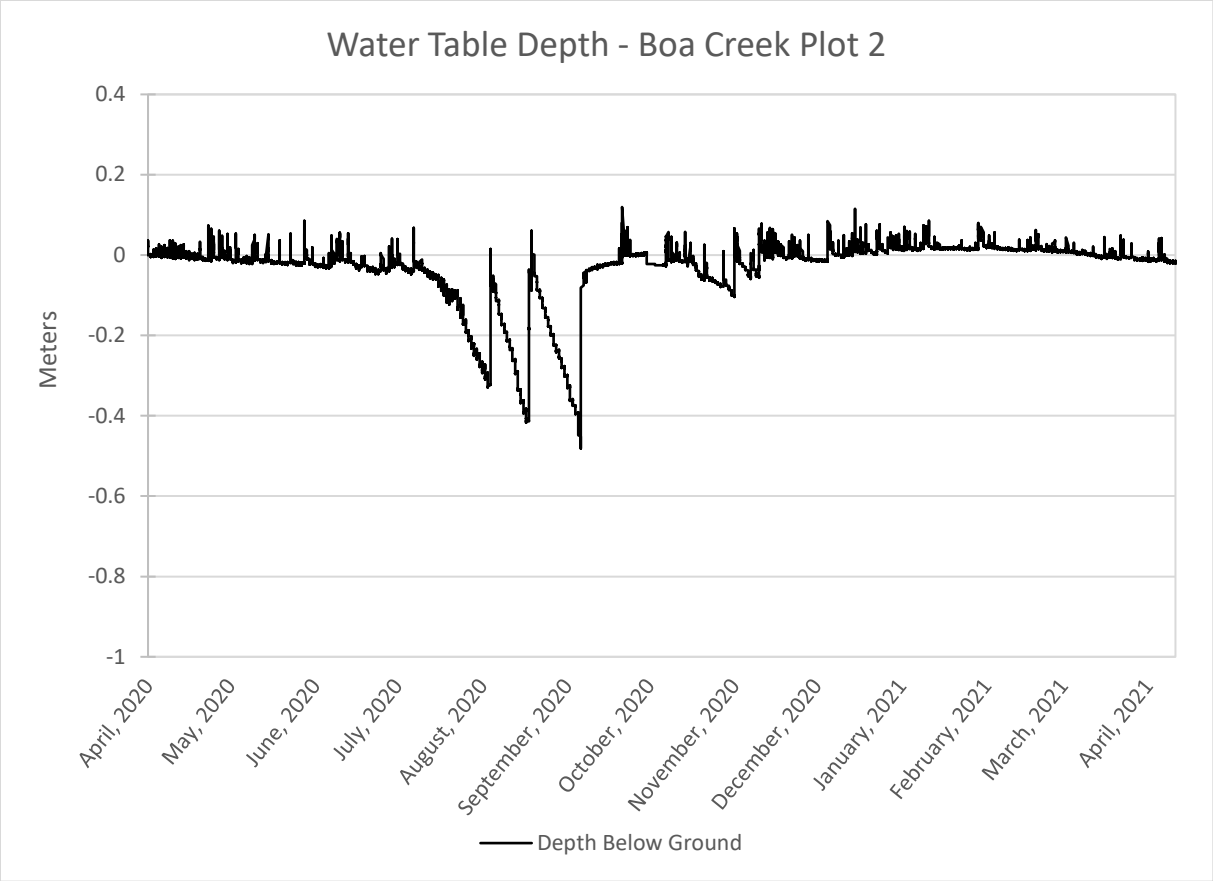


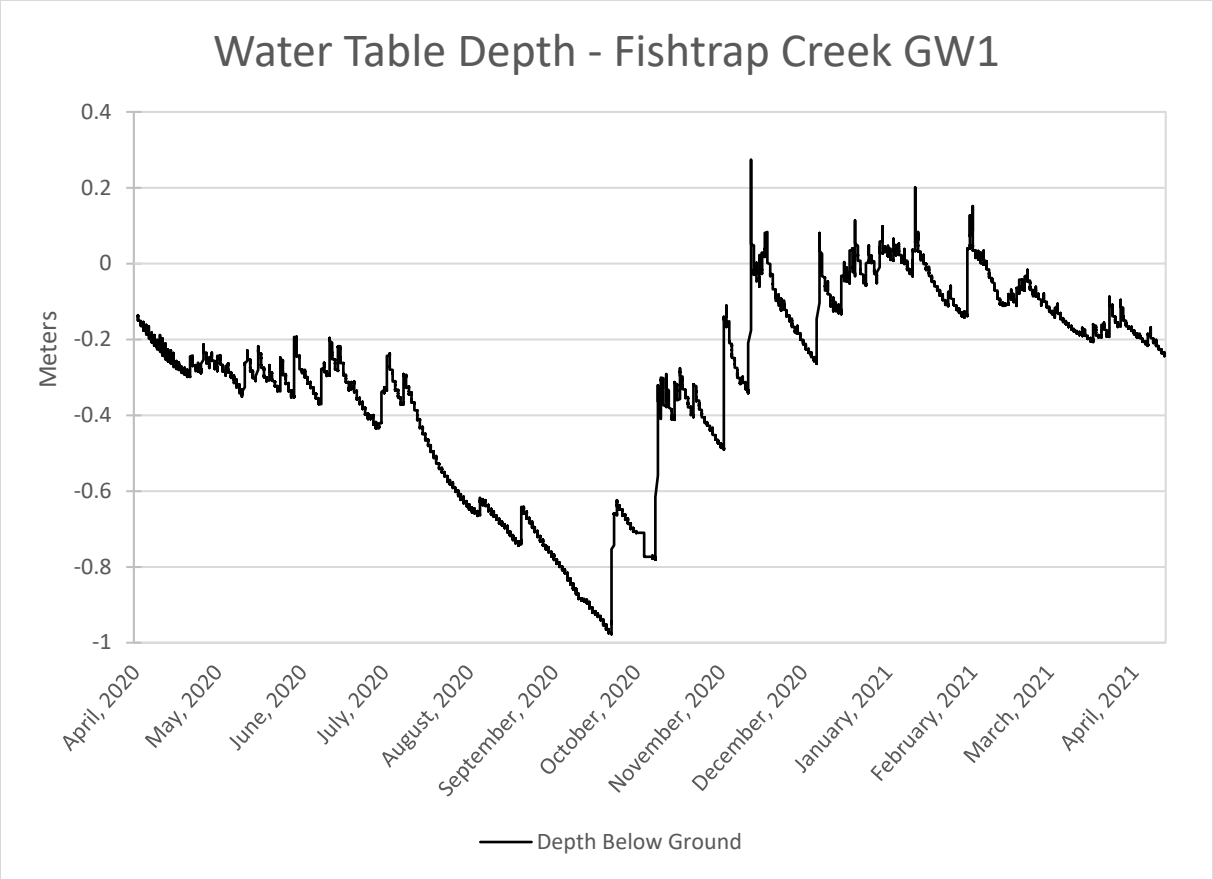
Note: Total string length = from bottom of pin (that the instrument hangs from) to the bottom of the Instrument.
A correction was then applied for the actual location of the sensor on the instrument (2.4cm above the tip).

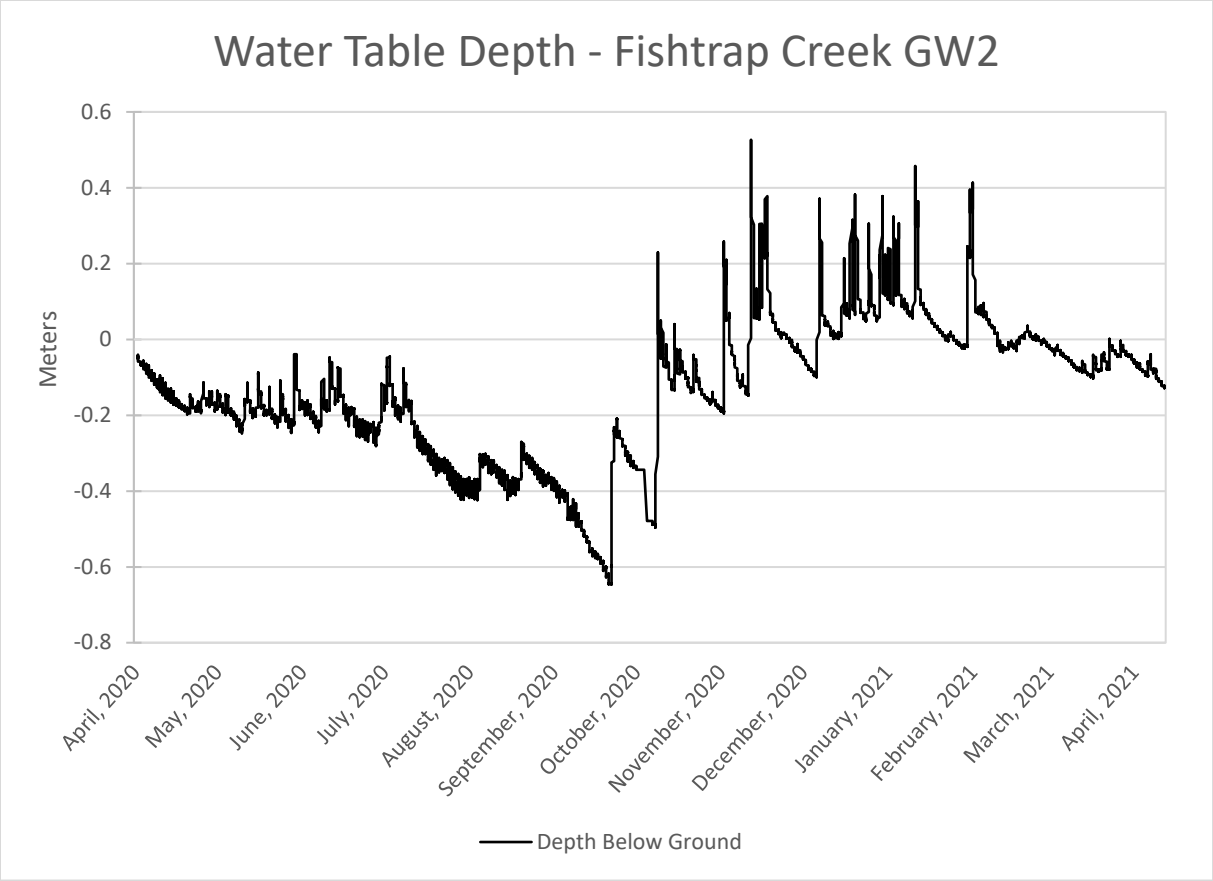
APPENDIX N

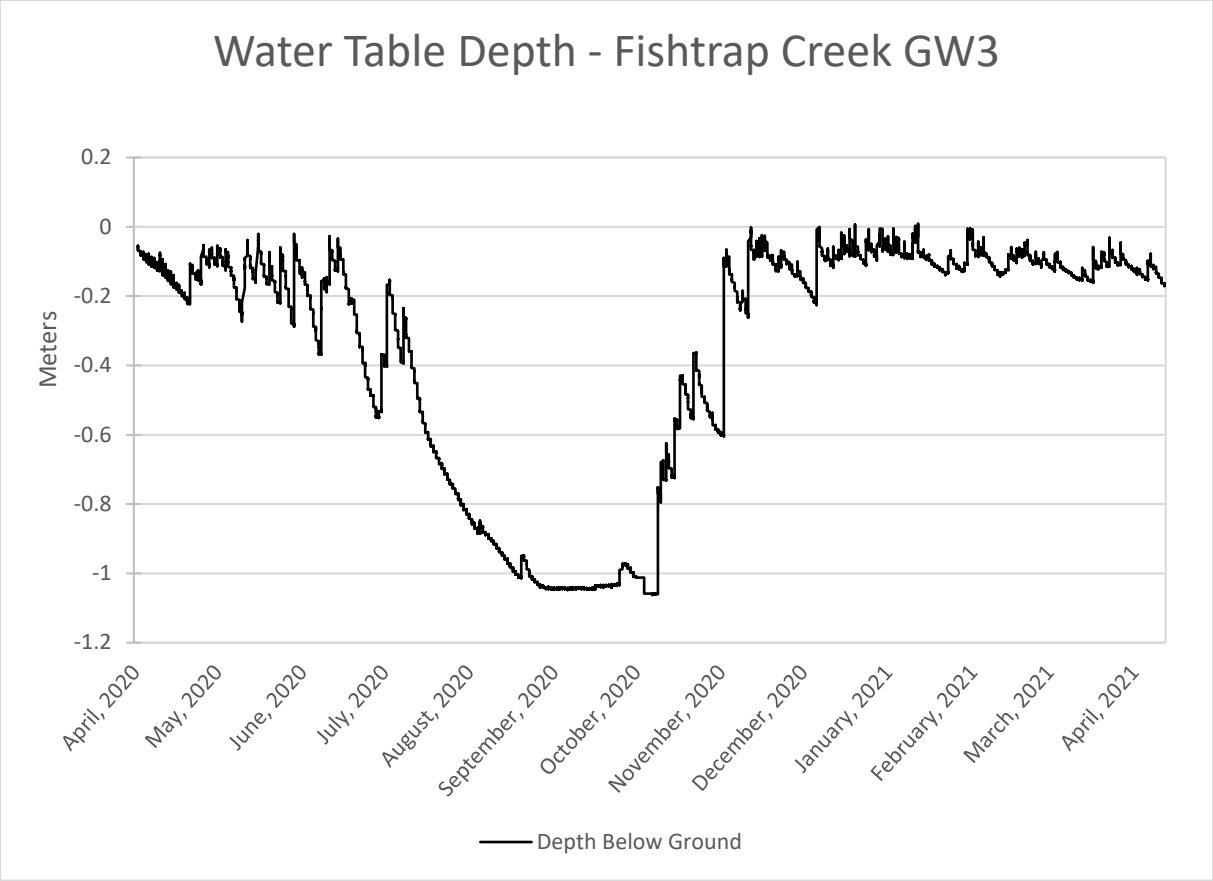
2020 Shallow Groundwater Data Graphs

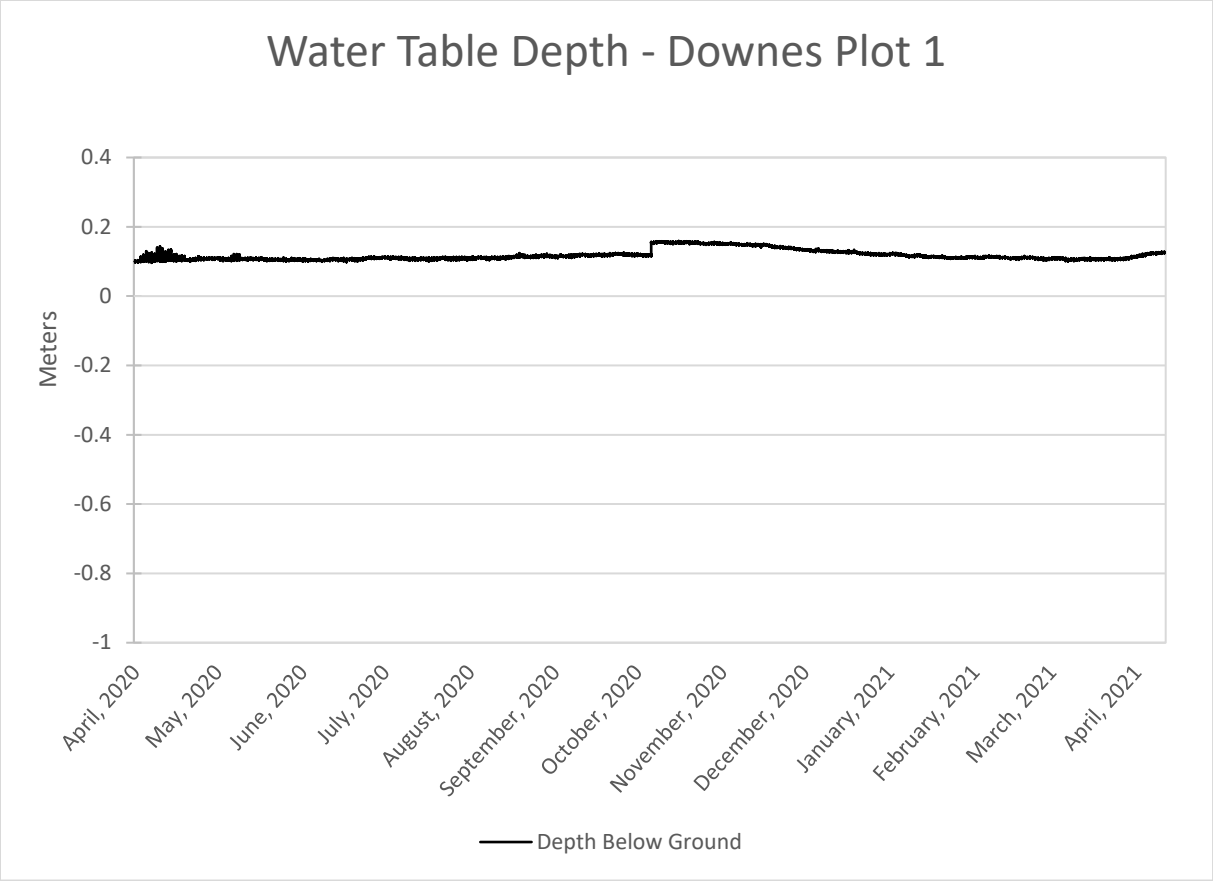

Water Table Depth - Horne Creek Plot 1
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

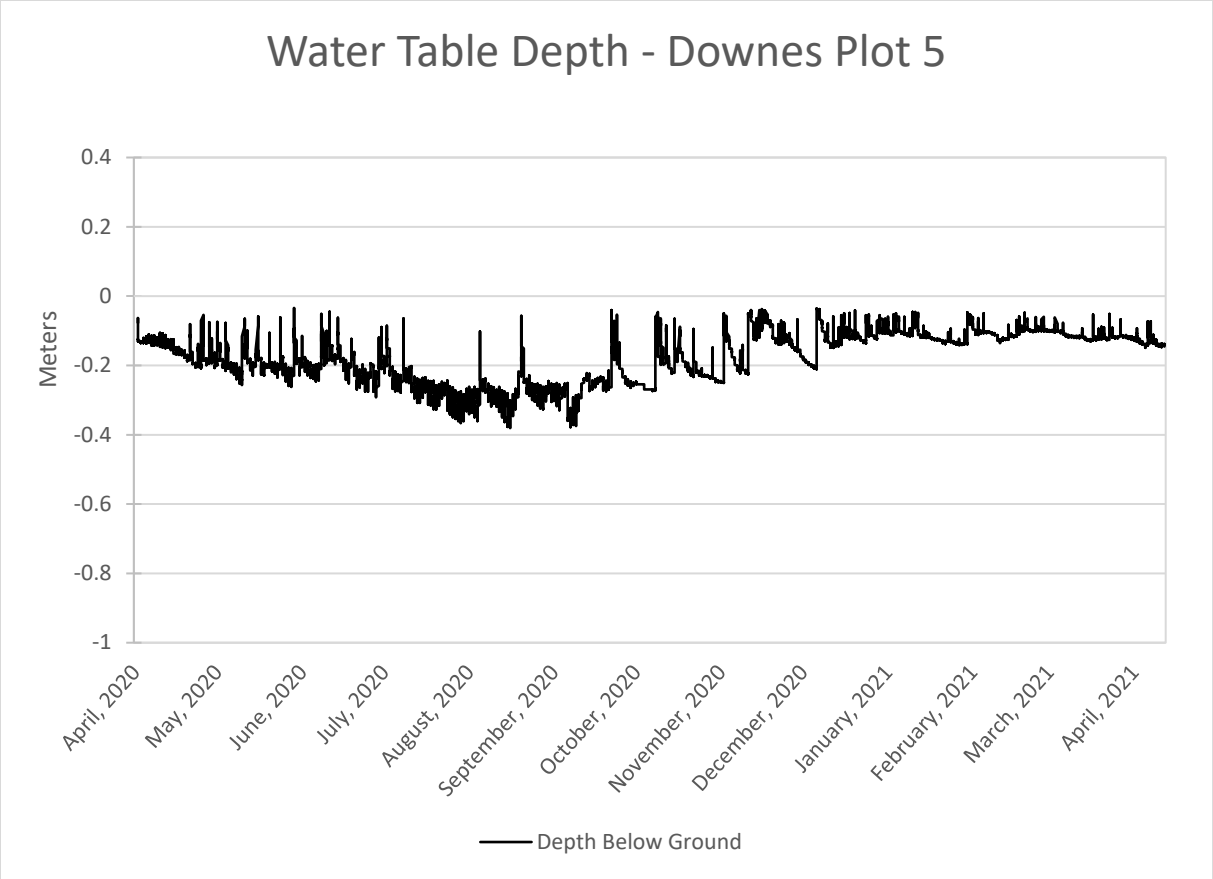

Water Table Depth - Boa Creek Plot 2
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

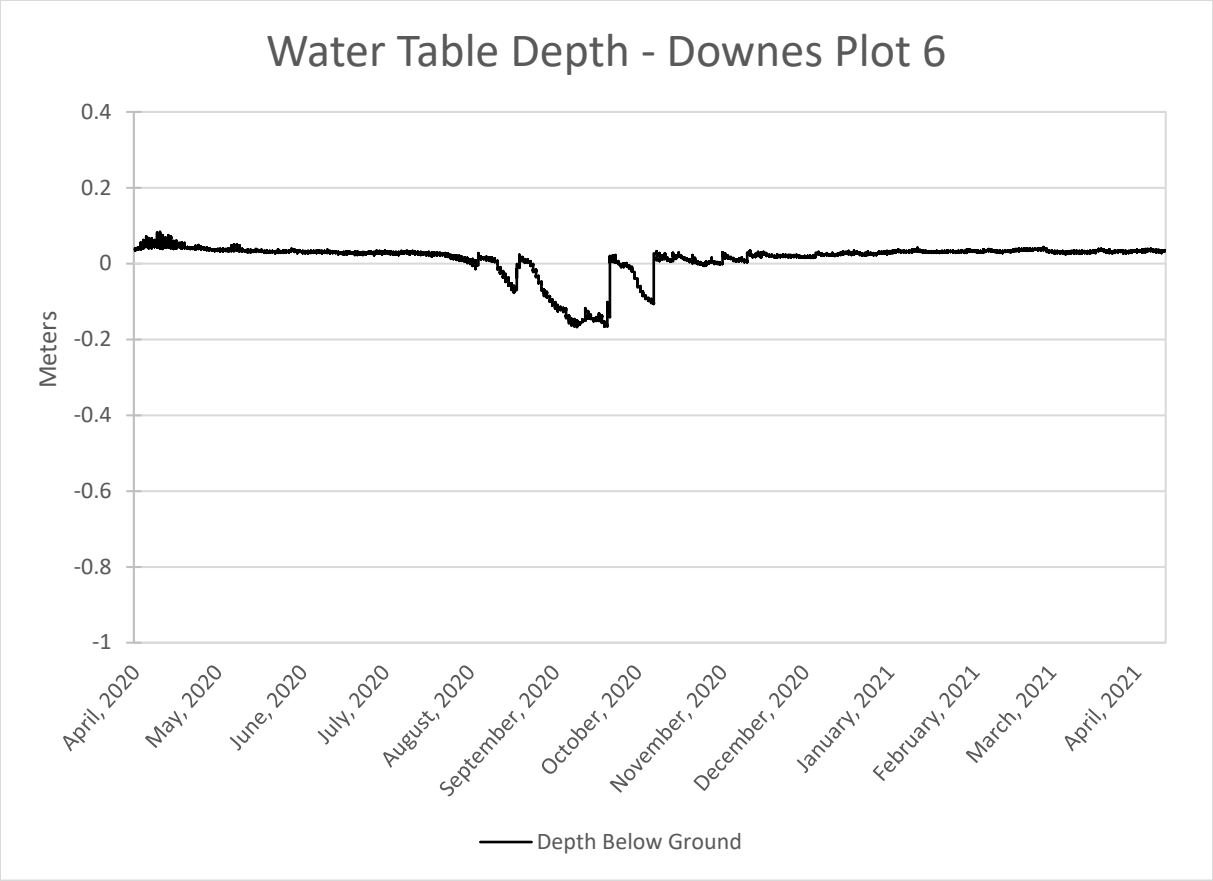

Water Table Depth - Fishtrap Creek GW1
Meters
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

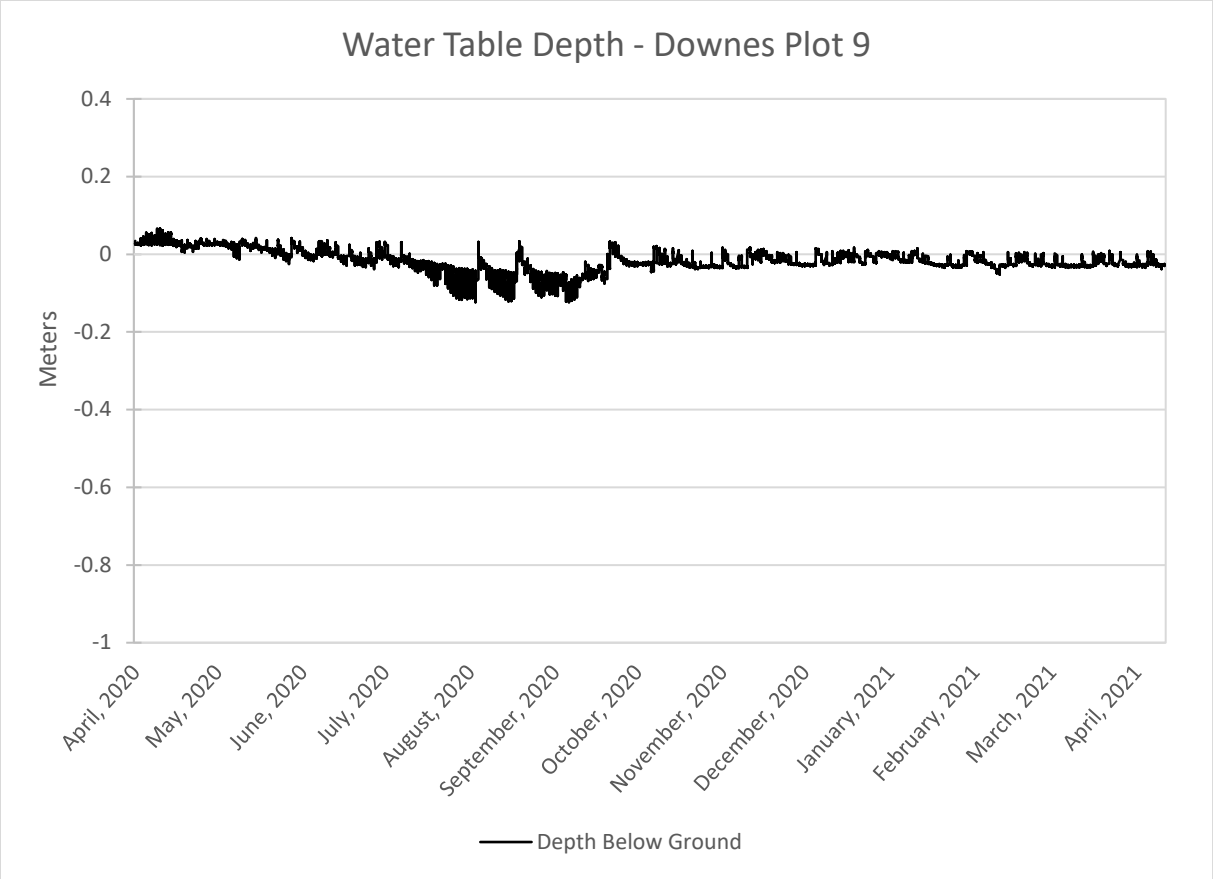

Water Table Depth - Fishtrap Creek GW2
Meters
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

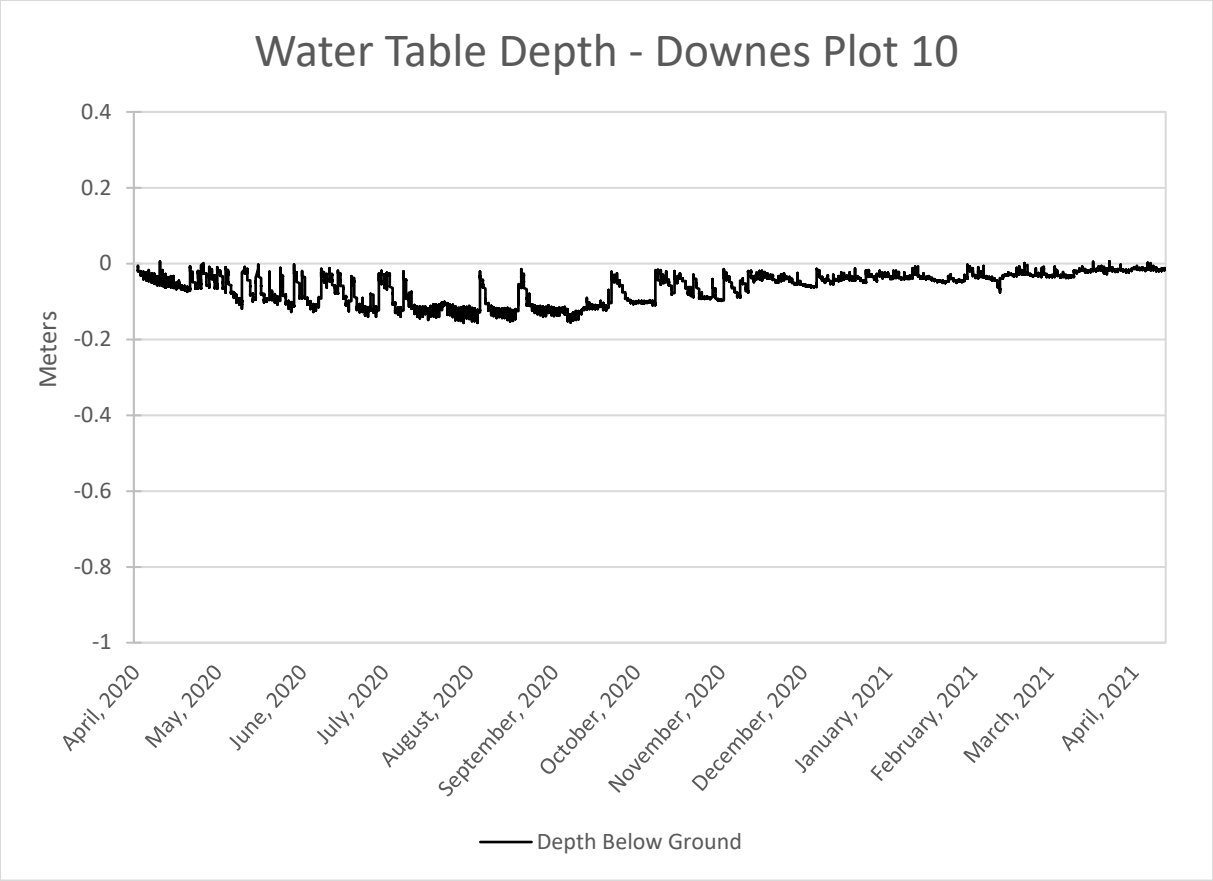

Water Table Depth - Fishtrap Creek GW3
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
-1.2
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

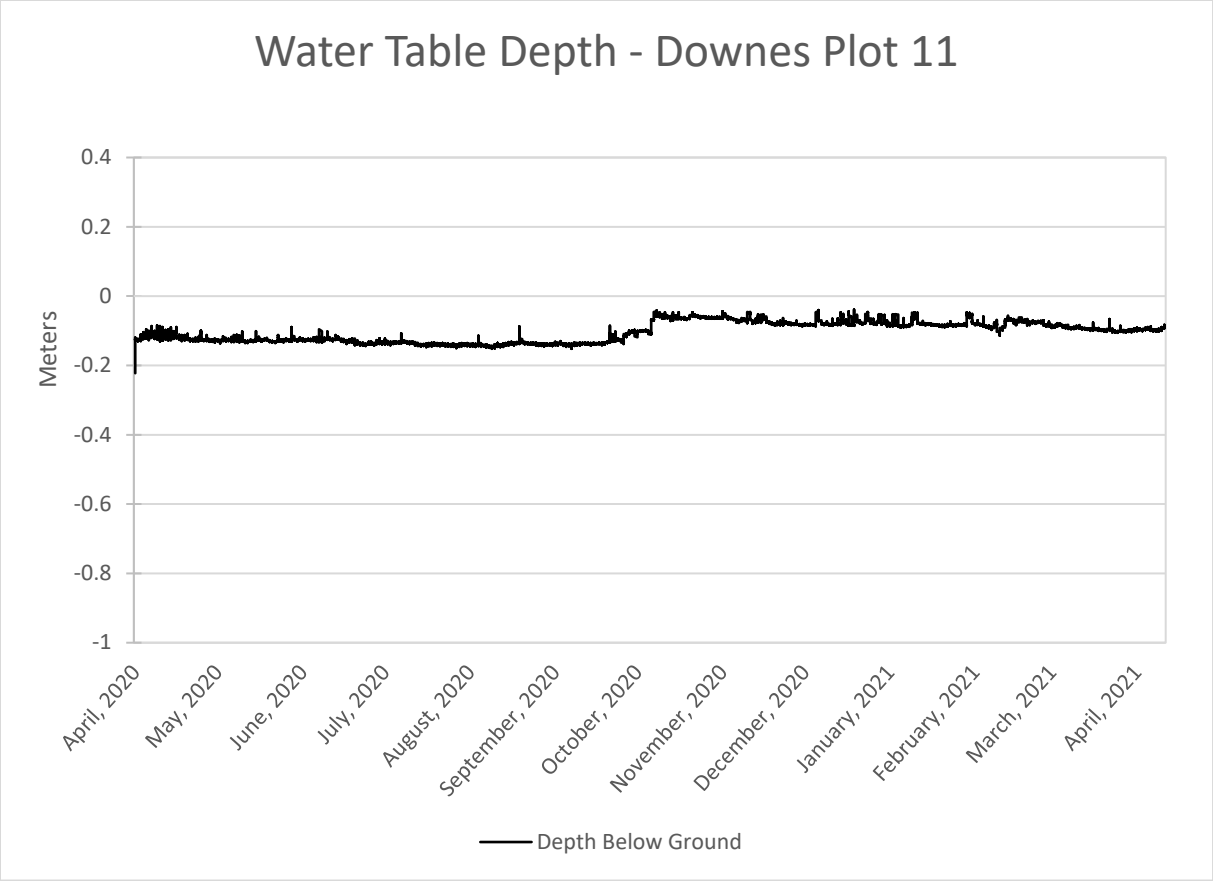

Water Table Depth - Downes Plot 1
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

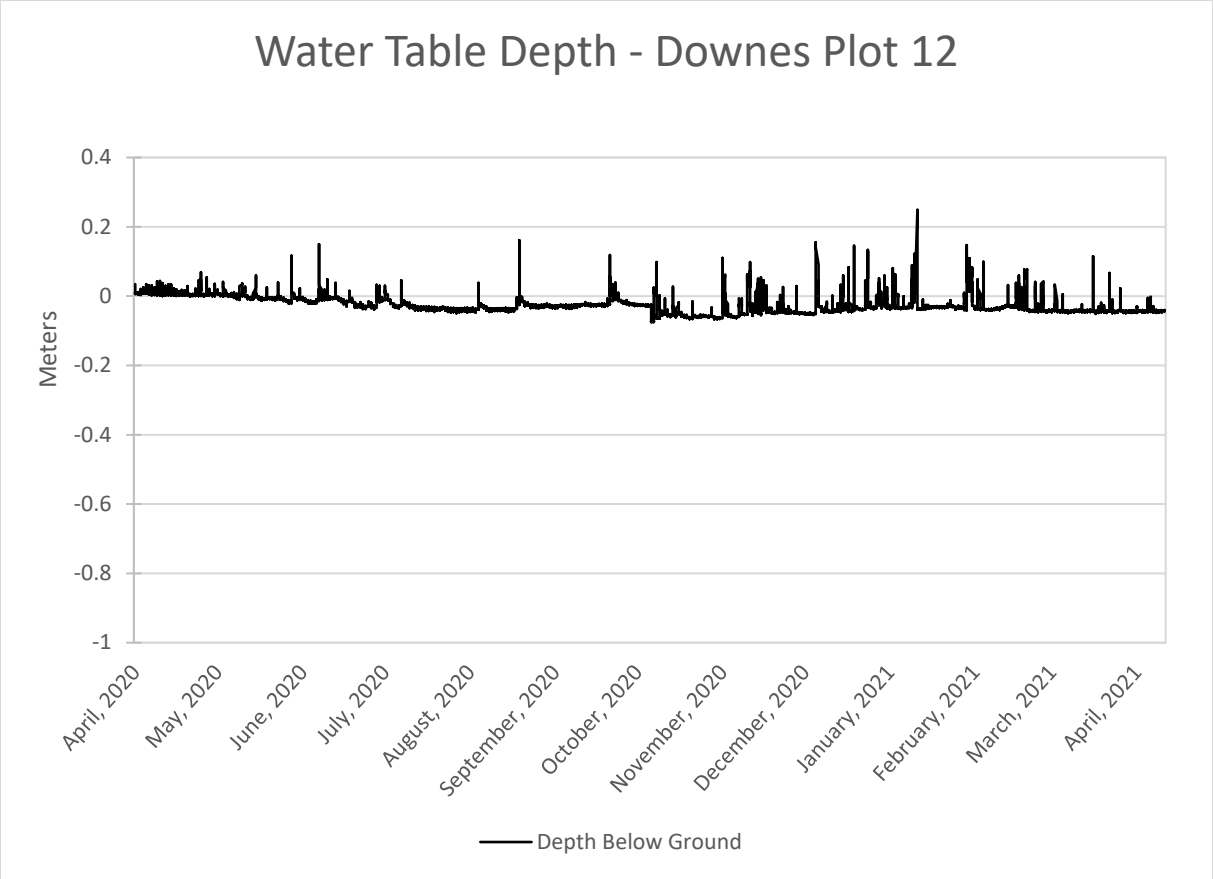

Water Table Depth - Downes Plot 5
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

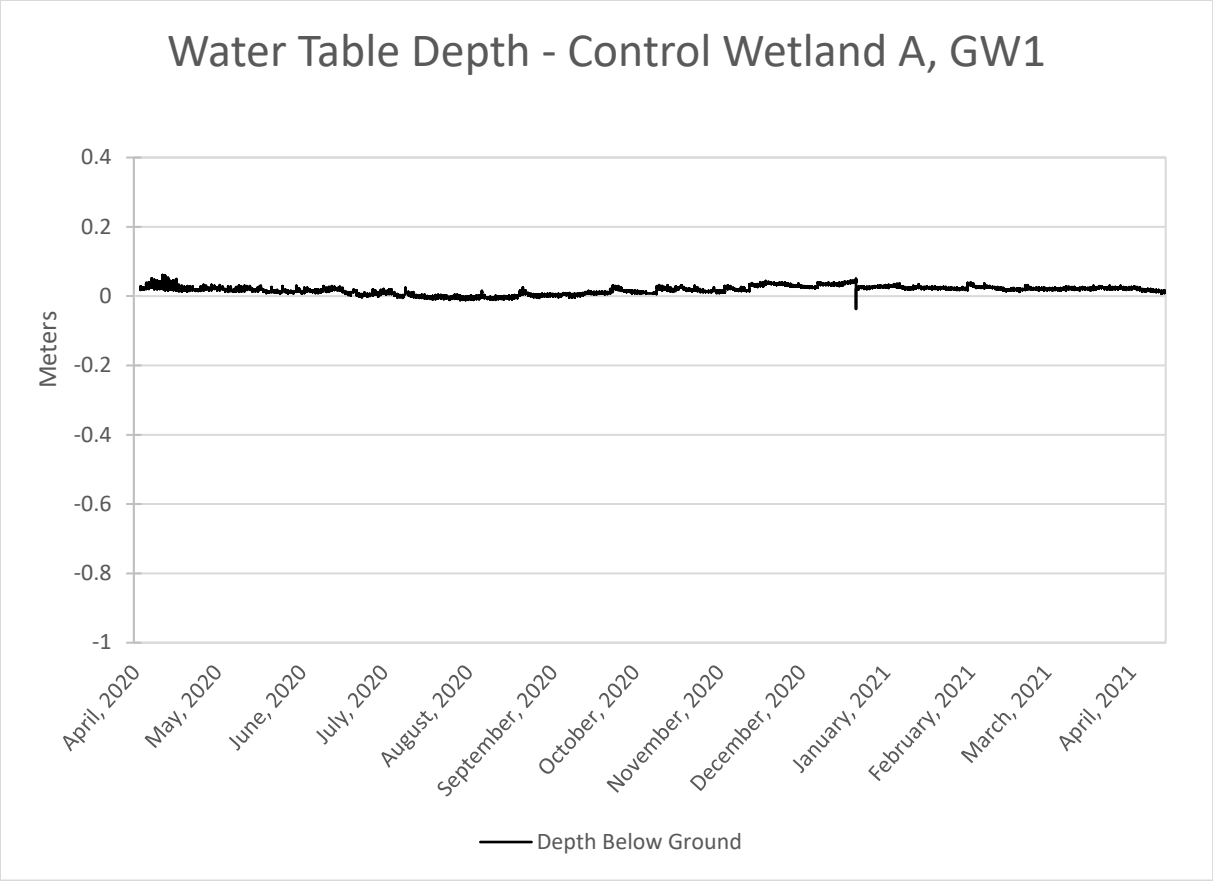

Water Table Depth - Downes Plot 6
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

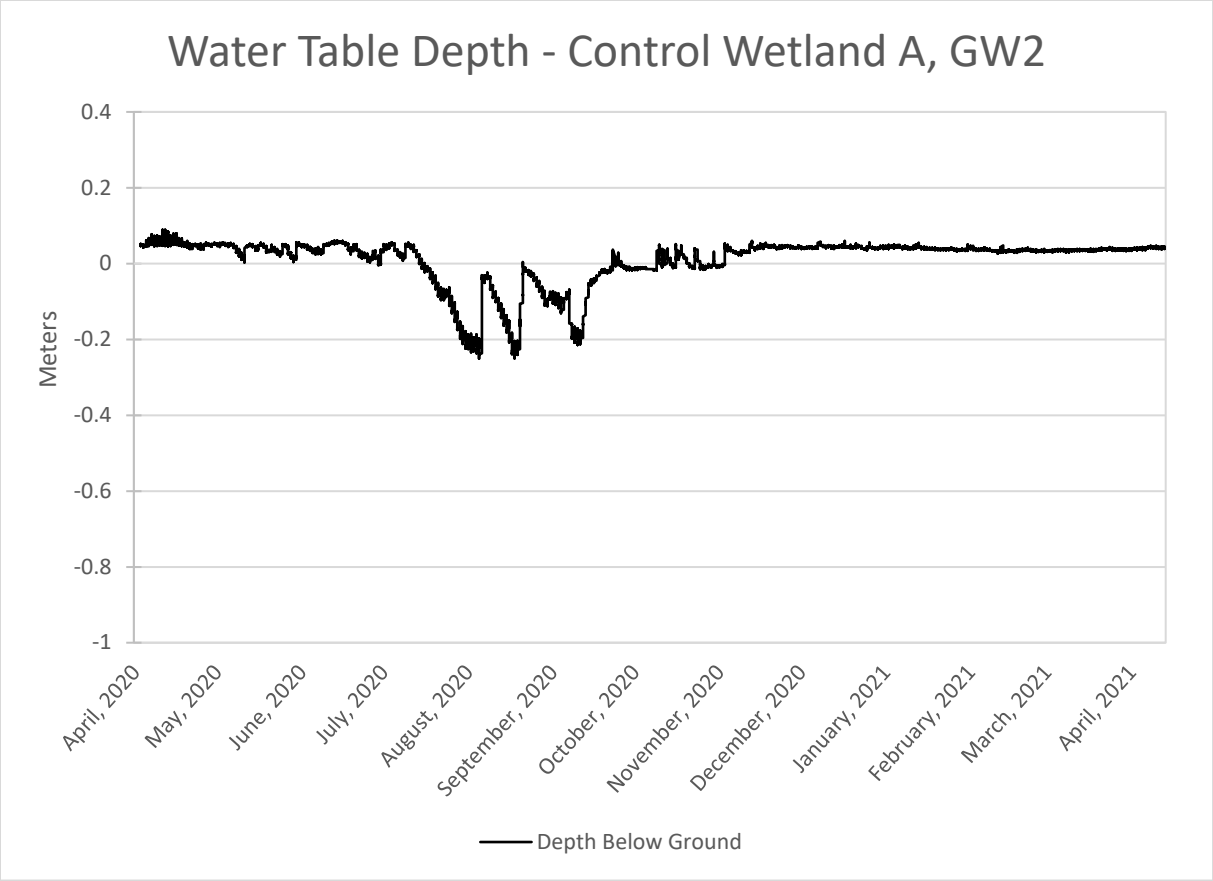

Water Table Depth - Downes Plot 9
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

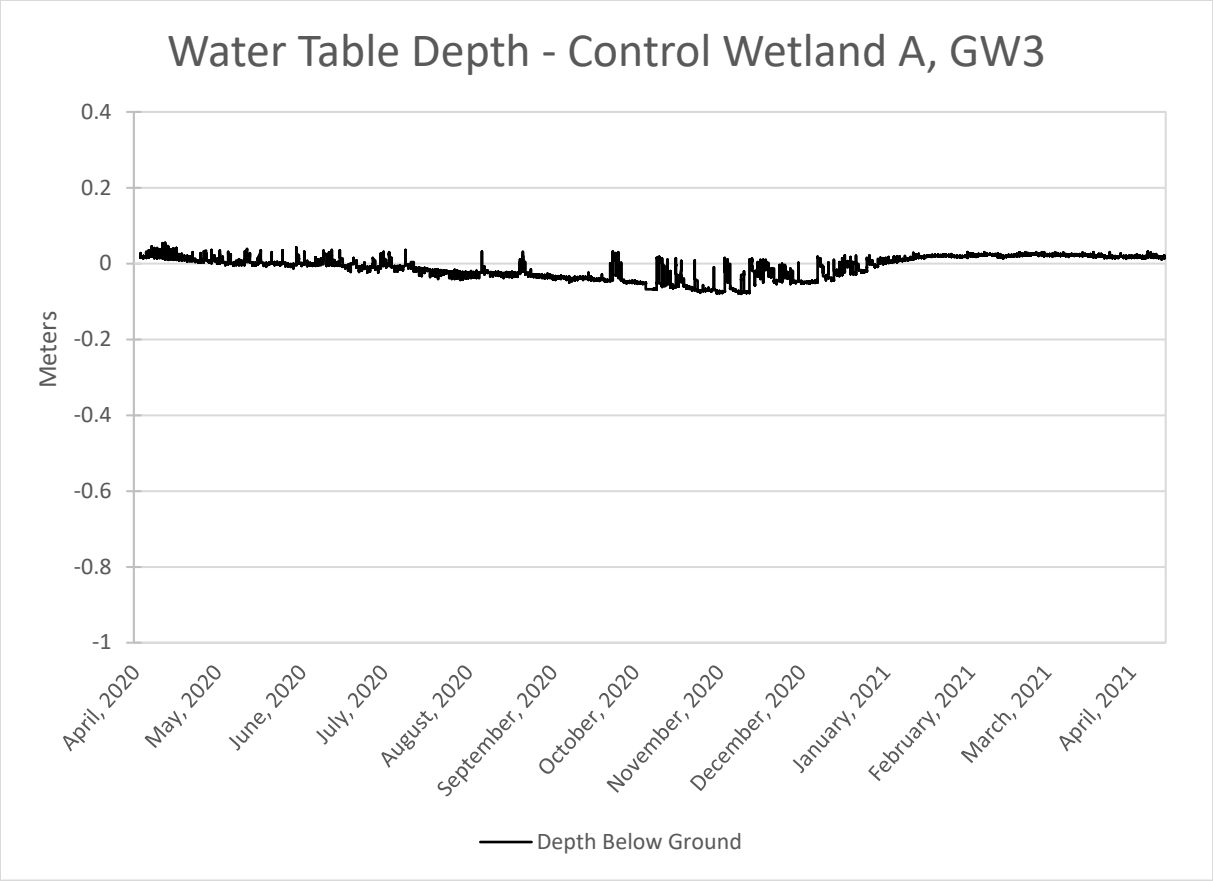

Water Table Depth - Downes Plot 10
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

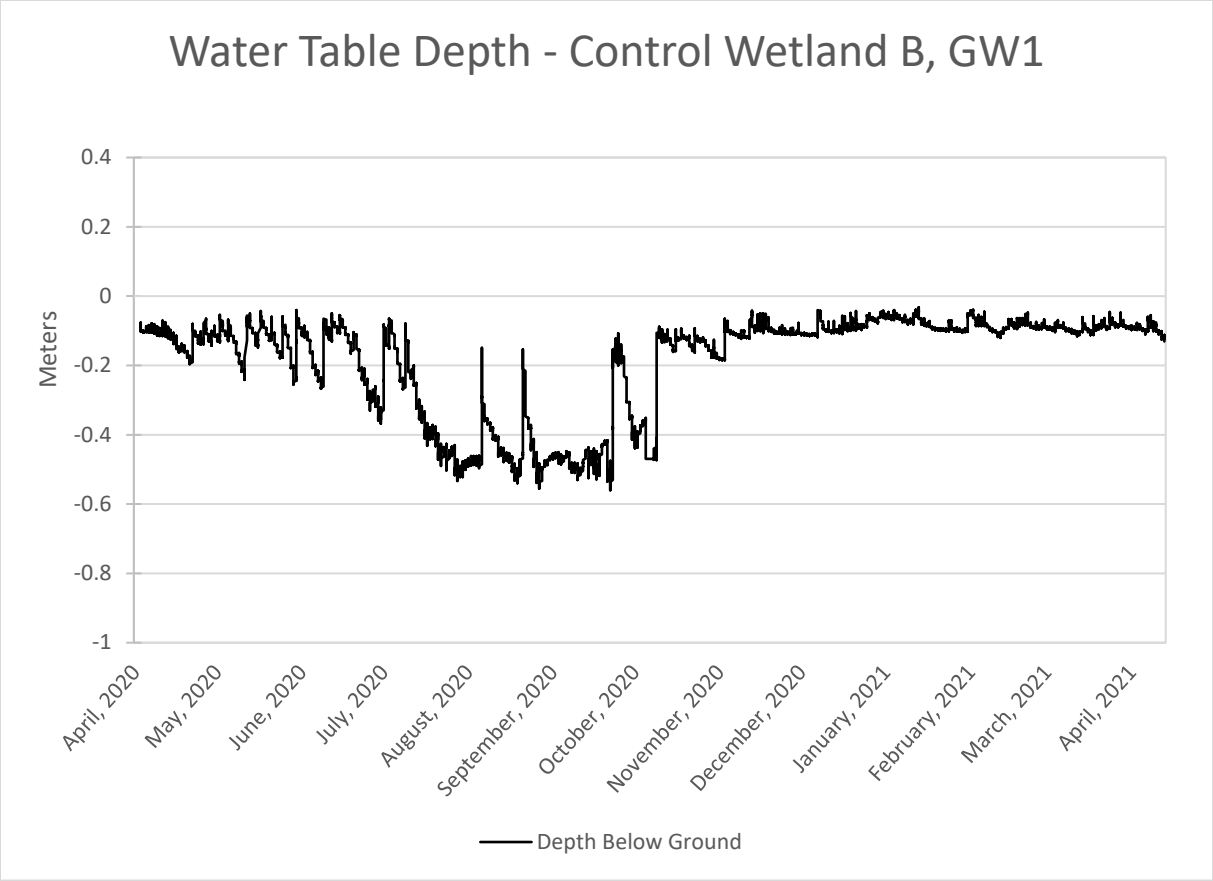

Water Table Depth - Downes Plot 11
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

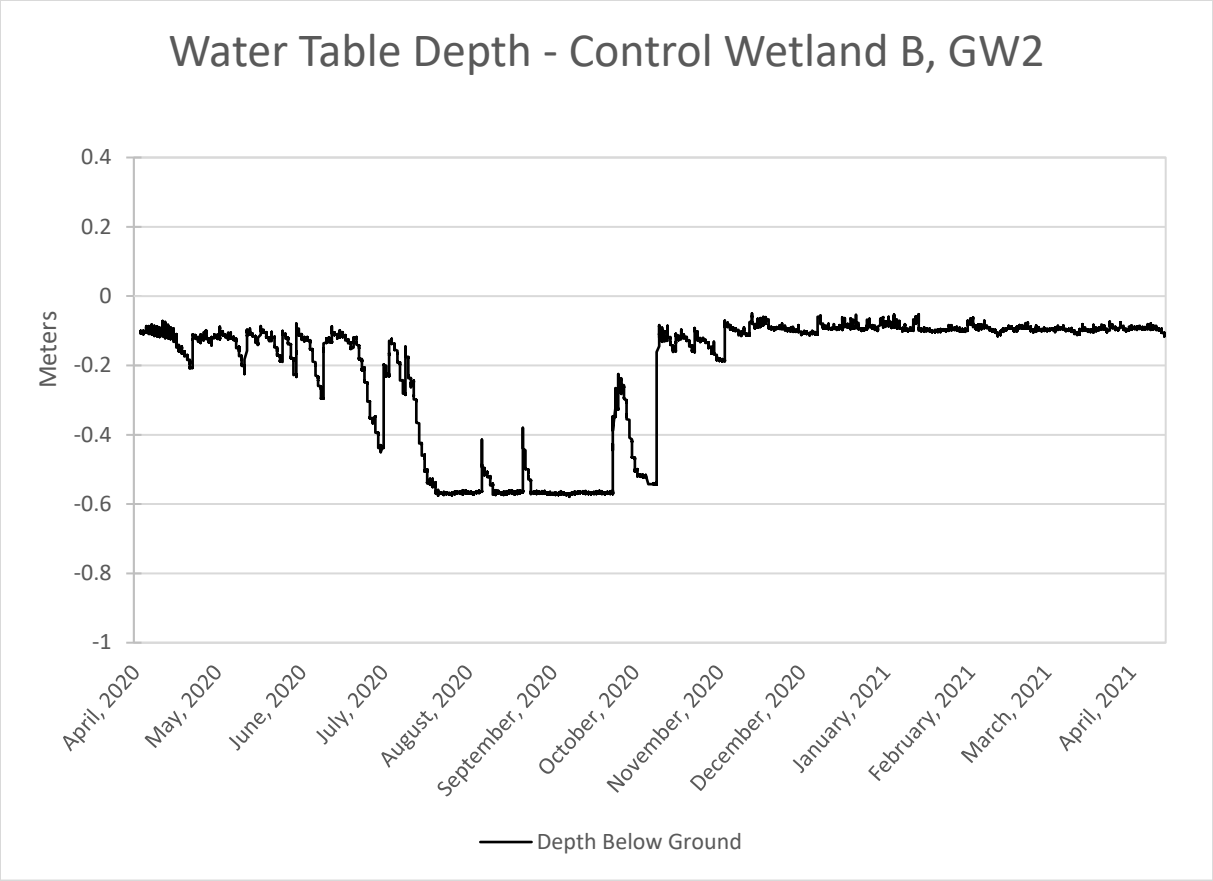

Water Table Depth - Downes Plot 12
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

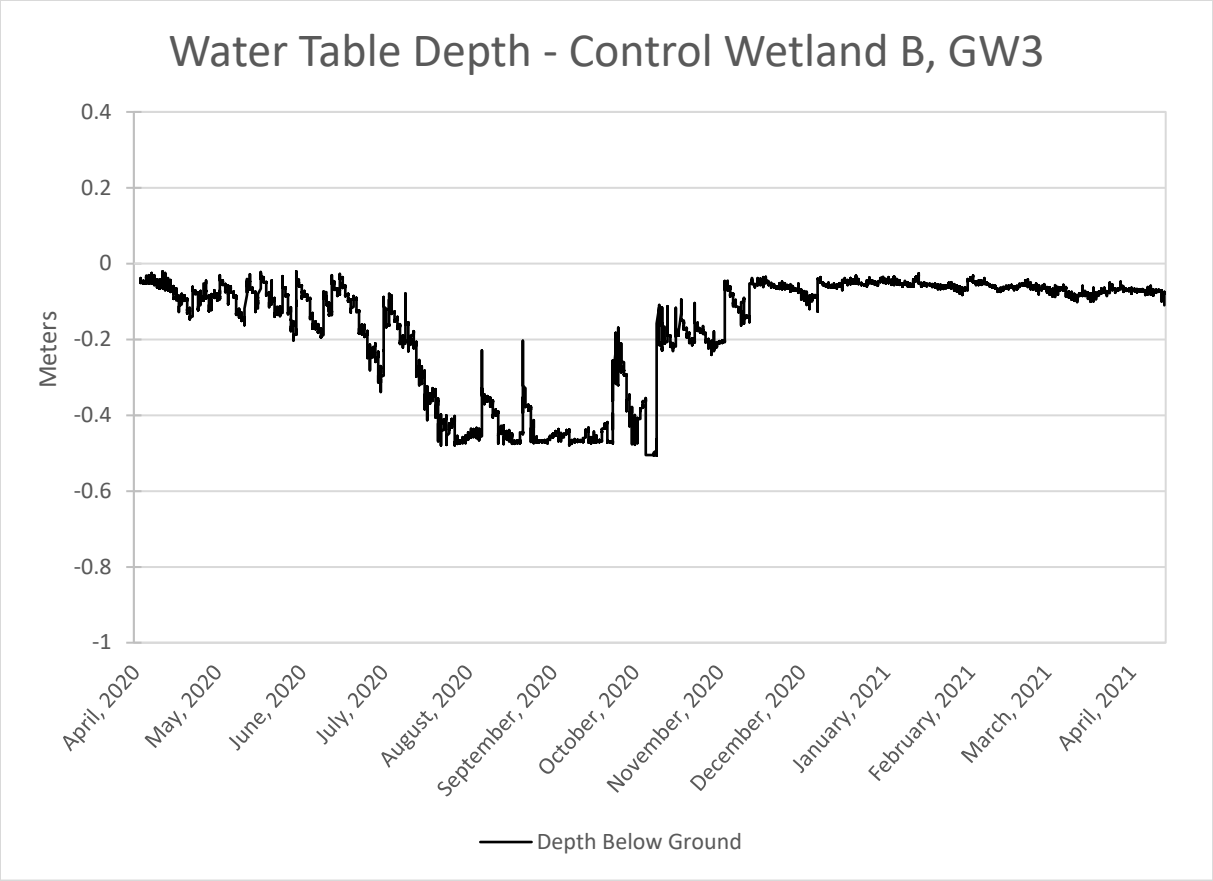

Water Table Depth - Control Wetland A, GW1
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

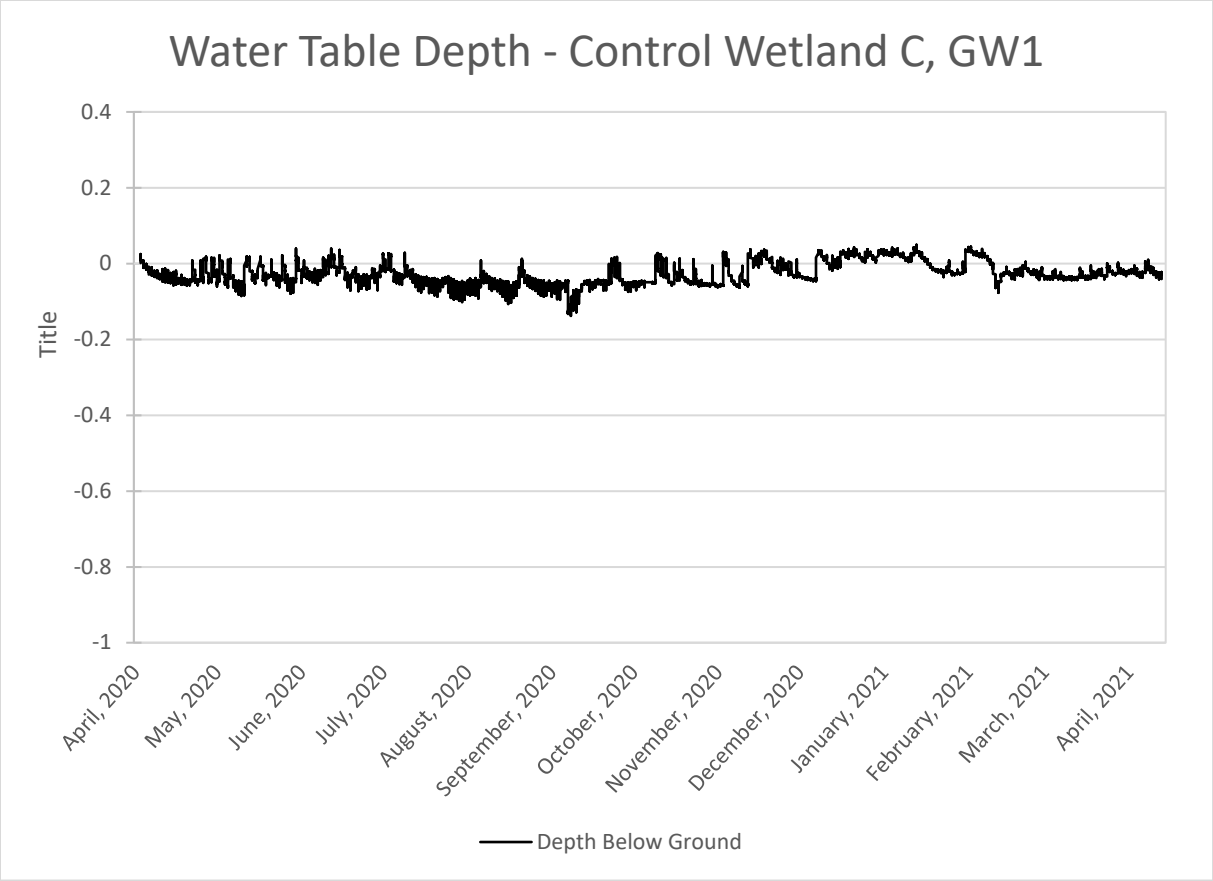

Water Table Depth - Control Wetland A, GW2
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

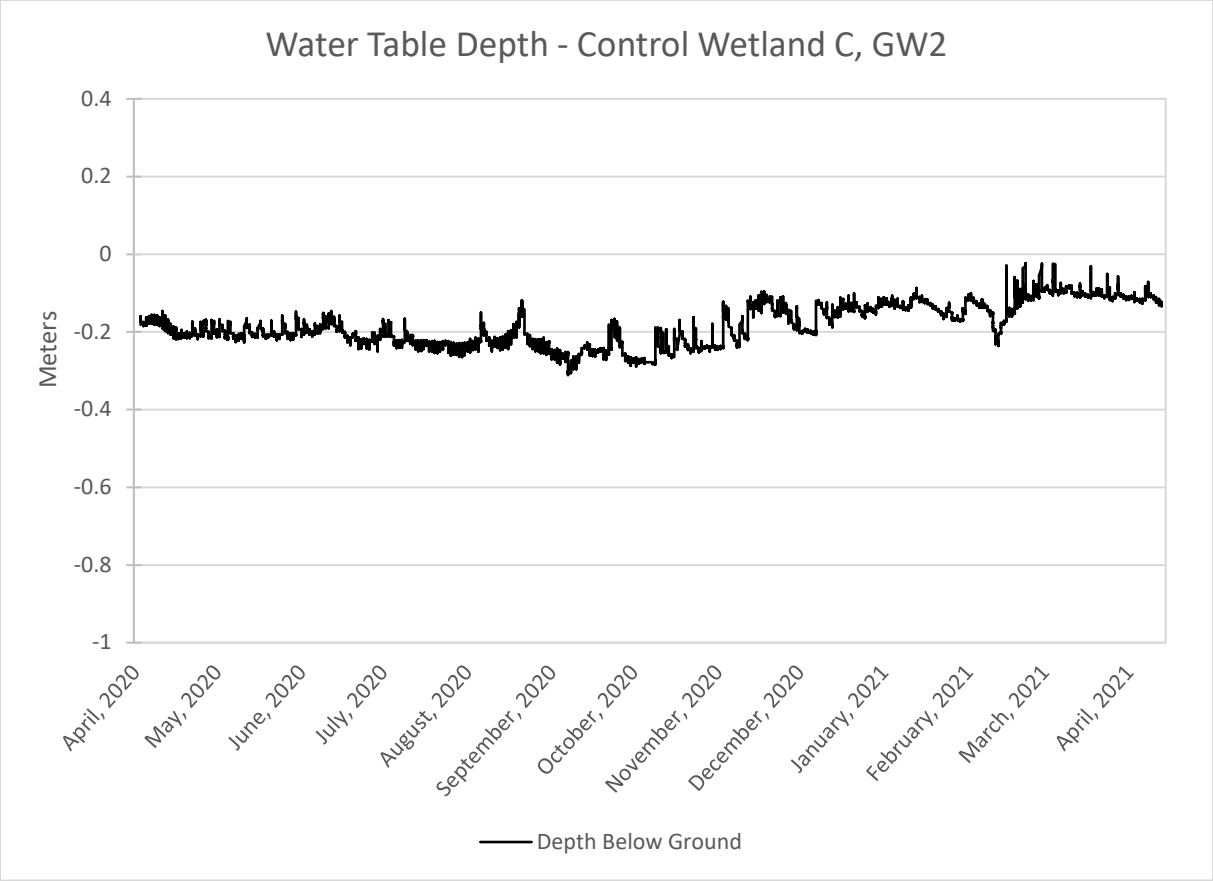

Water Table Depth - Control Wetland A, GW3
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

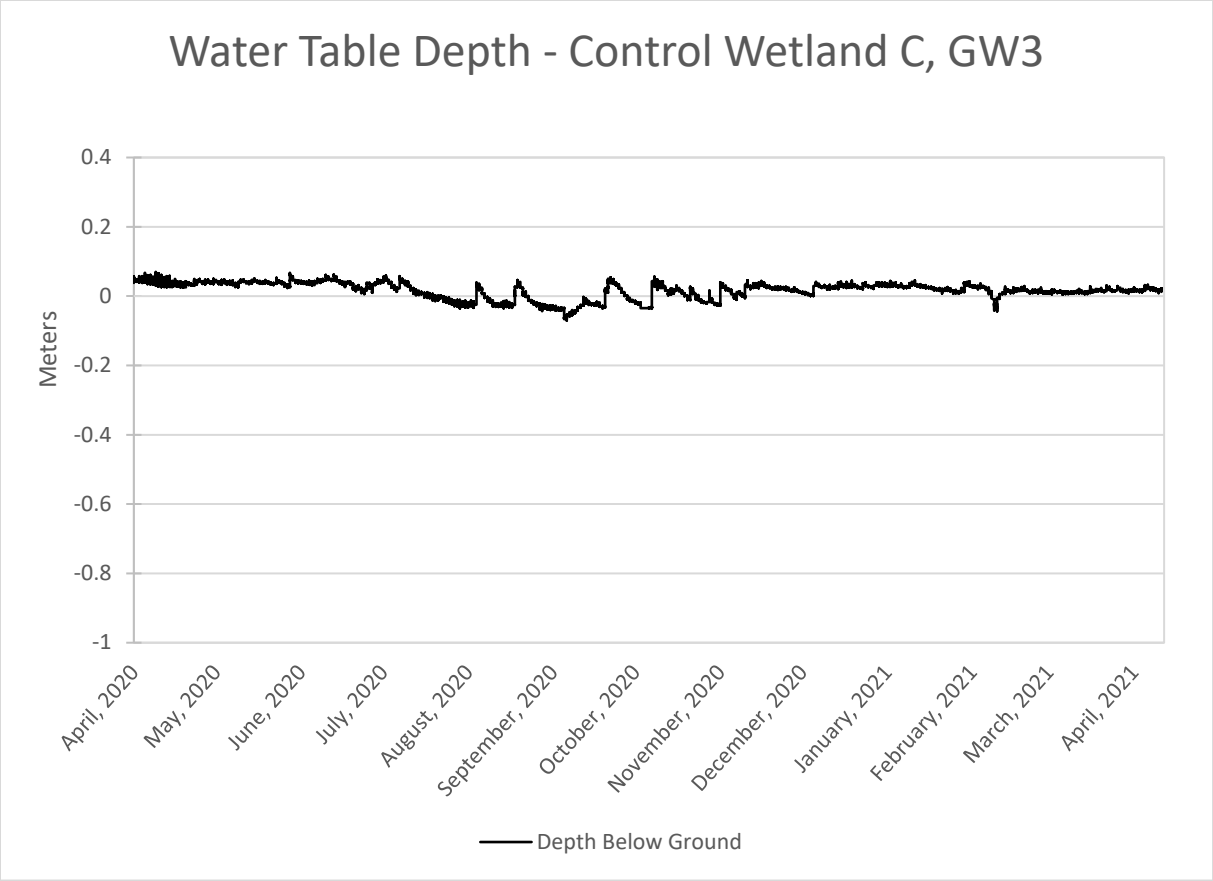

Water Table Depth - Control Wetland B, GW1
Meters
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground


Water Table Depth - Control Wetland B, GW2
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground


Water Table Depth - Control Wetland B, GW3
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground


Water Table Depth - Control Wetland C, GW1
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Title
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground


Water Table Depth - Control Wetland C, GW2
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground


Water Table Depth - Control Wetland C, GW3
0.4
0.2
0
-0.2
-0.4
-0.6
-0.8
-1
Meters
April, 2020
May, 2020
June, 2020
July, 2020
August, 2020
September, 2020
October, 2020
November, 2020
December, 2020
January, 2021
February, 2021
March, 2021
April, 2021
Depth Below Ground

APPENDIX O

2020 Vegetation Data

Plot #: FT01 **Date Surveyed:** October 2, 2020

Plot size: 10m X 10m

Notes: Smaller plot size used due to high shrub cover. No tree available to be tagged. What was previously documented as dogwood is actually cascara.

Cover by Layer:

A: 0% **B:** 90% **C:** 20% **D:** trace

Common Name	Species Name	Layer	% Cover
red elderberry	*Sambucus racemosa*	B1	33
cascara	*Rhamnus purshiana*	B1	21
black twinberry	*Lonicera involucrata*	B1	18
Pacific willow	*Salix lucida subsp. Lasiandra*	B1	6
red-osier dogwood	*Cornus sericea*	B1	4
vine maple	*Acer circinatum*	B1	3
salmonberry	*Rubus spectabilis*	B1	1
salmonberry	*Rubus spectabilis*	B2	5
spiny wood fern	*Dryopteris expansa*	C	14
stinging nettle	*Urtica dioica*	C	4
lady fern	*Athyrium filix-femina*	C	3
dovefoot geranium	*Geranium molle*	C	Trace
herb-Robert	*Geranium robertianum*	C	Trace
skunk cabbage	*Lysichiton americanus*	C	Trace
sword fern	*Polystichum munitum*	C	Trace
fringecup	*Tellima grandiflora*	C	Trace

Plot #: FT02 **Date Surveyed:** October 2, 2020

Plot size: 10m X 10m

Notes: Site is uniform and therefore a larger plot was not warranted. Tree stem prevents reed canarygrass from occupying 100% cover. Found stake in 2019. Paper birch just outside of plot.

Cover by Layer:

A: 40% **B:** 3% **C:** 90% **D:** 0%

Common Name	Species Name	Layer	% Cover
red alder	*Alnus rubra*	A3	40
black twinberry	*Lonicera involucrata*	B1	2
red-osier dogwood	*Cornus sericea*	B1	0.5
cutleaf evergreen blackberry	*Rubus lacinatus*	B2	0.25
salmonberry	*Rubus spectabilis*	B2	Trace
reed canarygrass	*Phalaris arundinacea*	C	90
stinging nettle	*Urtica dioica*	C	Trace
cleavers	*Galium aparine*	C	Trace

Plot #: FT03 **Date Surveyed:** October 2, 2020

Plot size: 10m X 10m

Notes: Floodplain bench where site is located is relatively narrow, so a smaller plot size was used. Very few shrub plants present on site. No tree available to be marked by center.

Cover by Layer:

A: 0% **B:** 5% **C:** 99% **D:** 0%

Common Name	Species Name	Layer	% Cover
Sitka willow	*Salix sitchensis*	B1	5
salmonberry	*Rubus spectabilis*	B2	trace
reed canarygrass	*Phalaris arundinacea*	C	98
stinging nettle	*Urtica dioica*	C	trace

Plot #: FT04 **Date Surveyed:** October 2, 2020

Plot size: 20m X 20m

Notes: Plot is on a convex slope. Toe of slope is 10m downslope of the lower plot edge. Slope crest is 5m up from the upper plot edge. Vine maple found just outside plot. Paper birch in the B2 layer is fallen trees and cascara is mostly fallen. Red elderberry in B1 and B2 layer has no leaves.

Cover by Layer:

A: 17% **B:** 55% **C:** 6% **D:** trace

Common Name	Species Name	Layer	% Cover
Douglas-fir	*Pseudotsuga menziesii*	A1	12
red alder	*Alnus rubra*	A3	5
paper birch	*Betula papyrifera*	A3	1
beaked hazelnut	*Corylus cornuta*	B1	5
cascara	*Rhamnus purshiana*	B1	3
cascara	*Rhamnus purshiana*	B2	Trace
Pacific ninebark	*Physocarpus capitatus*	B1	1
European mountain-ash	*Sorbus aucuparia*	B1	0.5
Indian-plum	*Oemleria cerasiformis*	B1	0.25
salmonberry	*Rubus spectabilis*	B2	42
red alder	*Alnus rubra*	B2	Trace
English oak	*Quercus robur*	B2	Trace
thimbleberry	*Rubus parviflorus*	B2	tr
red elderberry	*Sambucus racemosa*	B2	0.5
California Blackberry	*Rubus ursinus*	C	2
spiny wood fern	*Dryopteris expansa*	C	2
Pacific bleeding heart	*Dicentra formosa*	C	1.5
lady fern	*Athyrium filix-femina*	C	0.5
large-leaved avens	*Geum macrophyllum*	C	Trace
sword fern	*Polystichum munitum*	C	Trace
fringecup	*Tellima grandiflora*	C	Trace
three-leaved foamflower	*Tiarella trifoliata*	C	Trace
Northern Starflower	*Trientalis latifolia*	C	Trace
piggyback plant	*Tolmiea menziesii*	C	Trace
European speedwell	*Veronica beccabunga*	C	Trace

Plot #: FT05 **Date Surveyed:** October 2, 2020

Plot size: n/a

Notes: Plot is a visual assessment. View point is at top of slope. Plant inventory based on roughly 20m by 20m area. Outside of the plot, willow was observed in the A1 layer.

Cover by Layer:

A: 40% **B:** 65% **C:** 20% **D:** 0%

Common Name	Species Name	Layer	% Cover
red alder	*Alnus rubra*	A2	30
paper birch	*Betula papyrifera*	A3	10
cascara	*Rhamnus purshiana*	A3	2
Pacific ninebark	*Physocarpus capitatus*	B1	20
red-osier dogwood	*Cornus sericea*	B1	15
beaked hazelnut	*Corylus cornuta*	B1	10
salmonberry	*Rubus spectabilis*	B1	1.5
red elderberry	*Sambucus racemosa*	B1	1
thimbleberry	*Rubus parviflorus*	B2	5
cutleaf evergreen blackberry	*Rubus laciniatus*	B2	2
reed canarygrass	*Phalaris arundinacea*	C	20
fringecup	*Tellima grandiflora*	C	1

Plot #: FT06 **Date Surveyed:** October 9, 2020

Plot size: 10m X 10m

Notes: Red alder, red elderberry, willow, and hardhack are present outside of the plot. Toe of slope is 25m east of plot edge. Blackberry expanding. Black cottonwood and salmonberry losing their leaves.

Cover by Layer:

A: 65% **B:** 95% **C:** 3% **D:** trace

Common Name	Species Name	Layer	% Cover
black cottonwood	*Populus balsamifera ssp. trichocarpa*	A1	70
red-osier dogwood	*Cornus sericea*	B1	65
Himalayan blackberry	*Rubus armeniacus*	B1	25
black cottonwood	*Populus balsamifera ssp. trichocarpa*	B1	trace
beaked hazelnut	*Corylus cornuta*	B1	5
salmonberry	*Rubus spectabilis*	B1	6
salmonberry	*Rubus spectabilis*	B2	trace
Nootka rose	*Rosa nutkana*	B2	trace
policeman's helmet	*Impatiens glandulifera*	C	2
common horsetail	*Equisetum arvense*	C	1
reed canarygrass	*Phalaris arundinacea*	C	trace
sword fern	*Polystichum munitum*	C	trace
stinging nettle	*Urtica dioica*	C	trace

Plot #: FT07 **Date Surveyed:** October 9, 2020

Plot size: 10m X 10m

Notes: This plot represents a wetter location in the hardhack – reed canarygrass polygon. Crab apple also observed just outside of plot. A dense rose patch is present east of the plot.

Cover by Layer:

A: 10% **B:** 40% **C:** 65% **D:** 0%

Common Name	Species Name	Layer	% Cover
black twinberry	*Lonicera involucrata*	B1	13
Nootka rose	*Rosa nutkana*	B1	5
hardhack	*Spiraea douglasii*	B1	Trace
hardhack	*Spiraea douglasii*	B2	6
reed canarygrass	*Phalaris arundinacea*	C	70
Western skunk cabbage	*Lysichiton americanus*	C	2
stinging nettle	*Urtica dioica*	C	Trace
cleavers	*Galium aparine*	C	Trace

Plot #: H01 **Date Surveyed:** October 2, 2020

Plot size: 20m X 20m

Notes: Site consists of high canopy cover areas with small patches with canopy gaps and pooling water on the surface. Leaves had fallen on bitter cherry, devil's club, red alder and vine maple.

Cover by Layer:

A: 60% **B:** 12% **C:** 20% **D:** trace

Common Name	Species Name	Layer	% Cover
Western hemlock	*Tsuga heterophylla*	A1	17
Sitka spruce	*Picea sitchensis*	A1	11
Western hemlock	*Tsuga heterophylla*	A2	15
Western redcedar	*Thuja plicata*	A2	10
Western redcedar	*Thuja plicata*	A3	14
red alder	*Alnus rubra*	A3	4
paper birch	*Betula papyrifera*	A3	8
vine maple	*Acer circinatum*	B1	4
red alder	*Alnus rubra*	B1	4
Western hemlock	*Tsuga heterophylla*	B1	2.5
red-osier dogwood	*Cornus sericea*	B1	2
Western redcedar	*Thuja plicata*	B1	1.5
devil's club	*Oplopanax horridus*	B1	1
paper birch	*Betula papyrifera*	B1	0.5
European mountain-ash	*Sorbus aucuparia*	B1	0.5
bigleaf maple	*Acer macrophyllum*	B1	tr
black twinberry	*Lonicera involucrata*	B1	tr
salmonberry	*Rubus spectabilis*	B1	tr
English oak	*Quercus robur*	B1	Tr
salmonberry	*Rubus spectabilis*	B2	2
Western redcedar	*Thuja plicata*	B2	1
Himalayan blackberry	*Rubus armeniacus*	B2	0.5
red alder	*Alnus rubra*	B2	Trace
vine maple	*Acer circinatum*	B2	Trace
false azalea	*Menziesia ferruginea*	B2	Trace
English oak	*Quercus robur*	B2	Trace
stink currant	*Ribes bracteosum*	B2	Trace

Common Name	Species Name	Layer	% Cover
black gooseberry	*Ribes lacustre*	B2	Trace
red huckleberry	*Vaccinium parvifolium*	B2	Trace
lady fern	*Athyrium filix-femina*	C	12
Western skunk cabbage	*Lysichiton americanus*	C	7
Pacific water-parsley	*Oenanthe sarmentosa*	C	1.5
jewelweed	*Impatiens capensis*	C	1
spiny wood fern	*Dryopteris expansa*	C	1
dovefoot geranium	*Geranium molle*	C	1
false lily-of-the-valley	*Maianthemum dilatatum*	C	0.75
European field bitter-cress	*Cardamine pratensis*	C	Trace
common horsetail	*Equisetum arvense*	C	Trace
slender hawkweed	*Hieracium gracile*	C	Trace
mountain sweet-cicely	*Osmorhiza berteroi*	C	Trace
bracken fern	*Pteridium aquilinum*	C	Trace
Hooker's fairybells	*Prosartes hookeri*	C	Trace
California Blackberry	*Rubus ursinus*	C	Trace
European bittersweet	*Solanum dulcamara*	C	Trace
fringecup	*Tellima grandiflora*	C	Trace
stinging nettle	*Urtica dioica*	C	Trace

Plot #: H02 **Date Surveyed:** September 26, 2019

Plot size: 20m X 20m

Notes: Plot is in a red alder and cottonwood forest between Horn Creek and MacLure Rd. Wet depression at the edge of plot contains skunk cabbage.

Cover by Layer:

A: 45% **B:** 65% **C:** 27% **D:** trace

Common Name	Species Name	Layer	% Cover
black cottonwood	*Populus balsamifera ssp. trichocarpa*	A1	18
red alder	*Alnus rubra*	A2	25
bitter cherry	*Prunus emarginata*	A3	4
paper birch	*Betula papyrifera*	A3	4
bitter cherry	*Prunus emarginata*	B1	9
cascara	*Rhamnus purshiana*	B1	7
bigleaf maple	*Acer macrophyllum*	B1	6
salmonberry	*Rubus spectabilis*	B1	5
Indian-plum	*Oemleria cerasiformis*	B1	3
red elderberry	*Sambucus racemosa*	B1	2
red alder	*Alnus rubra*	B1	1
Western redcedar	*Thuja plicata*	B1	0.5
vine maple	*Acer circinatum*	B1	Trace
salmonberry	*Rubus spectabilis*	B2	35
vine maple	*Acer circinatum*	B2	Trace
English holly	*Ilex aquifolium*	B2	Trace
Himalayan blackberry	*Rubus armeniacus*	B2	Trace
thimbleberry	*Rubus parviflorus*	B2	Trace
lady fern	*Athyrium filix-femina*	C	11
yellow archangel	*Lamium galeobdolon*	C	9
spiny wood fern	*Dryopteris expansa*	C	1.5
sword fern	*Polystichum munitum*	C	0.5
common horsetail	*Equisetum arvense*	C	Trace
false lily-of-the-valley	*Maianthemum dilatatum*	C	Trace
Western skunk cabbage	*Lysichiton americanus*	C	Trace
red alder	*Alnus rubra*	C	Trace

Common Name	Species Name	Layer	% Cover
slender hawkweed	*Hieracium gracile*	C	Trace
herb-Robert	*Geranium robertianum*	C	Trace
creeping buttercup	*Ranunculus repens*	C	Trace
piggyback plant	*Tolmiea menziesii*	C	Trace

Plot #: B01 **Date Surveyed:** September 30, 2020

Plot size: 10m X 10m

Notes: Significant decay in blackberry and other species. Tree cover now includes cedar out of plot.

Cover by Layer:

A: 35% **B:** 80% **C:** 3% **D:** 0

Common Name	Species Name	Layer	% Cover
paper birch	*Betula papyrifera*	A2	20
salmonberry	*Rubus spectabilis*	B1	15
Himalayan blackberry	*Rubus armeniacus*	B1	35
cherry-laurel	*Prunus laurocerasus*	B2	trace
English ivy	*Hedera helix*	C	1.5
Western skunk cabbage	*Lysichiton americanus*	C	0.5
false lily-of-the-valley	*Maianthemum dilatatum*	C	trace
common horsetail	*Equisetum arvense*	C	trace

Plot #: B01 **Date Surveyed:** September 30, 2020

Plot size: B02 is 20m X 20m

Notes: There is a redcedar and a beaked hazelnut stem just outside of plot.

Cover by Layer:

A: 40% **B:** 55% **C:** 40% **D:** 0%

Common Name	Species Name	Layer	% Cover
black cottonwood	*Populus balsamifera ssp. trichocarpa*	A1	30
Pacific willow	*Salix lucida ssp. lasiandra*	A3	3
salmonberry	*Rubus spectabilis*	B1	20
Sitka willow	*Salix sitchensis*	B1	4
black twinberry	*Lonicera involucrata*	B1	2
hardhack	*Spiraea douglasii*	B1	1.5
Pacific willow	*Salix lucida ssp. lasiandra*	B1	1.5
beaked hazelnut	*Corylus cornuta*	B1	1
bitter cherry	*Prunus emarginata*	B1	0.5
bigleaf maple	*Acer macrophyllum*	B1	tr
salmonberry	*Rubus spectabilis*	B2	3
Himalayan blackberry	*Rubus armeniacus*	B2	2
black twinberry	*Lonicera involucrata*	B2	1
hardhack	*Spiraea douglasii*	B2	1
cherry-laurel	*Prunus laurocerasus*	B2	Tr
European mountain-ash	*Sorbus aucuparia*	B2	tr
English holly	*Ilex aquifolium*	B2	tr
Western skunk cabbage	*Lysichiton americanus*	C	35
lady fern	*Athyrium filix-femina*	C	12
common horsetail	*Equisetum arvense*	C	10
jewelweed	*Impatiens capensis*	C	2.5
European field bitter-cress	*Cardamine pratensis*	C	0.5
slough sedge	*Carex obnupta*	C	0.5

Plot #: D01 **Date Surveyed:** September 28, 2020

Plot size: 20m X 20m

Notes: Moss has roughly 25% cover but primarily on wood and not the ground.

Cover by Layer:

A: 20% **B:** 35% **C:** 45% **D:** trace

Common Name	Species Name	Layer	% Cover
Western redcedar	*Thuja plicata*	A2	20
red alder	*Alnus rubra*	A3	1.5
vine maple	*Acer circinatum*	B1	15
salmonberry	*Rubus spectabilis*	B1	2
red alder	*Alnus rubra*	B1	1.5
Pacific willow	*Salix lucida ssp. lasiandra*	B1	1.5
stink currant	*Ribes bracteosum*	B1	0.5
salmonberry	*Rubus spectabilis*	B2	7.5
stink currant	*Ribes bracteosum*	B2	1.5
red huckleberry	*Vaccinium parvifolium*	B2	Tr
European mountain-ash	*Sorbus aucuparia*	B2	Tr
Oak sp.	*Quercus* sp.	B2	Tr
common horsetail	*Equisetum arvense*	C	16
Western skunk cabbage	*Lysichiton americanus*	C	14
lady fern	*Athyrium filix-femina*	C	6
fringecup	*Tellima grandiflora*	C	2
spiny wood fern	*Dryopteris expansa*	C	1
reed canarygrass	*Phalaris arundinacea*	C	1
piggyback plant	*Tolmiea menziesii*	C	1
false lily-of-the-valley	*Maianthemum dilatatum*	C	0.5
stinging nettle	*Urtica dioica*	C	0.5
sword fern	*Polystichum munitum*	C	0.25
dovefoot geranium	*Geranium molle*	C	trace
tall mannagrass	*Glyceria elata*	C	trace
European bittersweet	*Solanum dulcamara*	C	trace
three-leaved foamflower	*Tiarella trifoliata*	C	trace

Plot #: D02 **Date Surveyed:** September 28, 2020

Plot size: 20m X 20m

Notes: Woody debris present with roughly 10% cover within the plot. Pockets of standing water throughout the plot. Plot straddles an alder-dominated area and a cattail and reed canarygrass-dominated field.

Cover by Layer:

A: 5% **B:** 35% **C:** 60% **D:** 0%

Common Name	Species Name	Layer	% Cover
red alder	*Alnus rubra*	A3	5
vine maple	*Acer circinatum*	B1	5
salmonberry	*Rubus spectabilis*	B1	3
red alder	*Alnus rubra*	B1	2
Sitka willow	*Salix sitchensis*	B1	2
red elderberry	*Sambucus racemosa*	B1	0.25
salmonberry	*Rubus spectabilis*	B2	6
Stink currant	*Ribes bracteosum*	B2	0.5
common horsetail	*Equisetum arvense*	C	13
lady fern	*Athyrium filix-femina*	C	12
reed canarygrass	*Phalaris arundinacea*	C	10
Western skunk cabbage	*Lysichiton americanus*	C	6
common cattail	*Typha latifolia*	C	5
piggy-back plant	*Tolmiea menziesii*	C	3
stinging nettle	*Urtica dioica*	C	1
spiny wood fern	*Dryopteris expansa*	C	0.5
European field bitter-cress	*Cardamine pratensis*	C	Trace
European bittersweet	*Solanum dulcamara*	C	Trace
false lily-of-the-valley	*Maianthemum dilatatum*	C	Trace

Plot #: D03 **Date Surveyed:** October 8, 2020

Plot size: 20m X 20m

Notes: Site centre is on an elevated hummock with conifers. It slopes down to the east, west, and north. Cedar blown down on edge of plot, on the south side close to the trail. Bigleaf maple and bitter cherry outside of plot but overhanging and included in overall tree cover.

A: 35% **B:** 60% **C:** 30% **D:** trace

Common Name	Species Name	Layer	% Cover
Western redcedar	*Thuja plicata*	A1	17
Western redcedar	*Thuja plicata*	A2	12
Western hemlock	*Tsuga heterophylla*	A3	2
salmonberry	*Rubus spectabilis*	B1	37
vine maple	*Acer circinatum*	B1	12.5
English holly	*Ilex aquifolium*	B1	1.5
cascara	*Rhamnus purshiana*	B1	1.5
red elderberry	*Sambucus racemosa*	B1	0.5
devil's club	*Oplopanax horridus*	B1	tr
salmonberry	*Rubus spectabilis*	B2	6
Western redcedar	*Thuja plicata*	B2	tr
cherry-laurel	*Prunus laurocerasus*	B2	tr
devil's club	*Oplopanax horridus*	B2	tr
Thimbleberry	*Rubus parviflorus*	B2	tr
spiny wood fern	*Dryopteris expansa*	C	22
lady fern	*Athyrium filix-femina*	C	3
sword fern	*Polystichum munitum*	C	2.5
Western skunk cabbage	*Lysichiton americanus*	C	2
common horsetail	*Equisetum arvense*	C	trace
false lily-of-the-valley	*Maianthemum dilatatum*	C	trace
vanilla-leaf	*Achlys triphylla*	C	trace
European field bitter-cress	*Cardamine pratensis*	C	trace

Plot #: D04 **Date Surveyed:** October 8, 2020

Plot size: 20m X 20m

Notes: Plot consistently slopes northeast and is mostly open. Dead red alder within plot.

Cover by Layer:

A: 0% **B:** 6% **C:** 97% **D:** 0%

Common Name	Species Name	Layer	% Cover
red alder	*Alnus rubra*	B1	3
cascara	*Rhamnus purshiana*	B1	1
vine maple	*Acer circinatum*	B1	0.5
salmonberry	*Rubus spectabilis*	B1	0.5
European mountain-ash	*Sorbus aucuparia*	B1	trace
stink currant	*Ribes bracteosum*	B1	trace
black twinberry	*Lonicera involucrata*	B2	0.5
salmonberry	*Rubus spectabilis*	B2	0.5
Pacific willow	*Salix lucida subsp. lasiandra*	B2	trace
common horsetail	*Equisetum arvense*	C	60
reed canarygrass	*Phalaris arundinacea*	C	35
Western skunk cabbage	*Lysichiton americanus*	C	35
lady fern	*Athyrium filix-femina*	C	trace
Cooley's hedge-nettle	*Stachys chamissonis var. cooleyae*	C	trace
stinging nettle	*Urtica dioica*	C	trace
piggy-back plant	*Tolmiea menziesii*	C	trace
European field bitter-cress	*Cardamine pratensis*	C	trace

Plot #: D05 **Date Surveyed:** October 8, 2020

Plot size: 20m X 20m

Notes: Site has skunk cabbage throughout.

Cover by Layer:

A: 35% **B:** 40% **C:** 65% **D:** 0%

Common Name	Species Name	Layer	% Cover
black cottonwood	*Populus balsamifera ssp. trichocarpa*	A1	23
salmonberry	*Rubus spectabilis*	B1	11
vine maple	*Acer circinatum*	B1	6.5
red alder	*Alnus rubra*	B1	6
black twinberry	*Lonicera involucrata*	B1	6
paper birch	*Betula papyrifera*	B1	3
hardhack	*Spiraea douglasii*	B1	1.5
devil's club	*Oplopanax horridus*	B1	trace
hardhack	*Spiraea douglasii*	B1	Trace
salmonberry	*Rubus spectabilis*	B2	3
thimbleberry	*Rubus parviflorus*	B2	1
black twinberry	*Lonicera involucrata*	B2	0.5
red alder	*Alnus rubra*	B2	trace
black gooseberry	*Ribes lacustre*	B2	trace
devil's club	*Oplopanax horridus*	B2	trace
common horsetail	*Equisetum arvense*	C	55
Western skunk cabbage	*Lysichiton americanus*	C	28
lady fern	*Athyrium filix-femina*	C	7
spiny wood fern	*Dryopteris expansa*	C	0.5
reed canarygrass	*Phalaris arundinacea*	C	trace
sword fern	*Polystichum munitum*	C	trace

Plot #: D06 **Date Surveyed:** September 28, 2020

Plot size: 20m X 20m

Notes: Watercourse crosses eastern side of plot. Redcedar and alder present outside of plot, as well as a large bigleaf maple. A vine maple with the stem outside of the plot accounts for 10% of cover.

Cover by Layer:

A: 12% **B:** 65% **C:** 35% **D:** trace

Common Name	Species Name	Layer	% Cover
red alder	*Alnus rubra*	A3	1.5
vine maple	*Acer circinatum*	B1	12
red elderberry	*Sambucus racemosa*	B1	8
salmonberry	*Rubus spectabilis*	B1	5
salmonberry	*Rubus spectabilis*	B2	35
stink currant	*Ribes bracteosum*	B2	0.5
devil's club	*Oplopanax horridus*	B2	Tr
lady fern	*Athyrium filix-femina*	C	16
piggy-back plant	*Tolmiea menziesii*	C	8
spiny wood fern	*Dryopteris expansa*	C	8
stinging nettle	*Urtica dioica*	C	7
Western skunk cabbage	*Lysichiton americanus*	C	5
common horsetail	*Equisetum arvense*	C	1
sword fern	*Polystichum munitum*	C	trace
Pacific bleeding heart	*Dicentra formosa*	C	trace
European field bitter-cress	*Cardamine pratensis*	C	trace
small-flowered bulrush	*Scirpus microcarpus*	C	trace

Plot #: D07 **Date Surveyed:** October 8, 2020

Plot size: 20m X 20m

Notes: Plot consists of a forest edge and openings, as well as a small equisetum-dominated patch.

Cover by Layer:

A: 25% **B:** 55% **C:** 60% **D:** trace

Common Name	Species Name	Layer	% Cover
western redcedar	*Thuja plicata*	A2	12
cascara	*Rhamnus purshiana*	A3	3
salmonberry	*Rubus spectabilis*	B1	28
vine maple	*Acer circinatum*	B1	10
Western hemlock	*Tsuga heterophylla*	B1	2
stink currant	*Ribes bracteosum*	B1	trace
devil's club	*Oplopanax horridus*	B1	trace
western redcedar	*Thuja plicata*	B1	trace
Himalayan blackberry	*Rubus armeniacus*	B1	trace
European mountain-ash	*Sorbus aucuparia*	B1	trace
salmonberry	*Rubus spectabilis*	B2	12
stink currant	*Ribes bracteosum*	B2	2
Himalayan blackberry	*Rubus armeniacus*	B2	trace
vine maple	*Acer circinatum*	B2	trace
devil's club	*Oplopanax horridus*	B2	trace
thimbleberry	*Rubus parviflorus*	B2	trace
common horsetail	*Equisetum arvense*	C	23
piggy-back plant	*Tolmiea menziesii*	C	16
Western skunk cabbage	*Lysichiton americanus*	C	11
spiny wood fern	*Dryopteris expansa*	C	5.5
lady fern	*Athyrium filix-femina*	C	2
stinging nettle	*Urtica dioica*	C	2

Plot #: D08 **Date Surveyed:** September 29, 2020

Plot size: 20m X 20m

Notes: A watercourse runs through the eastern edge of the plot. There is coarse woody debris scattered throughout but much of it doesn't have contact with the ground. Fallen alder outside of plot.

Cover by Layer:

A: 20% **B:** 75% **C:** 20% **D:** trace

Common Name	Species Name	Layer	% Cover
Western redcedar	*Thuja plicata*	A2	10
Western redcedar	*Thuja plicata*	A3	5
cascara	*Rhamnus purshiana*	A3	2
vine maple	*Acer circinatum*	B1	33
red alder	*Alnus rubra*	B1	10
Western redcedar	*Thuja plicata*	B1	4
salmonberry	*Rubus spectabilis*	B1	3
Western hemlock	*Tsuga heterophylla*	B1	1
devil's club	*Oplopanax horridus*	B1	0.5
salmonberry	*Rubus spectabilis*	B2	11
vine maple	*Acer circinatum*	B2	3
stink currant	*Ribes bracteosum*	B2	2
devil's club	*Oplopanax horridus*	B2	tr
Himalayan blackberry	*Rubus armeniacus*	B2	tr
thimbleberry	*Rubus parviflorus*	B2	tr
red elderberry	*Sambucus racemosa*	B2	tr
spiny wood fern	*Dryopteris expansa*	C	7
lady fern	*Athyrium filix-femina*	C	5
Western skunk cabbage	*Lysichiton americanus*	C	5
false lily-of-the-valley	*Maianthemum dilatatum*	C	trace
European field bitter-cress	*Cardamine pratensis*	C	trace
common horsetail	*Equisetum arvense*	C	trace
sword fern	*Polystichum munitum*	C	trace
piggy-back plant	*Tolmiea menziesii*	C	trace
European speedwell	*Veronica beccabunga*	C	trace

Plot #: D13 **Date Surveyed:** October 8, 2020

Plot size: 20m X 20m

Notes: The plot is located 10m south of the boardwalk. Site is east of the toe of slope and west of the cattail marsh. A small watercourse runs through the southeast corner of the plot boundary.

Cover by Layer:

A: 10% **B:** 50% **C:** 25% **D:** trace

Common Name	Species Name	Layer	% Cover
red alder	*Alnus rubra*	A3	7
Pacific willow	*Salix lucida subsp. lasiandra*	A3	2
salmonberry	*Rubus spectabilis*	B1	16
black twinberry	*Lonicera involucrata*	B1	10
red alder	*Alnus rubra*	B1	9
Sitka willow	*Salix sitchensis*	B1	3
stink currant	*Ribes bracteosum*	B1	2
hardhack	*Spiraea douglasii*	B1	1.5
Pacific willow	*Salix lucida subsp. lasiandra*	B1	1
Himalayan blackberry	*Rubus armeniacus*	B1	0.5
red elderberry	*Sambucus racemosa*	B1	trace
bitter cherry	*Prunus emarginata*	B1	trace
stink currant	*Ribes bracteosum*	B2	2
black twinberry	*Lonicera involucrata*	B2	1
salmonberry	*Rubus spectabilis*	B2	trace
piggy-back plant	*Tolmiea menziesii*	C	9
Western skunk cabbage	*Lysichiton americanus*	C	8
lady fern	*Athyrium filix-femina*	C	6
common horsetail	*Equisetum arvense*	C	4
small-flowered bulrush	*Scirpus microcarpus*	C	0.5
stinging nettle	*Urtica dioica*	C	0.5
spiny wood fern	*Dryopteris expansa*	C	trace
European bittersweet	*Solanum dulcamara*	C	trace
European speedwell	*Veronica beccabunga*	C	trace
European field bitter-cress	*Cardamine pratensis*	C	trace
Unknown tree seedling.	-	C	trace

Plot #: D13 **Date Surveyed:** October 8, 2020

Plot size: 20m X 20m

Notes: The plot is located 10m south of the boardwalk. Site is east of the toe of slope and west of the cattail marsh. A small watercourse runs through the southeast corner of the plot boundary.

Cover by Layer:

A: 10% **B:** 50% **C:** 25% **D:** trace

Common Name	Species Name	Layer	% Cover
Palm tree moss?	*Leucolepis acanthoneuron*	D	trace
Unknown liverwort		D	trace

Plot #: D14 **Date Surveyed:** September 29, 2020

Plot size: 10m X 10m

Notes: Bigleaf maple, vine maple, hemlock, and red alder just outside of plot boundary – do not include bigleaf maple in estimate for within plot. Plot is on a slope, which reduced the possible plot size, and is southwest of a trail at the slope crest.

A: 70% **B:** 45% **C:** 25% **D:** 0%

Common Name	Species Name	Layer	% Cover
cascara	*Rhamnus purshiana*	A3	12
red alder	*Alnus rubra*	A3	5
beaked hazelnut	*Corylus cornuta*	B1	4
western redcedar	*Thuja plicata*	B1	5
thimbleberry	*Rubus parviflorus*	B2	17
salmonberry	*Rubus spectabilis*	B2	8
dull Oregon-grape	*Mahonia nervosa*	B2	0.5
red huckleberry	*Vaccinium parvifolium*	B2	Trace
California Blackberry	*Rubus ursinus*	B2	Trace
sword fern	*Polystichum munitum*	C	21
spiny wood fern	*Dryopteris expansa*	C	3
bracken fern	*Pteridium aquilinum*	C	1
slender hawkweed	*Hieracium gracile*	C	0.5

Plot #: D15 **Date Surveyed:** September 28, 2020

Plot size: 20m X 20m

Notes: Site is on a knoll. Paths are present to the south and west of the plot. A large bigleaf maple is present within the plot.

Cover by Layer:

A: 55% **B:** 45% **C:** 12% **D:** 1%

Common Name	Species Name	Layer	% Cover
bigleaf maple	*Acer macrophyllum*	A1	45
red alder	*Alnus rubra*	A1	4
red alder	*Alnus rubra*	A2	7
salmonberry	*Rubus spectabilis*	B1	4
red elderberry	*Sambucus racemosa*	B1	7
vine maple	*Acer circinatum*	B1	0.5
thimbleberry	*Rubus parviflorus*	B1	Tr
salmonberry	*Rubus spectabilis*	B2	30
thimbleberry	*Rubus parviflorus*	B2	5
Indian-plum	*Oemleria cerasiformis*	B2	Tr
red elderberry	*Sambucus racemosa*	B2	Tr
spiny wood fern	*Dryopteris expansa*	C	8
sword fern	*Polystichum munitum*	C	2
Pacific bleeding heart	*Dicentra formosa*	C	trace
lady fern	*Athyrium filix-femina*	C	trace
piggyback plant	*Tolmiea menziesii*	C	trace

Plot #: D16 **Date Surveyed:**

Plot size: 10m X 10m

Notes: Snail plot. *Thuja plicata* just outside of plot. Site is on a slope. Duff measure recorded near plot centre.

Cover by Layer:

A: 60% **B:** 70% **C:** 15% **D:** 0%

Duff Measure: 5cm depth.

Common Name	Species Name	Layer	% Cover
bigleaf maple	*Acer macrophyllum*	A1	40
beaked hazelnut	*Corylus cornuta*	B1	20
vine maple	*Acer circinatum*	B1	3
Indian-plum	*Oemleria cerasiformis*	B1	3
salmonberry	*Rubus spectabilis*	B1	2
bigleaf maple	*Acer macrophyllum*	B1	1
salmonberry	*Rubus spectabilis*	B2	55
thimbleberry	*Rubus parviflorus*	B2	7
stinging nettle	*Urtica dioica*	C	12
lady fern	*Athyrium filix-femina*	C	2
fringecup	*Tellima grandiflora*	C	1
sword fern	*Polystichum munitum*	C	0.5
herb-Robert	*Geranium robertianum*	C	trace
bracken fern	*Pteridium aquilinum*	C	trace
California blackberry	*Rubus ursinus*	C	trace

Plot #: D17 **Date Surveyed:**

Plot size: 10m X 10m

Notes: Snail plot. *Acer macrophyllum* on edge of plot is in. *Tsuga heterophylla* is out. Site is on a slope. Duff measure recorded near plot centre. Plot ends at trail edge.

Cover by Layer:

A: 85% **B:** 65% **C:** 9% **D:** 0%

Duff Measure: 6cm depth.

Common Name	Species Name	Layer	% Cover
bigleaf maple	*Acer macrophyllum*	A1	40
salmonberry	*Rubus spectabilis*	B1	12
vine maple	*Acer circinatum*	B1	3
western redcedar	*Thuja plicata*	B1	1
salmonberry	*Rubus spectabilis*	B2	45
vine maple	*Acer circinatum*	B2	6
red elderberry	*Sambucus racemosa*	B2	0.25
stinging nettle	*Urtica dioica*	C	6
sword fern	*Polystichum munitum*	C	2
fringecup	*Tellima grandiflora*	C	0.5

Plot #: D18 **Date Surveyed:** October 8, 2020

Plot size: 10m X 10m

Notes: Snail plot. Site is level. Duff measure recorded near plot centre. *Vaccinium parviflorus* not counted in cover, due to growing from stump rather than the ground.

Cover by Layer:

A: 85% **B:** 50% **C:** 5% **D:** 0%

Duff Measure: 3cm depth.

Common Name	Species Name	Layer	% Cover
bigleaf maple	*Acer macrophyllum*	A1	80
beaked hazelnut	*Corylus cornuta*	B1	20
red elderberry	*Sambucus racemosa*	B1	5
Indian-plum	*Oemleria cerasiformis*	B1	5
vine maple	*Acer circinatum*	B1	1
Indian-plum	*Oemleria cerasiformis*	B2	5
stink currant	*Ribes bracteosum*	B2	5
vine maple	*Acer circinatum*	B2	1
sword fern	*Polystichum munitum*	C	1
spiny wood fern	*Dryopteris expansa*	C	1
lady fern	*Athyrium filix-femina*	C	1
stinging nettle	*Urtica dioica*	C	trace

APPENDIX P

Indicator Plant Plot Data

Plot Number: H01-LA1 **Date:** September 30, 2020.

Plot Bearing: Start post to finish post is 10m at 56°. From finish to start: 236°.

Bearing from TEM plot: H01 TEM plot bearing to finish post of H01-LA2: 9.06m at 296°. From H01-LA2 finish post to H01-LA1 finish: 4m at 326°.

Notes: 10m length plot, adjacent and parallel to H01-LA2.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.39	0.44	R	0.23	few petioles very decayed
0.51	0.99	L	0.58	
0.39	1.56	R	0.46	medium decay
0.35	1.55	L	0.36	
0.44	2.51	L	0.92	
0.52	2.57	L	0.55	some decay, small leaves
0.32	3.76	L	0.16	small, some decay
N/A	3.88	L	0.03	immature
0.27	4.09	L	0.05	
N/A	6.02	R	0.38	too decayed
0.34	6.15	R	0.32	
N/A	6.07	R	0.7	immature (decayed)
0.39	7.07	L	0.37	quite decayed
0.52	7.78	L	0.89	

Plot Number: H01-LA2 **Date:** September 30, 2020.

Plot Bearing: H01-LA2 start post to finish post is 10m at 56°. From finish to start: 236°.

Bearing from TEM plot: H01 TEM plot bearing to finish post of H01-LA2: 9.06m at 296°.

Notes: 10m length plot, adjacent and parallel to H01-LA1.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.31	0.96	R	0.52	double decay
0.37	1.45	L	0.51	
0.24	2.04	L	0.29	some decay
0.41	2.19	R	0.97	
0.32	2.4	R	0.17	
0.31	3.37	R	0.09	quite decayed
0.33	4.04	R	0.16	double center, very decayed
0.41	4.04	R	0.46	very decayed
0.34	4.07	L	0.52	double center
0.35	4	L	0.59	medium decay
0.28	4.7	L	0.38	medium decay
0.34	4.41	R	0.34	assume it crosses very decayed
0.30	5.23	L	0.64	
0.46	6.55	R	0.96	very decayed
0.45	6.97	L	0.22	double center, very decayed
0.45	7.28	L	0.16	
0.41	8.02	L	0.7	triple center

Plot Number: B02-LA1 **Date:** September 30, 2020.

Weather: Clear during survey. **Plot Bearing:** Start post to finish post is 15m at 90°.

Bearing from TEM plot: Transect is adjacent to B02 TEM plot.

Notes: Significant decay seen in some cases but did not appear to impact the survey.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.43	0	R	0.15	triple center
N/A	0.1	R	0.16	too decayed to measure
N/A	1.57	R	0.16	too decayed to measure, potentially immature
0.39	1.44	L	0.74	quite decayed
N/A	1.81	R	0.59	too decayed to measure, potentially immature
N/A	1.95	R	0.6	too decayed to measure, potentially immature
0.3	2.67	L	0.97	quite decayed
0.39	2.68	R	0.9	double center
0.3	3.02	R	0.03	Very decayed
N/A	3.65	L	0.98	too decayed to measure
0.44	3.5	R	0.54	very decayed, few leaves left
0.43	4.37	L	0.21	bottom leaves decayed
0.42	5.36	R	0.71	decayed
0.41	5.37	R	0.04	heavily decayed, only 2 leaves left
0.53	5.58	L	1.09	very decayed, most likely in
N/A	5.5			not submerged, still decayed
0.37	6.45	L	0.42	
0.44	6.82	R	0.29	heavily decayed, can only measure one leaf
0.4	6.96	R	0.52	very decayed
0.37	7.1	L	0.05	very decayed
0.48	7.19	R	0.43	
N/A	7.72	R	0.1	immature
0.4	7.83	R	0.46	
N/A	8.08	L	0.12	immature
0.34	8.32	L	0.51	
N/A	8.63	L	0.23	immature
0.29	9	L	0.34	
0.49	9.02	L	0.89	
0.31	9.2	R	0.2	very decayed, only one leaf
0.39	9.86	R	0.69	
0.3	11.26	L	0.57	very decayed

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.42	11.51	R	0.1	double center
0.41	12.11	R	0.92	
0.47	12.62	L	0.75	double center
0.52	14.1	L	0.61	decayed, assumed crossed line
0.42	14.53	R	1.02	Overall, B02 petiole length is much smaller this year due to decay

Plot Number: D01-LA1 **Date:** September 28, 2020.

Plot Bearing: D01-LA1 start post to finish post is 15m at 282°.

Bearing from TEM plot: D01 TEM plot bearing to start post of D01-LA1: 1.38m at 273°.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.29	1.53	L	0.62	
0.63	2.47	R	0.39	
0.62	3.23	R	0.33	
0.66	3.62	R	0.45	
0.45	3.95	L	0.65	
0.74	3.74	R	1.15	double centre
0.62	4.58	R	0.1	
0.66	4.73	L	0.39	
0.67	4.44	L	0.99	
0.53	4.32	L	0.68	
n/a	4.88	L		immature
0.51	5.09	L	0.4	decayed, only 1 leaf left
0.67	5.29	L	0.47	
0.42	3.9	R	0.61	
0.69	3.77	R	0.88	
0.63	4.14	L	0.12	

Plot Number: D05-LA1 **Date:** September 28, 2020.

Plot Bearing: D05-LA1 start post to finish post is 15m at 210°.

Bearing from TEM plot: D05 TEM plot bearing to start post of D05-LA1: 1.69m at 23°.

3% Gradient from finish to start.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.47	5.31	R	0.53	
0.54	4.85	L	1.11	
0.51	6.11	L	0.65	Very decayed
0.57	6.07	L	0.88	
0.31	6.53	R	0.31	
0.62	6.36	R	0.86	
0.45	7.12	L	0.36	
0.35	7.69	L	0.45	
0.39	7.87	L	0.42	Very decayed
0.64	8.27	L	1.07	
0.52	8.53	L	0.54	
0.68	8.57	L	0.74	
0.43	8.92	R	0.28	
0.52	9.03	R	0.25	
0.34	9.39	L	0.16	
0.56	12.79	L	1.06	
0.39	13.07	L	0.23	
0.32	14.57	R	0.2	

Plot Number: D06-LA1 **Date:** September 28, 2020.

Plot Bearing: D06-LA1 start post to finish post is 15m at 96°.

Bearing from TEM plot: D06 TEM plot bearing to start post of D06-LA1: 5.56m at 351°.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.51	0.85	L	0.18	triple center
0.43	1.68	L	1	
0.43	2.45	L	0.85	
0.35	3.52	L	0.42	
0	6.12	R	n/s	immature
0.49	6.5	L	0.84	missing leaf to intersect
0.52	7.1	L	1.4	
0.53	7.54	R	0.78	
0.53	8.44	U	0	triple center
0.48	8.48	L	0.55	double center
0.38	9.67	R	0.03	
0.48	9.68	R	0.24	decayed, had over 6 leaves
0.48	10.45	R	0.77	
0.49	11.13	L	0.45	
N/A	11.9	L	n/s	immature
0.36	12.39	L	0.35	triple center
0.58	14.48	R	0.56	

Plot Number: D08-LA1 **Date:** September 28, 2020.

Plot Bearing: D08-LA1 start post to finish post is 15m at 56°.

Bearing from TEM plot: D08 TEM plot bearing to start post of D08-LA1: 12.4m at 280°.

Petiole Length	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.39	14.26	L	0.13	
0.19	12.18	L	0.27	
0.35	10.96	R	0.38	2 centers
0.39	5.52	L	0.26	
0.43	2.5	L	0.91	
0.23	0.58	L	0.05	Very decayed

Plot Number: D09-LA1 **Date:** September 28, 2020.

Plot Bearing: D09-LA1 start post to finish post is 15m at 247°.

Notes: No associated TEM plot for this site. Transect crosses one watercourse (from 4.3m to 4.9m on transect) and two seeps. Transect has a hummock in the middle with no indicator plants. Plants located immediately behind the start and the end posts which were excluded from the survey.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.62	0.5	L	0.045	triple center
N/A	0.66	R	n/s	immature
0.6	0.28	R	0.66	some decay
0.61	0.19	R	0.96	
0.43	0.91	R	0.44	
0.48	2.2	L	0.68	Significant decay, 1 leaf left, estimation
0.48	2.54	L	0.17	
N/A	2.64	R	n/s	immature
0.48	3.31	R	0.03	
0.31	3.94	L	0.23	
N/A	4.24-4.77	N/A	N/A	creek
0.51	5.47	L	0.16	Decay, only 2 leaves left
N/A	5.95	n/s	n/s	immature
0.39	6.2	L	0.1	very decayed, 3 leaves left
0.42	11.81	R	0.77	
0.34	12.5	R	0.2	
0.45	12.26	R	0.8	a lot of decay
0.6	12.43	R	0.99	
N/A	12.5	R	n/s	immature
0.73	12.91	R	0.9	
N/A	12.8	R	0.01	immature
N/A	12.93	R	0.003	immature
N/A	13.27	R	n/s	immature
0.56	13.26	L	0.13	
0.46	13.36	L	0.54	
N/A	13.78	L	n/s	immature
0.38	14.39	L	0.79	
0.54	14.46	L	1.13	
0.47	14.77	L	0.1	

Plot Number: D10-LA1 **Date:** October 8, 2020.

Plot Bearing: D10-LA1 start post to finish post is 15m at 280°.

Notes: No TEM plot associated with this plot. This plot was not sampled in 2019 because the plot could not be found under the large amount of fallen trees from a blowdown that occurred after last years sampling.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.59	1.8	R	0.88	eaten, not decayed
0.51	1.84	L	0.76	quite decayed
n/a	3.73	L	0.17	immature
0.49	4.27	L	0.62	
0.52	4.77	L	0.57	minor decay
0.54	4.54	R	0.33	
0.5	5.9	L	0.19	
0.46	5.5	R	0.25	decayed/eaten
0.57	7.12	R	0.21	decayed and trampled
0.52	9.78	R	0.57	some decay
0.47	11.19	R	0.09	
0.59	11.51	R	0.65	quite decayed and eaten
0.48	13.39	L	0.69	pretty decayed
0.52	14.63	U	0	decayed and trampled

Plot Number: D11-LA1 **Date:** September 28, 2020.

Plot Bearing: D11-LA1 start post to finish post is 15m at 130°.

Notes: New plot, no TEM data associated. Watercourse from 10.7 to 12.8m on transect.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.52	1.77	R	0.8	quite decayed
0.39	1.92	R	0.08	
0.58	3.65	R	0.34	
0.42	2.8	L	0.17	quite decayed
N/A	4.5	L	0.64	all decayed
0.36	5.75	R	0.42	double centers, very decayed
0.41	5.8	L	1.05	
0.43	7.08	L	0.25	very decayed
0.31	6.97	R	0.41	very decayed
0.42	8	R	0.14	
N/A	9.85	R	n/s	immature

Plot Number: D12-LA1 **Date:** September 29, 2020.

Plot Bearing: D12-LA1 start post to finish post is 15m at 296°.

Notes: No TEM plot associated with this plot.

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.63	0.98	R	0.74	
0.53	2.58	R	0.16	quite decayed
N/A	2.69	R	0.17	very decayed
0.53	2.75	L	0.05	
0.5	2.91	L	0.22	very decayed
0.51	3.03	L	0.75	very decayed
N/A	2.82	L	0.83	very decayed
0.53	2.80	R	1.15	2 centers, quite decayed
0.53	4.37	R	0.91	medium decay
0.42	4.25	L	0.65	medium decay
0.5	5.58	R	0.77	
0.48	6.00	R	0.62	medium to low decay
0.49	7.03	L	0.45	good condition
0.49	8.08	L	0.77	low decay
0.63	8.75	L	0.17	medium decay
0.59	8.36	R	0.83	
0.46	9.5	L	0.88	good condition
0.43	9.58	L	0.89	good condition
0.58	9.84	R	0.3	
0.52	9.97	R	0.33	
0.47	10.63	L	0.1	
0.53	10.93	R	0.16	
0.44	11.06	R	0.68	significant decay
0.47	11.38	L	0.02	significant decay
0.57	12.47	L	0.18	double centre
0.6	12.6	L	0.29	
0.53	12.65	R	1.09	
0.56	13.55	R	0.21	
0.46	14.85	R	0.3	
0.56	14.3	L	0.36	blackberry, need machete
0.57	12.47	L	0.18	double centre

Petiole Length (m)	Distance to Start (m)	Location from Transect Line	Offset from Transect Line (m)	Notes
0.6	12.6	L	0.29	
0.53	12.65	R	1.09	
0.56	13.55	R	0.21	
0.46	14.85	R	0.3	
0.56	14.3	L	0.36	blackberry, need machete