



CERTIFICATE OF ANALYSIS

REPORTED TO Mid Shuswap Lumby Water Stewards
1631 Mable Lake Rd
Lumby, BC V0E 2G6

ATTENTION Russ Collins

PO NUMBER Mid Shuswap Lumby Water Stewards
PROJECT Analytical Testing

PROJECT INFO

WORK ORDER 8052472

RECEIVED / TEMP 2018-05-28 09:04 / 12°C
REPORTED 2018-06-06 13:07

COC NUMBER 40837.5581

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO 17025:2005 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry



It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve



Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

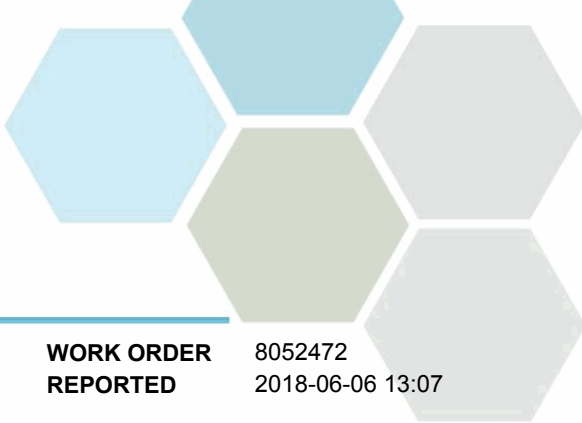
If you have any questions or concerns, please contact me at estclair@caro.ca

Authorized By:

Eilish St.Clair, B.Sc., C.I.T.
Client Service Representative

1-888-311-8846 | www.caro.ca

#110 4011 Viking Way Richmond, BC V6V 2K9 | #102 3677 Highway 97N Kelowna, BC V1X 5C3 | 17225 109 Avenue Edmonton, AB T5S 1H7



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Harris Creek (Hwy 6) (8052472-01) Matrix: Water Sampled: 2018-05-27 11:15						F1, FILT

Anions

Chloride	3.45	AO ≤ 250	0.10	mg/L	2018-05-28	
Nitrate (as N)	0.011	MAC = 10	0.010	mg/L	2018-05-28	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2018-05-28	
Sulfate	5.3	AO ≤ 500	1.0	mg/L	2018-05-28	

General Parameters

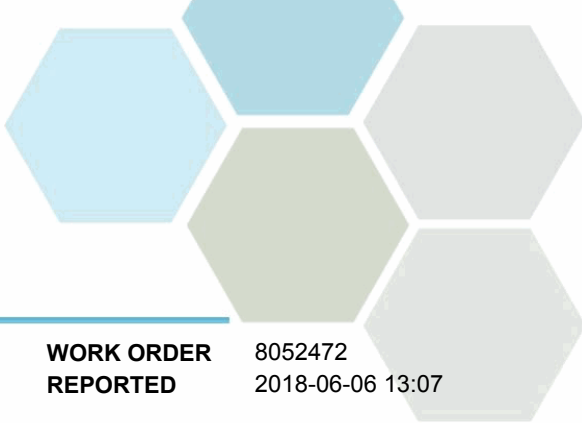
Ammonia, Total (as N)	< 0.020	None Required	0.020	mg/L	2018-05-31	
Conductivity (EC)	50.3	N/A	2.0	µS/cm	2018-05-30	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2018-05-31	
pH	7.10	7.0-10.5	0.10	pH units	2018-05-30	HT2
Phosphorus, Total (as P)	0.0412	N/A	0.0020	mg/L	2018-05-31	
Phosphorus, Total Dissolved	0.0115	N/A	0.0020	mg/L	2018-05-31	
Turbidity	4.53	OG < 1	0.10	NTU	2018-05-28	

Calculated Parameters

Hardness, Total (as CaCO3)	21.7	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0106	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	

Total Metals

Aluminum, total	297	OG < 100	2.0	µg/L	2018-06-04	
Antimony, total	< 0.050	MAC = 6	0.050	µg/L	2018-06-04	
Arsenic, total	0.306	MAC = 10	0.050	µg/L	2018-06-04	
Barium, total	9.13	MAC = 1000	0.10	µg/L	2018-06-04	
Beryllium, total	0.019	N/A	0.010	µg/L	2018-06-04	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2018-06-04	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2018-06-04	
Cadmium, total	0.0127	MAC = 5	0.0020	µg/L	2018-06-04	
Calcium, total	5740	N/A	40	µg/L	2018-06-04	
Chromium, total	0.66	MAC = 50	0.10	µg/L	2018-06-04	
Cobalt, total	0.262	N/A	0.0050	µg/L	2018-06-04	
Copper, total	3.00	AO ≤ 1000	0.20	µg/L	2018-06-04	
Iron, total	383	AO ≤ 300	2.0	µg/L	2018-06-04	
Lead, total	0.127	MAC = 10	0.050	µg/L	2018-06-04	
Lithium, total	1.34	N/A	0.050	µg/L	2018-06-04	
Magnesium, total	1790	N/A	5.0	µg/L	2018-06-04	
Manganese, total	21.1	AO ≤ 50	0.050	µg/L	2018-06-04	
Mercury, total	< 0.0050	MAC = 1	0.0050	µg/L	2018-06-02	
Molybdenum, total	0.430	N/A	0.010	µg/L	2018-06-04	
Nickel, total	7.69	N/A	0.040	µg/L	2018-06-04	
Phosphorus, total	36	N/A	10	µg/L	2018-06-04	
Potassium, total	1080	N/A	10	µg/L	2018-06-04	
Selenium, total	0.13	MAC = 50	0.10	µg/L	2018-06-04	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Harris Creek (Hwy 6) (8052472-01) Matrix: Water Sampled: 2018-05-27 11:15, Continued						F1, FILT

Total Metals, Continued

Silicon, total	5170	N/A	100	µg/L	2018-06-04	
Silver, total	0.011	N/A	0.010	µg/L	2018-06-04	
Sodium, total	1540	AO ≤ 200000	20	µg/L	2018-06-04	
Strontium, total	34.9	N/A	0.10	µg/L	2018-06-04	
Sulfur, total	2100	N/A	1000	µg/L	2018-06-04	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2018-06-04	
Thallium, total	0.0068	N/A	0.0040	µg/L	2018-06-04	
Thorium, total	0.043	N/A	0.010	µg/L	2018-06-04	
Tin, total	0.057	N/A	0.050	µg/L	2018-06-04	
Titanium, total	12.6	N/A	0.20	µg/L	2018-06-04	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2018-06-04	
Uranium, total	0.258	MAC = 20	0.0010	µg/L	2018-06-04	
Vanadium, total	1.12	N/A	0.20	µg/L	2018-06-04	
Zinc, total	4.1	AO ≤ 5000	1.0	µg/L	2018-06-04	
Zirconium, total	0.586	N/A	0.020	µg/L	2018-06-04	

Microbiological Parameters

Coliforms, Total	160	MAC = 0	1	CFU/100 mL	2018-05-28	
Background Colonies	> 200	N/A	200	CFU/100 mL	2018-05-28	
E. coli	150	MAC = 0	1	CFU/100 mL	2018-05-28	

Duteau Creek (Hwy 6) (8052472-02) | Matrix: Water | Sampled: 2018-05-27 11:05

F1, FILT

Anions

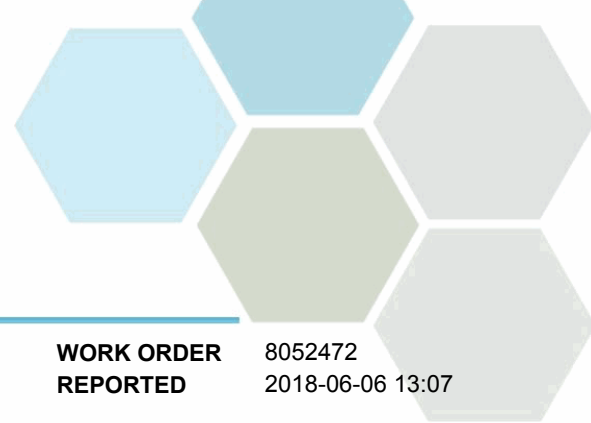
Chloride	2.51	AO ≤ 250	0.10	mg/L	2018-05-28	
Nitrate (as N)	0.089	MAC = 10	0.010	mg/L	2018-05-28	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2018-05-28	
Sulfate	7.5	AO ≤ 500	1.0	mg/L	2018-05-28	

General Parameters

Ammonia, Total (as N)	0.036	None Required	0.020	mg/L	2018-05-31	
Conductivity (EC)	91.1	N/A	2.0	µS/cm	2018-05-30	
Nitrogen, Total Kjeldahl	0.227	N/A	0.050	mg/L	2018-05-31	
pH	6.75	7.0-10.5	0.10	pH units	2018-05-30	HT2
Phosphorus, Total (as P)	0.0350	N/A	0.0020	mg/L	2018-05-31	
Phosphorus, Total Dissolved	0.0133	N/A	0.0020	mg/L	2018-05-31	
Turbidity	3.50	OG < 1	0.10	NTU	2018-05-28	

Calculated Parameters

Hardness, Total (as CaCO3)	39.8	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0889	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.316	N/A	0.0500	mg/L	N/A	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
---------	--------	-----------	----------	----------	-----------

Duteau Creek (Hwy 6) (8052472-02) | Matrix: Water | Sampled: 2018-05-27 11:05, Continued

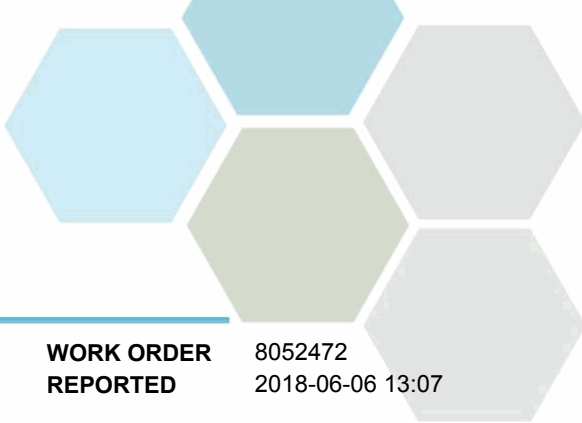
F1, FILT

Total Metals

Aluminum, total	320	OG < 100	2.0 µg/L	2018-06-04	
Antimony, total	< 0.050	MAC = 6	0.050 µg/L	2018-06-04	
Arsenic, total	0.347	MAC = 10	0.050 µg/L	2018-06-04	
Barium, total	17.2	MAC = 1000	0.10 µg/L	2018-06-04	
Beryllium, total	0.019	N/A	0.010 µg/L	2018-06-04	
Bismuth, total	< 0.010	N/A	0.010 µg/L	2018-06-04	
Boron, total	2.2	MAC = 5000	2.0 µg/L	2018-06-04	
Cadmium, total	0.0140	MAC = 5	0.0020 µg/L	2018-06-04	
Calcium, total	11100	N/A	40 µg/L	2018-06-04	
Chromium, total	1.20	MAC = 50	0.10 µg/L	2018-06-04	
Cobalt, total	0.327	N/A	0.0050 µg/L	2018-06-04	
Copper, total	2.09	AO ≤ 1000	0.20 µg/L	2018-06-04	
Iron, total	756	AO ≤ 300	2.0 µg/L	2018-06-04	
Lead, total	0.164	MAC = 10	0.050 µg/L	2018-06-04	
Lithium, total	1.24	N/A	0.050 µg/L	2018-06-04	
Magnesium, total	2920	N/A	5.0 µg/L	2018-06-04	
Manganese, total	79.3	AO ≤ 50	0.050 µg/L	2018-06-04	
Mercury, total	< 0.0050	MAC = 1	0.0050 µg/L	2018-06-02	
Molybdenum, total	0.791	N/A	0.010 µg/L	2018-06-04	
Nickel, total	1.71	N/A	0.040 µg/L	2018-06-04	
Phosphorus, total	46	N/A	10 µg/L	2018-06-04	
Potassium, total	1500	N/A	10 µg/L	2018-06-04	
Selenium, total	0.44	MAC = 50	0.10 µg/L	2018-06-04	
Silicon, total	6210	N/A	100 µg/L	2018-06-04	
Silver, total	0.015	N/A	0.010 µg/L	2018-06-04	
Sodium, total	2500	AO ≤ 200000	20 µg/L	2018-06-04	
Strontium, total	65.3	N/A	0.10 µg/L	2018-06-04	
Sulfur, total	2900	N/A	1000 µg/L	2018-06-04	
Tellurium, total	< 0.050	N/A	0.050 µg/L	2018-06-04	
Thallium, total	0.0093	N/A	0.0040 µg/L	2018-06-04	
Thorium, total	0.044	N/A	0.010 µg/L	2018-06-04	
Tin, total	< 0.050	N/A	0.050 µg/L	2018-06-04	
Titanium, total	18.5	N/A	0.20 µg/L	2018-06-04	
Tungsten, total	< 0.20	N/A	0.20 µg/L	2018-06-04	
Uranium, total	0.377	MAC = 20	0.0010 µg/L	2018-06-04	
Vanadium, total	1.68	N/A	0.20 µg/L	2018-06-04	
Zinc, total	2.9	AO ≤ 5000	1.0 µg/L	2018-06-04	
Zirconium, total	0.526	N/A	0.020 µg/L	2018-06-04	

Microbiological Parameters

Coliforms, Total	≥ 130	MAC = 0	1 CFU/100 mL	2018-05-28	
Background Colonies	> 200	N/A	200 CFU/100 mL	2018-05-28	
E. coli	80	MAC = 0	1 CFU/100 mL	2018-05-28	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
---------	--------	-----------	----	-------	----------	-----------

Mid Bessette Creek (8052472-03) | Matrix: Water | Sampled: 2018-05-27 10:35

F1, FILT

Anions

Chloride	1.49	AO ≤ 250	0.10	mg/L	2018-05-28	
Nitrate (as N)	0.027	MAC = 10	0.010	mg/L	2018-05-28	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2018-05-28	
Sulfate	7.4	AO ≤ 500	1.0	mg/L	2018-05-28	

General Parameters

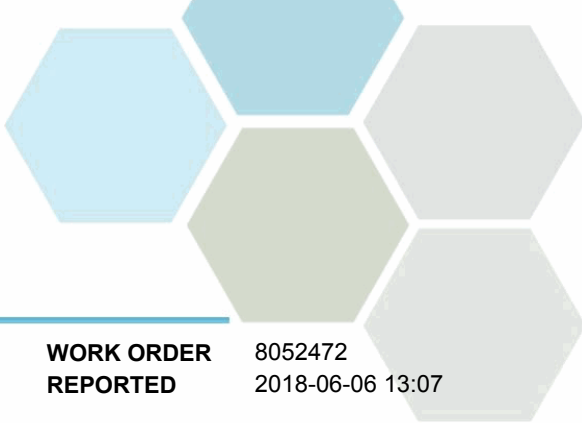
Ammonia, Total (as N)	0.038	None Required	0.020	mg/L	2018-05-31	
Conductivity (EC)	84.0	N/A	2.0	µS/cm	2018-05-30	
Nitrogen, Total Kjeldahl	0.277	N/A	0.050	mg/L	2018-05-31	
pH	7.37	7.0-10.5	0.10	pH units	2018-05-30	HT2
Phosphorus, Total (as P)	0.0522	N/A	0.0020	mg/L	2018-05-31	
Phosphorus, Total Dissolved	0.0118	N/A	0.0020	mg/L	2018-05-31	
Turbidity	13.8	OG < 1	0.10	NTU	2018-05-28	

Calculated Parameters

Hardness, Total (as CaCO3)	38.2	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0274	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.304	N/A	0.0500	mg/L	N/A	

Total Metals

Aluminum, total	633	OG < 100	2.0	µg/L	2018-06-04	
Antimony, total	< 0.050	MAC = 6	0.050	µg/L	2018-06-04	
Arsenic, total	0.604	MAC = 10	0.050	µg/L	2018-06-04	
Barium, total	15.8	MAC = 1000	0.10	µg/L	2018-06-04	
Beryllium, total	0.028	N/A	0.010	µg/L	2018-06-04	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2018-06-04	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2018-06-04	
Cadmium, total	0.0558	MAC = 5	0.0020	µg/L	2018-06-04	
Calcium, total	11100	N/A	40	µg/L	2018-06-04	
Chromium, total	1.62	MAC = 50	0.10	µg/L	2018-06-04	
Cobalt, total	0.578	N/A	0.0050	µg/L	2018-06-04	
Copper, total	3.72	AO ≤ 1000	0.20	µg/L	2018-06-04	
Iron, total	1060	AO ≤ 300	2.0	µg/L	2018-06-04	
Lead, total	0.330	MAC = 10	0.050	µg/L	2018-06-04	
Lithium, total	1.64	N/A	0.050	µg/L	2018-06-04	
Magnesium, total	2570	N/A	5.0	µg/L	2018-06-04	
Manganese, total	45.7	AO ≤ 50	0.050	µg/L	2018-06-04	
Mercury, total	< 0.0050	MAC = 1	0.0050	µg/L	2018-06-02	
Molybdenum, total	0.743	N/A	0.010	µg/L	2018-06-04	
Nickel, total	6.31	N/A	0.040	µg/L	2018-06-04	
Phosphorus, total	63	N/A	10	µg/L	2018-06-04	
Potassium, total	1240	N/A	10	µg/L	2018-06-04	
Selenium, total	0.52	MAC = 50	0.10	µg/L	2018-06-04	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Mid Bessette Creek (8052472-03) Matrix: Water Sampled: 2018-05-27 10:35, Continued						F1, FILT

Total Metals, Continued

Silicon, total	6000	N/A	100	µg/L	2018-06-04	
Silver, total	0.020	N/A	0.010	µg/L	2018-06-04	
Sodium, total	1940	AO ≤ 200000	20	µg/L	2018-06-04	
Strontium, total	67.9	N/A	0.10	µg/L	2018-06-04	
Sulfur, total	2800	N/A	1000	µg/L	2018-06-04	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2018-06-04	
Thallium, total	0.0107	N/A	0.0040	µg/L	2018-06-04	
Thorium, total	0.071	N/A	0.010	µg/L	2018-06-04	
Tin, total	< 0.050	N/A	0.050	µg/L	2018-06-04	
Titanium, total	28.1	N/A	0.20	µg/L	2018-06-04	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2018-06-04	
Uranium, total	0.378	MAC = 20	0.0010	µg/L	2018-06-04	
Vanadium, total	2.24	N/A	0.20	µg/L	2018-06-04	
Zinc, total	6.6	AO ≤ 5000	1.0	µg/L	2018-06-04	
Zirconium, total	0.629	N/A	0.020	µg/L	2018-06-04	

Microbiological Parameters

Coliforms, Total	≥ 45	MAC = 0	1	CFU/100 mL	2018-05-28	
Background Colonies	> 200	N/A	200	CFU/100 mL	2018-05-28	
E. coli	33	MAC = 0	1	CFU/100 mL	2018-05-28	

Lower Bessette Creek (8052472-04) | Matrix: Water | Sampled: 2018-05-27 10:20

F1, FILT

Anions

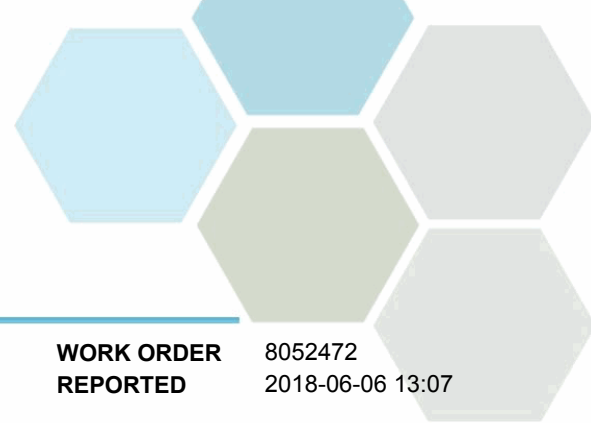
Chloride	1.63	AO ≤ 250	0.10	mg/L	2018-05-28	
Nitrate (as N)	0.026	MAC = 10	0.010	mg/L	2018-05-28	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2018-05-28	
Sulfate	7.5	AO ≤ 500	1.0	mg/L	2018-05-28	

General Parameters

Ammonia, Total (as N)	0.034	None Required	0.020	mg/L	2018-05-31	
Conductivity (EC)	87.2	N/A	2.0	µS/cm	2018-05-30	
Nitrogen, Total Kjeldahl	0.143	N/A	0.050	mg/L	2018-05-31	
pH	7.43	7.0-10.5	0.10	pH units	2018-05-30	HT2
Phosphorus, Total (as P)	0.109	N/A	0.0020	mg/L	2018-05-31	
Phosphorus, Total Dissolved	0.0102	N/A	0.0020	mg/L	2018-05-31	
Turbidity	20.5	OG < 1	0.10	NTU	2018-05-28	

Calculated Parameters

Hardness, Total (as CaCO3)	42.1	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0262	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.169	N/A	0.0500	mg/L	N/A	

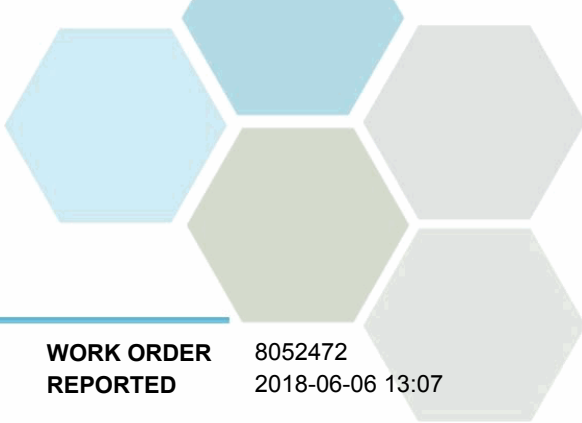


TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
Lower Bessette Creek (8052472-04) Matrix: Water Sampled: 2018-05-27 10:20, Continued					F1, FILT
Total Metals					
Aluminum, total	1330	OG < 100	2.0 µg/L	2018-06-04	
Antimony, total	0.058	MAC = 6	0.050 µg/L	2018-06-04	
Arsenic, total	0.817	MAC = 10	0.050 µg/L	2018-06-04	
Barium, total	22.7	MAC = 1000	0.10 µg/L	2018-06-04	
Beryllium, total	0.049	N/A	0.010 µg/L	2018-06-04	
Bismuth, total	0.013	N/A	0.010 µg/L	2018-06-04	
Boron, total	< 2.0	MAC = 5000	2.0 µg/L	2018-06-04	
Cadmium, total	0.0933	MAC = 5	0.0020 µg/L	2018-06-04	
Calcium, total	11800	N/A	40 µg/L	2018-06-04	
Chromium, total	3.80	MAC = 50	0.10 µg/L	2018-06-04	
Cobalt, total	1.05	N/A	0.0050 µg/L	2018-06-04	
Copper, total	5.18	AO ≤ 1000	0.20 µg/L	2018-06-04	
Iron, total	2150	AO ≤ 300	2.0 µg/L	2018-06-04	
Lead, total	0.676	MAC = 10	0.050 µg/L	2018-06-04	
Lithium, total	2.40	N/A	0.050 µg/L	2018-06-04	
Magnesium, total	3060	N/A	5.0 µg/L	2018-06-04	
Manganese, total	66.6	AO ≤ 50	0.050 µg/L	2018-06-04	
Mercury, total	< 0.0050	MAC = 1	0.0050 µg/L	2018-06-02	
Molybdenum, total	0.840	N/A	0.010 µg/L	2018-06-04	
Nickel, total	7.71	N/A	0.040 µg/L	2018-06-04	
Phosphorus, total	92	N/A	10 µg/L	2018-06-04	
Potassium, total	1480	N/A	10 µg/L	2018-06-04	
Selenium, total	0.56	MAC = 50	0.10 µg/L	2018-06-04	
Silicon, total	7330	N/A	100 µg/L	2018-06-04	
Silver, total	0.030	N/A	0.010 µg/L	2018-06-04	
Sodium, total	2050	AO ≤ 200000	20 µg/L	2018-06-04	
Strontium, total	74.1	N/A	0.10 µg/L	2018-06-04	
Sulfur, total	2900	N/A	1000 µg/L	2018-06-04	
Tellurium, total	< 0.050	N/A	0.050 µg/L	2018-06-04	
Thallium, total	0.0215	N/A	0.0040 µg/L	2018-06-04	
Thorium, total	0.153	N/A	0.010 µg/L	2018-06-04	
Tin, total	< 0.050	N/A	0.050 µg/L	2018-06-04	
Titanium, total	69.7	N/A	0.20 µg/L	2018-06-04	
Tungsten, total	0.26	N/A	0.20 µg/L	2018-06-04	
Uranium, total	0.443	MAC = 20	0.0010 µg/L	2018-06-04	
Vanadium, total	4.29	N/A	0.20 µg/L	2018-06-04	
Zinc, total	8.6	AO ≤ 5000	1.0 µg/L	2018-06-04	
Zirconium, total	0.745	N/A	0.020 µg/L	2018-06-04	
Microbiological Parameters					
Coliforms, Total	≥ 81	MAC = 0	1 CFU/100 mL	2018-05-28	
Background Colonies	> 200	N/A	200 CFU/100 mL	2018-05-28	
E. coli	37	MAC = 0	1 CFU/100 mL	2018-05-28	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
---------	--------	-----------	----	-------	----------	-----------

Shuswap River (Wilsey Dam) (8052472-05) | Matrix: Water | Sampled: 2018-05-27 10:00

F1, FILT

Anions

Chloride	1.21	AO ≤ 250	0.10	mg/L	2018-05-28	
Nitrate (as N)	0.061	MAC = 10	0.010	mg/L	2018-05-28	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2018-05-28	
Sulfate	3.0	AO ≤ 500	1.0	mg/L	2018-05-28	

General Parameters

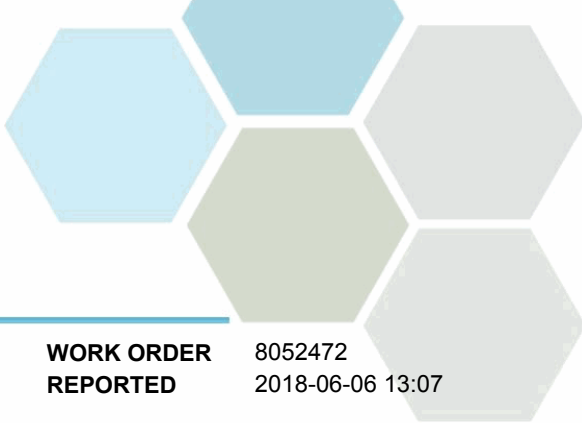
Ammonia, Total (as N)	0.066	None Required	0.020	mg/L	2018-05-31	
Conductivity (EC)	66.9	N/A	2.0	µS/cm	2018-05-30	
Nitrogen, Total Kjeldahl	0.073	N/A	0.050	mg/L	2018-05-31	
pH	7.44	7.0-10.5	0.10	pH units	2018-05-30	HT2
Phosphorus, Total (as P)	0.0543	N/A	0.0020	mg/L	2018-05-31	
Phosphorus, Total Dissolved	< 0.0020	N/A	0.0020	mg/L	2018-05-31	
Turbidity	21.8	OG < 1	0.10	NTU	2018-05-28	

Calculated Parameters

Hardness, Total (as CaCO3)	33.5	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0611	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.134	N/A	0.0500	mg/L	N/A	

Total Metals

Aluminum, total	865	OG < 100	2.0	µg/L	2018-06-04	
Antimony, total	0.068	MAC = 6	0.050	µg/L	2018-06-04	
Arsenic, total	0.702	MAC = 10	0.050	µg/L	2018-06-04	
Barium, total	15.2	MAC = 1000	0.10	µg/L	2018-06-04	
Beryllium, total	0.032	N/A	0.010	µg/L	2018-06-04	
Bismuth, total	0.012	N/A	0.010	µg/L	2018-06-04	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2018-06-04	
Cadmium, total	0.0534	MAC = 5	0.0020	µg/L	2018-06-04	
Calcium, total	10600	N/A	40	µg/L	2018-06-04	
Chromium, total	2.14	MAC = 50	0.10	µg/L	2018-06-04	
Cobalt, total	0.636	N/A	0.0050	µg/L	2018-06-04	
Copper, total	2.63	AO ≤ 1000	0.20	µg/L	2018-06-04	
Iron, total	1360	AO ≤ 300	2.0	µg/L	2018-06-04	
Lead, total	0.553	MAC = 10	0.050	µg/L	2018-06-04	
Lithium, total	1.35	N/A	0.050	µg/L	2018-06-04	
Magnesium, total	1680	N/A	5.0	µg/L	2018-06-04	
Manganese, total	37.1	AO ≤ 50	0.050	µg/L	2018-06-04	
Mercury, total	< 0.0050	MAC = 1	0.0050	µg/L	2018-06-02	
Molybdenum, total	0.526	N/A	0.010	µg/L	2018-06-04	
Nickel, total	2.09	N/A	0.040	µg/L	2018-06-04	
Phosphorus, total	45	N/A	10	µg/L	2018-06-04	
Potassium, total	830	N/A	10	µg/L	2018-06-04	
Selenium, total	0.31	MAC = 50	0.10	µg/L	2018-06-04	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Shuswap River (Wilsey Dam) (8052472-05) Matrix: Water Sampled: 2018-05-27 10:00, Continued						F1, FILT

Total Metals, Continued

Silicon, total	4280	N/A	100	µg/L	2018-06-04	
Silver, total	0.027	N/A	0.010	µg/L	2018-06-04	
Sodium, total	517	AO ≤ 200000	20	µg/L	2018-06-04	
Strontium, total	47.0	N/A	0.10	µg/L	2018-06-04	
Sulfur, total	1200	N/A	1000	µg/L	2018-06-04	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2018-06-04	
Thallium, total	0.0159	N/A	0.0040	µg/L	2018-06-04	
Thorium, total	0.081	N/A	0.010	µg/L	2018-06-04	
Tin, total	< 0.050	N/A	0.050	µg/L	2018-06-04	
Titanium, total	38.5	N/A	0.20	µg/L	2018-06-04	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2018-06-04	
Uranium, total	0.329	MAC = 20	0.0010	µg/L	2018-06-04	
Vanadium, total	2.59	N/A	0.20	µg/L	2018-06-04	
Zinc, total	7.2	AO ≤ 5000	1.0	µg/L	2018-06-04	
Zirconium, total	0.119	N/A	0.020	µg/L	2018-06-04	

Microbiological Parameters

Coliforms, Total	32	MAC = 0	1	CFU/100 mL	2018-05-28	
Background Colonies	> 200	N/A	200	CFU/100 mL	2018-05-28	
E. coli	8	MAC = 0	1	CFU/100 mL	2018-05-28	

Shuswap River (Odd Fellows) (8052472-06) | Matrix: Water | Sampled: 2018-05-27 09:20

F1, FILT

Anions

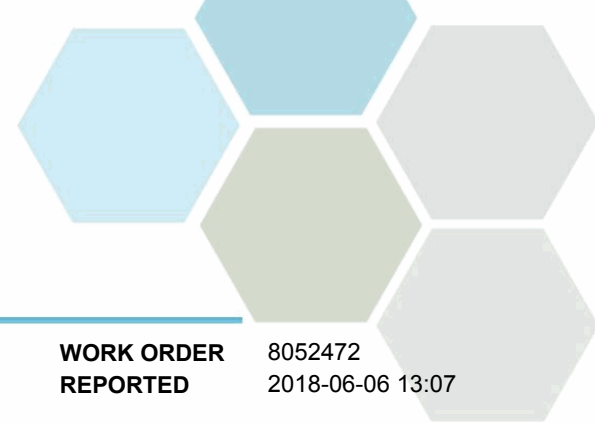
Chloride	2.12	AO ≤ 250	0.10	mg/L	2018-05-28	
Nitrate (as N)	0.051	MAC = 10	0.010	mg/L	2018-05-28	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2018-05-28	
Sulfate	3.3	AO ≤ 500	1.0	mg/L	2018-05-28	

General Parameters

Ammonia, Total (as N)	< 0.020	None Required	0.020	mg/L	2018-05-31	
Conductivity (EC)	73.4	N/A	2.0	µS/cm	2018-05-30	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2018-05-31	
pH	7.43	7.0-10.5	0.10	pH units	2018-05-30	HT2
Phosphorus, Total (as P)	0.0380	N/A	0.0020	mg/L	2018-05-31	
Phosphorus, Total Dissolved	0.0044	N/A	0.0020	mg/L	2018-05-31	
Turbidity	21.1	OG < 1	0.10	NTU	2018-05-28	

Calculated Parameters

Hardness, Total (as CaCO3)	35.6	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0509	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	0.0509	N/A	0.0500	mg/L	N/A	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
---------	--------	-----------	----------	----------	-----------

Shuswap River (Odd Fellows) (8052472-06) | Matrix: Water | Sampled: 2018-05-27 09:20, Continued

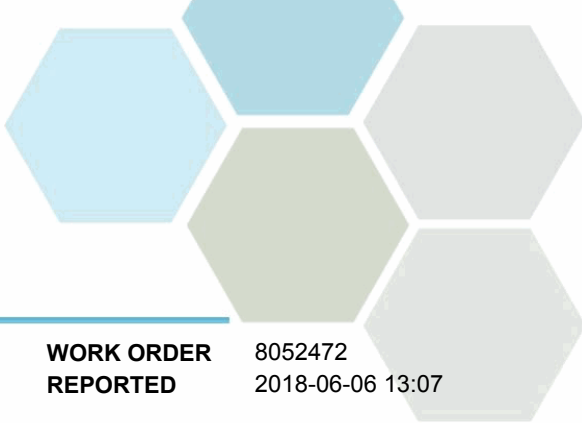
F1, FILT

Total Metals

Aluminum, total	779	OG < 100	2.0 µg/L	2018-06-04	
Antimony, total	0.077	MAC = 6	0.050 µg/L	2018-06-04	
Arsenic, total	0.676	MAC = 10	0.050 µg/L	2018-06-04	
Barium, total	15.2	MAC = 1000	0.10 µg/L	2018-06-04	
Beryllium, total	0.029	N/A	0.010 µg/L	2018-06-04	
Bismuth, total	< 0.010	N/A	0.010 µg/L	2018-06-04	
Boron, total	< 2.0	MAC = 5000	2.0 µg/L	2018-06-04	
Cadmium, total	0.0489	MAC = 5	0.0020 µg/L	2018-06-04	
Calcium, total	11300	N/A	40 µg/L	2018-06-04	
Chromium, total	2.18	MAC = 50	0.10 µg/L	2018-06-04	
Cobalt, total	0.568	N/A	0.0050 µg/L	2018-06-04	
Copper, total	2.81	AO ≤ 1000	0.20 µg/L	2018-06-04	
Iron, total	1210	AO ≤ 300	2.0 µg/L	2018-06-04	
Lead, total	0.509	MAC = 10	0.050 µg/L	2018-06-04	
Lithium, total	1.27	N/A	0.050 µg/L	2018-06-04	
Magnesium, total	1770	N/A	5.0 µg/L	2018-06-04	
Manganese, total	33.8	AO ≤ 50	0.050 µg/L	2018-06-04	
Mercury, total	< 0.0050	MAC = 1	0.0050 µg/L	2018-06-02	
Molybdenum, total	0.645	N/A	0.010 µg/L	2018-06-04	
Nickel, total	2.20	N/A	0.040 µg/L	2018-06-04	
Phosphorus, total	40	N/A	10 µg/L	2018-06-04	
Potassium, total	905	N/A	10 µg/L	2018-06-04	
Selenium, total	0.35	MAC = 50	0.10 µg/L	2018-06-04	
Silicon, total	4460	N/A	100 µg/L	2018-06-04	
Silver, total	0.022	N/A	0.010 µg/L	2018-06-04	
Sodium, total	692	AO ≤ 200000	20 µg/L	2018-06-04	
Strontium, total	51.9	N/A	0.10 µg/L	2018-06-04	
Sulfur, total	1400	N/A	1000 µg/L	2018-06-04	
Tellurium, total	< 0.050	N/A	0.050 µg/L	2018-06-04	
Thallium, total	0.0156	N/A	0.0040 µg/L	2018-06-04	
Thorium, total	0.072	N/A	0.010 µg/L	2018-06-04	
Tin, total	< 0.050	N/A	0.050 µg/L	2018-06-04	
Titanium, total	35.1	N/A	0.20 µg/L	2018-06-04	
Tungsten, total	< 0.20	N/A	0.20 µg/L	2018-06-04	
Uranium, total	0.318	MAC = 20	0.0010 µg/L	2018-06-04	
Vanadium, total	2.40	N/A	0.20 µg/L	2018-06-04	
Zinc, total	8.0	AO ≤ 5000	1.0 µg/L	2018-06-04	
Zirconium, total	0.172	N/A	0.020 µg/L	2018-06-04	

Microbiological Parameters

Coliforms, Total	210	MAC = 0	1 CFU/100 mL	2018-05-28	
Background Colonies	> 200	N/A	200 CFU/100 mL	2018-05-28	
E. coli	18	MAC = 0	1 CFU/100 mL	2018-05-28	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
---------	--------	-----------	----	-------	----------	-----------

Vance Creek (Mabel Lake Road) (8052472-07) | Matrix: Water | Sampled: 2018-05-27 10:50

F1, FILT

Anions

Chloride	2.14	AO ≤ 250	0.10	mg/L	2018-05-28	
Nitrate (as N)	0.036	MAC = 10	0.010	mg/L	2018-05-28	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2018-05-28	
Sulfate	18.7	AO ≤ 500	1.0	mg/L	2018-05-28	

General Parameters

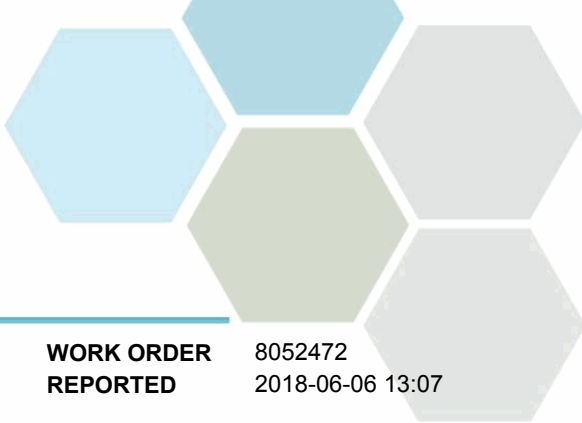
Ammonia, Total (as N)	< 0.020	None Required	0.020	mg/L	2018-05-31	
Conductivity (EC)	257	N/A	2.0	µS/cm	2018-05-30	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2018-05-31	
pH	7.96	7.0-10.5	0.10	pH units	2018-05-30	HT2
Phosphorus, Total (as P)	0.127	N/A	0.0020	mg/L	2018-05-31	
Phosphorus, Total Dissolved	0.0040	N/A	0.0020	mg/L	2018-05-31	
Turbidity	59.0	OG < 1	0.10	NTU	2018-05-28	

Calculated Parameters

Hardness, Total (as CaCO3)	136	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0363	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	

Total Metals

Aluminum, total	1950	OG < 100	2.0	µg/L	2018-06-04	
Antimony, total	0.148	MAC = 6	0.050	µg/L	2018-06-04	
Arsenic, total	2.45	MAC = 10	0.050	µg/L	2018-06-04	
Barium, total	45.2	MAC = 1000	0.10	µg/L	2018-06-04	
Beryllium, total	0.049	N/A	0.010	µg/L	2018-06-04	
Bismuth, total	0.021	N/A	0.010	µg/L	2018-06-04	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2018-06-04	
Cadmium, total	0.381	MAC = 5	0.0020	µg/L	2018-06-04	
Calcium, total	44800	N/A	40	µg/L	2018-06-04	
Chromium, total	5.37	MAC = 50	0.10	µg/L	2018-06-04	
Cobalt, total	2.18	N/A	0.0050	µg/L	2018-06-04	
Copper, total	10.2	AO ≤ 1000	0.20	µg/L	2018-06-04	
Iron, total	4390	AO ≤ 300	2.0	µg/L	2018-06-04	
Lead, total	1.35	MAC = 10	0.050	µg/L	2018-06-04	
Lithium, total	3.15	N/A	0.050	µg/L	2018-06-04	
Magnesium, total	5950	N/A	5.0	µg/L	2018-06-04	
Manganese, total	96.4	AO ≤ 50	0.050	µg/L	2018-06-04	
Mercury, total	< 0.0050	MAC = 1	0.0050	µg/L	2018-06-02	
Molybdenum, total	2.00	N/A	0.010	µg/L	2018-06-04	
Nickel, total	5.69	N/A	0.040	µg/L	2018-06-04	
Phosphorus, total	126	N/A	10	µg/L	2018-06-04	
Potassium, total	1480	N/A	10	µg/L	2018-06-04	
Selenium, total	3.19	MAC = 50	0.10	µg/L	2018-06-04	



TEST RESULTS

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Vance Creek (Mabel Lake Road) (8052472-07) Matrix: Water Sampled: 2018-05-27 10:50, Continued						F1, FILT

Total Metals, Continued

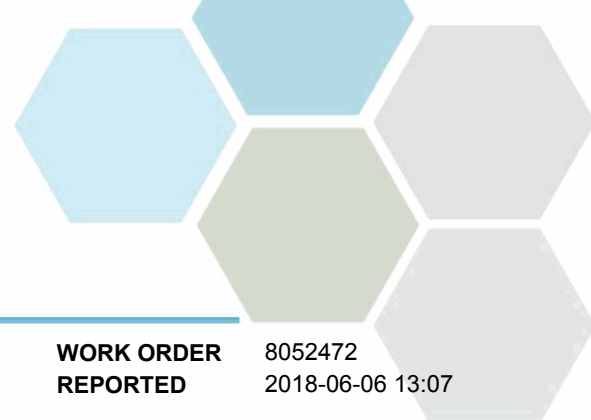
Silicon, total	8370	N/A	100	µg/L	2018-06-04	
Silver, total	0.118	N/A	0.010	µg/L	2018-06-04	
Sodium, total	1870	AO ≤ 200000	20	µg/L	2018-06-04	
Strontium, total	285	N/A	0.10	µg/L	2018-06-04	
Sulfur, total	7100	N/A	1000	µg/L	2018-06-04	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2018-06-04	
Thallium, total	0.0254	N/A	0.0040	µg/L	2018-06-04	
Thorium, total	0.261	N/A	0.010	µg/L	2018-06-04	
Tin, total	< 0.050	N/A	0.050	µg/L	2018-06-04	
Titanium, total	43.5	N/A	0.20	µg/L	2018-06-04	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2018-06-04	
Uranium, total	0.802	MAC = 20	0.0010	µg/L	2018-06-04	
Vanadium, total	6.94	N/A	0.20	µg/L	2018-06-04	
Zinc, total	23.8	AO ≤ 5000	1.0	µg/L	2018-06-04	
Zirconium, total	0.252	N/A	0.020	µg/L	2018-06-04	

Microbiological Parameters

Coliforms, Total	11	MAC = 0	1	CFU/100 mL	2018-05-28	
Background Colonies	> 200	N/A	200	CFU/100 mL	2018-05-28	
E. coli	2	MAC = 0	1	CFU/100 mL	2018-05-28	

Sample Qualifiers:

- F1 The sample was not field-filtered and was therefore filtered through a 0.45 µm membrane in the laboratory and preserved with HNO3 prior to analysis for dissolved metals.
- FILT The sample has been filtered for DP in the laboratory. Results may not reflect conditions at the time of sampling.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards
Analytical Testing

WORK ORDER REPORTED 8052472
2018-06-06 13:07

Analysis Description	Method Ref.	Technique	Location
Ammonia, Total in Water	SM 4500-NH3 G* (2011)	Automated Colorimetry (Phenate)	Kelowna
Anions in Water	SM 4110 B (2011)	Ion Chromatography	Kelowna
Coliforms, Total in Water	SM 9222 B (2006)	Membrane Filtration / m-Endo Agar	Kelowna
Conductivity in Water	SM 2510 B (2011)	Conductivity Meter	Kelowna
E. coli in Water	SM 9222 G (2006)	Membrane Filtration / Nutrient Agar with MUG	Kelowna
Hardness in Water	SM 2340 B* (2011)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
Mercury, total in Water	EPA 245.7*	BrCl ₂ Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2011)	Block Digestion and Flow Injection Analysis	Kelowna
pH in Water	SM 4500-H+ B (2011)	Electrometry	Kelowna
Phosphorus, Total Dissolved in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2011)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Phosphorus, Total in Water	SM 4500-P B.5* (2011) / SM 4500-P F (2011)	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Total Metals in Water	EPA 200.2* / EPA 6020B	HNO ₃ +HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
Turbidity in Water	SM 2130 B (2011)	Nephelometry	Kelowna

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

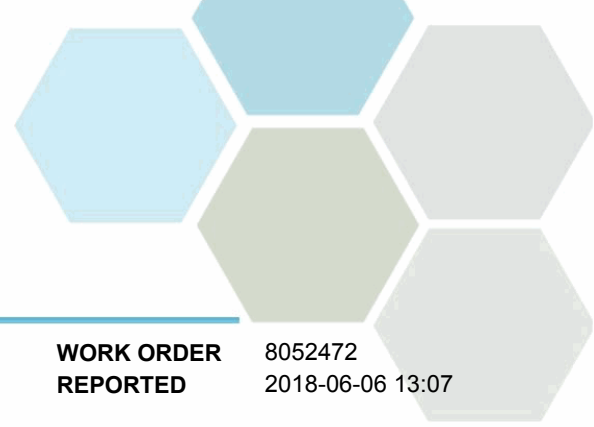
Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
>	Greater than the specified Result
>=	Greater than or equal to the specified Result
AO	Aesthetic Objective
CFU/100 mL	Colony Forming Units per 100 millilitres
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
NTU	Nephelometric Turbidity Units
OG	Operational Guideline (treated water)
pH units	pH < 7 = acidic, pH > 7 = basic
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, Feb 2017\)](#)

Note: In some cases, the values displayed on the report represent the lowest guideline and are to be verified by the end user



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO Mid Shuswap Lumby Water Stewards
PROJECT Analytical Testing

WORK ORDER 8052472
REPORTED 2018-06-06 13:07

General Comments:

The results in this report apply to the samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Samples will be disposed of 30 days after the test report has been issued unless otherwise agreed to in writing. The quality control (QC) data is available upon request