CERTIFICATE OF ANALYSIS

REPORTED TO	Mid Shuswap Lumby Water Stewards 1631 Mable Lake Rd Lumby, BC V0E 2G6		
ATTENTION	Russ Collins	**WORK ORDER**	7111167
PO NUMBER	Mid Shuswap Lumby Water Stewards	**RECEIVED / TEMP**	2017-11-15 09:14 / 4°C
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08
PROJECT INFO		**COC NUMBER**	No COC

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 kmckeown@caro.ca

Authorized By:

Kristin McKeown
Account Manager

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Duteau Creek (Hwy 6) (7111167-01) | Matrix: Water | Sampled: 2017-11-14 11:00						F1, FILT, PRES
Anions						
Chloride	**10.2**	AO ≤ 250	0.10	mg/L	2017-11-17	
Nitrate (as N)	**0.544**	MAC = 10	0.010	mg/L	2017-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2017-11-17	
Sulfate	**31.2**	AO ≤ 500	1.0	mg/L	2017-11-17	
General Parameters						
Ammonia, Total (as N)	**0.020**	None Required	0.020	mg/L	2017-11-18	
Conductivity (EC)	**292**	N/A	2.0	µS/cm	2017-11-15	
Nitrogen, Total Kjeldahl	**0.155**	N/A	0.050	mg/L	2017-11-17	
pH	**8.01**	7.0-10.5	0.10	pH units	2017-11-15	HT2
Phosphorus, Total (as P)	**0.0132**	N/A	0.0020	mg/L	2017-11-16	
Phosphorus, Total Dissolved	**0.0113**	N/A	0.0020	mg/L	2017-11-16	
Turbidity	**1.05**	OG < 1	0.10	NTU	2017-11-14	
Calculated Parameters						
Hardness, Total (as CaCO3)	**115**	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.544**	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	**0.700**	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**8.5**	N/A	1.0	µg/L	2017-11-22	
Total Metals						
Aluminum, total	**21.4**	OG < 100	2.0	µg/L	2017-11-21	
Antimony, total	**0.063**	MAC = 6	0.050	µg/L	2017-11-21	
Arsenic, total	**0.363**	MAC = 10	0.050	µg/L	2017-11-21	
Barium, total	**23.8**	MAC = 1000	0.10	µg/L	2017-11-21	
Beryllium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Boron, total	**5.9**	MAC = 5000	2.0	µg/L	2017-11-21	
Cadmium, total	**0.0064**	MAC = 5	0.0020	µg/L	2017-11-21	
Calcium, total	**34600**	N/A	40	µg/L	2017-11-21	
Chromium, total	**0.65**	MAC = 50	0.10	µg/L	2017-11-21	
Cobalt, total	**0.0646**	N/A	0.0050	µg/L	2017-11-21	
Copper, total	**0.81**	AO ≤ 1000	0.20	µg/L	2017-11-21	
Iron, total	**264**	AO ≤ 300	2.0	µg/L	2017-11-21	
Lead, total	< 0.050	MAC = 10	0.050	µg/L	2017-11-21	
Lithium, total	**2.16**	N/A	0.050	µg/L	2017-11-21	
Magnesium, total	**6990**	N/A	5.0	µg/L	2017-11-21	
Manganese, total	**47.3**	AO ≤ 50	0.050	µg/L	2017-11-21	
Molybdenum, total	**1.72**	N/A	0.010	µg/L	2017-11-21	
Nickel, total	**0.896**	N/A	0.040	µg/L	2017-11-21	
Phosphorus, total	**14**	N/A	10	µg/L	2017-11-21	

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Duteau Creek (Hwy 6) (7111167-01) | Matrix: Water | Sampled: 2017-11-14 11:00, Continued						F1, FILT, PRES
Total Metals, Continued						
Potassium, total	**3220**	N/A	10	µg/L	2017-11-21	
Selenium, total	**0.73**	MAC = 50	0.10	µg/L	2017-11-21	
Silicon, total	**5800**	N/A	100	µg/L	2017-11-21	
Silver, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Sodium, total	**6840**	AO ≤ 200000	20	µg/L	2017-11-21	
Strontium, total	**190**	N/A	0.10	µg/L	2017-11-21	
Sulfur, total	**8900**	N/A	1000	µg/L	2017-11-21	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Thallium, total	< 0.0040	N/A	0.0040	µg/L	2017-11-21	
Thorium, total	**0.012**	N/A	0.010	µg/L	2017-11-21	
Tin, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Titanium, total	**1.21**	N/A	0.20	µg/L	2017-11-21	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2017-11-21	
Uranium, total	**1.31**	MAC = 20	0.0010	µg/L	2017-11-21	
Vanadium, total	**0.61**	N/A	0.20	µg/L	2017-11-21	
Zinc, total	< 1.0	AO ≤ 5000	1.0	µg/L	2017-11-21	
Zirconium, total	**0.206**	N/A	0.020	µg/L	2017-11-21	
Microbiological Parameters						
Coliforms, Total	**130**	MAC = 0	1	CFU/100 mL	2017-11-15	
Background Colonies	**> 200**	N/A	200	CFU/100 mL	2017-11-15	
E. coli	**10**	MAC = 0	1	CFU/100 mL	2017-11-15	
Harris Creek (Hwy 6) (7111167-02) | Matrix: Water | Sampled: 2017-11-14 10:50						F1, FILT, PRES
Anions						
Chloride	**3.71**	AO ≤ 250	0.10	mg/L	2017-11-17	
Nitrate (as N)	**0.038**	MAC = 10	0.010	mg/L	2017-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2017-11-17	
Sulfate	**32.9**	AO ≤ 500	1.0	mg/L	2017-11-17	
General Parameters						
Ammonia, Total (as N)	**0.024**	None Required	0.020	mg/L	2017-11-18	
Conductivity (EC)	**335**	N/A	2.0	µS/cm	2017-11-15	
Nitrogen, Total Kjeldahl	**0.164**	N/A	0.050	mg/L	2017-11-17	
pH	**8.05**	7.0-10.5	0.10	pH units	2017-11-15	HT2
Phosphorus, Total (as P)	**0.0186**	N/A	0.0020	mg/L	2017-11-16	
Phosphorus, Total Dissolved	**0.0159**	N/A	0.0020	mg/L	2017-11-16	
Turbidity	**0.62**	OG < 1	0.10	NTU	2017-11-14	
Calculated Parameters						
Hardness, Total (as CaCO3)	**154**	None Required	0.100	mg/L	N/A	

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Harris Creek (Hwy 6) (7111167-02) | Matrix: Water | Sampled: 2017-11-14 10:50, Continued						F1, FILT, PRES
Calculated Parameters, Continued						
Nitrate+Nitrite (as N)	**0.0380**	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	**0.202**	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**1.5**	N/A	1.0	µg/L	2017-11-22	
Total Metals						
Aluminum, total	**9.0**	OG < 100	2.0	µg/L	2017-11-21	
Antimony, total	**0.077**	MAC = 6	0.050	µg/L	2017-11-21	
Arsenic, total	**1.26**	MAC = 10	0.050	µg/L	2017-11-21	
Barium, total	**20.3**	MAC = 1000	0.10	µg/L	2017-11-21	
Beryllium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Boron, total	**5.3**	MAC = 5000	2.0	µg/L	2017-11-21	
Cadmium, total	**0.0080**	MAC = 5	0.0020	µg/L	2017-11-21	
Calcium, total	**46400**	N/A	40	µg/L	2017-11-21	
Chromium, total	**0.65**	MAC = 50	0.10	µg/L	2017-11-21	
Cobalt, total	**0.0761**	N/A	0.0050	µg/L	2017-11-21	
Copper, total	**0.64**	AO ≤ 1000	0.20	µg/L	2017-11-21	
Iron, total	**238**	AO ≤ 300	2.0	µg/L	2017-11-21	
Lead, total	< 0.050	MAC = 10	0.050	µg/L	2017-11-21	
Lithium, total	**4.36**	N/A	0.050	µg/L	2017-11-21	
Magnesium, total	**9110**	N/A	5.0	µg/L	2017-11-21	
Manganese, total	**50.7**	AO ≤ 50	0.050	µg/L	2017-11-21	
Molybdenum, total	**2.90**	N/A	0.010	µg/L	2017-11-21	
Nickel, total	**1.34**	N/A	0.040	µg/L	2017-11-21	
Phosphorus, total	**26**	N/A	10	µg/L	2017-11-21	
Potassium, total	**3190**	N/A	10	µg/L	2017-11-21	
Selenium, total	**0.59**	MAC = 50	0.10	µg/L	2017-11-21	
Silicon, total	**7720**	N/A	100	µg/L	2017-11-21	
Silver, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Sodium, total	**7940**	AO ≤ 200000	20	µg/L	2017-11-21	
Strontium, total	**236**	N/A	0.10	µg/L	2017-11-21	
Sulfur, total	**10600**	N/A	1000	µg/L	2017-11-21	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Thallium, total	< 0.0040	N/A	0.0040	µg/L	2017-11-21	
Thorium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Tin, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Titanium, total	**0.81**	N/A	0.20	µg/L	2017-11-21	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2017-11-21	
Uranium, total	**1.74**	MAC = 20	0.0010	µg/L	2017-11-21	
Vanadium, total	**0.76**	N/A	0.20	µg/L	2017-11-21	
Zinc, total	< 1.0	AO ≤ 5000	1.0	µg/L	2017-11-21	

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Harris Creek (Hwy 6) (7111167-02) | Matrix: Water | Sampled: 2017-11-14 10:50, Continued						F1, FILT, PRES
Total Metals, Continued						
Zirconium, total	**0.098**	N/A	0.020	µg/L	2017-11-21	
Microbiological Parameters						
Coliforms, Total	**550**	MAC = 0	1	CFU/100 mL	2017-11-15	
Background Colonies	**> 200**	N/A	200	CFU/100 mL	2017-11-15	
E. coli	**50**	MAC = 0	1	CFU/100 mL	2017-11-15	
Lower Bessette Creek (7111167-03) | Matrix: Water | Sampled: 2017-11-14 10:00						F1, FILT, PRES
Anions						
Chloride	**9.05**	AO ≤ 250	0.10	mg/L	2017-11-17	
Nitrate (as N)	**0.253**	MAC = 10	0.010	mg/L	2017-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2017-11-17	
Sulfate	**36.1**	AO ≤ 500	1.0	mg/L	2017-11-17	
General Parameters						
Ammonia, Total (as N)	**0.037**	None Required	0.020	mg/L	2017-11-18	
Conductivity (EC)	**353**	N/A	2.0	µS/cm	2017-11-15	
Nitrogen, Total Kjeldahl	**0.226**	N/A	0.050	mg/L	2017-11-17	
pH	**8.18**	7.0-10.5	0.10	pH units	2017-11-15	HT2
Phosphorus, Total (as P)	**0.0339**	N/A	0.0020	mg/L	2017-11-16	
Phosphorus, Total Dissolved	**0.0111**	N/A	0.0020	mg/L	2017-11-16	
Turbidity	**8.98**	OG < 1	0.10	NTU	2017-11-14	
Calculated Parameters						
Hardness, Total (as CaCO3)	**161**	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.253**	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	**0.479**	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**3.3**	N/A	1.0	µg/L	2017-11-22	
Total Metals						
Aluminum, total	**663**	OG < 100	2.0	µg/L	2017-11-21	
Antimony, total	**0.095**	MAC = 6	0.050	µg/L	2017-11-21	
Arsenic, total	**0.838**	MAC = 10	0.050	µg/L	2017-11-21	
Barium, total	**35.6**	MAC = 1000	0.10	µg/L	2017-11-21	
Beryllium, total	**0.024**	N/A	0.010	µg/L	2017-11-21	
Bismuth, total	**0.011**	N/A	0.010	µg/L	2017-11-21	
Boron, total	**6.0**	MAC = 5000	2.0	µg/L	2017-11-21	
Cadmium, total	**0.0403**	MAC = 5	0.0020	µg/L	2017-11-21	
Calcium, total	**48700**	N/A	40	µg/L	2017-11-21	
Chromium, total	**2.68**	MAC = 50	0.10	µg/L	2017-11-21	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO Mid Shuswap Lumby Water Stewards
PROJECT Analytical Testing

WORK ORDER 7111167
REPORTED 2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Lower Bessette Creek (7111167-03) | Matrix: Water | Sampled: 2017-11-14 10:00, Continued						F1, FILT, PRES
Total Metals, Continued						
Cobalt, total	**0.588**	N/A	0.0050	µg/L	2017-11-21	
Copper, total	**2.53**	AO ≤ 1000	0.20	µg/L	2017-11-21	
Iron, total	**1230**	AO ≤ 300	2.0	µg/L	2017-11-21	
Lead, total	**0.403**	MAC = 10	0.050	µg/L	2017-11-21	
Lithium, total	**4.09**	N/A	0.050	µg/L	2017-11-21	
Magnesium, total	**9520**	N/A	5.0	µg/L	2017-11-21	
Manganese, total	**34.1**	AO ≤ 50	0.050	µg/L	2017-11-21	
Molybdenum, total	**2.57**	N/A	0.010	µg/L	2017-11-21	
Nickel, total	**2.73**	N/A	0.040	µg/L	2017-11-21	
Phosphorus, total	**39**	N/A	10	µg/L	2017-11-21	
Potassium, total	**3360**	N/A	10	µg/L	2017-11-21	
Selenium, total	**1.25**	MAC = 50	0.10	µg/L	2017-11-21	
Silicon, total	**7090**	N/A	100	µg/L	2017-11-21	
Silver, total	**0.016**	N/A	0.010	µg/L	2017-11-21	
Sodium, total	**9150**	AO ≤ 200000	20	µg/L	2017-11-21	
Strontium, total	**284**	N/A	0.10	µg/L	2017-11-21	
Sulfur, total	**11600**	N/A	1000	µg/L	2017-11-21	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Thallium, total	< 0.0040	N/A	0.0040	µg/L	2017-11-21	
Thorium, total	**0.146**	N/A	0.010	µg/L	2017-11-21	
Tin, total	**0.068**	N/A	0.050	µg/L	2017-11-21	
Titanium, total	**57.6**	N/A	0.20	µg/L	2017-11-21	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2017-11-21	
Uranium, total	**2.08**	MAC = 20	0.0010	µg/L	2017-11-21	
Vanadium, total	**2.84**	N/A	0.20	µg/L	2017-11-21	
Zinc, total	**4.5**	AO ≤ 5000	1.0	µg/L	2017-11-21	
Zirconium, total	**0.213**	N/A	0.020	µg/L	2017-11-21	
Microbiological Parameters						
Coliforms, Total	**870**	MAC = 0	1	CFU/100 mL	2017-11-15	
Background Colonies	**> 200**	N/A	200	CFU/100 mL	2017-11-15	
E. coli	**76**	MAC = 0	1	CFU/100 mL	2017-11-15	
Mid Bessette Creek (7111167-04) | Matrix: Water | Sampled: 2017-11-14 10:15						F1, FILT, PRES
Anions						
Chloride	**8.50**	AO ≤ 250	0.10	mg/L	2017-11-17	
Nitrate (as N)	**0.252**	MAC = 10	0.010	mg/L	2017-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2017-11-17	
Sulfate	**35.2**	AO ≤ 500	1.0	mg/L	2017-11-17	
General Parameters						

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Mid Bessette Creek (7111167-04) | Matrix: Water | Sampled: 2017-11-14 10:15, Continued						F1, FILT, PRES
General Parameters, Continued						
Ammonia, Total (as N)	**0.029**	None Required	0.020	mg/L	2017-11-18	
Conductivity (EC)	**343**	N/A	2.0	µS/cm	2017-11-15	
Nitrogen, Total Kjeldahl	**0.148**	N/A	0.050	mg/L	2017-11-17	
pH	**8.12**	7.0-10.5	0.10	pH units	2017-11-15	HT2
Phosphorus, Total (as P)	**0.0205**	N/A	0.0020	mg/L	2017-11-16	
Phosphorus, Total Dissolved	**0.0143**	N/A	0.0020	mg/L	2017-11-16	
Turbidity	**1.09**	OG < 1	0.10	NTU	2017-11-14	
Calculated Parameters						
Hardness, Total (as CaCO3)	**144**	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.252**	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	**0.400**	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**2.3**	N/A	1.0	µg/L	2017-11-22	
Total Metals						
Aluminum, total	**37.8**	OG < 100	2.0	µg/L	2017-11-21	
Antimony, total	**0.066**	MAC = 6	0.050	µg/L	2017-11-21	
Arsenic, total	**0.607**	MAC = 10	0.050	µg/L	2017-11-21	
Barium, total	**25.4**	MAC = 1000	0.10	µg/L	2017-11-21	
Beryllium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Boron, total	**5.6**	MAC = 5000	2.0	µg/L	2017-11-21	
Cadmium, total	**0.0114**	MAC = 5	0.0020	µg/L	2017-11-21	
Calcium, total	**44200**	N/A	40	µg/L	2017-11-21	
Chromium, total	**0.70**	MAC = 50	0.10	µg/L	2017-11-21	
Cobalt, total	**0.0867**	N/A	0.0050	µg/L	2017-11-21	
Copper, total	**0.75**	AO ≤ 1000	0.20	µg/L	2017-11-21	
Iron, total	**220**	AO ≤ 300	2.0	µg/L	2017-11-21	
Lead, total	< 0.050	MAC = 10	0.050	µg/L	2017-11-21	
Lithium, total	**3.23**	N/A	0.050	µg/L	2017-11-21	
Magnesium, total	**8100**	N/A	5.0	µg/L	2017-11-21	
Manganese, total	**37.8**	AO ≤ 50	0.050	µg/L	2017-11-21	
Molybdenum, total	**2.32**	N/A	0.010	µg/L	2017-11-21	
Nickel, total	**1.15**	N/A	0.040	µg/L	2017-11-21	
Phosphorus, total	**20**	N/A	10	µg/L	2017-11-21	
Potassium, total	**2930**	N/A	10	µg/L	2017-11-21	
Selenium, total	**1.25**	MAC = 50	0.10	µg/L	2017-11-21	
Silicon, total	**5960**	N/A	100	µg/L	2017-11-21	
Silver, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Sodium, total	**7990**	AO ≤ 200000	20	µg/L	2017-11-21	
Strontium, total	**246**	N/A	0.10	µg/L	2017-11-21	

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Mid Bessette Creek (7111167-04) | Matrix: Water | Sampled: 2017-11-14 10:15, Continued						F1, FILT, PRES
Total Metals, Continued						
Sulfur, total	**10600**	N/A	1000	µg/L	2017-11-21	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Thallium, total	< 0.0040	N/A	0.0040	µg/L	2017-11-21	
Thorium, total	**0.014**	N/A	0.010	µg/L	2017-11-21	
Tin, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Titanium, total	**2.34**	N/A	0.20	µg/L	2017-11-21	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2017-11-21	
Uranium, total	**1.68**	MAC = 20	0.0010	µg/L	2017-11-21	
Vanadium, total	**0.65**	N/A	0.20	µg/L	2017-11-21	
Zinc, total	< 1.0	AO ≤ 5000	1.0	µg/L	2017-11-21	
Zirconium, total	**0.131**	N/A	0.020	µg/L	2017-11-21	
Microbiological Parameters						
Coliforms, Total	**300**	MAC = 0	1	CFU/100 mL	2017-11-15	
Background Colonies	**> 200**	N/A	200	CFU/100 mL	2017-11-15	
E. coli	**42**	MAC = 0	1	CFU/100 mL	2017-11-15	
Vance Creek (Mabel Lake Road) (7111167-05) | Matrix: Water | Sampled: 2017-11-14 10:30						F1, FILT, PRES
Anions						
Chloride	**3.49**	AO ≤ 250	0.10	mg/L	2017-11-17	
Nitrate (as N)	**0.027**	MAC = 10	0.010	mg/L	2017-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2017-11-17	
Sulfate	**38.8**	AO ≤ 500	1.0	mg/L	2017-11-17	
General Parameters						
Ammonia, Total (as N)	< 0.020	None Required	0.020	mg/L	2017-11-18	
Conductivity (EC)	**420**	N/A	2.0	µS/cm	2017-11-15	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2017-11-17	
pH	**8.30**	7.0-10.5	0.10	pH units	2017-11-15	HT2
Phosphorus, Total (as P)	< 0.0020	N/A	0.0020	mg/L	2017-11-16	
Phosphorus, Total Dissolved	< 0.0020	N/A	0.0020	mg/L	2017-11-16	
Turbidity	**0.20**	OG < 1	0.10	NTU	2017-11-14	
Calculated Parameters						
Hardness, Total (as CaCO3)	**189**	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.0269**	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	< 1.0	N/A	1.0	µg/L	2017-11-22	
Total Metals						

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Vance Creek (Mabel Lake Road) (7111167-05) | Matrix: Water | Sampled: 2017-11-14 10:30, Continued						F1, FILT, PRES
Total Metals, Continued						
Aluminum, total	**3.1**	OG < 100	2.0	µg/L	2017-11-21	
Antimony, total	**0.057**	MAC = 6	0.050	µg/L	2017-11-21	
Arsenic, total	**0.260**	MAC = 10	0.050	µg/L	2017-11-21	
Barium, total	**31.7**	MAC = 1000	0.10	µg/L	2017-11-21	
Beryllium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Boron, total	**2.8**	MAC = 5000	2.0	µg/L	2017-11-21	
Cadmium, total	**0.0213**	MAC = 5	0.0020	µg/L	2017-11-21	
Calcium, total	**64000**	N/A	40	µg/L	2017-11-21	
Chromium, total	**0.82**	MAC = 50	0.10	µg/L	2017-11-21	
Cobalt, total	**0.0139**	N/A	0.0050	µg/L	2017-11-21	
Copper, total	**0.27**	AO ≤ 1000	0.20	µg/L	2017-11-21	
Iron, total	**9.4**	AO ≤ 300	2.0	µg/L	2017-11-21	
Lead, total	< 0.050	MAC = 10	0.050	µg/L	2017-11-21	
Lithium, total	**2.71**	N/A	0.050	µg/L	2017-11-21	
Magnesium, total	**7110**	N/A	5.0	µg/L	2017-11-21	
Manganese, total	**0.675**	AO ≤ 50	0.050	µg/L	2017-11-21	
Molybdenum, total	**2.50**	N/A	0.010	µg/L	2017-11-21	
Nickel, total	**0.193**	N/A	0.040	µg/L	2017-11-21	
Phosphorus, total	< 10	N/A	10	µg/L	2017-11-21	
Potassium, total	**1730**	N/A	10	µg/L	2017-11-21	
Selenium, total	**3.53**	MAC = 50	0.10	µg/L	2017-11-21	
Silicon, total	**5930**	N/A	100	µg/L	2017-11-21	
Silver, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Sodium, total	**3600**	AO ≤ 200000	20	µg/L	2017-11-21	
Strontium, total	**394**	N/A	0.10	µg/L	2017-11-21	
Sulfur, total	**10500**	N/A	1000	µg/L	2017-11-21	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Thallium, total	< 0.0040	N/A	0.0040	µg/L	2017-11-21	
Thorium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Tin, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Titanium, total	< 0.20	N/A	0.20	µg/L	2017-11-21	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2017-11-21	
Uranium, total	**1.85**	MAC = 20	0.0010	µg/L	2017-11-21	
Vanadium, total	**0.27**	N/A	0.20	µg/L	2017-11-21	
Zinc, total	< 1.0	AO ≤ 5000	1.0	µg/L	2017-11-21	
Zirconium, total	< 0.020	N/A	0.020	µg/L	2017-11-21	
Microbiological Parameters						
Coliforms, Total	**130**	MAC = 0	1	CFU/100 mL	2017-11-15	
Background Colonies	**> 200**	N/A	200	CFU/100 mL	2017-11-15	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2017-11-15	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Shuswap River (Wilsey Dam) (7111167-06) | Matrix: Water | Sampled: 2017-11-14 09:48						F1, FILT, PRES
Anions						
Chloride	**0.46**	AO ≤ 250	0.10	mg/L	2017-11-17	
Nitrate (as N)	**0.038**	MAC = 10	0.010	mg/L	2017-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2017-11-17	
Sulfate	**6.8**	AO ≤ 500	1.0	mg/L	2017-11-17	
General Parameters						
Ammonia, Total (as N)	**0.021**	None Required	0.020	mg/L	2017-11-18	
Conductivity (EC)	**115**	N/A	2.0	µS/cm	2017-11-15	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2017-11-17	
pH	**7.97**	7.0-10.5	0.10	pH units	2017-11-15	HT2
Phosphorus, Total (as P)	< 0.0020	N/A	0.0020	mg/L	2017-11-16	
Phosphorus, Total Dissolved	< 0.0020	N/A	0.0020	mg/L	2017-11-16	
Turbidity	**0.28**	OG < 1	0.10	NTU	2017-11-14	
Calculated Parameters						
Hardness, Total (as CaCO3)	**45.5**	None Required	0.100	mg/L	N/A	
Nitrate+Nitrite (as N)	**0.0381**	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**5.5**	N/A	1.0	µg/L	2017-11-22	
Total Metals						
Aluminum, total	**10.1**	OG < 100	2.0	µg/L	2017-11-21	
Antimony, total	< 0.050	MAC = 6	0.050	µg/L	2017-11-21	
Arsenic, total	**0.147**	MAC = 10	0.050	µg/L	2017-11-21	
Barium, total	**9.11**	MAC = 1000	0.10	µg/L	2017-11-21	
Beryllium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2017-11-21	
Cadmium, total	**0.0045**	MAC = 5	0.0020	µg/L	2017-11-21	
Calcium, total	**15000**	N/A	40	µg/L	2017-11-21	
Chromium, total	**0.61**	MAC = 50	0.10	µg/L	2017-11-21	
Cobalt, total	**0.0076**	N/A	0.0050	µg/L	2017-11-21	
Copper, total	**0.29**	AO ≤ 1000	0.20	µg/L	2017-11-21	
Iron, total	**20.2**	AO ≤ 300	2.0	µg/L	2017-11-21	
Lead, total	< 0.050	MAC = 10	0.050	µg/L	2017-11-21	
Lithium, total	**0.626**	N/A	0.050	µg/L	2017-11-21	
Magnesium, total	**1950**	N/A	5.0	µg/L	2017-11-21	
Manganese, total	**2.26**	AO ≤ 50	0.050	µg/L	2017-11-21	
Molybdenum, total	**0.733**	N/A	0.010	µg/L	2017-11-21	
Nickel, total	**0.167**	N/A	0.040	µg/L	2017-11-21	
Phosphorus, total	< 10	N/A	10	µg/L	2017-11-21	

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Shuswap River (Wilsey Dam) (7111167-06) | Matrix: Water | Sampled: 2017-11-14 09:48, Continued						F1, FILT, PRES
Total Metals, Continued						
Potassium, total	**770**	N/A	10	µg/L	2017-11-21	
Selenium, total	**0.44**	MAC = 50	0.10	µg/L	2017-11-21	
Silicon, total	**2540**	N/A	100	µg/L	2017-11-21	
Silver, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Sodium, total	**1170**	AO ≤ 200000	20	µg/L	2017-11-21	
Strontium, total	**71.0**	N/A	0.10	µg/L	2017-11-21	
Sulfur, total	**1700**	N/A	1000	µg/L	2017-11-21	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Thallium, total	< 0.0040	N/A	0.0040	µg/L	2017-11-21	
Thorium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Tin, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Titanium, total	**0.30**	N/A	0.20	µg/L	2017-11-21	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2017-11-21	
Uranium, total	**0.428**	MAC = 20	0.0010	µg/L	2017-11-21	
Vanadium, total	**0.32**	N/A	0.20	µg/L	2017-11-21	
Zinc, total	< 1.0	AO ≤ 5000	1.0	µg/L	2017-11-21	
Zirconium, total	**0.021**	N/A	0.020	µg/L	2017-11-21	
Microbiological Parameters						
Coliforms, Total	**21**	MAC = 0	1	CFU/100 mL	2017-11-15	
Background Colonies	**> 200**	N/A	200	CFU/100 mL	2017-11-15	
E. coli	**2**	MAC = 0	1	CFU/100 mL	2017-11-15	
Shuswap River (Odd Fellows) (7111167-07) | Matrix: Water | Sampled: 2017-11-14 09:20						F1, FILT, PRES
Anions						
Chloride	**1.08**	AO ≤ 250	0.10	mg/L	2017-11-17	
Nitrate (as N)	**0.037**	MAC = 10	0.010	mg/L	2017-11-17	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2017-11-17	
Sulfate	**10.0**	AO ≤ 500	1.0	mg/L	2017-11-17	
General Parameters						
Ammonia, Total (as N)	**0.020**	None Required	0.020	mg/L	2017-11-18	
Conductivity (EC)	**132**	N/A	2.0	µS/cm	2017-11-15	
Nitrogen, Total Kjeldahl	**0.108**	N/A	0.050	mg/L	2017-11-17	
pH	**7.85**	7.0-10.5	0.10	pH units	2017-11-15	HT2
Phosphorus, Total (as P)	< 0.0020	N/A	0.0020	mg/L	2017-11-16	
Phosphorus, Total Dissolved	< 0.0020	N/A	0.0020	mg/L	2017-11-16	
Turbidity	**0.49**	OG < 1	0.10	NTU	2017-11-14	
Calculated Parameters						
Hardness, Total (as CaCO3)	**53.9**	None Required	0.100	mg/L	N/A	

CARO ANALYTICAL SERVICES

TEST RESULTS

REPORTED TO Mid Shuswap Lumby Water Stewards
PROJECT Analytical Testing

WORK ORDER 7111167
REPORTED 2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Shuswap River (Odd Fellows) (7111167-07) | Matrix: Water | Sampled: 2017-11-14 09:20, Continued						F1, FILT, PRES
Calculated Parameters, Continued						
Nitrate+Nitrite (as N)	**0.0372**	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	**0.145**	N/A	0.0500	mg/L	N/A	
Dissolved Metals						
Aluminum, dissolved	**5.2**	N/A	1.0	µg/L	2017-11-22	
Total Metals						
Aluminum, total	**11.2**	OG < 100	2.0	µg/L	2017-11-21	
Antimony, total	< 0.050	MAC = 6	0.050	µg/L	2017-11-21	
Arsenic, total	**0.191**	MAC = 10	0.050	µg/L	2017-11-21	
Barium, total	**10.4**	MAC = 1000	0.10	µg/L	2017-11-21	
Beryllium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Bismuth, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Boron, total	< 2.0	MAC = 5000	2.0	µg/L	2017-11-21	
Cadmium, total	**0.0082**	MAC = 5	0.0020	µg/L	2017-11-21	
Calcium, total	**17600**	N/A	40	µg/L	2017-11-21	
Chromium, total	**0.71**	MAC = 50	0.10	µg/L	2017-11-21	
Cobalt, total	**0.0168**	N/A	0.0050	µg/L	2017-11-21	
Copper, total	**0.32**	AO ≤ 1000	0.20	µg/L	2017-11-21	
Iron, total	**45.5**	AO ≤ 300	2.0	µg/L	2017-11-21	
Lead, total	< 0.050	MAC = 10	0.050	µg/L	2017-11-21	
Lithium, total	**0.790**	N/A	0.050	µg/L	2017-11-21	
Magnesium, total	**2430**	N/A	5.0	µg/L	2017-11-21	
Manganese, total	**8.90**	AO ≤ 50	0.050	µg/L	2017-11-21	
Molybdenum, total	**0.930**	N/A	0.010	µg/L	2017-11-21	
Nickel, total	**0.213**	N/A	0.040	µg/L	2017-11-21	
Phosphorus, total	< 10	N/A	10	µg/L	2017-11-21	
Potassium, total	**904**	N/A	10	µg/L	2017-11-21	
Selenium, total	**0.48**	MAC = 50	0.10	µg/L	2017-11-21	
Silicon, total	**2770**	N/A	100	µg/L	2017-11-21	
Silver, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Sodium, total	**1620**	AO ≤ 200000	20	µg/L	2017-11-21	
Strontium, total	**85.4**	N/A	0.10	µg/L	2017-11-21	
Sulfur, total	**2300**	N/A	1000	µg/L	2017-11-21	
Tellurium, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Thallium, total	< 0.0040	N/A	0.0040	µg/L	2017-11-21	
Thorium, total	< 0.010	N/A	0.010	µg/L	2017-11-21	
Tin, total	< 0.050	N/A	0.050	µg/L	2017-11-21	
Titanium, total	**0.40**	N/A	0.20	µg/L	2017-11-21	
Tungsten, total	< 0.20	N/A	0.20	µg/L	2017-11-21	
Uranium, total	**0.564**	MAC = 20	0.0010	µg/L	2017-11-21	
Vanadium, total	**0.35**	N/A	0.20	µg/L	2017-11-21	
Zinc, total	< 1.0	AO ≤ 5000	1.0	µg/L	2017-11-21	

TEST RESULTS

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Shuswap River (Odd Fellows) (7111167-07) | Matrix: Water | Sampled: 2017-11-14 09:20, Continued						F1, FILT, PRES
Total Metals, Continued						
Zirconium, total	**0.022**	N/A	0.020	µg/L	2017-11-21	
Microbiological Parameters						
Coliforms, Total	**110**	MAC = 0	1	CFU/100 mL	2017-11-15	
Background Colonies	**> 200**	N/A	200	CFU/100 mL	2017-11-15	
E. coli	**1**	MAC = 0	1	CFU/100 mL	2017-11-15	

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.
PRES	Sample has been preserved for TP, DP, TN, NH3 in the laboratory and the holding time has been extended.

APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO	Mid Shuswap Lumby Water Stewards	**WORK ORDER**	7111167
PROJECT	Analytical Testing	**REPORTED**	2017-11-22 13:08

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
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	Richmond
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
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	HNO3+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
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)

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