

REPORTED TO	Mid Shuswap Lumby Water Stewards 1631 Mable Lake Rd Lumby, BC V0E 2G6	TEL	(250) 547-2554
		FAX	-
ATTENTION	Russ Collins	WORK ORDER	5081013
PO NUMBER		RECEIVED / TEMP	Aug-17-15 09:30 / 6°C
PROJECT	Analytical Testing	REPORTED	Aug-24-15
PROJECT INFO		COC NUMBER	40837.5581

General Comments:

CARO Analytical Services employs methods which are conducted according to procedures accepted by appropriate regulatory agencies, and/or are conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts, except where otherwise agreed to by the client.

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REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards
Analytical Testing

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Analysis Description	Method Reference	Technique	Location
Ammonia-N in Water (total)	APHA 4500-NH3 G*	Automated Colorimetry (Phenate)	Kelowna
Anions in Water by IC	APHA 4110 B	Ion Chromatography with Chemical Suppression of Eluent Conductivity	Kelowna
Conductivity in Water	APHA 2510 B	Conductivity Meter	Kelowna
E. coli (Partition)	APHA 9222 G	Membrane Filtration / Nutrient Agar with MUG	Kelowna
Hardness (as CaCO3)	APHA 2340 B	Calculation	N/A
Mercury, total by CVAFS (low)	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna
Total Kjeldahl Nitrogen in Water	APHA 4500-Norg D*	Block Digestion and Flow Injection Analysis	Kelowna
Total Phosphorus in Water	APHA 4500-P B.5 / APHA 4500-P F	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Total Phosphorus, dissolved	APHA 4500-P B.5 / APHA 4500-P F	Persulfate Digestion / Automated Colorimetry (Ascorbic Acid)	Kelowna
Total Recoverable Metals	APHA 3030E* / APHA 3125 B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma Mass Spectrometry (ICP-MS)	Richmond
Turbidity	APHA 2130 B	Nephelometry	Kelowna

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

Method Reference Descriptions:

APHA Standard Methods for the Examination of Water and Wastewater, 22nd Edition, American Public Health Association/American Water Works Association/Water Environment Federation
EPA United States Environmental Protection Agency Test Methods

Glossary of Terms:

MRL Method Reporting Limit
< Less than the Reported Detection Limit (RDL) - the RDL may be higher than the MRL due to various factors such as dilutions, limited sample volume, high moisture, or interferences
CFU/100 mL Colony Forming Units per 100 millilitres
mg/L Milligrams per litre
NTU Nephelometric Turbidity Units
pH units pH < 7 = acidic, pH > 7 = basic
µg/L Micrograms per litre
µS/cm Microsiemens per centimetre

Standards / Guidelines Referenced in this Report:

Guidelines for Canadian Drinking Water Quality (Oct 2014)
Website: http://www.hc-sc.gc.ca/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/sum_guide-res_recom-eng.pdf

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

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Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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Sample ID: Harris Creek (Hwy 6) (5081013-01) [Water] Sampled: Aug-16-15

PRES

Anions

Chloride	3.59	AO ≤ 250	0.10	mg/L	N/A	Aug-19-15	
Nitrate as N	0.019	MAC = 10	0.010	mg/L	N/A	Aug-19-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Aug-19-15	
Sulfate	17.9	AO ≤ 500	1.0	mg/L	N/A	Aug-19-15	

General Parameters

Conductivity (EC)	271	N/A	2	µS/cm	N/A	Aug-17-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Aug-20-15	
Nitrogen, Total Kjeldahl	0.13	N/A	0.05	mg/L	Aug-18-15	Aug-19-15	
pH	8.12	6.5-8.5	0.01	pH units	N/A	Aug-17-15	HT2
Phosphorus, Total as P	0.037	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Phosphorus, Total Dissolved	0.026	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Turbidity	1.3	OG < 0.1	0.1	NTU	N/A	Aug-18-15	

Calculated Parameters

Hardness, Total (Total as CaCO3)	129	N/A	0.1	mg/L	N/A	N/A	
Nitrate+Nitrite as N	0.019	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.151	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	49	OG < 100	1	µg/L	Aug-20-15	Aug-21-15	
Antimony, total	< 0.05	MAC = 6	0.05	µg/L	Aug-20-15	Aug-21-15	
Arsenic, total	1.33	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Barium, total	20.1	MAC = 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Beryllium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Boron, total	4	MAC = 5000	1	µg/L	Aug-20-15	Aug-21-15	
Cadmium, total	0.004	MAC = 5	0.002	µg/L	Aug-20-15	Aug-21-15	
Calcium, total	39600	N/A	40	µg/L	Aug-20-15	Aug-21-15	
Chromium, total	0.4	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Cobalt, total	0.095	N/A	0.005	µg/L	Aug-20-15	Aug-21-15	
Copper, total	0.7	AO ≤ 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Iron, total	328	AO ≤ 300	2	µg/L	Aug-20-15	Aug-21-15	
Lead, total	0.05	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Lithium, total	4.48	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Magnesium, total	7200	N/A	5.0	µg/L	Aug-20-15	Aug-21-15	
Manganese, total	45.8	AO ≤ 50	0.05	µg/L	Aug-20-15	Aug-21-15	
Mercury, total	< 0.005	MAC = 1	0.005	µg/L	Aug-20-15	Aug-21-15	
Molybdenum, total	1.99	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Nickel, total	1.66	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	
Phosphorus, total	12	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Potassium, total	2930	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Selenium, total	0.4	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Silicon, total	8300	N/A	50	µg/L	Aug-20-15	Aug-21-15	
Silver, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Sodium, total	6580	AO ≤ 200000	10	µg/L	Aug-20-15	Aug-21-15	
Strontium, total	193	N/A	0.1	µg/L	Aug-20-15	Aug-21-15	

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Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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Sample ID: Harris Creek (Hwy 6) (5081013-01) [Water] Sampled: Aug-16-15, Continued

PRES

Total Recoverable Metals, Continued

Sulfur, total	5900	N/A	500	µg/L	Aug-20-15	Aug-21-15	
Tellurium, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Thallium, total	< 0.004	N/A	0.004	µg/L	Aug-20-15	Aug-21-15	
Thorium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Tin, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Titanium, total	3.2	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Uranium, total	0.887	MAC = 20	0.001	µg/L	Aug-20-15	Aug-21-15	
Vanadium, total	1.2	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Zinc, total	< 1	AO ≤ 5000	1	µg/L	Aug-20-15	Aug-21-15	
Zirconium, total	0.11	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	

Microbiological Parameters

E. coli	230	MAC = None Detected	1	CFU/100 mL	Aug-17-15	Aug-18-15	
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Sample ID: Duteau Creek (Hwy 6) (5081013-02) [Water] Sampled: Aug-16-15

PRES

Anions

Chloride	4.82	AO ≤ 250	0.10	mg/L	N/A	Aug-19-15	
Nitrate as N	0.084	MAC = 10	0.010	mg/L	N/A	Aug-19-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Aug-19-15	
Sulfate	9.2	AO ≤ 500	1.0	mg/L	N/A	Aug-19-15	

General Parameters

Conductivity (EC)	142	N/A	2	µS/cm	N/A	Aug-17-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Aug-20-15	
Nitrogen, Total Kjeldahl	0.38	N/A	0.05	mg/L	Aug-18-15	Aug-19-15	
pH	7.89	6.5-8.5	0.01	pH units	N/A	Aug-17-15	HT2
Phosphorus, Total as P	0.025	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Phosphorus, Total Dissolved	0.016	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Turbidity	1.6	OG < 0.1	0.1	NTU	N/A	Aug-18-15	

Calculated Parameters

Hardness, Total (Total as CaCO3)	62.1	N/A	0.1	mg/L	N/A	N/A	
Nitrate+Nitrite as N	0.084	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.460	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	56	OG < 100	1	µg/L	Aug-20-15	Aug-21-15	
Antimony, total	< 0.05	MAC = 6	0.05	µg/L	Aug-20-15	Aug-21-15	
Arsenic, total	0.41	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Barium, total	18.0	MAC = 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Beryllium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Boron, total	4	MAC = 5000	1	µg/L	Aug-20-15	Aug-21-15	
Cadmium, total	0.005	MAC = 5	0.002	µg/L	Aug-20-15	Aug-21-15	
Calcium, total	18900	N/A	40	µg/L	Aug-20-15	Aug-21-15	

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Sample ID: Duteau Creek (Hwy 6) (5081013-02) [Water] Sampled: Aug-16-15, Continued

PRES

Total Recoverable Metals, Continued

Chromium, total	0.3	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Cobalt, total	0.074	N/A	0.005	µg/L	Aug-20-15	Aug-21-15	
Copper, total	1.1	AO ≤ 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Iron, total	344	AO ≤ 300	2	µg/L	Aug-20-15	Aug-21-15	
Lead, total	0.06	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Lithium, total	1.45	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Magnesium, total	3630	N/A	5.0	µg/L	Aug-20-15	Aug-21-15	
Manganese, total	33.1	AO ≤ 50	0.05	µg/L	Aug-20-15	Aug-21-15	
Mercury, total	< 0.005	MAC = 1	0.005	µg/L	Aug-20-15	Aug-21-15	
Molybdenum, total	1.07	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Nickel, total	1.06	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	
Phosphorus, total	20	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Potassium, total	1950	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Selenium, total	0.4	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Silicon, total	4800	N/A	50	µg/L	Aug-20-15	Aug-21-15	
Silver, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Sodium, total	3700	AO ≤ 200000	10	µg/L	Aug-20-15	Aug-21-15	
Strontium, total	99.9	N/A	0.1	µg/L	Aug-20-15	Aug-21-15	
Sulfur, total	2500	N/A	500	µg/L	Aug-20-15	Aug-21-15	
Tellurium, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Thallium, total	< 0.004	N/A	0.004	µg/L	Aug-20-15	Aug-21-15	
Thorium, total	0.02	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Tin, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Titanium, total	3.1	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Uranium, total	0.441	MAC = 20	0.001	µg/L	Aug-20-15	Aug-21-15	
Vanadium, total	1.1	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Zinc, total	< 1	AO ≤ 5000	1	µg/L	Aug-20-15	Aug-21-15	
Zirconium, total	0.50	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	

Microbiological Parameters

E. coli	110	MAC = None Detected	1	CFU/100 mL	Aug-17-15	Aug-18-15	
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Sample ID: Mid Bessette Creek (5081013-03) [Water] Sampled: Aug-16-15

PRES

Anions

Chloride	6.97	AO ≤ 250	0.10	mg/L	N/A	Aug-19-15	
Nitrate as N	0.134	MAC = 10	0.010	mg/L	N/A	Aug-19-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Aug-19-15	
Sulfate	18.4	AO ≤ 500	1.0	mg/L	N/A	Aug-19-15	

General Parameters

Conductivity (EC)	244	N/A	2	µS/cm	N/A	Aug-17-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Aug-20-15	
Nitrogen, Total Kjeldahl	0.31	N/A	0.05	mg/L	Aug-18-15	Aug-19-15	
pH	8.13	6.5-8.5	0.01	pH units	N/A	Aug-17-15	HT2

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Sample ID: Mid Bessette Creek (5081013-03) [Water] Sampled: Aug-16-15, Continued

PRES

General Parameters, Continued

Phosphorus, Total as P	0.040	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Phosphorus, Total Dissolved	0.024	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Turbidity	2.2	OG < 0.1	0.1	NTU	N/A	Aug-18-15	

Calculated Parameters

Hardness, Total (Total as CaCO ₃)	112	N/A	0.1	mg/L	N/A	N/A	
Nitrate+Nitrite as N	0.134	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.444	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	79	OG < 100	1	µg/L	Aug-20-15	Aug-21-15	
Antimony, total	< 0.05	MAC = 6	0.05	µg/L	Aug-20-15	Aug-21-15	
Arsenic, total	0.67	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Barium, total	24.5	MAC = 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Beryllium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Boron, total	4	MAC = 5000	1	µg/L	Aug-20-15	Aug-21-15	
Cadmium, total	0.012	MAC = 5	0.002	µg/L	Aug-20-15	Aug-21-15	
Calcium, total	35100	N/A	40	µg/L	Aug-20-15	Aug-21-15	
Chromium, total	0.3	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Cobalt, total	0.104	N/A	0.005	µg/L	Aug-20-15	Aug-21-15	
Copper, total	1.0	AO ≤ 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Iron, total	310	AO ≤ 300	2	µg/L	Aug-20-15	Aug-21-15	
Lead, total	0.07	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Lithium, total	2.78	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Magnesium, total	5930	N/A	5.0	µg/L	Aug-20-15	Aug-21-15	
Manganese, total	41.3	AO ≤ 50	0.05	µg/L	Aug-20-15	Aug-21-15	
Mercury, total	< 0.005	MAC = 1	0.005	µg/L	Aug-20-15	Aug-21-15	
Molybdenum, total	1.91	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Nickel, total	1.38	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	
Phosphorus, total	31	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Potassium, total	2510	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Selenium, total	1.0	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Silicon, total	5900	N/A	50	µg/L	Aug-20-15	Aug-21-15	
Silver, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Sodium, total	5950	AO ≤ 200000	10	µg/L	Aug-20-15	Aug-21-15	
Strontium, total	205	N/A	0.1	µg/L	Aug-20-15	Aug-21-15	
Sulfur, total	5900	N/A	500	µg/L	Aug-20-15	Aug-21-15	
Tellurium, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Thallium, total	< 0.004	N/A	0.004	µg/L	Aug-20-15	Aug-21-15	
Thorium, total	0.02	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Tin, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Titanium, total	5.2	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Uranium, total	0.830	MAC = 20	0.001	µg/L	Aug-20-15	Aug-21-15	
Vanadium, total	1.2	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Zinc, total	1	AO ≤ 5000	1	µg/L	Aug-20-15	Aug-21-15	

SAMPLE ANALYTICAL DATA

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Sample ID: Mid Bessette Creek (5081013-03) [Water] Sampled: Aug-16-15, Continued

PRES

Total Recoverable Metals, Continued

Zirconium, total	0.25	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	
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Microbiological Parameters

E. coli	140	MAC = None Detected	1	CFU/100 mL	Aug-17-15	Aug-18-15	
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Sample ID: Lower Bessette Creek (5081013-04) [Water] Sampled: Aug-16-15

PRES

Anions

Chloride	7.11	AO ≤ 250	0.10	mg/L	N/A	Aug-19-15	
Nitrate as N	0.050	MAC = 10	0.010	mg/L	N/A	Aug-19-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Aug-19-15	
Sulfate	21.0	AO ≤ 500	1.0	mg/L	N/A	Aug-19-15	

General Parameters

Conductivity (EC)	263	N/A	2	µS/cm	N/A	Aug-17-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Aug-20-15	
Nitrogen, Total Kjeldahl	0.20	N/A	0.05	mg/L	Aug-18-15	Aug-19-15	
pH	8.28	6.5-8.5	0.01	pH units	N/A	Aug-17-15	HT2
Phosphorus, Total as P	0.029	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Phosphorus, Total Dissolved	0.015	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Turbidity	1.9	OG < 0.1	0.1	NTU	N/A	Aug-18-15	

Calculated Parameters

Hardness, Total (Total as CaCO ₃)	123	N/A	0.1	mg/L	N/A	N/A	
Nitrate+Nitrite as N	0.050	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.253	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	66	OG < 100	1	µg/L	Aug-20-15	Aug-21-15	
Antimony, total	< 0.05	MAC = 6	0.05	µg/L	Aug-20-15	Aug-21-15	
Arsenic, total	0.75	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Barium, total	25.7	MAC = 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Beryllium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Boron, total	5	MAC = 5000	1	µg/L	Aug-20-15	Aug-21-15	
Cadmium, total	0.017	MAC = 5	0.002	µg/L	Aug-20-15	Aug-21-15	
Calcium, total	38000	N/A	40	µg/L	Aug-20-15	Aug-21-15	
Chromium, total	0.2	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Cobalt, total	0.096	N/A	0.005	µg/L	Aug-20-15	Aug-21-15	
Copper, total	1.1	AO ≤ 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Iron, total	232	AO ≤ 300	2	µg/L	Aug-20-15	Aug-21-15	
Lead, total	0.07	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Lithium, total	2.99	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Magnesium, total	6890	N/A	5.0	µg/L	Aug-20-15	Aug-21-15	
Manganese, total	29.9	AO ≤ 50	0.05	µg/L	Aug-20-15	Aug-21-15	
Mercury, total	< 0.005	MAC = 1	0.005	µg/L	Aug-20-15	Aug-21-15	

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards
Analytical Testing

WORK ORDER REPORTED 5081013
Aug-24-15

Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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Sample ID: Lower Bessette Creek (5081013-04) [Water] Sampled: Aug-16-15, Continued

PRES

Total Recoverable Metals, Continued

Molybdenum, total	2.30	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Nickel, total	1.45	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	
Phosphorus, total	29	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Potassium, total	2740	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Selenium, total	1.0	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Silicon, total	5900	N/A	50	µg/L	Aug-20-15	Aug-21-15	
Silver, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Sodium, total	6680	AO ≤ 200000	10	µg/L	Aug-20-15	Aug-21-15	
Strontium, total	236	N/A	0.1	µg/L	Aug-20-15	Aug-21-15	
Sulfur, total	7200	N/A	500	µg/L	Aug-20-15	Aug-21-15	
Tellurium, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Thallium, total	< 0.004	N/A	0.004	µg/L	Aug-20-15	Aug-21-15	
Thorium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Tin, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Titanium, total	5.2	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Uranium, total	0.921	MAC = 20	0.001	µg/L	Aug-20-15	Aug-21-15	
Vanadium, total	1.1	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Zinc, total	1	AO ≤ 5000	1	µg/L	Aug-20-15	Aug-21-15	
Zirconium, total	0.15	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	

Microbiological Parameters

E. coli	150	MAC = None Detected	1	CFU/100 mL	Aug-17-15	Aug-18-15	
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Sample ID: Shuswap River (Wilsey Dam) (5081013-05) [Water] Sampled: Aug-16-15

PRES

Anions

Chloride	0.35	AO ≤ 250	0.10	mg/L	N/A	Aug-19-15	
Nitrate as N	< 0.010	MAC = 10	0.010	mg/L	N/A	Aug-19-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Aug-19-15	
Sulfate	6.1	AO ≤ 500	1.0	mg/L	N/A	Aug-19-15	

General Parameters

Conductivity (EC)	104	N/A	2	µS/cm	N/A	Aug-17-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Aug-20-15	
Nitrogen, Total Kjeldahl	0.06	N/A	0.05	mg/L	Aug-18-15	Aug-19-15	
pH	7.99	6.5-8.5	0.01	pH units	N/A	Aug-17-15	HT2
Phosphorus, Total as P	0.007	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Phosphorus, Total Dissolved	0.004	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Turbidity	0.4	OG < 0.1	0.1	NTU	N/A	Aug-18-15	

Calculated Parameters

Hardness, Total (Total as CaCO3)	48.6	N/A	0.1	mg/L	N/A	N/A	
Nitrate+Nitrite as N	< 0.010	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.056	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards
Analytical Testing

WORK ORDER REPORTED 5081013
Aug-24-15

Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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Sample ID: Shuswap River (Wilsey Dam) (5081013-05) [Water] Sampled: Aug-16-15, Continued

PRES

Total Recoverable Metals, Continued

Aluminum, total	16	OG < 100	1	µg/L	Aug-20-15	Aug-21-15	
Antimony, total	< 0.05	MAC = 6	0.05	µg/L	Aug-20-15	Aug-21-15	
Arsenic, total	0.19	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Barium, total	10.5	MAC = 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Beryllium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Boron, total	2	MAC = 5000	1	µg/L	Aug-20-15	Aug-21-15	
Cadmium, total	0.007	MAC = 5	0.002	µg/L	Aug-20-15	Aug-21-15	
Calcium, total	16400	N/A	40	µg/L	Aug-20-15	Aug-21-15	
Chromium, total	1.3	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Cobalt, total	0.025	N/A	0.005	µg/L	Aug-20-15	Aug-21-15	
Copper, total	1.0	AO ≤ 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Iron, total	37	AO ≤ 300	2	µg/L	Aug-20-15	Aug-21-15	
Lead, total	0.10	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Lithium, total	0.73	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Magnesium, total	1830	N/A	5.0	µg/L	Aug-20-15	Aug-21-15	
Manganese, total	3.91	AO ≤ 50	0.05	µg/L	Aug-20-15	Aug-21-15	
Mercury, total	< 0.005	MAC = 1	0.005	µg/L	Aug-20-15	Aug-21-15	
Molybdenum, total	0.87	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Nickel, total	0.76	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	
Phosphorus, total	< 10	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Potassium, total	784	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Selenium, total	0.4	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Silicon, total	2600	N/A	50	µg/L	Aug-20-15	Aug-21-15	
Silver, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Sodium, total	1090	AO ≤ 200000	10	µg/L	Aug-20-15	Aug-21-15	
Strontium, total	72.2	N/A	0.1	µg/L	Aug-20-15	Aug-21-15	
Sulfur, total	1300	N/A	500	µg/L	Aug-20-15	Aug-21-15	
Tellurium, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Thallium, total	< 0.004	N/A	0.004	µg/L	Aug-20-15	Aug-21-15	
Thorium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Tin, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Titanium, total	0.4	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Uranium, total	0.328	MAC = 20	0.001	µg/L	Aug-20-15	Aug-21-15	
Vanadium, total	0.4	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Zinc, total	2	AO ≤ 5000	1	µg/L	Aug-20-15	Aug-21-15	
Zirconium, total	0.01	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	

Microbiological Parameters

E. coli	11	MAC = None Detected	1	CFU/100 mL	Aug-17-15	Aug-18-15	
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Sample ID: Shuswap River (Odd Fellows) (5081013-06) [Water] Sampled: Aug-16-15

PRES

Anions

Chloride	0.59	AO ≤ 250	0.10	mg/L	N/A	Aug-19-15	
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REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards
Analytical Testing

WORK ORDER REPORTED 5081013
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Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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Sample ID: Shuswap River (Odd Fellows) (5081013-06) [Water] Sampled: Aug-16-15, Continued

PRES

Anions, Continued

Nitrate as N	< 0.010	MAC = 10	0.010	mg/L	N/A	Aug-19-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Aug-19-15	
Sulfate	7.3	AO ≤ 500	1.0	mg/L	N/A	Aug-19-15	

General Parameters

Conductivity (EC)	120	N/A	2	µS/cm	N/A	Aug-17-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Aug-20-15	
Nitrogen, Total Kjeldahl	< 0.05	N/A	0.05	mg/L	Aug-18-15	Aug-19-15	
pH	7.94	6.5-8.5	0.01	pH units	N/A	Aug-17-15	HT2
Phosphorus, Total as P	0.008	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Phosphorus, Total Dissolved	0.004	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Turbidity	0.6	OG < 0.1	0.1	NTU	N/A	Aug-18-15	

Calculated Parameters

Hardness, Total (Total as CaCO3)	56.7	N/A	0.1	mg/L	N/A	N/A	
Nitrate+Nitrite as N	< 0.010	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	< 0.050	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	27	OG < 100	1	µg/L	Aug-20-15	Aug-21-15	
Antimony, total	< 0.05	MAC = 6	0.05	µg/L	Aug-20-15	Aug-21-15	
Arsenic, total	0.25	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Barium, total	12.1	MAC = 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Beryllium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Boron, total	2	MAC = 5000	1	µg/L	Aug-20-15	Aug-21-15	
Cadmium, total	0.012	MAC = 5	0.002	µg/L	Aug-20-15	Aug-21-15	
Calcium, total	19000	N/A	40	µg/L	Aug-20-15	Aug-21-15	
Chromium, total	0.4	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Cobalt, total	0.034	N/A	0.005	µg/L	Aug-20-15	Aug-21-15	
Copper, total	0.4	AO ≤ 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Iron, total	70	AO ≤ 300	2	µg/L	Aug-20-15	Aug-21-15	
Lead, total	0.07	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Lithium, total	0.89	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Magnesium, total	2280	N/A	5.0	µg/L	Aug-20-15	Aug-21-15	
Manganese, total	8.24	AO ≤ 50	0.05	µg/L	Aug-20-15	Aug-21-15	
Mercury, total	< 0.005	MAC = 1	0.005	µg/L	Aug-20-15	Aug-21-15	
Molybdenum, total	1.03	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Nickel, total	0.49	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	
Phosphorus, total	< 10	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Potassium, total	920	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Selenium, total	0.5	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Silicon, total	3100	N/A	50	µg/L	Aug-20-15	Aug-21-15	
Silver, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Sodium, total	1370	AO ≤ 200000	10	µg/L	Aug-20-15	Aug-21-15	
Strontium, total	87.4	N/A	0.1	µg/L	Aug-20-15	Aug-21-15	
Sulfur, total	2200	N/A	500	µg/L	Aug-20-15	Aug-21-15	

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards
Analytical Testing

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Aug-24-15

Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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Sample ID: Shuswap River (Odd Fellows) (5081013-06) [Water] Sampled: Aug-16-15, Continued PRES

Total Recoverable Metals, Continued

Tellurium, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Thallium, total	< 0.004	N/A	0.004	µg/L	Aug-20-15	Aug-21-15	
Thorium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Tin, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Titanium, total	1.2	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Uranium, total	0.432	MAC = 20	0.001	µg/L	Aug-20-15	Aug-21-15	
Vanadium, total	0.5	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Zinc, total	1	AO ≤ 5000	1	µg/L	Aug-20-15	Aug-21-15	
Zirconium, total	0.03	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	

Microbiological Parameters

E. coli	40	MAC = None Detected	1	CFU/100 mL	Aug-17-15	Aug-18-15	
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Sample ID: Vance Creek (Mabel Lake Road) (5081013-07) [Water] Sampled: Aug-16-15 PRES

Anions

Chloride	3.42	AO ≤ 250	0.10	mg/L	N/A	Aug-19-15	
Nitrate as N	0.072	MAC = 10	0.010	mg/L	N/A	Aug-19-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Aug-19-15	
Sulfate	33.7	AO ≤ 500	1.0	mg/L	N/A	Aug-19-15	

General Parameters

Conductivity (EC)	403	N/A	2	µS/cm	N/A	Aug-17-15	
Ammonia as N, Total	< 0.020	N/A	0.020	mg/L	N/A	Aug-20-15	
Nitrogen, Total Kjeldahl	0.06	N/A	0.05	mg/L	Aug-18-15	Aug-19-15	
pH	8.31	6.5-8.5	0.01	pH units	N/A	Aug-17-15	HT2
Phosphorus, Total as P	0.006	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Phosphorus, Total Dissolved	0.004	N/A	0.002	mg/L	Aug-19-15	Aug-20-15	
Turbidity	0.3	OG < 0.1	0.1	NTU	N/A	Aug-18-15	

Calculated Parameters

Hardness, Total (Total as CaCO ₃)	206	N/A	0.1	mg/L	N/A	N/A	
Nitrate+Nitrite as N	0.072	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.127	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	3	OG < 100	1	µg/L	Aug-20-15	Aug-21-15	
Antimony, total	< 0.05	MAC = 6	0.05	µg/L	Aug-20-15	Aug-21-15	
Arsenic, total	0.31	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Barium, total	37.2	MAC = 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Beryllium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Boron, total	3	MAC = 5000	1	µg/L	Aug-20-15	Aug-21-15	
Cadmium, total	0.012	MAC = 5	0.002	µg/L	Aug-20-15	Aug-21-15	
Calcium, total	70000	N/A	40	µg/L	Aug-20-15	Aug-21-15	
Chromium, total	0.2	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	

REPORTED TO PROJECT Mid Shuswap Lumby Water Stewards
Analytical Testing

WORK ORDER REPORTED 5081013
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Analyte	Result / Recovery	Standard / Guideline	MRL / Limits	Units	Prepared	Analyzed	Notes
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Sample ID: Vance Creek (Mabel Lake Road) (5081013-07) [Water] Sampled: Aug-16-15, Continued PRES

Total Recoverable Metals, Continued

Cobalt, total	0.017	N/A	0.005	µg/L	Aug-20-15	Aug-21-15	
Copper, total	0.3	AO ≤ 1000	0.1	µg/L	Aug-20-15	Aug-21-15	
Iron, total	8	AO ≤ 300	2	µg/L	Aug-20-15	Aug-21-15	
Lead, total	< 0.05	MAC = 10	0.05	µg/L	Aug-20-15	Aug-21-15	
Lithium, total	3.17	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Magnesium, total	7620	N/A	5.0	µg/L	Aug-20-15	Aug-21-15	
Manganese, total	0.78	AO ≤ 50	0.05	µg/L	Aug-20-15	Aug-21-15	
Mercury, total	< 0.005	MAC = 1	0.005	µg/L	Aug-20-15	Aug-21-15	
Molybdenum, total	2.85	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Nickel, total	0.41	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	
Phosphorus, total	< 10	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Potassium, total	1990	N/A	10	µg/L	Aug-20-15	Aug-21-15	
Selenium, total	3.2	MAC = 50	0.1	µg/L	Aug-20-15	Aug-21-15	
Silicon, total	7700	N/A	50	µg/L	Aug-20-15	Aug-21-15	
Silver, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Sodium, total	3920	AO ≤ 200000	10	µg/L	Aug-20-15	Aug-21-15	
Strontium, total	444	N/A	0.1	µg/L	Aug-20-15	Aug-21-15	
Sulfur, total	11000	N/A	500	µg/L	Aug-20-15	Aug-21-15	
Tellurium, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Thallium, total	< 0.004	N/A	0.004	µg/L	Aug-20-15	Aug-21-15	
Thorium, total	< 0.01	N/A	0.01	µg/L	Aug-20-15	Aug-21-15	
Tin, total	< 0.05	N/A	0.05	µg/L	Aug-20-15	Aug-21-15	
Titanium, total	< 0.2	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Uranium, total	1.70	MAC = 20	0.001	µg/L	Aug-20-15	Aug-21-15	
Vanadium, total	0.3	N/A	0.2	µg/L	Aug-20-15	Aug-21-15	
Zinc, total	< 1	AO ≤ 5000	1	µg/L	Aug-20-15	Aug-21-15	
Zirconium, total	< 0.01	N/A	0.02	µg/L	Aug-20-15	Aug-21-15	

Microbiological Parameters

E. coli	29	MAC = None Detected	1	CFU/100 mL	Aug-17-15	Aug-18-15	
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Sample / Analysis Qualifiers:

- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.
- PRES Sample has been preserved for NUTRIENTS in the laboratory and the holding time has been extended.