

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 4110805

PO NUMBER

RECEIVED / TEMP Nov-17-14 09:04 / 8°C

PROJECT Analytical Testing

REPORTED Nov-24-14

PROJECT INFO

COC NUMBER 40837.558

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.

The results in this report apply to the samples analyzed in accordance with the Chain of Custody or Sample Requisition 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.



Issued By:

Jennifer Shanko, ASCT
Administration Coordinator

Please contact CARO if more information is needed or to provide feedback on our services.

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Analysis Description	Method Reference	Technique	Location
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	Kelowna
pH in Water	APHA 4500-H+ B	Electrometry	Kelowna
Total Kjeldahl Nitrogen in Water	EPA 351.2 *	Sulfuric Acid Digestion, Automated Colorimetry	Kelowna
Total Phosphorus in Water (Kjeldahl)	EPA 365.4 *	Sulfuric Acid Digestion, Automated Colorimetry	Kelowna
Total Phosphorus, dissolved (Kjeldahl)	EPA 365.4 *	Sulfuric Acid Digestion, Automated Colorimetry	Kelowna
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
AO Aesthetic objective
MAC Maximum acceptable concentration (health based)
OG Operational guideline (treated water)
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
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/pubs/water-eau/2012-sum_guide-res_recom/index-eng.php

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) (4110805-01) [Water] Sampled: Nov-16-14 11:05

Anions							
Chloride	2.00	AO ≤ 250	0.10	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrate as N	0.046	MAC = 10	0.010	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Nov-19-14	
Sulfate	21.9	AO ≤ 500	1.0	mg/L	N/A	Nov-19-14	
General Parameters							
Conductivity (EC)	218	N/A	2	µS/cm	N/A	Nov-17-14	
Nitrogen, Total Kjeldahl	0.15	N/A	0.05	mg/L	Nov-17-14	Nov-18-14	
pH	7.89	6.5-8.5	0.01	pH units	N/A	Nov-17-14	
Phosphorus, Total Kjeldahl	0.08	N/A	0.01	mg/L	Nov-17-14	Nov-18-14	
Phosphorus, Total Kjeldahl Dissolved	0.08	N/A	0.01	mg/L	Nov-18-14	Nov-19-14	
Turbidity	0.7	OG < 0.1	0.1	NTU	N/A	Nov-19-14	
Calculated Parameters							
Nitrogen, Nitrate+Nitrite as N	0.046	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.197	N/A	0.050	mg/L	N/A	N/A	
Microbiological Parameters							
E. coli	20	MAC = None Detected	1	CFU/100 mL	Nov-17-14	Nov-18-14	

Sample ID: Duteau Creek (Hwy 6) (4110805-02) [Water] Sampled: Nov-16-14 11:00

Anions							
Chloride	4.53	AO ≤ 250	0.10	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrate as N	0.341	MAC = 10	0.010	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Nov-19-14	
Sulfate	15.3	AO ≤ 500	1.0	mg/L	N/A	Nov-19-14	
General Parameters							
Conductivity (EC)	189	N/A	2	µS/cm	N/A	Nov-17-14	
Nitrogen, Total Kjeldahl	0.29	N/A	0.05	mg/L	Nov-17-14	Nov-18-14	
pH	7.84	6.5-8.5	0.01	pH units	N/A	Nov-17-14	
Phosphorus, Total Kjeldahl	0.03	N/A	0.01	mg/L	Nov-17-14	Nov-18-14	
Phosphorus, Total Kjeldahl Dissolved	0.03	N/A	0.01	mg/L	Nov-18-14	Nov-19-14	
Turbidity	1.3	OG < 0.1	0.1	NTU	N/A	Nov-19-14	
Calculated Parameters							
Nitrogen, Nitrate+Nitrite as N	0.341	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.632	N/A	0.050	mg/L	N/A	N/A	
Microbiological Parameters							
E. coli	34	MAC = None Detected	1	CFU/100 mL	Nov-17-14	Nov-18-14	

Sample ID: Mid Bessette Creek (4110805-03) [Water] Sampled: Nov-16-14 10:20

Anions							
Chloride	5.55	AO ≤ 250	0.10	mg/L	N/A	Nov-19-14	

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Sample ID: Mid Bessette Creek (4110805-03) [Water] Sampled: Nov-16-14 10:20, Continued

Anions, Continued

Nitrogen, Nitrate as N	0.279	MAC = 10	0.010	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Nov-19-14	
Sulfate	26.9	AO ≤ 500	1.0	mg/L	N/A	Nov-19-14	

General Parameters

Conductivity (EC)	278	N/A	2	µS/cm	N/A	Nov-17-14	
Nitrogen, Total Kjeldahl	0.29	N/A	0.05	mg/L	Nov-17-14	Nov-18-14	
pH	8.01	6.5-8.5	0.01	pH units	N/A	Nov-17-14	
Phosphorus, Total Kjeldahl	0.02	N/A	0.01	mg/L	Nov-17-14	Nov-18-14	
Phosphorus, Total Kjeldahl Dissolved	0.02	N/A	0.01	mg/L	Nov-18-14	Nov-19-14	
Turbidity	1.4	OG < 0.1	0.1	NTU	N/A	Nov-19-14	

Calculated Parameters

Nitrogen, Nitrate+Nitrite as N	0.279	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.571	N/A	0.050	mg/L	N/A	N/A	

Microbiological Parameters

E. coli	11	MAC = None Detected	1	CFU/100 mL	Nov-17-14	Nov-18-14	
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Sample ID: Lower Bessette Creek (4110805-04) [Water] Sampled: Nov-16-14 10:00

Anions

Chloride	5.59	AO ≤ 250	0.10	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrate as N	0.253	MAC = 10	0.010	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Nov-19-14	
Sulfate	29.5	AO ≤ 500	1.0	mg/L	N/A	Nov-19-14	

General Parameters

Conductivity (EC)	295	N/A	2	µS/cm	N/A	Nov-17-14	
Nitrogen, Total Kjeldahl	0.26	N/A	0.05	mg/L	Nov-17-14	Nov-18-14	
pH	8.08	6.5-8.5	0.01	pH units	N/A	Nov-17-14	
Phosphorus, Total Kjeldahl	0.02	N/A	0.01	mg/L	Nov-17-14	Nov-18-14	
Phosphorus, Total Kjeldahl Dissolved	0.02	N/A	0.01	mg/L	Nov-18-14	Nov-19-14	
Turbidity	1.7	OG < 0.1	0.1	NTU	N/A	Nov-19-14	

Calculated Parameters

Nitrogen, Nitrate+Nitrite as N	0.253	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.518	N/A	0.050	mg/L	N/A	N/A	

Microbiological Parameters

E. coli	10	MAC = None Detected	1	CFU/100 mL	Nov-17-14	Nov-18-14	
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Sample ID: Shuswap River (Wilsey Dam) (4110805-05) [Water] Sampled: Nov-16-14 10:30

Anions

Chloride	0.20	AO ≤ 250	0.10	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrate as N	0.074	MAC = 10	0.010	mg/L	N/A	Nov-19-14	

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Sample ID: Shuswap River (Wilsey Dam) (4110805-05) [Water] Sampled: Nov-16-14 10:30, Continued

Anions, Continued

Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Nov-19-14	
Sulfate	4.7	AO ≤ 500	1.0	mg/L	N/A	Nov-19-14	

General Parameters

Conductivity (EC)	83	N/A	2	µS/cm	N/A	Nov-17-14	
Nitrogen, Total Kjeldahl	0.08	N/A	0.05	mg/L	Nov-17-14	Nov-18-14	
pH	7.78	6.5-8.5	0.01	pH units	N/A	Nov-17-14	
Phosphorus, Total Kjeldahl	< 0.01	N/A	0.01	mg/L	Nov-17-14	Nov-18-14	
Phosphorus, Total Kjeldahl Dissolved	< 0.01	N/A	0.01	mg/L	Nov-18-14	Nov-19-14	
Turbidity	0.6	OG < 0.1	0.1	NTU	N/A	Nov-19-14	

Calculated Parameters

Nitrogen, Nitrate+Nitrite as N	0.074	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.152	N/A	0.050	mg/L	N/A	N/A	

Microbiological Parameters

E. coli	< 1	MAC = None Detected	1	CFU/100 mL	Nov-17-14	Nov-18-14	
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Sample ID: Shuswap River (Odd Fellows) (4110805-06) [Water] Sampled: Nov-16-14

Anions

Chloride	0.33	AO ≤ 250	0.10	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrate as N	0.072	MAC = 10	0.010	mg/L	N/A	Nov-19-14	
Nitrogen, Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	Nov-19-14	
Sulfate	5.5	AO ≤ 500	1.0	mg/L	N/A	Nov-19-14	

General Parameters

Conductivity (EC)	92	N/A	2	µS/cm	N/A	Nov-17-14	
Nitrogen, Total Kjeldahl	0.10	N/A	0.05	mg/L	Nov-17-14	Nov-18-14	
pH	7.78	6.5-8.5	0.01	pH units	N/A	Nov-17-14	
Phosphorus, Total Kjeldahl	< 0.01	N/A	0.01	mg/L	Nov-17-14	Nov-18-14	
Phosphorus, Total Kjeldahl Dissolved	< 0.01	N/A	0.01	mg/L	Nov-18-14	Nov-19-14	
Turbidity	1.0	OG < 0.1	0.1	NTU	N/A	Nov-19-14	

Calculated Parameters

Nitrogen, Nitrate+Nitrite as N	0.072	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.170	N/A	0.050	mg/L	N/A	N/A	

Microbiological Parameters

E. coli	1	MAC = None Detected	1	CFU/100 mL	Nov-17-14	Nov-18-14	
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