

REPORTED TO	Campbell Scientific Canada Corp. 1030 Sugar Lake Rd Cherryville, BC V0E 2G2	TEL	(250) 547-9466
		FAX	-
ATTENTION	Claude Labine	WORK ORDER	5051565
PO NUMBER		RECEIVED / TEMP	May-25-15 10:00 / 8°C
PROJECT	Cherryville Water Stewart	REPORTED	Jun-01-15
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.

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.



Authorized By: **Ed Hoppe, B.Sc., P.Chem.**
Division Manager, Kelowna

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

Locations:

#110 4011 Viking Way
Richmond, BC V6V 2K9
Tel: 604-279-1499 Fax: 604-279-1599

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www.caro.ca

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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 / Nutrient Agar with MUG	Kelowna
Fecal Coliforms (MF)	APHA 9222 D	Membrane Filtration / Membrane Filtration	Kelowna
Hardness (as CaCO ₃)	APHA 2340 B	Calculation	N/A
Mercury, total by CVAFS	EPA 245.7*	BrCl ₂ 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 H	Persulfate Digestion / Flow Injection Analysis	Kelowna
Total Phosphorus, dissolved	APHA 4500-P B.5 / APHA 4500-P H	Persulfate Digestion / Flow Injection Analysis	Kelowna
Total Recoverable Metals	APHA 3030E* / APHA 3125 B	HNO ₃ +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
 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
 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: Reiter Creek (5051565-01) [Water] Sampled: May-24-15 11:00

Anions

Chloride	< 0.10	AO ≤ 250	0.10	mg/L	N/A	May-26-15	
Nitrate as N	< 0.010	MAC = 10	0.010	mg/L	N/A	May-26-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	May-26-15	
Sulfate	3.0	AO ≤ 500	1.0	mg/L	N/A	May-26-15	

General Parameters

Conductivity (EC)	120	N/A	2	µS/cm	N/A	May-25-15	
Nitrogen, Total Kjeldahl	0.16	N/A	0.05	mg/L	May-25-15	May-27-15	
pH	7.96	6.5-8.5	0.01	pH units	N/A	May-25-15	HT2
Phosphorus, Total as P	0.027	N/A	0.002	mg/L	May-26-15	May-27-15	
Phosphorus, Total Dissolved	0.003	N/A	0.002	mg/L	May-26-15	May-27-15	
Turbidity	9.7	OG < 0.1	0.1	NTU	N/A	May-26-15	

Calculated Parameters

Hardness, Total (Total as CaCO3)	59.9	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	0.157	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	549	OG < 100	1	µg/L	May-28-15	May-30-15	
Antimony, total	< 0.05	MAC = 6	0.05	µg/L	May-28-15	May-30-15	
Arsenic, total	0.13	MAC = 10	0.05	µg/L	May-28-15	May-30-15	
Barium, total	17.9	MAC = 1000	0.1	µg/L	May-28-15	May-30-15	
Beryllium, total	0.02	N/A	0.01	µg/L	May-28-15	May-30-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	May-28-15	May-30-15	
Boron, total	2	MAC = 5000	1	µg/L	May-28-15	May-30-15	
Cadmium, total	0.032	MAC = 5	0.002	µg/L	May-28-15	May-30-15	
Calcium, total	21300	N/A	40	µg/L	May-28-15	May-30-15	
Chromium, total	1.9	MAC = 50	0.1	µg/L	May-28-15	May-30-15	
Cobalt, total	0.409	N/A	0.005	µg/L	May-28-15	May-30-15	
Copper, total	1.8	AO ≤ 1000	0.1	µg/L	May-28-15	May-30-15	
Iron, total	747	AO ≤ 300	2	µg/L	May-28-15	May-30-15	
Lead, total	0.20	MAC = 10	0.05	µg/L	May-28-15	May-30-15	
Lithium, total	0.93	N/A	0.05	µg/L	May-28-15	May-30-15	
Magnesium, total	1630	N/A	5.0	µg/L	May-28-15	May-30-15	
Manganese, total	14.0	AO ≤ 50	0.05	µg/L	May-28-15	May-30-15	
Mercury, total	< 0.00002	MAC = 0.001	0.00002	mg/L	May-28-15	Jun-01-15	
Molybdenum, total	0.47	N/A	0.01	µg/L	May-28-15	May-30-15	
Nickel, total	1.40	N/A	0.02	µg/L	May-28-15	May-30-15	
Phosphorus, total	18	N/A	10	µg/L	May-28-15	May-30-15	
Potassium, total	803	N/A	10	µg/L	May-28-15	May-30-15	
Selenium, total	0.2	MAC = 50	0.1	µg/L	May-28-15	May-30-15	
Silicon, total	4900	N/A	50	µg/L	May-28-15	May-30-15	
Silver, total	< 0.01	N/A	0.01	µg/L	May-28-15	May-30-15	
Sodium, total	712	AO ≤ 200000	10	µg/L	May-28-15	May-30-15	
Strontium, total	50.2	N/A	0.1	µg/L	May-28-15	May-30-15	
Sulfur, total	970	N/A	500	µg/L	May-28-15	May-30-15	

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Sample ID: Reiter Creek (5051565-01) [Water] Sampled: May-24-15 11:00, Continued

Total Recoverable Metals, Continued

Tellurium, total	< 0.05	N/A	0.05	µg/L	May-28-15	May-30-15	
Thallium, total	0.012	N/A	0.004	µg/L	May-28-15	May-30-15	
Thorium, total	0.05	N/A	0.01	µg/L	May-28-15	May-30-15	
Tin, total	< 0.05	N/A	0.05	µg/L	May-28-15	May-30-15	
Titanium, total	31.7	N/A	0.2	µg/L	May-28-15	May-30-15	
Uranium, total	0.169	MAC = 20	0.001	µg/L	May-28-15	May-30-15	
Vanadium, total	2.4	N/A	0.2	µg/L	May-28-15	May-30-15	
Zinc, total	4	AO ≤ 5000	1	µg/L	May-28-15	May-30-15	
Zirconium, total	0.22	N/A	0.02	µg/L	May-28-15	May-30-15	

Microbiological Parameters

Coliforms, Fecal	< 1	N/A	1	CFU/100 mL	May-25-15	May-26-15	
E. coli	< 1	MAC = None Detected	1	CFU/100 mL	May-25-15	May-26-15	

Sample ID: Shuswap River (Sihlis Road) (5051565-02) [Water] Sampled: May-24-15 10:45

Anions

Chloride	< 0.10	AO ≤ 250	0.10	mg/L	N/A	May-26-15	
Nitrate as N	0.074	MAC = 10	0.010	mg/L	N/A	May-26-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	May-26-15	
Sulfate	3.2	AO ≤ 500	1.0	mg/L	N/A	May-26-15	

General Parameters

Conductivity (EC)	60	N/A	2	µS/cm	N/A	May-25-15	
Nitrogen, Total Kjeldahl	0.08	N/A	0.05	mg/L	May-25-15	May-27-15	
pH	7.72	6.5-8.5	0.01	pH units	N/A	May-25-15	HT2
Phosphorus, Total as P	0.005	N/A	0.002	mg/L	May-26-15	May-27-15	
Phosphorus, Total Dissolved	0.002	N/A	0.002	mg/L	May-26-15	May-27-15	
Turbidity	1.3	OG < 0.1	0.1	NTU	N/A	May-26-15	

Calculated Parameters

Hardness, Total (Total as CaCO ₃)	27.1	N/A	0.1	mg/L	N/A	N/A	
Nitrate+Nitrite as N	0.074	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.154	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	55	OG < 100	1	µg/L	May-28-15	May-30-15	
Antimony, total	< 0.05	MAC = 6	0.05	µg/L	May-28-15	May-30-15	
Arsenic, total	0.07	MAC = 10	0.05	µg/L	May-28-15	May-30-15	
Barium, total	6.0	MAC = 1000	0.1	µg/L	May-28-15	May-30-15	
Beryllium, total	< 0.01	N/A	0.01	µg/L	May-28-15	May-30-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	May-28-15	May-30-15	
Boron, total	2	MAC = 5000	1	µg/L	May-28-15	May-30-15	
Cadmium, total	0.006	MAC = 5	0.002	µg/L	May-28-15	May-30-15	
Calcium, total	9450	N/A	40	µg/L	May-28-15	May-30-15	
Chromium, total	0.2	MAC = 50	0.1	µg/L	May-28-15	May-30-15	

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Sample ID: Shuswap River (Sihlis Road) (5051565-02) [Water] Sampled: May-24-15 10:45, Continued

Total Recoverable Metals, Continued

Cobalt, total	0.056	N/A	0.005	µg/L	May-28-15	May-30-15	
Copper, total	0.6	AO ≤ 1000	0.1	µg/L	May-28-15	May-30-15	
Iron, total	86	AO ≤ 300	2	µg/L	May-28-15	May-30-15	
Lead, total	0.05	MAC = 10	0.05	µg/L	May-28-15	May-30-15	
Lithium, total	0.37	N/A	0.05	µg/L	May-28-15	May-30-15	
Magnesium, total	860	N/A	5.0	µg/L	May-28-15	May-30-15	
Manganese, total	4.68	AO ≤ 50	0.05	µg/L	May-28-15	May-30-15	
Mercury, total	< 0.00002	MAC = 0.001	0.00002	mg/L	May-28-15	Jun-01-15	
Molybdenum, total	0.43	N/A	0.01	µg/L	May-28-15	May-30-15	
Nickel, total	0.25	N/A	0.02	µg/L	May-28-15	May-30-15	
Phosphorus, total	< 10	N/A	10	µg/L	May-28-15	May-30-15	
Potassium, total	623	N/A	10	µg/L	May-28-15	May-30-15	
Selenium, total	< 0.1	MAC = 50	0.1	µg/L	May-28-15	May-30-15	
Silicon, total	2800	N/A	50	µg/L	May-28-15	May-30-15	
Silver, total	< 0.01	N/A	0.01	µg/L	May-28-15	May-30-15	
Sodium, total	711	AO ≤ 200000	10	µg/L	May-28-15	May-30-15	
Strontium, total	30.4	N/A	0.1	µg/L	May-28-15	May-30-15	
Sulfur, total	1100	N/A	500	µg/L	May-28-15	May-30-15	
Tellurium, total	< 0.05	N/A	0.05	µg/L	May-28-15	May-30-15	
Thallium, total	< 0.004	N/A	0.004	µg/L	May-28-15	May-30-15	
Thorium, total	< 0.01	N/A	0.01	µg/L	May-28-15	May-30-15	
Tin, total	< 0.05	N/A	0.05	µg/L	May-28-15	May-30-15	
Titanium, total	2.7	N/A	0.2	µg/L	May-28-15	May-30-15	
Uranium, total	0.305	MAC = 20	0.001	µg/L	May-28-15	May-30-15	
Vanadium, total	0.4	N/A	0.2	µg/L	May-28-15	May-30-15	
Zinc, total	1	AO ≤ 5000	1	µg/L	May-28-15	May-30-15	
Zirconium, total	0.06	N/A	0.02	µg/L	May-28-15	May-30-15	

Microbiological Parameters

Coliforms, Fecal	< 1	N/A	1	CFU/100 mL	May-25-15	May-26-15	
E. coli	< 1	MAC = None Detected	1	CFU/100 mL	May-25-15	May-26-15	

Sample ID: Cherry Creek (Sugar Lk Road) (5051565-03) [Water] Sampled: May-24-15 10:30

Anions

Chloride	0.41	AO ≤ 250	0.10	mg/L	N/A	May-26-15	
Nitrate as N	0.074	MAC = 10	0.010	mg/L	N/A	May-26-15	
Nitrite as N	< 0.010	MAC = 1	0.010	mg/L	N/A	May-26-15	
Sulfate	7.1	AO ≤ 500	1.0	mg/L	N/A	May-26-15	

General Parameters

Conductivity (EC)	122	N/A	2	µS/cm	N/A	May-25-15	
Nitrogen, Total Kjeldahl	0.11	N/A	0.05	mg/L	May-25-15	May-27-15	
pH	7.96	6.5-8.5	0.01	pH units	N/A	May-25-15	HT2
Phosphorus, Total as P	0.045	N/A	0.002	mg/L	May-26-15	May-28-15	

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Sample ID: Cherry Creek (Sugar Lk Road) (5051565-03) [Water] Sampled: May-24-15 10:30, Continued

General Parameters, Continued

Phosphorus, Total Dissolved	0.004	N/A	0.002	mg/L	May-26-15	May-28-15	
Turbidity	9.5	OG < 0.1	0.1	NTU	N/A	May-26-15	

Calculated Parameters

Hardness, Total (Total as CaCO ₃)	60.1	N/A	0.1	mg/L	N/A	N/A	
Nitrate+Nitrite as N	0.074	N/A	0.010	mg/L	N/A	N/A	
Nitrogen, Total	0.183	N/A	0.050	mg/L	N/A	N/A	

Total Recoverable Metals

Aluminum, total	383	OG < 100	1	µg/L	May-28-15	May-30-15	
Antimony, total	0.09	MAC = 6	0.05	µg/L	May-28-15	May-30-15	
Arsenic, total	0.60	MAC = 10	0.05	µg/L	May-28-15	May-30-15	
Barium, total	14.4	MAC = 1000	0.1	µg/L	May-28-15	May-30-15	
Beryllium, total	0.01	N/A	0.01	µg/L	May-28-15	May-30-15	
Bismuth, total	< 0.01	N/A	0.01	µg/L	May-28-15	May-30-15	
Boron, total	2	MAC = 5000	1	µg/L	May-28-15	May-30-15	
Cadmium, total	0.046	MAC = 5	0.002	µg/L	May-28-15	May-30-15	
Calcium, total	19800	N/A	40	µg/L	May-28-15	May-30-15	
Chromium, total	1.9	MAC = 50	0.1	µg/L	May-28-15	May-30-15	
Cobalt, total	0.372	N/A	0.005	µg/L	May-28-15	May-30-15	
Copper, total	1.5	AO ≤ 1000	0.1	µg/L	May-28-15	May-30-15	
Iron, total	664	AO ≤ 300	2	µg/L	May-28-15	May-30-15	
Lead, total	0.29	MAC = 10	0.05	µg/L	May-28-15	May-30-15	
Lithium, total	1.13	N/A	0.05	µg/L	May-28-15	May-30-15	
Magnesium, total	2590	N/A	5.0	µg/L	May-28-15	May-30-15	
Manganese, total	21.1	AO ≤ 50	0.05	µg/L	May-28-15	May-30-15	
Mercury, total	< 0.00002	MAC = 0.001	0.00002	mg/L	May-28-15	Jun-01-15	
Molybdenum, total	1.00	N/A	0.01	µg/L	May-28-15	May-30-15	
Nickel, total	1.48	N/A	0.02	µg/L	May-28-15	May-30-15	
Phosphorus, total	32	N/A	10	µg/L	May-28-15	May-30-15	
Potassium, total	618	N/A	10	µg/L	May-28-15	May-30-15	
Selenium, total	0.7	MAC = 50	0.1	µg/L	May-28-15	May-30-15	
Silicon, total	3800	N/A	50	µg/L	May-28-15	May-30-15	
Silver, total	< 0.01	N/A	0.01	µg/L	May-28-15	May-30-15	
Sodium, total	1080	AO ≤ 200000	10	µg/L	May-28-15	May-30-15	
Strontium, total	102	N/A	0.1	µg/L	May-28-15	May-30-15	
Sulfur, total	2300	N/A	500	µg/L	May-28-15	May-30-15	
Tellurium, total	< 0.05	N/A	0.05	µg/L	May-28-15	May-30-15	
Thallium, total	0.007	N/A	0.004	µg/L	May-28-15	May-30-15	
Thorium, total	0.02	N/A	0.01	µg/L	May-28-15	May-30-15	
Tin, total	< 0.05	N/A	0.05	µg/L	May-28-15	May-30-15	
Titanium, total	20.8	N/A	0.2	µg/L	May-28-15	May-30-15	
Uranium, total	0.281	MAC = 20	0.001	µg/L	May-28-15	May-30-15	
Vanadium, total	1.6	N/A	0.2	µg/L	May-28-15	May-30-15	
Zinc, total	3	AO ≤ 5000	1	µg/L	May-28-15	May-30-15	
Zirconium, total	0.14	N/A	0.02	µg/L	May-28-15	May-30-15	

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Sample ID: Cherry Creek (Sugar Lk Road) (5051565-03) [Water] Sampled: May-24-15 10:30, Continued

Microbiological Parameters

Coliforms, Fecal	6	N/A	1	CFU/100 mL	May-25-15	May-26-15	
E. coli	6	MAC = None Detected	1	CFU/100 mL	May-25-15	May-26-15	

Sample / Analysis Qualifiers:

HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.