



Annual Report of Monitoring Balfour Water System

Developed in accordance with the
British Columbia Drinking Water Protection Act

BALFOUR WATER SYSTEM	
Period of Monitoring Covered by this Report:	January 1 - December 31, 2022
Interior Health Permit to Operate Facility Number:	0210655
EOCP Classification:	WD-II / WT-II
IH Permit:	Drinking Water System 15 - 300 Connections
Location of Water Supply System:	Balfour, BC

Contact Information:

Regional District of Central Kootenay
Box 590, 202 Lakeside Drive
Nelson, BC V1L 5R4
PH: (250) 352-8171
Email: WaterContact@rdck.bc.ca

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1. Introduction

Balfour is a suburban community located 32 kilometers northeast of the city of Nelson within the Regional District of Central Kootenay (RDCK) Electoral Area E. The water system in Balfour is the second largest RDCK operated system with 265 active metered service connections. Kootenay Lake provides the water source, with a wet well intake located 215 meters from shore.

As part of the British Columbia Provincial *Drinking Water Protection Act (2001)* and *Drinking Water Protection Regulation (2003)* an annual water system report to water users is required. This annual report summarizes information collected and recorded throughout the reporting period, and details additional relevant information to the water system.

2. Water Treatment Objectives

The provincial technical document *Drinking Water Treatment objectives (Microbiological) for Surface Water Supplies in British Columbia (2012)* provides performance targets for water suppliers to ensure the provision of biologically safe drinking water. Interior Health supports water suppliers to meet these objectives as risk to human health is substantially reduced. The general treatment objectives are:

- 4-log (99.99%) removal/inactivation of viruses
- 3-log (99.9%) removal/inactivation of *Giardia* and *Cryptosporidium* (oocysts)
- Two separate treatment processes (multi-barrier) for surface water supplies
- Turbidity less than 1 NTU (Nephelometric Turbidity Unit)
- Zero total and fecal coliforms (*E. coli*)

The Balfour water treatment plant provides biologically safe drinking water to its users and achieves the above listed treatment objectives through various system components installed and maintained at the water treatment plant.

3. Water System Overview

Kootenay Lake provides the source water for the Balfour water system, which is delivered to the water treatment plant via a series of pumps. Treatment begins with chlorination at the pump-house prior to the water being delivered to the treatment plant. At the treatment plant (WTP), water initially passes through media and cartridge filters to reduce turbidity (suspended sediment). Following this are ultraviolet (UV) light disinfection units for the treatment of microbiological components. A final chlorination injection provides the necessary treatment residual to the distribution system.

Due to the unsustainable cost of disposable cartridge filters, the RDCK made an application to remove the 1 micron absolute filters in 2014. The application was approved by Interior Health with conditions that include the requirement for *“Average daily turbidity levels measured at equal intervals (at least every four hours) immediately before the disinfectant is applied are around 1 NTU, but do not exceed 5 NTU for more than two days in a 12-month period.”*

The RDCK has brought the Balfour Water Treatment Plant into the existing central SCADA (supervisory, control and data acquisition) system located at the Nelson office. As this offers continuous monitoring and data logging with alarm notifications sent should parameters for turbidity not be met, the Balfour water system is in full compliance with Interior Health’s turbidity monitoring requirements.

4. Monitoring

The Balfour water system includes monitoring for bacteriological components (total/fecal coliforms), turbidity, chlorine residual (free and total), consumption, and chemical constituents.

4.1 Bacteriological

Sampling is done bi-weekly from various locations within the distribution system. Tests for total and fecal coliforms are performed in accordance with the methods outlines in the *Standard Methods for the Examination of Water and Wastewater (2005)*. Colony forming units (cfu) per 100 ml are determined for each sample. There were no adverse sample results in 2022.

4.2 Turbidity

Turbidity is measured on the raw, post media filters, and post cartridge filters using both in-line and handheld turbidity meters. In-line instruments are cross-referenced with the handheld meter to ensure accuracy. Figure 1 shows turbidity levels measured on raw and treated water using a handheld turbidity meter. Turbidity levels after the treatment process were consistently below the treatment objective of less than 1 NTU for the reporting period.

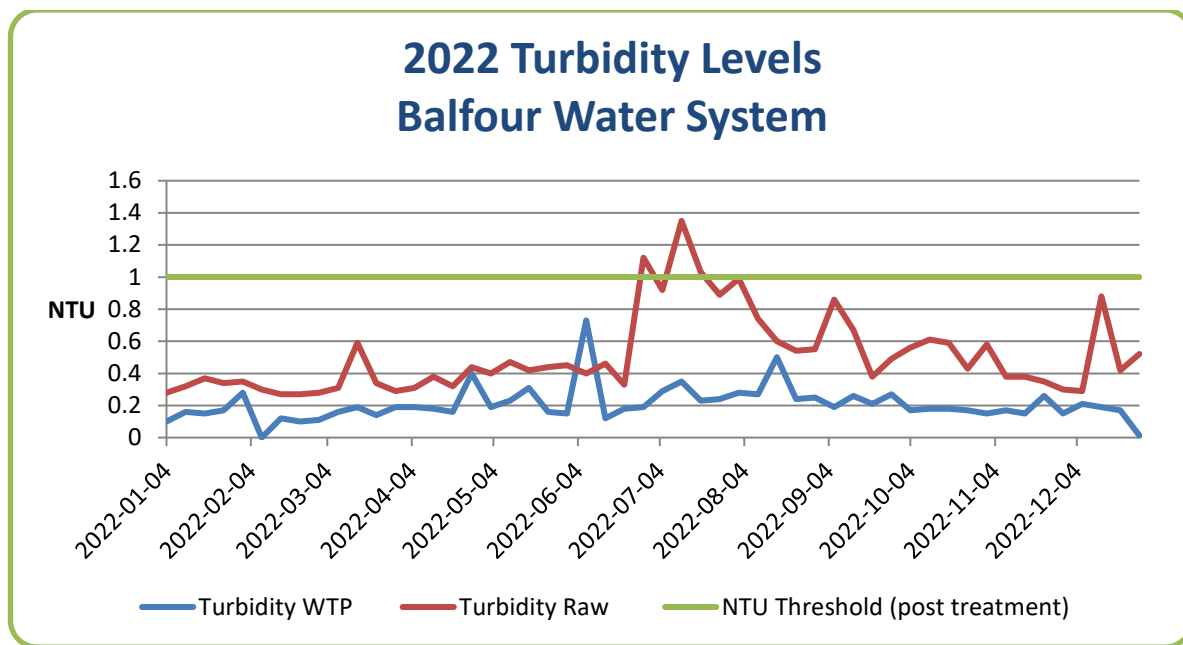


Figure 1 – Turbidity Levels for Reporting Period

4.3 Chlorine Residual

Chlorine disinfection contact time (CT) is primarily achieved through the transmission pipe from the lake pump house up to the water treatment plant. Should raw water turbidity exceed 1 NTU, CT is then achieved from the transmission piping to reservoir and the reservoir itself. Chlorine residual levels are measured with an online chlorine analyzer at the pump house and post treatment (at the WTP after final chlorine injection). Residual levels are also measured using a handheld chlorine meter at the pump-house, post treatment, and to the distribution system (post reservoir). Chlorine residual targets for the Balfour water system are a minimum of 0.7 mg/l post treatment and a minimum of 0.20 mg/l in all areas of the distribution system. Figure 2 shows chlorine residual levels post treatment and post reservoir. In 2022, there were three recorded days of raw water turbidity exceeding 1 NTU (June 28, July 12 and July 19) which could impact chlorine disinfection. Flushing was increased in response to chlorine residual dropping below 0.2 mg/l on July 19. A boil water notice was not issued as the value came from only one sample location. When raw water turbidity exceeds 1 NTU, a minimum chlorine residual of 0.5 mg/l post reservoir is required per Interior Health construction permit conditions.

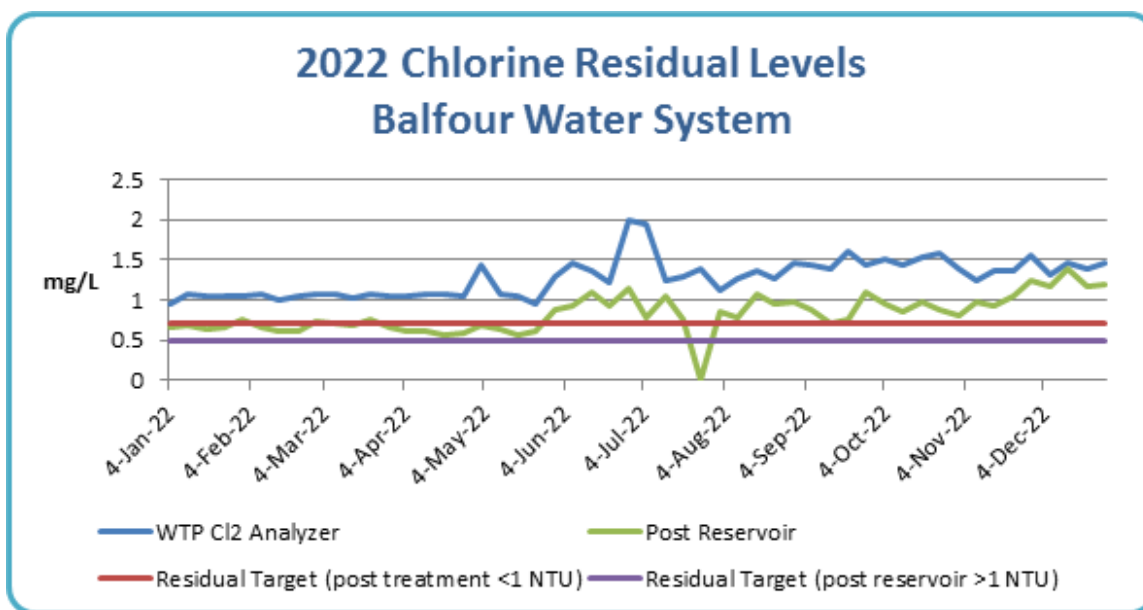


Figure 2 – Free Chlorine Residual Levels for Reporting Period

4.4 Consumption

Flow rates are measured at the pump house, pre-treatment system, post-reservoir (delivers to the lower pressure zone), and at the upper pressure zone outlet. The total recorded volume of treated water delivered to the upper and lower pressure zones was **134,580 m³**. This does not include water used for treatment plant processes. Figure 3 details the volumes for post-reservoir/lower pressure zone (50495945) and the upper pressure zone (50496349).

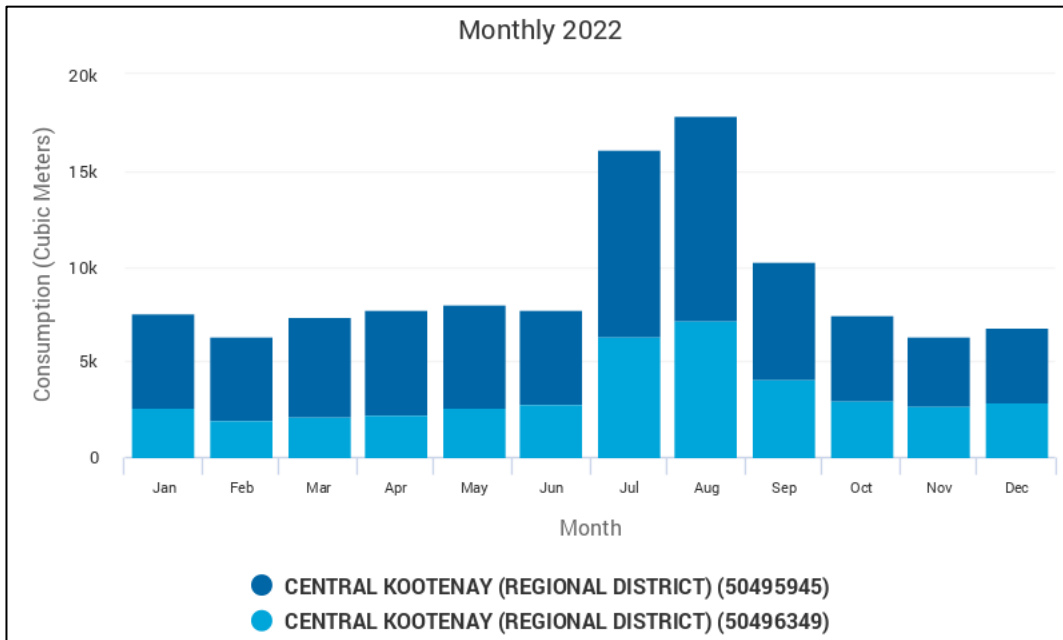


Figure 3 – Treated Water Volumes for Reporting Period

4.5 Chemistry

Comprehensive chemical analysis of water constituents was completed in November and December of 2019 from two separate sources within the distribution system. The results in Appendix A show that chemical parameters are below the Maximum Acceptable Concentration (MAC) as detailed in Health Canada’s *Guidelines for Canadian Drinking Water Quality – Summary Table (2017)*.

The RDCK also tested for the chemical disinfection by-products Trihalomethanes/Haloacetic Acids, and Volatile Organic Compounds in June and October. These results are summarized in Appendix B. The results show that levels are below the MAC as outlined in the *Guidelines*.

5. Advisories Issued

The following table describes the Notices and Advisories issued for the reporting period.

Table 1 – Notices and Advisories Issued

Notice/Advisory Type	Dates in Effect	Reason
Maintenance	April 13	Flushing and valve exercising
*Boil Water Notice - Localized	May 9 - 13	New water main connection north end of Queens Bay Rd.

*Each Notice/Advisory was issued a Rescind Notice to notify the public once action was completed and water quality sampling results demonstrated good water quality.

6. Events and Improvements

The following capital upgrades were completed in 2022:

- Ferry landing water main upgrade and raw water line realignment along the exit from HWY 3A to Upper Balfour Rd.
- Mainline extension up Queens Bay Rd and connection to Queens Bay Resort
- Sumac Phase 2 mainline and connection completed

Consumption data is collected using cellular endpoints that transmit meter data to a cellular network, which in turn sends the information to a secured hosted software suite for Advanced Metering Analytics (AMA). The AMA database can be accessed via an internet connection and provides a host of analytical data. The AMA suite also offers a customer portal website where they are able to monitor consumption data, access meter information, and set leak alerts to notify them should usage exceed a customer-set threshold. To date, 111 customers have signed up for the portal website service.

7. Water Conservation

Mandatory Stage 1 water conservation measures are in place from June 1 to September 30 every year. Stage 1 measures permit the watering of lawns, gardens, trees and shrubs only from 7pm to 10am daily. Watering using drip irrigation, a watering can or a hand held hose is permitted anytime. The RDCK did not implement water conservation measures higher than Stage 1 in 2022.

8. Planned Improvements

8.1 Improvements Required by Operating Permit or Drinking Water Officer

The current Interior Health Authority issued Permit to Operate for the Balfour Water System requires the following improvements:

1. Provide a source water protection plan for each water source
 - a. Provide a timeline for initiation of a source water assessment and implementation of a watershed control program
 - b. Complete modules 1, 2, 7, and 8 of the BC Comprehensive Drinking Water Source to Tap Assessment Guide or equivalent
2. Operate according to the RDCK cross connection control program
 - a. Develop a cross connection control program or implementation plan indicating milestones and dates for completion
 - b. Provide an annual update indicating successes and challenges of the cross connections control implementation plan within the water systems annual

report

The source water for the water system is Kootenay Lake. The RDCK completed a comprehensive watershed protection plan for the Balfour water system in March 2023. Signs have been posted that indicate a source water protection area. The Drinking Water Source to Tap Screen has been completed.

According to Water Bylaw 2894, cross connection control is required for all new connections or redevelopments for minor, moderate and severe risk premises, as laid out by the *Canadian Standards Association* (CSA-B64).

8.2 Future Improvements

Future planned capital upgrades and actions include the following:

- Carrier pipes for new water main laterals along section of Highway 3A to be installed in 2023 during highway resurfacing project.
- Replacement of 800m section of water main along highway servicing newly installed laterals with 8" water main and hydrants in 2024.

9. Training and Certification

Table 2 – Operator Certification

OPERATOR	ACTIVE EOCP LEVELS
David W. Sharun	WT-II, SWS, WD-II
Jay Colley	SWS, WT-II, WD 2
Kurt	WT MUI
Daniel	Uncertified

10. Emergency Response Plan

An Emergency Response Plan (ERP) for the Balfour Water System was completed in February 2012, and is updated annually. This document includes emergency contact information, a communications plan, and detailed procedures for the following types of incidents:

- broken water main;
- source contamination;
- elevated turbidity levels in treated water;
- fire in a building;
- flood conditions;
- loss of source;
- presence of coliforms or E. coli;
- pump failure;

- power failure; and
- low chlorine residuals.

The *Drinking Water Protection Regulation (2003)*, under Section 13, requires that water suppliers provide an ERP to address any potential emergencies that may impact the delivery of water and health of those being supplied by the water system. The ERP must be made accessible to the staff of the water supplier and a copy submitted to the local Environmental Health Officer. The RDCK has fulfilled these requirements for the Balfour Water System.

Appendix A: Comprehensive Chemistry Analysis Results



CERTIFICATE OF ANALYSIS

REPORTED TO	Regional District of Central Kootenay - Nelson Box 590 - 202 Lakeside Drive Nelson, BC V1L 5R4	WORK ORDER	N001181
ATTENTION	RDCK- Nelson	RECEIVED / TEMP REPORTED	2019-11-07 09:30 / 8°C
PO NUMBER	RDCK- Nelson	COC NUMBER	37652
PROJECT	Analytical Testing		
PROJECT INFO			

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.

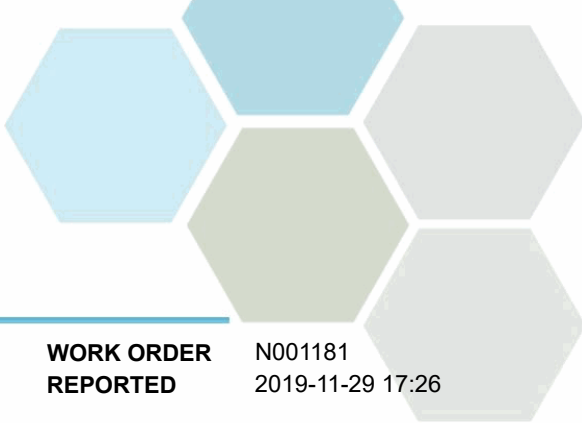
If you have any questions or concerns, please contact me at acrump@caro.ca

Authorized By:

Alana Crump
Junior Account Manager

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 Regional District of Central Kootenay - Nelson
Analytical Testing

WORK ORDER REPORTED N001181
2019-11-29 17:26

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
Ferry Landing - Line End (N001181-01) Matrix: Water Sampled: 2019-11-05 15:38					PRES

Anions

Chloride	2.43	AO ≤ 250	0.10 mg/L	2019-11-07	
Fluoride	< 0.10	MAC = 1.5	0.10 mg/L	2019-11-07	
Nitrate (as N)	0.088	MAC = 10	0.010 mg/L	2019-11-07	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2019-11-07	
Sulfate	12.7	AO ≤ 500	1.0 mg/L	2019-11-07	

Calculated Parameters

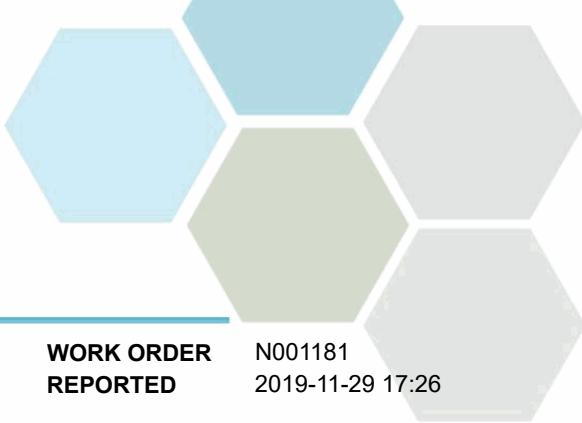
Cation-Anion Balance	-3.84	N/A		2019-11-20	
Hardness, Total (as CaCO3)	69.7	None Required	0.500 mg/L		N/A
Langelier Index	-0.7	N/A	-5.0	2019-11-20	
Solids, Total Dissolved	82.3	AO ≤ 500	1.00 mg/L		N/A

General Parameters

Alkalinity, Total (as CaCO3)	64.3	N/A	1.0 mg/L	2019-11-13	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2019-11-13	
Alkalinity, Bicarbonate (as CaCO3)	64.3	N/A	1.0 mg/L	2019-11-13	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2019-11-13	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2019-11-13	
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2019-11-08	
Conductivity (EC)	145	N/A	2.0 µS/cm	2019-11-13	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020 mg/L	2019-11-12	
pH	7.67	7.0-10.5	0.10 pH units	2019-11-13	HT2
Temperature, at pH	20.9	N/A	°C	2019-11-13	HT2
Turbidity	5.08	OG < 1	0.10 NTU	2019-11-08	

Total Metals

Aluminum, total	< 0.0050	OG < 0.1	0.0050 mg/L	2019-11-15	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2019-11-15	
Arsenic, total	0.00060	MAC = 0.01	0.00050 mg/L	2019-11-15	
Barium, total	0.0165	MAC = 1	0.0050 mg/L	2019-11-15	
Boron, total	0.0084	MAC = 5	0.0050 mg/L	2019-11-15	
Cadmium, total	0.000072	MAC = 0.005	0.000010 mg/L	2019-11-15	
Calcium, total	19.7	None Required	0.20 mg/L	2019-11-15	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2019-11-15	
Cobalt, total	0.00021	N/A	0.00010 mg/L	2019-11-15	
Copper, total	0.00306	MAC = 2	0.00040 mg/L	2019-11-15	
Iron, total	1.75	AO ≤ 0.3	0.010 mg/L	2019-11-15	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2019-11-15	
Magnesium, total	4.99	None Required	0.010 mg/L	2019-11-15	
Manganese, total	0.0297	MAC = 0.12	0.00020 mg/L	2019-11-15	
Molybdenum, total	0.00047	N/A	0.00010 mg/L	2019-11-15	
Nickel, total	< 0.00040	N/A	0.00040 mg/L	2019-11-15	
Potassium, total	0.47	N/A	0.10 mg/L	2019-11-15	



TEST RESULTS

REPORTED TO PROJECT Regional District of Central Kootenay - Nelson
Analytical Testing

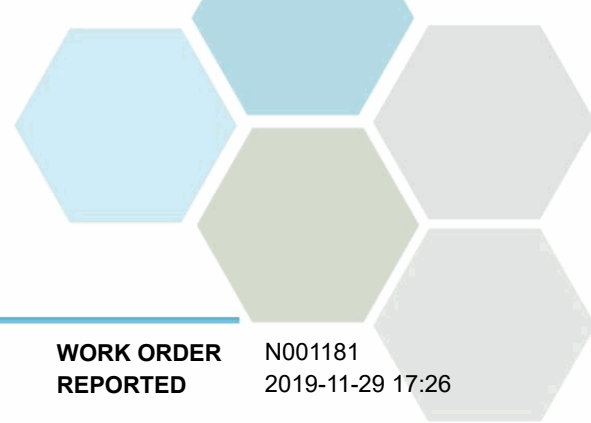
WORK ORDER REPORTED N001181
2019-11-29 17:26

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Ferry Landing - Line End (N001181-01) Matrix: Water Sampled: 2019-11-05 15:38, Continued						PRES
<i>Total Metals, Continued</i>						
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2019-11-15	
Sodium, total	2.41	AO ≤ 200	0.10	mg/L	2019-11-15	
Strontium, total	0.0966	7	0.0010	mg/L	2019-11-15	
Uranium, total	0.000596	MAC = 0.02	0.000020	mg/L	2019-11-15	
Zinc, total	0.155	AO ≤ 5	0.0040	mg/L	2019-11-15	

Sample 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 CN in the laboratory and the holding time has been extended.



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Regional District of Central Kootenay - Nelson
Analytical Testing

WORK ORDER REPORTED N001181
2019-11-29 17:26

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	Kelowna
Cation-Anion Balance in Water	SM 1030 E (2017)	SM 1030 E (2011)	N/A
Colour, True in Water	SM 2120 C (2017)	Spectrophotometry (456 nm)	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
Langelier Index in Water	SM 2330 B (2017)	Calculation	N/A
pH in Water	SM 4500-H+ B (2017)	Electrometry	Kelowna
Solids, Total Dissolved in Water	SM 1030 E (2017)	SM 1030 E (2011)	N/A
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 (2017)	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)
%	Percent
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
°C	Degrees Celcius
AO	Aesthetic Objective
CU	Colour Units (referenced against a platinum cobalt standard)
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
µS/cm	Microsiemens per centimetre
ASTM	ASTM International Test Methods
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager: acrump@caro.ca

CERTIFICATE OF ANALYSIS

REPORTED TO Interior Health Authority - Vernon
1440-14th Avenue
Vernon, BC V1B 2T1

ATTENTION Chris Russell

PO NUMBER

PROJECT Comprehensive Testing 2019 (Chris Russell)

PROJECT INFO Balfour

WORK ORDER 9120867

RECEIVED / TEMP REPORTED 2019-12-10 09:30 / 6°C
2019-12-18 18:38

COC NUMBER No Number

Introduction:

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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.

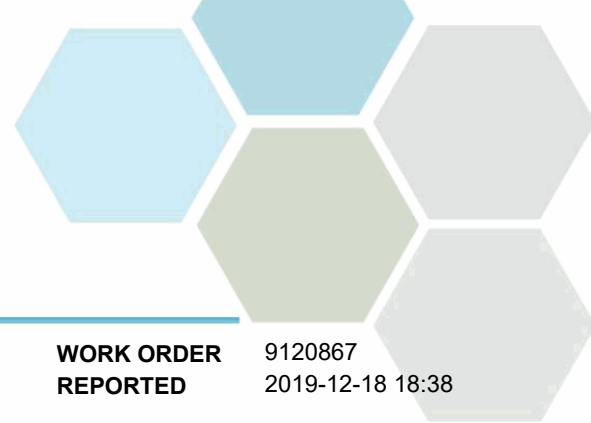
If you have any questions or concerns, please contact me at sgulenchyn@caro.ca

Authorized By:

Sara Gulenchyn, B.Sc, P.Chem.
Client Service Manager

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#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 Interior Health Authority - Vernon
Comprehensive Testing 2019 (Chris Russell)

WORK ORDER REPORTED 9120867
2019-12-18 18:38

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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2076; Balfour - Post Office (9120867-01) | Matrix: Water | Sampled: 2019-12-09 07:57

Anions

Chloride	2.38	AO ≤ 250	0.10 mg/L	2019-12-11	
Fluoride	< 0.10	MAC = 1.5	0.10 mg/L	2019-12-11	
Nitrate (as N)	0.195	MAC = 10	0.010 mg/L	2019-12-11	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2019-12-11	
Sulfate	13.8	AO ≤ 500	1.0 mg/L	2019-12-11	

Calculated Parameters

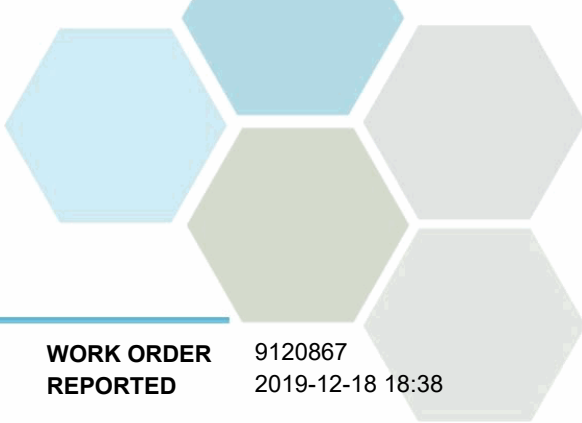
Hardness, Total (as CaCO3)	82.2	None Required	0.500 mg/L	N/A	
Langelier Index	-0.4	N/A	-5.0	2019-12-18	
Solids, Total Dissolved	94.3	AO ≤ 500	1.00 mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	74.7	N/A	1.0 mg/L	2019-12-12	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2019-12-12	
Alkalinity, Bicarbonate (as CaCO3)	74.7	N/A	1.0 mg/L	2019-12-12	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2019-12-12	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2019-12-12	
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2019-12-11	
Conductivity (EC)	171	N/A	2.0 µS/cm	2019-12-12	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020 mg/L	2019-12-12	
pH	7.77	7.0-10.5	0.10 pH units	2019-12-12	HT2
Temperature, at pH	22.5	N/A	°C	2019-12-12	HT2
Turbidity	0.11	OG < 1	0.10 NTU	2019-12-11	

Total Metals

Aluminum, total	< 0.0050	OG < 0.1	0.0050 mg/L	2019-12-18	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2019-12-18	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050 mg/L	2019-12-18	
Barium, total	0.0242	MAC = 1	0.0050 mg/L	2019-12-18	
Boron, total	< 0.0050	MAC = 5	0.0050 mg/L	2019-12-18	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010 mg/L	2019-12-18	
Calcium, total	23.0	None Required	0.20 mg/L	2019-12-18	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2019-12-18	
Cobalt, total	< 0.00010	N/A	0.00010 mg/L	2019-12-18	
Copper, total	0.00572	MAC = 2	0.00040 mg/L	2019-12-18	
Iron, total	< 0.010	AO ≤ 0.3	0.010 mg/L	2019-12-18	
Lead, total	0.00026	MAC = 0.005	0.00020 mg/L	2019-12-18	
Magnesium, total	5.98	None Required	0.010 mg/L	2019-12-18	
Manganese, total	< 0.00020	MAC = 0.12	0.00020 mg/L	2019-12-18	
Mercury, total	< 0.000010	MAC = 0.001	0.000010 mg/L	2019-12-12	
Molybdenum, total	0.00054	N/A	0.00010 mg/L	2019-12-18	
Nickel, total	< 0.00040	N/A	0.00040 mg/L	2019-12-18	
Potassium, total	0.46	N/A	0.10 mg/L	2019-12-18	



TEST RESULTS

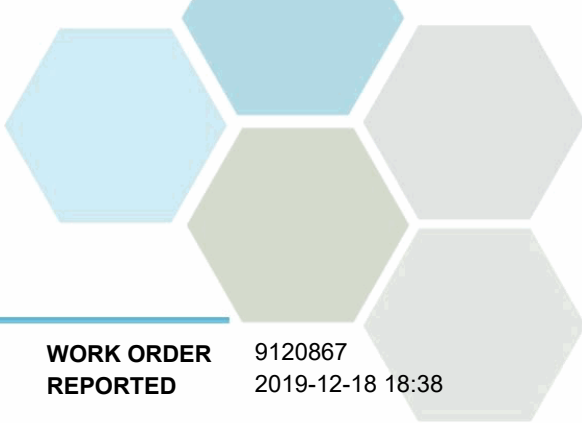
REPORTED TO PROJECT Interior Health Authority - Vernon
Comprehensive Testing 2019 (Chris Russell)

WORK ORDER REPORTED 9120867
2019-12-18 18:38

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
2076; Balfour - Post Office (9120867-01) Matrix: Water Sampled: 2019-12-09 07:57, Continued						
<i>Total Metals, Continued</i>						
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2019-12-18	
Sodium, total	2.19	AO ≤ 200	0.10	mg/L	2019-12-18	
Strontium, total	0.111	7	0.0010	mg/L	2019-12-18	
Uranium, total	0.000745	MAC = 0.02	0.000020	mg/L	2019-12-18	
Zinc, total	0.0093	AO ≤ 5	0.0040	mg/L	2019-12-18	

Sample Qualifiers:

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 Interior Health Authority - Vernon
Comprehensive Testing 2019 (Chris Russell)

WORK ORDER REPORTED 9120867
2019-12-18 18:38

Analysis Description	Method Ref.	Technique	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	Kelowna
Colour, True in Water	SM 2120 C (2017)	Spectrophotometry (456 nm)	Kelowna
Conductivity in Water	SM 2510 B (2017)	Conductivity Meter	Kelowna
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	Kelowna
Hardness in Water	SM 2340 B* (2017)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	N/A
Langelier Index in Water	SM 2330 B (2017)	Calculation	N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	Richmond
pH in Water	SM 4500-H+ B (2017)	Electrometry	Kelowna
Solids, Total Dissolved in Water	SM 1030 E (2017)	SM 1030 E (2011)	N/A
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 (2017)	Nephelometry	Kelowna

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

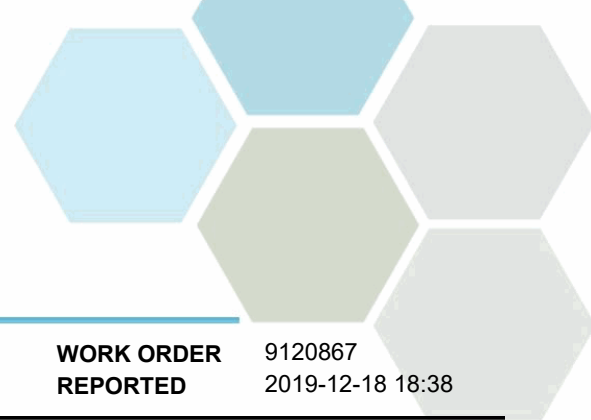
Glossary of Terms:

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
°C	Degrees Celcius
AO	Aesthetic Objective
CU	Colour Units (referenced against a platinum cobalt standard)
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
µS/cm	Microsiemens per centimetre
ASTM	ASTM International Test Methods
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association

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.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager: sgulenchyn@caro.ca



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Interior Health Authority - Vernon
Comprehensive Testing 2019 (Chris Russell)

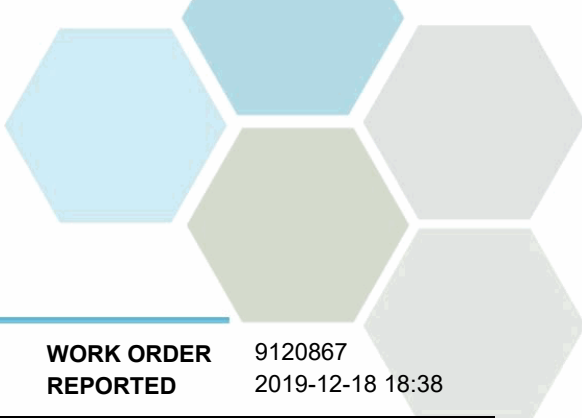
WORK ORDER REPORTED 9120867
2019-12-18 18:38

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS):** A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS):** A second aliquot of sample is fortified with with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B9L0892									
Blank (B9L0892-BLK1)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
Blank (B9L0892-BLK2)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Sulfate	< 1.0	1.0 mg/L							
LCS (B9L0892-BS1)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Chloride	16.0	0.10 mg/L	16.0		100	90-110			
Fluoride	4.10	0.10 mg/L	4.00		102	88-108			
Nitrate (as N)	4.11	0.010 mg/L	4.00		103	90-110			
Nitrite (as N)	2.02	0.010 mg/L	2.00		101	85-115			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			
LCS (B9L0892-BS2)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Chloride	16.2	0.10 mg/L	16.0		101	90-110			
Fluoride	3.95	0.10 mg/L	4.00		99	88-108			
Nitrate (as N)	4.11	0.010 mg/L	4.00		103	90-110			
Nitrite (as N)	2.01	0.010 mg/L	2.00		101	85-115			
Sulfate	16.0	1.0 mg/L	16.0		100	90-110			
General Parameters, Batch B9L0873									
Blank (B9L0873-BLK1)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Turbidity	< 0.10	0.10 NTU							
LCS (B9L0873-BS1)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Turbidity	38.8	0.10 NTU	40.0		97	90-110			

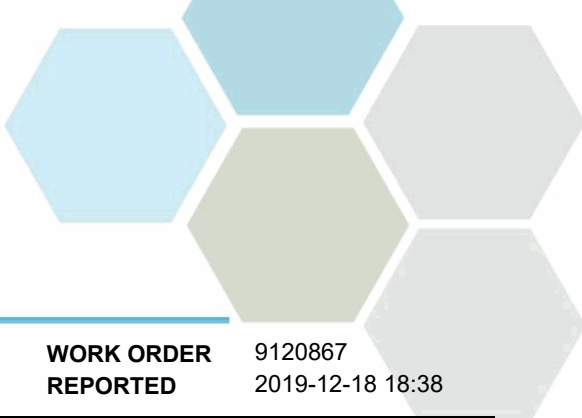


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Interior Health Authority - Vernon
Comprehensive Testing 2019 (Chris Russell)

WORK ORDER REPORTED 9120867
2019-12-18 18:38

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9L0873, Continued									
General Parameters, Batch B9L0876									
Blank (B9L0876-BLK1)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Colour, True	< 5.0	5.0 CU							
Blank (B9L0876-BLK2)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Colour, True	< 5.0	5.0 CU							
LCS (B9L0876-BS1)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Colour, True	21	5.0 CU	20.0		103	85-115			
LCS (B9L0876-BS2)			Prepared: 2019-12-11, Analyzed: 2019-12-11						
Colour, True	21	5.0 CU	20.0		105	85-115			
General Parameters, Batch B9L0919									
Blank (B9L0919-BLK1)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Cyanide, Total	< 0.0020	0.0020 mg/L							
Blank (B9L0919-BLK2)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Cyanide, Total	< 0.0020	0.0020 mg/L							
LCS (B9L0919-BS1)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Cyanide, Total	0.0196	0.0020 mg/L	0.0200		98	82-120			
LCS (B9L0919-BS2)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Cyanide, Total	0.0189	0.0020 mg/L	0.0200		95	82-120			
LCS Dup (B9L0919-BSD1)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Cyanide, Total	0.0202	0.0020 mg/L	0.0200		101	82-120	3	10	
LCS Dup (B9L0919-BSD2)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Cyanide, Total	0.0183	0.0020 mg/L	0.0200		92	82-120	3	10	
General Parameters, Batch B9L0980									
Blank (B9L0980-BLK1)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
Blank (B9L0980-BLK2)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Conductivity (EC)	< 2.0	2.0 µS/cm							
LCS (B9L0980-BS1)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Alkalinity, Total (as CaCO3)	95.8	1.0 mg/L	100		96	80-120			

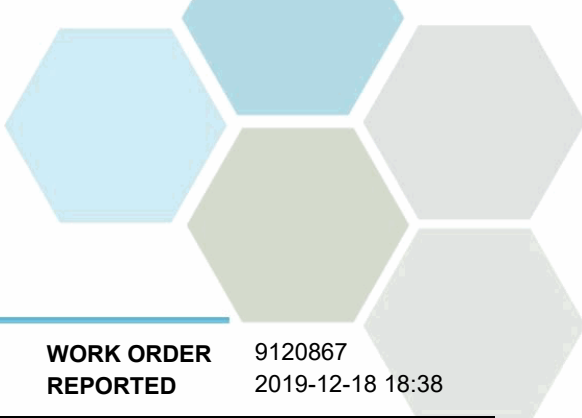


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Interior Health Authority - Vernon
Comprehensive Testing 2019 (Chris Russell)

WORK ORDER REPORTED 9120867
2019-12-18 18:38

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B9L0980, Continued									
LCS (B9L0980-BS2)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Alkalinity, Total (as CaCO3)	95.4	1.0 mg/L	100		95	80-120			
LCS (B9L0980-BS3)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Conductivity (EC)	1370	2.0 µS/cm	1410		97	95-104			
LCS (B9L0980-BS4)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Conductivity (EC)	1360	2.0 µS/cm	1410		97	95-104			
Reference (B9L0980-SRM1)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
pH	6.99	0.10 pH units	7.01		100	98-102			
Reference (B9L0980-SRM2)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
pH	7.02	0.10 pH units	7.01		100	98-102			
Total Metals, Batch B9L1006									
Blank (B9L1006-BLK1)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Mercury, total	< 0.000010	0.000010 mg/L							
Blank (B9L1006-BLK2)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Mercury, total	< 0.000010	0.000010 mg/L							
Reference (B9L1006-SRM1)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Mercury, total	0.00480	0.000010 mg/L	0.00489		98	80-120			
Reference (B9L1006-SRM2)			Prepared: 2019-12-12, Analyzed: 2019-12-12						
Mercury, total	0.00463	0.000010 mg/L	0.00489		95	80-120			
Total Metals, Batch B9L1125									
Blank (B9L1125-BLK1)			Prepared: 2019-12-13, Analyzed: 2019-12-18						
Aluminum, total	< 0.0050	0.0050 mg/L							
Antimony, total	< 0.00020	0.00020 mg/L							
Arsenic, total	< 0.00050	0.00050 mg/L							
Barium, total	< 0.0050	0.0050 mg/L							
Boron, total	< 0.0050	0.0050 mg/L							
Cadmium, total	< 0.000010	0.000010 mg/L							
Calcium, total	< 0.20	0.20 mg/L							
Chromium, total	< 0.00050	0.00050 mg/L							
Cobalt, total	< 0.00010	0.00010 mg/L							
Copper, total	< 0.00040	0.00040 mg/L							
Iron, total	< 0.010	0.010 mg/L							
Lead, total	< 0.00020	0.00020 mg/L							
Magnesium, total	< 0.010	0.010 mg/L							
Manganese, total	< 0.00020	0.00020 mg/L							
Molybdenum, total	< 0.00010	0.00010 mg/L							
Nickel, total	< 0.00040	0.00040 mg/L							
Potassium, total	< 0.10	0.10 mg/L							
Selenium, total	< 0.00050	0.00050 mg/L							
Sodium, total	< 0.10	0.10 mg/L							
Strontium, total	< 0.0010	0.0010 mg/L							
Uranium, total	< 0.000020	0.000020 mg/L							
Zinc, total	< 0.0040	0.0040 mg/L							



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Interior Health Authority - Vernon
Comprehensive Testing 2019 (Chris Russell)

WORK ORDER REPORTED 9120867
2019-12-18 18:38

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B9L1125, Continued									
LCS (B9L1125-BS1)					Prepared: 2019-12-13, Analyzed: 2019-12-18				
Aluminum, total	0.0199	0.0050 mg/L	0.0199		100	80-120			
Antimony, total	0.0189	0.00020 mg/L	0.0200		94	80-120			
Arsenic, total	0.0197	0.00050 mg/L	0.0200		98	80-120			
Barium, total	0.0180	0.0050 mg/L	0.0198		91	80-120			
Boron, total	0.0184	0.0050 mg/L	0.0200		92	80-120			
Cadmium, total	0.0193	0.000010 mg/L	0.0199		97	80-120			
Calcium, total	1.84	0.20 mg/L	2.02		91	80-120			
Chromium, total	0.0196	0.00050 mg/L	0.0198		99	80-120			
Cobalt, total	0.0201	0.00010 mg/L	0.0199		101	80-120			
Copper, total	0.0201	0.00040 mg/L	0.0200		100	80-120			
Iron, total	1.85	0.010 mg/L	2.02		91	80-120			
Lead, total	0.0196	0.00020 mg/L	0.0199		99	80-120			
Magnesium, total	1.86	0.010 mg/L	2.02		92	80-120			
Manganese, total	0.0187	0.00020 mg/L	0.0199		94	80-120			
Molybdenum, total	0.0186	0.00010 mg/L	0.0200		93	80-120			
Nickel, total	0.0200	0.00040 mg/L	0.0200		100	80-120			
Potassium, total	1.80	0.10 mg/L	2.02		89	80-120			
Selenium, total	0.0202	0.00050 mg/L	0.0200		101	80-120			
Sodium, total	1.90	0.10 mg/L	2.02		94	80-120			
Strontium, total	0.0181	0.0010 mg/L	0.0200		90	80-120			
Uranium, total	0.0200	0.000020 mg/L	0.0200		100	80-120			
Zinc, total	0.0233	0.0040 mg/L	0.0200		117	80-120			
Reference (B9L1125-SRM1)					Prepared: 2019-12-13, Analyzed: 2019-12-18				
Aluminum, total	0.113	0.0050 mg/L	0.118		96	82-114			
Antimony, total	0.0220	0.00020 mg/L	0.0216		102	88-115			
Arsenic, total	0.227	0.00050 mg/L	0.212		107	88-111			
Barium, total	1.53	0.0050 mg/L	1.65		93	83-110			
Boron, total	0.781	0.0050 mg/L	0.825		95	79-117			
Cadmium, total	0.111	0.000010 mg/L	0.110		100	90-110			
Calcium, total	3.82	0.20 mg/L	3.86		99	85-120			
Chromium, total	0.224	0.00050 mg/L	0.217		103	88-111			
Cobalt, total	0.0663	0.00010 mg/L	0.0620		107	90-114			
Copper, total	0.438	0.00040 mg/L	0.408		107	90-117			
Iron, total	0.633	0.010 mg/L	0.635		100	90-116			
Lead, total	0.0561	0.00020 mg/L	0.0550		102	90-110			
Magnesium, total	3.33	0.010 mg/L	3.30		101	88-116			
Manganese, total	0.169	0.00020 mg/L	0.171		99	88-108			
Molybdenum, total	0.204	0.00010 mg/L	0.202		101	88-110			
Nickel, total	0.437	0.00040 mg/L	0.418		105	90-112			
Potassium, total	1.38	0.10 mg/L	1.44		96	87-116			
Selenium, total	0.0180	0.00050 mg/L	0.0162		111	90-122			
Sodium, total	8.93	0.10 mg/L	9.00		99	81-117			
Strontium, total	0.459	0.0010 mg/L	0.468		98	86-110			
Uranium, total	0.128	0.000020 mg/L	0.129		99	88-112			
Zinc, total	0.461	0.0040 mg/L	0.424		109	90-113			

Appendix B: Trihalomethanes/Haloacetic Acid and Volatile Organic Compounds Monitoring Results



CERTIFICATE OF ANALYSIS

REPORTED TO	Regional District of Central Kootenay - Nelson Box 590 - 202 Lakeside Drive Nelson, BC V1L 5R4	WORK ORDER	22F3613
ATTENTION	Steve Ethier	RECEIVED / TEMP REPORTED	2022-06-23 09:30 / 12.5°C
PO NUMBER	RDCK- Balfour	COC NUMBER	B112237
PROJECT	Balfour		
PROJECT INFO			

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/IEC 17025:2017 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.

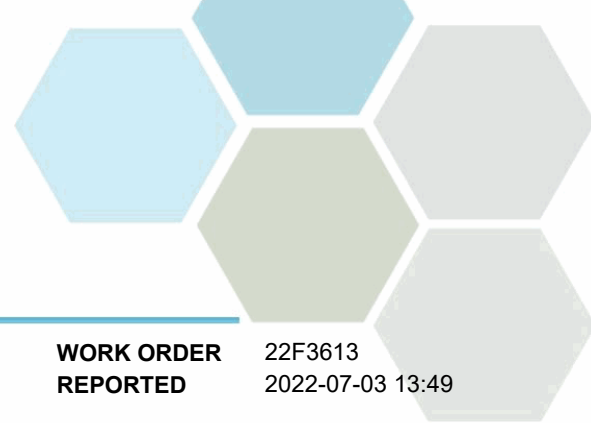
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4

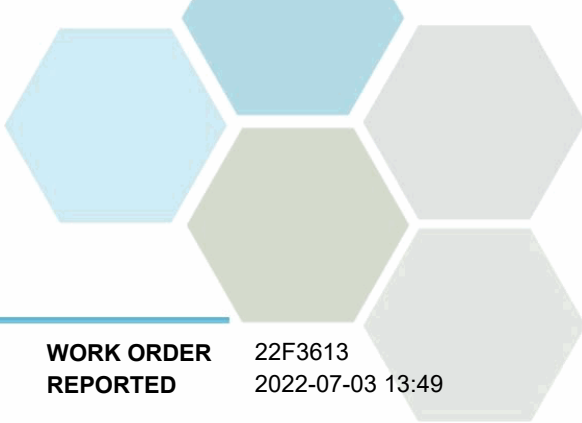


TEST RESULTS

REPORTED TO PROJECT Regional District of Central Kootenay - Nelson
Balfour

WORK ORDER REPORTED 22F3613
2022-07-03 13:49

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Balfour (22F3613-01) Matrix: Water Sampled: 2022-06-20 12:00						
Calculated Parameters						
Total Trihalomethanes	0.0430	MAC = 0.1	0.00400	mg/L		N/A
Haloacetic Acids						
Monochloroacetic Acid	< 0.0020	N/A	0.0020	mg/L		2022-07-01
Monobromoacetic Acid	< 0.0020	N/A	0.0020	mg/L		2022-07-01
Dichloroacetic Acid	0.0192	N/A	0.0020	mg/L		2022-07-01
Trichloroacetic Acid	0.0253	N/A	0.0020	mg/L		2022-07-01
Dibromoacetic Acid	< 0.0020	N/A	0.0020	mg/L		2022-07-01
Total Haloacetic Acids (HAA5)	0.0444	MAC = 0.08	0.00200	mg/L		N/A
Surrogate: 2-Bromopropionic Acid	102		70-130	%		2022-07-01
Volatile Organic Compounds (VOC)						
Bromodichloromethane	< 0.0010	N/A	0.0010	mg/L		2022-06-28
Bromoform	< 0.0010	N/A	0.0010	mg/L		2022-06-28
Chloroform	0.0430	N/A	0.0010	mg/L		2022-06-28
Dibromochloromethane	< 0.0010	N/A	0.0010	mg/L		2022-06-28
Surrogate: Toluene-d8	105		70-130	%		2022-06-28
Surrogate: 4-Bromofluorobenzene	100		70-130	%		2022-06-28



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Regional District of Central Kootenay - Nelson
Balfour

WORK ORDER REPORTED 22F3613
2022-07-03 13:49

Analysis Description	Method Ref.	Technique	Accredited	Location
Haloacetic Acids in Water	EPA 552.3*	Liquid-Liquid Microextraction, Derivatization and GC-ECD	✓	Richmond
Trihalomethanes in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	✓	Richmond

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
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
EPA	United States Environmental Protection Agency Test Methods

Guidelines Referenced in this Report:

[Guidelines for Canadian Drinking Water Quality \(Health Canada, June 2019\)](#)

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

General Comments:

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Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any **Bold** and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager: bwhitehead@caro.ca

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CERTIFICATE OF ANALYSIS

REPORTED TO	Regional District of Central Kootenay - Nelson Box 590 - 202 Lakeside Drive Nelson, BC V1L 5R4	WORK ORDER	22J1985
ATTENTION	RDCK- Nelson	RECEIVED / TEMP REPORTED	2022-10-14 09:30 / 13.1°C
PO NUMBER	RDCK- Nelson	REPORTED	2022-10-25 12:18
PROJECT	Analytical Testing	COC NUMBER	No Number
PROJECT INFO	BAL		

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/IEC 17025:2017 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.

By engaging our services, you are agreeing to CARO Analytical Service's Standard Terms and Conditions outlined here: <https://www.caro.ca/terms-conditions>

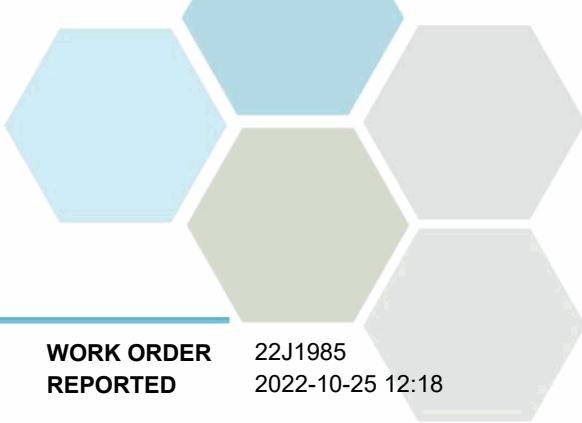
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Account Manager

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 | #108 4475 Wayburne Drive Burnaby, BC V5G 4X4



TEST RESULTS

REPORTED TO PROJECT Regional District of Central Kootenay - Nelson
Analytical Testing

WORK ORDER REPORTED 22J1985
2022-10-25 12:18

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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BAL - Post Office (22J1985-01) | Matrix: Water | Sampled: 2022-10-11 12:26

Calculated Parameters

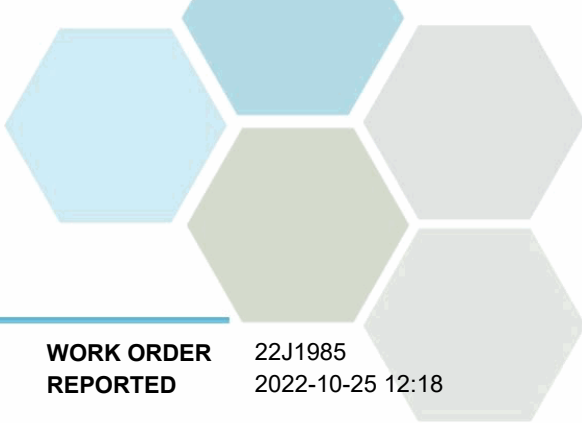
Total Trihalomethanes	0.0504	MAC = 0.1	0.00400	mg/L		N/A
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Haloacetic Acids

Monochloroacetic Acid	< 0.0020	N/A	0.0020	mg/L		2022-10-23
Monobromoacetic Acid	< 0.0020	N/A	0.0020	mg/L		2022-10-23
Dichloroacetic Acid	0.0158	N/A	0.0020	mg/L		2022-10-23
Trichloroacetic Acid	0.0222	N/A	0.0020	mg/L		2022-10-23
Dibromoacetic Acid	< 0.0020	N/A	0.0020	mg/L		2022-10-23
Total Haloacetic Acids (HAA5)	0.0379	MAC = 0.08	0.00200	mg/L		N/A
Surrogate: 2-Bromopropionic Acid	96		70-130	%		2022-10-23

Volatile Organic Compounds (VOC)

Bromodichloromethane	0.0013	N/A	0.0010	mg/L		2022-10-22
Bromoform	< 0.0010	N/A	0.0010	mg/L		2022-10-22
Chloroform	0.0491	N/A	0.0010	mg/L		2022-10-22
Dibromochloromethane	< 0.0010	N/A	0.0010	mg/L		2022-10-22
Surrogate: Toluene-d8	81		70-130	%		2022-10-22
Surrogate: 4-Bromofluorobenzene	108		70-130	%		2022-10-22



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Regional District of Central Kootenay - Nelson
Analytical Testing

WORK ORDER REPORTED 22J1985
2022-10-25 12:18

Analysis Description	Method Ref.	Technique	Accredited	Location
Haloacetic Acids in Water	EPA 552.3*	Liquid-Liquid Microextraction, Derivatization and GC-ECD	✓	Richmond
Trihalomethanes in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	✓	Richmond

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