



CERTIFICATE OF ANALYSIS

REPORTED TO Black Mountain Irrigation District
285 Gray Avenue
KELOWNA, BC V1X 1W8

ATTENTION Robert Hrasko

PO NUMBER
PROJECT Drinking Water/ Bacteria
PROJECT INFO

WORK ORDER 22A0768

RECEIVED / TEMP 2022-01-10 13:28 / 9.1°C
REPORTED 2022-01-17 13:31
COC NUMBER No Number

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.

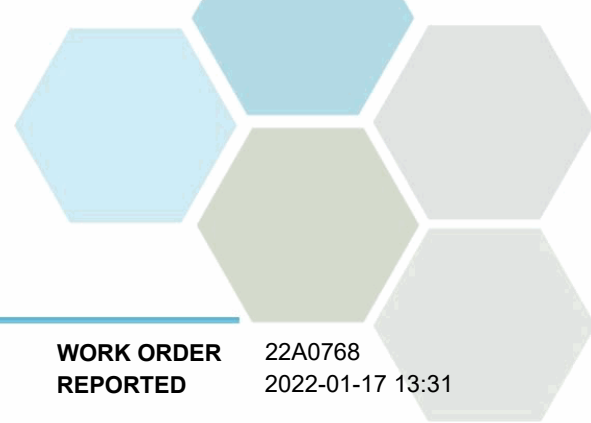
If you have any questions or concerns, please contact me at bwhitehead@caro.ca

Authorized By:

Brent Whitehead
Client Service Team Lead

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TEST RESULTS

REPORTED TO PROJECT Black Mountain Irrigation District
Drinking Water/ Bacteria

WORK ORDER REPORTED 22A0768
2022-01-17 13:31

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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Booster #1 (22A0768-01) | Matrix: Water | Sampled: 2022-01-10 08:35

Microbiological Parameters

Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2022-01-10	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2022-01-10	

Screen Works (22A0768-02) | Matrix: Water | Sampled: 2022-01-10 08:59

General Parameters

Alkalinity, Total (as CaCO3)	45.5	N/A	1.0	mg/L	2022-01-11	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-01-11	
Alkalinity, Bicarbonate (as CaCO3)	45.5	N/A	1.0	mg/L	2022-01-11	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-01-11	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-01-11	
Colour, True	< 5.0	AO ≤ 15	5.0	CU	2022-01-14	HT1
Conductivity (EC)	123	N/A	2.0	µS/cm	2022-01-11	
pH	6.99	7.0-10.5	0.10	pH units	2022-01-11	HT2
Turbidity	0.33	OG < 1	0.10	NTU	2022-01-13	
UV Transmittance @ 254nm	86.1	N/A	0.10	% T	2022-01-14	HT1

Well #4 (22A0768-03) | Matrix: Water | Sampled: 2022-01-10 13:02

Anions

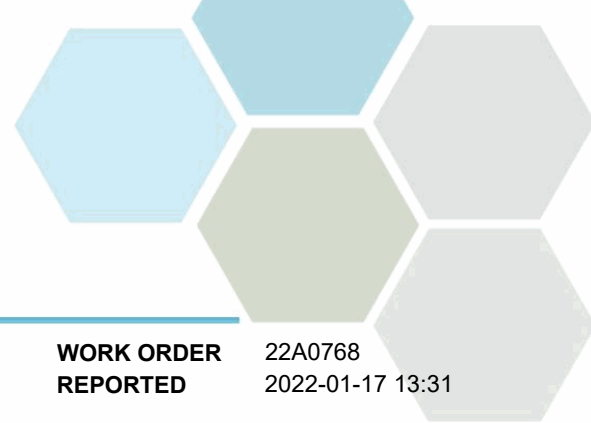
Chloride	12.3	AO ≤ 250	0.10	mg/L	2022-01-11	
Fluoride	0.10	MAC = 1.5	0.10	mg/L	2022-01-11	
Nitrate (as N)	3.17	MAC = 10	0.010	mg/L	2022-01-11	
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2022-01-11	
Sulfate	24.9	AO ≤ 500	1.0	mg/L	2022-01-11	

Calculated Parameters

Hardness, Total (as CaCO3)	239	None Required	0.500	mg/L	N/A	
Langelier Index	0.2	N/A	-5.0		2022-01-17	
Solids, Total Dissolved	270	AO ≤ 500	1.00	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	195	N/A	1.0	mg/L	2022-01-11	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-01-11	
Alkalinity, Bicarbonate (as CaCO3)	195	N/A	1.0	mg/L	2022-01-11	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-01-11	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2022-01-11	
Colour, True	< 5.0	AO ≤ 15	5.0	CU	2022-01-14	HT1
Conductivity (EC)	488	N/A	2.0	µS/cm	2022-01-11	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	2022-01-12	
pH	7.48	7.0-10.5	0.10	pH units	2022-01-11	HT2
Temperature, at pH	23.0	N/A		°C	2022-01-11	HT2
Turbidity	< 0.10	OG < 1	0.10	NTU	2022-01-13	



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Well #4 (22A0768-03) | Matrix: Water | Sampled: 2022-01-10 13:02, Continued

Microbiological Parameters

Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2022-01-10	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2022-01-10	

Total Metals

Aluminum, total	< 0.0050	OG < 0.1	0.0050	mg/L	2022-01-12	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-01-12	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2022-01-12	
Barium, total	0.0139	MAC = 2	0.0050	mg/L	2022-01-12	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-01-12	
Cadmium, total	0.000028	MAC = 0.005	0.000010	mg/L	2022-01-12	
Calcium, total	73.0	None Required	0.20	mg/L	2022-01-12	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-01-12	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-01-12	
Copper, total	0.00402	MAC = 2	0.00040	mg/L	2022-01-12	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2022-01-12	
Lead, total	0.00027	MAC = 0.005	0.00020	mg/L	2022-01-12	
Magnesium, total	13.8	None Required	0.010	mg/L	2022-01-12	
Manganese, total	< 0.00020	MAC = 0.12	0.00020	mg/L	2022-01-12	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2022-01-12	
Molybdenum, total	0.00141	N/A	0.00010	mg/L	2022-01-12	
Nickel, total	0.00055	N/A	0.00040	mg/L	2022-01-12	
Potassium, total	1.86	N/A	0.10	mg/L	2022-01-12	
Selenium, total	0.00058	MAC = 0.05	0.00050	mg/L	2022-01-12	
Sodium, total	11.4	AO ≤ 200	0.10	mg/L	2022-01-12	
Strontium, total	0.304	MAC = 7	0.0010	mg/L	2022-01-12	
Uranium, total	0.00112	MAC = 0.02	0.000020	mg/L	2022-01-12	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2022-01-12	

Hadden Outlet - Raw (22A0768-04) | Matrix: Water | Sampled: 2022-01-10 08:53

Microbiological Parameters

Coliforms, Total (Q-Tray)	39	MAC = 0	1	MPN/100 mL	2022-01-10	
E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-01-10	

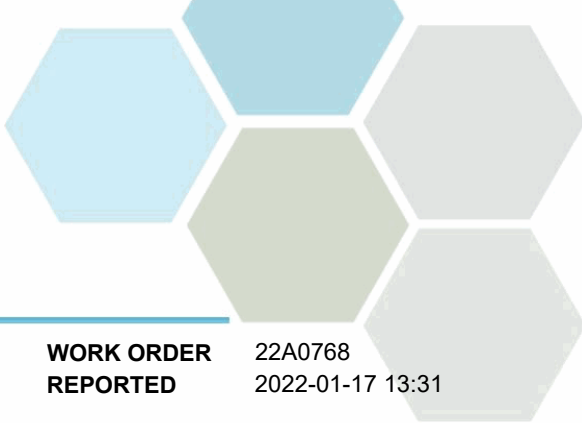
Stevens Outlet - Raw (22A0768-05) | Matrix: Water | Sampled: 2022-01-10 09:21

Microbiological Parameters

Coliforms, Total (Q-Tray)	35	MAC = 0	1	MPN/100 mL	2022-01-10	
E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-01-10	

2921 Belgo Rd (22A0768-06) | Matrix: Water | Sampled: 2022-01-10 07:48

Microbiological Parameters



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2921 Belgo Rd (22A0768-06) | Matrix: Water | Sampled: 2022-01-10 07:48, Continued

Microbiological Parameters, Continued

Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2022-01-10	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2022-01-10	

Kirschner Reservoir (22A0768-07) | Matrix: Water | Sampled: 2022-01-10 08:15

Microbiological Parameters

Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2022-01-10	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2022-01-10	

Prospect Reservoir (22A0768-08) | Matrix: Water | Sampled: 2022-01-10 11:09

Microbiological Parameters

Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2022-01-10	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2022-01-10	

Pearson School (22A0768-09) | Matrix: Water | Sampled: 2022-01-10 11:40

Anions

Chloride	8.39	AO ≤ 250	0.10 mg/L	2022-01-11	
Fluoride	< 0.10	MAC = 1.5	0.10 mg/L	2022-01-11	
Nitrate (as N)	0.023	MAC = 10	0.010 mg/L	2022-01-11	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2022-01-11	
Sulfate	6.9	AO ≤ 500	1.0 mg/L	2022-01-11	

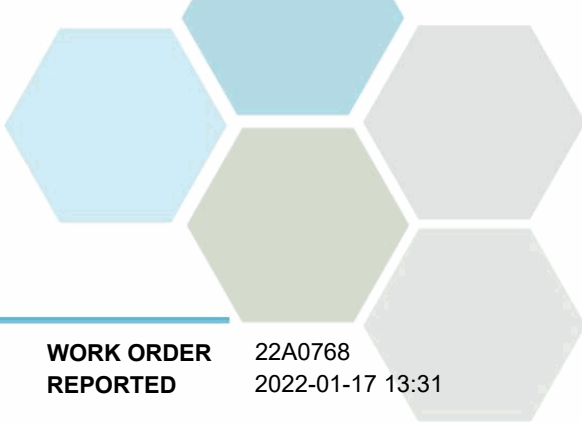
Calculated Parameters

Hardness, Total (as CaCO3)	54.7	None Required	0.500 mg/L	N/A	
Langelier Index	-1.5	N/A	-5.0	2022-01-17	
Solids, Total Dissolved	67.8	AO ≤ 500	1.00 mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	45.9	N/A	1.0 mg/L	2022-01-11	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-01-11	
Alkalinity, Bicarbonate (as CaCO3)	45.9	N/A	1.0 mg/L	2022-01-11	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-01-11	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-01-11	
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2022-01-14	HT1
Conductivity (EC)	126	N/A	2.0 µS/cm	2022-01-11	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020 mg/L	2022-01-12	
pH	7.05	7.0-10.5	0.10 pH units	2022-01-11	HT2
Temperature, at pH	23.1	N/A	°C	2022-01-11	HT2
Turbidity	0.32	OG < 1	0.10 NTU	2022-01-13	

Microbiological Parameters



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Pearson School (22A0768-09) | Matrix: Water | Sampled: 2022-01-10 11:40, Continued

Microbiological Parameters, Continued

Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2022-01-10	
E. coli	< 1	MAC = 0	1	CFU/100 mL	2022-01-10	

Total Metals

Aluminum, total	0.0729	OG < 0.1	0.0050	mg/L	2022-01-12	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2022-01-12	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2022-01-12	
Barium, total	0.0099	MAC = 2	0.0050	mg/L	2022-01-12	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2022-01-12	
Cadmium, total	< 0.000010	MAC = 0.005	0.000010	mg/L	2022-01-12	
Calcium, total	15.9	None Required	0.20	mg/L	2022-01-12	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-01-12	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2022-01-12	
Copper, total	0.00235	MAC = 2	0.00040	mg/L	2022-01-12	
Iron, total	0.037	AO ≤ 0.3	0.010	mg/L	2022-01-12	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2022-01-12	
Magnesium, total	3.60	None Required	0.010	mg/L	2022-01-12	
Manganese, total	0.00355	MAC = 0.12	0.00020	mg/L	2022-01-12	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2022-01-12	
Molybdenum, total	0.00076	N/A	0.00010	mg/L	2022-01-12	
Nickel, total	0.00041	N/A	0.00040	mg/L	2022-01-12	
Potassium, total	0.74	N/A	0.10	mg/L	2022-01-12	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2022-01-12	
Sodium, total	4.11	AO ≤ 200	0.10	mg/L	2022-01-12	
Strontium, total	0.0807	MAC = 7	0.0010	mg/L	2022-01-12	
Uranium, total	0.000200	MAC = 0.02	0.000020	mg/L	2022-01-12	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2022-01-12	

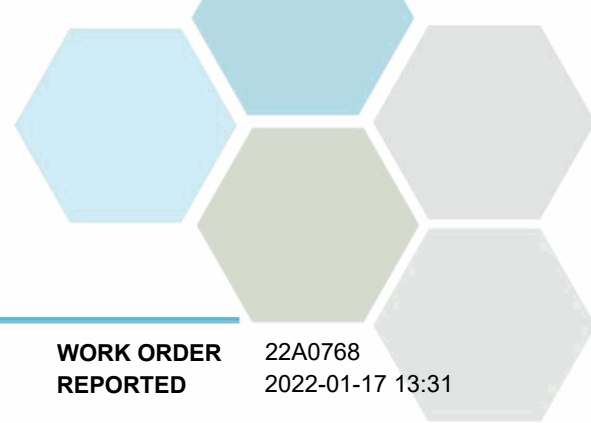
WTP Intake - Raw (22A0768-10) | Matrix: Water | Sampled: 2022-01-10 09:33

Microbiological Parameters

Coliforms, Total (Q-Tray)	27	MAC = 0	1	MPN/100 mL	2022-01-10	
E. coli (Q-Tray)	< 1	MAC = 0	1	MPN/100 mL	2022-01-10	

Sample Qualifiers:

- HT1 The sample was prepared and/or analyzed past the recommended holding time.
- HT2 The 15 minute recommended holding time (from sampling to analysis) has been exceeded - field analysis is recommended.



APPENDIX 1: SUPPORTING INFORMATION

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Drinking Water/ Bacteria

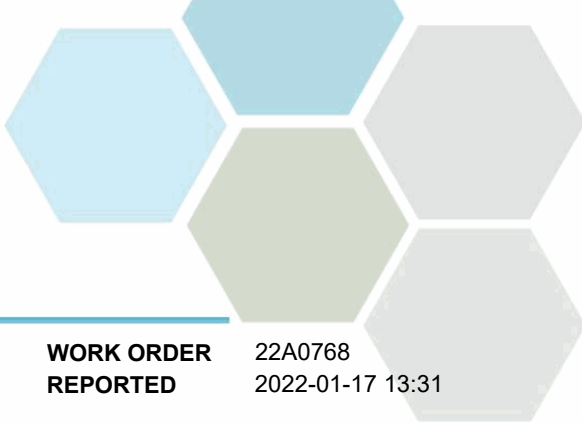
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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2017)	Titration with H2SO4	✓	Kelowna
Anions in Water	SM 4110 B (2017)	Ion Chromatography	✓	Kelowna
Coliforms, Total in Water	SM 9222* (2017)	Membrane Filtration / Chromocult Agar	✓	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
E. coli in Water	SM 9222* (2017)	Membrane Filtration / Chromocult Agar	✓	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
Transmittance at 254 nm in Water	SM 5910 B* (2017)	Ultraviolet Absorption	✓	Kelowna
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)
% T	Percent Transmittance
<	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
CFU/100 mL	Colony Forming Units per 100 millilitres
CU	Colour Units (referenced against a platinum cobalt standard)
MAC	Maximum Acceptable Concentration (health based)
mg/L	Milligrams per litre
MPN/100 mL	Most Probable Number per 100 millilitres
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



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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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