

CERTIFICATE OF ANALYSIS

REPORTED TO Wynndel Irrigation District
5127 A Wynndel Road
WYNNDEL, BC V0B 2N2

ATTENTION Bob Adams

PO NUMBER
PROJECT Drinking Water
PROJECT INFO

WORK ORDER 2412848

RECEIVED / TEMP 2024-09-23 08:00 / 19.8°C
REPORTED 2024-10-01 15:01
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.

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 TeamCaro@caro.ca

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TEST RESULTS

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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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Reservoir (2412848-01) | Matrix: Water | Sampled: 2024-09-19

Anions

Chloride	0.52	AO ≤ 250	0.10	mg/L	2024-09-24	
Fluoride	< 0.10	MAC = 1.5	0.10	mg/L	2024-09-24	
Nitrate (as N)	0.023	MAC = 10	0.010	mg/L	2024-09-24	HT1
Nitrite (as N)	< 0.010	MAC = 1	0.010	mg/L	2024-09-24	HT1
Sulfate	6.9	AO ≤ 500	1.0	mg/L	2024-09-24	

Calculated Parameters

Hardness, Total (as CaCO3)	100	None Required	0.500	mg/L	N/A	
Langelier Index	-0.3	N/A	-5.0		2024-10-01	CT6
Nitrate+Nitrite (as N)	0.0232	N/A	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	N/A	0.0500	mg/L	N/A	
Solids, Total Dissolved	101	AO ≤ 500	1.00	mg/L	N/A	

General Parameters

Alkalinity, Total (as CaCO3)	93.8	N/A	1.0	mg/L	2024-09-26	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-09-26	
Alkalinity, Bicarbonate (as CaCO3)	93.8	N/A	1.0	mg/L	2024-09-26	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-09-26	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0	mg/L	2024-09-26	
Ammonia, Total (as N)	< 0.050	None Required	0.050	mg/L	2024-09-25	
Carbon, Total Organic	0.98	N/A	0.50	mg/L	2024-09-26	
Colour, True	< 5.0	AO ≤ 15	5.0	CU	2024-09-26	HT1
Conductivity (EC)	202	N/A	2.0	µS/cm	2024-09-26	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020	mg/L	2024-09-30	
Nitrogen, Total Kjeldahl	< 0.050	N/A	0.050	mg/L	2024-09-28	
pH	7.88	7.0-10.5	0.10	pH units	2024-09-26	HT2
Temperature, at pH	22.8	N/A		°C	2024-09-26	HT2
Turbidity	0.18	OG < 1	0.10	NTU	2024-09-24	HT1
UV Transmittance @ 254 nm - Unfiltered	97.7	N/A	0.10	% T	2024-10-01	HT1
UV Transmittance @ 254nm	97.3	N/A	0.10	% T	2024-10-01	HT1

Microbiological Parameters

Coliforms, Total	< 1	MAC = 0	1	CFU/100 mL	2024-09-24	HT3
Background Colonies	< 1	N/A	1	CFU/100 mL	2024-09-24	HT4
E. coli	< 1	MAC = 0	1	CFU/100 mL	2024-09-24	HT3

Total Metals

Aluminum, total	0.0099	OG < 0.1	0.0050	mg/L	2024-09-26	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2024-09-26	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2024-09-26	
Barium, total	0.0948	MAC = 2	0.0050	mg/L	2024-09-26	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2024-09-26	
Cadmium, total	< 0.000010	MAC = 0.007	0.000010	mg/L	2024-09-26	
Calcium, total	23.3	None Required	0.20	mg/L	2024-09-26	



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Reservoir (2412848-01) Matrix: Water Sampled: 2024-09-19, Continued						
<i>Total Metals, Continued</i>						
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2024-09-26	
Cobalt, total	< 0.00010	N/A	0.00010	mg/L	2024-09-26	
Copper, total	0.00294	MAC = 2	0.00040	mg/L	2024-09-26	
Iron, total	0.013	AO ≤ 0.3	0.010	mg/L	2024-09-26	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2024-09-26	
Magnesium, total	10.2	None Required	0.010	mg/L	2024-09-26	
Manganese, total	0.00088	MAC = 0.12	0.00020	mg/L	2024-09-26	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2024-09-26	
Molybdenum, total	0.00035	N/A	0.00010	mg/L	2024-09-26	
Nickel, total	< 0.00040	N/A	0.00040	mg/L	2024-09-26	
Potassium, total	1.10	N/A	0.10	mg/L	2024-09-26	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2024-09-26	
Sodium, total	1.38	AO ≤ 200	0.10	mg/L	2024-09-26	
Strontium, total	0.0459	MAC = 7	0.0010	mg/L	2024-09-26	
Uranium, total	0.000551	MAC = 0.02	0.000020	mg/L	2024-09-26	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2024-09-26	

Sample Qualifiers:

- CT6 Results were based on lab temperature & lab pH.
- 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.
- HT3 Microbiological analysis was initiated beyond the maximum holding time of 30 hours. Results may not be valid.
- HT4 The collection date and/or time was not provided. Therefore holding time exceedances cannot be properly identified.



APPENDIX 1: SUPPORTING INFORMATION

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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2021)	Titration with H2SO4	✓	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2021)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2020)	Ion Chromatography	✓	Kelowna
Carbon, Total Organic in Water	SM 5310 B (2022)	Combustion, Infrared CO2 Detection	✓	Kelowna
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Colour, True in Water	SM 2120 C (2021)	Spectrophotometry (456 nm)	✓	Kelowna
Conductivity in Water	SM 2510 B (2021)	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* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Hardness in Water	SM 2340 B* (2021)	Calculation: 2.497 [total Ca] + 4.118 [total Mg] (Est)	✓	N/A
Langelier Index in Water	SM 2330 B (2021)	Calculation		N/A
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2021)	Block Digestion and Flow Injection Analysis	✓	Kelowna
pH in Water	SM 4500-H+ B (2021)	Electrometry	✓	Kelowna
Solids, Total Dissolved in Water	SM 1030 E (2021)	SM 1030 E		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 - Unfiltered in Water	SM 5910 B* (2021)	Ultraviolet Absorption	✓	Kelowna
Transmittance at 254 nm in Water	SM 5910 B* (2021)	Ultraviolet Absorption	✓	Kelowna
Turbidity in Water	SM 2130 B (2020)	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
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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