

CERTIFICATE OF ANALYSIS

REPORTED TO	Alto Utilities Ltd. 10397 Lodge Rd LAKE COUNTRY, BC V4V 1V6	WORK ORDER	2212371
ATTENTION	Keith Hanson	RECEIVED / TEMP REPORTED	2022-09-19 10:57 / 12.3°C 2022-09-26 12:02
PO NUMBER		COC NUMBER	B115396
PROJECT	Water Bacteriology		
PROJECT INFO	No Project		

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

Authorized By:

Team CARO
Client Service Representative

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

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Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
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Lodge Test Station - South Well (2212371-01) | Matrix: Water | Sampled: 2022-09-19 10:15

Anions

Chloride	99.8	AO ≤ 250	0.10 mg/L	2022-09-22	
Fluoride	0.30	MAC = 1.5	0.10 mg/L	2022-09-22	
Nitrate (as N)	0.925	MAC = 10	0.010 mg/L	2022-09-22	
Nitrite (as N)	< 0.010	MAC = 1	0.010 mg/L	2022-09-22	
Sulfate	79.0	AO ≤ 500	1.0 mg/L	2022-09-22	

Calculated Parameters

Hardness, Total (as CaCO3)	360	None Required	0.500 mg/L	N/A	
Solids, Total Dissolved	580	AO ≤ 500	1.00 mg/L	N/A	

General Parameters

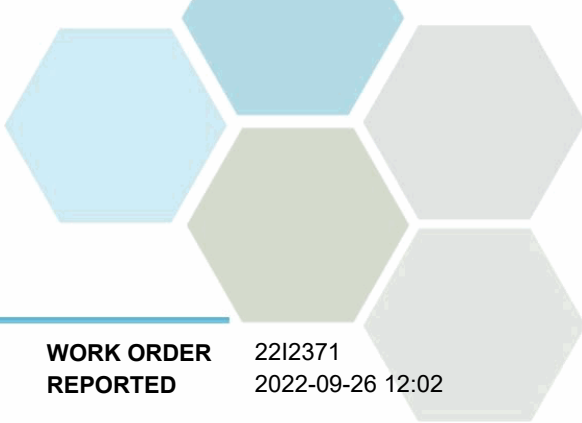
Alkalinity, Total (as CaCO3)	331	N/A	1.0 mg/L	2022-09-24	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-09-24	
Alkalinity, Bicarbonate (as CaCO3)	331	N/A	1.0 mg/L	2022-09-24	
Alkalinity, Carbonate (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-09-24	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	N/A	1.0 mg/L	2022-09-24	
Conductivity (EC)	974	N/A	2.0 µS/cm	2022-09-23	
Cyanide, Total	0.0048	MAC = 0.2	0.0020 mg/L	2022-09-23	
pH	7.98	7.0-10.5	0.10 pH units	2022-09-23	HT2
Turbidity	1.09	OG < 1	0.10 NTU	2022-09-19	

Microbiological Parameters

Coliforms, Total	< 1	MAC = 0	1 CFU/100 mL	2022-09-19	
E. coli	< 1	MAC = 0	1 CFU/100 mL	2022-09-19	

Total Metals

Aluminum, total	< 0.0050	OG < 0.1	0.0050 mg/L	2022-09-21	
Antimony, total	< 0.00020	MAC = 0.006	0.00020 mg/L	2022-09-21	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050 mg/L	2022-09-21	
Barium, total	0.0514	MAC = 2	0.0050 mg/L	2022-09-21	
Boron, total	0.0604	MAC = 5	0.0500 mg/L	2022-09-21	
Cadmium, total	0.000042	MAC = 0.005	0.000010 mg/L	2022-09-21	
Calcium, total	90.1	None Required	0.20 mg/L	2022-09-21	
Chromium, total	< 0.00050	MAC = 0.05	0.00050 mg/L	2022-09-21	
Copper, total	0.00160	MAC = 2	0.00040 mg/L	2022-09-21	
Iron, total	0.197	AO ≤ 0.3	0.010 mg/L	2022-09-21	
Lead, total	< 0.00020	MAC = 0.005	0.00020 mg/L	2022-09-21	
Magnesium, total	32.7	None Required	0.010 mg/L	2022-09-21	
Manganese, total	0.0539	MAC = 0.12	0.00020 mg/L	2022-09-21	
Potassium, total	5.46	N/A	0.10 mg/L	2022-09-21	
Selenium, total	0.00255	MAC = 0.05	0.00050 mg/L	2022-09-21	
Sodium, total	66.9	AO ≤ 200	0.10 mg/L	2022-09-21	
Strontium, total	0.803	MAC = 7	0.0010 mg/L	2022-09-21	
Uranium, total	0.0110	MAC = 0.02	0.000020 mg/L	2022-09-21	



TEST RESULTS

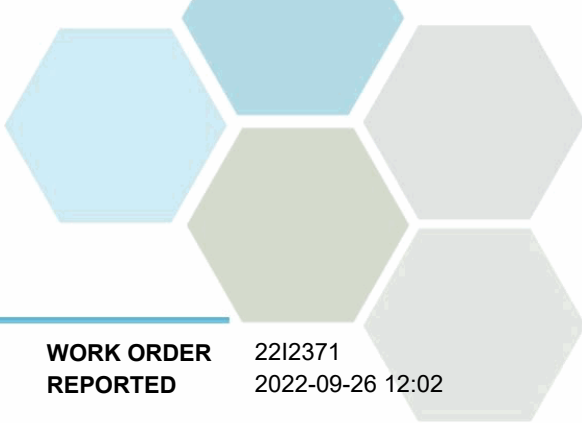
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Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
Lodge Test Station - South Well (2212371-01) Matrix: Water Sampled: 2022-09-19 10:15, Continued						
<i>Total Metals, Continued</i>						
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2022-09-21	

Sample Qualifiers:

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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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
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
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
AO	Aesthetic Objective
CFU/100 mL	Colony Forming Units per 100 millilitres
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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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: TeamCaro@caro.ca

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