



## CERTIFICATE OF ANALYSIS

<b>REPORTED TO</b>	Stettler, Town of (Alberta) 5031 - 50 Street Stettler, AB T0C 2L0	<b>WORK ORDER</b>	23A0309
<b>ATTENTION</b>	Grant McQuay	<b>RECEIVED / TEMP REPORTED</b>	2023-01-05 08:30 / 11.4°C 2023-01-20 15:56
<b>PO NUMBER</b>		<b>COC NUMBER</b>	09556
<b>PROJECT</b>	Distribution System - Biannual Analysis		
<b>PROJECT INFO</b>			

### 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>

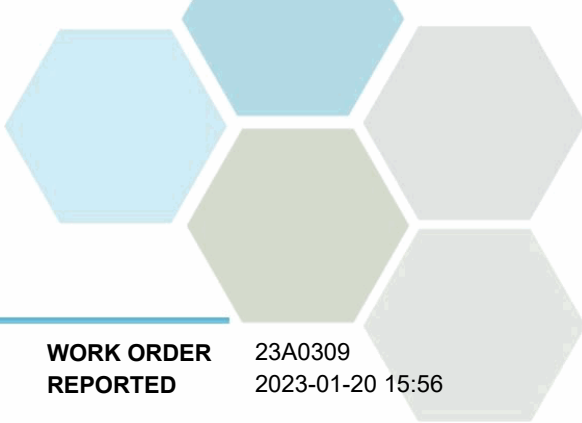
If you have any questions or concerns, please contact me at [rpschyk@caro.ca](mailto:rpschyk@caro.ca)

#### Authorized By:

Regan Pshyk  
Account Manager

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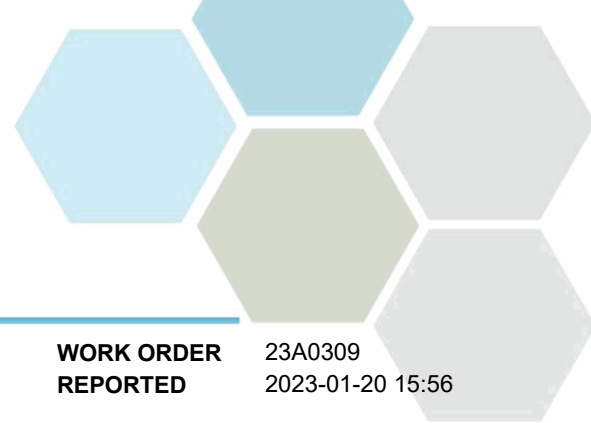
# TEST RESULTS

**REPORTED TO PROJECT** Stettler, Town of (Alberta)  
Distribution System - Biannual Analysis

**WORK ORDER REPORTED** 23A0309  
2023-01-20 15:56

Analyte	Result	Guideline	RL Units	Analyzed	Qualifier
<b>GT Hydraulics (23A0309-01)   Matrix: Water   Sampled: 2023-01-04 10:09</b>					<b>PRES</b>
<b>Acid Herbicides</b>					
2,4-D	< 0.10	MAC = 100	0.10 µg/L	2023-01-18	
MCPA	< 0.02	MAC = 350	0.02 µg/L	2023-01-18	
2,4,5-T	< 0.10	N/A	0.10 µg/L	2023-01-18	
Dicamba	< 0.10	MAC = 110	0.10 µg/L	2023-01-18	
Picloram	< 0.10	MAC = 190	0.10 µg/L	2023-01-18	
Dinoseb	< 0.10	N/A	0.10 µg/L	2023-01-18	
<b>Anions</b>					
Bromate	< 0.010	MAC = 0.01	0.010 mg/L	2023-01-12	
Chloride	<b>10.5</b>	AO ≤ 250	0.50 mg/L	2023-01-06	
Fluoride	<b>0.62</b>	MAC = 1.5	0.10 mg/L	2023-01-06	
Nitrate (as N)	<b>0.431</b>	MAC = 10	0.050 mg/L	2023-01-06	
Nitrite (as N)	< 0.050	MAC = 1	0.050 mg/L	2023-01-06	
Sulfate	<b>71.9</b>	AO ≤ 500	1.0 mg/L	2023-01-06	
<b>Calculated Parameters</b>					
Chloramines	<b>0.680</b>	MAC = 3	0.0400 mg/L	N/A	
Total Trihalomethanes	<b>0.0275</b>	MAC = 0.1	0.00400 mg/L	N/A	
Hardness, Total (as CaCO3)	<b>239</b>	None Required	0.541 mg/L	N/A	
Solids, Total Dissolved	<b>307</b>	AO ≤ 500	10 mg/L	2023-01-20	
<b>Chlorinated Phenols</b>					
2,4-Dichlorophenol	< 0.00020	AO ≤ 0.0003	0.00020 mg/L	2023-01-06	
2,4,6-Trichlorophenol	< 0.00050	AO ≤ 0.002	0.00050 mg/L	2023-01-06	
2,3,4,6-Tetrachlorophenol	< 0.00050	AO ≤ 0.001	0.00050 mg/L	2023-01-06	
Pentachlorophenol	< 0.00050	AO ≤ 0.03	0.00050 mg/L	2023-01-06	
<b>General Parameters</b>					
Alkalinity, Total (as CaCO3)	<b>191</b>	N/A	2.0 mg/L	2023-01-09	
Bicarbonate (HCO3)	<b>232</b>	N/A	2.0 mg/L	2023-01-09	
Carbonate (CO3)	< 2.0	N/A	2.0 mg/L	2023-01-09	
Hydroxide (OH)	< 2.0	N/A	2.0 mg/L	2023-01-09	
Ammonia, Total (as N)	<b>0.486</b>	None Required	0.050 mg/L	2023-01-09	
Carbon, Total Organic	<b>3.15</b>	N/A	0.50 mg/L	2023-01-09	
Chlorine, Total	<b>0.76</b>	None Required	0.02 mg/L	2023-01-05	HT2
Chlorine, Free	<b>0.08</b>	N/A	0.02 mg/L	2023-01-05	HT2
Colour, True	< 5.0	AO ≤ 15	5.0 CU	2023-01-06	
Conductivity (EC)	<b>568</b>	N/A	2.0 µS/cm	2023-01-09	
Cyanide, Total	< 0.0020	MAC = 0.2	0.0020 mg/L	2023-01-06	HT1
Nitilotriacetic Acid	< 0.20	MAC = 0.4	0.20 mg/L	2023-01-11	
pH	<b>7.26</b>	7.0-10.5	0.10 pH units	2023-01-09	HT2
Sulfide, Total	< 0.020	AO ≤ 0.05	0.020 mg/L	2023-01-09	
Turbidity	<b>0.14</b>	OG < 1	0.10 NTU	2023-01-06	

**Miscellaneous Herbicides**



# TEST RESULTS

**REPORTED TO PROJECT** Stettler, Town of (Alberta)  
Distribution System - Biannual Analysis

**WORK ORDER REPORTED** 23A0309  
2023-01-20 15:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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**GT Hydraulics (23A0309-01) | Matrix: Water | Sampled: 2023-01-04 10:09, Continued**

**PRES**

**Miscellaneous Herbicides, Continued**

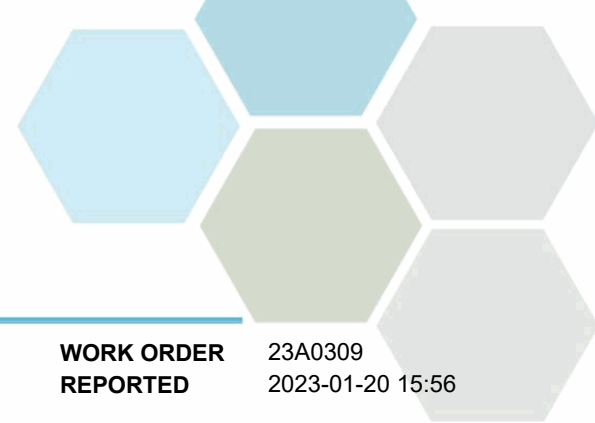
Glyphosate	< 0.050	MAC = 0.28	0.050	mg/L	2023-01-18	
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**Pesticides, Herbicides, and Fungicides**

Atrazine and metabolites	< 0.000100	MAC = 0.005	0.000100	mg/L	2023-01-12	
Azinphos-methyl	< 0.000200	MAC = 0.02	0.000200	mg/L	2023-01-12	
Bromoxynil	< 0.000200	MAC = 0.03	0.000200	mg/L	2023-01-12	
Chlorpyrifos	< 0.000010	MAC = 0.09	0.000010	mg/L	2023-01-12	
Cyanazine	< 0.000100	N/A	0.000100	mg/L	2023-01-12	
Diazinon	< 0.000020	MAC = 0.02	0.000020	mg/L	2023-01-12	
Diclofop-methyl	< 0.000100	MAC = 0.009	0.000100	mg/L	2023-01-12	
Dimethoate	< 0.000200	MAC = 0.02	0.000200	mg/L	2023-01-12	
Diuron	< 0.000200	MAC = 0.15	0.000200	mg/L	2023-01-12	
Malathion	< 0.000100	MAC = 0.19	0.000100	mg/L	2023-01-12	
Methoxychlor	< 0.000050	N/A	0.000050	mg/L	2023-01-12	
Metolachlor	< 0.000100	MAC = 0.05	0.000100	mg/L	2023-01-12	
Metribuzin	< 0.000200	MAC = 0.08	0.000200	mg/L	2023-01-12	
Phorate	< 0.000100	MAC = 0.002	0.000100	mg/L	2023-01-12	
Simazine	< 0.000200	MAC = 0.01	0.000200	mg/L	2023-01-12	
Terbufos	< 0.000100	MAC = 0.001	0.000100	mg/L	2023-01-12	
Triallate	< 0.000100	N/A	0.000100	mg/L	2023-01-12	
Trifluralin	< 0.000200	MAC = 0.045	0.000200	mg/L	2023-01-12	

**Polycyclic Aromatic Hydrocarbons (PAH)**

Acenaphthene	< 0.050	N/A	0.050	µg/L	2023-01-05	
Acenaphthylene	< 0.200	N/A	0.200	µg/L	2023-01-05	
Anthracene	< 0.010	N/A	0.010	µg/L	2023-01-05	
Benz(a)anthracene	< 0.010	N/A	0.010	µg/L	2023-01-05	
Benzo(a)pyrene	< 0.010	MAC = 0.04	0.010	µg/L	2023-01-05	
Benzo(b+j)fluoranthene	< 0.050	N/A	0.050	µg/L	2023-01-05	
Benzo(g,h,i)perylene	< 0.050	N/A	0.050	µg/L	2023-01-05	
Benzo(k)fluoranthene	< 0.050	N/A	0.050	µg/L	2023-01-05	
2-Chloronaphthalene	< 0.100	N/A	0.100	µg/L	2023-01-05	
Chrysene	< 0.050	N/A	0.050	µg/L	2023-01-05	
Dibenz(a,h)anthracene	< 0.010	N/A	0.010	µg/L	2023-01-05	
Fluoranthene	< 0.030	N/A	0.030	µg/L	2023-01-05	
Fluorene	< 0.050	N/A	0.050	µg/L	2023-01-05	
Indeno(1,2,3-cd)pyrene	< 0.050	N/A	0.050	µg/L	2023-01-05	
1-Methylnaphthalene	< 0.100	N/A	0.100	µg/L	2023-01-05	
2-Methylnaphthalene	< 0.100	N/A	0.100	µg/L	2023-01-05	
Naphthalene	< 0.200	N/A	0.200	µg/L	2023-01-05	
Phenanthrene	< 0.100	N/A	0.100	µg/L	2023-01-05	
Pyrene	< 0.020	N/A	0.020	µg/L	2023-01-05	
Quinoline	< 0.050	N/A	0.050	µg/L	2023-01-05	
Surrogate: Naphthalene-d8	85		50-140	%	2023-01-05	



## TEST RESULTS

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2023-01-20 15:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
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**GT Hydraulics (23A0309-01) | Matrix: Water | Sampled: 2023-01-04 10:09, Continued**

**PRES**

**Polycyclic Aromatic Hydrocarbons (PAH), Continued**

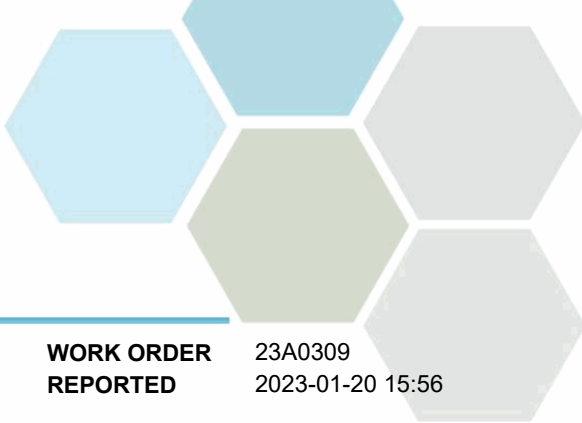
Surrogate: Perylene-d12	78		50-140	%	2023-01-05	
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**Total Metals**

Aluminum, total	0.0277	OG < 0.1	0.0050	mg/L	2023-01-12	
Antimony, total	< 0.00020	MAC = 0.006	0.00020	mg/L	2023-01-12	
Arsenic, total	< 0.00050	MAC = 0.01	0.00050	mg/L	2023-01-12	
Barium, total	0.0934	MAC = 2	0.0050	mg/L	2023-01-12	
Boron, total	< 0.0500	MAC = 5	0.0500	mg/L	2023-01-12	
Cadmium, total	0.011	MAC = 7	0.010	µg/L	2023-01-12	
Calcium, total	62.9	None Required	0.20	mg/L	2023-01-12	
Chromium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2023-01-12	
Copper, total	0.0103	MAC = 2	0.00040	mg/L	2023-01-12	
Iron, total	< 0.010	AO ≤ 0.3	0.010	mg/L	2023-01-12	
Lead, total	< 0.00020	MAC = 0.005	0.00020	mg/L	2023-01-12	
Magnesium, total	20.0	None Required	0.010	mg/L	2023-01-12	
Manganese, total	0.00194	MAC = 0.12	0.00020	mg/L	2023-01-12	
Mercury, total	< 0.000010	MAC = 0.001	0.000010	mg/L	2023-01-11	
Selenium, total	< 0.00050	MAC = 0.05	0.00050	mg/L	2023-01-12	
Silver, total	< 0.050	N/A	0.050	µg/L	2023-01-12	
Sodium, total	20.7	AO ≤ 200	0.10	mg/L	2023-01-12	
Uranium, total	0.686	MAC = 20	0.020	µg/L	2023-01-12	
Zinc, total	< 0.0040	AO ≤ 5	0.0040	mg/L	2023-01-12	

**Volatile Organic Compounds (VOC)**

Benzene	< 0.5	MAC = 5	0.5	µg/L	2023-01-06	
Bromodichloromethane	2.5	N/A	1.0	µg/L	2023-01-06	
Bromoform	< 1.0	N/A	1.0	µg/L	2023-01-06	
Carbon tetrachloride	< 0.5	MAC = 2	0.5	µg/L	2023-01-06	
Chlorobenzene	< 1.0	AO ≤ 30	1.0	µg/L	2023-01-06	
Chloroethane	< 2.0	N/A	2.0	µg/L	2023-01-06	
Chloroform	25.0	N/A	1.0	µg/L	2023-01-06	
Dibromochloromethane	< 1.0	N/A	1.0	µg/L	2023-01-06	
1,2-Dibromoethane	< 0.3	N/A	0.3	µg/L	2023-01-06	
Dibromomethane	< 1.0	N/A	1.0	µg/L	2023-01-06	
1,2-Dichlorobenzene	< 0.5	AO ≤ 3	0.5	µg/L	2023-01-06	
1,3-Dichlorobenzene	< 1.0	N/A	1.0	µg/L	2023-01-06	
1,4-Dichlorobenzene	< 1.0	AO ≤ 1	1.0	µg/L	2023-01-06	
1,1-Dichloroethane	< 1.0	N/A	1.0	µg/L	2023-01-06	
1,2-Dichloroethane	< 1.0	MAC = 5	1.0	µg/L	2023-01-06	
1,1-Dichloroethylene	< 1.0	MAC = 14	1.0	µg/L	2023-01-06	
cis-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2023-01-06	
trans-1,2-Dichloroethylene	< 1.0	N/A	1.0	µg/L	2023-01-06	
Dichloromethane	< 3.0	MAC = 50	3.0	µg/L	2023-01-06	
1,2-Dichloropropane	< 1.0	N/A	1.0	µg/L	2023-01-06	



## TEST RESULTS

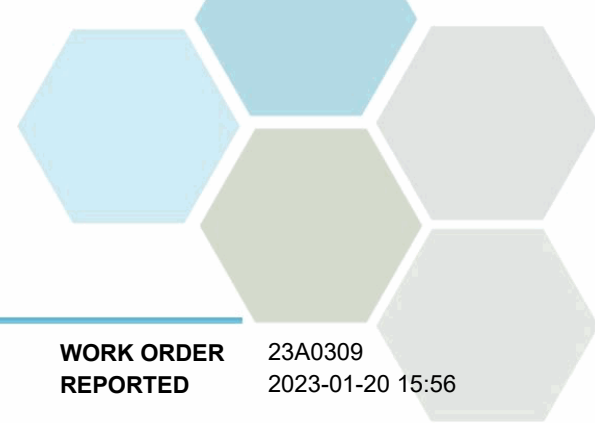
**REPORTED TO PROJECT** Stettler, Town of (Alberta)  
Distribution System - Biannual Analysis

**WORK ORDER REPORTED** 23A0309  
2023-01-20 15:56

Analyte	Result	Guideline	RL	Units	Analyzed	Qualifier
<b>GT Hydraulics (23A0309-01)   Matrix: Water   Sampled: 2023-01-04 10:09, Continued</b>						<b>PRES</b>
<i>Volatile Organic Compounds (VOC), Continued</i>						
1,3-Dichloropropene (cis + trans)	< 1.0	N/A	1.0	µg/L	2023-01-06	
Ethylbenzene	< 1.0	AO ≤ 1.6	1.0	µg/L	2023-01-06	
Methyl tert-butyl ether	< 1.0	AO ≤ 15	1.0	µg/L	2023-01-06	
Styrene	< 1.0	N/A	1.0	µg/L	2023-01-06	
1,1,2,2-Tetrachloroethane	< 0.5	N/A	0.5	µg/L	2023-01-06	
Tetrachloroethylene	< 1.0	MAC = 10	1.0	µg/L	2023-01-06	
Toluene	< 0.5	MAC = 60	0.5	µg/L	2023-01-06	
1,1,1-Trichloroethane	< 1.0	N/A	1.0	µg/L	2023-01-06	
1,1,2-Trichloroethane	< 1.0	N/A	1.0	µg/L	2023-01-06	
Trichloroethylene	< 1.0	MAC = 5	1.0	µg/L	2023-01-06	
Trichlorofluoromethane	< 1.0	N/A	1.0	µg/L	2023-01-06	
Vinyl chloride	< 1.0	MAC = 2	1.0	µg/L	2023-01-06	
Xylenes (total)	< 2.0	AO ≤ 20	2.0	µg/L	2023-01-06	
Surrogate: Toluene-d8	105		70-130	%	2023-01-06	
Surrogate: 4-Bromofluorobenzene	98		70-130	%	2023-01-06	

**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.
- PRES Sample has been preserved for glyph and herb in the laboratory and the holding time has been extended.



## APPENDIX 1: SUPPORTING INFORMATION

**REPORTED TO PROJECT** Stettler, Town of (Alberta)  
Distribution System - Biannual Analysis

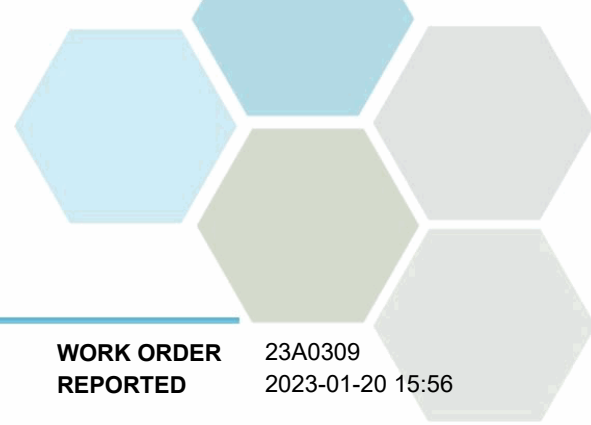
**WORK ORDER REPORTED** 23A0309  
2023-01-20 15:56

Analysis Description	Method Ref.	Technique	Accredited	Location
Acid Herbicides in Water in Water	In-House	N/A	✓	Richmond
Alkalinity in Water	SM 2320 B* (2021)	Titration with H2SO4	✓	Edmonton
Ammonia, Total in Water	SM 4500-NH3 D* (2021)	Ion Selective Electrode	✓	Edmonton
Anions in Water	SM 4110 B (2020)	Ion Chromatography	✓	Edmonton
Bromate in Water	SM 4110 B (2020)	Ion Chromatography	✓	Sublet
Carbon, Total Organic in Water	SM 5310 B (2022)	Combustion, Infrared CO2 Detection	✓	Kelowna
Chlorine, Free in Water	SM 4500-Cl G (2021)	Colorimetry (DPD)	✓	Edmonton
Chlorine, Total in Water	SM 4500-Cl G (2021)	Colorimetry (DPD)	✓	Edmonton
Colour, True in Water	SM 2120 C (2021)	Spectrophotometry (456 nm)	✓	Edmonton
Conductivity in Water	SM 2510 B (2021)	Conductivity Meter	✓	Edmonton
Cyanide, SAD in Water	ASTM D7511-12	Flow Injection with In-Line UV Digestion and Amperometry	✓	Kelowna
Glyphosate in Water	EPA 547*	Direct Aqueous Injection HPLC with Post-Column Derivatization and Fluorescence Detection	✓	Richmond
Hardness in Water	SM 2340 B (2021)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	✓	N/A
Nitritotriacetic Acid in Water	EPA 430.1	Manual Colorimetry (Zinc-Zincon)		Kelowna
Pesticides in Water	EPA 3510C* / EPA 8270D*	Liquid-Liquid DCM Extraction (B/N) / GC-MSD (SIM)	✓	Richmond
pH in Water	SM 4500-H+ B (2021)	Electrometry	✓	Edmonton
Phenols, Chlorinated in Water	EPA 3510C* / EPA 8270D	Liquid-Liquid DCM Extraction (Acidic) / GC-MSD (SIM)	✓	Richmond
Polycyclic Aromatic Hydrocarbons in Water	EPA 3511* / EPA 8270D	Hexane MicroExtraction (Base/Neutral) / GC-MSD (SIM)		Edmonton
Solids, Total Dissolved in Water	SM 1030 E (2021)	SM 1030 E		N/A
Sulfide, Total in Water	SM 4500-S2 D* (2021)	Colorimetry (Methylene Blue)	✓	Edmonton
Total Metals in Water	EPA 6020B	BrCl2 Oxidation / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Turbidity in Water	SM 2130 B (2020)	Nephelometry	✓	Edmonton
Volatile Organic Compounds in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)		Edmonton

*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
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
µg/L	Micrograms per litre
µS/cm	Microsiemens per centimetre



## APPENDIX 1: SUPPORTING INFORMATION

<b>REPORTED TO PROJECT</b>	Stettler, Town of (Alberta) Distribution System - Biannual Analysis	<b>WORK ORDER REPORTED</b>	23A0309 2023-01-20 15:56
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 received 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 or once samples expire, whichever comes first. Longer hold is possible if 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: [rpshyk@caro.ca](mailto:rpshyk@caro.ca)

*Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.*