



Saskatchewan  
Ministry of  
Environment



**City of Lloydminster  
Drinking Water Quality and Compliance  
2022 Annual Notice to Consumers**

The Water Security Agency and Ministry of Environment requires that at least once each year waterworks owners provide notification to consumers of the quality of water produced and supplied as well as information on the performance of the waterworks in submitting samples as required by a Minister’s Order or Permit to Operate a waterworks. The following is a summary of the City of Lloydminster water quality and sample submission compliance record for the January 1 – December 31, 2022, time period. This report was completed on January 26, 2023. Readers should refer to Saskatchewan Water Security Agency’s Municipal Drinking Water Quality Monitoring Guidelines, June 2015, EPB 502 for more information on minimum sample submission requirements. Permit requirements for a specific waterworks may require more sampling than outlined in the department’s monitoring guidelines. If consumers need more information on the nature and significance of specific water tests, for example, “what is the significance of selenium in a water supply”, more detailed information is available from: [http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/index\\_e.html](http://www.hc-sc.gc.ca/ewh-semt/pubs/water-eau/index_e.html).

**Water Quality Standards**

**Bacteriological Quality**

<b>Parameter</b>	<b>Limit</b>	<b>Regular Sample Required/yr</b>	<b>Regular Samples Submitted</b>	<b># of Positive Regular Samples Submitted</b>
Total Coliform	0 organisms/100 mL	390	402	0
E. coli	0 organisms/100 mL	390	402	0

*The City of Lloydminster (City) is responsible to ensure that one hundred percent of all bacteriological samples are submitted as required. Outlined in the updated March 31, 2022 Permit to Operate a Waterworks, the City is required to take a minimum of 8 samples per week. Additional Bacteriological sample are taken monthly to ensure we exceed the minimum requirement.*

**Water Disinfection – Chlorine residuals for Test Results Submitted with Bacteriological Samples**

<b>Parameter</b>	<b>Minimum Limit (mg/L)</b>	<b>Free Chlorine Residual Range</b>	<b>Total Chlorine Residual Range</b>	<b># Tests Required/yr</b>	<b># Tests Submitted</b>	<b># Adequate Chlorine (%)</b>
Chlorine Residual in Distribution System	0.1 mg/L free OR 0.5 mg/L total	0.32 - 1.23 mg/L	0.51 - 1.54 mg/L	338	350	(100%)

*A minimum of 0.1 milligrams per liter (mg/L) free chlorine residual **OR** 0.5 mg/L total chlorine residual is required at all times throughout the distribution system. The City is required to test chlorine residuals on every bacteriological sample submitted. Routine locations include Co-op gas station (east), Servus Sports Centre, Circle K Convenience store, Bud Miller Maintenance shop, West End Reservoir, City Operations Centre and Co-op gas station (West). Additional samples are taken monthly at various locations throughout the city.*

## Water Disinfection – Free Chlorine Residuals for Water Entering Distribution System - From Water Treatment Plant Records

Parameter	Limit (mg/L)	Test Level Range (mg/L)	# Tests Performed	# Tests Not Meeting Requirements
Free Chlorine Residual	at least 0.1	0.83 – 2.06	Minimum one test/day	0

A minimum of 0.1 milligrams per litre (mg/L) free chlorine residual is required for water entering the distribution system. The City performs chlorine tests daily in the laboratory and has continuous on-line Cl<sub>2</sub> monitoring to ensure treated water entering the distribution system has at least 0.5 mg/L of free Cl<sub>2</sub> residual leaving the Water Treatment Plant.

## Turbidity

Parameter	Limit (NTU)	Test Level Range	Maximum Allowable Turbidity (NTU)	# Tests Not Meeting Requirements	# Tests Required	# Tests Completed
Turbidity	0.3	0.04 - 0.14	1.0	0	365/yr.	365

Turbidity is a measure of water treatment efficiency. Turbidity measures the “clarity” of the drinking water and is generally reported in Nephelometric Turbidity Units (NTU). Tests are performed daily in lab and the WTP has 5 continuous on- line Turbidimeters to ensure no treated water has Turbidity levels exceeding 0.3 NTU's for 12 consecutive hours.

## Chemical – Health Category

Parameter	Limit MAC (mg/L)	Limit IMAC (mg/L)	Aesthetic Objective (mg/L)	May 11 Results (mg/L)	Aug 17 Results (mg/L)	Nov 16 Results (mg/L)	Samples Exceeding MAC/IMAC	Samples Required/yr.	Samples Submitted
Aluminum				0.052	0.140	0.034	0	3	3
Antimony	0.006			< 0.0002	< 0.0002	< 0.0002	0	3	3
Arsenic	0.010			0.0003	0.0006	0.0002	0	3	3
Barium	1.0			0.047	0.067	0.055	0	3	3
Boron		5.0		0.02	0.02	0.02	0	3	3
Cadmium	0.005			0.00001	< 0.00001	< 0.00001	0	3	3
Chromium	0.05			< 0.0005	< 0.0005	< 0.0005	0	3	3
Copper	2.0		1.0	0.0008	0.0011	0.0007	0	3	3
Iron			0.3	0.0010	0.0016	0.0010	0	3	3
Lead	0.01	0.005		< 0.0001	< 0.0001	< 0.0001	0	3	3
Manganese	0.12		0.02	< 0.0005	0.0007	< 0.0005	0	3	3
Selenium	0.01			0.0001	0.0002	0.0006	0	3	3
Silver				< 0.00005	< 0.00005	< 0.00005	0	3	3
Uranium	0.02			< 0.0001	0.0004	0.0003	0	3	3
Zinc			5.0	< 0.0005	< 0.0005	< 0.0005	0	3	3

Substances within the chemical health category may be naturally occurring in drinking water sources or may be the result of human activities. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (IMAC) is exceeded. NOTE- Permit to Operate was updated March 31,2022. Sampling requirement increased from yearly to Quarterly (Jan-Mar, Apr-Jun, Jul-Sept, Oct-Dec) Sample result indicating “<” is non-detectable.

**Chemical – Pesticides**- Sampling Frequency Once (1) every 2 years. Data below is from May 12, 2021

Parameter	Limit MAC (µg/L)	Limit IMAC(µg/L)	Sample Result(µg/L)	Samples Exceeding MAC/IMAC	# Samples Required/2yrs.	# Samples Submitted
Atrazine		5.0	< 0.2	0	1	1
Bromoxynil (Buctril)		5.0	< 2	0	1	1
Carbofuran	90		< 0.2	0	1	1
Chlorpyrifos (Lorsban)	90		< 0.2	0	1	1
Dicamba (Banvel)	120		< 1	0	1	1
2,4-D*		100	< 1	0	1	1
Diclofop-methyl (Hoegrass)	9		< 1	0	1	1
Dimethoate (Cygon)		200	< 5	0	1	1
Malathion	190		< 0.2	0	1	1
MCPA	100		< 1	0	1	1
Pentachlorophenol (PCP)	60		< 0.5	0	1	1
Picloram (Tordon)		190	< 1	0	1	1
Trifluralin (Treflan)		45	< 0.2	0	1	1

*Pesticides in drinking water may occur as a result of these substances used by humans. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (IMAC) is exceeded. Please note any sample result indicating “<” is non-detectable.*

**Chemical – Trihalomethanes and Haloacetic Acids**- Samples Submitted February 8, May 10, August 17, November 15,2022

Parameter	Limit (µg/L)	Sample Results Average (µg/L)	# Samples Required/yr.	# Samples Submitted
Trihalomethanes	100	53.3	8 (two every 3 months)	8
Haloacetic Acids	80	52.1	8 (two every 3 months)	8

*Trihalomethanes and Haloacetic Acids are generated during the water disinfection process by a by-product of reactions between chlorine and organic material. Trihalomethanes are generally found only in drinking water obtained from surface water supplies. Trihalomethanes and Haloacetic Acids are to be monitored on a quarterly basis and the Interim Maximum Acceptable Concentration is expressed as an average of 4 quarterly samples.*

**Algal Toxins –Microcystin-LR**

Parameter	Limit (mg/L)	Jun 28 Results (mg/L)	Jul 26 Results (mg/L)	Aug 17 Results (mg/L)	Sep 6 Results (mg/L)	# Samples Required/yr.	# Samples Submitted
Microcystin LR	0.0015	<0.0001	<0.0001	0.0001	<0.0001	As required	4

*Microcystin LR is an algal toxin typically released following die-off on an algal bloom in a raw surface water supply. Samples should typically be collected and analyzed on a monthly basis during periods when algae blooms on reservoirs or other surface water sources occur. “<” is non-detectable*

## Cryptosporidium & Giardia- For Raw Untreated River Water

March 31, 2022, Permit to Operate a Waterworks was updated to include semi-annually sampling and following upsets or significant events that may affect raw water quality from entering a water treatment plant. Samples were collected and tested on May 9 & November 14, 2022

### Chemical - General Chemical

Aesthetic Parameter	Objectives* (mg/L)	Sample Results Average (mg/L)	# Samples Required/yr.	# Samples Submitted
Alkalinity	500	125	4	4
Bicarbonate	No Objective	152	4	4
Calcium	No Objective	50	4	4
Carbonate	No Objective	<1	4	4
Chloride	250	10	4	4
Conductivity	No Objective	409 uS/cm	4	4
Fluoride	Non-Fluoridating Community	0.10	4	4
Hardness	800	182	4	4
Magnesium	200	14	4	4
Nitrate	45	1	4	4
PH	No Objective	7.73 pH units	4	4
Sodium	300	12	4	4
Sulphate	500	75	4	4
Total dissolved Solids	1500	268	4	4

Samples were submitted for General Chemical analysis on February 9, May 11, August 17, and November 16, 2022. Sample results indicated that there were no exceedances of the provincial aesthetic objectives for the General Chemical category.

NOTE: The City of Lloydminster does not add Fluoride into Drinking water. Trace amounts are found naturally in the source water.

*\*Objectives apply to certain characteristics of or substances found in water for human consumptive or hygienic use. The presence of these substances will affect the acceptance of water by consumers and/or interfere with the practice of supplying good quality water. Compliance with drinking water aesthetic objectives is not mandatory as these objectives are in the range where they do not constitute a health hazards. The aesthetic objectives for several parameters (including hardness as CaCO<sub>3</sub>, magnesium, sodium and total dissolved solids) consider regional differences in drinking water sources and quality*

### Chemical – Cyanide and Mercury

Parameter	Limit MAC (µg/L)	May 11 Result (µg/L)	Nov 16 Results (ug/L)	# Samples Exceeding MAC	# Samples Required/yr.	# Samples Submitted
Cyanide	200	1	3	0	2	2
Mercury	1.0	< 0.001	< 0.001	0	2	2

*Mercury enters water supplies naturally and as a result of human activities. Cyanide can enter source waters as a result of industrial effluent or spill events. These substances may represent a long-term health risk if the Maximum Acceptable Concentration (MAC) is exceeded. One sample required every 6 months from treated water at the Water Treatment Plant (Jan-Jun and July-Dec)*

## Chemical – Synthetic Organic, BTEX, PFOS & PFOA

Sampling Frequency Once (1) every 2 years. Data below is from May 12, 2021

Parameter	Limit MAC (µg/L)	Limit IMAC (µg/L)	Aesthetic Objective (µg/L)	Sample Result (µg/L)	# Samples Exceeding Limit	# Samples Required/2yrs.	# Samples Submitted
Benzene	5.0			< 0.5	0	1	1
Benzo (a) pyrene	0.01			< 0.01	0	1	1
Carbon tetrachloride	5.0			< 2	0	1	1
Dichlorobenzene, 1,2	20			< 0.5	0	1	1
Dichlorobenzene, 1,4	5.0			< 0.5	0	1	1
Dichloroethane, 1,2		5.0		< 0.5	0	1	1
Dichloroethylene 1,1	14			< 0.5	0	1	1
Dichloromethane	50			< 0.5	0	1	1
Dichlorophenol, 2,4	900			< 0.2	0	1	1
Ethylbenzene			2.4	< 0.5	0	1	1
Monochlorobenzene	80			< 0.5	0	1	1
Perfluorooctane Sulfonate				< 0.01 µg/kg	0	1	1
Perfluorooctanoic Acid				< 0.02 µg/kg	0	1	1
Tetrachlorophenol, 2,3,4,6				< 1	0	1	1
Toluene			24	< 0.5	0	1	1
Trichloroethylene	50			< 0.5	0	1	1
Trichlorophenol, 2,3,4,6	5.0			< 2	0	1	1
Vinyl Chloride	2.0			< 0.5	0	1	1
Xylene			300	< 0.5	0	1	1

*Contamination of drinking water by synthetic organic chemicals only results from pollution events. Contamination of drinking water in excess of Maximum Acceptable Concentration (MAC) or Interim Maximum Acceptable Concentration (IMAC) may represent a health risk. Please note any sample result indicating "<" is non-detectable.*

**More information on water quality and sample submission performance may be obtained from:**

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