2024 Drinking Water Quality Report

Regina's drinking water originates in the Rocky Mountains and flows through Lake Diefenbaker to Buffalo Pound Lake. Water is treated at the Buffalo Pound Water Treatment Plant (WTP) and pumped over 60 kilometres (km) to five reservoirs within Regina. Three pump stations in Regina pressurize the system to get water safely to our customers. Water quality is checked at the WTP and again within the main distribution system in Regina that provides water to homes and businesses within the city.

In 2024, as in previous years, regular testing was undertaken within the City of Regina's (City) water distribution system and at the WTP. All samples were analyzed by the WTP's analytical lab or other accredited Canadian labs. This report is composed of water quality data for samples taken within Regina's water distribution system and at the WTP, as required by Saskatchewan Water Security Agency (WSA), and includes any additional sampling voluntarily performed by the City.

1. Regina Distribution System Water Quality

The City performs weekly sampling at 18 locations throughout its water distribution system to ensure high quality water is supplied to the residents. These samples are taken to comply with the City's provincial Permit to Operate through the WSA. They include tests for chlorine, turbidity, bacteria, trihalomethanes, and haloacetic acids. Sampling locations are at representative locations throughout the distribution system.

The WSA 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 water works in submitting samples as required by the Minister's Order or Permit to Operate a Waterworks (Permit).

The following is a summary of the City's water quality and sample submission compliance records for the period January 1, 2024 to December 31, 2024. This report was completed in March 2025. Samples were collected following the Permit requirements, and all results were within the safe ranges as specified by the Permit.

The criteria specified by WSA in the City's Permit are based on the Saskatchewan Drinking Water Standards and Objectives. These standards and objectives are derived from Health Canada's Canadian Drinking Water Guidelines. Each province reviews these guidelines and determines what levels and parameters to adopt to create their own standards based on regional differences and in some cases their own research outside of that done by Health Canada.

If consumers need more information on the nature and significance of specific water tests, for example, "what is the significance of sulphate?", click on the following link.

https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html#t2

Water Quality Standards

The potable water testing conducted by City and WTP staff throughout 2024 met all Permit requirements, and the water quality was well within the standards set by Health Canada and the Permit.

I. Bacteriological Quality

Bacteriological water quality monitoring is required for systems supplying water for human consumption or hygienic use and is used as an indicator of the potential presence of pathogens.

Parameter	Maximum Limit	Regular Samples Required	Total Samples Tested[a]	No. of Samples Meeting Regulations
Total Coliform and Background Bacteria	Zero Organisms/100ml Less than 200/100ml	936	939*	936

** Enhanced sampling undertaken during the weeks of June 17, August 26, and December 29, 2024*

Notes:

a. Positive bacteriological samples are resampled to confirm the presence or absence of pathogens. Follow up tests confirmed the absence of pathogens in all cases.

II. Water Disinfection - Chlorine Residual in Distribution System for Test Results Submitted with Bacteriological Samples

Parameter	Minimum Requirements (mg/l)	Result, average (mg/L)	No. of Tests Required	No. of Tests Performed	No. of Samples Meeting Requirements
Chlorine Residual [b]	0.1 mg/L Free	0.67	936	936	936
	0.5 mg/L Total	0.85			

Notes:

*a. To meet Regulations, either free **or** total chlorine residual must meet or exceed the minimum requirements.*

III. Turbidity

Parameter	Maximum Limit (NTU)	Result, average (NTU)	No. of Tests Required	No. of Tests Performed	No. of Tests Meeting Requirements
Turbidity	1.0	0.17	936	936	936

(NTU) Nephelometric Turbidity Unit - a unit of measurement used to indicate the clarity of drinking water

IV. Chemical – Trihalomethanes & Haloacetic Acids

Trihalomethanes (THM) and haloacetic acids (HAA) are generated during the water disinfection process as a by-product of reactions between chlorine and organic material. THMs and HAAs are generally found only in drinking water that is obtained from surface water supplies that are disinfected by chlorine, such as Regina's water.

THMs are to be monitored from two different representative locations at the extremities of the distribution system every month, while HAA are to be monitored from four different representative locations at the extremities of the distribution system every three months. The yearly averages are then compared to the maximum limit. The City voluntarily tests THMs weekly at varying locations.

Parameter	Maximum Limit (mg/l)	Sample Result, Average mg/l	No. of Samples Required	No. of Samples Taken
Trihalomethanes	0.1	0.069	24	86
Haloacetic Acids	0.08	0.035	16	16

2. WTP Clearwell Drinking Water Quality

Following treatment, the WTP's clear well holds the water. From there, water is pumped to Regina. Acting in accordance with the Permit to Operate, WTP staff obtained regular samples from the clear well, and conducted comprehensive water quality analyses for all parameters in the accredited on-site analytical lab.

Parameter	Testing Result Annual Average (mg/L)	Saskatchewan's Drinking Water Quality Standards and Objectives (mg/L)
Alkalinity (Total, as $CaCO_3$)	147	500 (AO)
Calcium (Ca)	46	No Standard
Chloride (Cl)	36.1	250 (AO)
Fluoride (F)	0.12	1.5 (MAC)
Hardness (Total, as $CaCO_3$)	208	800 (AO)
Iron (Fe)	None Detected	0.3 (AO)
Magnesium (Mg)	22	200 (AO)
Manganese (Mn)	None Detected	0.05 (AO)
Nitrate (NO_3)	0.11	45 (MAC)
Potassium (K)	5.5	No Standard
Sodium (Na)	42	300 (AO)
Sulphate (SO_4)	113	500 (AO)
Total Dissolved Solids (TDS)	376	1,500 (AO)

Notes:

- *Values are given in milligrams per litre (mg/L) which is equivalent to parts per million (ppm)*
- *The Permit to Operate references the Saskatchewan Drinking Water Quality Standards*
- *No fluoride was added to Regina water. Fluoride measured is naturally occurring.*
- *"AO" means "Aesthetic Objective", "MAC" means "Maximum Allowable Concentration"*

3. Additional Drinking Water Data

The following water quality parameters were sampled from Regina's water distribution system on a voluntary basis. This is done to identify items before they become problems, to allow the City time to make decisions, and ensure that the quality of water

being distributed. The parameters chosen for sampling are those suggested by Health Canada but are not required by the Water Security Agency or the Permit.

All 18 locations were sampled for routine water chemistry (major ions, hardness, alkalinity) and metals; ten locations were sampled for asbestos, and one location was sampled for over 135 parameters listed by Health Canada, including volatile organic compounds (VOCs), pesticides and radiological parameters.

All samples were under Health Canada's Water Quality Objectives. The results for voluntary asbestos and select Health Canada parameters are summarised below.

Parameter	Testing Results[a]	Detection Threshold	Health Canada Guideline Water Quality Objective
Total Asbestos (MFL)[b]	None Detected	0.18	Not Regulated

Notes:

a. Asbestos was sampled at ten locations. None of the ten samples had detectable asbestos.

b. MFL means Millions of Fibers per Litre. This is a measure of fibers present within a litre of tested water.

The City of Regina participated in a WSA-led asbestos sampling program by coordinating sampling at one pumpstation, four distribution sites, and following water main repairs in five locations. WSA received analytical results that showed no detectable asbestos fibres greater than 0.001 millimetres (mm). WSA is currently working on a report to be submitted to Health Canada, which would be ready to review by approximately July 2025.

Parameter	Testing Results	Detection Threshold	Health Canada Guideline Water Quality Objective
Inorganics	(mg/L)	(mg/L)	(mg/L)
Alkalinity	180	1.0	Not Regulated
Ammonia	0.047	0.050	Not Regulated
Chloramines	0.022	0.020	Not Regulated
Chlorite	ND	0.010	1
Cyanide	ND	0.0020	0.2
Fluoride	0.108	0.020	1.5
Pesticides/Herbicides	ND	0.0001	Variable
Formaldehyde	0.0027	0.0002	Not Regulated
Hardness	206	0.50	Not Regulated
Nitrate	ND	0.020	45
Nitrite	ND	0.010	3
N-Nitrosodimethyalmine	ND	0.00003	0.00004
Per- and polyfluoroalkyl Substances (PFAS/PFOS)	ND	0.000001	None (ALARA: 0.00003)
Total Dissolved Solids (TDS)	360	1.0	500
Microcystin	ND	0.0002	0.0015

Parameter	Testing Results	Detection Threshold	Health Canada Guideline Water Quality Objective
Organics	(mg/L)	(mg/L)	(mg/L)
Trihalomethanes (THM)	0.048	0.00002	0.1
Volatile Organic Compounds (not inc. THM)	ND	0.0005	Variable
Benzo(a)pyrene	ND	0.000005	0.00004
Radiological Isotopes	(Bq/L)	(Bq/L)	(Bq/L)
Lead-210	ND	0.02	0.2
Radium-226	0.005	0.005	0.5
Radon-222	ND	4	Not Regulated
Strontium-90	ND	0.05	5

Notes:

- *Summary of results for voluntary parameters at one sampling location. No parameter exceeded Health Canada guidelines.*
- *Milligrams per litre (mg/L) which is equivalent to parts per million (ppm).*
- *Becquerel per litre (Bq/L) is a measure of the strength of radioactivity.*
- *ND means "None Detected".*
- *Fluoride is not added to Regina water. The measured concentration is naturally occurring.*
- *ALARA means As Low as Reasonably Achievable*
- *TDS is composed of calcium, magnesium, sodium, potassium, carbonate, bicarbonate, chloride, sulphate and nitrate. A TDS concentration above 500 can cause scaling on pipes, faucets and appliances. Saskatchewan has adopted 1,500 mg/L as the TDS drinking water objective due to higher naturally occurring mineral content in surface water and groundwater.*
- *Pesticides/herbicides includes 30 specific compounds, all of which were ND.*
- *Microcystin is a toxin produced by cyanobacteria (blue-green algae).*
- *Volatile Organic Compounds (VOCs) include over 50 specific compounds (such as benzene), all of which were ND.*

Parameter	Testing Results*	Detection Threshold	Health Canada Guideline Water Quality Objective
Metals	(mg/L)	(mg/L)	(mg/L)
Aluminum	0.0242	0.003	0.1
Antimony	0.0002	0.0001	0.006
Arsenic	0.0009	0.0001	0.010
Barium	0.0616	0.0001	2.0
Beryllium	ND	0.00002	Not Regulated
Boron	0.0613	0.01	5
Cadmium	ND	0.000005	0.007
Calcium	45.3	0.05	Not Regulated
Cesium	ND	0.00001	Not Regulated
Chromium	ND	0.0005	0.05
Cobalt	ND	0.0001	Not Regulated
Copper	0.0181	0.0005	1
Iron	0.0467	0.01	0.1
Lead	0.0003	0.00005	0.005
Lithium	0.0268	0.001	Not Regulated
Magnesium	23.4	0.005	Not Regulated

Parameter	Testing Results*	Detection Threshold	Health Canada Guideline Water Quality Objective
Manganese	0.0071	0.0001	0.02
Mercury	ND	0.00005	0.001
Molybdenum	0.0021	0.00005	Not Regulated
Nickel	0.0009	0.0005	Not Regulated
Phosphorus	ND	0.05	Not Regulated
Potassium	5.42	0.05	Not Regulated
Selenium	0.0004	0.00005	0.05
Silver	ND	0.00001	Not Regulated
Sodium	44.7	0.05	200
Strontium	0.305	0.0002	7
Sulfur	41.9	0.5	Not Regulated
Thallium	ND	0.00001	Not Regulated
Thorium	ND	0.0001	Not Regulated
Tin	ND	0.0001	Not Regulated
Titanium	ND	0.0003	Not Regulated
Uranium	0.0002	0.0001	0.02
Vanadium	ND	0.00001	Not Regulated
Zinc	0.0050	0.0005	5

Notes:

- *Results are an average of the 18 locations. No parameters or locations exceeded Health Canada guidelines.*
- *Milligrams per litre (mg/l), which is equivalent to parts per million (ppm)*
- *ND means "None Detected"*

Contact Information

More information on water quality and sample submission performance may be obtained from the City of Regina at 306-777-7000 or www.regina.ca