City of Prince Albert

Annual Water Quality Report

2025

City of Prince Albert

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1.0 Drinking Water System Summary

1.1 Treatment

The City of Prince Albert's Water Treatment Plant draws raw water from the North Saskatchewan River. The raw water first enters the Raw Water Pump House, which includes screening equipment, three raw water pumps, and a potassium permanganate dosing system used to help oxidize organic matter.

The water then enters the lower pipe gallery of the treatment building, where coagulant is added and rapidly mixed with the water using a hydraulic flash mixer. From there, the water flows through a series of three contact basins, where powdered activated carbon may be added for taste and odour control.

The water then proceeds to the Actiflo Ballasted Floc Clarifier units, which use coagulation, flocculation, and sedimentation to remove suspended particles from the water. As the water rises through the inclined settling tubes in the sedimentation chamber, clarified water is collected in troughs and directed to the eight gravity filter cells.

Each filter cell contains a stainless-steel underdrain system and dual-layer filter media consisting of sand and anthracite. The filtered water is then directed into the clearwells. From there, it can be pumped by three transfer pumps to the River Street Reservoirs, which provide a combined storage volume of approximately 30,000 m³.

Before the water enters the reservoirs, it is:

a) Passed through the ultraviolet disinfection system;

b) Dosed with chlorine solution for further disinfection;

c) Adjusted for pH using sodium hydroxide;

d) Fluoridated to support dental health; and

e) Dosed with phosphoric acid for corrosion control, including the reduction of lead exposure from plumbing materials.

1.2 Distribution

Treated water is drawn from the River Street Reservoirs into the River Street Pump House, where it is distributed to Zone 1 of the water distribution system.

Two primary fill mains also convey treated water from the River Street Pump House to two reservoirs located in Zone 2: the 2nd Avenue Reservoir and the Marquis Road Reservoir. Each of these reservoirs has a capacity of approximately 11,000 m³. These reservoirs and pump houses supply potable water to the Zone 2 water distribution system.

1.3 Monitoring

The Water Treatment Plant operating system includes two redundant programmable logic controllers, commonly known as PLCs, and a Supervisory Control and Data Acquisition system, commonly known as SCADA. The SCADA system includes a historian program that stores operational data.

Additional software is used to assist with the collection and management of operational data. Thousands of data points are continuously monitored and tracked to support water quality, regulatory compliance, and proper operation of the facility.

2.0 Drinking Water Quality and Compliance

The Water Security Agency and the Ministry of Environment require waterworks owners to provide consumers, at least once each year, with information on the quality of water produced and supplied, as well as the performance of the waterworks in meeting sample submission requirements under the Minister's Order and Permit to Operate a Waterworks. The following section summarizes the City of Prince Albert's drinking water quality and sample submission compliance record for the period from January 1, 2025, to December 31, 2025. This report was completed on April 24, 2026. Readers should refer to the Saskatchewan Water Security Agency Municipal Drinking Water Quality Monitoring Guidelines, June 2015, EPB 502, for additional information on minimum sampling requirements. Permit requirements for a specific waterworks may require more sampling than the minimum outlined in the guidelines. More detailed information on the nature and significance of individual water quality parameters is available from Health Canada.

2.1 Bacteriological Quality

Parameter / Location	Limit	Regular Samples Required	Regular Samples Submitted	Compliance Result
Total Coliform	0 organisms/100 mL	471	471	No samples tested positive 100% compliance
E. coli	0 organisms/100 mL			
Background Bacteria	Less than 200 organisms/100 mL			

The City of Prince Albert is responsible for ensuring that all required bacteriological samples are submitted. In 2025, 471 bacteriological samples were required and 471 were submitted, resulting in 100% compliance. Generally, analysis is performed on a single sample for all parameters mentioned above. The City is required to submit nine (9) bacteriological samples per week for analysis.

2.2 Chlorine Residual Submitted with Bacteriological Samples

Parameter	Minimum Limit (mg/L)	Free Chlorine Residual Range (mg/L)	Total Chlorine Residual Range (mg/L)	# Tests Required	# Tests Submitted	Adequate Chlorine
Chlorine Residual in Distribution System	0.1 free OR 0.5 total	0.36 to 1.58	0.41 to 1.77	471	471	100%

A proper chlorine submission includes both the free and total chlorine residual fields on the bacteriological sample submission form. All required chlorine residual results were submitted with bacteriological samples in 2025.

2.3 Free Chlorine Residual Leaving the River Street Reservoir

Parameter	Minimum Limit (mg/L)	Recorded Range (mg/L)	Monitoring Method	# Results Not Meeting Requirement
Free Chlorine Residual	0.10	0.44 to 1.74	Continuous online monitoring and grab samples	0

A minimum free chlorine residual of 0.1 mg/L is required for water leaving the River Street Reservoir before the next chlorine injection point. Continuous monitoring and routine operator grab sampling showed full compliance with this requirement in 2025.

2.4 Filter Turbidity Performance

Filter	Limit (NTU)	Recorded Range (NTU)	Maximum Recorded (NTU)	Results Not Meeting Requirement	Monitoring Method
Filter A	1.0	0.015 to 0.30	0.30	0	Continuous monitoring and grab sample comparison
Filter B	1.0	0.012 to 0.30	0.30	0	Continuous monitoring and grab sample comparison
Filter C	1.0	0.002 to 0.30	0.30	0	Continuous monitoring and grab sample comparison
Filter D	1.0	0.020 to 0.30	0.30	0	Continuous monitoring and grab sample comparison
Filter E	1.0	0.013 to 0.30	0.30	0	Continuous monitoring and grab sample comparison
Filter F	1.0	0.016 to 0.30	0.30	0	Continuous monitoring and grab sample comparison
Filter G	1.0	0.012 to 0.30	0.30	0	Continuous monitoring and grab sample comparison
Filter H	1.0	0.002 to 0.30	0.30	0	Continuous monitoring and grab sample comparison

Turbidity is a measure of treatment effectiveness and drinking water clarity. The City of Prince Albert continuously monitors filter effluent turbidity from each filter. High turbidity alarms are generated above 0.2 NTU, and the filter effluent valve is programmed to shut automatically if turbidity reaches 0.3 NTU or higher. No results exceeded the 0.3 NTU limit in 2025.

2.5 Chemical - Health Category

Parameter (Total mg/L)	MAC / IMAC Limit (mg/L)	Sampled on 9-Jan-25	Sampled on 2-Apr-25	Sampled on 16-Jul-25	Sampled on 21-Oct-25	Samples Exceeding Limit	# Samples Required	# Samples Submitted
Aluminum	MAC 0.1	0.026	0.021	0.036	0.027	0	4 per year	4
Antimony	MAC 0.006	<0.0002	<0.0002	<0.0002	<0.0002	0	4 per year	4
Arsenic	MAC 0.01	<0.0001	<0.0001	0.0001	0.0001	0	4 per year	4
Barium	MAC 1	0.068	0.066	0.059	0.058	0	4 per year	4
Boron	IMAC 5	0.01	0.02	0.02	0.01	0	4 per year	4
Cadmium	MAC 0.005	0.00001	0.00001	0.00001	0.00001	0	4 per year	4
Chromium	MAC 0.05	<0.0005	<0.0005	<0.0005	<0.0005	0	4 per year	4
Copper	MAC 2	0.0008	0.0009	0.001	0.0006	0	4 per year	4
Fluoride	MAC 1.5	Year max 1.19	Year avg 0.67	-	-	0	365	679
Iron	AO 0.3	0.0018	0.0011	<0.0005	0.0014	0	4 per year	4
Lead	MAC 0.005	<0.0001	<0.0001	<0.0001	<0.0001	0	4 per year	4
Manganese	MAC 0.05	0.0023	0.0099	0.011	0.004	0	4 per year	4
Selenium	MAC 0.01	0.0002	0.0002	0.0002	0.0002	0	4 per year	4
Silver	No Limit	<0.00005	<0.00005	<0.00005	<0.00005	0	4 per year	4
Uranium	MAC 0.02	0.0002	0.0001	0.0001	<0.0001	0	4 per year	4
Zinc	AO 5	0.0023	0.0023	0.0022	0.0019	0	4 per year	4

Substances in the chemical-health category may be naturally present in source water or may result from human activity. These substances can pose a long-term health risk if the maximum acceptable concentration or interim maximum acceptable concentration is exceeded. No chemical-health exceedances were recorded in 2025. The City of Prince Albert continues to fluoridate its drinking water to support dental health.

2.6 Chemical - Cyanide and Mercury

Parameter	MAC Limit (mg/L)	Sampled on 9-Jan-25	Sampled on 16-Jul-25	Samples Exceeding Limit	# Samples Required	# Samples Submitted
Cyanide	0.2	<0.01	<0.001	0	2 per year	2
Mercury	0.001	<0.000001	<0.000001	0	2 per year	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. Mandatory sampling requirements depend on the population served by the waterworks.

2.7 Trihalomethanes and Haloacetic Acids

Parameter	MAC Limit (mg/L)	Average Result (mg/L)	# Samples Required	# Samples Submitted
Trihalomethanes	0.10	0.0287	8 (2 every 3 months)	8
Haloacetic Acids	0.08	0.0260	8 (2 every 3 months)	8

Trihalomethanes and haloacetic acids are disinfection by-products that form when chlorine reacts with organic material in source water. Quarterly monitoring results in 2025 remained well below the applicable maximum acceptable concentrations.

2.8 General Chemical Quality

Parameter	Objective / Limit (mg/L)	Sampled on 9-Jan-25	Sampled on 2-Apr-25	Sampled on 16-Jul-25	Sampled on 21-Oct-25	# Samples Required	# Samples Submitted
Alkalinity (as CaCO3)	500	140	117	105	118	4 per year	4
Bicarbonate (as HCO3)	No Objective	171	143	128	144	4 per year	4
Carbonate (as CO3)	No Objective	<1	<1	<1	<1	4 per year	4
Chloride	250	22	34	37	23	4 per year	4
Conductivity (uS/cm)	No Objective	478	492	441	432	4 per year	4
Hardness (as CaCO3)	800	204	188	175	188	4 per year	4
Nitrate (as NO3)	MAC 45	3.6	0.06	<0.04	0.13	4 per year	4
pH	No Objective	7.61	7.16	7.65	7.60	4 per year	4
Potassium	No Objective	1.6	3	2	1.4	4 per year	4
Sulphate	500	72	70	57	61	4 per year	4
Calcium	No Objective	54	49	47	49	4 per year	4
Magnesium	200	17	16	14	16	4 per year	4
Sodium	300	16	22	16	14	4 per year	4
Total Dissolved Solids	1500	310	290	288	252	4 per year	4

General chemical sampling is required under the Permit to Operate. Results for 2025 remained below applicable aesthetic objectives and limits, indicating stable treated water quality throughout the year.

2.9 Cryptosporidium and Giardia - Raw Untreated River Water

Parameter	Unit	29-Apr-25 Sample Result	22-Sep-25 Sample Result
Cryptosporidium	oocysts/L	<0.1	<0.1
Giardia	cysts/L	0.3	<0.1

Giardia and Cryptosporidium are protozoan organisms that can cause gastrointestinal illnesses if ingested. Raw water monitoring is part of a broader treatment strategy aimed at achieving a 3-log reduction and/or inactivation of these organisms. The City of Prince Albert Water Treatment Plant uses Actiflo treatment and ultraviolet disinfection as a multi-barrier approach.

2.10 Microcystin Monitoring

Parameter	MAC Limit (mg/L)	Sampled on 23-Jun	Sampled on 16-Jul	Sampled on 18-Aug	Sampled on 16-Sep	Sampled on 9-Oct	Samples Exceeding Limit	# Samples Submitted
Microcystin	0.0015	0.0001	<0.0001	<0.0001	0.0002	0.0002	0	5

Microcystins are toxins released by cyanobacteria during algal bloom conditions. The Water Treatment Plant collects monthly samples during the seasonal bloom period from June to October. All 2025 results were below the maximum acceptable concentration.

2.11 Radiological Quality

Parameter	MAC Limit (Bq/L)	19-Nov-25 Result	Samples Exceeding MAC	# Samples Required	# Samples Submitted
Gross Alpha	0.5	<0.17	0	1 per year	1
Gross Beta	1.0	0.1	0	1 per year	1

Radiological screening parameters are used to assess overall drinking water quality for a broader group of radionuclides. In Saskatchewan, radiological contamination of drinking water is uncommon and typically site-specific. No exceedances were recorded in 2025.

3.0 Contact Information

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

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