

# Carman Public Water System Annual Report - 2022



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A copy of this report is available to the public via the Town Of Carman website:  
[www.carmanmanitoba.ca](http://www.carmanmanitoba.ca) or, a free paper copy may be obtained at our Town Office at the address above.

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## **1. Introduction**

The Town of Carman Manitoba strives to provide high quality drinking water in sufficient quantities to meet public needs. It is our goal to do so in a safe and cost-effective manner, while remaining in compliance with the regulatory requirements governing the provisions of safe drinking water. It is our belief that the public has a right to access the information related to the drinking water they consume. To that end, the following report has been prepared for the Community of Carman public water system.

## **2. Sources**

On June 23rd, 2021, The Town of Carman began supplying water from our newly constructed 3600m<sup>3</sup> storage reservoir and pump house, and began decommissioning the Carman water treatment plant. The Town of Carman is now supplied drinking water solely from the Pembina Valley Water Cooperative Stephenfield Water Treatment Plant (SWTP) at Stephenfield Lake, with the option of being supplied water from Pembina Valley Water Cooperative's Morris Water Treatment Plant. An additional distribution being installed in March 2023 will allow water to be supplied back into the RM of Dufferin in emergency situations. For more information on the Stephenfield Water Treatment Plant, please visit the Pembina Valley Water Cooperative website at <https://pvwc.ca/>

### **Why and how do we disinfect our water?**

The Carman Reservoir and pump house contains a means to provide additional chlorination with 2 pumps available in case of emergency, or if additional disinfectant is required. Upgrades to the SWTP membrane plant have provided much more stable chlorine residuals in the Carman distribution system and re-chlorination at the Carman pump house is currently not required. Chlorine residuals are continually monitored with online monitors and manual daily tests.

## **3. Water storage and distribution**

The Carman Reservoir and pump house has a capacity of 3600 cubic meters or 800,000 Imperial gallons. There is approximately 3.5 - 4 days of storage in summer or peak demand periods, and 4 - 5 days in winter or lower demand periods.

### **What is the "Distribution System"?**

The water distribution system is the network of underground pipes used to carry the treated water from the water treatment facility to the homes and businesses in Carman. We have 25 km of cast iron, AC and PVC piping. Piping is interconnected and "looped" to ensure that fresh safe water is continuously supplied. Regular maintenance is performed in the distribution system including a seasonal distribution system / fire hydrant flushing program in September/October. Seasonal flushing of the distribution allows for the removal of sediment in water mains that may have accumulated over time.

## **4. Water testing the why, where, and how**

### **Is our water tested? What for? When?**

**Bacteriological testing:** Carman distribution system Operators test the treated water (leaving the Storage Reservoir) and the water within the Carman distribution system bi-weekly for the presence of Total Coliform E.coli bacteria. If Total Coliform bacteria are present in the water, it is an indication that disease-causing bacteria may also be present. Tests for the presence of E.coli. are also conducted at the same time.

**Disinfectant testing:** Carman distribution system Operators test the level of free and total chlorine in the treated water supply daily to ensure that the water leaving the Carman Reservoir has adequate chlorine residuals to ensure proper disinfection throughout the Carman distribution system.

The Carman Reservoir and pump house is equipped with 2 online free chlorine analyzers (1 on the incoming water supply line and 1 on the discharge), so disinfection levels are continuously monitored. Daily manual confirmatory tests are performed for free chlorine and weekly for total chlorine residuals.

**Trihalomethanes (THMs):** Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in the water. Studies have shown a link between high levels of THMs and cancer. For that reason, the province has set a health-based standard for THMs of 100 micrograms per liter of water or 0.100 ppm. The THM standard is based on an average of four samples per year. Carman tests THM levels in one location in the distribution system on a seasonal basis.

**Haloacetic Acids (HAAs):** Haloacetic acids (HAAs) are an undesirable by-product of using chlorine to disinfect drinking water. Exposure to such by-products from drinking water at high levels over many years has been associated with a number of adverse health outcomes by epidemiological studies. The provincial and federal governments have set a limit of 80 micrograms per liter of water or 0.08 mg/L.

THMs and HAAs are submitted every other year in even numbered years. THM and HAA sampling was completed in 2022 with the following results:

THM (mg/L)	HAA (mg/L)
Quarter 1 - 0.0127	Quarter 1 – 0.0180
Quarter 2 - 0.0807	Quarter 2 – 0.1040
Quarter 3 - 0.0330	Quarter 3 – 0.0107
Quarter 4 - 0.0146	Quarter 4 – 0.0054
Average THM 2022 – 0.0352	Average HAA 2022 – 0.0345

### Lead Sampling:

A lead sampling program that was to start in 2020/21 was postponed due to the COVID-19 pandemic. Carman will begin a lead sampling program in spring of 2023 that will consist of 20 different locations throughout the Carman water distribution system. If you believe you have lead pipes in your house, please let us know and we will add you to the sampling list.

### Other Important Information:

The Office of Drinking Water participates in the Federal-Provincial-Territorial Committee on Drinking Water that approves the Guidelines for Canadian Drinking Water Quality. Drinking water quality standards applied in Manitoba regulations are consistent with current Health Canada guidelines, and the Office of Drinking Water monitors the potential impact of proposed changes to Manitoba water systems. Health Canada recently published new technical guidelines on cyanobacteria (algae), manganese, and lead.

Canadian Drinking Water guidelines can be found at <https://www.canada.ca/en/health-canada/services/environmental-workplace-health/water-quality/drinking-water/canadian-drinking-water-guidelines.html>

## What were the results of water testing in 2022?

The following table summarizes treated water testing results for 2022:

Testing Parameter	Standard	Carman Compliance	Standard Met
Bacteriological	0/100 mL Coliforms 0/100 mL E. Coli	100 %	Yes
Chlorine Leaving Reservoir	0.5 mg/L	100 %	Yes
Chlorine in distribution system	0.1 mg/L	100 %	Yes
Total Trihalomethanes (THMs) - Samples collected every other year, beginning in 2020	≤0.10 mg/L	2022 average – 0.0352 mg/L	2022 – Yes
Total Haloacetic Acids (HAAs) – Samples collected every other year, beginning in 2020	≤0.08mg/L	2022 average - 0.0345 mg/L	2022 – Yes

## 2022 Bacteriological Testing Results

ALS			E. Coli	Total Coliforms
Sample ID	ALS ID	Date Sampled	MPN/100ML	MPN/100ML
TOC - Distribution @ Ed's Tire	L2677739-1	1/10/2022	0	0
TOC - Distribution @ Res Outgoing	L2677739-2	1/10/2022	0	0
TOC - Distribution @ Carman Arena	L2677739-3	1/10/2022	0	0
TOC - Distribution @ Darcy's House	L2679759-1	1/19/2022	0	0
TOC - Distribution @ 250-2nd Ave NW	L2679759-2	1/19/2022	0	0
TOC - Distribution @ 6-Arteva Place	L2679759-3	1/19/2022	0	0
TOC - Distribution @ Darcy's House	L2680161-1	1/20/2022	0	0
TOC - Distribution @ 250-2nd Ave NW	L2680161-2	1/20/2022	0	0
TOC - Distribution @ 6-Arteva Place	L2680161-3	1/20/2022	0	0
TOC - Distribution @ Res Outgoing	L2680816-2	1/24/2022	0	0
TOC - Distribution @ LCL Construction	L2680816-3	1/24/2022	0	0
TOC - Distribution @ Rob's House	L2681499-1	1/26/2022	0	0
TOC - Distribution @ Darcy's House	L2681501-1	1/26/2022	0	0
TOC - Distribution @ Community Hall	L2681501-2	1/26/2022	0	0
TOC - Distribution @ Dennis Major's	L2681501-3	1/26/2022	0	0
TOC - Distribution @ Darcy's House	L2681797-1	1/27/2022	0	0
TOC - Distribution @ Community Hall	L2681797-2	1/27/2022	0	0
TOC - Distribution @ Dennis Major's	L2681797-3	1/27/2022	0	0
TOC - Distribution @ High School	L2683885-1	2/7/2022	0	0
TOC - Distribution @ Res Outgoing	L2683885-2	2/7/2022	0	0
TOC - Distribution @ Carman Hospital	L2683885-3	2/7/2022	0	0
TOC - Distribution @ Golf Course	L2687357-1	2/22/2022	0	0
TOC - Distribution @ Res Outgoing	L2687357-2	2/22/2022	0	0
TOC - Distribution @ Carman Motor Inn	L2687357-3	2/22/2022	0	0
TOC - Distribution @ Elementary School	L2690513-1	3/7/2022	0	0
TOC - Distribution @ Res Outgoing	L2690513-2	3/7/2022	0	0

TOC - Distribution @ Public Works Shop	L2690513-3	3/7/2022	0	0
TOC - Distribution @ Carman Hospital	L2693501-1	3/21/2022	0	0
TOC - Distribution @ Res Outgoing	L2693501-2	3/21/2022	0	0
TOC - Distribution @ High School	L2693501-3	3/21/2022	0	0
TOC - Distribution @ Carman Arena	L2696565-1	4/4/2022	0	0
TOC - Distribution @ Res Outgoing	L2696565-2	4/4/2022	0	0
TOC - Distribution @ Darcy's House	L2696565-3	4/4/2022	0	0
TOC - Distribution @ Elementary School	L2699646-1	4/19/2022	0	0
TOC - Distribution @ Res Outgoing	L2699646-2	4/19/2022	0	0
TOC - Distribution @ Ed's Tire	L2699646-3	4/19/2022	0	0
TOC - Distribution @ Carman Hospital	L2702661-1	5/2/2022	0	0
TOC - Distribution @ Res Outgoing	L2702661-2	5/2/2022	0	0
TOC - Distribution @ LCL Construction	L2702661-3	5/2/2022	0	0
TOC - Distribution @ 86-8th ST. NW	L2703423-1	5/4/2022	0	0
TOC - Distribution @ Darcy's House	L2703423-2	5/4/2022	0	0
TOC - Distribution @ 66-8th ST. NW	L2703423-3	5/4/2022	0	0
TOC - Distribution @ 86-8th ST. NW	L2703739-1	5/5/2022	0	0
TOC - Distribution @ Darcy's House	L2703739-2	5/5/2022	0	0
TOC - Distribution @ 66-8th ST. NW	L2703739-3	5/5/2022	0	0
TOC - Distribution @ 86-8th ST. NW	L2705249-1	5/11/2022	0	0
TOC - Distribution @ 119-8th ST. NW	L2705249-2	5/11/2022	0	0
TOC - Distribution @ 131-8th ST. NW	L2705249-3	5/11/2022	0	0
TOC - Distribution @ 86-8th ST. NW	L2705639-1	5/12/2022	0	0
TOC - Distribution @ 119-8th ST. NW	L2705639-2	5/12/2022	0	0
TOC - Distribution @ 131-8th ST. NW	L2705639-3	5/12/2022	0	0
TOC - Distribution @ Carman Golf Club	L2706493-1	5/16/2022	0	0
TOC - Distribution @ Res Outgoing	L2706493-2	5/16/2022	0	0
TOC - Distribution @ Carman Motor Inn	L2706493-3	5/16/2022	0	0
TOC - Distribution @ Seasonal Campground	L2706493-4	5/16/2022	0	0
TOC - Distribution @ Seasonal Campground	L2707009-1	5/17/2022	0	0
TOC - Distribution @ Seasonal Campground	L2710540-1	5/30/2022	0	0
TOC - Distribution @ Res Outgoing	L2710540-2	5/30/2022	0	0
TOC - Distribution @ Public Works Shop	L2710540-3	5/30/2022	0	0
TOC - Distribution @ Memorial Hall	L2711814-1	6/2/2022	0	0
TOC - Distribution @ Linear Grain	L2711814-2	6/2/2022	0	0
TOC - Distribution @ Oxbow Inn	L2711814-3	6/2/2022	0	0
TOC - Distribution @ Memorial Hall	L2712199-1	6/3/2022	0	0
TOC - Distribution @ Linear Grain	L2712199-2	6/3/2022	0	0
TOC - Distribution @ Oxbow Inn	L2712199-3	6/3/2022	0	0
TOC - Distribution @ Darcy's House	L2714417-1	6/13/2022	0	0
TOC - Distribution @ Res Outgoing	L2714417-2	6/13/2022	0	0
TOC - Distribution @ Ed's Tire	L2714417-3	6/13/2022	0	0
TOC - Distribution @ High School	L2718234-1	6/27/2022	0	0
TOC - Distribution @ Res Outgoing	L2718234-2	6/27/2022	0	0
TOC - Distribution @ Elementary School	L2718234-3	6/27/2022	0	0
TOC - Distribution @ Carman Golf Club	L2721391-1	7/11/2022	0	0
TOC - Distribution @ Res Outgoing	L2721391-2	7/11/2022	0	0

TOC - Distribution @ Carman Hospital	L2721391-3	7/11/2022	0	0
TOC - Distribution @ Darcy's House	L2724521-1	7/25/2022	0	0
TOC - Distribution @ Res Outgoing	L2724521-2	7/25/2022	0	0
TOC - Distribution @ Carman Campground	L2724521-3	7/25/2022	0	0
TOC - Distribution @ 90 - 1st St. SE	L2725482-1	7/28/2022	0	0
TOC - Distribution @ 67 - 1st St. SE	L2725482-2	7/28/2022	0	0
TOC - Distribution @ PKF Lawyers	L2725482-3	7/28/2022	0	0
TOC - Distribution @ 90 - 1st St. SE	L2725715-1	7/29/2022	0	0
TOC - Distribution @ 67 - 1st St. SE	L2725715-2	7/29/2022	0	0
TOC - Distribution @ PKF Lawyers	L2725715-3	7/29/2022	0	0
TOC - Distribution @ Res Outgoing	L2727102-1	8/8/2022	0	0
TOC - Distribution @ LCL Construction	L2727102-2	8/8/2022	0	0
TOC - Distribution @ Ed's Tire	L2727102-3	8/8/2022	0	0
TOC - Distribution @ Public Works Shop	L2729429-1	8/22/2022	0	0
TOC - Distribution @ Res Outgoing	L2729429-2	8/22/2022	0	0
TOC - Distribution @ Blue Crescent Hotel	L2729429-3	8/22/2022	0	0
TOC - Distribution @ Elementary School	L2731510-1	9/6/2022	0	0
TOC - Distribution @ Res Outgoing	L2731510-2	9/6/2022	0	0
TOC - Distribution @ High School	L2731510-3	9/6/2022	0	0
TOC - Distribution @ Darcy's House	L2733511-1	9/20/2022	0	0
TOC - Distribution @ Res Outgoing	L2733511-2	9/20/2022	0	0
TOC - Distribution @ Carman Hospital	L2733511-3	9/20/2022	0	0
TOC - Distribution @ Carman Golf Club	L2733509-1	9/20/2022	0	0
TOC - Distribution @ Splash Pad	L2733509-2	9/20/2022	0	0
TOC - Distribution @ 1 - Eagle Drive	L2733509-3	9/20/2022	0	0
TOC - Distribution @ Carman Golf Club	L2733688-1	9/21/2022	0	0
TOC - Distribution @ Splash Pad	L2733688-2	9/21/2022	0	0
TOC - Distribution @ 1 - Eagle Drive	L2733688-3	9/21/2022	0	0
TOC - Distribution @ Carman Arena	L2735227-1	10/3/2022	0	0
TOC - Distribution @ Res Outgoing	L2735227-2	10/3/2022	0	0
TOC - Distribution @ Ed's Tire	L2735227-3	10/3/2022	0	0
TOC - Distribution @ Public Works Shop	L2736906-1	10/17/2022	0	0
TOC - Distribution @ Res Outgoing	L2736906-2	10/17/2022	0	0
TOC - Distribution @ Carman Golf Club	L2736906-3	10/17/2022	0	0
TOC - Distribution @ Carman Hospital	L2738610-1	10/31/2022	0	0
TOC - Distribution @ Res Outgoing	L2738610-2	10/31/2022	0	0
TOC - Distribution @ Carman Elementary	L2738610-3	10/31/2022	0	0
TOC - Distribution @ Carman Golf Club	L2740226-1	11/14/2022	0	0
TOC - Distribution @ Res Outgoing	L2740226-2	11/14/2022	0	0
TOC - Distribution @ Carman Motor Inn	L2740226-4	11/14/2022	0	0
TOC - Distribution @ Carman Arena	L2741711-1	11/28/2022	0	0
TOC - Distribution @ Res Outgoing	L2741711-2	11/28/2022	0	0
TOC - Distribution @ High School	L2741711-3	11/28/2022	0	0
TOC - Distribution @ Public Works Shop	L2742953-1	12/12/2022	0	0
TOC - Distribution @ Res Outgoing	L2742953-2	12/12/2022	0	0
TOC - Distribution @ Darcy's House	L2742953-3	12/12/2022	0	0
TOC - Distribution @ Carman Arena	L2743895-1	12/28/2022	0	0

TOC - Distribution @ Res Outgoing	L2743895-2	12/28/2022	0	0
TOC - Distribution @ Carman Hospital	L2743895-3	12/28/2022	0	0

**Total Metals sampling results (2021)**

**Total Metals (WATER)**

Analyte	Unit	ALS ID		L2674144-1 20-DEC-21 11:00 CARMEN (STEPHENFIELD REGIONAL)3 - DISTRIBUTION
		Sampled Date	Sampled Time	
		Guide Limit #1	Guide Limit #2	Sample ID
Aluminum (Al)-Total	mg/L	0.1	2.9	0.0090
Antimony (Sb)-Total	mg/L	-	0.006	<0.00010
Arsenic (As)-Total	mg/L	-	0.01	0.00014
Barium (Ba)-Total	mg/L	-	2	0.0136
Beryllium (Be)-Total	mg/L	-	-	<0.00010
Bismuth (Bi)-Total	mg/L	-	-	<0.000050
Boron (B)-Total	mg/L	-	5	0.104
Cadmium (Cd)-Total	mg/L	-	0.005	<0.0000050
Calcium (Ca)-Total	mg/L	-	-	15.7
Cesium (Cs)-Total	mg/L	-	-	<0.000010
Chromium (Cr)-Total	mg/L	-	0.05	<0.00010
Cobalt (Co)-Total	mg/L	-	-	<0.00010
Copper (Cu)-Total	mg/L	1	2	0.0303
Iron (Fe)-Total	mg/L	0.3	-	<0.010
Lead (Pb)-Total	mg/L	-	0.005	0.000410
Lithium (Li)-Total	mg/L	-	-	0.0225
Magnesium (Mg)-Total	mg/L	-	-	8.06
Manganese (Mn)-Total	mg/L	0.02	0.12	0.00623
Molybdenum (Mo)-Total	mg/L	-	-	0.000141
Nickel (Ni)-Total	mg/L	-	-	0.00054
Phosphorus (P)-Total	mg/L	-	-	<0.030
Potassium (K)-Total	mg/L	-	-	4.31
Rubidium (Rb)-Total	mg/L	-	-	0.00127
Selenium (Se)-Total	mg/L	-	0.05	0.000087
Silicon (Si)-Total	mg/L	-	-	2.49
Silver (Ag)-Total	mg/L	-	-	<0.000010
Sodium (Na)-Total	mg/L	200	-	16.5
Strontium (Sr)-Total	mg/L	-	7	0.0720
Sulfur (S)-Total	mg/L	-	-	1.10
Tellurium (Te)-Total	mg/L	-	-	<0.00020
Thallium (Tl)-Total	mg/L	-	-	<0.000010
Thorium (Th)-Total	mg/L	-	-	<0.00010
Tin (Sn)-Total	mg/L	-	-	<0.00010

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**  
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**  
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

**Total Metals sampling results (2021) continued:**

**Total Metals (WATER)**

		ALS ID	L2674144-1	
		Sampled Date	20-DEC-21	
		Sampled Time	11:00	
		Sample ID	CARMEN	
Analyte	Unit	Guide Limit #1	Guide Limit #2	(STEPHENFIELD REGIONAL)3 - DISTRIBUTION
Titanium (Ti)-Total	mg/L	-	-	<0.00030
Tungsten (W)-Total	mg/L	-	-	<0.00010
Uranium (U)-Total	mg/L	-	0.02	0.000123
Vanadium (V)-Total	mg/L	-	-	<0.00050
Zinc (Zn)-Total	mg/L	5	-	0.0099
Zirconium (Zr)-Total	mg/L	-	-	<0.00020

**Federal Guidelines for Canadian Drinking Water Quality (MAR, 2021)**  
**#1: GCDWQ - Aesthetic Objective/Other Value (Jan.2020)**  
**#2: GCDWQ - Maximum Acceptable Concentrations (MACs-Jan.2020)**

**What do we have in place to alert water plant staff to water emergencies?**

The Carman Reservoir and pump house is alarmed with the following parameters: low/high pressure alarms, low/high flow alarms, low chlorine levels, and loss of normal power.

**Were there any major expenses incurred in 2022?**

The Town of Carman water meter replacement program resumed in 2022 with approximately 45 residential houses and approximately 25 commercial meters replaced. All remaining meters are on order and to arrive May/June of 23.

**Did any non-compliance incidents occur in 2022?**

There were no non-compliance incidents noted by the Office of Drinking Water in 2022.