



City of Morden Public Water System Annual Report 2022

This report is available online at the City of Morden website www.mymorden.ca as of May 11th, 2023

Email Town address info@mymorden.ca

Paper copies are available at the Morden Civic Center office at 100-195 Stephen St.

Notifications will be in the quarterly water bills, the Quarterly Newsletter and on the City of Morden website, indicating how users can acquire copies of the report.



City of Morden Annual Water System Operation Report 2022

Where does our water come from?

The City of Morden gets its water supply from Lake Minnewasta. Lake Minnewasta is a reservoir created by the construction of a PFRA dam on Dead horse Creek. The reservoir is approximately 1.4 km long and 500m wide at its widest point. The watershed of the creek upstream from the reservoir encompasses about 130 sq km of land area.

Why do we treat our water?

We treat our water to ensure that safe and pleasing drinking water is supplied to the homes and businesses in the City of Morden. Provincial Regulations have set health based drinking water standards for all public water systems and are becoming more stringent all the time. The City of Morden is committed to meeting or exceeding these new standards set by the province to provide the best tap water possible to the City of Morden.

What type of treatment do we use?

Due to the high hardness count (400- 900 Mg/l) of Morden's raw water supply we use a Lime- Soda Ash softening process followed by filtration, UV disinfection and chlorination. These processes are designed to soften and clarify the water and remove microbial contaminants, such as bacteria and organic materials that are naturally found in lake waters.

Why and how do we disinfect our water?

The final step in the treatment of safe drinking water is disinfection. Disinfection is the selective destruction or inactivation of disease-causing organisms in water. The Drinking Water Safety Act and Office of Drinking Water require that water is disinfected to a set standard before it leaves the water treatment plant and that an adequate amount is maintained in the distribution system to ensure the water is safe right to the consumer's tap. The City of Morden disinfects its water through chlorination. Chlorine is added to kill bacteria and viruses that are commonly found in surface waters such as rivers and lakes. An adequate amount of Chlorine is added before the water leaves the treatment plant to ensure an effective kill of

bacteria and to provide a disinfectant residual throughout the distribution system to combat any contamination in the system.

In 2016 the City of Morden added UV light disinfection as an added barrier of disinfection to treat pathogens- bacteria that are resistant to chlorine.

Are chemicals added to our water? Why?

We add Powder Activated Carbon and Fluoride to the water.

Powder Activated Carbon is added to the water to help control taste and odour issues caused by Algae etc.

Fluoride is added as part of the Provincial Fluoridation Program at regulated levels to help prevent tooth decay. This process is monitored by Manitoba Health and Healthy Living. Note the optimum level of Fluoride in water used to be 1 mg/l (part per million) with a Maximum containment level of 1.5 mg/l. As of March 15, 2011 Manitoba Health changed the optimum level to 0.7 ppm with a range of 0.5 to 0.9 ppm. This change was brought about to acknowledge the fact that consumers are getting other sources of Fluoride such as toothpastes and mouthwashes etc. While there is naturally occurring Fluoride in our source water this is taken into account and the final total amount is kept as close to .7ppm as possible.

How much water storage do we have?

When the new water plant was built in 1998 a 500,000-gal reservoir was built underneath it. Another underground reservoir with a capacity of 880,000 gal was constructed and put in service in May 2014. In addition to these reservoirs the Morden WTP has a standpipe with a design capacity of 400,000 gal. The total storage is available is 1.78 million gals which is sufficient to address the City of Morden’s water storage needs for years to come. The standpipe condition, however, is deteriorated and replacement is needed in the coming couple of years.

What is the “distribution system”?

The system is a network of underground pipes that supply water to all areas of City. The chart shown below identifies the type and length of watermain piping in service.

Type of Waterline	Total Meters
Asbestos cement	36273.21
Ductile iron	1760.08
Plastic	30,101

The mains are flushed through hydrants and regular maintenance including hydrant testing is done annually usually in fall.

Is our water tested? What for? When?

Water tests are taken on a routine basis to ensure the quality and safety of our water and to monitor how well the treatment facility is operating. We daily test the water at the water plant for: Chlorine residual, hardness, PH, turbidity, Alkalinity, Fluoride. All water test results associated with water safety are submitted to the Office of Drinking Water for review. The tests sent to The Office of Drinking Water are: Bacterial tests, Trihalomethane, Haloacetic acid, Fluoride tests, Turbidity and chlorine residuals

Bacterial testing: We test the raw water (untreated lake water), the treated water leaving the plant, and the water in the distribution system, every two weeks for the presence of Total coliforms and E-Coli bacteria at a provincially accredited lab in Wpg.

Disinfectant testing is done daily on the treated water leaving the water plant and chlorine levels are also tested in the distribution system every time we take samples for bacterial sampling to ensure there is a proper Chlorine residual in the system.

Turbidity testing is done via on-line continuously monitoring equipment and verified daily by desktop testing. Turbidity is measurement of the clarity of the water and is used to determine how well our treatment system is working.

Trihalomethane (THM) testing: Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in the water. The province has set a standard based on an average of four samples per year. We test THM levels in two locations on a quarterly basis.

Haloacetic Acid testing: The Office of Drinking Water initiated a Haloacetic Acid testing program in 2016. Haloacetic Acid is a disinfection by- product formed by a reaction with Chlorine. Testing is done at the same time as THMs on a quarterly basis.

Fluoride sampling: Daily sampling of Fluoride levels are done at the water plant and every two weeks a composite sample for that period is submitted for testing and verification at a provincially credited lab.

In addition to the above a detailed chemical analysis is performed annually.

What are the results of the tests? Are copies available?

As a result of the testing the Office of Drinking Water has determined that “ The City of Morden has been fulfilling its obligations with regard to bacteriological and disinfection monitoring and reporting”

Copies of test results are kept at the Water plant and copies can be made available by contacting the foreman at the Water plant. Ph# 204-822-5707.

Below are the test results of the annual water analysis.

ANNUAL WATER ANALYSIS

		ALS ID		L2734948-1	L2734948-2	L2734948-3
		Sampled Date		28-SEP-22	28-SEP-22	
		Sampled Time		14:00	14:00	-
		Sample ID		MORDEN 1 - RAW	MORDEN 2 - TREATED	MORDEN 3 - DISTRIBUTION
Analyte	Unit	Guide Limit #1	Guide Limit #2			
Physical Parameters						
Colour, True	CU	15	-	20.4	<5.0	
Conductivity	umhos/cm	-	-	867	738	

Hardness (as CaCO3)	mg/L	-	-	355	247	
Langelier Index (4 C)	No Unit	-	-	0.60	-0.69	
Langelier Index (60 C)	No Unit	-	-	1.4	0.072	
pH	pH units	7.00-10.5	-	8.23	7.60	
Total Dissolved Solids	mg/L	500	-	537	460	
Transmittance, UV (254 nm)	%T/cm	-	-	54.1	85.1	
Turbidity	NTU	-	-	6.02	<0.10	
Anions and Nutrients						
Alkalinity, Total (as CaCO3)	mg/L	-	-	167	35.0	
Ammonia, Total (as N)	mg/L	-	-	0.403	0.030	
Bicarbonate (HCO3)	mg/L	-	-	204	42.7	
Bromide (Br)	mg/L	-	-	<0.010	<0.010	
Carbonate (CO3)	mg/L	-	-	<0.60	<0.60	
Chloride (Cl)	mg/L	250	-	11.7	17.4	
Fluoride (F)	mg/L	-	1.5	0.308	0.647	
Hydroxide (OH)	mg/L	-	-	<0.34	<0.34	
Nitrate (as N)	mg/L	-	10	0.0880	0.328	
Nitrite (as N)	mg/L	-	1	0.0297	<0.0010	
Sulfate (SO4)	mg/L	500	-	243	262	
Metals						
Aluminum (Al)-Total	mg/L	0.1	2.9	0.0397	0.0184	0.0129
Chromium (Cr)-Total	mg/L	-	0.05	0.00016	0.00041	0.00045
Cobalt (Co)-Total	mg/L	-	-	0.00040	<0.00010	0.00010
Copper (Cu)-Total	mg/L	1	2	0.00647	0.0433	0.0308
Iron (Fe)-Total	mg/L	0.3	-	0.118	<0.010	0.146
Lead (Pb)-Total	mg/L	-	0.005	0.000171	<0.000050	0.000813
Lithium (Li)-Total	mg/L	-	-	0.0604	0.0605	0.0587
Magnesium (Mg)-Total	mg/L	-	-	40.0	13.9	13.3
Manganese (Mn)-Total	mg/L	0.02	0.12	0.483	0.00239	0.00469
Molybdenum (Mo)-Total	mg/L	-	-	0.00741	0.00717	0.00731
Nickel (Ni)-Total	mg/L	-	-	0.00519	0.00137	0.00172
Phosphorus (P)-Total	mg/L	-	-	0.179	<0.050	<0.030
Potassium (K)-Total	mg/L	-	-	8.05	8.50	8.29
Rubidium (Rb)-Total	mg/L	-	-	0.00311	0.00388	0.00381
Selenium (Se)-Total	mg/L	-	0.05	0.00228	0.00159	0.00158
Silicon (Si)-Total	mg/L	-	-	8.28	3.85	3.79
Silver (Ag)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total	mg/L	200	-	46.5	47.1	46.3
Strontium (Sr)-Total	mg/L	-	7	0.395	0.289	0.297
Sulfur (S)-Total	mg/L	-	-			96.1
Tellurium (Te)-Total	mg/L	-	-	<0.00020	<0.00020	<0.00020
Thallium (Tl)-Total	mg/L	-	-	<0.000010	<0.000010	<0.000010
Thorium (Th)-Total	mg/L	-	-	<0.00010	<0.00010	0.00032
Tin (Sn)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total	mg/L	-	-	0.00070	<0.00030	<0.00030

Tungsten (W)-Total	mg/L	-	-	<0.00010	<0.00010	<0.00010
Uranium (U)-Total	mg/L	-	0.02	0.00892	0.000135	0.000186
Vanadium (V)-Total	mg/L	-	-	0.00596	0.00242	0.00223
Zinc (Zn)-Total	mg/L	5	-	0.0089	<0.0030	0.0752
Zirconium (Zr)-Total	mg/L	-	-	0.00022	<0.00020	<0.00020
Organics						
Microcystin	ug/L	-	1.5	<0.20		

BI-WEEKLY BACTERIAL TESTS

Date	#1 Raw	#2 Treated	#3 Distribution @PWG	#4 Dist. @PVWC	#5 Dist. @Morden Rec.	#6 Dist. @ Civic centre	#7 Dist. @ Fire Hall
January 13, 2022							
Chlorine Free	0	1.29	0.39	0.44	0.13	0.39	0.34
Chlorine Total	0	2.16	1.1	1.01	0.61	1.07	1.00
Total Coliforms	3	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.29	0.39	0.19	0.37	0.38	0.37
January 26, 2022							
Chlorine Free	0	0.91	0.56	0.52	0.13	0.54	0.57
Chlorine Total	0	1.52	1.27	1.19	0.61	1.26	1.23
Total Coliforms	10	0	0	0	0	0	0
Escherichia Coli	0	0	0	0.0	0	0	0
Turbidity		0.22	0.41	0.14	0.40	0.28	0.29
February 07, 2022							
Chlorine Free	0	0.79	0.26	0.83	0.11	0.44	0.46
Chlorine Total	0	2.00	0.88	1.50	0.76	1.07	1.14
Total Coliforms	1	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.19	0.32	0.19	0.30	0.26	0.27
February 22, 2022							
Chlorine Free	0	0.79	0.24	0.13	0.14	0.27	0.29
Chlorine Total	0	1.44	0.98	0.72	0.75	1.01	0.87
Total Coliforms	3	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.18	0.22	0.11	0.23	0.18	0.16
March 7, 2022							
Chlorine Free	0	1.17	0.25	1.04	0.19	0.28	0.75
Chlorine Total	0	1.90	0.89	1.63	0.80	0.72	1.43
Total Coliforms	2	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		18	0.34	0.14	0.33	0.29	0.29
March 21, 2022							
Chlorine Free	0	1.09	0.19	0.31	0.28	0.31	0.75
Chlorine Total	0	1.80	0.76	1.05	0.84	0.87	1.43
Total Coliforms	41	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.19	0.56	0.36	0.44	0.51	0.56
April 4, 2022							
Chlorine Free	0	1.04	0.36	0.74	0.28	0.48	0.47
Chlorine Total	0	1.62	1.04	1.36	0.87	1.15	1.11
Total Coliforms	>200	0	0	0	0	0	0

Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.19	0.36	0.11	0.36	0.47	0.35
April 19,2022							
Chlorine Free	0	1.20	0.58	1.09	0.38	0.37	0.79
Chlorine Total	0	1.18	1.15	1.46	0.95	1.23	1.26
Total Coliforms	118	0	0	0	0	0	0
Escherichia Coli	1	0	0	0	0	0	0
Turbidity		0.23	0.47	0.13	0.36	0.38	0.24
May 3, 2021							
Chlorine Free	0	2.80	1.59	0.95	0.80	1.19	1.31
Chlorine Total	0	3.38	2.10	1.25	1.42	1.77	1.92
Total Coliforms	>200	0	0	0	0	0	0
Escherichia Coli	66	0	0	0	0	0	0
Turbidity		6.37	3.75	0.28	1.86	1.56	2.07
May 17,2022							
Chlorine Free	0	1.77	1.41	0.99	0.98	1.46	0.97
Chlorine Total	0	2.56	1.73	1.30	1.33	1.92	1.34
Total Coliforms	200	0	0	0	0	0	0
Escherichia Coli	4	0	0	0	0	0	0
Turbidity		0.46	1.05	0.22	0.80	0.62	0.82
June 1, 2022							
Chlorine Free	0	1.04	0.88	0.85	0.52	0.74	0.47
Chlorine Total	0	1.36	1.21	1.18	0.84	1.10	1.08
Total Coliforms	>200	0	0	0	0	0	0
Escherichia Coli	74	0	0	0	0	0	0
Turbidity		0.22	0.56	0.22	0.56	0.25	0.79
June 13,2022							
Chlorine Free	0	0.96	0.35	0.95	0.57	0.42	0.57
Chlorine Total	0	1.34	0.68	1.24	1.22	0.77	0.86
Total Coliforms	19	0	0	0	0	0	0
Escherichia Coli	1	0	0	0	0	0	0
Turbidity		0.12	0.24	0.19	0.16	0.22	0.32
June 27,2022							
Chlorine Free	0	0.99	0.23	0.48	0.37	0.61	0.40
Chlorine Total	0	1.45	0.60	0.84	0.75	0.99	0.76
Total Coliforms	>200	0	0	0	0	0	0
Escherichia Coli	1	0	0	0	0	0	0
Turbidity		0.10	0.26	0.18	0.22	0.98	0.24
July 11,2022							
Chlorine Free	0	0.83	0.12	0.76	0.79	0.39	0.31
Chlorine Total	0	1.25	0.43	1.20	1.08	0.81	0.72
Total Coliforms	>200	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.10	0.24	0.67	0.30	0.21	0.32
July 25,2022							
Chlorine Free	0	1.04	0.26	0.56	1.01	0.68	0.43
Chlorine Total	0	1.40	0.61	1.04	1.47	1.06	0.79
Total Coliforms	>200	0	0	0	0	0	0
Escherichia Coli	4	0	0	0	0	0	0
Turbidity		0.12	0.28	0.14	0.18	0.24	0.29
August 8,2022							
Chlorine Free	0	1.11	0.47	0.53	0.97	.63	0.57
Chlorine Total	0	1.53	0.75	0.94	1.39	.92	1.00
Total Coliforms	>200	0	0	0	0	0	0
Escherichia Coli	1	0	0	0	0	0	0
Turbidity		0.12	0.34	0.11	0.17	0.21	0.23

August 22,2022							
Chlorine Free	0	0.93	0.26	0.42	0.85	0.56	0.38
Chlorine Total	0	1.38	0.65	0.87	1.24	0.89	0.78
Total Coliforms	>200	0	0	0	0	0	0
Escherichia Coli	1	0	0	0	0	0	0
Turbidity		0.17	0.42	0.25	0.34	0.39	0.39
Sept 6,2022							
Chlorine Free	0	1.56	0.08	0.44	1.05	0.60	0.22
Chlorine Total	0	2.03	1.28	0.89	1.68	1.02	0.62
Total Coliforms	>200	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.09	0.29	0.17	0.38	0.42	0.29
Sept 21,2022							
Chlorine Free	0	1.19	0.15	0.46	0.67	0.32	0.40
Chlorine Total	0	1.71	0.55	1.02	1.11	0.74	0.77
Total Coliforms	>200	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.11	0.30	0.15	0.16	0.27	0.24
October 4, 2022							
Chlorine Free	0	1.13	0.35	0.43	0.19	0.57	0.37
Chlorine Total	0	1.61	0.77	0.88	0.55	1.04	0.73
Total Coliforms	118	0	0	0	0	0	0
Escherichia Coli	1	0	0	0	0	0	0
Turbidity		0.11	0.21	0.26	0.21	0.22	0.18
October 17,2022							
Chlorine Free	0	1.03	0.13	0.38	0.18	0.65	0.53
Chlorine Total	0	1.46	0.48	0.77	0.55	1.09	0.96
Total Coliforms	165	0	0	0	0	0	0
Escherichia Coli	1	0	0	0	0	0	0
Turbidity		0.08	0.19	0.15	0.16	0.16	0.15
Oct 31, 2021							
Chlorine Free	0	0.94	0.24	0.14	0.30	0.55	0.62
Chlorine Total	0	1.39	0.59	0.58	0.63	0.98	1.07
Total Coliforms	118	0	0	0	0	0	0
Escherichia Coli	1	0	0	0	0	0	0
Turbidity		0.03	0.23	0.20	0.21	0.15	0.19
Nov 14, 2022							
Chlorine Free	0		0.26	0.19	0.31	0.54	0.30
Chlorine Total	0		0.56	0.66	0.68	0.95	0.95
Total Coliforms	45	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.09	0.22	0.21	0.29	0.44	0.42
Nov 28,2022							
Chlorine Free	0	0.99	0.53	0.06	0.33	0.78	0.22
Chlorine Total	0	1.38	0.94	0.37	0.68	1.24	0.72
Total Coliforms	34	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.09	0.26	0.21	0.16	0.26	0.27
Dec. 12,2022							
Chlorine Free	0	0.98	0.29	0.40	0.28	0.51	0.33
Chlorine Total	0	1.34	0.67	0.99	0.67	0.90	0.66
Total Coliforms	11	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0
Turbidity		0.08	0.33	0.24	0.29	0.51	0.43
Dec. 28, 2022							
Chlorine Free	0	1.09	0.30	0.34	0.32	0.75	0.48
Chlorine Total	0	1.47	0.69	0.87	0.76	1.21	0.91
Total Coliforms	5	0	0	0	0	0	0
Escherichia Coli	0	0	0	0	0	0	0

Turbidity		0.10	0.18	0.23	0.24	0.21	0.30

How well Morden complied with standards and license during 2021?

The table below provides the city's compliance with the license/standards.

Parameter	Monitoring Requirement	Quality Standard	Performance
Total Coliform	Biweekly sampling program with each set of samples consisting of one raw, one treated and a minimum of 5 distribution samples	Less than one total coliform bacteria detectable per 100 mL in all treated and distributed water	100% Compliance
E. coli		Less than one E. coli bacteria detectable per 100 mL in all treated and distributed water	100% Compliance
Chlorine Residuals			
Free chlorine (treated water)	Treated water – Continuous sampling (online monitoring) of water entering the distribution system following 20 minutes of contact time. A confirmatory sample to be taken daily at the online analyzer sampling or effluent point	A free chlorine residual of at least 0.5 mg/L in water entering the distribution system following a minimum contact time of 20 minutes.	100% Compliance
Free chlorine (distribution system)	At the same times and location(s) as bacteriological distribution sampling	A free chlorine residual of at least 0.1 mg/L at all times at any point in the water distribution system	100% Compliance
Total chlorine (treated water)	One sample per day of water entering the distribution system following at least 20 minutes of contact time		100% Compliance
Total chlorine (distribution system)	At the same times and location(s) as bacteriological distribution sampling		
Ultraviolet Disinfection	Continuous monitoring of UV dosage for each operating UV unit	95% of water produced per month is disinfected within validated conditions.	100% Compliance
Turbidity	One raw water sample per day	Less than or equal to 0.3 NTU in 95% of the measurements in a month of the effluent from each operating filter	2 incidents were recorded in 2022 where filtered water turbidity exceeded 1.0 NTU for a brief period. A boil water advisory was issued
	Continuous (online monitoring) sampling of the effluent from each operating	Not exceed 0.3 NTU for more than 12 consecutive hours of filter	

	particulate filter A confirmatory sample to be taken daily at the online turbidity analyzer sampling or effluent point	operation Not exceed 1.0 NTU for any measurement	for the period. The polymer used for clarification was changed from anionic polymer to cationic polymer which brought down the turbidity and corrected the issue.
Total trihalomethanes (THMs)	Two preserved samples taken on a quarterly basis during February, May, August and November, every year at the furthest points in the distribution system.	Less than or equal to 0.10 mg/L as locational running annual average of quarterly samples	Non-compliant (results below)
Total Haloacetic Acids (HAAs)	Two preserved samples taken on a quarterly basis during February, May, August and November, every year at the furthest points in the distribution system.	Less than or equal to 0.08 mg/L as locational running annual average of quarterly samples	100% Compliance
Arsenic	One raw and one treated sample taken every year	Less than or equal to 0.01 mg/L	100% Compliance
Lead	As per instructions of the Drinking Water Officer	Less than or equal to 0.005 mg/L	100% Compliance
Manganese	One raw and one treated water sample every year. One distribution sample taken on a quarterly basis during February, May, August and November	Less than or equal to 0.12 mg/L	100% Compliance
Total Microcystins	One raw water sample in August every year and event-based testing as per ODW guidelines	Less than or equal to 0.0015 mg/L	100% Compliance

How do we plan to meet Standards for Trihalomethanes? (THM's)

As stated previously Trihalomethanes are formed when chlorine reacts with naturally occurring organic matter in the water. Because of the nature of Lime Soda-Ash softening plants and the amount of chemicals we need to add for softening the water. Treating surface water to meet trihalomethane standards can be challenging. The standard for total THMS is 0.1 mg/l based on a running average of quarterly samples The City of Morden is currently exceeding this standard based on the running average of our quarterly samples with results of 0.157 and 0.147 mg/l, which are

above the regulated limit.

The City of Morden through assistance from Water Services Board and Associated Engineering is working on exploring the best option for future upgrades to Morden Water treatment Plant to address THM issues. A pilot plant study using three different water filter/treatment systems was conducted in 2021 to determine which treatment process is best suited for our raw water. Suez ran the pilot system from April to October and observed their performance during various water quality situations throughout the spring and summer. Associated Engineering is now in the process of finalizing its recommendations for the WTP upgrades. The City is also considering the ultrasonic algae treatment for lake Minnewasta to improve the raw water quality and to reduce the organic content in the raw water and a new standpipe with air stripping option to address THM issue. City is also working on towards replacing the existing standpipe with a new one with air stripping for THM control.

Haloacetic acids are currently below regulatory guidelines.

Trihalomethane Test Results

February 07, 2022	Recreation Centre	Public Works Garage
THM Preserved: <ul style="list-style-type: none"> • Bromodichloromethane mg/l • Bromoform mg/l • Dibromochloromethane mg/l • Chloroform mg/L • THMs mg/l 	0.0388 <0.00010 0.0159 0.0995 0.154	0.0412 <0.00010 0.0147 0.112 0.168
Sample Location	Fire Hall	Civic Centre
<ul style="list-style-type: none"> • Total Haloacetic Acid ug/L 	54.4	60.3
May 17,2022	Recreation Centre	Public Works Garage
THM Preserved: <ul style="list-style-type: none"> • Bromodichloromethane mg/l • Bromoform mg/l • Dibromochloromethane mg/l • Chloroform • THMs mg/l 	0.0146 <0.0010 0.00208 .100 0.117	0.0126 <0.0010 0.00084 0.108 0.122
Sample Location	Fire Hall	Civic Centre
<ul style="list-style-type: none"> • Total Haloacetic Acid ug/L 	114	116

Aug 18 / 2022	Recreation Centre	Public Works Garage
THM Preserved:		
• Bromodichloromethane mg/l	0.0132	0.0137
• Bromoform mg/l	<0.0010	<0.0010
• Dibromochloromethane mg/l	0.00208	0.00215
• Chloroform	0.995	0.108
• THMs mg/l	0.115	0.124
Sample Location	Fire Hall	Civic Centre
• Total Haloacetic Acid ug/L	104	106
Nov 14 / 2022	Recreation Centre	Public Works Garage
THM Preserved:		
• Bromodichloromethane mg/l	0.0179	0.0170
• Bromoform mg/l	<0.0010	<0.0010
• Dibromochloromethane mg/l	0.00261	0.00269
• Chloroform	0.0873	0.0850
• THMs mg/l	0.108	0.105
Sample Location	Fire Hall	Civic Centre
• Total Haloacetic Acid ug/L	58.5	60.4

Does the City of Morden have certified trained personnel?

Operator Certification falls under The Environment Act's Water and Wastewater Facility Operator's Regulation. The water plant is a Level III Water Treatment Facility. We currently have one Certified Level III WT / Level II Distribution operator and one Level II WT / Level I Distribution Operator and one Operator in Training (to be registered) working at the water treatment plant.

The distribution system is a Level II facility. Public Works has 2 operators, who have Water Distribution Class II, Wastewater collection II, and Wastewater treatment class I. One operator with Level I in Water Distribution, Wastewater Collection and Wastewater Treatment and one operator in training. One of the operators in Public Works also has Water Treatment Class III.

How do we alert Public Works Staff to water emergencies?

The Public Works Department has staff on call 24 hrs. When emergencies arise after hours, residents who call the regular office no. are transferred to the on-call staff.

Were there emergencies, regulatory compliance issues or other operational issues to report for 2022?

There were two precautionary boil water advisories for watermain repairs. Tests were sent away when completed. They came back good, and the advisories were rescinded.

There was one boil water advisory issued due to high turbidity in the treated water at the WTP on May 01, 2022. The WTP after conducted several trials and Jar tests and finally switched from anionic polymer to cationic polymer which corrected the issue and boil water advisory was lifted on May 20, 2022

Were there any major expenses incurred in 2022?

Following major expenses were incurred in 2022.

- Functional design of water treatment plant upgrades to address THM issues, Standpipe and any other required upgrades.
- Preliminary design for Pembina River to Dead Horse Creek water diversion to augment raw water supply.
- Investment in to PVWC water infrastructure to arrange more water for Morden.
- Replacement of raw water pumps at the intake station for the WTP

Future system expansion or expenses expected?

City has budgeted for following upgrades/renewals in 2023.

- Ultrasonic algae treatment to improve raw water quality
- Preliminary design for Pembina River to Dead Horse Creek water diversion to augment raw water supply.
- Feasibility study for 2nd inline reservoir on DHC
- Standpipe upgrade design
- 6th Street Block 400 watermain renewal to replace existing DI pipe with HDPE pipeline

In future, the city is planning to construct Pembina River to Dead Horse Creek water diversion to ensure raw water for future needs, construction of a new standpipe with air stripping for THM removal and decommissioning existing standpipe and upgrades to WTP to be identified in the Associated Engineering report. In addition to these upgrades, City will continue to invest in the renewal of the old watermains.

Who can we call with questions or concerns regarding drinking water?

For general questions during business hours , call the City of Morden office from 9:00 a.m. to 4:30 p.m. or email info@mymorden.ca