

2022 SECTION 11 ANNUAL REPORT

MOOREFIELD
DRINKING WATER
SYSTEM



For the period of
January 1st, 2022 to December 31st, 2022

Prepared for the Corporation of the Township of Mapleton by the Ontario Clean Water Agency



This report was prepared in accordance with the requirements of [O.Reg 170/03, Section 11, Annual reports](#) for the following system and reporting period:

Drinking-Water System Number:	260069732
Drinking-Water System Name:	Moorefield Drinking Water System
Drinking-Water System Owner:	The Corporation of the Township of Mapleton
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2022 – December 31, 2022

Does your Drinking-Water System serve more than 10,000 people?

No

Is your Annual Report available to the public at no charge on a web site on the Internet?

Yes

Note: If a large municipal residential system serves more than 10,000 people, the owner of the system shall ensure that a copy of every report prepared under this section is available to the public at no charge on a website on the Internet. O. Reg. 170/03, Section 11. (10)

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection (O.Reg 170/03, Section 11.(6)(f)):

- Township of Mapleton Office, 7275 Sideroad 16, Drayton, Ontario, N0G 1P0
- <https://mapleton.ca/>

Note: this is required for large municipal residential systems or small municipal residential systems.

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
N/A	N/A

Did you provide a copy of your annual report to all Drinking Water System owners that are connected to you and to whom you provide all of its drinking water?

N/A

How system users are notified that the annual report is available, and is free of charge:

- | | |
|-------------------------------------|--|
| <input checked="" type="checkbox"/> | Public access/notice via the web |
| <input checked="" type="checkbox"/> | Public access/notice via Government Office |
| <input type="checkbox"/> | Public access/notice via a newspaper |
| <input checked="" type="checkbox"/> | Public access/notice via Public Request |
| <input type="checkbox"/> | Public access/notice via a Public Library |
| <input type="checkbox"/> | Public access/notice via other method: |

Describe your Drinking-Water System (O.Reg 170/03, Section 11.(6)(a)):

The Moorefield Drinking Water System is classified as a Large Municipal Drinking Water System, servicing an approximate population of 1,740 persons. The system is comprised of one pumphouse, draws water from two production wells.

The raw water for the Moorefield pumphouse is supplied from two drilled groundwater wells (Well 1 and Well 2). The water pumped from the wells is treated with sodium hypochlorite (for primary and secondary disinfection). The treated water is stored in a water storage standpipe prior to entering the distribution system. Online equipment continuously monitors and records free chlorine residual and flowrates. The pumphouse is also equipped with standby power in the event of a power failure.

List of water treatment chemicals used by the system during the reporting period (O.Reg 170/03, Section 11.(6)(a)):

- Sodium Hypochlorite 12% Solution

Significant expenses were incurred to:

- | | |
|-------------------------------------|---------------------------------------|
| <input type="checkbox"/> | Install required equipment |
| <input checked="" type="checkbox"/> | Repair required equipment |
| <input checked="" type="checkbox"/> | Replace required equipment |
| <input type="checkbox"/> | No significant expenses were incurred |

Description of major expenses during the reporting period to install, repair or replace required equipment (O.Reg 170/03, Section 11.(6)(e)):

- Chemical Pump Diaphragm Repair Kits
- Butterfly Valve for Water Storage Tank

Summary of any reports/notices submitted to the Ministry and/or Spills Action Centre in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 during the reporting period, including a description of any corrective actions taken under Schedule 17 or 18 (O.Reg 170/03, Section 11.(6)(b),(d)):

Incident Date (yyyy/mm/dd)	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date (yyyy/mm/dd)
N/A	N/A	N/A	N/A	N/A	N/A

Table 1: Microbiological testing done under the Schedule 11 of Regulation 170/03 during this reporting period (O.Reg 170/03, Section 11.(6)(c)).

Location	Number of Samples	Range of E. Coli or Fecal Results		Range of Total Coliforms Results		Number of HPC Samples	Range of HPC Samples	
		Min.	Max.	Min.	Max.		Min.	Max.
Raw Water - Well 1	52	0	0	0	2	n/a	n/a	n/a
Raw Water - Well 2	52	0	0	0	0	n/a	n/a	n/a
Treated Water	52	0	0	0	0	52	0	3
Distribution Water	133 ^{1A}	0	0	0	0	97	0	8

Note: HPC = Heterotrophic Plate Count

Note: Units for E.Coli or Fecal Results are cfu/100 mL, units for Total Coliform Results are cfu/100 mL, units for HPC results are cfu/1mL

The number of people served by the system is 1,740. (Verified with Owner November 17, 2022)

^{1A}As per O.Reg 170/03 Schedule 10-2.(a),(3) if the system serves 100,000 people or less, at least eight distribution samples, plus one additional distribution sample for every 1,000 people served by the system, are taken every month and at least 25% of the samples are tested for HPC

Table 2: Operational testing done under Schedule 7 of Regulation 170/03 during the period covered by this Annual Report (O.Reg 170/03, Section 11.(6)(c)).

Parameter & Location	Number of Samples	Range of Results	
		Min.	Max.
Turbidity (NTU) - Raw Water - Well 1	12	0.10	0.57
Turbidity (NTU) - Raw Water - Well 2	12	0.07	0.23
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.62	1.61
Free Chlorine Residual, In-House (mg/L) - DW	443	0.59	1.57

Note: The number of samples used for continuous monitoring units is 8760.

356 distribution samples required to be taken (one sample is taken on each day of the week, with additional included on scheduled sampling days)

Table 3: Summary of additional testing and sampling results carried out in accordance with the requirement of an approval, municipal drinking water licence or order (including OWRA) or other legal instrument. (O.Reg 170/03, Section 11.(6)(c))

Legal Instrument & Issue Date (yyyy/mm/dd)	Parameter	Date Sampled (yyyy/mm/dd)	Result	Unit of Measure
N/A	N/A	N/A	N/A	N/A

Table 4: Summary of Inorganic parameters tested during this reporting period or the most recent sample results (O.Reg 170/03, Section 11.(6)(c))

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Antimony: Sb (ug/L) - TW	2021/07/21	<MDL 0.9	6.0	No
Arsenic: As (ug/L) - TW	2021/07/21	<MDL 0.2	10.0	No
Barium: Ba (ug/L) - TW	2021/07/21	186.0	1000.0	No
Boron: B (ug/L) - TW	2021/07/21	34.0	5000.0	No
Cadmium: Cd (ug/L) - TW	2021/07/21	0.003	5.0	No
Chromium: Cr (ug/L) - TW	2021/07/21	0.12	50.0	No
Mercury: Hg (ug/L) - TW	2021/07/21	<MDL 0.01	1.0	No
Selenium: Se (ug/L) - TW	2021/07/21	<MDL 0.04	50.0	No
Uranium: U (ug/L) - TW	2021/07/21	0.034	20.0	No
Additional Inorganics				
Fluoride (mg/L) - TW	2021/07/21	0.68	1.5	No
Nitrite (mg/L) - TW	2022/01/11	<MDL 0.003	1.0	No
Nitrite (mg/L) - TW	2022/04/05	<MDL 0.003	1.0	No
Nitrite (mg/L) - TW	2022/07/05	<MDL 0.003	1.0	No
Nitrite (mg/L) - TW	2022/10/12	<MDL 0.003	1.0	No
Nitrate (mg/L) - TW	2022/01/11	<MDL 0.006	10.0	No
Nitrate (mg/L) - TW	2022/04/05	<MDL 0.006	10.0	No
Nitrate (mg/L) - TW	2022/07/05	<MDL 0.006	10.0	No
Nitrate (mg/L) - TW	2022/10/12	<MDL 0.006	10.0	No

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result	Aesthetic Objective (AO)	Exceedance	
				AO	> 20 mg/L
Sodium: Na (mg/L) - TW	2021/07/21 ^{4A}	12.80	200 ^{4B}	No	No

Note: MDL = Minimum Detection Limit

^{4A}Fluoride and Sodium are reportable every 60 months. The next set of fluoride and sodium samples is scheduled to be tested in 2026.

^{4B}There is no regulatory Maximum Allowable Concentration (MAC) Sodium. The aesthetic objective (AO) for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified when the sodium concentration exceeds 20 mg/L so that this information may be communicated to local physicians for their use with patients on sodium restricted diets.

Table 5: Summary of lead testing under Schedule 15.1 during this reporting period (O.Reg 170/03, Section 11.(6)(g))

Location/Type & Parameter	Number of Samples	Range of Results		Number of Lead Exceedances (MAC = 10 µ/L)
		Min.	Max.	
Period: January 1 to April 15				
Plumbing – Lead (µg/L) ^{5B}	N/A	N/A	N/A	0
Distribution – Lead (µg/L) ^{5C}	2	0.05	0.38	0
Distribution – Alkalinity (mg/L as CaCO ₃)	2	229	251	N/A
Distribution – pH	2	8.99	9.03	N/A
Period: June 15 to October 15				
Plumbing – Lead (µg/L) ^{5B}	N/A	N/A	N/A	0
Distribution – Lead (µg/L) ^{5C}	2	0.20	0.70	0
Distribution – Alkalinity (mg/L as CaCO ₃)	2	232	232	N/A
Distribution – pH	2	8.73	8.83	N/A
Period: December 15 to 31				
Plumbing – Lead (µg/L) ^{5B}	N/A	N/A	N/A	0
Distribution – Lead (µg/L) ^{5C}	N/A	N/A	N/A	0
Distribution – Alkalinity (mg/L as CaCO ₃)	N/A	N/A	N/A	N/A
Distribution - pH	N/A	N/A	N/A	N/A

Note: this is required for large municipal residential systems, small municipal residential systems or non-municipal year-round residential system.

^{5A}*This system follows a reduced sampling schedule (O.Reg 170/03, Section 15.1.5). The number of sampling points for the system is based on the population served by the system and therefore requires 2 distribution sampling points per sampling period.*

^{5B}*Plumbing samples are not applicable as this system qualifies for the plumbing exemption per O. Reg 170/03 Schedule 15.1-5 (9) (10).*

^{5C}*Distribution lead samples are taken every 36 months. The next set of distribution lead samples is scheduled to be sampled during the winter period of December 15, 2024 to April 15, 2025 and summer period of June 15, 2025 to October 15, 2025.*

Table 6: Summary of Organic parameters sampled during this reporting period or the most recent sample results (O.Reg 170/03, Section 11.(6)(c)).

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Alachlor (ug/L) - TW	2021/07/21	<MDL 0.02	5.0	No
Atrazine + N-dealkylated metabolites (ug/L) - TW	2021/07/21	<MDL 0.01	5.0	No
Azinphos-methyl (ug/L) - TW	2021/07/21	<MDL 0.05	20.0	No
Benzene (ug/L) - TW	2021/07/21	<MDL 0.32	1.0	No
Benzo(a)pyrene (ug/L) - TW	2021/07/21	<MDL 0.004	0.01	No
Bromoxynil (ug/L) - TW	2021/07/21	<MDL 0.33	5.0	No
Carbaryl (ug/L) - TW	2021/07/21	<MDL 0.05	90.0	No
Carbofuran (ug/L) - TW	2021/07/21	<MDL 0.01	90.0	No
Carbon Tetrachloride (ug/L) - TW	2021/07/21	<MDL 0.17	2.0	No
Chlorpyrifos (ug/L) - TW	2021/07/21	<MDL 0.02	90.0	No
Diazinon (ug/L) - TW	2021/07/21	<MDL 0.02	20.0	No
Dicamba (ug/L) - TW	2021/07/21	<MDL 0.2	120.0	No
1,2-Dichlorobenzene (ug/L) - TW	2021/07/21	<MDL 0.41	200.0	No
1,4-Dichlorobenzene (ug/L) - TW	2021/07/21	<MDL 0.36	5.0	No
1,2-Dichloroethane (ug/L) - TW	2021/07/21	<MDL 0.35	5.0	No
1,1-Dichloroethylene (ug/L) - TW	2021/07/21	<MDL 0.33	14.0	No
Dichloromethane (Methylene Chloride) (ug/L) - TW	2021/07/21	<MDL 0.35	50.0	No
2,4-Dichlorophenol (ug/L) - TW	2021/07/21	<MDL 0.15	900.0	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L) - TW	2021/07/21	<MDL 0.19	100.0	No
Diclofop-methyl (ug/L) - TW	2021/07/21	<MDL 0.4	9.0	No
Dimethoate (ug/L) - TW	2021/07/21	<MDL 0.06	20.0	No
Diquat (ug/L) - TW	2021/07/21	<MDL 1.0	70.0	No
Diuron (ug/L) - TW	2021/07/21	<MDL 0.03	150.0	No
Glyphosate (ug/L) - TW	2021/07/21	<MDL 1.0	280.0	No
Malathion (ug/L) - TW	2021/07/21	<MDL 0.02	190.0	No
Metolachlor (ug/L) - TW	2021/07/21	<MDL 0.01	50.0	No
Metribuzin (ug/L) - TW	2021/07/21	<MDL 0.02	80.0	No

Parameter & Location	Sample Date (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Monochlorobenzene (Chlorobenzene) (ug/L) - TW	2021/07/21	<MDL 0.3	80.0	No
Paraquat (ug/L) - TW	2021/07/21	<MDL 1.0	10.0	No
PCB (ug/L) - TW	2021/07/21	<MDL 0.04	3.0	No
Pentachlorophenol (ug/L) - TW	2021/07/21	<MDL 0.15	60.0	No
Phorate (ug/L) - TW	2021/07/21	<MDL 0.01	2.0	No
Picloram (ug/L) - TW	2021/07/21	<MDL 1.0	190.0	No
Prometryne (ug/L) - TW	2021/07/21	<MDL 0.03	1.0	No
Simazine (ug/L) - TW	2021/07/21	<MDL 0.01	10.0	No
Terbufos (ug/L) - TW	2021/07/21	<MDL 0.01	1.0	No
Tetrachloroethylene (ug/L) - TW	2021/07/21	<MDL 0.35	10.0	No
2,3,4,6-Tetrachlorophenol (ug/L) - TW	2021/07/21	<MDL 0.2	100.0	No
Triallate (ug/L) - TW	2021/07/21	<MDL 0.01	230.0	No
Trichloroethylene (ug/L) - TW	2021/07/21	<MDL 0.44	5.0	No
2,4,6-Trichlorophenol (ug/L) - TW	2021/07/21	<MDL 0.25	5.0	No
2-methyl-4- chlorophenoxyacetic acid (MCPA) (ug/L) - TW	2021/07/21	<MDL 0.12	100.0	No
Trifluralin (ug/L) - TW	2021/07/21	<MDL 0.02	45.0	No
Vinyl Chloride (ug/L) - TW	2021/07/21	<MDL 0.17	1.0	No
Trihalomethane: Total (ug/L) Annual Average - DW	2022 Quarterly	18.0	100.0	No
HAA Total (ug/L) Annual Average - DW	2022 Quarterly	5.3	80.0	No

Note: MDL = Minimum Detection Limit, MAC = Maximum Allowable Concentration, TW = Treated Water, DW = Distribution Water

Table 7: List of Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards for the reporting period.

Parameter	Result Value	Unit of Measure	Date of Sample
N/A	N/A	N/A	N/A