2024 SECTION 11 ANNUAL REPORT

MOOREFIELD DRINKING WATER SYSTEM

For the period of
January 1st, 2024 to December 31st, 2024

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

Mapleton

ONTARIO CLEAN WATER AGENCY
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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, 2024 – December 31, 2024

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:

X	Public access/notice via the web
X	Public access/notice via Government Office
	Public access/notice via a newspaper
X	Public access/notice via Public Request
	Public access/notice via a Public Library
	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 Class I Water Distribution and Supply Subsystem. It is categorized under O.Reg 170/03 as a Large Municipal Drinking Water System, servicing an approximate population of 1,740 persons. The system is comprised of one pumphouse which draws water from two production wells. A third supply well (Well 3) has been added to the system but has not been commissioned yet.

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:

X	Install required equipment
X	Repair required equipment
X	Replace required equipment
	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))*:

- Replace and install new chemical pumps
- Replace and install chemical skid
- Pressure relief valve (PRV) repairs

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/ Notice of	Result & Unit	Reporting Summary, Corrective Actions & Resolution
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[1A]	53	0	0	0	1	n/a	n/a	n/a
Raw Water - Well 2[1A]	53	0	0	0	0	n/a	n/a	n/a
Treated Water[1B]	53	0	0	0	0	53	0	3
Distribution Water[1C]	158	0	0	0	0	158	0	160

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

[1A]O.Reg 170/03, Schedule 10-4. (1)(3) requires for a large municipal residential system that a water sample is taken at least once every week from the drinking water system's raw water, before any treatment is applied to the water and tested for E.Coli and total coliforms.

[1B]O Reg 170/03, Schedule 10-3 requires for a large municipal residential system that a treated water sample is taken at least once every week and tested for E.Coli, total coliforms and general bacteria population expressed as colony counts on a heterotrophic count (HPC).

[1C]O.Reg 170/03 Schedule 10-2.(1)(2)(3) requires that a system that 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, with at least one of the samples being taken in each week and that each of the samples taken is tested for E.Coli, Total Coliforms. At least 25 percent of the samples required must be tested for general bacteria population expressed as colony counts on heterotrophic plate count (HPC). As of 2024, the population of Moorefield DWS is 1,740 persons, as confirmed by the owner on November 9, 2023 and thus requires at the minimum nine (9) monthly distribution samples.

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[2A]	12	0.10	0.52
Turbidity (NTU) - Raw Water - Well 2[2A]	12	0.10	0.49
Free Chlorine Residual, On-Line (mg/L) - TW[2B]	8760	0.41	1.76
Free Chlorine Residual, Distribution Water (mg/L) - DW[2C]	471	0.56	1.50

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

[2A]O.Reg 170/03 Schedule 7-3.(1)(1.1) requires a raw water sample be taken at least once every month from each well that is supplying water to the system and tested for turbidity.

[2B]O.Reg 170/03 Schedule 7-2.(1) requires a drinking water system that provides chlorination for primary disinfection to sample and test for free chlorine residual with continuous monitoring equipment in the treatment process at or near a location where the intended contact time has just been completed.

[2C]O.Reg 170/03 Schedule 7-2.(3)(4) requires a large municipal residential system that provides secondary disinfection to take at least seven distribution samples each week and immediately tested for free chlorine residual, if the system provides chlorination and does not provide chloramination, unless at least one sample is taken on each day of the week. At the Moorefield DWS, secondary disinfection is monitored by taking one sample each day of the week, with additional samples 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[4A] (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Antimony: Sb (µg/L) - TW	2024/07/24	<MDL 0.6	6.0	No
Arsenic: As (µg/L) - TW	2024/07/24	<MDL 0.2	10.0	No
Barium: Ba (µg/L) - TW	2024/07/24	198.0	1000.0	No
Boron: B (µg/L) - TW	2024/07/24	32.0	5000.0	No
Cadmium: Cd µg/L) - TW	2024/07/24	<MDL 0.003	5.0	No
Chromium: Cr (µg/L) - TW	2024/07/24	0.12	50.0	No
Mercury: Hg (µg/L) - TW	2024/07/24	<MDL 0.01	1.0	No
Selenium: Se (µg/L) - TW	2024/07/24	<MDL 0.04	50.0	No
Uranium: U (µg/L) - TW	2024/07/24	0.033	20.0	No
Additional Inorganics				
Fluoride (mg/L) - TW	2021/07/21[4B]	0.68	1.5	No
Nitrite (mg/L) - TW	2024/01/02	0.011	1.0	No
Nitrite (mg/L) - TW	2024/04/02	<MDL 0.003	1.0	No
Nitrite (mg/L) - TW	2024/07/16	<MDL 0.003	1.0	No
Nitrite (mg/L) - TW	2024/10/08	<MDL 0.003	1.0	No
Nitrate (mg/L) - TW	2024/01/02	<MDL 0.006	10.0	No
Nitrate (mg/L) - TW	2024/04/02	0.007	10.0	No
Nitrate (mg/L) - TW	2024/07/16	<MDL 0.006	10.0	No
Nitrate (mg/L) - TW	2024/10/08	<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[4C]	12.80	200	No	No

Note: MDL = Minimum Detection Limit

[4A]Inorganic Parameters (Schedule 23) are required to be tested every 36 months for a large municipal residential system, if the system obtains water from a raw water source that is ground water (O. Reg 170/03 Schedule 13-2(b). The last set of samples was collected and tested in 2024, the next set of samples is scheduled to be collected and tested in 2027.

[4B]Fluoride is reportable every 60 months. The most recent fluoride samples were taken in 2021. The next set of fluoride samples is scheduled to be tested in 2026.

[4C]Sodium is reportable every 60 months. The most recent sodium samples were tested in 2021, the next set of samples is scheduled to be tested in 2026.

Note: 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	N/A
Distribution – Lead (µg/L) [5C]	N/A	N/A	N/A	N/A
Distribution – Alkalinity (mg/L as $CaCO_3$)	2	225	228	N/A
Distribution – pH	2	7.69	7.81	N/A
Period: June 15 to October 15				
Plumbing – Lead (µg/L) [5B]	N/A	N/A	N/A	N/A
Distribution – Lead (µg/L) [5C]	N/A	N/A	N/A	N/A
Distribution – Alkalinity (mg/L as $CaCO_3$)	2	232	240	N/A
Distribution – pH	2	7.98	8.00	N/A
Period: December 15 to 31				
Plumbing – Lead (µg/L) [5B]	N/A	N/A	N/A	N/A
Distribution – Lead (µg/L) [5C]	N/A	N/A	N/A	N/A
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 people served by the system is 1,740 persons, as confirmed by the owner on November 9, 2023 and thus requires two (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 most recent set of distribution lead samples were collected within the winter period of December 15, 2021 to April 15, 2022 and summer period of June 15, 2022 to October 15, 2022. 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[6A] (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Alachlor (µg/L) - TW	2024/07/24	<MDL 0.02	5.0	No
Atrazine + N-dealkylated metabolites (µg/L) - TW	2024/07/24	<MDL 0.01	5.0	No
Azinphos-methyl (µg/L - TW	2024/07/24	<MDL 0.05	20.0	No
Benzene (µg/L) - TW	2024/07/24	<MDL 0.32	1.0	No
Benzo(a)pyrene (µg/L) - TW	2024/07/24	<MDL 0.004	0.01	No
Bromoxynil (µg/L) - TW	2024/07/24	<MDL 0.33	5.0	No
Carbaryl (µg/L) - TW	2024/07/24	<MDL 0.05	90.0	No
Carbofuran (µg/L) - TW	2024/07/24	<MDL 0.01	90.0	No
Carbon Tetrachloride (µg/L) - TW	2024/07/24	<MDL 0.17	2.0	No
Chlorpyrifos (µg/L) - TW	2024/07/24	<MDL 0.02	90.0	No
Diazinon (µg/L) - TW	2024/07/24	<MDL 0.02	20.0	No
Dicamba (µg/L) - TW	2024/07/24	<MDL 0.2	120.0	No
1,2-Dichlorobenzene (µg/L) - TW	2024/07/24	<MDL 0.41	200.0	No
1,4-Dichlorobenzene (µg/L) - TW	2024/07/24	<MDL 0.36	5.0	No
1,2-Dichloroethane (µg/L) - TW	2024/07/24	<MDL 0.35	5.0	No
1,1-Dichloroethylene (µg/L) - TW	2024/07/24	<MDL 0.33	14.0	No
Dichloromethane (Methylene Chloride) (µg/L) - TW	2024/07/24	<MDL 0.35	50.0	No
2,4-Dichlorophenol (µg/L) - TW	2024/07/24	<MDL 0.15	900.0	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (µg/L) - TW	2024/07/24	<MDL 0.19	100.0	No
Diclofop-methyl (µg/L) - TW	2024/07/24	<MDL 0.4	9.0	No

Parameter & Location	Sample Date[6A] (yyyy/mm/dd)	Sample Result	Maximum Allowable Concentration (MAC)	Exceedance of MAC
Dimethoate (µg/L) - TW	2024/07/24	<MDL 0.06	20.0	No
Diquat (µg/L) - TW	2024/07/24	<MDL 1.0	70.0	No
Diuron (µg/L) - TW	2024/07/24	<MDL 0.03	150.0	No
Glyphosate (µg/L) - TW	2024/07/24	<MDL 1.0	280.0	No
Malathion (µg/L) - TW	2024/07/24	<MDL 0.02	190.0	No
Metolachlor (µg/L) - TW	2024/07/24	<MDL 0.01	50.0	No
Metribuzin (µg/L) - TW	2024/07/24	<MDL 0.02	80.0	No
Monochlorobenzene (Chlorobenzene) (µg/L) - TW	2024/07/24	<MDL 0.3	80.0	No
Paraquat (µg/L) - TW	2024/07/24	<MDL 1.0	10.0	No
PCB (µg/L) - TW	2024/07/24	<MDL 0.04	3.0	No
Pentachlorophenol (µg/L) - TW	2024/07/24	<MDL 0.15	60.0	No
Phorate (µg/L) - TW	2024/07/24	<MDL 0.01	2.0	No
Picloram (µg/L) - TW	2024/07/24	<MDL 1.0	190.0	No
Prometryne (µg/L) - TW	2024/07/24	<MDL 0.03	1.0	No
Simazine (µg/L) - TW	2024/07/24	<MDL 0.01	10.0	No
Terbufos (µg/L) - TW	2024/07/24	<MDL 0.01	1.0	No
Tetrachloroethylene (µg/L) - TW	2024/07/24	<MDL 0.35	10.0	No
2,3,4,6-Tetrachlorophenol (µg/L) - TW	2024/07/24	<MDL 0.2	100.0	No
Triallate (µg/L) - TW	2024/07/24	<MDL 0.01	230.0	No
Trichloroethylene (µg/L) - TW	2024/07/24	<MDL 0.44	5.0	No
2,4,6-Trichlorophenol (µg/L) - TW	2024/07/24	<MDL 0.25	5.0	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (µg/L) - TW	2024/07/24	<MDL 0.12	100.0	No
Trifluralin (µg/L) - TW	2024/07/24	<MDL 0.02	45.0	No
Vinyl Chloride (µg/L) - TW	2024/07/24	<MDL 0.17	1.0	No
Trihalomethane: Total Annual Average (µg/L) - DW	2024 (Quarterly)	19.5	100.0	No
Haloacetic Acid: Total Annual Average (µg/L) - DW	2024 (Quarterly)	<MDL 5.3	80.0	No

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

[6A]*Organic Parameters (Schedule 24) are required to be tested every 36 months for a large municipal residential system, if the system obtains water from a raw water supply that is ground water (O. Reg 170/03 Schedule 13-4.(1b)). The last set of samples was collected and tested in 2024, the next set of samples is scheduled to be collected and tested in 2027.*

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