

# ANNUAL REPORT

## MOOREFIELD DRINKING WATER SYSTEM

FOR THE PERIOD:  
JANUARY 1, 2019 – DECEMBER 31, 2019

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



<b>Drinking-Water System Number:</b>	260069732
<b>Drinking-Water System Name:</b>	Moorefield Drinking Water System
<b>Drinking-Water System Owner:</b>	The Corporation of the Township of Mapleton
<b>Drinking-Water System Category:</b>	Large Municipal Residential
<b>Period being reported:</b>	January 1, 2019 – December 31, 2019

<b><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></b>	<b><u>Complete for all other Categories.</u></b>
<p><b>Does your Drinking-Water System serve more than 10,000 people?</b>                      Yes [ ] No [X]</p> <p><b>Is your annual report available to the public at no charge on a web site on the Internet?</b>                      Yes [X] No [ ]</p> <p><b>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</b>                      Office of Township of Mapleton                      7275 Sideroad 16                      Drayton                      Ontario, NOG 1P0</p>	<p><b>Number of Designated Facilities served:</b>                      Not Applicable</p> <p><b>Did you provide a copy of your annual report to all Designated Facilities you serve?</b>                      Not Applicable</p> <p><b>Number of Interested Authorities you report to:</b>                      Not Applicable</p> <p><b>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?</b>                      Not Applicable</p>

Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

**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
<i>Not Applicable</i>	<i>Not Applicable</i>

**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?**

Not Applicable.

**Indicate how you notified system users that your annual report is available, and is free of charge.**

- Public access/notice via the web
- Public access/notice via Government Office
- Public access/notice via a newspaper
- Public access/notice via Public Request
- Public access/notice via a Public Library
- Public access/notice via other method:

**Describe your Drinking-Water System**

The Moorefield Water Supply System is a ground water supply, treatment and storage system, serving the Hamlet of Moorefield in the Township of Mapleton. There are two wells, one at 119 and one at 73.2 meters deep, in bedrock within the same aquifer. Both wells are located outdoors, approximately 55 meters east of the pumphouse and are approved to supply water at a maximum flow rate of 660 L/min and 420 L/min from the system.

Before entering the distribution system from these wells, the raw water is treated by adding a disinfectant to protect against microbial contaminants. The water is disinfected with sodium hypochlorite solution (chlorine). Treated water is then pumped from the pumphouse to the water storage standpipe providing a total storage capacity of approximately 387 m3 for equalization and emergency storage and chlorine contact requirements. The treated water, in the water storage standpipe, is distributed by four high lift pumps through approximately 4 kilometers of watermain. Residual chlorine levels are maintained in the distribution system to effectively provide disinfection throughout the entire system.

**List all water treatment chemicals used over this reporting period**

- Sodium Hypochlorite 12% Solution NSF, Disinfection

**Were any significant expenses incurred to?**

- Install required equipment
- Repair required equipment
- Replace required equipment
- No significant expenses were incurred

**Please provide a brief description of any significant expenses incurred**

- Annual Flow Meter Calibrations
- Annual Generator Load Testing
- Annual Backflow Preventer Inspections
- DWQMS S1 Systems Audit
- High Lift Pump singer valves rebuild and blow-off tests
- Well #1 and Well #2 casing conduit repairs
- Well #1 Pump motor replacement
- Generator motherboard relay replacement

**Provide details on the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre**

Incident Date (yyyy/mm/dd)	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date (yyyy/mm/dd)
<i>Not Applicable</i>					

**Table 1. Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.**

Location	Number of Samples	Range of E.coli 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	1	n/a	n/a	n/a
Raw Water - Well 2	53	0	0	0	3	n/a	n/a	n/a
Treated Water	54	0	0	0	0	53	0	7
DW location	136	0	0	0	0	95	0	146

**Table 2. Operational testing done under Schedule 7, 8 or 9 during the period covered by this Annual Report.**

Parameter	Number of Grab Samples	Range of Results	
		Minimum	Maximum
<b>Raw Water</b>			
Turbidity, Well 1 (NTU)	12	0.05	0.18
Turbidity, Well 2 (NTU)	12	0.07	0.21
<b>Treated Water</b>			
Free Chlorine Residual, TW (mg/L)	8760	0.77	1.79
<b>Distribution Water</b>			
Free Chlorine Residual, DW (mg/L)	446	0.70	1.50

NOTE: For continuous monitors, 8760 is used as the number of samples.

**Table 3. Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.**

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
<i>Not Applicable</i>				

**Table 4. Summary of Inorganic parameters tested during this reporting period or most recent sample results**

Treated Water	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Antimony: Sb (µg/L) - TW	2018/07/26	<MDL 0.02	6.0	No	No
Arsenic: As (µg/L) - TW	2018/07/26	<MDL 0.2	10.0	No	No
Barium: Ba (µg/L) - TW	2018/07/26	208.0	1000.0	No	No
Boron: B (µg/L) - TWµ	2018/07/26	28.0	5000.0	No	No
Cadmium: Cd (µg/L) - TW	2018/07/26	<MDL 0.003	5.0	No	No
Chromium: Cr (µg/L) - TW	2018/07/26	0.1	50.0	No	No
Mercury: Hg (µg/L) - TW	2018/07/26	<MDL 0.01	1.0	No	No
Selenium: Se (µg/L) - TW	2018/07/26	<MDL 0.04	50.0	No	No
Uranium: U (µg/L) - TW	2018/07/26	0.028	20.0	No	No
<b>Additional Inorganics</b>					
Fluoride (mg/L) - TW	2016/07/18	0.8	1.5	No	No
Nitrite (mg/L) - TW	2019/01/07	<MDL 0.003	1.0	No	No

Nitrite (mg/L) - TW	2019/04/15	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2019/07/08	<MDL 0.003	1.0	No	No
Nitrite (mg/L) - TW	2019/10/09	<MDL 0.003	1.0	No	No
Nitrate (mg/L) - TW	2019/01/07	<MDL 0.006	10.0	No	No
Nitrate (mg/L) - TW	2019/04/15	<MDL 0.006	10.0	No	No
Nitrate (mg/L) - TW	2019/07/08	<MDL 0.006	10.0	No	No
Nitrate (mg/L) - TW	2019/10/09	0.006	10.0	No	No
Sodium: Na (mg/L) - TW	2016/07/18	14.6	20*	No	Yes

\*There is no "MAC" for Sodium. The aesthetic objective 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 (applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)**

Location Type	Number of Samples	Range of Results		MAC	Number of Exceedances
		Minimum	Maximum		
Distribution - Lead Results (µg/L)	3	0.01	1.00	10	0
Distribution - Alkalinity (mg/L)	3	231	238	n/a	n/a
DW location - pH In-House	3	7.39	7.85	n/a	n/a

The Moorefield Drinking Water Systems qualifies for plumbing exemption.

**Table 6. Summary of Organic parameters sampled during this reporting period or the most recent sample results**

TREATED WATER	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Alachlor (µg/L) - TW	2018/07/26	<MDL 0.02	5.00	No	No
Atrazine + N-dealkylated metabolites (µg/L) - TW	2018/07/26	<MDL 0.01	5.00	No	No
Azinphos-methyl (µg/L) - TW	2018/07/26	<MDL 0.05	20.00	No	No
Benzene (µg/L) - TW	2018/07/26	<MDL 0.32	1.00	No	No
Benzo(a)pyrene (µg/L) - TW	2018/07/26	<MDL 0.004	0.01	No	No
Bromoxynil (µg/L) - TW	2018/07/26	<MDL 0.33	5.00	No	No
Carbaryl (µg/L) - TW	2018/07/26	<MDL 0.05	90.00	No	No
Carbofuran (µg/L) - TW	2018/07/26	<MDL 0.01	90.00	No	No
Carbon Tetrachloride (µg/L) - TW	2018/07/26	<MDL 0.16	2.00	No	No
Chlorpyrifos (µg/L) - TW	2018/07/26	<MDL 0.02	90.00	No	No
Diazinon (µg/L) - TW	2018/07/26	<MDL 0.02	20.00	No	No
Dicamba (µg/L) - TW	2018/07/26	<MDL 0.2	120.00	No	No
1,2-Dichlorobenzene (µg/L) - TW	2018/07/26	<MDL 0.41	200.00	No	No
1,4-Dichlorobenzene (µg/L) - TW	2018/07/26	<MDL 0.36	5.00	No	No
1,2-Dichloroethane (µg/L) - TW	2018/07/26	<MDL 0.35	5.00	No	No

1,1-Dichloroethylene (µg/L) - TW	2018/07/26	<MDL 0.33	14.00	No	No
Dichloromethane (Methylene Chloride) (µg/L) - TW	2018/07/26	<MDL 0.35	50.00	No	No
2,4-Dichlorophenol (µg/L) - TW	2018/07/26	<MDL 0.15	900.00	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (µg/L) - TW	2018/07/26	<MDL 0.19	100.00	No	No
Diclofop-methyl (µg/L) - TW	2018/07/26	<MDL 0.4	9.00	No	No
Dimethoate (µg/L) - TW	2018/07/26	<MDL 0.03	20.00	No	No
Diquat (µg/L) - TW	2018/07/26	<MDL 1.0	70.00	No	No
Diuron (µg/L) - TW	2018/07/26	<MDL 0.03	150.00	No	No
Glyphosate (µg/L) - TW	2018/07/26	<MDL 1.0	280.00	No	No
Malathion (µg/L) - TW	2018/07/26	<MDL 0.02	190.00	No	No
Metolachlor (µg/L) - TW	2018/07/26	<MDL 0.01	50.00	No	No
Metribuzin (µg/L) - TW	2018/07/26	<MDL 0.02	80.00	No	No
Monochlorobenzene (Chlorobenzene) (µg/L) - TW	2018/07/26	<MDL 0.3	80.00	No	No
Paraquat (µg/L) - TW	2018/07/26	<MDL 1.0	10.00	No	No
PCB (µg/L) - TW	2018/07/26	<MDL 0.04	3.00	No	No
Pentachlorophenol (µg/L) - TW	2018/07/26	<MDL 0.15	60.00	No	No
Phorate (µg/L) - TW	2018/07/26	<MDL 0.01	2.00	No	No
Picloram (µg/L) - TW	2018/07/26	<MDL 1.0	190.00	No	No
Prometryne (µg/L) - TW	2018/07/26	<MDL 0.03	1.00	No	No
Simazine (µg/L) - TW	2018/07/26	<MDL 0.01	10.00	No	No
Terbufos (µg/L) - TW	2018/07/26	<MDL 0.01	1.00	No	No
Tetrachloroethylene (µg/L) - TW	2018/07/26	<MDL 0.35	10.00	No	No
2,3,4,6-Tetrachlorophenol (µg/L) - TW	2018/07/26	<MDL 0.2	100.00	No	No
Triallate (µg/L) - TW	2018/07/26	<MDL 0.01	230.00	No	No
Trichloroethylene (µg/L) - TW	2018/07/26	<MDL 0.44	5.00	No	No
2,4,6-Trichlorophenol (µg/L) - TW	2018/07/26	<MDL 0.25	5.00	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (µg/L) - TW	2018/07/26	<MDL 0.12	100.00	No	No
Trifluralin (µg/L) - TW	2018/07/26	<MDL 0.02	45.00	No	No
Vinyl Chloride (µg/L) - TW	2018/07/26	<MDL 0.17	1.00	No	No
<b>Distribution Water</b>					
Trihalomethane: Total (µg/L) Annual Average - DW	2019 (Quarterly)	16.75	100.00	No	No
HAA Total (µg/L) Annual Average - DW	2019 (Quarterly)	5.3	N/A	N/A	N/A

**Table 7. List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards. (Only if DWS category is large municipal residential, small municipal residential, large municipal non-residential, non-municipal year round residential, large non municipal non-residential)**

Parameter	Result Value	Unit of Measure	Date of Sample
<i>Not Applicable</i>			

**The Moorefield Drinking Water System was last inspected by the Ministry of the Environment, Conservation, and Parks on June 6, 2019.**