City of Barrie
Water Operations Branch

Drinking Water System
2023 Annual Report
Section 11, O.Reg. 170/03

For the Period of

JANUARY 1ST, 2023 TO DECEMBER 31ST, 2023

System Rating:	Water Treatment Subsystem Class IV Water Distribution and Supply Subsystem Class IV Water Distribution Subsystem Class II
Drinking Water System No.:	220001192
Municipal Drinking Water Licence No.:	014-101, Issue No. 6

Effective Date: 2023-02-16

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2023 Annual Report – Section 11, O.Reg. 170/03

1 Introduction

The City of Barrie Water Operations Branch (the Branch) prepared this Annual Report (Report) to satisfy the requirements of Section 11 of Ontario Regulation (O.Reg.) 170/03. Section 11 (1) requires that the owner of a drinking water system prepare a report in accordance with subsection (3) and (6) for the preceding calendar year. The annual report must be prepared no later than February 28th of each year.

This report covers the period of January 1st to December 31st, 2023, and the information provided complies with the reporting requirements outlined in Section 11 of O.Reg.170/03.

A summary of the City of Barrie's Municipal Drinking Water System (the System) description is outlined below:

- Drinking-Water System Number: 220001192
- Drinking-Water System Name: City of Barrie Drinking Water System
- Drinking-Water System Owner: Corporation of the City of Barrie
- Drinking-Water System Category: Large Municipal Residential

2 Reporting Requirements under Section 11 - O.Reg.170/03

Section 11 requires that the Report include the following information relating to the period covered by the report:

- Include a statement of where a Report prepared under Schedule 22 will be available for inspection by any member of the public during normal business hours without charge;
- Contain a brief description of the drinking water system, including a list of water treatment chemicals used by the system;
- Describe any major expenses incurred to install, repair, or replace required equipment;
- Summarize any reports made to the Ministry of Environment, Conservation and Parks (MECP) for Adverse Water Quality Incidents (AWQIs);
- Summarize the results of tests required under O.Reg. 170/03, or under an approval; Municipal Drinking Water Licence (MDWL) or order, including any Ontario Water Resources Act order, if tests required under this Regulation in respect of a parameter were not required during that period, summarize the most recent results of tests of that parameter;
- Specify the number of points sampled during the periods, the number of samples taken, and the number of points where samples exceeded the prescribed standard regarding Schedule 15.1 - Lead; and
- Describe any corrective actions taken.

3 Evidence of Compliance

3.1 Availability of the Annual Report

In accordance with Section 11 of O.Reg. 170/03, a copy of the Report is available to the public, free of charge from the City of Barrie website and from the Branch by request. The Schedule 22 Report is available to the public free of charge from the Branch by request.

The public will be advised of the Report's availability and how to obtain a copy, without charge, on the City of Barrie's website and on social media outlets by February 28, 2024.

3.2 Description of the Municipal Drinking Water System

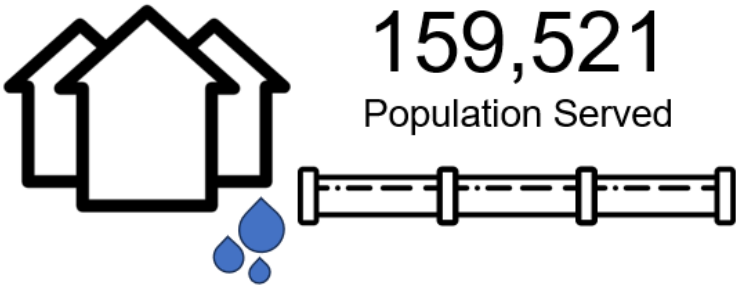
The System consists of a Surface Water Treatment Plant (SWTP) and associated low lift pumping station (LLPS), 12 groundwater wells, 3 in-ground storage facilities, 7 booster stations, and 3 elevated storage towers.

Treatment at the SWTP consists of primary screening, flocculation, membrane filtration, granular activated carbon contactors (for taste and odour control), and disinfection with chlorine gas. Primary disinfection is achieved through chlorine contact time (CT) in the four baffled wall chlorine contact chamber and reservoir. Secondary disinfection is achieved by boosting the chlorine residual of the treated water upon entry into the distribution system from the SWTP's reservoir. Re-chlorination to

maintain the chlorine residual in the distribution system is available at Harvie Road Booster Station/Reservoir and Mapleview Tower.

Treatment at each of the well stations consists of iron sequestration by addition of sodium silicate and disinfection with chlorine gas. Primary disinfection is achieved through CT prior to the first consumer, with the exception of Well 5, which uses ultraviolet disinfection. Secondary disinfection is maintained throughout the distribution system with booster chlorination applied at 7 locations throughout the distribution system.

The distribution system consists of approximately 4,157 hydrants and approximately 686 kilometers of watermain and transmission main ranging in sizes from 32mm to 1200mm and as of January 2024, delivering drinking water to a population of approximately 159,521 residents.



3.3 Water Treatment Chemicals

The following water treatment chemicals were used during the reporting period:

- Polyaluminum Chloride – Pre-filtration Coagulant – SWTP
- Chlorine – Primary and Secondary Disinfection – SWTP and Wells
- Sodium Silicate – Iron and Manganese Sequestration – Wells

3.4 Significant Expenses Incurred

A summary of the major expenses incurred during the reporting period to install, repair, or replace required equipment, and value of each, is included in Table 1.

Table 1 – Summary of Expenses Incurred

Activity	**Costs Incurred (2023)**
Reservoir Repairs (Harvie Rd. Reservoir)	$125,000
Well Pump Column Replacement (Well #13, Johnson Street)	$54,940
Well Column Inspection (Well #12, Centennial Park)	$21,350
Flow Meter & Valve Replacement (Big Bay Booster Pump Station)	$53,000
Pump #3 Bowl Replacement (Innisfil Booster Pump Station)	$30,740
Sluice Gate Repairs (Low Lift Pump Station)	$65,000
Roof Fall Arrest System Engineering & Installation (Low Lift Pump Station)	$24,000
Tank Repairs (Surface Water Treatment Plant)	$24,840
Long Term Membrane Replacement (Surface Water Treatment Plant)	$249,996
Strainer Rebuild (Surface Water Treatment Plant)	$23,460
Watermain break repairs (24)	$228,540
Hydro excavation contractors for water infrastructure repairs	$32,850

Chamber re-habilitation	$98,780
Advanced Metering Infrastructure (AMI) Service Agreement & Tower Maintenance	$124,200
Meter Replacement Program	$641,450

3.5 Operational Checks, Sampling and Testing

In general, during the reporting period, operational checks were completed and drinking water samples were collected in accordance with O.Reg. 170/03 and the MDWL, with the exception of Well 3A which was not in service; therefore, only sodium samples were collected at that location. The Branch utilizes a subcontracted laboratory to analyze drinking water samples that have been collected throughout the System. The subcontracted laboratory switched in July of 2022 resulting in some differences in the Method Detection Limits (MDL) on data tables indicated by an asterisk (*). The laboratory results for all analyzed samples regulated by O.Reg. 170/03 and the MDWL are summarized in Table 2 through Table 10, included in Appendix A for reference.

Details of the sampling and testing conducted in 2023 are discussed below in Section 3.5.1 through 3.5.4, inclusive.

3.5.1 Schedule 7 – Operational Checks – O.Reg. 170/03

Operational checks including free chlorine in treated water and free chlorine in distribution water, and raw water and treated water turbidity were conducted in accordance with Schedule 7 of O.Reg.170/03, except for Well 3A which was not in service. The data summarized in the table contains numbers reflective of analyzer calibration and maintenance activities and are not an indication of improperly treated water.

The operational checks conducted during this reporting period are summarized in Table 2, included in Appendix A for reference.

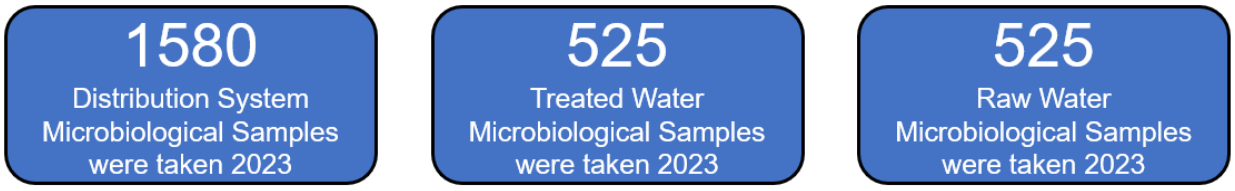
3.5.2 Schedule 10 – Microbiological Sampling and Testing – O.Reg. 170/03

Raw, treated, and distribution water samples were analyzed for microbiological parameters specified in Schedule 10-2, 10-3 and 10-4 of O.Reg. 170/03 and Heterotrophic Plate Count (HPC), and Background bacteria (Background) pursuant to the Public Health Inspector's Guide (PHIG), dated 2021.

Laboratory results for most samples analyzed for E.coli, Total Coliforms and Background met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03 and the PHIG. There were several raw water samples collected before treatment that indicated the presence of bacteria.

One (1) treated sample yielded a Total Coliform count. Total Coliforms are an indicator bacterium where their presence may indicate that disease-causing organisms (bacteria) may be present in the water. The one (1) treated water sample that had a Total Coliform count, had no E.coli present. The adverse result was reported as an AWQI as discussed in Section 3.6.

The samples analyzed for microbiological parameters during this reporting period are summarized in Table 3, included in Appendix A for reference.

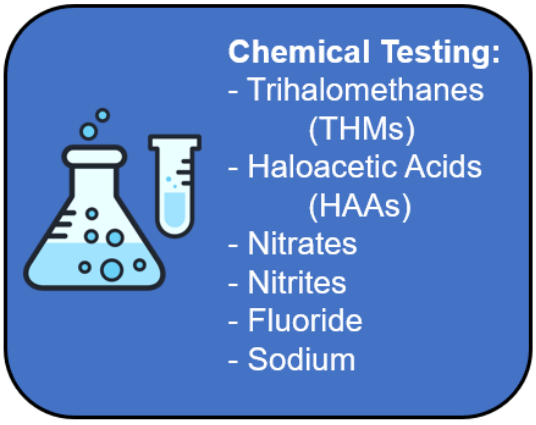


3.5.3 Schedule 13 – Chemical Testing – O.Reg. 170/03

Treated water samples collected from the Water Distribution and Supply Subsystem were analyzed for organic and inorganic chemical parameters in accordance with O.Reg. 170/03, Schedule 13, Section 13.2 (Schedule 23), Section 13.4 (Schedule 24), Section 13.8, and Section 13.9. Analytical results for samples

analyzed for organic and inorganic chemical parameters met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03.

Treated water samples collected from the distribution system were analyzed for Trihalomethanes (THMs) and Haloacetic Acids (HAAs) in accordance with O.Reg. 170/03, Schedule 13.6 and 13.6.1. Treated water samples collected from the well stations and SWTP were analyzed for nitrates, nitrites, fluoride, and sodium in accordance with Schedules 13.7, 13.8 and 13.9 of O.Reg.170/03 respectively. Laboratory results for all samples analyzed for THMs, HAAs, fluoride, nitrate and nitrite met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03 and 170/03. Samples analyzed for sodium did exceed the applicable standards stipulated in O.Reg. 170/03; however, there were no reporting requirements of the results to the MECP during the 2023 reporting period.



The above noted results are summarized in Tables 4, 5, and 6 in Appendix A for reference.

If analysis required under O.Reg. 170/03 with respect to an analytical parameter was not required during the reporting period; the most recent analytical results for that parameter was included in this report, in accordance with O.Reg. 170/03, s.11 (6) (b).

3.5.4 Schedule 15.1 – Lead – O.Reg. 170/03

Lead samples are collected from the plumbing at five (5) industrial and commercial locations and ten (10) hydrants within the distribution system during the winter and summer sampling period in accordance with Schedule 15.1.

Samples were taken in accordance with Schedule D Table 2 of the Municipal Drinking Water License.

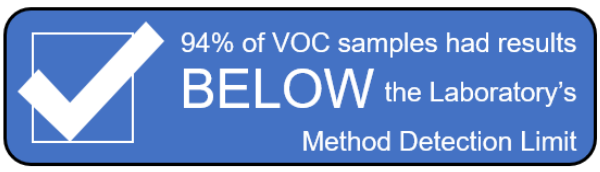
Analytical results indicated lead concentrations below the established limit of 10ug/L (0.01 mg/L) for all the locations sampled.

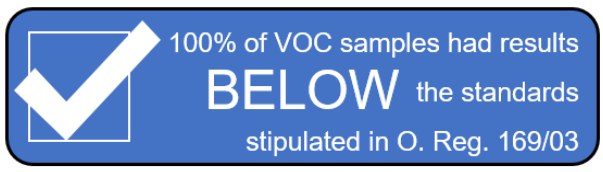
The samples analyzed for lead during this reporting period are summarized in Table 7 and included in Appendix A for reference.

3.5.5 Municipal Drinking Water Licence

In addition to the sampling and monitoring required by O.Reg. 170/03, specific conditions within the City's MDWL required additional sampling and monitoring at select locations for select Volatile Organic Compounds (VOCs), sodium, and UV disinfection at Well 5.

Analytical results for all samples analyzed for select VOCs were below the applicable standards stipulated in O.Reg. 169/03.





Samples analyzed for sodium did exceed the applicable standards stipulated in O.Reg. 170/03; however, there were no reporting requirements of the results to the MECP during the 2023 reporting period. Well 12 was not sampled for sodium during the sampling period due to being out of service.

The samples analyzed for select VOCs and sodium during the reporting period are summarized in Table 8 and Table 9, respectively, and included in Appendix A for reference. UV monitoring documented during this reporting period is summarized in Table 10 and included in Appendix A for reference.

3.6 Reporting and Corrective Actions

3.6.1 Schedule 16 – Reporting of Adverse Test Results and Other Problems

There were six (6) AWQIs reported during the 2023 reporting period in accordance with Schedule 16 of O.Reg. 170/03.

3.6.2 Schedule 17 – Corrective Actions

Corrective actions related to each of the reported AWQIs, as noted above, were completed in accordance with O.Reg. 170/03, Schedule 17. The Branch resolved the AWQIs in consultation with the Simcoe Muskoka District Health Unit (SMDHU) and the MECP in a timely manner.

The AWQIs and associated corrective actions that occurred during this reporting period are summarized in Table 12, included in Appendix A for reference.

4 Closure

It is the belief of the Branch that this report satisfies the requirements of Section 11 of O.Reg. 170/03. If you have any questions concerning the contents of this report, please contact the Supervisor of Compliance and Technical Support at the Branch.

Appendix A - Tables

Table 2 – Schedule 7 Operational Checks*

Sample Location	Sample Count	Free Chlorine		Turbidity			
		(min)	(max)	(min)	(max)	(min)	(max)
		Treated Water		Raw Water		Treated Water	
Well 5	**8760	0.18	4.30	0.00	2.92	-	-
Well 7	**8760	0.43	2.00	0.01	10.00	-	-
Well 9	**8760	0.56	1.41	0.00	6.27	-	-
Well 11	**8760	0.43	4.02	0.02	31.67	-	-
Well 12	**8760	0.59	1.57	0.02	0.66	-	-
Well 13	**8760	0.58	1.41	0.01	6.38	-	-
Well 14	**8760	0.33	3.24	0.02	3.33	-	-
Well 15	**8760	0.24	2.24	0.03	1.05	-	-
Well 16	**8760	0.28	4.06	0.01	9.99	-	-
Well 17	**8760	0.27	3.03	0.02	5.94	-	-
Well 18	**8760	0.02	5.00	0.01	9.99	-	-
Surface Water Treatment Plant	**8760	0.00	5.00	0.00	162.75	0.01	4.51
Bayfield Tower	**8760	0.00	3.09	-	-	-	-
Ferndale Tower	**8760	0.00	2.16	-	-	-	-
Mapleview Tower	**8760	0.00	1.88	-	-	-	-
Anne Reservoir	**8760	0.00	2.26	-	-	-	-
Harvie Reservoir	**8760	0.00	2.38	-	-	-	-
Sunnidale Reservoir	**8760	0.00	5.00	-	-	-	-

Notes:

** 8760 - Represents continuous monitoring

-- - Analysis not required

NTU - Turbidity measured in Nephelometric Turbidity Units

mg/L - Free Chlorine measured in milligrams per litre

* Data used to populate this table contains numbers reflective of analyzer calibration and maintenance activities and are not an indication of improperly treated water

Table 3 – Schedule 10 Microbiological Sampling and Testing

Sample Location	E.Coli		Total Coliform		Background		HPC		Sample Count
	(min)	(max)	(min)	(max)	(min)	(max)	(min)	(max)	
Distribution System									
North Sampling Points	0	0	0	0	-	-	<10	80	780
South Sampling Points	0	0	0	0	-	-	<10	20	778
Other (i.e., main breaks, maintenance)	0	0	0	0	0	0	-	-	22
								Sub-Total Distribution Samples	1580
Treated Water									
Well 5	0	0	0	0	0	1	20	60	46
Well 7	0	0	0	0	0	86	10	60	52
Well 9	0	0	0	0	0	1	10	10	45
Well 11	0	0	0	0	0	0	10	10	52
Well 12	0	0	0	0	0	0	10	10	7
Well 13	0	0	0	0	0	0	10	40	24
Well 14	0	0	0	0	0	1	10	30	48
Well 15	0	0	0	0	0	0	10	20	52
Well 16	0	0	0	0	0	0	10	30	42
Well 17	0	0	0	1	0	0	10	20	54
Well 18	0	0	0	0	0	0	10	30	51
Surface Water Treatment Plant	0	0	0	0	0	0	10	20	52
								Sub-Total Treated Samples	525
Raw Water									
Well 5	0	0	0	2	0	38	-	-	46
Well 7	0	0	0	0	0	0	-	-	52
Well 9	0	0	0	0	0	0	-	-	45
Well 11	0	0	0	0	0	0	-	-	52
Well 12	0	0	0	0	0	0	-	-	6
Well 13	0	0	0	8	0	1	-	-	24
Well 14	0	0	0	0	0	0	-	-	48
Well 15	0	0	0	0	0	0	-	-	52
Well 16	0	0	0	21	0	63			42
Well 17	0	0	0	0	0	0	-	-	54
Well 18	0	0	0	0	0	0	-	-	52
Surface Water Treatment Plant	0	14	0	31	3	140	-	-	52
								Sub-Total Raw Samples	525

Notes:

CFU/100mL - E. coli, Total Coliform and Background results are expressed as Colony Forming Units (CFU)/100mL

CFU/1mL - Heterotrophic Plate Count (HPC) results are expressed as CFU/1mL

-- - Analysis not required

Table 4 – Schedule 13 Chemical Sampling and Testing – Inorganics and Organics

Sample Location		Well 5	Well 7	Well 9	Well 11	Well 12	Well 13	Well 14	Well 15	Well 16	Well 17	Well 18	SWTP
Date Sampled		2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2021-04-12	2023-08-28
	MDL	Analytical Result											
Treated Water - Inorganic Parameters													
Antimony	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Arsenic	0.001	0.0003*	0.0003*	<MDL	0.0001*	0.0002*	0.0002*	0.0001*	0.0004*	0.0003*	0.0003*	0.0004*	<MDL
Barium	0.001	0.179	0.27	0.104	0.235	0.401	0.267	0.108	0.281	0.105	0.294	0.255	0.033
Boron	0.005	0.021	0.013	0.010	0.016	0.025	0.018	0.014	0.012	0.013	0.015	0.017	0.016*
Cadmium	0.0001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Chromium	0.002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	0.002*
Mercury	0.00002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	0.0003
Selenium	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	0.001*
Uranium	0.001	0.00039*	0.00028*	0.00099*	0.00086*	0.00036*	0.00146*	0.0009*	0.00015*	0.001*	0.00033*	0.0002*	<MDL
Treated Water - Organic Parameters													
Alachlor	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Atrazine+metabolites	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Azinphos-methyl	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Benzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Benzo(a)pyrene	0.00001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Bromoxynil	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Carbaryl	0.003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Carbofuran	0.004	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Carbon Tetrachloride	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Chlorpyrifos	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Diazinon	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Dicamba	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
1,2-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,4-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-dichloroethane	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,1-Dichloroethylene (vinylidene chloride)	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Dichloromethane	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
2,4-Dichlorophenol	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
2,4-Dichlorophenoxy acetic acid (2,4-D)	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Diclofop-methyl	0.0009	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Dimethoate	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Diquat	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Diuron	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Glyphosate	0.025	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Malathion	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
MCPA	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Metolachlor	0.003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Metribuzin	0.003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Monochlorobenzene	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Paraquat	0.001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Pentachlorophenol	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Phorate	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Picloram	0.015	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Polychlorinated Biphenyls (PCB)	0.00006	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Prometryne	0.0001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Simazine	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Terbufos	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Tetrachloroethylene (perchloroethylene)	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
2,3,4,6-Tetrachlorophenol	0.0003	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Triallate	0.01	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Trichloroethylene	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	0.0014	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
2,4,6-Trichlorophenol	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Trifluralin	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*
Vinyl Chloride	0.002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL*

Notes:

mg/L - All units presented in milligrams per litre
MDL - Method Detection Limit for laboratory analysis
<MDL - Analytical Result did not exceed the laboratory Method Detection Limit (MDL)
SWTP - Surface Water Treatment Plant
* - Sample analyzed at a lab with a lower MDL than listed

Table 5 – Schedule 13 Chemical Sampling and Testing – Trihalomethanes & Haloacetic Acids

Parameter	Running Annual Average
	2023
Trihalomethanes	0.0375
Haloacetic Acids	0.0294

Notes:

mg/L - Reported in milligrams per litre

Table 6 – Schedule 13 Chemical Sampling and Testing – Sodium, Fluoride, Nitrite and Nitrate

Parameter	MDL	Date Sampled	Analytical Results											
		Sample Location	Well 5	Well 7	Well 9	Well 11	Well 12	Well 13	Well 14	Well 15	Well 16	Well 17	Well 18	SWTP
Sodium	0.1	2019-09-16	17.8	10	43.7	94.2	140	54.2	61.9	22.7	--	--	9.9	--
		2019-12-09	--	--	--	--	--	--	--	--	10.4	--	--	--
		2020-03-02	--	--	--	--	--	--	--	--	--	9.9	--	--
		2021-08-30	--	--	--	--	--	--	--	--	--	--	--	32.0
Fluoride	0.2	2019-09-16	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	--	--	<MDL	--
		2019-12-09	--	--	--	--	--	--	--	--	<MDL	--	--	--
		2020-03-02	--	--	--	--	--	--	--	--	--	<MDL	--	--
		2021-08-30	--	--	--	--	--	--	--	--	--	--	--	<MDL
Nitrite	0.05	2023-02-27	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2023-03-06	<MDL	<MDL	<MDL	<MDL	--	<MDL	<MDL	<MDL	--	<MDL	<MDL	--
		2023-03-13	--	--	--	--	--	--	--	--	<MDL	--	--	--
		2023-04-03	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2023-05-29	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2023-06-05	<MDL	<MDL	<MDL	<MDL	--	--	<MDL	<MDL	<MDL	<MDL	<MDL	--
		2023-08-28	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2023-09-11	--	<MDL	<MDL	<MDL	--	--	<MDL	<MDL	<MDL	<MDL	<MDL	--
		2023-09-28	--	--	--	--	--	<MDL	--	--	--	--	--	--
		2023-10-16	<MDL	--	--	--	--	--	--	--	--	--	--	--
		2023-11-27	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2023-12-04	<MDL	<MDL	--	<MDL	--	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	--
Nitrate	0.05	2023-02-27	--	--	--	--	--	--	--	--	--	--	--	0.17
		2023-03-06	<MDL	<MDL	3.83	0.47	--	1.86	0.06	<MDL	--	<MDL	<MDL	--
		2023-03-13	--	--	--	--	--	--	--	--	0.56	--	--	--
		2023-04-03	--	--	--	--	--	--	--	--	--	--	--	0.31
		2023-05-29	--	--	--	--	--	--	--	--	--	--	--	0.30
		2023-06-05	<MDL	<MDL	2.77	0.65	--	--	0.07	<MDL	1.23	<MDL	<MDL	--
		2023-08-28	--	--	--	--	--	--	--	--	--	--	--	0.19
		2023-09-11	--	<MDL	2.72	0.78	--	--	0.13	<MDL	1.10	<MDL	<MDL	--
		2023-09-28	--	--	--	--	--	2.32	--	--	--	--	--	--
		2023-10-16	<MDL	--	--	--	--	--	--	--	--	--	--	--
		2023-11-27	--	--	--	--	--	--	--	--	--	--	--	<MDL
		2023-12-04	<MDL	<MDL	--	0.71	--	2.37	0.13	<MDL	1.17	<MDL	<MDL	--

Notes:

-- - Analysis not required
MDL - Method Detection Limit for laboratory analysis
<MDL - Analytical Result did not exceed the laboratory Method Detection Limit (MDL)
mg/L - All units reported in milligrams per litre
SWTP - Surface Water Treatment Plant

Table 7 – Schedule 15.1 – Lead

Parameter	MDL	Sample Count	Range of Results	
			(min)	(max)
Lead (Plumbing)	0.0001	20	0.0001	0.0064
Lead (Distribution System)		20	<MDL	0.0005

Notes:

mg/L - All units reported in milligrams per litre

MDL - Method Detection Limit for laboratory analysis

Table 8 – Municipal Drinking Water Licence – Raw Water Sampling and Testing – Volatile Organic Compound

Parameter	MDL	Analytical Results							
		(min)	(max)	(min)	(max)	(min)	(max)	(min)	(max)
Sample Location		**Well 11**		**Well 12**		**Well 14**		**Well 15**	
Benzene	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Carbon Tetrachloride	0.0002	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,4-Dichlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,2-Dichloroethane	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
1,1-Dichloroethene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Cis-1,2-Dichloroethene	0.0005	<MDL	<MDL	0.001	0.001	<MDL	0.0009	<MDL	0.0018
Dichloromethane	0.005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Monochlorobenzene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Tetrachloroethylene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL
Trichloroethylene	0.0005	<MDL	<MDL	<MDL	<MDL	<MDL	0.0014	<MDL	<MDL
Vinyl Chloride	0.0001	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	<MDL	0.0001

Notes:

mg/L - All units reported in milligrams per litre

MDL - Method Detection Limit for laboratory analysis

<MDL - Analytical result did not exceed the laboratory Method Detection Limit (MDL)

Table 9 – Municipal Drinking Water Licence – Raw Water Sampling and Testing - Sodium

Sample Location	Sodium	
	(min)	(max)
*Well 3A	42.0	50.0
Well 9	53.0	59.0
Well 11	97.0	101.0
Well 12	--	--
Well 13	21.1	58.0
Well 14	54.0	70.0

Notes: mg/L - All units reported in milligrams per litre

* - Although 3A was not in service, analytical results required as a condition of the MDWL

-- - Well 12 was out of service during the sampling period.

Table 10 – Municipal Drinking Water Licence – Ultra Violet Monitoring*

Parameter	Minimum	Well 5	
		(min)	(max)
UV Dosage *Monitored Continuously*	40	0	131.4
UVT *Monitored Weekly*	85	86.2	99.5

Notes: (mJ/cm^2) - UV Dosage measured in millijoules per centimeter squared

% - UVT measured in percent

* Data used to populate this table contains numbers reflective of analyzer calibration and maintenance activities and are not an indication of improperly treated water

Table 11 – Schedule 16 and 17 – Summary of Adverse Water Quality Incidents (AWQIs)

AWQI #	Incident Date	Location	Parameter	Result	Unit of Measure	Summary	Corrective Action Date
162058	2023-05-31	Cross Street WPS18	Pressure	0	psi	Discharge pressure dropped below 20 psi for approximately 8 minutes until the watermain break at the North-East corner of Ferndale Drive and Tiffin Street was isolated. Loss of pressure was contained to the dead end section of the transmission main from the site of the break to Well 18. Storage facilities were able to maintain minimum pressure throughout the drinking water system. Once isolated, the system pressure was restored and adequate free chlorine residual results were achieved.	2023-05-31
163240	2023-08-30	Shelley Lane, Bethune Place and Scott Crescent	Pressure	0	psi	During a watermain swabbing event, valves V3841 and V847 were closed to direct swabs through the drinking water system along Frost Trail. As a result, Shelley Lane, Bethune Place and Scott Crescent were isolated with no water pressure. Water Operations Staff stopped the swabbing event and valves were reopened to restore water pressure. System flushing occurred in the affected areas and adequate free chlorine and turbidity was recorded.	2023-08-30
163918	2023-10-30	Big Bay Booster Pump Station/Harvie Reservoir	Pressure	9.2	psi	Low distribution pressure occurred in the Zone 2 South pressure zone from 8:00 am to 8:10 am. The lowest pressure recorded was at Big Bay Booster Pump Station at 9.20 psi (63.45 kPa). Loss of pressure was caused by a check valve failing to open at Harvie Reservoir. Repairs were completed and normal operation was restored.	2023-10-30
163993	2023-11-08	Big Bay Booster Pump Station/Harvie Reservoir	Pressure	14.69	psi	Low distribution pressure occurred in the Zone 2 South pressure zone between 10:05 am to 10:09 am. The lowest pressure recorded was at Big Bay Booster Pump Station at 14.69 psi (101.26 kPa). Loss of pressure was caused by a check valve failing to open at Harvie Reservoir. The same valve that failed (and was fixed) on 2023-10-30 failed again on 2023-11-08. Water Operations Staff have implemented a further fix to the valve that should prevent this issue from occurring again.	2023-11-08
164167	2023-12-06	Cedar Point Drive at Edgehill Drive	Other	-	-	An AWQI was reported for the Category 2 watermain break that occurred on December 6. A section of approximately 5 meters of watermain pipe broke due to the contractor dropping a piece of wood on the watermain while installing the sanitary main. This AWQI notification was requested by the MECP Spills Action Center (SAC) when the operator was notifying them of the water restoration. Water Operations does not agree that this is an actual AWQI as contamination was not directed to users. Repairs were completed and normal operation was restored.	2023-12-06
164198	2023-12-11	Cross Street WPS17	Microbiological - Total Coliform	1	Count/100 mL	A sample of treated water taken from Well Pump Station 17 on 2023-12-11 was analyzed by the Contracted Laboratory. The laboratory notified Water Operations on 2023-12-12 that the analyzed sample produced a result of 1 Total Coliforms (TC) count. Corrective actions were immediately taken. Resampling was conducted on 2023-12-12 and 2023-12-14. The results of the re-samples taken indicated no presence of Total Coliforms.	2023-12-18

Notes: NA - Not Applicable