

Schedule B

2020 Annual Report, Section 11

Ontario Regulation 170/03



**City of Barrie
Water Operations Branch**

**Drinking Water System
2020 Annual Report
Section 11, O.Reg. 170/03**

For the Period of

JANUARY 1ST, 2020 TO DECEMBER 31ST, 2020

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: 2021-02-22

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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, 2020 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 an 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; 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 public will be advised of the Report’s availability and how to obtain a copy, without charge, on the City of Barrie’s website, in a local newspaper and on social media outlets after February 22, 2021.

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 achieves primary disinfection using 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 3,854 hydrants and approximately 644 kilometers of watermain and transmission main ranging in sizes from 32mm to 1200mm and as of January 2021, delivering drinking water to a population of approximately 151,043 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 brief 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 (2020)
Well Pump Motor Replacement (Heritage Park Well #14)	\$21,100
Well Pump Motor Replacement (Centennial Park Well #12)	\$26,000
Health and Safety Upgrades (Mapleview Tower)	\$21,800
Corrosion Removal and liner Touch up (Mapleview Tower)	\$36,700
Health and Safety Upgrades (Ferndale Tower)	\$51,100
Replace Generator ATS (Anne St. Booster Pumping Station)	\$25,586
Highlift and Lowlift pump inspections and repairs	\$54,000
Watermain break repairs (28)	\$171,711
Hydro excavation contractors for water infrastructure repairs	\$58,013
Advanced Metering Infrastructure (AMI) Service Agreement	\$95,690
Meter Replacement Program	\$308,605

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 one exception of Well 3A which was not in service; therefore no operational checks or regulated samples were collected. The laboratory results for all analyzed samples regulated by O.Reg. 170/03 and the MDWL are summarized in Table 3 through Table 11, included in Appendix A for reference.

Details of the sampling and testing conducted in 2020 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: treated and distribution free chlorine and raw and treated turbidity was conducted in accordance with Schedule 7 of O.Reg.170/03, with the exception of Well 3A which was not in service.

The operational checks conducted during this reporting period are summarized in Table 3, 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 Ontario Public Health Inspector’s Guide (OPHIG), dated 2013.

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 OPHIG, with the exception of the raw water samples collected before treatment on the dates detailed in Table 2. Five (5) treated distribution samples yielded Total Coliform counts. Total Coliforms are an indicator bacteria where their presence may indicate that disease-causing organisms (bacteria) may be present in the water. All treated water samples that had a Total Coliform count, had no E. Coli present. One (1) treated distribution sample yielded a NDOGT (No Data Overgrown with Target) result. A NDOGT result indicates that the test has a large number of bacteria present and Total Coliform and/or E. Coli are visible to the analyst, but it is difficult to determine exactly how much is present. All adverse results were reported as AWQIs as discussed in Section 3.6.

Table 2 – Summary of E.coli, Total Coliform and Background Presence

Date of Sample	E.coli	Total Coliform	Background>200
SWTP – Raw Water			
2020-01-13	X	X	
2020-01-20	X	X	X
2020-01-27		X	X
2020-02-03		X	
2020-02-10		X	
2020-02-18		X	
2020-03-09		X	
2020-03-23		X	
2020-03-30		X	
2020-04-14	X	X	
2020-04-20		X	
2020-05-04		X	
2020-05-19		X	
2020-06-01		X	
2020-07-06		X	X
2020-08-04	X	X	X
2020-08-10		X	
2020-08-17	X	X	X
2020-08-24			X
2020-08-31	NDOGT	NDOGT	NDOGT
2020-09-08	X	X	X
2020-09-14	X	X	X
2020-09-21	X	X	X
2020-09-28	X	X	X
2020-10-05	X	X	X
2020-10-13			X
2020-10-19	NDOGT	NDOGT	NDOGT
2020-10-26	NDOGT	NDOGT	NDOGT

Date of Sample	E.coli	Total Coliform	Background>200
2020-11-02		X	X
2020-11-09	X	X	X
2020-11-16			X
2020-11-23		X	X
2020-11-30	X	X	
2020-12-07			X
2020-12-14	X	X	
2020-12-21	X	X	
2020-12-29	X	X	
Well 13 – Raw Water			
2020-02-03		X	
Well 15 – Raw Water			
2020-04-14		X	
Well 16 – Raw Water			
2020-02-10		X	
Harvie Reservoir – Treated Water			
2019-06-01		X	
Bayview Reservoir – Treated Water			
2020-06-01		X	
Saunders Rd. Sample Station – Treated Water			
2020-07-27		X	
Mapleview Sample Station – Treated Water			
2020-07-27		X	
Glenwood Drive – Treated Water			
2020-08-16		X	
Penetanguishene Rd. Sample Station – Treated Water			
2020-08-24	NDOGT	NDOGT	NDOGT

The samples analyzed for microbiological and bacteriological parameters during this reporting period are summarized in Table 4, 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 all 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 in accordance with O.Reg. 170/03, Schedule 13.6 and 13.6.1. Treated water samples collected from the well stations were analyzed for nitrates and nitrites in accordance with 13.7 of O.Reg.170/03. Laboratory results for all samples analyzed for THM, nitrate and nitrite parameters met the requirements and did not exceed the applicable standards stipulated in O.Reg. 169/03.

The above noted results are summarized in Tables 5, 6, and 7 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 were collected from the plumbing at industrial and commercial locations and several hydrants within the distribution system during the winter and summer sampling period in accordance with Schedule 15.1. Amendments made under the MDWL requires the collection of five (5) Industrial,

Commercial & Institutional (ICI) samples and ten (10) Distribution samples to be collected during the reporting periods of December 15th, 2019 to April 15th, 2020 and June 15th, 2020 to October 15th, 2020.

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

The samples analyzed for lead during this reporting period are summarized in Table 8, 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 (VOC), sodium, and UV disinfection at Well 5. Analytical results for all samples analyzed for select VOCs and sodium were below the applicable standards stipulated in O.Reg. 169/03.

The samples analyzed for select VOCs and sodium during the reporting period are summarized in Table 9 and Table 10, respectively and included in Appendix A for reference. UV monitoring documented during this reporting period is summarized in Table 11, 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

Eight (8) AWQIs were reported during the 2020 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 3 – 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	0.09	2.38	0.00	0.85	--	--
Well 7	**8760	0.38	1.60	0.00	4.95	--	--
Well 9	**8760	0.28	2.00	0.00	2.78	--	--
Well 11	**8760	0.52	1.81	0.00	6.05	--	--
Well 12	**8760	0.12	2.00	0.00	2.00	--	--
Well 13	**8760	0.01	2.00	0.00	10.00	--	--
Well 14	**8760	0.00	2.00	0.00	10.00	--	--
Well 15	**8760	0.38	1.59	0.00	8.38	--	--
Well 16	**8760	0.29	2.00	0.00	10.00	--	--
Well 17	**8760	0.33	2.00	0.00	9.99	--	--
Well 18	**8760	0.31	2.80	0.00	4.34	--	--
Surface Water Treatment Plant	**8760	0.00	4.28	0.00	470.49	0.00	3.46
Bayfield Tower	**8760	0.42	3.04	--	--	--	--
Ferndale Tower	**8760	0.00	2.00	--	--	--	--
Mapleview Tower	**8760	0.14	1.31	--	--	--	--
Anne Reservoir	**8760	0.00	2.39	--	--	--	--
Harvie Reservoir	**8760	0.06	2.47	--	--	--	--
Sunnidale Reservoir	**8760	0.00	2.00	--	--	--	--

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 4 – 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									
North Sampling Points	0	NDOGT	0	NDOGT	--	--	<10	290	729
South Sampling Points	0	0	0	5	--	--	<10	420	696
Other (i.e., main breaks, maintenance)	0	0	0	1	0	>200	--	--	73
Sub-Total Distribution Samples									1498
Treated Water									
Well 5	0	0	0	0	0	1	10	40	51
Well 7	0	0	0	0	0	0	10	50	40
Well 9	0	0	0	0	0	0	10	160	50
Well 11	0	0	0	0	0	1	10	80	49
Well 12	0	0	0	0	0	0	10	180	48
Well 13	0	0	0	0	0	0	10	40	19
Well 14	0	0	0	0	0	5	10	370	42
Well 15	0	0	0	0	0	0	10	110	51
Well 16	0	0	0	0	0	150	10	170	51
Well 17	0	0	0	0	0	0	10	40	42
Well 18	0	0	0	0	0	0	10	370	52
Surface Water Treatment Plant	0	0	0	0	0	1	10	60	51
Sub-Total Treated Samples									546
Raw Water									
Well 5	0	0	0	0	0	8	--	--	51
Well 7	0	0	0	0	0	1	--	--	40
Well 9	0	0	0	0	0	11	--	--	50
Well 11	0	0	0	0	0	0	--	--	49
Well 12	0	0	0	0	0	37	--	--	49
Well 13	0	0	0	20	0	42	--	--	18
Well 14	0	0	0	0	0	26	--	--	42
Well 15	0	0	0	1	0	6	--	--	51
Well 16	0	0	0	1	0	2	--	--	51
Well 17	0	0	0	0	0	14	--	--	42
Well 18	0	0	0	0	0	34	--	--	52
Surface Water Treatment Plant	0	6	0	76	0	198	--	--	51
Sub-Total Raw Samples									546

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 5 – 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	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2018-04-16	2020-08-31
RL	Analytical Result											
Treated Water - Inorganic Parameters												
Antimony	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Arsenic	0.1	0.5	0.4	0.1	0.2	0.2	0.3	0.3	0.4	0.3	0.7	0.5
Barium	1	185	237	98	215	356	92	257	267	97	271	229
Boron	5	17	13	14	14	26	19	20	13	14	16	19
Cadmium	0.015	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Chromium	2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Mercury	0.02	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Selenium	1	<RL	<RL	1	<RL	3	<RL	2	<RL	<RL	<RL	<RL
Uranium	0.05	0.43	0.28	0.88	0.71	0.4	0.91	1.33	0.14	1.09	0.27	0.2
Treated Water - Organic Parameters												
Alachlor	0.3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Atrazine+metabolites	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Azinphos-methyl	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Benzene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Benzo(a)pyrene	0.005	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Bromoxynil	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Carbaryl	3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Carbofuran	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Carbon Tetrachloride	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Chlorpyrifos	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Diazinon	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Dicamba	10	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,2-Dichlorobenzene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,4-Dichlorobenzene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,2-dichloroethane	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
-Dichloroethylene (vinylidene chloride)	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Dichloromethane	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
2,4-Dichlorophenol	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
2,4-Dichlorophenoxy acetic acid (2,4-D)	10	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Diclofop-methyl	0.90	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Dimethoate	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Diquat	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Diuron	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Glyphosate	25	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Malathion	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
MCPA	10	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Metolachlor	3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Metribuzin	3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Monochlorobenzene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Paraquat	1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Pentachlorophenol	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Phorate	0.3	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Picloram	15	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Polychlorinated Biphenyls (PCB)	0.05	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Prometryne	0.1	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Simazine	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Terbufos	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
tetrachloroethylene (perchloroethylene)	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
2,3,4,6-Tetrachlorophenol	0.20	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Triallate	10	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Trichloroethylene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
2,4,6-Trichlorophenol	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Trifluralin	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Vinyl Chloride	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL

Notes:

- ug/L - All units presented in micrograms per litre
- <RL - Analytical Result did not exceed the laboratory Reporting Limit (RL)
- SWTP - Surface Water Treatment Plant

Table 6 – Schedule 13 Chemical Sampling and Testing – Trihalomethanes & Haloacetic Acids

Parameter	Running Annual Average
	2020
Trihalomethanes	45.3
Haloacetic Acids	26.9

Notes:

ug/L - Reported in micrograms per litre

Table 7 – Schedule 13 Chemical Sampling and Testing – Sodium, Fluoride, Nitrite and Nitrate

Parameter	RL	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	0.2 RL	2019-03-22	--	--	31.9	--	--	--	--	--	--	--	--	--		
		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	--	--	
		2020-08-31	--	--	--	--	--	--	--	--	--	--	--	--	31.4	
Fluoride	0.1 RL	2019-09-16	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	--	--	<RL	--		
		2019-12-09	--	--	--	--	--	--	--	--	--	<RL	--	--		
		2020-03-02	--	--	--	--	--	--	--	--	--	--	<RL	--		
Nitrite	0.1 RL	2020-02-06	--	--	--	--	--	--	<RL	--	--	--	--	--		
		2020-02-24	--	--	--	--	--	--	--	--	--	--	--	<RL		
		2020-03-02	--	--	--	--	--	--	--	--	--	--	<RL	--		
		2020-03-09	<RL	--	--	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	--	
		2020-03-17	--	--	<RL	--	--	--	--	--	--	--	--	--	--	
		2020-05-08	--	<RL	--	--	--	--	--	--	--	--	--	--	--	
		2020-05-25	--	--	--	--	--	--	--	--	--	--	--	--	<RL	
		2020-06-09	<RL	<RL	<RL	<RL	<RL	<RL	--	--	<RL	<RL	<RL	<RL	<RL	--
		2020-06-10	--	--	--	--	--	--	--	<RL	--	--	--	--	--	--
		2020-08-24	--	--	--	--	--	--	--	--	--	--	--	--	--	<RL
		2020-08-31	--	--	--	--	--	--	--	--	--	--	--	--	--	<RL
		2020-09-08	<RL	<RL	<RL	<RL	<RL	<RL	--	<RL	<RL	<RL	<RL	<RL	<RL	--
		2020-11-23	--	--	--	--	--	--	--	--	--	--	--	--	--	<RL
2020-12-07	<RL	<RL	<RL	<RL	<RL	<RL	--	<RL	<RL	<RL	<RL	<RL	<RL	--		
2020-12-21	--	--	--	--	--	--	--	<RL	--	--	--	--	--	--		
Nitrate	0.1 RL	2020-02-06	--	--	--	--	--	--	3.5	--	--	--	--	--		
		2020-02-24	--	--	--	--	--	--	--	--	--	--	--	0.2		
		2020-03-02	--	--	--	--	--	--	--	--	--	--	<RL	--		
		2020-03-09	<RL	--	--	0.5	<RL	2.5	<RL	<RL	1.1	<RL	<RL	<RL	--	
		2020-03-17	--	--	3.5	--	--	--	--	--	--	--	--	--	--	
		2020-05-08	--	<RL	--	--	--	--	--	--	--	--	--	--	--	
		2020-05-25	--	--	--	--	--	--	--	--	--	--	--	--	0.2	
		2020-06-09	<RL	<RL	3.6	0.5	<RL	--	--	<RL	1.1	<RL	<RL	<RL	--	
		2020-06-10	--	--	--	--	--	--	--	<RL	--	--	--	--	--	
		2020-08-24	--	--	--	--	--	--	--	--	--	--	--	--	0.2	
		2020-08-31	--	--	--	--	--	--	--	--	--	--	--	--	0.2	
		2020-09-08	<RL	<RL	2.6	0.6	<RL	--	--	<RL	<RL	<RL	<RL	<RL	--	
		2020-11-23	--	--	--	--	--	--	--	--	--	--	--	--	0.1	
2020-12-07	<RL	<RL	2.5	0.5	<RL	--	--	<RL	<RL	1.1	<RL	<RL	--			
2020-12-21	--	--	--	--	--	--	--	2.5	--	--	--	--	--			

Notes:

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

Table 8 – Schedule 15.1 – Lead

Parameter	RL	Sample Count	Range of Results	
			(min)	(max)
Lead (Plumbing)	0.02	20	0.06	0.58
Lead (Distribution System)		20	0.09	5.08

Notes:

ug/L - All units reported in micrograms per litre

RL - Laboratory Reporting Limit

Table 9 – Municipal Drinking Water Licence – Raw Water Sampling and Testing – Volatile Organic Compound

Parameter	RL	Analytical Results							
		(min)	(max)	(min)	(max)	(min)	(max)	(min)	(max)
Sample Location		Well 11		Well 12		Well 14		Well 15	
Benzene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Carbon Tetrachloride	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,2-Dichlorobenzene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,4-Dichlorobenzene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,2-Dichloroethane	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
1,1-Dichloroethene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Cis-1,2-Dichloroethene	0.5	<RL	0.84	<RL	<RL	<RL	1.79	<RL	2.06
Dichloromethane	5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Monochlorobenzene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Tetrachloroethylene	0.5	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
Trichloroethylene	0.5	<RL	<RL	<RL	<RL	<RL	0.74	<RL	<RL
Vinyl Chloride	0.2	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL

Notes: ug/L - All units reported in micrograms per litre
 <RL - Analytical result did not exceed the laboratory Reporting Limit (RL)

Table 10 – Municipal Drinking Water Licence – Raw Water Sampling and Testing - Sodium

Sample Location	Sodium	
	(min)	(max)
*Well 3A	43	47.4
**Well 9	38.5	47.4
Well 11	79.2	92.8
Well 12	138	147
***Well 13	26.3	55.7
Well 14	39	63.2

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
 ** - Samples were not collected at Well 9 in the first quarter due to well maintenance activities
 *** - Samples were not collected at Well 13 in the fourth quarter due to well maintenance activities

Table 11 – Municipal Drinking Water Licence – Ultra Violet Monitoring

Parameter	Minimum	Well 5	
		(min)	(max)
UV Dosage Monitored Continuously	40	0	102.2
UVT Monitored Weekly	85	85.6	95.6

Notes: (mJ/cm²) - UV Dosage measured in millijoules per centimeter squared
 % - UVT measured in percent

Table 12 – Schedule 16 and 17 – Summary of Adverse Water Quality Incidents (AWQIs)

AWQI #	Incident Date	Location	Parameter	Result	Unit of Measure	Summary	Corrective Action Date
149694	2020-03-04	Harvie Reservoir, Harvie Booster Pumping Station	Free Chlorine Residual	0.02 mg/L at Harvie Reservoir , 0.00 mg/L at Harvie Booster Pumping Station	mg/L	Low chlorine residuals were detected at 2 separate analyzers, one at Harvie Reservoir and one at Harvie Booster Pumping Station. Online analyzers were verified against handheld analyzers and corrections were made to online analyzers, if required. The low chlorine water was allowed to mix in the reservoir with water of acceptable residual already in the reservoir. Suspected cause of low chlorine was due to a slug of water from the watermain after isolation for integrity inspections. The incident was immediately reported to the SMDHU and the MECP. Bacteriological samples were collected from watermain	2020-03-04
150106	2020-06-01	Harvie Reservoir	Total Coliform	1	Count/100 mL	A microbiological sample was collected in the distribution system during routine weekly sampling. External lab results indicated that the results for Total Coliform exceeded regulatory limits. The incident was immediately reported to the SMDHU and the MECP. Bacteriological samples were collected from the adverse location, as well as, upstream and downstream of the adverse location until 2 consecutive samples collected 24 hours apart were acceptable.	2020-06-02
150107	2020-06-01	Bayview Reservoir	Total Coliform	12	Count/100 mL	A microbiological sample was collected in the distribution system during routine weekly sampling. External lab results indicated that the results for Total Coliform exceeded regulatory limits. The incident was immediately reported to the SMDHU and the MECP. Bacteriological samples were collected from the adverse location, as well as, upstream and downstream of the adverse location until 2 consecutive samples collected 24 hours apart were acceptable.	2020-06-02
150975	2020-07-27	Saunders Sample Station	Total Coliform	5	Count/100 mL	A microbiological sample was collected in the distribution system during routine weekly sampling. External lab results indicated that the results for Total Coliform exceeded regulatory limits. The incident was immediately reported to the SMDHU and the MECP. Bacteriological samples were collected from the adverse location, as well as, upstream and downstream of the adverse location until 2 consecutive samples collected 24 hours apart were acceptable.	2020-07-28
150976	2020-07-27	Mapleview Sample Station	Total Coliform	1	Count/100 mL	A microbiological sample was collected in the distribution system during routine weekly sampling. External lab results indicated that the results for Total Coliform exceeded regulatory limits. The incident was immediately reported to the SMDHU and the MECP. Bacteriological samples were collected from the adverse location, as well as, upstream and downstream of the adverse location until 2 consecutive samples collected 24 hours apart were acceptable.	2020-07-28
151427	2020-08-16	Glenwood Drive	Total Coliform	1	Count/100 mL	A microbiological sample was collected in the distribution system following a water service repair. External lab results indicated that the results for Total Coliform exceeded regulatory limits. The incident was immediately reported to the SMDHU and the MECP. Bacteriological samples were collected from the adverse location, as well as, upstream and downstream of the adverse location until 2 consecutive samples collected were acceptable.	2020-08-18

AWQI #	Incident Date	Location	Parameter	Result	Unit of Measure	Summary	Corrective Action Date
151560	2020-08-24	Penetanguishene Sample Station	Total Coliform & E. Coli	NDOGT	NA	<p>A microbiological sample was collected in the distribution system during routine weekly sampling. External lab results indicated that the results for Total Coliform and E. coli exceeded regulatory limits, with a result of NDOGT (No Data: Overgrown with target). When there is a NDOGT result, it means the test has a large number of bacteria present and Total Coliform and/or E. Coli are visible to the analyst, but it is difficult to determine exactly how much is present.</p> <p>The incident was immediately reported to the SMDHU and the MECP. Bacteriological samples were collected from the adverse location, as well as, upstream and downstream of the adverse location until 2 consecutive samples collected 24 hours apart were acceptable.</p>	2020-08-25
151909	2020-09-08	Browning Trail	Low Pressure	NA	NA	<p>A low pressure incident lasting about 90 secs resulted from a main break that occurred during a closed pressure zone. Acceptable chlorine residuals and positive pressure were maintained for the duration of the incident.</p> <p>The incident was immediately reported to the SMDHU and the MECP. Pressure readings were collected in the vicinity of the main break and were all acceptable. A review of the negative consumption reports from the Advanced Metering Infrastructure (AMI) system did not identify and properties having negative consumption during the dip in pressure.</p>	2020-09-08

Notes:

NA - Not applicable