



**City of Barrie  
Water Operations Branch**

**Drinking Water System  
2019 Annual Report  
Section 11, O.Reg. 170/03**

For the Period of

**JANUARY 1<sup>ST</sup>, 2019 TO DECEMBER 31<sup>ST</sup>, 2019**

**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: 2020-02 -28

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## **1 Introduction**

The City of Barrie Water Operations Branch (the Branch) prepared this 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 28<sup>th</sup> of each year.

This report covers the period of January 1<sup>st</sup> to December 31<sup>st</sup>, 2019 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 annual 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 on February 28, 2020.

### **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 3,817 hydrants and approximately 640 kilometers of watermain and transmission main ranging in sizes from 32mm to 1200mm and as of January 2020, delivering drinking water to a population of approximately 149,900 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 (2019)
SWTP backup power generator repair	\$45,000
Highlift and Lowlift pump inspections and repairs	\$63,000
Watermain break repairs (41)	\$251,435
Two large main breaks (Yonge St. / Big Bay Point.Rd., Little Ave.)	\$235,819
Hydro excavation contractors for water infrastructure repairs	\$58,272

### 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 2019 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. One treated distribution sample yielded a NDOGT (No Data Overgrown with Target) result, and was reported as an AWQI as discussed in Section 3.6. A NDOGT result indicates that the test has a large number of bacteria present, however, the analyst is unable to identify the presence/absence of Total Coliform and/or E. Coli.

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

Date of Sample	E.coli	Total Coliform	Background>200
<b>SWTP – Raw Water</b>			
2019-01-02		X	
2019-01-07		X	
2019-01-14		X	
2019-01-21		X	
2019-01-28		X	
2019-02-04		X	
2019-02-11	X	X	X
2019-02-19		X	
2019-02-26		X	
2019-03-04		X	
2019-03-11		X	
2019-03-18		X	
2019-03-25	X	X	X
2019-04-01		X	X
2019-04-08		X	X
2019-04-15		X	
2019-04-23		X	
2019-05-13		X	
2019-05-27		X	
2019-06-03			X
2019-06-10			X
2019-06-17	X	X	X
2019-06-24	X	X	X
2019-07-02	X	X	
2019-07-08			X
2019-07-22		X	X
2019-07-29	X	X	
2019-08-06	X	X	
2019-08-19		X	
2019-08-26		X	
2019-09-03	X	X	X
2019-09-09	X	X	
2019-09-16	X	X	
2019-09-23	X	X	
2019-09-30		X	
2019-10-07	X	X	
2019-10-15	X	X	
2019-10-28	X	X	X
2019-11-04	X	X	X
2019-11-11	X	X	
2019-11-18	X	X	
2019-11-25	X	X	
2019-12-02	X	X	X
2019-12-09		X	X
2019-12-16		X	X

Date of Sample	E.coli	Total Coliform	Background>200
2019-12-30	X	X	
<b>Well 9 – Raw Water</b>			
2019-03-22			X
2019-03-25			X
<b>Well 13 – Raw Water</b>			
2019-12-09	NDOGT	NDOGT	NDOGT
<b>Well 16 – Raw Water</b>			
2019-12-04		X	
<b>Mulcaster St. &amp; Dunlop St. E – Treated Water</b>			
2019-09-14	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) in accordance with O.Reg. 170/03, Schedule 13.6. 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 15<sup>th</sup>, 2018 to April 15<sup>th</sup>, 2019 and June 15<sup>th</sup>, 2019 to October 15<sup>th</sup>, 2019.

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 was 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

Three (3) AWQIs were reported during the 2019 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 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	0.00	2.00	0.00	5.30	--	--
Well 7	**8760	0.26	1.81	0.00	9.51	--	--
Well 9	**8760	0.52	2.00	0.00	6.99	--	--
Well 11	**8760	0.37	1.71	0.00	9.99	--	--
Well 12	**8760	0.40	1.98	0.00	2.00	--	--
Well 13	**8760	0.05	2.00	0.00	10.00	--	--
Well 14	**8760	0.21	1.66	0.01	6.60	--	--
Well 15	**8760	0.27	1.63	0.00	4.85	--	--
Well 16	**8760	0.43	2.00	0.00	9.66	--	--
Well 17	**8760	0.20	2.00	0.00	8.26	--	--
Well 18	**8760	0.24	2.00	0.00	9.99	--	--
Surface Water Treatment Plant	**8760	0.00	5.00	0.00	101.00	0.00	12.28
Bayfield Tower	**8760	0.00	1.55	--	--	--	--
Ferndale Tower	**8760	0.00	2.00	--	--	--	--
Mapleview Tower	**8760	0.44	1.87	--	--	--	--
Anne Reservoir	**8760	0.27	1.95	--	--	--	--
Harvie Reservoir	**8760	0.00	2.00	--	--	--	--
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

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)	
<b>Distribution</b>									
North Sampling Points	0	0	0	0	--	--	<10	350	791
South Sampling Points	0	0	0	0	--	--	<10	70	816
Other (i.e., main breaks, maintenance)	0	0	0	0	0	85	--	--	67
Sub-Total Distribution Samples									1674
<b>Treated Water</b>									
Well 5	0	0	0	0	0	1	10	20	51
Well 7	0	0	0	0	0	20	10	20	53
Well 9	0	0	0	0	0	23	10	670	42
Well 11	0	0	0	0	0	0	10	20	53
Well 12	0	0	0	0	0	0	10	120	53
Well 13	0	0	0	0	0	43	10	30	38
Well 14	0	0	0	0	0	2	10	10	53
Well 15	0	0	0	0	0	22	10	20	50
Well 16	0	0	0	0	0	3	10	20	41
Well 17	0	0	0	0	0	0	70	70	26
Well 18	0	0	0	0	0	0	10	20	53
Surface Water Treatment Plant	0	0	0	0	0	0	10	30	53
Sub-Total Treated Samples									566
<b>Raw Water</b>									
Well 5	0	0	0	1	0	2	--	--	51
Well 7	0	0	0	0	0	0	--	--	53
Well 9	0	0	0	0	0	39	--	--	43
Well 11	0	0	0	0	0	1	--	--	53
Well 12	0	0	0	0	0	4	--	--	53
Well 13	0	0	0	0	0	0	--	--	38
Well 14	0	0	0	0	0	0	--	--	53
Well 15	0	0	0	1	0	0	--	--	50
Well 16	0	0	0	4	0	10	--	--	43
Well 17	0	0	0	0	0	0	--	--	26
Well 18	0	0	0	0	0	5	--	--	53
Surface Water Treatment Plant	0	13	0	197	0	190	--	--	53
Sub-Total Raw Samples									569

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	2019-09-03
RL	Analytical Result											
<b>Treated Water - Inorganic Parameters</b>												
Antimony	0.1	<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	0.014	<RL										
Chromium	2	<RL										
Mercury	0.02	<RL	0.02									
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
<b>Treated Water - Organic Parameters</b>												
Alachlor	0.3	<RL										
Atrazine+metabolites	0.5	<RL										
Azinphos-methyl	1	<RL										
Benzene	0.5	<RL										
Benzo(a)pyrene	0.005	<RL										
Bromoxynil	0.3	<RL										
Carbaryl	3	<RL										
Carbofuran	1	<RL										
Carbon Tetrachloride	0.2	<RL										
Chlorpyrifos	0.5	<RL										
Diazinon	1	<RL										
Dicamba	5	<RL										
1,2-Dichlorobenzene	0.1	<RL										
1,4-Dichlorobenzene	0.2	<RL										
1,2-dichloroethane	0.1	<RL										
1-Dichloroethylene (vinylidene chloride)	0.1	<RL										
Dichloromethane	0.3	<RL										
2,4-Dichlorophenol	0.1	<RL										
2,4-Dichlorophenoxy acetic acid (2,4-D)	5	<RL										
Diclofop-methyl	0.50	<RL										
Dimethoate	1	<RL										
Diquat	5	<RL										
Diuron	5	<RL										
Glyphosate	25	<RL										
Malathion	5	<RL										
MCPA	10	<RL										
Metolachlor	3	<RL										
Metribuzin	3	<RL										
Monochlorobenzene	0.2	<RL										
Paraquat	1	<RL										
Pentachlorophenol	0.1	<RL										
Phorate	0.3	<RL										
Picloram	5	<RL										
Polychlorinated Biphenyls (PCB)	0.05	<RL										
Prometryne	0.1	<RL										
Simazine	0.5	<RL										
Terbufos	0.3	<RL										
Tetrachloroethylene (perchloroethylene)	0.2	<RL										
2,3,4,6-Tetrachlorophenol	0.10	<RL										
Triallate	10	<RL										
Trichloroethylene	0.1	<RL										
2,4,6-Trichlorophenol	0.1	<RL										
Trifluralin	0.5	<RL										
Vinyl Chloride	0.2	<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

Parameter	Running Annual Average
	2019
Trihalomethanes	39.3

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	2016-05-17	--	--	--	--	127	--	--	--	--	--	--	--	
		2016-05-30	--	--	--	--	131	--	--	--	--	--	--	--	
		2016-09-06	--	--	--	--	--	--	--	--	--	--	--	30.8	
		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	--	--	--
Fluoride	0.1 RL	2014-09-17	--	--	--	0.08	--	--	0.08	--	--	--	--	--	
		2016-05-17	--	--	--	--	0.08	--	--	--	--	--	--	--	
		2019-09-16	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	--	<RL	<RL	
		2019-12-09	--	--	--	--	--	--	--	--	<RL	--	--	--	
Nitrite	0.1 RL	2019-01-29	--	--	--	--	--	<RL	--	--	--	--	--	--	
		2019-02-26	--	--	--	--	--	--	--	--	--	--	--	<RL	
		2019-03-04	<RL	<RL	--	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	--
		2019-03-25	--	--	<RL	--	--	--	--	--	--	--	--	--	--
		2019-05-27	--	--	--	--	--	--	--	--	--	--	--	--	<RL
		2019-06-03	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL
		2019-09-03	--	--	--	--	--	--	--	--	--	--	--	--	<RL
		2019-09-09	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	<RL	--	--	<RL	--
		2019-11-25	--	--	--	--	--	--	--	--	--	--	--	--	<RL
		2019-12-03	<RL	<RL	<RL	<RL	<RL	--	<RL	<RL	<RL	--	--	<RL	--
Nitrate	0.1 RL	2019-01-29	--	--	--	--	--	2.8	--	--	--	--	--	--	
		2019-02-26	--	--	--	--	--	--	--	--	--	--	--	<RL	
		2019-03-04	<RL	<RL	--	0.6	<RL	2	<RL	<RL	1.1	<RL	<RL	--	
		2019-03-25	--	--	3.4	--	--	--	--	--	--	--	--	--	
		2019-05-27	--	--	--	--	--	--	--	--	--	--	--	0.2	
		2019-06-03	<RL	<RL	4.2	0.7	<RL	1.9	<RL	<RL	1.2	<RL	<RL	--	
		2019-09-03	--	--	--	--	--	--	--	--	--	--	--	0.2	
		2019-09-09	<RL	<RL	5.4	1	<RL	2.4	<RL	<RL	--	--	<RL	--	
		2019-11-25	--	--	--	--	--	--	--	--	--	--	--	<RL	
		2019-12-03	<RL	<RL	2.9	0.5	<RL	--	<RL	<RL	--	--	--	--	
2019-12-09	--	--	--	--	--	--	--	--	--	0.5	--	<RL	--		

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
- \* - Samples were not collected at Well 17 in the third and fourth quarters due to well maintenance activities

Table 8 – Schedule 15.1 – Lead

Parameter	RL	Sample Count	Range of Results	
			(min)	(max)
Lead (Plumbing)	0.02	20	0.05	2.1
Lead (Distribution System)		20	<RL	3.97

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	1.08	<RL	<RL	<RL	2.16	0.87	2.18
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	0.91	<RL	<RL	<RL	1.77	<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	44.4	46.8
**Well 9	44.5	55.7
Well 11	66.3	86.8
Well 12	130	137
***Well 13	22.6	58.1
Well 14	43	102

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	105.6
UVT Monitored Weekly	85	85.5	95

Notes: (mJ/cm<sup>2</sup>) - UV Dosage measured in millijoules per centimeter squared  
 % - UVT measured in percent

Table 12 – Schedule 16 and 17 – Adverse Water Quality Incidents (AWQIs) and Corrective Actions

AWQI #	Incident Date	Location	Parameter	Result	Unit of Measure	Corrective Action Taken	Corrective Action Date
145124	2019-04-05	Yonge St. & Big Bay Point Rd.	Pressure loss resulting in improperly disinfected water directed to users under O.Reg. 170/03 Schedule 16-4	NA	NA	<p>A large transmission watermain break occurred at the intersection of Yonge Street and Big Bay Point Road. Water Operations Branch staff was first made aware of the occurrence through the Branch's afterhours service call provider and promptly attended and responded on site.</p> <p>Given the nature of the break and the knowledge that positive pressure was lost in the distribution system, the event was reported as an Adverse Water Quality Incident (AWQI) to the Simcoe Muskoka District Health Unit (SMDHU), and the Ministry of the Environment, Conservation and Parks (MECP). As a result, the SMDHU issued a Boil Water Advisory for the affected areas surrounding the break.</p> <p>To respond to the AWQI, crews were deployed to flush at several locations within the affected area, collect bacteriological samples and measure turbidity and free chlorine. Residuals within the affected area were consistently above regulatory limits. Upon receipt of acceptable bacteriological sample results from the laboratory, SMDHU rescinded the Boil Water Order on April 6, 2019.</p> <p>Work continued at the site of the break over the next week to repair and bring the transmission watermain back into service.</p>	2019-05-23
147520	2019-08-22	Brown Bear St & Salem Rd.	Chlorine Residual	0.03	mg/L	<p>Low chlorine residual was detected at a dead end on Brown Bear Street and Salem Road intersection.</p> <p>The incident was immediately reported to the SMDHU and the MECP.</p> <p>The hydrant was flushed and the free chlorine residual continued to be tested until adequate results were achieved. An auto-flushing device was installed in the area and was set to run 8 hours per day in order to maintain an acceptable residual level.</p>	2019-09-03
148046	2019-09-14	Mulcaster St. & Dunlop St. E	Total Coliform & E. Coli	NDOGT	NA	<p>A microbiological sample was collected in the distribution system for a final tie-in at a hydrant located on a construction site just west of Dunlop Street E. The operator reported that conditions were gusty (34 km/hr wind gust) and there was a lot of dust being picked up. 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 however, the analyst is unable to identify the presence/absence of Total Coliform and/or E. Coli. The incident was immediately reported to the SMDHU and the MECP. The hydrant was flushed and sampled until 2 consecutive samples collected 24 hours apart were acceptable.</p>	2019-09-19

Notes:

NA - Not applicable