

# Town of New Tecumseth 2018 Tottenham Drinking Water System Annual Report



Prepared in accordance with Section 11 of Ontario Regulation 170/03

For the Period of

**January 1 to December 31, 2018**

System Rating: Water Distribution and Supply Subsystem Class II

Drinking Water System No.: 220001085  
Municipal DW License No.: 123-102, Issue No. 2

February 1, 2018

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## 1. INTRODUCTION

In accordance with Ontario Regulation 170/03 (O.Reg.170/03): Drinking Water Systems, the Town of New Tecumseth has prepared this Annual Report which is required to be completed no later than February 28<sup>th</sup> of every year. This report covers the period of January 1<sup>st</sup> to December 31<sup>st</sup>, 2018 and the information provided complies with the reporting requirements outlined in Section 11 of O.Reg.170/03.

A summary of the Town of New Tecumseth's drinking water system description is outlined below:

Drinking-Water System Number:	220001085
Drinking-Water System Name:	Tottenham Water Supply System
Drinking-Water System Owner:	Corporation of the Town of New Tecumseth
Drinking-Water System Category:	Large Municipal Residential

## 2. REPORTING REQUIREMENTS (Section 11 - O.Reg.170/03)

### 2.1 Availability of Annual Water Report

This report has been prepared in accordance with Section 11 of Ontario Regulation 170/03 and is available, free of charge as follows:

- via the Town of New Tecumseth website (<http://newtecumseth.ca/>)
- via Public Request (email: [drinkingwater@newtecumseth.ca](mailto:drinkingwater@newtecumseth.ca) or phone 705-435-3900 ext. 1432)

The users of water from the Town of New Tecumseth Tottenham Drinking Water System are advised through the Town of New Tecumseth's website and local newspaper when this report is available and how to obtain a copy.

### 2.2 Description of Drinking-Water System

The Tottenham Well Supply System consists of four groundwater production wells that are grouped into two general locations: Well #4 & #5 (Walkem Drive Wells) and Wells #6A & #7 (Coventry Park Wells). The water from these wells is conveyed through dedicated mains to the Mill Street Reservoir. The Reservoir has one active cell with a storage capacity of approximately 900 m<sup>3</sup>. The system includes a 4,500 m<sup>3</sup> elevated storage tank.

The Tottenham Reservoir is the central location for the Supervisory Control and Data Acquisition (SCADA) system that provides various monitoring and control over the Tottenham Water System.

The Tottenham Water Supply system distributes treated water to approximately 5,143 consumers (based on 2016 Census from Statistics Canada). There are 1,650 service connections, comprising of residential, institutional, commercial and industrial consumers. In addition, there are approximately 34 kilometers of water main and 277 hydrants.

### 2.3 Water Treatment Chemicals

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

- Sodium Hypochlorite (12%)
- Sodium Silicate

## 2.4 Significant Expenses Incurred

The following major expenses were incurred during the reporting period to install, repair or replace required equipment:

A brief summary and value of the expenses incurred, including those outlined above, are as follows:

Maintenance Activity	Costs Incurred (2018)
Flow Meter Calibration	\$1,645

## 2.5 Sampling and Testing

Drinking water samples were collected and tested in accordance of O.Reg. 170/03 and tested in accordance with O.Reg. 169/03.

### 2.5.1 Schedule 7 - Operational Checks

Operational checks including raw water turbidity, and free chlorine (treated and distribution) were conducted in accordance with Schedule 7 of O.Reg.170/03. The operational testing conducted during this reporting period are summarized in Table 1 of this report.

### 2.5.2 Schedule 10 - Microbiological Sampling and Testing

Microbiological testing on raw, treated and distribution water samples were conducted in accordance with Schedule 10-2, 10-3 and 10-4 of O.Reg.170/03. The microbiological testing and sampling conducted during this reporting period are summarized in Tables 2, 2.1 and 2.2 of this report.

In addition to the required microbiological testing from O. Reg. 170/03 (i.e. Total Coliform and E. Coli) Tables 2.1 and 2.2, include bacteriological health-related parameter; Heterotrophic Plate Count (HPC). HPC is a useful operational tool for monitoring general bacteriological water quality throughout the treatment process and in the distribution system. HPC results are not an indicator of water safety and, as such, should not be used as an indicator of potential adverse human health effects.

### 2.5.3 Schedule 13 - Chemical Testing

Chemical testing for organic and inorganic parameters was conducted on treated water samples in accordance with Schedule 13, Sections 13.2 (Schedule 23), 13.4 (Schedule 24), 13.8 and 13.9. The latest 36-month and 60-month test results are summarized in Table 3 of this report.

Chemical testing for trihalomethanes (THMs) and nitrate and nitrite were taken quarterly in accordance with Schedule 13.6 and 13.7 of O.Reg 170/03 respectively. THMs sampling is performed in the distribution system and nitrate and nitrites sampling is performed at the reservoir (treated samples). The latest test results are summarized in Table 3 (nitrate and nitrite) and in Table 6.1 (THMs) of this report.

### 2.5.4 Schedule 15.1 – Lead

Lead and Alkalinity samples are collected from several locations within the distribution system in accordance with O. Reg 170/03 Schedule 15.1. Lead samples are required to be done every three year and was completed in 2017. Alkalinity samples are required to be sampled between December 15<sup>th</sup> and April 15<sup>th</sup> and June 15<sup>th</sup> and October 15<sup>th</sup> every year. The latest test results are summarized in Table 4 of this report.

### **2.5.5 Schedule 16 – Reporting of Adverse Test Results and Other Problem and Schedule 17 – Corrective Actions**

Adverse water quality incidents (AWQI) were reported in accordance with Schedule 16 and corrective actions related to each incident were completed in accordance with Schedule 17. A summary of the AWQI's and associated corrective actions that occurred during this reporting period is included in Table 5 of this report.

### **2.6 Municipal Drinking Water Licence (MDWL) No. 123-102 Requirement**

In addition to the sampling and monitoring required under O.Reg 170/03, Schedule C: System Specific Conditions for the Tottenham Distribution System requires sampling, testing and monitoring for THMs monthly basis commencing July 2016 and Iron sampling on a quarterly basis also commencing July 2016. The latest test results required under the MDWL is included in Table 6.1 and 6.2.

# Tables

**Table 1 - Schedule 7 Operational Checks  
Summary of Raw and Treated Samples – Turbidity**

Sampling Location	Number of Samples	NTU (min/max)
<b>Raw Water Turbidity</b>		
Well #4	11	0.16/0.88
Well #5	12	0.24/1.32
Well #6A	12	0.16/1.90
Well #7	12	0.12/0.72

**Table 1.1 - Schedule 7 Operational Checks  
Summary of Treated and Distribution Samples – Free Chlorine**

Sampling Location	Number of Samples	mg/L (min/max)
<b>Treated Water Free Chlorine</b>		
Tottenham Reservoir	*8760	1.08/2.20
<b>Distribution Water Free Chlorine</b>		
Walkem Drive	*8760	0.32/2.20

**Notes:**

- \*8760 represents Continuous Monitoring
- Low chlorine residuals that are recorded by continuous monitoring equipment during equipment malfunctions or power outages are not considered to be an adverse event. These incidents are responded to by operations staff for resolution. Also, the value of 0.00 recorded by the continuous chlorine analyzer could be a result of equipment abnormality / SCADA issue / maintenance work or calibration.

**Table 2 - Schedule 10 Microbiological Sampling and Testing  
Summary of Distribution System Samples**

Source	Number of Samples	E.Coli (min/max)	Total Coliform (min/max)	HPC (min/max)
<b>Distribution System</b>				
Routine Sampling Points	257	0/0	0/8	0/33
Other (main breaks, new construction)	15	0/0	0/0	0/10
<b>Total Distribution Samples</b>	<b>272</b>			

**Table 2.1 - Schedule 10 Microbiological Sampling and Testing  
Summary of Treated Water Samples**

Source	Number of Samples	E.Coli (min/max)	Total Coliform (min/max)	HPC (min/max)
<b>Treated Water</b>				
Mill Street Reservoir	52	0/0	0/0	0/57
<b>Total Number of Treated Samples</b>	<b>52</b>			

**Table 2.2 - Schedule 10 Microbiological Sampling and Testing  
Summary of Raw Water Samples**

Source	Number of Samples	E.Coli (min/max)	Total Coliform (min/max)
<b>Raw Water</b>			
Well #4	52	0/0	0/0
Well #5	52	0/0	0/0
Well #6A	52	0/0	0/0
Well #7	52	0/0	0/0
<b>Total Number of Raw Samples</b>	<b>208</b>		

Notes:

**Table 3 - Schedule 13 Chemical Sampling and Testing  
Summary of Treated Water Samples – Inorganics**

Parameter	Sample Date (mm/dd/yr)	Result Value	Exceedance	Standard
<b>Mill Street Reservoir</b>				
Antimony	04/10/2018	0.02<MDL	No	6.0
Arsenic	04/10/2018	0.7	No	25
Barium	04/10/2018	124	No	1000
Boron	04/10/2018	73	No	5000
Cadmium	04/10/2018	0.004	No	5.0
Chromium	04/10/2018	0.13	No	50
Mercury	04/10/2018	0.01<MDL	No	1.0
Selenium	04/10/2018	0.04<MDL	No	10
Uranium	04/10/2018	0.006	No	20

Notes:

- Results expressed in ug/L
- MDL – Maximum Detection Limit Results expressed in ug/L



**Table 3.1 - Schedule 13 Chemical Sampling and Testing  
Summary of Treated Water Samples – Organics**

Parameter	Sample Date (mm/dd/yr)	Result Value	Exceedance	Standard
<b>Mill Street Reservoir</b>				
Alachlor	04/10/2018	0.02<MDL	No	5.0
Atrazine+N-dealkylated metabolites	04/10/2018	0.01<MDL	No	5.0
Azinphos-methyl	04/10/2018	0.05<MDL	No	20.0
Benzene	04/10/2018	0.32<MDL	No	5.0
Benzo(a)pyrene	04/10/2018	0.004<MDL	No	0.01
Bromoxynil	04/10/2018	0.33<MDL	No	5.0
Carbaryl	04/10/2018	0.05<MDL	No	90.0
Carbofuran	04/10/2018	0.01<MDL	No	90.0
Carbon Tetrachloride	04/10/2018	0.16<MDL	No	5.0
Chlorpyrifos	04/10/2018	0.02<MDL	No	90.0
Diazinon	04/10/2018	0.02<MDL	No	20.0
Dicamba	04/10/2018	0.20<MDL	No	120
1,2-Dichlorobenzene	04/10/2018	0.41<MDL	No	200
1,4-Dichlorobenzene	04/10/2018	0.36<MDL	No	5.0
1,2-dichloroethane	04/10/2018	0.35<MDL	No	5.0
1,1-Dichloroethylene (vinylidene chloride)	04/10/2018	0.33<MDL	No	14.0
Dichloromethane	04/10/2018	0.35<MDL	No	50.0
2,4-Dichlorophenol	04/10/2018	0.15<MDL	No	900
2,4-Dichlorophenoxy acetic acid (2,4-D)	04/10/2018	0.19<MDL	No	100
Diclofop-methyl	04/10/2018	0.40<MDL	No	9.0
Dimethoate	04/10/2018	0.03<MDL	No	20.0
Diquat	04/10/2018	1<MDL	No	70.0
Diuron	04/10/2018	0.03<MDL	No	150
Glyphosate	04/10/2018	1<MDL	No	280
Malathion	04/10/2018	0.02<MDL	No	190
MCPA	04/10/2018	0.12<MDL	No	100
Metolachlor	04/10/2018	0.01<MDL	No	50.0
Metribuzin	04/10/2018	0.02<MDL	No	80.0
Monochlorobenzene	04/10/2018	0.3<MDL	No	80.0
Paraquat	04/10/2018	1<MDL	No	10.0
Pentachlorophenol	04/10/2018	0.15<MDL	No	60.0
Phorate	04/10/2018	0.01<MDL	No	2.0
Picloram	04/10/2018	1<MDL	No	190
Polychlorinated Biphenyls (PCB)	04/10/2018	0.04<MDL	No	3.0
Prometryne	04/10/2018	0.03<MDL	No	1.0
Simazine	04/10/2018	0.01<MDL	No	10.0
Terbufos	04/10/2018	0.01<MDL	No	1.0
Tetrachloroethylene (perchloroethylene)	04/10/2018	0.35<MDL	No	30.0
2,3,4,6-Tetrachlorophenol	04/10/2018	0.20<MDL	No	100
Triallate	04/10/2018	0.01<MDL	No	230
Trichloroethylene	04/10/2018	0.44<MDL	No	5.0
2,4,6-Trichlorophenol	04/10/2018	0.25<MDL	No	5.0
Trifluralin	04/10/2018	0.02<MDL	No	45.0
Vinyl Chloride	04/10/2018	0.17<MDL	No	2.0

**Notes:**

- Results expressed in ug/L
- MDL – Maximum Detection Limit

**Table 3.2 - Schedule 13 Chemical Sampling and Testing  
Summary of Treated Water Samples – Nitrite and Nitrate**

Parameter	Sample Date (mm/dd/yr)	Result Value	Exceedance	Standard
<b>Mill Street Reservoir</b>				
Nitrite	01/22/2018	0.003 <MDL	No	1.0
	04/10/2018	0.003 <MDL		
	07/17/2018	0.003 <MDL		
	10/15/2018	0.003 <MDL		
Nitrate	01/22/2018	0.038	No	10.0
	04/10/2018	0.031		
	07/17/2018	0.028		
	10/15/2018	0.033		

**Notes:**

- Results expressed in mg/L

**Table 3.3 - Schedule 13 Chemical Sampling and Testing  
Summary of Treated Water Samples – Sodium and Fluoride**

Parameter	Sample Date (mm/dd/yr)	Result Value	Exceedance	Standard
<b>Mill Street Reservoir</b>				
Sodium	12/04/2017	63.4	No	200*
Fluoride	10/29/2018	0.22	No	1.5

**Notes:**

- Results expressed in 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 4 – Schedule 15.1 Lead  
Summary of Lead Samples**

Parameter	Sample Date (mm/dd/yr)	Number of Samples	Range of Results (min max)	Exceedance	Standard
Lead (Distribution System)	04/13/2017 10/10/2017	6	0.13 – 0.62 µg/l	No	10
Alkalinity (Distribution System)	03/12/2018 10/09/2018	6	200 – 211 (mg/l)	No	30 – 500*

**Notes:**

\*Aesthetic Objective under the Ontario Drinking Water Standards, Objectives and Guidelines

**Table 5 – Details of Adverse Water Quality Incidents (AWQIs) and Corrective Actions  
(Schedule 16 & 17)**

AWQI #	Incident Date (mm/dd/yr)	Location	Parameter	Result	Unit of Measure	Corrective Action Taken	Corrective Action Date (mm/dd/yr)
142506	09/03/2018	Distribution System	Low Chlorine	0.00	mg/l	Main flushed and water tested for chlorine residual upstream 0.89 mg/l and downstream 0.83 mg/l. No further action required.	09/03/2018

**Table 6.1 – Municipal Drinking Water Licence (MDWL) No. 123-102 Requirement  
Summary of Distribution Water Samples – Trihalomethanes**

Date	THM Quarterly Average	THM Running Annual Average	Exceedance	Standard
01/08/2018	77.5	90.0	No	100
01/22/2018				
02/05/2018				
03/19/2018				
04/10/2018	92.2			
05/14/2018				
06/11/2018				
07/17/2018	101.8			
08/15/2018				
09/17/2018				
10/09/2018	88.6			
10/13/2018				
11/12/2018				
12/04/2018				
12/11/2018				

**Notes:** Results expressed in ug/L  
\*Samples taken by Ministry of the Environment, Conservation and Parks

**Table 6.2 – Municipal Drinking Water License (MDWL) No. 123-102 Requirement  
Summary of Treated Water Samples - Iron**

Parameter	Sample Date (mm/dd/yr)	Results
<b>Mill Street Reservoir</b>		
Iron	01/22/2018	692
Iron	04/10/2018	750
Iron	07/17/2018	751
Iron	10/15/2018	684

**Notes:**  
- Results expressed in ug/L