

Town of New Tecumseth 2023 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, 2023

System Rating:

Water Distribution and Supply Subsystem Class II

Drinking Water System No.:

220001085

Municipal DW License No.:

123-102, Issue No. 4

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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 28th of every 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 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 or phone 705-435-3900)

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 m³. The system includes a 4,500 m³ elevated storage tank. The Tottenham Water System is supplemented with water from the Alliston Water Supply through a 300 mm diameter transmission main from Beeton McKelvey Reservoir.

The Mill Street 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 9,708 consumers (based on data from the Planning Department). There are 3,110 service connections, comprising of residential, institutional, and industrial consumers. In addition, there are approximately 34.6 kilometers of water main and 283 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, or replace required equipment:

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

Maintenance Activity	Costs Incurred (2023)
Flow Meter Calibration	\$2,000
Watermain Swabbing	\$86,445

2.5 Sampling and Testing

Drinking water samples were collected and tested in accordance with 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 was 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 is summarized in Tables 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), haloacetic acids (HAAs), and nitrate and nitrite was conducted quarterly in accordance with Schedule 13.6 and 13.7 of O.Reg 170/03 respectively. THM 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 5.1 (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 years and was completed in 2022. Alkalinity samples are required to be sampled between December 15th and April 15th and June 15th and October 15th 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 on a monthly basis commencing July 2016 and Iron sampling on a quarterly basis also commencing July 2016. The latest test results required under the MDWL are included in Table 6.1 and 6.2.

Tables

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

Sampling Location	Number of Samples	NTU	
		Min	Max
Raw Water Turbidity			
Well #4	12	0.16	0.59
Well #5	12	0.17	0.54
Well #6A	12	0.15	0.88
Well #7	12	0.13	0.66

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

Sampling Location	Number of Samples	mg/L (min/max)
Treated Water Free Chlorine		
Mill Street Reservoir	*8760	1.24/1.72
Distribution Water Free Chlorine		
Walkem Drive	*8760	1.06/1.97

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 Treated and Distribution System Samples**

Source	Number of Samples	E.Coli (min/max)	Total Coliform (min/max)	HPC (min/max)
Treated Water				
Mill Street Reservoir	52	0/0	0/0	0/3
Total Number of Treated Samples				52
Raw Water				
Well #4	52	0/0	0/0	--
Well #5	52	0/0	0/24	--
Well #6A	52	0/0	0/0	--
Well #7	52	0/0	0/1	--
Total Number of Raw Samples				208
Distribution System				
Routine Sampling Points	366	0/0	0/12	0/85
Other (main breaks, new construction)	1	0/0	0/0	0/2
Total Distribution Samples				367

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
Mill Street Reservoir				
Antimony	02/23/2021	0.9<MDL	No	6.0
Arsenic	02/23/2021	0.7	No	25
Barium	02/23/2021	129	No	1000
Boron	02/23/2021	67	No	5000
Cadmium	02/23/2021	0.003<MDL	No	5.0
Chromium	02/23/2021	0.44	No	50
Mercury	02/23/2021	0.01<MDL	No	1.0
Selenium	02/23/2021	0.04<MDL	No	10
Uranium	02/23/2021	0.015	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
Mill Street Reservoir				
Alachlor	02/23/2021	0.02<MDL	No	5.0
Atrazine+N-dealkylated metabolites	02/23/2021	0.01<MDL	No	5.0
Azinphos-methyl	02/23/2021	0.05<MDL	No	20.0
Benzene	02/23/2021	0.32<MDL	No	5.0
Benzo(a)pyrene	02/23/2021	0.004<MDL	No	0.01
Bromoxynil	02/23/2021	0.33<MDL	No	5.0
Carbaryl	02/23/2021	0.05<MDL	No	90.0
Carbofuran	02/23/2021	0.01<MDL	No	90.0
Carbon Tetrachloride	02/23/2021	0.17<MDL	No	5.0
Chlorpyrifos	02/23/2021	0.02<MDL	No	90.0
Diazinon	02/23/2021	0.02<MDL	No	20.0
Dicamba	02/23/2021	0.20<MDL	No	120
1,2-Dichlorobenzene	02/23/2021	0.41<MDL	No	200
1,4-Dichlorobenzene	02/23/2021	0.36<MDL	No	5.0
1,2-dichloroethane	02/23/2021	0.35<MDL	No	5.0
1,1-Dichloroethylene (vinylidene chloride)	02/23/2021	0.33<MDL	No	14.0
Dichloromethane	02/23/2021	0.35<MDL	No	50.0
2,4-Dichlorophenol	02/23/2021	0.15<MDL	No	900
2,4-Dichlorophenoxy acetic acid (2,4-D)	02/23/2021	0.19<MDL	No	100
Diclofop-methyl	02/23/2021	0.40<MDL	No	9.0
Dimethoate	02/23/2021	0.06<MDL	No	20.0
Diquat	02/23/2021	1<MDL	No	70.0
Diuron	02/23/2021	0.03<MDL	No	150
Glyphosate	02/23/2021	1<MDL	No	280
Malathion	02/23/2021	0.02<MDL	No	190
MCPA	02/23/2021	0.12<MDL	No	100
Metolachlor	02/23/2021	0.01<MDL	No	50.0
Metribuzin	02/23/2021	0.02<MDL	No	80.0
Monochlorobenzene	02/23/2021	0.3<MDL	No	80.0
Paraquat	02/23/2021	1<MDL	No	10.0

**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
Mill Street Reservoir				
Pentachlorophenol	02/23/2021	0.15<MDL	No	60.0
Phorate	02/23/2021	0.01<MDL	No	2.0
Picloram	02/23/2021	1<MDL	No	190
Polychlorinated Biphenyls (PCB)	02/23/2021	0.04<MDL	No	3.0
Prometryne	02/23/2021	0.03<MDL	No	1.0
Simazine	02/23/2021	0.01<MDL	No	10.0
Terbufos	02/23/2021	0.01<MDL	No	1.0
Tetrachloroethylene (perchloroethylene)	02/23/2021	0.35<MDL	No	30.0
2,3,4,6-Tetrachlorophenol	02/23/2021	0.20<MDL	No	100
Triallate	02/23/2021	0.01<MDL	No	230
Trichloroethylene	02/23/2021	0.44<MDL	No	5.0
2,4,6-Trichlorophenol	02/23/2021	0.25<MDL	No	5.0
Trifluralin	02/23/2021	0.02<MDL	No	45.0
Vinyl Chloride	02/23/2021	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 – Haloacetic Acids**

Date	Location	HAA Results	HAA Running Annual Average	Exceedance	Standard
March 14, 2023	Pierce Place	13.7	16.1	No	80
June 27, 2023	Pierce Place	11.0			
September 12, 2023	Pierce Place	20.4			
December 12, 2023	Pierce Place	19.2			

Notes:

- Results expressed in µg/L

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

Parameter	Sample Date (mm/dd/yr)	Result Value	Exceedance	Standard
Mill Street Reservoir				
Nitrite	01/17/2023	0.003 <MDL	No	1.0
	04/12/2023	0.003 <MDL		
	07/11/2023	0.003 <MDL		
	10/17/2023	0.003 <MDL		
Nitrate	01/17/2023	0.203	No	10.0
	04/12/2023	0.171		
	07/11/2023	0.050		
	10/17/2023	0.137		

Notes:

- Results expressed in mg/L

**Table 3.4 - Schedule 13 Chemical Sampling and Testing
Summary of Treated Water Samples – Sodium and Fluoride**

Parameter	Sample Date (mm/dd/yr)	Result Value	Exceedance	Standard
Mill Street Reservoir				
Sodium	10/11/2022	19.4	No	200*
Fluoride	10/12/2023	0.17	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)	04/12/2023 10/13/2023	6	0.02 – 0.44 µg/l	No	10
Alkalinity (Distribution System)	04/12/2023 10/13/2023	6	131 - 138 (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)
162559	07/11/2023	Distribution	Total Coliform	12	cfu/100ml	Watermains were flushed and checked chlorine residual at adverse location. Reading was 1.42 mg/l. Re-sampled at location and upstream and downstream July 13 th . Results all negative. No further action required.	07/17/2023

**Table 6.1 – Municipal Drinking Water License (MDWL) No. 123-102 Requirement
Summary of Treated Water Samples - Iron**

Parameter	Location	Sample Date (mm/dd/yr)	Results (µg/l)
Iron	Mill Street Reservoir	01/17/2023	230
Iron	Pierce Place SS	03/14/2023	448
Iron	Mill Street Reservoir	04/12/2023	182
Iron	Mill Street Reservoir	07/11/2023	126
Iron	Pierce Place SS	09/12/2023	78
Iron	Mill Street Reservoir	10/17/2023	382
Iron	Pierce Place SS	10/17/2023	153
Iron	Pierce Place SS	12/12/2023	136

**Table 6.2 – Municipal Drinking Water Licence (MDWL) No. 123-102 Requirement
Summary of Distribution Water Samples – Trihalomethanes**

Date	THM Results	Location	THM Quarterly Average	THM Running Annual Average	Exceedance	Standard
01/10/2023	33.0	Nolan Road	34.0			
01/10/2023	42.0	Water Tower				
01/10/2023	33.0	Pierce Place				
01/10/2023	32.0	Martin Trail				
01/10/2023	32.0	Dillane St E				
01/10/2023	33.0	78 Walkem				
02/14/2023	35.0	Nolan Road				
02.14/2023	24.0	Water Tower				
02/14/2023	38.0	Pierce Place				
02/14/2023	38.0	Martin Trail				
02/14/2023	45.0	Dillane St E				
02/14/2023	24.0	78 Walkem				
03/14/2023	35.0	Nolan Road				
03/14/2023	24.0	Water Tower				
03/14/2023	35.0	Pierce Place				
03/14/2023	46.0	Martin Trail				
03/14/2023	40.0	Dillane St E				
03/14/2023	23.0	78 Walkem				
04/12/2023	38.0	Nolan Road	41.1	42.0	No	100
04/12/2023	48.0	Water Tower				
04/12/2023	40.0	Pierce Place				
04/12/2023	38.0	Martin Trail				
04/12/2023	47.0	Dillane St E				
04/12/2023	29.0	78 Walkem				
05/09/2023	41.0	Nolan Road				
05/09/2023	50.0	Water Tower				
05/09/2023	35.0	Pierce Place				
05/09/2023	36.0	Martin Trail				
05/09/2023	44.0	Dillane St E				
05/09/2023	49.0	78 Walkem				
06/20/2023	40.0	Nolan Road	48.8			
06/20/2023	40.0	Martin Trail				
07/11/2023	48.0	Pierce Place				
07/11/2023	43.0	Water Tower				
08/15/2023	58.0	Nolan Road				
08/15/2023	48.0	Martin Trail				
09/12/2023	61.0	Pierce Place	44.0			
09/12/2023	35.0	Water Tower				
10/24/2023	60.0	Nolan Road				
10/24/2023	49.0	Martin Trail				
11/14/2023	51.0	Pierce Place				
11/14/2023	36.0	Water Tower				
12/12/2023	34.0	Nolan Road				
12/12/2023	34.0	Martin Trail				

Notes: - Results expressed in ug/L