2025 Annual Drinking Water System Summary Report

Thamesford Drinking Water System

1. GENERAL INFORMATION

Oxford County (the County) prepares a report summarizing system operation and water quality for every municipal drinking water system annually. The reports detail information required for Annual Reports and Summary Reports under Ontario Regulation (O. Reg.) 170/03 of the *Safe Drinking Water Act,* 2002 including the latest water quality testing results, water quantity statistics and any adverse conditions that may have occurred for the previous year. They are available for review by the end of February on the County website at www.oxfordcounty.ca/services-for-you/water-wastewater/drinking-water/ or by contacting the Public Works Department.

All efforts have been made to ensure the information presented in this report is accurate. If you have any questions or comments concerning the report, please contact the County at the address and phone number listed below or by email at water@oxfordcounty.ca.

Drinking Water System:	Thamesford Drinking Water System
Drinking Water System Number:	220000610
Reporting Period:	January 1, 2025 – December 31, 2025

Drinking Water System Owner & Contact Information:

Oxford County Public Works Department - Water Services
P.O. Box 1614
21 Reeve Street
Woodstock, ON N4S 7Y3
Telephone: 519-539-9800
Toll Free: 866-537-7778
Email: water@oxfordcounty.ca

1.1 System Description

The Thamesford Drinking Water System (DWS) is a large municipal residential water system as defined by O. Reg. 170/03 and serves a population of approximately 3,655 people. The system consists of four wells. Wells 1, 2 and 4 are classified as Groundwater Under the Direct Influence of surface water (GUDI) with effective in-situ filtration. Well 3 is a secure groundwater well. The water is treated by filtration for iron and manganese removal followed by disinfection by Ultraviolet (UV) light and sodium hypochlorite at the Thamesford Water Treatment Facility (WTF). Well 3 can be operated independently of the Thamesford WTF with the addition of sodium hypochlorite for disinfection as it is a secure groundwater well. In 2025, approximately 12,505 L of sodium hypochlorite was used in the water treatment process. The chemical is certified to meet standards set by the Standards Council of Canada or American National Standards Institute.

The 2,050 m^3 water tower provides storage and maintains system pressure. A standby generator is available to run the facility in the event of a power failure. The system is maintained by licensed water system operators, who operate treatment and monitoring equipment and collect samples as specified by O. Reg. 170/03. Alarms automatically notify operators in the event of failure of critical operational requirements. The Thamesford DWS does not supply drinking water to any other drinking water systems.

1.2 Major Expenses

Planning for major drinking water system expenses is included within Oxford County's Water Services Master Plan and managed according to our Asset Management and Capital Replacement Program.

The Thamesford Drinking Water System is one of 14 water systems with revenues and expenses pooled for economy-of-scale purposes. The systems are combined into the Township Water financial system and in 2025 had a forecasted operating and maintenance expenditures of approximately $4,370,000.

In addition to regular operational and maintenance expenditures, Capital Improvement Projects for the Townships systems were forecasted to be $2,500,000 for improvements to water treatment systems and replacement of distribution mains in the Township System.

Township Capital Improvement Projects included:

- $530,000 repair and maintenance on wells, water pump stations, and water treatment facilities;
- $190,000 for distribution replacements; and
- $50,000 for facilities improvements.

Capital Improvement projects for all systems included:

- $1,577,000 to implement a Countywide SCADA Master Plan for all water systems.

2. MICROBIOLOGICAL TESTING

2.1 *E. coli* and Total Coliform

Bacteriological tests for *E. coli* and total coliforms are required weekly from the raw and treated water at the facility and from the distribution system. Extra samples are taken after major repairs or maintenance work. Any *E. coli* or total coliform results above the Maximum Allowable Concentration (MAC) of 0 colonies per 100 mL in treated water samples must be reported to the Ministry of Environment, Conservation and Parks (MECP) and the Medical Officer of Health (MOH). Resamples and any other required actions are taken as quickly as possible. The results from the annual sampling program are shown on the table below. There was no adverse test result from 208 treated water samples in 2025.

Source	*Number of Samples*	*Range of E. coli Min - Max MAC = 0 (colonies / 100 mL)*	*Range of Total Coliform Min - Max MAC = 0 (colonies / 100 mL)*
Raw	216	0 - 4	0 - 19
Treated	52	0	0
Distribution	156	0	0

2.2 Heterotrophic Plate Count (HPC)

HPC analyses are required from the treated and distribution water. The tests are required weekly for treated water and for 25% of the required distribution system bacteriological samples. HPC should be less than 500 colonies per 1 mL. Results over 500 colonies per 1 mL may indicate a change in water quality but it is not considered an indicator of unsafe water. Annual results are shown in the following table.

Source	*Number of Samples*	*Range of HPC Min – Max (colonies / mL)*
Treated	52	0 – NDOGHPC *
Distribution	42	0 – 17

*No Data, Overgrown HPC (NDOGHPC) occurs when the HPC plate is overgrown with bacteria.

3. CHEMICAL TESTING

The *Safe Drinking Water Act*, 2002 requires periodic testing of the water for approximately 60 different chemical parameters. The latest results for all parameters are provided in Appendix ‘A’. The sampling frequency varies for different types and sizes of water systems and chemical parameters. If the concentration of a parameter is above half of the MAC under the Ontario Drinking Water Quality Standards, an increased testing frequency of once every three months is required by O. Reg. 170/03.

Where concerns regarding a parameter exist the MECP can also require additional sampling be undertaken.

Information on the health effects and allowable limits of components in drinking water may be found on the MECP web page through the link provided in Appendix 'A'. Additional information on common chemical parameters specific to the Thamesford DWS is provided below.

3.1 Sodium

Sodium levels in drinking water are tested once every five years. The aesthetic objective is 200 mg/L meaning at levels less than this, sodium will not impair the taste of the water. The latest test results are provided in Appendix 'A'.

When sodium levels are above 20 mg/L the MECP and the MOH are notified. Southwestern Public Health maintains an information page on sodium in drinking water at https://www.swpublichealth.ca/news/posts/public-health-issues-annual-reminder-about-fluoride-and-sodium-in-oxford-drinking-water/ in order to help people on sodium restricted diets monitor their sodium intake.

3.2 Hardness

This is an aesthetic parameter that may affect the appearance of the water but is not related to health. Well water commonly has high levels of hardness and other minerals from being in contact with underground rock formations. Many households have water softeners to help reduce white calcium deposits and improve the efficiency of soaps. This information is included here to help residents set the water softener at the level recommended by the manufacturer. Samples for hardness are collected at a minimum every three years from raw water. The hardness for the Thamesford Drinking Water System is 464 mg/L (27 grains/gallon) based on an historical running average and operational conditions.

3.3 Additional Testing Required by MECP

Under the Regulation, additional quarterly sampling is required when a parameter listed in Schedule 23 or 24 exceeds half of the MAC. Based on the latest test results no additional testing is required under O. Reg. 170/03.

No additional testing requirements are listed in the Municipal Drinking Water Licence (MDWL).

4. OPERATIONAL MONITORING

4.1 Chlorine Residual

Free chlorine levels in the treated water are continuously monitored at the discharge point of the WTF and in the distribution system. As a target, free chlorine residuals within the distribution system should be above 0.20 mg/L. A free chlorine level lower than 0.05 mg/L must be reported and corrective action taken. A summary of the chlorine

residual readings is provided in the following table. There were no reportable incidents in 2025.

4.2 Turbidity

Turbidity of treated water is continuously monitored at the treatment facility as a change in turbidity can indicate an operational problem. As a minimum, turbidity for each well is required to be tested monthly. Turbidity is measured in nephelometric turbidity units (NTU). Under O. Reg. 170/03 turbidity in groundwater from a secure well or a well with effective in-situ filtration is not reportable, however, turbidity should be < 1 NTU at the treatment plant and < 5 NTU in the distribution system. A summary of the annual monitoring results is provided in the following table:

Parameter	*Number of Tests or Monitoring Frequency*	*Range of Results (Min – Max) and Average*
Chlorine residual after treatment (mg/L)	Continuous	(0.98 - 2.23) 1.40
Chlorine residual in distribution (mg/L)	Continuous	(0.56 – 1.71) 1.29
Well 1 turbidity before treatment (NTU)	53	(0.13 - 4.69) 0.46
Well 2 turbidity before treatment (NTU)	58	(0.08 - 1.58) 0.34
Well 3 turbidity before treatment (NTU)	52	(0.30 - 2.27) 0.76
Well 4 turbidity before treatment (NTU)	56	(0.06 - 1.13) 0.30
Turbidity after treatment (NTU)	Continuous	(0.03 - 1.32) 0.06

4.3 Ultraviolet (UV) Disinfection

Supply wells that have been classified as being GUDI require “enhanced disinfection” through ultraviolet light (UV) followed by chlorination. A minimum UV dosage of 40 mJ/cm² is maintained to inactivate any microorganisms that may be present from contact with surface water. Insufficient dosage of UV lasting more than 10 minutes must be reported as inadequate disinfection. There were no occurrences of inadequate UV disinfection in 2025.

5. WATER QUANTITY

Continuous monitoring of flow rates from supply wells into the treatment system and from the WTF into the distribution system is required by O. Reg. 170/03. The Permit to Take Water (PTTW) and Municipal Drinking Water License (MDWL) issued by the MECP regulate the amount of water that can be utilized over a given time period. Terms used to evaluate capacity and current values for the Thamesford DWS are provided in the following table.

Capacity Term	*Description*	*Capacity (m^3/day)*
Supply Capacity	The limiting capacity of either the PTTW or MDWL.	5,391
Dynamic Supply Capacity	Accounts for any current constraints on the water supply (such as offline wells, reduced well capacity, water quality considerations).	5,391
Firm Capacity	Firm Capacity is defined as the removal of the highest producing well in an emergency or operational / maintenance situation with the ability to transport a maximum of 100 m^3/day to maintain system integrity if appropriate.	5,391
Dynamic Firm Capacity	Considers the removal of the largest production well and other current system constraints. Trucked in water may be considered for some systems.	4,320

This system consists of four supply wells. For Firm Capacity scenarios, Well 4 is removed and trucked in water is not considered for this system. Dynamic Capacity scenarios consider current reduced well yields for Wells 1, 2, and 4. The same capacity can still be achieved by when all wells are in service even considering reduced well yields as shown in the Dynamic Supply Capacity scenario. The Dynamic Firm Capacity considers the reduced well yields and that Well 4 is not in service which results in a lower capacity.

A summary comparing flows in 2025 to current capacities is provided in the table below and presented graphically in Appendix 'B'.

Flow Summary	*Supply Capacity (m^3/day)*	*Dynamic Supply Capacity (m^3/day)*	*Max Daily Flow (m^3/day)*	*Average Daily Flow (m^3/day)*	*Average Monthly Flow (m^3/month)*	*Total Yearly Flow (m^3/year)*
Normal Operation*	5,391	5,391	1,373	873	26,562	318,748
Well 3 Only**	1,305	1,296	Configuration not used in 2025			
Thamesford DWS ***values may not sum**	**5,391**	**5,391**	**1,373**	**873**	**26,562**	**318,748**

**Normal operation includes the use of the Thamesford Water Treatment Facility by wells 1,2,3 and 4*
***Well 3 can operate direct to the tower independent of the Thamesford Water Treatment Facility if required.*

6. NON-COMPLIANCE FINDINGS AND ADVERSE RESULTS

This section documents any known incidents of non-compliance or adverse results, and the associated corrective actions taken to resolve the issue. Non-compliance issues are typically identified by either the Operating Authority or the MECP Drinking Water Inspectors. The issues and associated required actions are documented in the system's Annual Inspection Report. All non-compliance issues are investigated, corrective actions taken and documented using the County's Drinking Water Quality Management System (DWQMS) procedures.

6.1 Non-Compliance Findings

The annual MECP inspection took place in July 2025. The Inspection Report Rating was 97%. One administrative non-compliance was issued for the Thamesford drinking water system related the description of a water treatment component. The description was updated and no further actions were required.

6.2 Adverse Results

Any adverse bacteriological or chemical results or observations of operational conditions that may indicate adverse water quality are reported as required and corrective actions are taken. There were no adverse water quality incidents in 2025.

APPENDIX 'A': SUMMARY OF CHEMICAL RESULTS

UNDERSTANDING CHEMICAL TEST RESULTS

The following tables summarize the laboratory results of the chemical testing the County is required to complete. Different types of parameters are required to be tested for at different frequencies as noted below. Explanations on the health impacts of these parameters can be found in the MECP document PSIB 4449e01 titled "Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines" available at https://cvc.ca/wp-content/uploads/2011/03/std01_079707.pdf.

Results are shown as concentrations with units of either milligrams per litre (mg/L) or micrograms per litre (µg/L) where 1 mg/L is equal to 1000 µg/L. The Maximum Acceptable Concentration (MAC) is the highest amount of a parameter that is acceptable in municipal drinking water and can be found in the MECP Drinking Water Standards. The Method Detection Limit (MDL) is the lowest amount to which the laboratory can confidently measure. A result of "ND" stands for "Not Detected" and means that the concentration of the chemical is lower than the laboratory's equipment is capable of measuring. In the event that some samples results are ND, and other results are above the MDL, the value of the MDL will be used in place of the ND where an average result must be calculated. Where all collected samples are ND the average sample result will be assumed to be ND.

Nitrate and nitrite samples are required every three months in normal operation.

Parameter	*Number of Samples*	*Result Range Min – Max (mg/L)*	*Average Result (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Nitrite	4	ND	ND	1.0	0.003
Nitrate	4	1.83 – 3.08	2.42	10.0	0.006

Trihalomethane (THM) and total Haloacetic Acids (HAA) are by-products of the disinfection process. The samples are required every three months from the distribution system.

Parameter	*Number of Samples*	*Annual Average (µg/L)*	*MAC (µg/L)*	*MDL (µg/L)*
Trihalomethane (THM)	4	26.8	100	0.37
Haloacetic Acids (HAA)	4	8.8	80	5.3

The following table summarizes the most recent test results for sodium and fluoride. Testing and reporting any adverse results is required every five years.

Parameter	*Sample Date*	*Result Value (mg/L)*	*MAC (mg/L)*	*MDL (mg/L)*
Sodium	May 27, 2024	27.1	20*	0.01
Fluoride	May 27, 2024	0.71	1.5**	0.06

*Sodium levels between 20 – 200 mg/L must be reported every 5 years.
**Natural levels of fluoride between 1.5 – 2.4 mg/L must be reported every 5 years.

The following table summarizes the most recent results for the Lead Testing Program. Lead samples are taken every three years. Levels of alkalinity and pH are monitored twice per year in the distribution system to ensure water quality is consistent and does not facilitate leaching of lead into the water.

Parameter	*Number of Samples*	*Result Range (Min - Max)*	*Acceptable Level*
Distribution Alkalinity 2025	6	210 – 333 mg/L	30 – 500 mg/L
Distribution pH 2025	6	7.49 – 7.75	6.5 – 8.5
Distribution Lead 2024	6	ND – 0.28 µg/L	10 µg/L MAC

The following table summarizes annual test results for Schedule 23 parameters. Testing is required annually for water treatment facilities with GUDI wells.

Parameter	*Sample Date*	*Result Value (µg/L)*	*MAC (µg/L)*	*MDL (µg/L)*
Antimony	June 2, 2025	ND	6	0.6
Arsenic	June 2, 2025	0.2	10	0.2
Barium	June 2, 2025	55.4	1000	0.02
Boron	June 2, 2025	58	5000	2
Cadmium	June 2, 2025	ND	5	0.003
Chromium	June 2, 2025	0.18	50	0.08
Mercury	June 2, 2025	ND	1	0.01
Selenium	June 2, 2025	0.20	50	0.04
Uranium	June 2, 2025	0.354	20	0.002

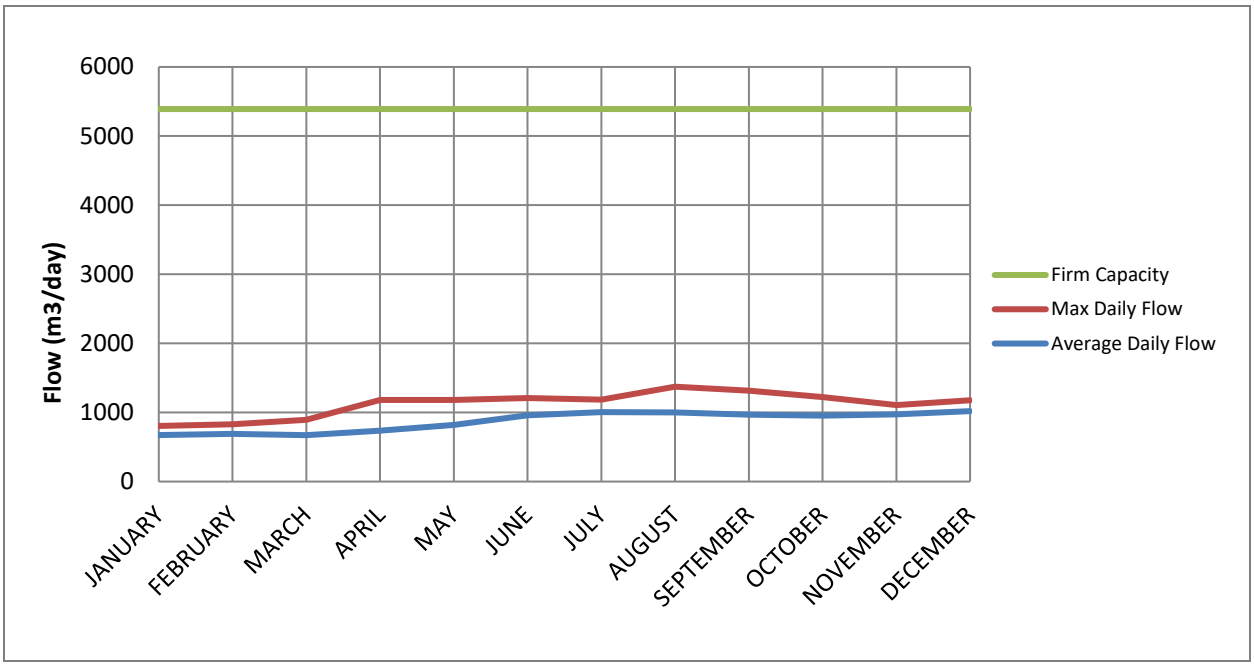
The following table summarizes annual test results for Schedule 24 parameters. Testing is required annually for water treatment facilities with GUDI wells.

Parameter	*Sample Date*	*Result (µg/L)*	*MAC (µg/L)*	*MDL (µg/L)*
Alachlor	June 2, 2025	ND	5	0.02
Atrazine + N-dealkylated metabolites	June 2, 2025	ND	5	0.01
Azinphos-methyl	June 2, 2025	ND	20	0.05
Benzene	June 2, 2025	ND	1	0.32
Benzo(a)pyrene	June 2, 2025	ND	0.01	0.004
Bromoxynil	June 2, 2025	ND	5	0.33
Carbaryl	June 2, 2025	ND	90	0.05
Carbofuran	June 2, 2025	ND	90	0.01
Carbon Tetrachloride	June 2, 2025	ND	2	0.17
Chlorpyrifos	June 2, 2025	ND	90	0.02
Diazinon	June 2, 2025	ND	20	0.02
Dicamba	June 2, 2025	ND	120	0.20
1,2-Dichlorobenzene	June 2, 2025	ND	200	0.41
1,4-Dichlorobenzene	June 2, 2025	ND	5	0.36
1,2-Dichloroethane	June 2, 2025	ND	5	0.35
1,1-Dichloroethylene (vinylidene chloride)	June 2, 2025	ND	14	0.33
Dichloromethane	June 2, 2025	ND	50	0.35
2-4 Dichlorophenol	June 2, 2025	ND	900	0.15
2,4-Dichlorophenoxy acetic acid (2,4-D)	June 2, 2025	ND	100	0.19
Diclofop-methyl	June 2, 2025	ND	9	0.40
Dimethoate	June 2, 2025	ND	20	0.06
Diquat	June 2, 2025	ND	70	1
Diuron	June 2, 2025	ND	150	0.03

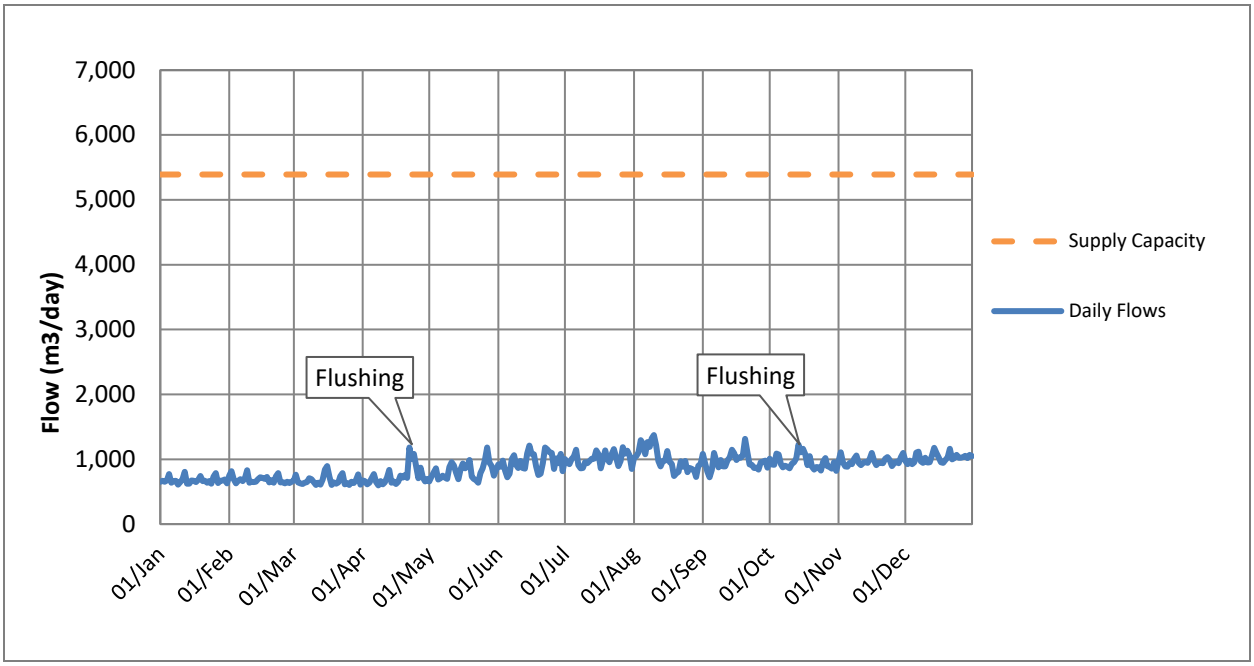
Parameter	*Sample Date*	*Result (µg/L)*	*MAC (µg/L)*	*MDL (µg/L)*
Glyphosate	June 2, 2025	ND	280	1
Malathion	June 2, 2025	ND	190	0.02
2-methyl-4chlorophenoxyacetic acid (MCPA)	June 2, 2025	ND	100	0.12
Metolachlor	June 2, 2025	ND	50	0.01
Metribuzin	June 2, 2025	ND	80	0.02
Monochlorobenzene	June 2, 2025	ND	80	0.30
Paraquat	June 2, 2025	ND	10	1
Pentachlorophenol	June 2, 2025	ND	60	0.15
Phorate	June 2, 2025	ND	2	0.01
Picloram	June 2, 2025	ND	190	1
Polychlorinated Biphenyls(PCB)	June 2, 2025	ND	3	0.04
Prometryne	June 2, 2025	ND	1	0.03
Simazine	June 2, 2025	ND	10	0.01
Terbufos	June 2, 2025	ND	1	0.01
Tetrachloroethylene	June 2, 2025	ND	10	0.35
2,3,4,6-Tetrachlorophenol	June 2, 2025	ND	100	0.20
Triallate	June 2, 2025	ND	230	0.01
Trichloroethylene	June 2, 2025	ND	5	0.44
2,4,6-Trichlorophenol	June 2, 2025	ND	5	0.25
Trifluralin	June 2, 2025	ND	45	0.02
Vinyl Chloride	June 2, 2025	ND	1	0.17

APPENDIX 'B': WATER QUANTITY SUMMARY

2025 Average vs Maximum Daily Flow Rates



2025 Daily Flow



In 2025 the Thamesford Supply Capacity, Dynamic Supply Capacity, and Firm Capacity were the same.

2025 Total Production by Well