North Middlesex Distribution System

Waterworks #260006529
System Category – Large Municipal Residential

Annual Drinking Water Report

Prepared For: Municipality of North Middlesex

Reporting Period of January 1 – December 31, 2024

Issued: February 13, 2025

Revision: 0

Operating Authority:

OCWA

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

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Overview

This report fulfills requirements of Ontario Regulation 170/03 Section 11 and Schedule 22. The report must be made available to anyone that requests a copy of the report. By March 31, 2025 the report must be provided to members of municipal council.

Report Availability

This system does not serve more than 10 000 residences and the annual reports will be available to residents at the Municipal Office as well as on the municipal website. Notification will be at the Municipal Office and copies provided free of charge if requested. The Municipal Office is located at 229 Main Street, Parkhill, Ontario, N0M 2K0.

System Process Description

The North Middlesex Distribution System (DWS# 260006529) provides drinking water to consumers within the Municipality of North Middlesex. The North Middlesex Distribution System purchases potable water from the Lake Huron Primary Water Supply System (LHPWSS); water can enter the North Middlesex Distribution System from five points along the LHPWSS main transmission line. Primary and secondary disinfection is supplied from LHPWSS. There are no treatment chemicals used within the North Middlesex Distribution System.

The North Middlesex Distribution System is comprised of:

- one water tower;
- two underground water reservoirs;
- two booster pump stations;
- two booster pumps located in the LHPWSS McGillivray Booster Station; and,
- watermains and appurtenances such as hydrants, air release, pressure relief, isolation and sustaining valves.

The North Middlesex Distribution System is connected to the East Lambton Shores Distribution System (DWS# 260006568) and the Lucan Biddulph Distribution System (DWS# 260003071). The East Lambton Shores Distribution System connection can supply water to a section of the North Middlesex Distribution System if necessary or in an emergency situation. The East Lambton Shores Distribution System (Thedford) is located in the Municipality of Lambton Shores and is operated by Jacobs. The Lucan Biddulph Distribution System (Lucan) is operated by Jacobs and supplies water to the hamlet of Clandeboye located in the Municipality of North Middlesex.

Summary of Non-Compliance

Adverse Water Quality Incidents

Under the *Safe Drinking Water Act*, O. Reg 170/03, any adverse water quality incidents (AWQI) are required to be reported to the Ministry of the Environment, Conservation and Parks (MECP) and corrective action taken. Refer to Table 1 below for a summary of AWQI incidents in 2024.

Table 1: *Adverse Water Quality Incidents*

Date	AWQI #	Problem	Details	Legislation	Corrective Action Taken
There were no AWQI's reported during the reporting period.					

Non-Compliance

Under the *Safe Drinking Water Act*, O. Reg 170/03, any events where legislative requirements were not met are required to be reported to the MECP and corrective actions taken. Refer to Table 2 below for a summary of non-compliance incidents in 2024.

Table 2*: Summary of Non-Compliance Incidents*

Legislation	Requirement(s) system failed to meet	Duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliance issues reported during the reporting period.				

Non-Compliance Identified in a Ministry Inspection:

The routine MECP Inspections have an Inspection Rating Record. This record evaluates the system to provide information for the owner/operator on areas that need to be improved. The particular areas that were evaluated for the North Middlesex Distribution System were: Certification and Training, Logbooks, Operations Manuals, Reporting and Corrective Actions, Treatment Processes, and Water Quality Monitoring. This system received 0 out of 321 non-compliance ratings and as such received 100% for the Final Inspection Rating.

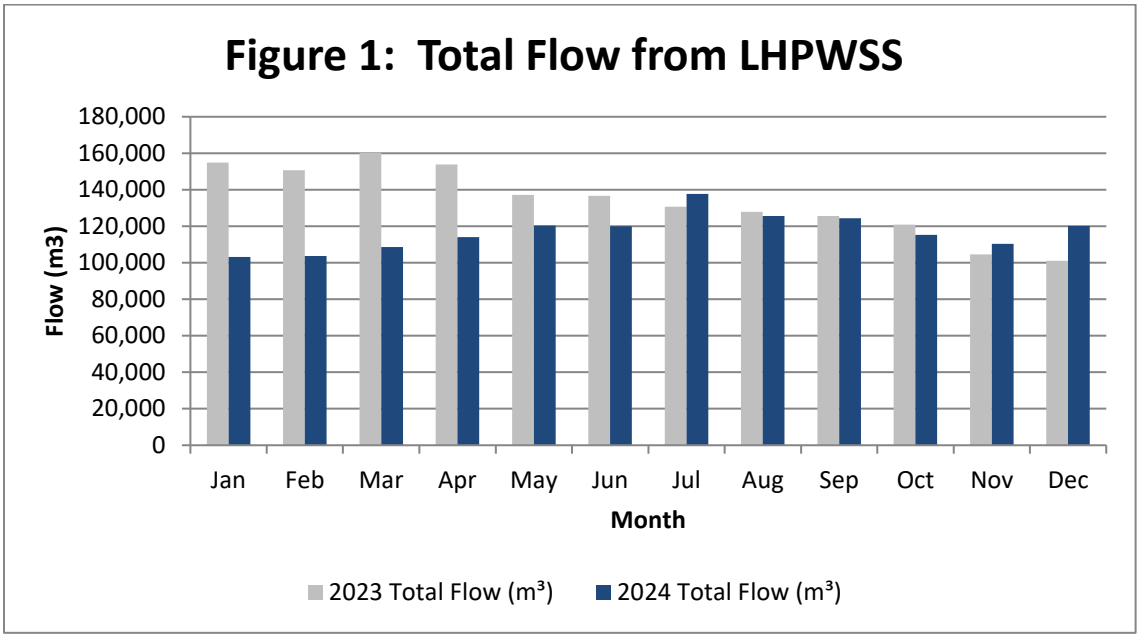
Table 3*: Non-Compliances Identified in a Ministry Inspection*

Legislation	requirement(s) system failed to meet	duration of the failure (i.e. date(s))	Corrective Action	Status
There were no non-compliances identified in the Inspection Report.				

Flows

The total flow to the North Middlesex Distribution System from LHPWSS was 1 403 559 m^3. This is a 12% decrease from 2023. This decrease was due to a significant watermain leak that was repaired upon detection in 2023. See Figure 1 below for monthly flows to the North Middlesex Distribution System.

Figure 1: *Monthly Flows to the North Middlesex Distribution System*



The North Middlesex Distribution System Municipal Drinking Water License (License Number: 002-101) does not identify a system rated capacity. The agreement between the Municipality of North Middlesex and the LHPWSS Board of Management (Regional Water Supply) does not specify a maximum water taking volume.

The total flow and average daily flows by month for 2024 are listed in Table 4 below.

Table 4: *North Middlesex Distribution System Flows*

Month	Total Flow (m^3)	Average Daily Flow (m^3)
January	103 124	3326.58
February	103 632	3701.14
March	108 701	3506.48
April	113 995	3799.83
May	120 421	3884.55
June	120 028	4000.93
July	137 804	4445.29
August	125 625	4052.42
September	124 422	4147.4
October	115 285	3718.87
November	110 315	3677.17
December	120 207	3877.65
TOTAL	1 403 559	-
MAXIMUM	137 804	4445.29
AVERAGE	116 963.3	3844.86

Regulatory Sample Results Summary

Microbiological Testing

To meet regulatory requirements, the distribution system is sampled on a weekly basis at various locations for E. coli, Total Coliforms and heterotrophic plate count (HPC). The regulatory limit for Total Coliform and E. coli is zero, heterotrophic plate count (HPC) doesn't have a limit. Refer to Table 5 below.

Table 5: *Microbiological Testing Summary*

	No. of Samples Collected	Range of E.Coli Results (cfu/100mL)		Range of Total Coliform Results (cfu/100mL)		No. of HPC Samples Collected	Range of HPC Results (cfu/mL)	
		Min	Max	Min	Max		Min	Max
Distribution Water	216	0	0	0	0	57	10	10

Operational Testing

Free chlorine residuals are monitored throughout the distribution system to meet regulatory requirements and ensure adequate secondary disinfection is provided. The regulatory requirement for free chlorine residual is a minimum of 0.05 mg/L with an objective of 0.20 mg/L throughout the distribution system. Refer to Table 6 below.

Table 6: *Free Chlorine Residuals*

Parameter	No. of Samples Collected	Range of Results	
		Minimum	Maximum
Free Chlorine Residual, grab (mg/L)	788	0.58	1.30

Inorganic Parameters

Schedule 15.1 Sampling:

Schedule 15.1 Sampling is required under O. Reg 170/03. This includes sampling for lead, alkalinity and pH. The North Middlesex Distribution system is under reduced sampling. As such, no residential plumbing samples were required to be collected. Monitoring the pH and alkalinity in the distribution system is essential to ensure adequate buffering for corrosion control and to minimize exposure to metals such as lead. Refer to Table 7 below.

Table 7*: Schedule 15.1 Sample Results*

Distribution System	Number of Samples	Range of Results		MAC (ug/L)	Number of Exceedances
		Minimum	Maximum		
Alkalinity (mg/L)	6	82	86	n/a	n/a
pH	6	7.77	8.51	n/a	n/a
Lead (ug/l)	6	0.01	0.52	10	0

Organic Parameters

Organic parameters are tested quarterly as a requirement under O. Reg 170/03. This includes testing for chlorine byproducts including Trihalomethane and Haloacetic Acid. Refer to Table 8 below.

***Table 8**: Organic Parameter Testing*

	Annual Running Average	MAC	Number of Exceedances
Distribution Water			
Trihalomethane: Total (ug/L) Annual Average	28.0	100	0
Haloacetic Acids: Total (ug/L) Annual Average	9.85	80	0

MAC = Maximum Allowable Concentration as per O. Reg 169/03

Additional Legislated Samples

There are no additional sampling requirements within the North Middlesex Distribution System.

Major Maintenance and Capital Summary

The North Middlesex Distribution System completed a number of repairs, installations, replacements and projects as listed below in Table 9. These represent the major expenses incurred in 2024.

Table 9: *Major Maintenance*

Item	Description
1	Watermain Repairs, Appurtenance Repairs
2	Queen Street Watermain Replacement – Ailsa Craig
3	Altitude Valve Set Point Adjustments
4	Air Relief Valve and Pressure Gauge Replacements
5	Milltronics Adjustments/Repairs – Mt. Carmel Reservoir
6	Chlorine Trending Screen Replacement – Ailsa Craig Tower
7	Sample Station Piping/Valve Replacements
8	Meter Pit Installations
9	PLC Upgrades – Mt. Carmel Reservoir, West Williams Booster Station
10	Blow Off Installations
11	Ailsa Craig Tower Inspection and Disinfection
12	Fire Flow Testing

Revision History

Date	Revision #	Revision Notes
February 13, 2025	0	Issued Report