

Lambton Area Water Supply System



Waterworks # 210000906
System Category – Large Municipal Residential

Annual Drinking Water Report

Prepared For: Lambton Area Water Supply System
Joint Board of Management

Reporting Period of January 1st – December 31st, 2024

Issued: February 19, 2025

Revision: 0

Operating Authority:



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Overview

This report fulfills requirements of Ontario Regulation 170/03 Section 11. The report must be made available to anyone that requests a copy of the report. By February 28th, 2025 the report must be provided to municipal members.

Report Availability

This system serves more than 10,000 people, the annual reports are available to anyone free of charge on the LAWSS website (www.lawss.org) or upon request. Listed below is the location where the Annual Report required under O. Reg. 170/03 Section 11 and Schedule 22 is available for inspection or to receive a copy:

Location	Address	Telephone
Lambton Area Water Supply System	1215 Fort St. Sarnia, ON N7V 1M1	519-344-7429

A copy of this report has been provided to the drinking water systems listed in the table below that receive all their drinking water from LAWSS. A copy of this annual report can be provided free of charge by contacting the drinking water system owners listed below.

Drinking Water System Name	DWS#	Contact Information to obtain copy of Annual Report
Sarnia Distribution System	260003136	Sarnia City Hall 255 N Christina St. Sarnia, ON 519-332-0330
Village of Point Edward Distribution System	210000924	Village of Point Edward Municipal Office 135 Kendall St. Pt. Edward, ON 519-337-3021
St. Clair Distribution System	260006464	St. Clair Civic Centre 1155 Emily St. Mooretown, ON 519-867-2021
Plympton-Wyoming Distribution System	260006594	Town of Plympton Wyoming Municipal Office 546 Niagara St. Wyoming, ON 519-845-3939
Township of Warwick Distribution System	260001799	Township of Warwick Municipal Office 6332 Navoo Road Warwick, ON 519-849-3926
West Lambton Shores Water Distribution System	260006581	Lambton Shores Municipal Office 7883 Amtelcom Parkway Forest, ON 519-786-2335
Alvinston Distribution System	260040170	Township of Brooke Alvinston Municipal Office 3234 River Road Alvinston, ON 519-898-2173

System Process Description

The Lambton Area Water Supply System (LAWSS) is a direct filtration facility with a maximum rated capacity of 181,844 m³/day. The Water Treatment Plant (WTP) uses chemically assisted filtration with disinfection. The facility consists of an intake system, a low lift pumping system, a treatment system and distribution pumping system that supplies water to seven different drinking water systems. Water is drawn into the plant (a zebra mussel chemical control system is available when needed) via a 1675 mm intake pipe, located approximately 100 m into the St. Clair River at a depth of 15 m. The water passes through travelling screens prior to entering the surge wells and pre-disinfection is utilized. Water flows to the low lift pump wet wells where a total of 4 vertical turbine pumps are located and used as needed. The water is then pumped to a common discharge header where a coagulant is added and then flash mixed. Powdered activated carbon (PAC) is also applied at this location when needed to control taste and odor problems. The water is then flocculated with polymer being added when needed. Polymer can be added to any and all of the following as required: to the flocculation trains, filter inlet channels and each filter. Water from the flocculators is then sent to be filtered by dual media filters (10 filters in total). The filter effluents combine into two clearwells via gravity where sodium hypochlorite is added. To increase the chlorine contact time, the treated water is diverted to two baffled reservoirs (in series with total capacity of 67460 m³). The water is fluoridated upon exiting the reservoirs. Six vertical turbine pumps are available for supplying water to the distribution system. The water treatment process and distribution components are controlled by a dedicated supervisory control and data acquisition (SCADA) computer system and are monitored by a certified operator 24 hours a day. Emergency generators powered by diesel are available at the WTP to keep the plant in operation should a power failure occur. The utility serves a large part of Lambton County and has about 250 km of water main of various size and materials. The LAWSS distribution system has three standpipes and one elevated tower. The East Lambton Booster Station (ELBS) has a water storage capacity of 9,000 m³ and the West Lambton Pumping Station (WLPS) has 90,000 m³ of water storage capacity. The booster stations are controlled and monitored from the WTP via the SCADA system. Backwash from the dual media filters is treated using a high rate clarification process (ACTIFLO). The clarified water is dechlorinated and then discharged to the St. Clair River and the settled material is sent to the Sarnia Water Pollution Control Plant for final treatment and disposal. This system is referred to as the Residual Management System.

Emergency Water Line connections exist between the LAWSS system and the following drinking water systems to supply and/or receive water during emergencies:

- Wallaceburg Water Treatment Plant And Distribution Subsystem (DWS# 220003341): A connection exists at Whitebread Line and Highway #40, St. Clair Twp. for LAWSS to either receive or supply water
- Petrolia Drinking Water System (DWS# 220002903): A connection exists at Confederation Line and Ploughing Match Rd., Plympton-Wyoming for LAWSS to supply water
- West Lambton Shores Distribution System (DWS# 260006581): A connection exists at Lakeshore Rd. and the Northwest corner of Ravenswood Rd, Lambton Shores for LAWSS to either receive or supply water

Treatment chemicals used during the reporting year:

Chemical Name	Use	Supplier
Sodium Hypochlorite	Pre and post disinfection	Lavo
Hydrofluosilicic Acid	Fluoridation	PVS Benson
Clar+Ion A7	Coagulation	Chemtrade
Powdered Activated Carbon	Taste and Odor (when required)	Brenntag
Polymer 8103+	Filter/Coagulant aid (when required)	Nalco

Polymer Norfloc 14120	Residual Management System Coagulant	Northland Chemicals
Sodium Bisulfite	Residual Management System dechlorination system	Anchem

Note: all water treatment chemicals listed in the table above are NSF/ANSI approved and certified.

Corrective Actions

Adverse Water Quality Incidents

Date	AWQI #	Location	Problem	Details	Legislation	Corrective Action Taken
There were no adverse water quality incidents reported during the reporting period.						

Regulatory Sample Results Summary

Microbiological Testing

	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
Raw Water	53	0	6	0	26			
Treated Water	53	0	0	0	0	53	10	10
Distribution Water	274	0	0	0	0	168	10	320

Operational Testing

Parameter	No. of Samples Collected	Range of Results		
		Minimum	Average	Maximum
Turbidity; On-Line (NTU) - RW	8760	0.16	1.23	14.10
Turbidity, On-Line (NTU) - TW	8760	0.040	0.068	0.760
Turbidity, On-Line (NTU) - Filt1	8760	0.003	0.043	0.484
Turbidity, On-Line (NTU) - Filt2	8760	0.005	0.023	0.430
Turbidity, On-Line (NTU) - Filt3	8760	0.001	0.037	0.776
Turbidity, On-Line (NTU) - Filt4	8760	0.005	0.021	0.424
Turbidity, On-Line (NTU) - Filt5	8760	0.003	0.043	0.813
Turbidity, On-Line (NTU) - Filt6	8760	0.013	0.033	0.407
Turbidity, On-Line (NTU) - Filt7	8760	0.006	0.033	0.443
Turbidity, On-Line (NTU) - Filt8	8760	0.004	0.018	0.544
Turbidity, On-Line (NTU) - Filt9	8760	0.001	0.03	0.240
Turbidity, On-Line (NTU) - Filt10	8760	0.003	0.016	0.210
Free Chlorine Residual, On-Line (mg/L) - TW	8760	0.82	1.64	1.99

Free Chlorine Residual, On-Line (mg/L) – East Lambton Booster Station Inlet	8760	0.77	1.42	1.76
Free Chlorine Residual, On-Line (mg/L) – West Lambton Pumping Station Inlet	8760	0.73	1.34	2.99 ¹
Fluoride, online (mg/L) ²	8760	0.01	0.50	1.99

1 – Two momentary spikes that restored to normal range within minutes

2 – Low min. and avg. readings caused by fluoridation system being offline for repairs for several months, therefore showing lower than 0.6-0.8 mg/L target fluoride residual range. All readings >1.5mg/L were due to calibrations or verified by handheld to meet regulatory requirements.

Inorganic Parameters

Inorganic parameters are tested as a requirement under O. Reg. 170/03. Sodium and Fluoride are required to be tested every 5 years. Nitrate and Nitrite are tested quarterly as required under O. Reg. 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

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

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	No. of Exceedances	
				MAC	1/2 MAC
Treated Water					
Antimony: Sb (ug/L) - TW	2024/05/06	< MDL 0.6	6	No	No
Arsenic: As (ug/L) - TW	2024/05/06	< MDL 0.2	10	No	No
Barium: Ba (ug/L) - TW	2024/05/06	13.9	1000	No	No
Boron: B (ug/L) - TW	2024/05/06	14	5000	No	No
Cadmium: Cd (ug/L) - TW	2024/05/06	< MDL 0.003	5	No	No
Chromium: Cr (ug/L) - TW	2024/05/06	0.24	50	No	No
Mercury: Hg (ug/L) - TW	2024/05/06	< MDL 0.01	1	No	No
Selenium: Se (ug/L) - TW	2024/05/06	0.12	50	No	No
Uranium: U (ug/L) - TW	2024/05/06	0.143	20	No	No
Additional Inorganics					
Nitrite (mg/L) - TW	2024/02/12	0.279	10	No	No
Nitrite (mg/L) - TW	2024/05/06	0.351	10	No	No
Nitrite (mg/L) - TW	2024/08/06	0.36	10	No	No
Nitrite (mg/L) - TW	2024/11/04	0.266	10	No	No
Nitrate (mg/L) - TW	2024/02/12	< MDL 0.003	1	No	No
Nitrate (mg/L) - TW	2024/05/06	< MDL 0.003	1	No	No
Nitrate (mg/L) - TW	2024/08/06	< MDL 0.003	1	No	No
Nitrate (mg/L) - TW	2024/11/04	< MDL 0.003	1	No	No
Sodium: Na (mg/L) - TW	2020/05/04	< MDL 0.003	20*	No	No

*There is no "MAC" for Sodium. The aesthetic objective for sodium in drinking water is 200 mg/L. The local Medical Officer of Health should be notified mg/L 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.

Schedule 15.1 Sampling:

The Schedule 15.1 Sampling is required under O.Reg 170/03. This system is exempt from sampling, therefore no samples were required. Schedule 15.1 results are available from each municipality from their annual results.

Organic Parameters

Organic parameters are tested annually as a requirement under O.Reg 170/03. In the event any of the parameters exceed half of the maximum allowable concentration the parameter is required to be sampled quarterly.

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Treated Water					
1,1-Dichloroethylene (ug/L)-TW	2024/05/06	< MDL 0.33	14	No	No
1,2-Dichlorobenzene (ug/L)-TW	2024/05/06	< MDL 0.41	200	No	No
1,2-Dichloroethane (ug/L)-TW	2024/05/06	< MDL 0.35	5	No	No
1,4-Dichlorobenzene (ug/L)-TW	2024/05/06	< MDL 0.36	5	No	No
2,3,4,6-Tetrachlorophenol (ug/L)-TW	2024/05/06	< MDL 0.2	100	No	No
2,4,6-Trichlorophenol (ug/L)-TW	2024/05/06	< MDL 0.25	5	No	No
2,4-Dichlorophenol (ug/L)-TW	2024/05/06	< MDL 0.15	900	No	No
2,4-Dichlorophenoxy acetic acid (2,4-D) (ug/L)-TW	2024/05/06	< MDL 0.19	100	No	No
2-methyl-4-chlorophenoxyacetic acid (MCPA) (ug/L)-TW	2024/05/06	< MDL 0.12	100	No	No
Alachlor (ug/L) -TW	2024/05/06	< MDL 0.02	5	No	No
Atrazine + N-dealkylated metabolites (ug/L)-TW	2024/05/06	0.02	5	No	No
Azinphos-methyl (ug/L)-TW	2024/05/06	< MDL 0.05	20	No	No
Benzene (ug/L)-TW	2024/05/06	< MDL 0.32	1	No	No
Benzo(a)pyrene (ug/L)-TW	2024/05/06	< MDL 0.004	0.01	No	No
Bromoxynil (ug/L)-TW	2024/05/06	< MDL 0.33	5	No	No
Carbaryl (ug/L)-TW	2024/05/06	< MDL 0.05	90	No	No
Carbofuran (ug/L) -TW	2024/05/06	< MDL 0.01	90	No	No
Carbon Tetrachloride (ug/L) -TW	2024/05/06	< MDL 0.17	2	No	No
Chlorpyrifos (ug/L) -TW	2024/05/06	< MDL 0.02	90	No	No
Diazinon (ug/L)-TW	2024/05/06	< MDL 0.02	20	No	No
Dicamba (ug/L)-TW	2024/05/06	< MDL 0.2	120	No	No
Dichloromethane (Methylene Chloride) (ug/L)-TW	2024/05/06	< MDL 0.35	50	No	No
Diclofop-methyl (ug/L)-TW	2024/05/06	< MDL 0.4	9	No	No
Dimethoate (ug/L)-TW	2024/05/06	< MDL 0.06	20	No	No
Diquat (ug/L)-TW	2024/05/06	< MDL 1	70	No	No
Diuron (ug/L)-TW	2024/05/06	< MDL 0.03	150	No	No

	Sample Date (yyyy/mm/dd)	Sample Result	MAC	Number of Exceedances	
				MAC	1/2 MAC
Glyphosate (ug/L)-TW	2024/05/06	< MDL 1	280	No	No
Malathion (ug/L)-TW	2024/05/06	< MDL 0.02	190	No	No
Metolachlor (ug/L)-TW	2024/05/06	< MDL 0.01	50	No	No
Metribuzin (ug/L)-TW	2024/05/06	< MDL 0.02	80	No	No
Monochlorobenzene (Chlorobenzene) (ug/L)-TW	2024/05/06	< MDL 0.3	80	No	No
Paraquat (ug/L)-TW	2024/05/06	< MDL 1	10	No	No
PCB (ug/L)-TW	2024/05/06	< MDL 0.04	3	No	No
Pentachlorophenol (ug/L)-TW	2024/05/06	< MDL 0.15	60	No	No
Phorate (ug/L)-TW	2024/05/06	< MDL 0.01	2	No	No
Picloram (ug/L)-TW	2024/05/06	< MDL 1	190	No	No
Prometryne (ug/L)-TW	2024/05/06	< MDL 0.03	1	No	No
Simazine (ug/L)-TW	2024/05/06	< MDL 0.01	10	No	No
Terbufos (ug/L)-TW	2024/05/06	< MDL 0.01	1	No	No
Tetrachloroethylene (ug/L)-TW	2024/05/06	< MDL 0.35	10	No	No
Triallate (ug/L) -TW	2024/05/06	< MDL 0.01	230	No	No
Trichloroethylene (ug/L)-TW	2024/05/06	< MDL 0.44	5	No	No
Trifluralin (ug/L)-TW	2024/05/06	< MDL 0.02	45	No	No
Vinyl Chloride (ug/L)-TW	2024/05/06	< MDL 0.17	1	No	No
Distribution Water					
HAA Total (ug/L) Annual Average-DW	2024	22.7	80	No	No
Trihalomethane: Total (ug/L) Annual Average-DW	2024	39.4	100	No	No

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

BDL = Below the laboratory detection level

Additional Legislated Samples

Residual Management

The municipal Drinking Water Licence requires monthly sampling of the Actiflo Treatment System Effluent on a monthly basis. There were no exceedances of the required parameters, refer to the table below for the summary of results.

Legal Document	Date of Issuance	Parameter	Annual Average Result (mg/L)	Annual Average Limit (mg/L)
MDWL 020-101	2020-10-20, updated 2024-08-02	Total Suspended Solids	<12.8	25
MDWL 020-101	2020-10-20, updated 2024-08-02	Aluminum	0.16	n/a
MDWL 020-101	2020-10-20, updated 2024-08-02	Total Chlorine Residual	0.01	0.02

Hazardous Algae Bloom (HAB) Sampling

There were no blooms identified in the source water in 2024. No microcystin samples were required to be collected.

Major Maintenance and Capital Summary

Item	Description	Cost
1.	New Generators Replacement	\$62,861
2.	Port Lambton Standpipe Rehabilitation	\$39,224
3.	WTP HL#6 Control Valve Replaced & VFD Calibrated	\$96,318
4.	Filter Gallery Control Panel Construct.	\$43,734
5.	WLPS -Reservoir Rehabilitation and Pump Upgrade Engineering	\$193,268
6.	Diesel Fuel Tank Replacement & Generator Plenum Upgrade	\$141,223
7.	SCADA 13 - Main Plant Various Panel Replacement	\$54,842
8.	Review of LAWSS' Corporate Structure	\$8,330
9.	WLPS Reservoirs Rehabilitation	\$3,377,315
10.	WTP Traveling Screens Replacement	\$100,256
11.	SCADA Phase 3 upgrades	\$17,988
12.	Mapping and Consulting - Secondary Intake	\$61,720
13.	WTP RMS Optimization	\$29,237

14.	Miscellaneous Engineering Services	\$46,258
15.	VFD for floc mixers replacement	\$17,619
16.	Turbidity meter replacement (5 in 2024)	\$25,002
17.	Filter drain sluice gate actuators (1)	\$9,886
18.	Main plant HVAC system annual maintenance	\$11,247
19.	Replace eyewash stations for the HFS area	\$14,648
20.	Replace service water flow meter	\$16,710
21.	Surge anticipator overhaul	\$14,403
22.	Replacement of WTP UPS system in MCC room	\$33,380
23.	3rd party electrical at the WTP	\$36,405
24.	Low Lift wet well clean out	\$62,855
25.	Replace/repair heaters at WLPS	\$15,111
26.	Forest turbine flow meter replacement	\$14,811
27.	ROV inspection at Indian Rd. Tower and Forest Standpipe	\$5,760
28.	Replace UPS system on Point Edward flow meters	\$11,487
29.	Complete repairs on West Lambton Pumping Station generators	\$53,028
30.	Annual energy efficiency (EL exterior and WTP emergency lighting)	\$9,859

Revision History

Date	Revision #	Revision Notes
Feb. 19, 2025	0	Created report.