Drinking-Water System Number:	**210000906**
Drinking-Water System Name:	Lambton Area Water Supply System
Drinking-Water System Owner:	Lambton Area Water Supply System Joint Board of Management
Drinking-Water System Category:	Large Municipal Residential System
Period being reported:	January 1, 2022 to December 31, 2022

Complete if your Category is Large Municipal Residential or Small Municipal Residential	***Complete for all other Categories.***
Does your Drinking-Water System serve more than 10,000 people? **Yes [X] No [ ]** **Is your annual report available to the public at no charge on a web site on the Internet?** **Yes [X] No [ ]** **The report is available at:** **www.lawss.org**	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve?** **Yes [ ] No [X]** **Number of Interested Authorities you report to:** N/A **Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?** **Yes [ ] No [X]**

Locations where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

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

Sarnia City Hall
255 N Christina St. Sarnia, ON
N7T 7N2
519-332-0330

Village of Point Edward Municipal Office
135 Kendall St. Pt. Edward, ON
N7M 4G6
519-337-3021

St. Clair Civic Centre
1155 Emily St. Mooretown, ON
N0N 1M0
519-867-2021

Town Of Plympton-Wyoming Municipal Office
546 Niagara St. Wyoming, ON
N0N 1T0
519-845-3939

Township of Warwick Municipal Office
6332 Nauvoo Rd. Watford, ON
N0M 2S0
519-849-3926

Lambton Shores Municipal Office
7883 Amtelecom Parkway Forest, ON
N0N 1J0
519-786-2335

Township of Brooke-Alvinston Municipal Office
3234 River St. P.O. Box 28 Alvinston, ON
N0N 1A0
519-898-2173

This list shows all the Drinking-Water Systems, which receive all of their drinking water from the Lambton Area Water Supply System:

Drinking Water System Name	Drinking Water System Number
Sarnia Distribution System	260003136
Village of Point Edward Distribution System	210000924
St. Clair Distribution System	260006464
Plympton-Wyoming Distribution System	260006594
Township of Warwick Distribution System	260001799
Alvinston Distribution System	260040170
Municipality of Lambton Shores (West Lambton Shores Water Distribution System)	260006581

Did you provide a copy of your annual report to all Drinking-Water System owners that are connected to you and to whom you provide all of its drinking water?

Yes [X] No [ ]

Indicate how you notified system users that your annual report is available, and is free of charge.

[X] Public access/notice via the web
[X] Public access/notice via Government Office
[ ] Public access/notice via a newspaper
[ ] Public access/notice via Public Request
[ ] Public access/notice via a Public Library
[ ] Public access/notice via other method

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Description of the Lambton Area Water Supply System

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 provide water to either system in case of emergencies:

Chatham-Kent: A connection exists at Whitebread Line and Highway #40
Petrolia: A connection exists at Confederation Line and Ploughing Match Rd.
Lambton Shores: A connection exists at Lakeshore Rd. and the Northwest corner of Ravenswood Rd.

The following is a list of all water treatment chemicals used over this reporting period

Sodium Hypochlorite: Pre and post disinfection
Hydrofluosilicic Acid: Fluoridation
Clar+Ion A7: Coagulation
Powdered Activated Carbon: Taste and Odor (when required)
Polymer 8103+: Filter/Coagulant aid (when required)
Polymer Norfloc 14120: Residual Management System coagulant
Sodium Bisulfite: Residual Management System dechlorination system

Note: All water treatment chemicals are NSF/ANSI approved and certified.

There were significant expenses incurred to the following.

[X] Install required equipment
[X] Repair required equipment
[X] Replace required equipment

The following is a brief description and a breakdown of monetary expenses incurred.

WTP-Backwash Rate Control Valve Actuator	$8,752
WTP- VFD Flocc Mixers - Purchase 1 for stock	$12,484
Annual Energy Efficiency Upgrade Project	$11,266
WTP-Replacement of 4 turbidity meters	$17,482
WTP-Replace N & S Clearwell hypo pumps	$22,338
WTP-Rotork Filter to Waste Replacement (2/yr)	$18,343
WTP-Replace West Flash Mixer Bearings (4 in total)	$17,123
RMS-Replace sludge holding tank mixer	$5,295
Dist-UPS Replacement at Towers	$7,902
Dist-Indian Rd Tower grounds maintenance	$12,720
Dist-Flow meter removal @ 330 Courtright Line	$9,077
Dist-16" mainline valve replacement Chamber 2	$14,246
Annual Energy Efficiency Upgrade Project	$10,499
Emergency Phone System	$16,740
Emergency EQ Tank Pump Repair	$6,804
WTP – High Lift Pump #2 Emergency Repair	$199,089
WTP – High Lift Pump #2 Corrosion Protection	$8,677
WTP – High Lift Pump #1 Emergency Repair	$38,370
New Generators Replacement	$214,361
WTP Main Plant HVAC Replacement	$1,581,855
SCADA Server Upgrade	$195,749
Port Lambton Standpipe Rehabilitation	$410,771
WLPS South Reservoir Rehab/Rebuild	$32,557
WTP HL#6 Control Valve replace & VFD Cali.	$34,612

SOGR Filter Gallery Control Panel Construct.	$14,355
Low Lift Station Cleanout	$334,465
System – Master Plan Rebuild	$11,864
System – Asset Management Plan	$14,178
Engineering Studies	$67,683
WTP RMS Optimization	$18,305

The following are the notices submitted in accordance with subsection 18(1) of the Safe Drinking-Water Act or section 16-4 of Schedule 16 of O.Reg.170/03 and reported to Spills Action Centre

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
No incidents to report					

The below table shows microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

	Number of Samples	Range of E.Coli Or Fecal Results (min #) - (max #) Units: cfu /100 mL	Range of Total Coliform Results (min #)- (max #) Units: cfu /100 mL	Range of Background Results (min #)- (max #) Units: cfu /100 mL	Range of HPC Results (min #)- (max #) Units: cfu /100 mL
Raw	52	0-6	0-40	0-880	N/A
Treated	52	0	0	0	<10

The table below shows operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

	Number of Grab Samples	Range of Results (min #)-(max #)	Unit of Measure
Turbidity	**8760**	**0.020-0.190**	**NTU**
Chlorine	**8760**	**0.00-2.10**	**mg/L**
Fluoride	**8760**	**0.00-2.0**	**mg/L**

Notes: Turbidity is measured on each filter effluent line at a frequency greater than is required under O. Reg 170/03 Schedule 6-5. Fluoride max residual of 2.0 mg/L was caused by testing of critical control alarm points.

The table below is a summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument. The three parameters on this list are a requirement for the Residual Management System.

Date of legal instrument issued	Parameter	Result Range	Unit of Measure
October 7, 2020	Total Suspended Solids	3-24	mg/L
October 7, 2020	Aluminum	0.023-0.302	mg/L
October 7, 2020	Total Chlorine Residual	0-0.15	mg/L

The table below is a summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	May 2, 2022	<0.6	ppb	No
Arsenic	May 2, 2022	<0.2	ppb	No
Barium	May 2, 2022	14.5	ppb	No
Boron	May 2, 2022	15.0	ppb	No
Cadmium	May 2, 2022	<0.003	ppb	No
Chromium	May 2, 2022	0.27	ppb	No
Mercury	May 2, 2022	<0.01	ppb	No
Selenium	May 2, 2022	0.12	ppb	No
Sodium	May 4, 2020	6.56	mg/L	No
Uranium	May 2, 2022	0.144	ppb	No
Nitrite	Nov 7, 2022	<0.003	mg/L	No
Nitrate	Nov 7, 2022	0.272	mg/L	No

The table below is a summary of lead testing under Schedule 15.1 during this reporting period (applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Unit of Measure	Number of Exceedances
Plumbing	-	-	-	-
Distribution	-	-	-	-

Note: Lead results are available from each Municipality from their annual results.

The below table is a summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	May 2, 2022	<0.02	**ppb**	No
Atrazine + N-dealkylated metabolites	May 2, 2022	0.03	**ppb**	No
Azinphos-methyl	May 2, 2022	<0.05	**ppb**	No
Benzene	May 2, 2022	<0.32	**ppb**	No
Benzo(a)pyrene	May 2, 2022	<0.004	**ppb**	No
Bromoxynil	May 2, 2022	<0.33	**ppb**	No
Carbaryl	May 2, 2022	<0.05	**ppb**	No
Carbofuran	May 2, 2022	<0.01	**ppb**	No
Carbon Tetrachloride	May 2, 2022	<0.17	**ppb**	No
Chlorpyrifos	May 2, 2022	<0.02	**ppb**	No
Atrazine	May 2, 2022	0.01	**ppb**	No
Desethyl atrazine	May 2, 2022	0.01	**ppb**	No
Diazinon	May 2, 2022	<0.02	**ppb**	No
Dicamba	May 2, 2022	<0.20	**ppb**	No
1,2-Dichlorobenzene	May 2, 2022	<0.41	**ppb**	No
1,4-Dichlorobenzene	May 2, 2022	<0.36	**ppb**	No
1,2-Dichloroethane	May 2, 2022	<0.35	**ppb**	No
1,1-Dichloroethylene (vinylidene chloride)	May 2, 2022	<0.33	**ppb**	No
Dichloromethane	May 2, 2022	<0.35	**ppb**	No
2,4 Dichlorophenol	May 2, 2022	<0.15	**ppb**	No
2,4-Dichlorophenoxy acetic acid (2,4-D)	May 2, 2022	<0.19	**ppb**	No
Diclofop-methyl	May 2, 2022	<0.40	**ppb**	No
Dimethoate	May 2, 2022	<0.06	**ppb**	No
Diquat	May 2, 2022	<1.0	**ppb**	No
Diuron	May 2, 2022	<0.03	**ppb**	No
Glyphosate	May 2, 2022	<1.0	**ppb**	No
Malathion	May 2, 2022	<0.02	**ppb**	No
MCPA	May 2, 2022	<0.00012	**ppm**	No
Metolachlor	May 2, 2022	<0.01	**ppb**	No
Metribuzin	May 2, 2022	<0.02	**ppb**	No
Monochlorobenzene	May 2, 2022	<0.3	**ppb**	No
Paraquat	May 2, 2022	<1	**ppb**	No
Pentachlorophenol	May 2, 2022	<0.15	**ppb**	No
Phorate	May 2, 2022	<0.01	**ppb**	No

Picloram	May 2, 2022	<1.0	**ppb**	No
Polychlorinated Biphenyls(PCB)	May 2, 2022	<0.04	**ppb**	No
Prometryne	May 2, 2022	<0.03	**ppb**	No
Simazine	May 2, 2022	<0.01	**ppb**	No
HAA **(**NOTE**:** show latest annual average**)**		23.76	**ppb**	No
THM **(**NOTE**:** show latest annual average**)**		37.58	**ppb**	No
Terbufos	May 2, 2022	<0.01	**ppb**	No
Tetrachloroethylene	May 2, 2022	<0.35	**ppb**	No
2,3,4,6-Tetrachlorophenol	May 2, 2022	<0.20	**ppb**	No
Triallate	May 2, 2022	<0.01	**ppb**	No
Trichloroethylene	May 2, 2022	<0.44	**ppb**	No
2,4,6-Trichlorophenol	May 2, 2022	<0.25	**ppb**	No
Trifluralin	May 2, 2022	<0.02	**ppb**	No
Vinyl Chloride	May 2, 2022	<0.17	**ppb**	No

Below is a list of any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
N/A			