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Drinking-Water Systems Regulation O. Reg. 170/03

Drinking-Water System Number:	210000791
Drinking-Water System Name:	**Lake Huron Primary Water Supply System**
Drinking-Water System Owner:	Lake Huron Primary Water Supply System Joint Board of Management
Drinking-Water System Operating Authority:	Ontario Clean Water Agency (OCWA)
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2022 through 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 [ ]** **Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.** Lake Huron and Elgin Area Water Supply Systems c/o Regional Water Supply Division 235 North Centre Road, Suite 200 London, ON N5X 4E7 https://huronelginwater.ca/ Lake Huron Water Treatment Plant 71155 Bluewater Hwy. Grand Bend, ON	**Number of Designated Facilities served:** N/A **Did you provide a copy of your annual report to all Designated Facilities you serve?** **Yes [ ] No [ ]** **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 [ ]**

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List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Systems that receive their drinking water from the LHPWSS:

Drinking Water System Name	Drinking Water System Number
City of London Distribution System	260004917
Municipality of Bluewater (Bluewater Lakeshore Distribution)	260006542
Municipality of Bluewater (Hensall Distribution System)	260091650
Municipality of Lambton Shores (East Lambton Shores Water Distribution System)	260006568
Township of Lucan Biddulph (Lucan Biddulph Distribution System)	260003071
Municipality of Middlesex Centre (Middlesex Centre Distribution System)	260004202
Municipality of North Middlesex (North Middlesex Distribution System)	260006529
Municipality of Strathroy-Caradoc (Strathroy-Caradoc Distribution System)	260080106
Municipality of South Huron (South Huron Water Distribution System)	220001520

Systems that may receive their drinking water from the LHPWSS:

Drinking Water System Name	Drinking Water System Number
Municipality of Lambton Shores (West Lambton Shores Distribution System) *Normally supplied by the Lambton Area Water Supply System (LAWSS) but a connection to the LHPWSS exists	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 _____

Describe your Drinking-Water System

The Lake Huron Water Treatment Plant (WTP) employs pre-chlorination, screening, powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, post-chlorination, and pH adjustment using sodium hydroxide to treat raw water obtained from Lake Huron. The WTP intake crib and raw water intake pipe have an estimated gross capacity of 454.6 Megalitres/day (MLD). The WTP rated capacity is 340.0 MLD.

A Residuals Management Facility (RMF) providing equalization, clarification, sediment thickening and dechlorination is also housed in the main complex. Thickened sediment is dewatered by centrifuges and the sediment is sent to the landfill for final disposal. Clarified and dechlorinated liquid streams are sent back to Lake Huron through the plant drain via the diversion chamber.

The transmission system is comprised of the McGillivray Booster Pumping Station and Reservoir, the Exeter-Hensall Booster Pumping Station and Reservoir, Arva Terminal Reservoir, Komoka-Mt. Brydges Booster Pumping Station (PS#4) and associated interconnecting transmission water mains, which includes the primary, Strathroy, Exeter-Hensall, and Komoka-Mt. Brydges transmission water mains.

The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system.

List all water treatment chemicals used over this reporting period

Filter Aid Polymer (on an as-required basis)
Aluminum Sulphate
Powder Activated Carbon
Chlorine Gas
Sodium Hydroxide
Sodium Hypochlorite (Exeter Hensall Pumping Station)
Dewatering Polymer (Residuals Management Facility)
Sodium Bisulphite (Residuals Management Facility)

Were any significant expenses incurred to?

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

Please provide a brief description and a breakdown of monetary expenses incurred

Capital Projects:

- High Lift Pump Upgrade: Replaced discharge valve on high lift pumps #1 and #4
- High Lift Pump Upgrade: Replaced high lift pumps #2, #3 and #5
- High Lift Pump Upgrade: Installed new high lift pump #6
- McGillivray Booster Station HVAC and Electrical Upgrade: Detailed design
- Oneida Transmission Pipeline: Preliminary design
- Huron WTP Disinfection and Storage Upgrades: Class Environmental Assessment (EA) and preliminary design
- Huron Coagulation System Upgrade
- Asset Management Plan update
- Water Quality Facility Plan update
- Financial Plan update
- Addition of permanent construction site trailer pads
- Security upgrades: installation of cameras and swipe card access
- Powdered activated carbon (PAC) System Upgrade: Preliminary design
- Rebuilt low lift pump #3
- Replaced Clarifier #1 gear box
- North Flocculation walking beam rehabilitation
- Rebuilt North Flocculation gear boxes #1 and #2
- RMF Tank Repairs: Installed North and South equalization tank baffle walls
- Arva Reservoir concrete crack injection
- Replaced Arva Valve House 600V Motor Control Center (MCC)
- Replaced Arva Valve House pressure transmitters
- Installed four (4) Total Suspended Solids (TSS) analyzers in sedimentation area
- Replaced two (2) fire hydrants at the WTP
- Upgraded interior LED lighting at the McGillivray Booster Station
- Upgraded interior LED lighting at the WTP
- Replaced low lift building windows
- Installed low lift grit pump hand rails
- Installed settled water platform guardrails
- Replaced the chlorine building roof and ladder
- Replaced roof drain at the WTP
- Replaced the high lift building overhead door
- Replaced the powdered activated carbon building overhead door
- Replaced HVAC variable frequency drive (VFD)
- Repaired McGillivray booster pump1 spool piece and installed new dresser coupling
- Installed chamber venting on four (4) critical transmission pipeline chambers

Maintenance Projects:

- Repaired pipeline section #1-162
- Replacement of surge tank air compressor motors

- North clearwell concrete rehabilitation
- Filter #11 – 30” butterfly valve replacement
- Service water pumps rehabilitation
- Service water pump bases replacement
- Backwash pump bases replacement
- Caustic soda line insulation
- Installed new air relief valve before caustic pumps
- Installed new suction and discharge valves on service water pump #4
- Installed new spool piece on all service water pumps #1 - #4
- Rebuilt Residual Management Facility (RMF) centrifuge feed pumps
- Rebuilt filters #1 & #12 effluent actuators
- Replaced filter effluent valve shaft seals on filters #3, #5, #7 and #11
- Installed new blind flanges on Komoka-Mt. Brydges pipeline chambers #35 and #37
- Installed new air release valve (ARV) chambers in #32A and #34A
- Repaired McGillivray BSP4 ball valve

Provide details on 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
N/A	N/A	N/A	N/A	N/A	N/A

Microbiological testing done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period.

Location	Number of Samples	Range of E. coli Results (CFU/100mL) (min #)-(max #)	Range of Total Coliform Results (CFU/100mL) (min #)-(max #)	Range of HPC Results (CFU/1mL) (min #)-(max #)
Raw Water	105	(0)-(<100)	(0)-(11,900)	(<10)-(1,550)
Treated Water (WTP)	285	(0)-(0)	(0)-(0)	(<10)-(70)
Distribution (McGillivray PS)	56	(0)-(0)	(0)-(0)	(<10)-(10)
Distribution (North Exeter)	56	(0)-(0)	(0)-(0)	(<10)-(10)

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Location	Number of Samples	Range of E. coli Results (CFU/100mL) (min #)-(max #)	Range of Total Coliform Results (CFU/100mL) (min #)-(max #)	Range of HPC Results (CFU/1mL) (min #)-(max #)
Distribution (South Exeter)	54	(0)-(0)	(0)-(0)	(<10)-(20)
Distribution (Exeter-Hensall Reservoir)	52	(0)-(0)	(0)-(0)	(<10)-(10)
Distribution (Komoka-Mt. Brydges PS)	60	(0)-(0)	(0)-(0)	(<10)-(20)

Operational testing done under Schedule 7, 8 or 9 of Regulation 170/03 during the period covered by this Annual Report.

Parameter	Number of Grab Samples	Range of Results (min #)-(max #)
Treated Water Free Chlorine (mg/L)	Continuous Monitoring	(0.66)-(1.76)
Treated Water Free Chlorine (mg/L)	2139	(0.99)-(1.71)
Treated Water Turbidity (NTU)	Continuous Monitoring	(0.019)-(2.00)
Treated Water Turbidity (NTU)	2139	(0.019)-(0.127)
Filter #1 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.019)-(0.109)
Filter #2 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.037)-(0.409)
Filter #3 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.030)-(0.428)
Filter #4 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.022)-(0.116)
Filter #5 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.031)-(0.568)
Filter #6 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.028)-(0.996)
Filter #7 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.017)-(0.127)
Filter #8 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.030)-(0.772)
Filter #9 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.020)-(0.344)
Filter #10- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.038)-(0.586)
Filter #11- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.021)-(0.202)
Filter #12- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.021)-(1.136)*
Combined Filtered Water Turbidity (NTU)	2138	(0.025)-(0.186)

Note: July 20th 2022 **–** Filter #12 effluent turbidity spike following return to service. Through a review of the continuous monitoring data the operating authority verified there was no adverse water quality incident.

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Summary of Inorganic parameters tested during this reporting period

*(*All tests were conducted on treated water leaving the WTP unless otherwise noted)*

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	January 06, 2022	Not Detected	mg/L	NO
Arsenic	January 06, 2022	Not Detected	mg/L	NO
Barium	January 06, 2022	0.0135	mg/L	NO
Boron	January 06, 2022	0.013	mg/L	NO
Cadmium	January 06, 2022	0.000003	mg/L	NO
Chromium	January 06, 2022	0.00022		NO
Lead (Komoka Mt-Brydges Monitoring Station #2)	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	0.00001 0.00013 0.00003 0.00004	mg/L mg/L mg/L mg/L	NO
Mercury	January 06, 2022	Not Detected	mg/L	NO
Selenium	January 06, 2022	0.00012	mg/L	NO
Sodium	January 06, 2022	11.1	mg/L	NO
Uranium	January 06, 2022	0.000045	mg/L	NO
Fluoride	January 06, 2022	Not Detected	mg/L	NO
Nitrite	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Nitrate	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	0.330 0.606 0.313 0.260	mg/L mg/L mg/L mg/L	NO

Summary of Organic parameters sampled during this reporting period or the most recent sample results

*(*All tests were conducted on treated water leaving the WTP unless otherwise noted)*

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	January 06, 2022	Not Detected	mg/L	NO
Atrazine + N-dealkylated metabolites	January 06, 2022	0.00003	mg/L	NO
Azinphos-methyl	January 06, 2022	Not Detected	mg/L	NO
Benzene	January 06, 2022	Not Detected	mg/L	NO
Benzo(a)pyrene	January 06, 2022	Not Detected	mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Bromoxynil	January 06, 2022	Not Detected	mg/L	NO
Carbaryl	January 06, 2022	Not Detected	mg/L	NO
Carbofuran	January 06, 2022	Not Detected	mg/L	NO
Carbon Tetrachloride	January 06, 2022	Not Detected	mg/L	NO
Chlorpyrifos	January 06, 2022	Not Detected	mg/L	NO
Diazinon	January 06, 2022	Not Detected	mg/L	NO
Dicamba	January 06, 2022	Not Detected	mg/L	NO
1,2-Dichlorobenzene	January 06, 2022	Not Detected	mg/L	NO
1,4-Dichlorobenzene	January 06, 2022	Not Detected	mg/L	NO
1,2-Dichloroethane	January 06, 2022	Not Detected	mg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	January 06, 2022	Not Detected	mg/L	NO
Dichloromethane	January 06, 2022	Not Detected	mg/L	NO
2-4 Dichlorophenol	January 06, 2022	Not Detected	mg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 06, 2022	Not Detected	mg/L	NO
Diclofop-methyl	January 06, 2022	Not Detected	mg/L	NO
Dimethoate	January 06, 2022	Not Detected	mg/L	NO
Diquat	January 06, 2022	Not Detected	mg/L	NO
Diuron	January 06, 2022	Not Detected	mg/L	NO
Glyphosate	January 06, 2022	Not Detected	mg/L	NO
Haloacetic Acids (HAA's) (Arva Reservoir)	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	Not Detected 0.0113 0.0063 0.0066	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Arva Reservoir) Running Annual Average	2022	0.007375	mg/L	NO
Haloacetic Acids (HAA's) (Exeter-Hensall Monitoring Station #3)	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	0.0141 0.0186 0.0167 0.0178	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Exeter-Hensall Monitoring Station #3) Running Annual Average	2022	0.0168	mg/L	NO
Haloacetic Acids (HAA's)	January 07, 2022 April 06, 2022 July 07, 2022	0.0122 0.0134 0.0071	mg/L mg/L mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
(Komoka Mt-Brydges Monitoring Station #2)	October 19, 2022	0.0137	mg/L	
Haloacetic Acids (HAA's) (Komoka Mt-Brydges Monitoring Station #2) Running Annual Average	2022	0.0116	mg/L	NO
Haloacetic Acids (HAA's) (Strathroy-Caradoc Monitoring Station #2)	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	0.0055 0.0065 0.0075 0.0068	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Strathroy-Caradoc Monitoring Station #2) Running Annual Average	2022	0.006575	mg/L	NO
Malathion	January 06, 2022	Not Detected	mg/L	NO
2-Methyl-4-chlorophenoxyacetic acid	January 06, 2022	Not Detected	mg/L	NO
Metolachlor	January 06, 2022	Not Detected	mg/L	NO
Metribuzin	January 06, 2022	Not Detected	mg/L	NO
Monochlorobenzene	January 06, 2022	Not Detected	mg/L	NO
Paraquat	January 06, 2022	Not Detected	mg/L	NO
Pentachlorophenol	January 06, 2022	Not Detected	mg/L	NO
Phorate	January 06, 2022	Not Detected	mg/L	NO
Picloram	January 06, 2022	Not Detected	mg/L	NO
Polychlorinated Biphenyls (PCB)	January 06, 2022	Not Detected	mg/L	NO
Prometryne	January 06, 2022	Not Detected	mg/L	NO
Simazine	January 06, 2022	Not Detected	mg/L	NO
Total Trihalomethanes (Arva Reservoir)	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	0.018 0.020 0.023 0.026	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (THMs) (Arva Reservoir) Running Annual Average	2022	0.022	mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Total Trihalomethanes (Exeter-Hensall Monitoring Station #3)	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	0.029 0.029 0.037 0.043	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (Exeter-Hensall Monitoring Station #3) Running Annual Average	2022	0.035	mg/L	NO
Total Trihalomethanes (Komoka Mt-Brydges Monitoring Station #2)	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	0.022 0.023 0.025 0.033	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (Komoka Mt-Brydges Monitoring Station #2) Running Annual Average	2022	0.026	mg/L	NO
Total Trihalomethanes (Strathroy-Caradoc Monitoring Station #2)	January 07, 2022 April 06, 2022 July 07, 2022 October 19, 2022	0.020 0.022 0.025 0.027	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (Strathroy-Caradoc Monitoring Station #2) Running Annual Average	2022	0.024	mg/L	NO
Terbufos	January 06, 2022	Not Detected	mg/L	NO
Tetrachloroethylene	January 06, 2022	Not Detected	mg/L	NO
2,3,4,6-Tetrachlorophenol	January 06, 2022	Not Detected	mg/L	NO
Triallate	January 06, 2022	Not Detected	mg/L	NO
Trichloroethylene	January 06, 2022	Not Detected	mg/L	NO
2,4,6-Trichlorophenol	January 06, 2022	Not Detected	mg/L	NO
Trifluralin	January 06, 2022	Not Detected	mg/L	NO
Vinyl Chloride	January 06, 2022	Not Detected	mg/L	NO

NOTE: During 2022, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.