Lake Huron
Primary Water Supply System

2020 Compliance Report

Contact Info:

Owner:
Lake Huron Primary Water Supply System Board of Management
c/o City of London, Regional Water Supply Division
235 North Centre Road, Suite 200, London, ON N5X 4E7
519-930-3505

Operating Authority:
Ontario Clean Water Agency
P.O. Box 1409, Grand Bend, ON N0M 1T0
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Profile

Who We Are

The Lake Huron Primary Water Supply System (LHPWSS) is owned by a Board of Management who governs the drinking water system. The Board of Management is made up of members appointed from each of the eight (8) member municipalities that are currently supplied with water from the LHPWSS. One of these member municipalities, the City of London, acts as the Administering Municipality. Accordingly, the City of London provides all associated administrative and management services on behalf of the Board. The Board of Management currently utilizes the services of an independent contracted Operating Authority.

The water system is operated and maintained by Ontario Clean Water Agency (OCWA) under contract to the Board of Management.

Operating Authority:

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

LHPWSS Board Member Municipalities:

- City of London (Administering Municipality)
- Municipality of Bluewater
- Municipality of Lambton Shores
- Township of Lucan Biddulph
- Municipality of Middlesex Centre
- Municipality of North Middlesex
- Municipality of South Huron
- Municipality of Strathroy-Caradoc

What Is Important

Values of the Water System

The values of the LHPWSS are the inherent beliefs or moral standards that generally reflect what the LHPWSS Board of Management stands for and believes in:

- **Sustainable** - be financially, environmentally, socially, and physically sustainable;
- **Inclusive** - provide access to bulk drinking water for current and prospective members, in accordance with Board policy;
- **Fair and equitable** - balance the interests of individual members with the best interests of all members, as well as the needs of existing members with the needs of new members;
- **Vigilant** - ensure an adequate supply of safe and reasonably priced drinking water is available to members;
- **Innovative** - be receptive to and supportive of new ideas and opportunities for improvement;
- **Cooperative** – be supportive to the needs of the Lake Huron Primary Water Supply System;
- **Open and transparent –** conduct business in a manner that enables member municipalities and the public to review and provide input into major decisions as appropriate;
- **Public Ownership –** retain ownership of the water system in public hands.

What We Do

Water Treatment & Supply

The LHPWSS is responsible for the treatment and transmission of drinking water to eight (8) municipalities in southwestern Ontario. The population served by this system is approximately 390,000. Water is provided bulk wholesale to the municipalities who then distribute it to their customers.

The Lake Huron Water Treatment Plant (WTP) has been in operation since 1967. The WTP employs pre-chlorination, screening, powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, post-chlorination, and sodium hydroxide addition to treat raw water obtained from Lake Huron. After the water is treated it is pumped from the WTP to various communities or to storage reservoirs. The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system**.**

The Lake Huron Primary Water Supply System is operated under the Municipal Drinking Water Licence (MDWL) #001-101 and Drinking Water Works Permit (DWWP) #001-201.

LHPWSS Assets:

- 1 water treatment plant
- 1 residuals management facility
- 3 water pumping stations
- 3 in-ground storage reservoirs
- 8 monitoring stations
- 151 km of water main

Figure 1: McGillivray Booster Pumping Station

Figure 2: Pumps at the Lake Huron WTP

LHPWSS: At A Glance

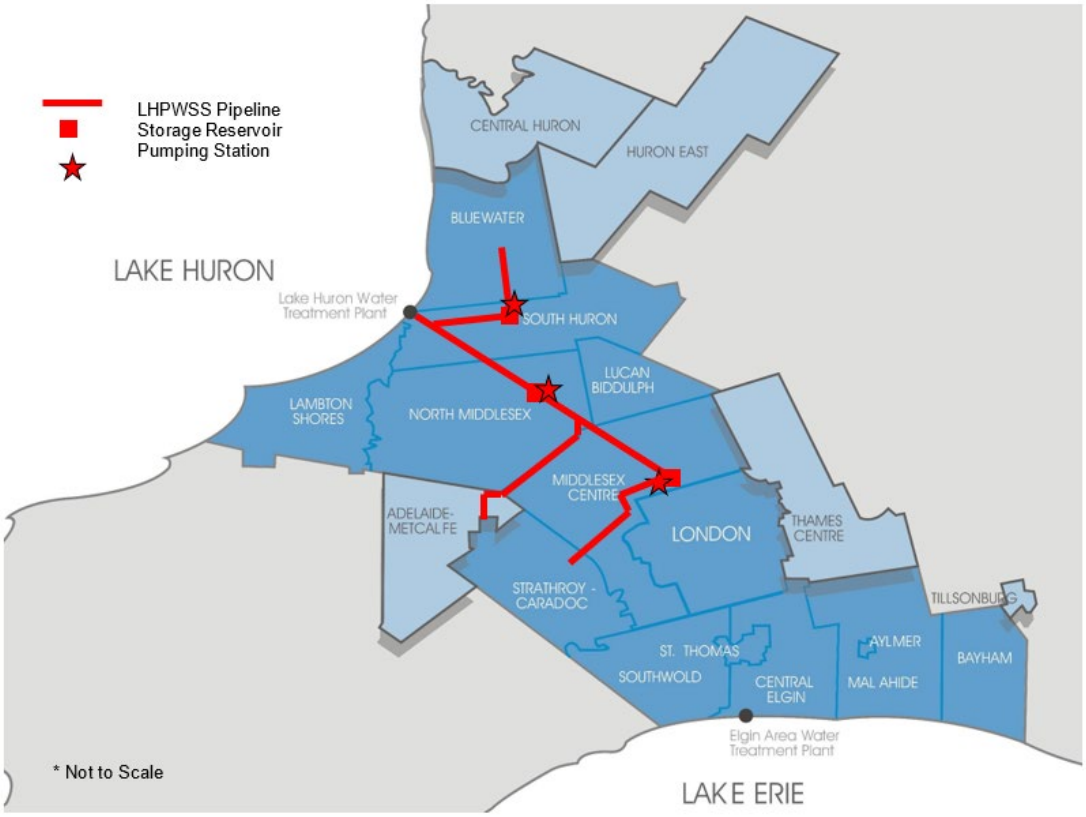

Figure 3: LHPWSS Major Infrastructure Locations

The Water Treatment Process

The following figure provides a general overview of the conventional water treatment process. The processes outlined below are very similar to the treatment at the Lake Huron WTP, although they are not an exact representation. Some details may vary.

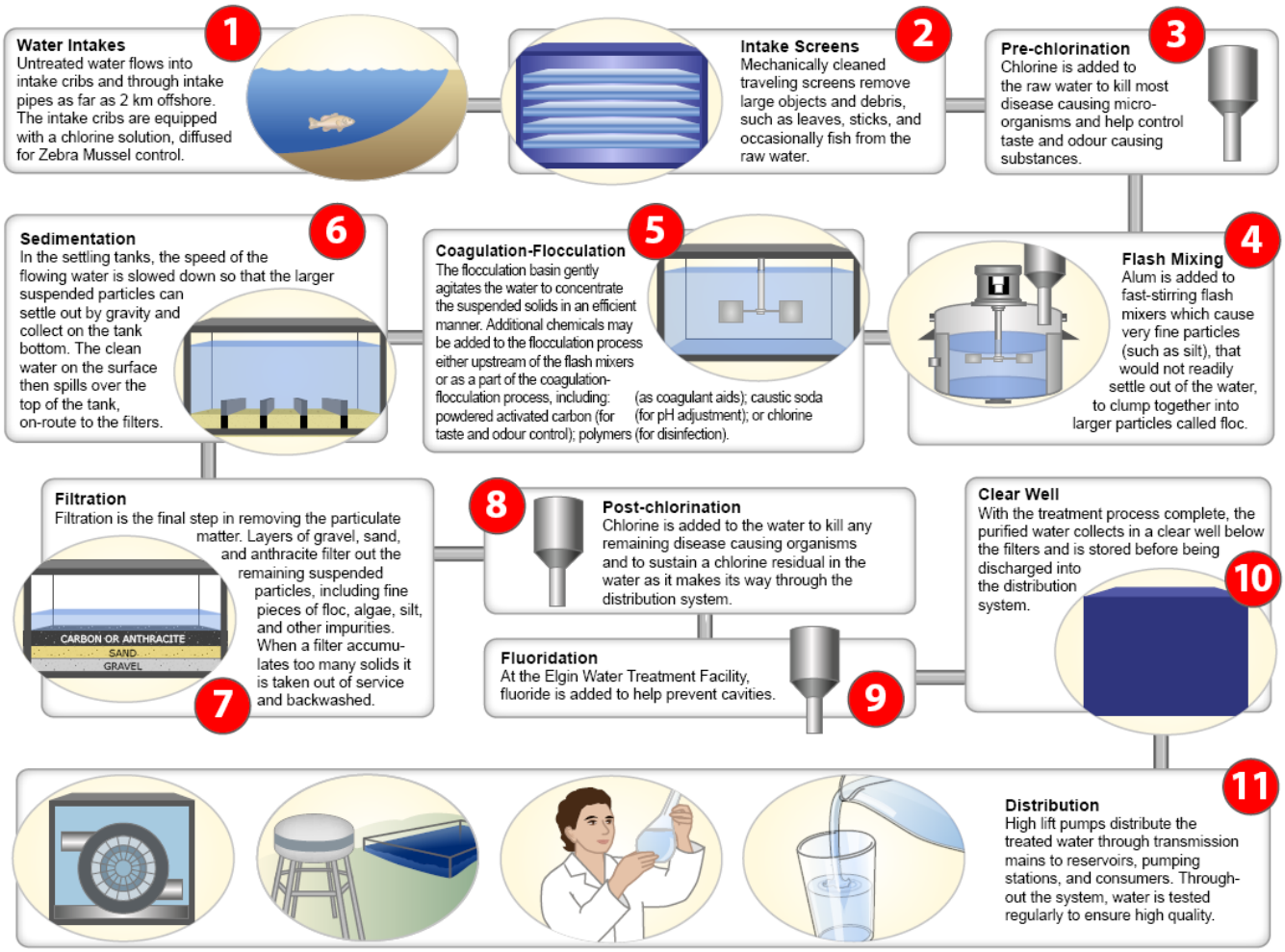

Figure 4: Overview of the Water Treatment Process

At the Lake Huron WTP, Step 9 (Fluoridation) does not take place.

At the Lake Huron WTP, one additional treatment step takes place:

Sodium Hydroxide is added as the treated water leaves the WTP and enters the transmission system (Step 11) to raise the treated water pH, resulting in reduced corrosion potential.

2020 Highlights - General

Master Water Plan Update

The LHPWSS is required to update the Master Water Plan every five (5) years, incorporating a 20-year planning horizon and beyond. The Plan reviews and updates all facets of previous Master Plan documents and considers capital maintenance and investment completed or underway. This plan encompasses detailed analysis of historical water demand for the system as determined from available data, census data, and population projections. As well, the Plan examines current regulations and anticipated future trends in regulation for the water supply industry in Ontario. Overall, the plan provides a framework for the Water Board to discern trends in demand and to plan for the timing, sizing and staging requirements to implement the process for capital upgrades over the planning horizon (2040 and beyond). The Plan supports the long term needs and growth of the Regional Water System and its benefiting municipalities. The updated Master Water Plan was completed in 2020 and is available upon request.

ISO 14001:2015 Certification

The LHPWSS has an Environmental Management System (EMS) which has been registered to the ISO 14001 standard since 2003. The LHPWSS underwent an external certification audit in October 2020. It was determined that the EMS met the requirements of the ISO 14001:2015 standard and the LHPWSS was recommended for certification for another three-year period. The continued utilization and registration of the EMS to the ISO 14001 standard is a requirement of the Service Agreement with OCWA.

2020 Capital Project Highlights

Distressed Pipe Replacement

As part of the Acoustic Fiber Optic (AFO) monitoring system installed within the 1200mm transmission pipeline, the LHPWSS determined in late 2019 that a pipe in a twinned high pressure section of the transmission main was in poor condition and consequently at high risk of failure. On this basis, and with the concurrence of OCWA and Pure Technologies, LHPWSS staff engaged the services of L82 Construction Ltd. to complete a proactive replacement of Pipe #4-80 which is located near Corbett Line. With the pipe being located in a twinned section of the transmission main, the repair was able to be performed over several days in March 2020. Had the LHPWSS failed to replace this distressed pipe section, it could have resulted in a catastrophic failure of the pipeline causing extensive damage to agricultural and conservation lands in the area.

Figure 5a: Removal of pipe #4-80

Figure 5b: Installation of repair piece

Figure 5c: Installation of dresser coupling

Figure 5d: Section of distressed pipe #4-80 showing significant delamination and wire breaks on the bottom of the pipe

High Lift Pump Design & Manufacturing

The previously completed Energy Audit and Pump Optimization Study identified the replacement of the high lift pumps at the Huron WTP as a significant opportunity for energy savings and optimizing pump operations. The existing high lift pump system is largely original to the initial WTP construction from the late 1960's and the pumps are nearing the end of their useful life. The most cost effective short- to mid-term solution is to remove three (3) pumps at the WTP, and replace them with two (2) lower volume high-head pumps and two (2) more efficient high volume pumps. The pumps will be sized to meet current and future water demands.

In 2018 the detailed engineering assessment and design work was initiated, to confirm the construction requirements, anticipated savings, and available funding incentives.

The pump pre-selection process was completed in October 2019, with KSB Pumps Inc. being awarded the contract for pump fabrication. The manufacturing of the pumps is currently underway, with a total estimated time of 18 months to complete. Anticipated delivery of the new pumps to the WTP site is mid-2021. The tender for construction is anticipated to be awarded in March 2021.

In order to receive financial incentives for energy savings associated with this project, it is required that the four (4) new pumps must be in-service by December 31, 2022. The project is currently on schedule to meet this deadline. The estimated total financial incentive for this project is $1.32M.

Figures 6a and 6b: Factory Acceptance Testing of the new high lift pumps was completed at the KSB factory in Halle, Germany. This testing confirms the pumps will perform as specified prior to being shipped to site.

Low Lift Pump Motor Replacements

The age of the motors for low lift pumps #1, #2, #5 and #6 was 35-50 years old and well past their normal life expectancy. These motors had multiple repairs and rebuilds since their original installation and, by nature of their age and non-ideal operating conditions, were very inefficient compared to current motors. The pumps would no longer operate efficiently with the new variable speed equipment installed as part of the recent electrical upgrade. The project involved replacing these motors with more efficient motors.

Figures 7a, 7b, 7c: Low lift motors #2, #5 and #6

Flocculation Gear Drive Rebuild

The flocculation gear drives are a type of transmission taking power from an electric motor and converting it to rotating energy to enable the flocculation mixing process to operate efficiently. These drives are original to the WTP and replacements were unable to be located. As such, the internal components were removed, measured and remanufactured to enable the drives to operate for another 50 years.

Figures 8a and 8b: Flocculation gear drives

Sewage Ejector Project

A sewage ejector pump is used when bathroom and other fixtures are located at a lower elevation than the septic or sewage system that disposes of the waste. The sewage ejector pump at the WTP is used to pump sewage from the front of the WTP all the way back to the septic system. It was original to the plant construction, was obsolete and repair parts were no longer available. The sewage ejector pump was replaced in 2020.

Figure 9: Sewage Ejector System

2020 Flow Summary

As per the water system's current Permit To Take Water (PTTW), the amount of raw water taken into the Lake Huron WTP cannot exceed 454.98 million litres/day or 5266 litres/second.

The water taking PTTW for 2020 was #4725-87SS3J and #P-300-2068363222.

As per the water system's current Municipal Drinking Water License, the rated capacity of the WTP is 340.0 million litres/day, which converts to 3935 litres/second. The maximum daily volume of treated water that flows from the treatment plant into the transmission system shall not exceed this value.

The following table contains a flow summary, with comparison to the system's rated capacity and permit limits in order to assess the capability of the system to meet existing and planned uses.

	Total Daily Flow (ML/day)	Total Daily Flow (% of Capacity)	Daily Instantaneous Peak Flow (L/s)
PTTW – permitted raw water taking amount	454.98	100%	5266
Raw Water Flow – Average Day	128.5	28.2%	2464
Raw Water Flow – Max. Day	209.5	46.0%	3496
WTP Rated Capacity	340.0	100%	3935
Treated Water Flow – Average Day	124.4	36.6%	1903
Treated Water Flow – Max. Day	202.9	59.7%	2744

A complete flow summary for the LHPWSS can be found in Appendix A.

Treated Water Volumes

The average daily flow from the Lake Huron Primary Water Supply System was 124.4 ML/day, which is a 1% increase from the previous year. The maximum daily flow for 2020 was 202.9 ML/day, which is a 12.2% increase from the previous year.

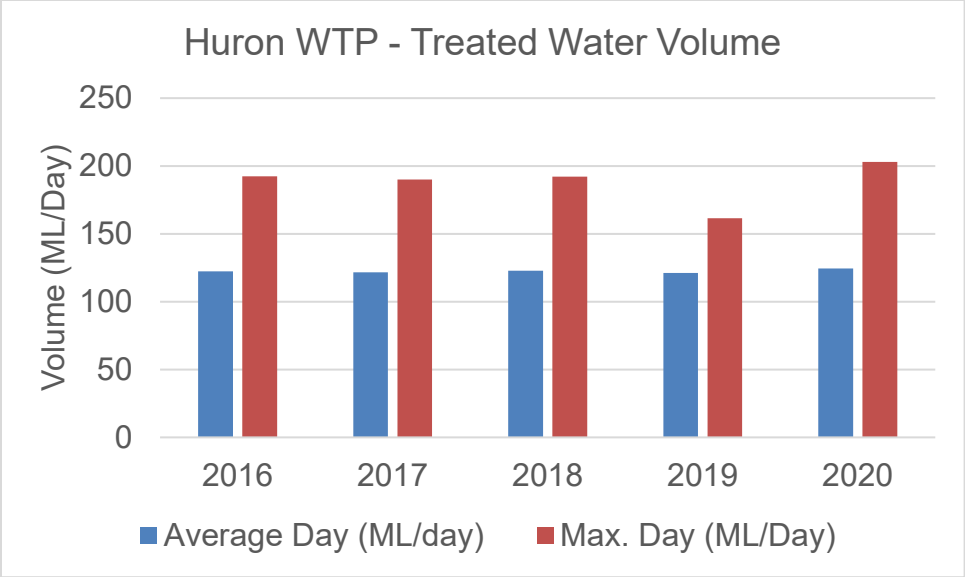

Figure 10: 5 Year Treated Water Volumes

The majority of the volume of treated drinking water from the LHPWSS is used by the City of London. As shown in Figure 11, London takes 83.30% of the volume, with the other seven municipalities using the remaining 16.70%.

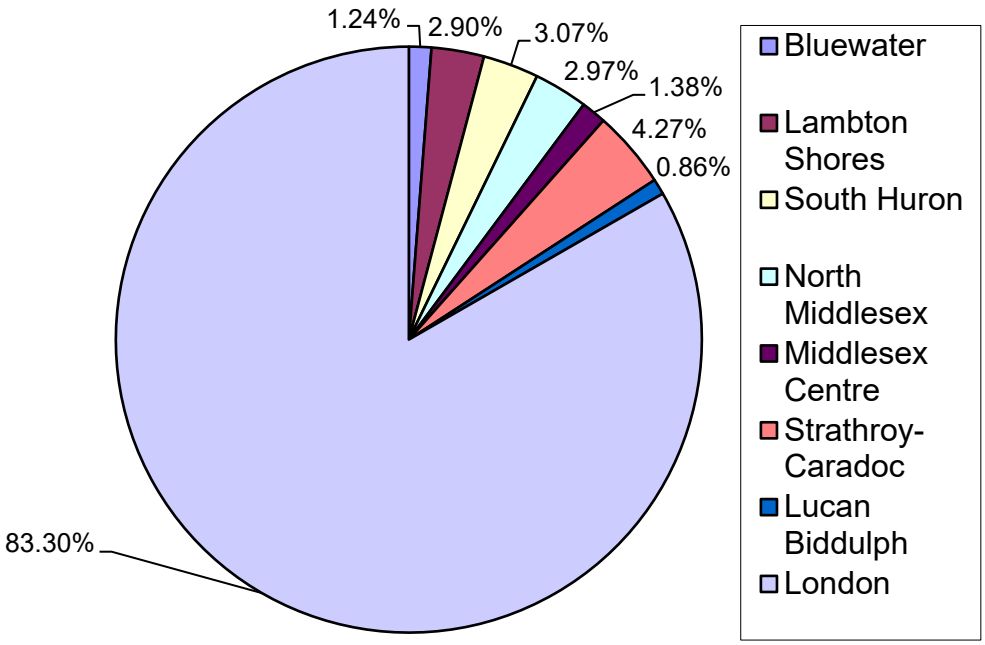

Figure 11: 2020 Treated Water Volumes per Municipality

2020 Chemical Consumption

A variety of water treatment chemicals are used at the Lake Huron WTP to ensure safe, clean drinking water. The following table outlines the chemicals most frequently used for the LHPWSS. As part of the system's registered ISO14001 Environmental Management System, objectives and targets are currently in place to optimize chemical usage.

Chemical	Used for	Total Amount Used in 2020
Aluminum sulphate	Coagulation	930,150 kg
Powdered activated carbon	Taste and odour control (seasonally)	20,402 kg
Chlorine gas	Mussel control	20,534 kg
Chlorine gas	Primary disinfection	73,044 kg
Sodium hydroxide	pH adjustment for corrosion control	575,862 kg
Polymer	Filter aid (used on an as-required basis)	N/A
Polymer	Residuals Management Facility – dewatering aid	5664 kg
Sodium Bisulphite	Residuals Management Facility – dechlorination	66,470 kg

2020 Water Quality Sampling and Monitoring

The LHPWSS consistently provides treated drinking water with water quality above the standards required by provincial regulation. Where desirable, the LHPWSS standards are more stringent than what is required by regulation. For example, the target at the Lake Huron WTP for treated water turbidity (a measure of the cloudiness of water) is 10 times more stringent than the provincial standard. The LHPWSS is practicing continual improvement to ensure that high drinking water standards are maintained and enhanced where possible.

All water quality sampling at the LHPWSS is performed in accordance with the Safe Drinking Water Act and its associated regulations. All samples are collected by licensed operating authority personnel and are submitted to Canadian Association for Laboratory Accreditation (CALA)/Standards Council of Canada (SCC) accredited laboratories for both bacterial and chemical analysis.

In 2020, a total of 683 microbiological samples were collected from raw, treated and distribution system water, and were tested for E Coli, total coliforms and heterotrophic plate count (HPC). There was one incident of an adverse microbiological test result in 2020. For more information please see the Annual Report, which is attached as Appendix B.

Annual samples are collected and tested for inorganics (metals) and organics which include herbicides, pesticides and volatile organic parameters. Quarterly sampling is also conducted for trihalomethanes and haloacetic acids (disinfection by-products), nitrates and nitrites.

Seasonal samples are collected and tested for total microcystin from June through to the end of October as part of the Harmful Algal Bloom (HAB) Monitoring and Sampling Program. The program is to keep drinking water safe from potential impacts of overgrowth of aquatic algal bacteria (i.e. cyanobacteria), that produce or have the potential to produce toxins (i.e. cyanotoxins) in the surrounding water, when the algal cells are damaged or die. These toxins, which include microcystins, can be harmful to people. A total of 22 raw water samples were tested for total microcystin. There were no detectable results in the raw water.

In addition, the WTP operator samples the raw, in-process and treated water six times per day and carries out an array of physical and chemical tests for operational control.

As required by regulation, the LHPWSS also prepares an Annual Report which includes a summary of water quality test results and a maintenance report. The 2020 Annual Report can be found in Appendix B.

Research and Partnerships

The LHPWSS acknowledges the importance of scientific research on water quality and the effects on human health. The LHPWSS has partnered with the Natural Sciences and Engineering Research Council (NSERC) Chair in Drinking Water Research at the University of Waterloo and University of Toronto to pursue research opportunities, as well as Western University, and is a member of the Water Research Foundation (WRF). In addition, the LHPWSS continues to evaluate and conduct specific research on the efficacy of the existing treatment processes, optimizing and improving treatment systems, and evaluating the potential and need of more advanced treatment alternatives.

Ministry Inspection

Annual Inspection

The Ontario Ministry of the Environment, Conservation and Parks (MECP) conducts an inspection of the LHPWSS annually. A MECP inspection took place on September 22, 2020. The final inspection report was issued on January 25, 2021. There were no non-compliances identified in the inspection report. The final inspection rating received for the 2020-2021 reporting year was 100.00%.

Lake Huron
Primary Water Supply System

Regional Water Supply Division
235 North Centre Road
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London, ON N5X 4E7
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www.huronelginwater.ca

Appendix A – 2020 Flow Summary

1. Raw Water Intake – Flow (ML/Day)

Day	January (ML)	February (ML)	March (ML)	April (ML)	May (ML)	June (ML)	July (ML)	August (ML)	September (ML)	October (ML)	November (ML)	December (ML)
1	103.72	106.52	117.84	108.95	124.49	141.55	190.67	163.44	138.88	122.10	117.10	115.26
2	101.11	113.13	116.76	110.02	110.23	116.76	154.09	139.06	147.35	129.43	116.58	113.61
3	108.05	115.10	124.44	109.83	109.36	149.05	189.16	129.06	151.76	114.35	102.76	120.04
4	115.57	127.96	114.33	109.96	109.73	139.18	194.28	116.93	159.57	113.36	139.71	129.16
5	114.50	115.95	113.41	108.71	110.12	155.51	198.62	125.13	125.18	145.67	117.13	123.3
6	115.44	110.97	125.89	126.88	123.65	146.90	201.80	141.05	138.04	119.28	114.90	122.48
7	115.38	113.45	121.41	112.44	110.06	158.69	202.41	149.73	114.04	140.84	107.44	134.79
8	116.54	114.74	113.36	108.58	123.44	162.93	209.47	154.48	133.06	115.88	122.50	136.62
9	116.11	130.55	142.95	114.92	124.38	197.76	207.77	149.46	98.71	139.12	131.39	107.6
10	110.18	125.41	105.19	104.95	106.46	110.80	172.55	149.40	144.05	115.38	87.08	148.95
11	129.07	115.01	85.39	108.32	125.09	145.33	127.18	120.97	145.38	114.61	138.90	82.60
12	101.71	114.42	137.52	106.67	107.95	142.56	153.71	177.04	143.60	126.80	123.71	139.82
13	115.20	114.87	130.36	101.08	95.39	115.74	153.80	145.53	140.82	114.37	122.30	116.34
14	112.85	113.54	113.83	103.36	135.00	149.18	185.48	162.95	140.97	114.80	115.29	116.32
15	107.92	123.67	114.94	105.48	122.84	156.16	157.38	159.33	92.64	118.13	114.92	121.72
16	106.86	112.08	128.56	112.30	115.06	183.13	147.61	149.37	98.84	133.31	135.60	115.44
17	125.08	110.28	116.28	111.79	115.70	155.10	164.68	142.19	163.94	129.62	69.54	137.16
18	113.02	109.86	124.57	113.23	122.10	178.39	188.16	115.59	150.08	115.59	140.52	121.53
19	100.55	114.81	100.26	110.92	112.92	161.39	131.07	152.33	143.33	118.24	116.07	134.68
20	130.74	105.92	98.24	102.27	114.58	165.00	150.44	149.29	137.86	115.57	116.34	116.21
21	112.52	113.39	108.00	103.74	114.28	154.41	148.33	160.81	139.38	118.38	115.02	115.12
22	115.08	113.36	108.05	106.69	144.17	145.60	135.96	156.50	137.72	116.47	116.34	116.54
23	138.13	113.52	120.90	131.74	133.72	139.25	149.75	157.36	147.78	141.78	146.50	118.36
24	129.67	128.87	109.02	115.28	115.44	139.03	154.39	163.41	140.80	118.78	102.52	119.4
25	107.91	101.24	108.70	110.76	144.29	152.83	192.00	152.64	146.00	118.00	115.32	106.96
26	115.36	133.97	97.47	108.59	146.50	170.65	160.43	137.95	148.93	151.06	140.65	113.45
27	114.49	109.27	108.72	109.90	162.84	158.39	161.13	136.77	148.59	101.02	114.08	116.51
28	109.69	113.30	109.55	111.80	146.01	163.80	163.40	147.30	139.91	120.10	144.55	116.32
29	115.77	114.19	109.81	100.95	133.89	158.65	147.60	115.75	145.33	116.72	113.62	114.82
30	117.55		109.75	109.88	135.52	191.55	153.91	129.82	100.29	115.26	113.69	115.71
31	113.31		110.01		115.33		167.57	133.64		115.76		116.62

Day	January (ML)	February (ML)	March (ML)	April (ML)	May (ML)	June (ML)	July (ML)	August (ML)	September (ML)	October (ML)	November (ML)	December (ML)
Monthly Total	3549.1	3349.4	3545.5	3300.0	3810.5	4605.3	5214.8	4484.3	4102.8	3789.8	3572.1	3723.4
Monthly Minimum	100.6	101.2	85.4	101.0	95.4	110.8	127.2	115.6	92.6	101.0	69.5	82.6
Monthly Maximum	138.1	134.0	143.0	131.7	162.8	197.8	209.5	177.0	163.9	151.1	146.5	149.0
Monthly Average	114.5	115.5	114.4	110.0	122.9	153.5	168.2	144.7	136.8	122.3	119.1	120.1

Annual Total (ML)	47,046.9
Annual Minimum (ML)	69.5
Annual Maximum (ML)	209.5
Annual Average (ML)	128.5

Note: (i) As per the water system's current Permit To Take Water (PTTW), the amount of raw water taken into the Lake Huron Water Treatment Plant cannot exceed 454.98 million litres/day.

2. Raw Water Instantaneous Peak Flow (L/s)

Day	January (L/s)	February (L/s)	March (L/s)	April (L/s)	May (L/s)	June (L/s)	July (L/s)	August (L/s)	September (L/s)	October (L/s)	November (L/s)	December (L/s)
1	1855.4	2010.8	1910.3	1885.3	2135.1	2183.6	3331.1	3164.0	3145.4	3148.5	1995.4	1992.8
2	1868.8	1960.6	2864.9	1896.6	1922.9	2011.1	2411.6	3180.6	3200.0	2188.8	2023.8	1983.2
3	1882.2	1922.9	2097.1	1882.1	1881.7	2886.3	3220.4	2164.1	3078.9	2111.9	2181.1	1983.8
4	1908.0	2699.9	1858.6	1876.7	1877.0	2957.1	3236.2	2080.1	3153.9	2049.5	2976.0	2119.1
5	1909.1	1903.8	1906.3	1885.8	1888.2	2906.1	3337.0	2189.4	3131.1	3169.0	2139.9	2256.6
6	1899.8	1855.8	2134.8	2950.9	3056.5	2216.0	3464.9	2231.3	2246.4	3169.0	2092.4	2129.9
7	1828.7	1899.4	2029.7	1926.7	1845.4	3141.6	3293.8	3175.9	2067.2	2216.6	2029.2	2045.5
8	1927.9	1888.3	1892.5	1924.3	2103.6	3183.1	3187.7	2968.4	2217.6	3112.0	1318.3	2156.7
9	1853.9	2248.6	2897.6	1891.1	1931.8	3128.6	3211.6	3339.4	3089.2	3112.0	3199.1	3021.5
10	1891.9	2840.5	2988.3	1260.3	1888.5	2860.6	3192.5	3199.3	3284.0	1994.3	3136.6	2910.9
11	2884.0	1912.7	2909.0	1711.9	2374.2	3128.4	3153.6	3104.4	3081.4	2016.9	2546.3	3068.8
12	1950.3	1883.9	2920.6	1936.2	1916.0	2181.8	3153.6	2726.9	3098.4	2205.6	3069.6	2929.3
13	1900.9	1920.3	2123.4	1922.8	3121.4	2221.5	3180.9	2970.3	3012.5	2070.1	2011.3	2023.6
14	1905.4	1903.7	1903.7	1942.0	3091.9	3097.6	3181.0	3190.0	3312.0	1994.0	2037.8	2045.3
15	1939.8	2099.2	1872.0	1970.8	2848.5	3130.6	2953.5	3149.3	2237.0	2058.1	1973.4	2183.3
16	2169.6	1894.8	2801.2	1997.1	2026.7	2824.3	3169.3	3297.0	3163.8	3288.1	3107.6	2071.8
17	2286.9	1900.8	1915.6	1911.6	2036.9	3324.1	3210.1	2226.3	3151.3	2216.2	2529.2	2210.6
18	1988.9	1942.9	2425.7	1897.9	2229.7	3066.6	3414.7	3444.3	3160.0	2022.1	3073.0	2299.9
19	2132.5	1897.9	2714.1	1851.4	1932.3	3483.0	3137.6	3162.0	3256.6	2163.1	2015.9	2115.9
20	2878.8	2876.5	1926.4	1865.2	1978.0	3161.5	3406.4	3096.9	3133.0	1984.1	2028.1	1997.5
21	1956.4	1912.0	1948.8	2003.6	1787.6	3005.2	3176.7	3332.5	3116.0	2014.2	2038.7	2011.6
22	2071.8	1869.8	1904.7	1874.2	2565.2	2991.6	2334.7	3276.2	3115.7	1993.3	1994.7	2064.0
23	2873.3	1839.8	2496.6	2181.0	2131.3	3043.6	3162.8	3183.8	3052.9	2232.1	3115.0	2006.1
24	2343.2	2695.7	1938.4	2023.5	1361.1	2232.3	3056.1	3103.0	3011.9	2211.3	3140.3	2107.6
25	1989.9	2652.5	2046.3	2030.1	3146.1	3140.2	3496.2	2831.0	3127.5	2171.3	1978.1	2045.6
26	1862.4	2817.0	1869.4	1876.3	3036.2	3082.2	3191.4	3160.1	3139.1	2209.6	3164.7	2032.5
27	1877.1	1999.8	1944.4	1940.3	3329.3	3196.5	3104.9	3067.2	3087.5	2942.1	2049.8	2006.9
28	1886.1	2021.6	1904.5	2010.9	2851.4	3345.4	3134.0	3192.6	3158.3	2224.0	1999.8	2035.9
29	1878.1	1880.2	1916.1	2883.3	3312.2	3267.2	3169.3	2117.2	3053.7	1972.9	1980.6	1970.5
30	1912.5		1912.7	1911.6	2183.0	3125.5	3170.9	2241.1	3400.0	2025.7	2053.4	2004.3
31	1975.9		1915.4		2015.2		3412.8	3179.6		2039.1		2045.5

Day	January (L/s)	February (L/s)	March (L/s)	April (L/s)	May (L/s)	June (L/s)	July (L/s)	August (L/s)	September (L/s)	October (L/s)	November (L/s)	December (L/s)
Monthly Minimum	1,829	1,840	1,859	1,260	1,361	2,011	2,335	2,080	2,067	1,973	1,318	1,970
Monthly Maximum	2,884	2,877	2,988	2,951	3,329	3,483	3,496	3,444	3,400	3,288	3,199	3,069
Monthly Average	2,048	2,109	2,190	1,971	2,316	2,917	3,170	2,927	3,016	2,333	2,367	2,190

Annual Minimum (L/s)	1,260
Annual Maximum (L/s)	3,496
Annual Average (L/s)	2,464

Note: (i) As per the water system's current Permit To Take Water (PTTW), the amount of raw water taken into the Lake Huron Water Treatment Plant cannot exceed 454.98 million litres/day. This converts to 5266 litres/second.

3. Treated Water Flow (ML/Day)

Day	January (ML)	February (ML)	March (ML)	April (ML)	May (ML)	June (ML)	July (ML)	August (ML)	September (ML)	October (ML)	November (ML)	December (ML)
1	100.08	102.78	114.14	105.51	120.18	138.27	183.33	160.02	135.22	118.85	112.61	110.85
2	97.29	109.26	113.32	105.61	105.65	112.99	140.20	135.15	142.87	125.93	112.63	110.83
3	105.14	112.22	120.35	105.82	106.07	145.42	186.05	126.31	148.27	110.31	99.29	115.41
4	112.11	124.06	110.69	105.70	105.50	135.63	191.12	112.55	156.13	110.32	137.20	124.05
5	112.26	110.65	110.61	105.57	105.77	151.91	194.58	122.05	121.18	142.61	111.15	119.99
6	111.95	106.97	121.77	123.17	120.69	144.43	195.66	138.14	134.46	114.99	111.21	118.41
7	112.05	110.65	117.49	108.35	105.92	156.25	197.61	143.59	111.32	134.72	105.65	131.98
8	112.16	110.74	109.27	105.59	119.28	156.02	195.91	151.76	129.44	112.74	117.50	132.67
9	111.97	126.80	140.87	111.12	120.11	192.24	202.92	145.06	93.94	135.39	129.12	101.74
10	106.52	122.93	104.24	100.88	103.26	103.21	166.66	144.51	141.28	111.40	84.40	145.16
11	127.13	110.83	81.20	105.29	121.35	142.07	122.10	117.52	142.00	111.62	134.63	78.56
12	99.12	110.74	133.77	102.81	104.35	139.68	148.90	174.47	140.21	122.86	122.01	137.12
13	110.51	110.74	126.79	96.90	91.20	111.80	147.94	141.61	138.31	110.06	117.32	112.25
14	110.79	110.71	110.80	100.45	130.30	145.83	181.94	159.14	137.13	112.15	111.42	111.96
15	105.31	121.35	111.00	101.47	119.33	151.79	150.20	155.67	88.36	112.86	112.37	118.79
16	103.11	108.19	124.70	108.30	112.72	175.63	143.66	146.66	95.45	128.27	132.23	112.16
17	123.13	107.39	111.94	108.91	112.43	149.64	160.79	137.30	161.12	126.90	66.69	132.51
18	110.89	105.81	120.95	109.32	119.81	175.91	184.37	111.77	147.22	112.89	138.20	117.11
19	96.90	110.78	95.91	107.01	109.33	156.61	126.64	149.81	140.34	112.67	112.38	131.28
20	127.01	102.49	94.64	99.33	111.09	162.89	145.33	141.16	135.11	112.77	112.49	112
21	108.13	109.58	103.06	99.50	111.70	151.69	144.43	154.66	137.21	112.64	112.39	111.99
22	111.54	109.22	103.72	102.46	140.93	140.86	131.05	153.37	134.49	112.40	112.63	111.89
23	135.09	109.49	118.14	129.19	130.45	133.18	146.53	153.81	144.23	137.12	142.63	115.02
24	127.17	125.44	105.24	111.46	112.91	34.04	150.66	160.04	138.63	115.66	98.89	115.37
25	104.22	97.63	104.83	106.80	140.78	145.77	185.77	149.25	142.79	115.21	111.01	102.08
26	112.09	131.26	93.58	105.61	143.25	167.03	156.54	134.45	145.66	146.54	136.53	110.05
27	111.99	105.59	105.66	105.96	158.02	154.99	157.00	133.92	145.16	94.23	111.00	112.11
28	105.96	110.67	105.55	107.51	144.15	160.34	159.88	144.53	137.91	116.84	110.88	111.96
29	112.23	110.53	105.52	97.26	130.59	153.17	144.30	111.02	142.04	112.65	110.94	111.82
30	112.18		105.69	105.98	131.80	186.27	151.36	124.55	90.28	110.85	110.91	112.01
31	110.67		105.68		112.83		163.94	130.10		112.50		111.89

Day	January (ML)	February (ML)	March (ML)	April (ML)	May (ML)	June (ML)	July (ML)	August (ML)	September (ML)	October (ML)	November (ML)	December (ML)
Monthly Total	3446.7	3245.5	3431.1	3188.8	3701.8	4375.6	5057.4	4364.0	3997.8	3667.0	3438.3	3601.0
Monthly Minimum	96.9	97.6	81.2	96.9	91.2	34.0	122.1	111.0	88.4	94.2	66.7	78.6
Monthly Maximum	135.1	131.3	140.9	129.2	158.0	192.2	202.9	174.5	161.1	146.5	142.6	145.2
Monthly Average	111.2	111.9	110.7	106.3	119.4	145.9	163.1	140.8	133.3	118.3	114.6	116.2

Annual Total (ML)	45514.8
Annual Minimum (ML)	34.0
Annual Maximum (ML)	202.9
Annual Average (ML)	124.4

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 340.0 million litres/day. The maximum daily volume of treated water that flows from the treatment plant into the distribution system shall not exceed this value.

4. Treated Water Instantaneous Peak Flow (L/s)

Day	January (L/s)	February (L/s)	March (L/s)	April (L/s)	May (L/s)	June (L/s)	July (L/s)	August (L/s)	September (L/s)	October (L/s)	November (L/s)	December (L/s)
1	1325.0	1334.0	1972.2	1260.6	2089.6	2205.9	2347.0	2486.0	2265.7	2099.7	1341.9	1334.0
2	1335.2	1337.3	1973.4	1261.7	1267.4	1349.8	2095.3	2259.0	2213.8	2143.8	1345.3	1320.4
3	1339.6	1329.4	2044.4	1271.8	1269.7	2251.0	2308.7	2140.4	2183.3	1323.8	2205.9	1982.3
4	1327.2	2613.5	1309.0	1268.5	1262.7	2220.7	2297.5	1338.4	2296.3	1319.2	2227.3	2104.3
5	1323.8	1312.5	1323.8	1262.7	1266.2	2195.9	2632.8	2204.7	2202.5	2130.2	1327.2	1985.6
6	1335.2	1344.2	2072.7	2097.6	1973.4	2211.0	2578.6	2250.0	2212.7	2118.9	1322.7	2030.9
7	1336.2	1320.4	2008.3	1318.1	1289.8	2350.6	2683.7	2469.1	1328.2	2270.3	1326.2	2051.2
8	1338.4	1325.0	1313.7	1321.5	2098.7	2594.3	2688.2	2674.7	2247.7	1344.2	1306.9	2192.4
9	1338.4	2140.5	2510.8	1332.9	1968.9	2667.8	2733.3	2264.6	2200.2	2522.1	2733.3	2566.1
10	1634.5	2177.8	2670.0	1316.0	1238.0	2684.8	2256.9	2498.4	2661.0	1358.8	2326.4	2281.5
11	2279.4	1337.3	2673.5	1322.7	1991.4	2186.7	2671.2	2611.5	2238.7	1340.7	2210.6	2164.4
12	1321.5	1338.4	2674.7	1357.6	1272.9	2166.4	2724.3	2637.4	2199.1	2233.0	2230.8	2217.1
13	1318.1	1320.4	2134.8	1323.8	2552.8	1750.7	2251.0	2636.2	2392.2	1335.2	1345.3	1336.2
14	1321.5	1310.2	1322.7	1320.4	2094.2	2247.7	2281.5	2279.4	2237.5	1356.5	1340.7	1370.1
15	1323.8	1992.6	1326.2	1345.3	2155.1	2701.9	2290.5	1964.6	1362.3	1346.4	1339.6	2091.9
16	1330.6	1322.7	2173.1	1335.2	1358.8	2685.0	2520.9	2555.0	2217.1	2150.6	2672.3	1331.0
17	2158.6	1329.4	1334.0	1335.2	1335.2	2688.2	2290.5	2245.4	2596.6	2211.6	2540.2	2207.1
18	1325.0	1330.6	2177.7	1354.3	2134.7	2692.8	2274.8	2639.6	2556.0	1341.9	2299.5	1913.5
19	1310.2	1322.7	2094.2	1329.4	1329.4	2743.5	2719.8	2671.2	2115.6	1339.6	1684.3	2149.5
20	2209.3	2143.9	1228.9	1338.4	1349.8	2737.9	2718.6	2576.3	2120.0	1343.1	1345.3	1337.3
21	1331.7	1629.9	1239.1	1267.4	1696.6	2187.8	2718.6	2701.7	2118.9	1335.2	1343.1	1335.2
22	1996.5	1310.2	1233.4	1268.5	2152.0	2474.8	2220.6	2705.1	2122.3	1343.1	1345.3	1341.9
23	2110.0	1337.3	2120.1	2203.6	2147.2	2225.1	2739.0	2296.3	2333.6	2252.2	2709.6	1996.9
24	2193.5	2442.1	1334.0	1976.6	1352.1	2259.0	2739.0	2262.4	2078.4	2272.5	2148.5	2117.7
25	1346.4	2497.3	1337.3	1306.9	2180.1	2564.0	2297.5	2251.0	2127.9	2208.1	1326.2	1336.2
26	1340.7	2026.4	1320.4	1260.6	2190.2	2645.3	2642.9	2247.7	2108.7	2225.1	2141.6	1341.9
27	1350.9	1312.5	1271.8	1274.1	2399.2	2670.0	2693.9	2578.6	2161.8	2256.7	1331.7	1346.4
28	1331.7	1312.5	1277.5	1996.9	2732.2	2673.5	2719.8	2243.2	2140.4	2244.3	1327.2	1334.0
29	1329.4	1339.6	1265.0	2008.2	2142.7	2274.8	2709.6	1325.0	2069.4	1336.2	1325.0	1338.4
30	1340.7		1266.2	1267.4	2176.6	2564.0	2266.9	2229.6	2091.8	1354.3	1323.8	1335.2
31	1330.6		1268.5		1345.3		2283.8	2230.8		1340.7		1329.4

Day	January (L/s)	February (L/s)	March (L/s)	April (L/s)	May (L/s)	June (L/s)	July (L/s)	August (L/s)	September (L/s)	October (L/s)	November (L/s)	December (L/s)
Monthly Minimum	1,310	1,310	1,229	1,261	1,238	1,350	2,095	1,325	1,328	1,319	1,307	1,320
Monthly Maximum	2,279	2,614	2,675	2,204	2,732	2,744	2,739	2,705	2,661	2,522	2,733	2,566
Monthly Average	1,501	1,593	1,718	1,430	1,800	2,396	2,497	2,338	2,173	1,768	1,760	1,746

Annual Minimum (L/s)	1,229
Annual Maximum (L/s)	2,744
Annual Average (L/s)	1,894

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 340.0 million litres/day. This converts to 3935 litres/second. The maximum daily volume of treated water that flows from the treatment plant into the distribution system shall not exceed this value.

Appendix B – 2020 Annual Report

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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, 2020 through December 31, 2020

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 [ ]**

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

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	260004917
Municipality of Bluewater	260006542
Municipality of Lambton Shores (East Lambton Shores Water Distribution System)	260006568
Township of Lucan-Biddulph	260003071
Municipality of Middlesex Centre (Middlesex Centre Distribution System)	260004202
Municipality of North Middlesex	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:

- Pipeline section replacement
- Instrumentation replacements
- Replacement of Uninterruptible Power Supply (UPS) and related breaker panels
- Backwash flow meter replacement
- Service water piping and valve replacement
- Garage door replacement

- Security upgrades
- Low lift pumps #2, #5, #6 motor replacements
- Caustic soda pipe replacements
- Caustic soda tank drain replacement
- Installed LED lighting and motion sensors
- Backwash check valve #1 and #4 replacements
- Surge tank relief valve vent piping replacement
- Pipeline chambers erosion control, rehabilitation and improvements
- Erosion control at the beach chamber
- Perimeter lighting upgrades
- Wastewater ejection pump system replacement
- Eyewash and shower stations replacements
- Interior door replacements
- Obsolete equipment removals
- Filter surface sweep replacements
- Envelope exterior sealants
- Low lift, suction and filter conduit sluice gate repairs
- Pipeline easement clearing
- Lab faucet replacements
- Railing replacements
- Flocculation gear drive rehabilitation

Maintenance Projects:

- Chlorine line repair for mussel control system
- Komoka-Mt.Brydges Pumping Station electrical breaker and cable replacements
- Low Lift pump #6 rebuild
- North filter conduit chlorine line repair

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
August 27, 2020 AWQI # 151596	Total Coliforms	1 Total Coliforms	CFU/ 100 mL	Resampled and tested. All resample results were clear.	August 27, 2020 and August 28, 2020

Ontario

Drinking-Water Systems Regulation O. Reg. 170/03
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	103	(0)-(<100)	(0)-(11,900)	(<10)-(>1,180)
Treated Water (WTP)	294	(0)-(0)	(0)-(1)	(<10)-(1,620)
Distribution (McGillivray PS)	60	(0)-(0)	(0)-(0)	(<10)-(20)
Distribution (North Exeter)	57	(0)-(0)	(0)-(0)	(<10)-(30)
Distribution (South Exeter)	55	(0)-(0)	(0)-(0)	(<10)-(40)
Distribution (Exeter-Hensall Reservoir)	58	(0)-(0)	(0)-(0)	(<10)-(20)
Distribution (Komoka-Mt. Brydges PS)	56	(0)-(0)	(0)-(0)	(<10)-(50)

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) – (1.93)
Treated Water Free Chlorine (mg/L)	2134	(0.83) - (1.58)
Treated Water Turbidity (NTU)	Continuous Monitoring	(0.024) – (2.00)
Treated Water Turbidity (NTU)	2136	(0.006) - (0.192)
Filter #1 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.023) - (0.556)
Filter #2 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.020) -(0.360)
Filter #3 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.026) - (0.133)
Filter #4 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.022) - (0.719)
Filter #5 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.023) - (0.451)
Filter #6 - Filtered Water Turbidity (NTU)	Continuous Monitoring	**Out of Service
Filter #7 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.025) - (0.645)

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

Parameter	Number of Grab Samples	Range of Results (min #)-(max #)
Filter #8 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.020) - *(1.24)
Filter #9 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.017) - (0.639)
Filter #10- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.022) - (0.247)
Filter #11- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.019) - (0.982)
Filter #12- Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.017) - (0.622)
Combined Filtered Water Turbidity (NTU)	2135	(0.008) - (0.130)

* On January 21, 2020, Filter #8 turbidity went above 1.0 NTU. The filtered water turbidity was above 1.0 NTU for less than 30 seconds, therefore not reportable (not an adverse result).

** Filter #6 was out of service for all of 2020 due to required repairs.

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 16, 2020	0.00011	mg/L	NO
Arsenic	January 16, 2020	Not Detected	mg/L	NO
Barium	January 16, 2020	0.0129	mg/L	NO
Boron	January 16, 2020	0.014	mg/L	NO
Cadmium	January 16, 2020	0.000005	mg/L	NO
Chromium	January 16, 2020	0.00012	mg/L	NO
Lead (Komoka Mt-Brydges Monitoring Station #2)	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	Not Detected 0.00001 0.00002 0.00001	mg/L mg/L mg/L mg/L	NO
Mercury	January 16, 2020	Not Detected	mg/L	NO
Selenium	January 16, 2020	0.00013	mg/L	NO
Sodium	January 16, 2020	13.8	mg/L	NO
Uranium	January 16, 2020	0.000028	mg/L	NO
Fluoride	January 16, 2020	0.07	mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Nitrite	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Nitrate	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	0.297 0.655 0.293 0.287	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 16, 2020	Not Detected	mg/L	NO
Atrazine + N-dealkylated metabolites	January 16, 2020	0.00002	mg/L	NO
Azinphos-methyl	January 16, 2020	Not Detected	mg/L	NO
Benzene	January 16, 2020	Not Detected	mg/L	NO
Benzo(a)pyrene	January 16, 2020	Not Detected	mg/L	NO
Bromoxynil	January 16, 2020	Not Detected	mg/L	NO
Carbaryl	January 16, 2020	Not Detected	mg/L	NO
Carbofuran	January 16, 2020	Not Detected	mg/L	NO
Carbon Tetrachloride	January 16, 2020	Not Detected	mg/L	NO
Chlorpyrifos	January 16, 2020	Not Detected	mg/L	NO
Diazinon	January 16, 2020	Not Detected	mg/L	NO
Dicamba	January 16, 2020	Not Detected	mg/L	NO
1,2-Dichlorobenzene	January 16, 2020	Not Detected	mg/L	NO
1,4-Dichlorobenzene	January 16, 2020	Not Detected	mg/L	NO
1,2-Dichloroethane	January 16, 2020	Not Detected	mg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	January 16, 2020	Not Detected	mg/L	NO
Dichloromethane	January 16, 2020	Not Detected	mg/L	NO
2-4 Dichlorophenol	January 16, 2020	Not Detected	mg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 16, 2020	Not Detected	mg/L	NO
Diclofop-methyl	January 16, 2020	Not Detected	mg/L	NO
Dimethoate	January 16, 2020	Not Detected	mg/L	NO
Diquat	January 16, 2020	Not Detected	mg/L	NO
Diuron	January 16, 2020	Not Detected	mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Glyphosate	January 16, 2020	Not Detected	mg/L	NO
Haloacetic Acids (HAA's) (Arva Reservoir)	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	Not Detected Not Detected 0.0063 0.0098	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Arva Reservoir) Running Annual Average	2020	0.0040	mg/L	NO
Haloacetic Acids (HAA's) (Exeter-Hensall Monitoring Station #3)	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	0.0076 0.0183 0.0154 0.0178	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Exeter-Hensall Monitoring Station #3) Running Annual Average	2020	0.0148	mg/L	NO
Haloacetic Acids (HAA's) (Komoka Mt-Brydges Monitoring Station #2)	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	Not Detected 0.0131 0.0074 0.0166	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Komoka Mt-Brydges Monitoring Station #2) Running Annual Average	2020	0.0093	mg/L	NO
Haloacetic Acids (HAA's) (Strathroy-Caradoc Monitoring Station #2)	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	Not Detected 0.0056 0.0077 0.0065	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) (Strathroy-Caradoc Monitoring Station #2) Running Annual Average	2020	0.0050	mg/L	NO
Malathion	January 16, 2020	Not Detected	mg/L	NO
2-Methyl-4-chlorophenoxyacetic	January 16, 2020	Not Detected	mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
acid				
Metolachlor	January 16, 2020	0.00002	mg/L	NO
Metribuzin	January 16, 2020	Not Detected	mg/L	NO
Monochlorobenzene	January 16, 2020	Not Detected	mg/L	NO
Paraquat	January 16, 2020	Not Detected	mg/L	NO
Pentachlorophenol	January 16, 2020	Not Detected	mg/L	NO
Phorate	January 16, 2020	Not Detected	mg/L	NO
Picloram	January 16, 2020	Not Detected	mg/L	NO
Polychlorinated Biphenyls (PCB)	January 16, 2020	Not Detected	mg/L	NO
Prometryne	January 16, 2020	Not Detected	mg/L	NO
Simazine	January 16, 2020	Not Detected	mg/L	NO
Total Trihalomethanes (Arva Reservoir)	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	0.015 0.022 0.024 0.026	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (THMs) (Arva Reservoir) Running Annual Average	2020	0.022	mg/L	NO
Total Trihalomethanes (Exeter-Hensall Monitoring Station #3)	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	0.028 0.034 0.038 0.053	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (Exeter-Hensall Monitoring Station #3) Running Annual Average	2020	0.038	mg/L	NO
Total Trihalomethanes (Komoka Mt-Brydges Monitoring Station #2)	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	0.019 0.027 0.031 0.035	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (Komoka Mt-Brydges Monitoring Station #2) Running Annual Average	2020	0.028	mg/L	NO
Total Trihalomethanes (Strathroy-Caradoc Monitoring Station #2)	January 14, 2020 April 2, 2020 July 17, 2020 October 19, 2020	0.017 0.024 0.029 0.030	mg/L mg/L mg/L mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Total Trihalomethanes (Strathroy-Caradoc Monitoring Station #2) Running Annual Average	2020	0.025	mg/L	NO
Terbufos	January 16, 2020	Not Detected	mg/L	NO
Tetrachloroethylene	January 16, 2020	Not Detected	mg/L	NO
2,3,4,6-Tetrachlorophenol	January 16, 2020	Not Detected	mg/L	NO
Triallate	January 16, 2020	Not Detected	mg/L	NO
Trichloroethylene	January 16, 2020	Not Detected	mg/L	NO
2,4,6-Trichlorophenol	January 16, 2020	Not Detected	mg/L	NO
Trifluralin	January 16, 2020	Not Detected	mg/L	NO
Vinyl Chloride	January 16, 2020	Not Detected	mg/L	NO

NOTE: During 2020, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.