Elgin Area
Primary Water Supply System

2022 Compliance Report

Contact Info:

Owner:
Elgin Area 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 220, Port Stanley, ON N5L 1J4
519-782-3101

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Profile

Who We Are

The Elgin Area Primary Water Supply System (EAPWSS) 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 EAPWSS. 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 contracts the operation and maintenance of the EAPWSS to the Ontario Clean Water Agency (OCWA), an independent Operating Authority.

Operating Authority:

ONTARIO CLEAN WATER AGENCY
AGENCE ONTARIENNE DES EAUX

EAPWSS Board Member Municipalities:

- City of London (Administering Municipality)
- Town of Aylmer
- Municipality of Bayham
- Municipality of Central Elgin
- Municipality of Dutton Dunwich
- Township of Malahide
- City of St. Thomas
- Township of Southwold

What Is Important

Values of the Water System

The values of the EAPWSS are the inherent beliefs or moral standards that generally reflect what the EAPWSS 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 Elgin Area 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 EAPWSS is responsible for the treatment and transmission of drinking water to eight (8) member municipalities in southwestern Ontario. The population served by this system is approximately 138,000. Water is provided bulk wholesale to the member municipalities who then distribute it to their customers.

The Elgin Area Water Treatment Plant (WTP) was constructed in the late 1960's and officially began operating in 1972. The WTP employs pre-chlorination, screening, powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, ultra-violet (UV) disinfection, post-chlorination, fluoridation and pH adjustment using both carbon dioxide and sodium hydroxide to treat raw water obtained from Lake Erie. After the water is treated it is pumped from the WTP to the member municipalities or to the terminal storage reservoir. The drinking water system is monitored at various locations via a Supervisory Control and Data Acquisition (SCADA) system**.**

The EAPWSS is operated under the Municipal Drinking Water Licence (MDWL) #048-101 and Drinking Water Works Permit (DWWP) #048-201.

EAPWSS Assets:

- 1 low lift pumping station
- 1 water treatment plant
- 1 residuals management facility
- 2 surge facilities
- 1 terminal storage reservoir (consists of 2 reservoir cells)
- 14.7 km primary transmission pipeline (2 pipelines, 1 temporarily decommissioned)

Figure 1: Low Lift Pumping Station located on Lake Erie

EAPWSS: At A Glance

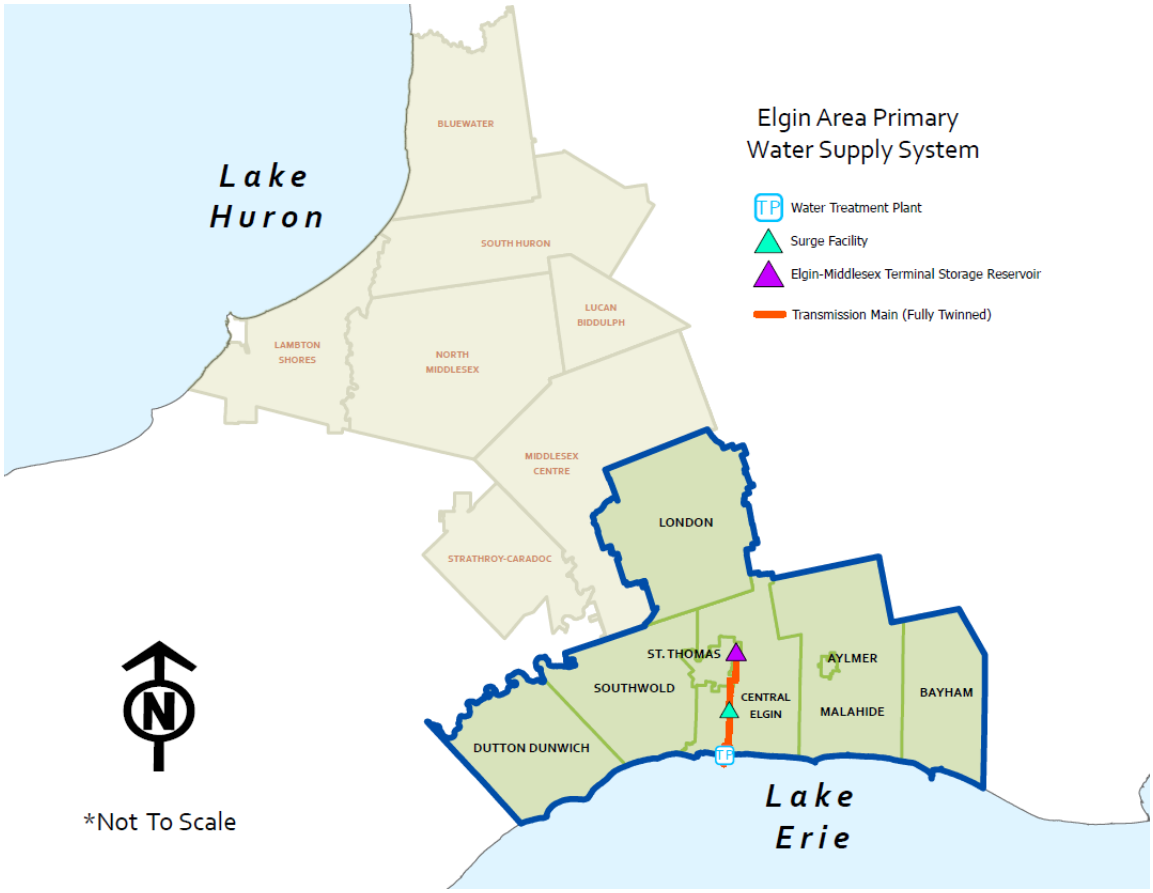

Figure 2: EAPWSS Major Infrastructure Locations

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 Elgin Area WTP, although they are not an exact representation. Some details may vary.

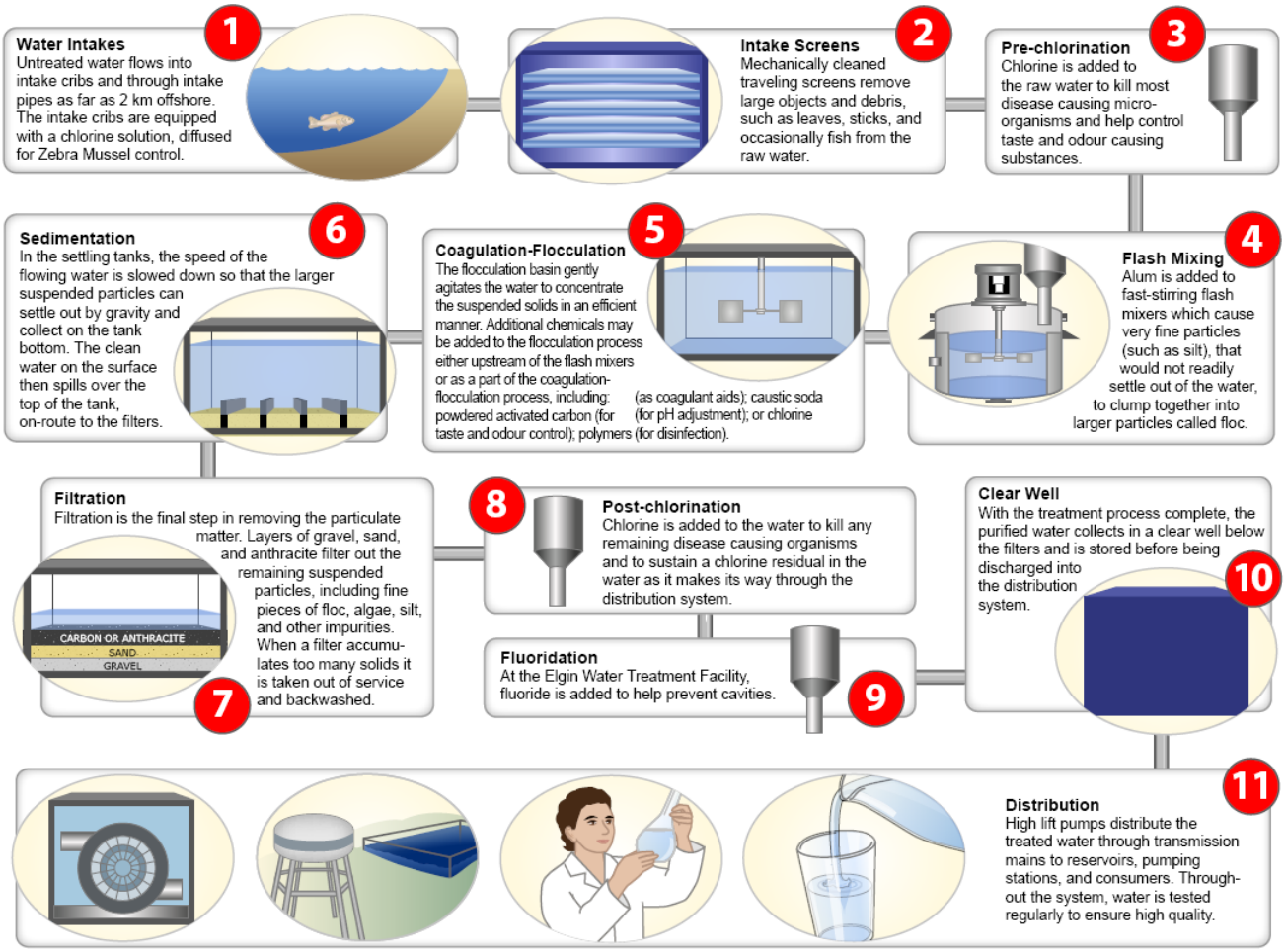

Figure 3: General Overview of the Water Treatment Process

At the Elgin Area WTP, several additional treatment steps take place:

- Carbon dioxide is injected prior to the flash mixing (Step 4) to lower the raw water pH to improve the treatment process effectiveness and efficiency.
- A UV reactor is located after each filter (Step 7) for additional disinfection when required.
- 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.

2022 Highlights - General

Elgin WTP Site Security & Security Upgrades

A comprehensive security audit was completed for the EAPWSS in 2017, which outlined vulnerabilities and security related risks throughout the water supply system. The security audit included a significant number of recommended physical improvements for the EAPWSS facilities in order to address the safety and security of operational staff, the public, and the security of the water supply to benefiting municipalities. In 2018 staff began addressing the identified deficiencies and vulnerabilities.

The security audit report included specific recommendations related to implementing on-site security services. In late 2021 a security trailer was constructed at the Water Treatment Plant (WTP). A three (3) year security services contract was awarded to Paladin Security Group Ltd. and the service began in January 2022. The addition of on-site security services has addressed some security and safety-related gaps, including improved visitor and contractor management.

Additional security upgrades undertaken in 2022 included the installation and integration of a new security camera system, and a card access system.

Figure 4: The new security trailer at the Elgin WTP.

Quality Management System Re-accreditation

The continued utilization and accreditation of a Quality Management System (QMS) is a provincial regulatory requirement under the *Safe Drinking Water Act* and the Municipal Drinking Water Licence Program. The licence framework requires drinking water system owners to obtain a Municipal Drinking Water Licence (MDWL) to operate their drinking water system. In order to obtain a MDWL, a drinking water system must have an accredited operating authority. To become accredited the operating authority must establish and maintain a QMS that meets the minimum requirements of the province's Drinking Water Quality Management Standard (DWQMS). Operating authorities are accredited by a third-party accreditation body against the requirements of the DWQMS. Re-accreditation audits take place every three (3) years. OCWA successfully received DWQMS re-accreditation for the EAPWSS in October 2022 and is accredited for another three-year term ending in 2025.

Operating Contract – Term Extension

In 2012 the Board of Management for the EAPWSS, concurrently and jointly with the Board of Management for the Lake Huron Primary Water Supply System (LHPWSS), awarded the contract for the management, operation and maintenance of the drinking water systems to OCWA. OCWA began operating the regional water system on July 1, 2012 for an initial five year term. In 2017 the term was extended for a five year period, ending in 2022.

In 2022 the operating contract was extended for another five year term. An Amended and Restated Operations and Maintenance Services Agreement was developed and approved. The Agreement continues to outline minimum expectations and mutual commitments between the LHPWSS and OCWA, while providing an incentive for superior performance from minimum standards.

The new Agreement is in effect for the period of January 1, 2023 to December 31, 2027.

Asset Management Plan Update

In 2021 the EAPWSS retained Dillon Consulting Ltd. for the completion of the Asset Management Plan (AMP) update. A key piece of the AMP update was the development of an Asset Management Policy which the EAPWSS Board of Management approved on October 7, 2021. Once the Asset Management Policy was established, the Board of Management endorsed the Asset Management Plan Levels of Service Framework, and received the State of the Infrastructure report.

The AMP update is a culmination of these initiatives and brings together the asset management direction, vision, and guiding principles of the utility for the next 5 years and beyond. The final AMP was endorsed by the Board of Management in October 2022.

The 2022 AMP update reflects the utility's continuous efforts to improve asset management planning and level of asset management maturity. It also includes several recommendations intended to support the continuous improvement of asset management practices, and the quality and accuracy of asset-related data.

The 2022 AMP establishes the asset management strategies, risk profiles, and investment activities that will guide the EAPWSS toward achieving the target levels of service to the member municipalities and respond to any changing service requirements from growth and enhancement over the next 25-year planning period. The AMP is an innovative approach to long-term asset management planning in alignment with global best practice standards for Asset Management such as ISO 55000.

Water Quality Facility Plan Update

In 2022 a project was initiated to update the Water Quality Facility Plan (WQFP). The WQFP is updated every five (5) years with the purpose of providing the EAPWSS with new information on WTP performance and treatment capacity as supply conditions change. The final updated WQFP will provide staff with a detailed report on the status of the WTP and residuals management processes and their overall performance. It will also provide recommendations and the framework to prioritize the timing for further sampling programs, studies, capital upgrades and/or operational modifications or changes to improve water treatment efficiency and efficacy. The recommendations will be implemented as future projects over a 10-year planning horizon. In June 2022, the WQFP update project was awarded to Stantec Consulting Ltd. with an estimated completion for mid-2023.

2022 Capital Project Highlights

Flocculation Tank Influent Distribution Upgrades

Since the commissioning of the Residuals Management Facility (RMF), operations staff have been dealing with uneven distribution of settled solids leading to periodic failures of the scraper system in the settling tanks. AECOM was retained to perform an engineering assessment of the observed uneven solids distribution and to provide recommendations to improve the solids and flow distribution. Based on AECOM's modelling, the recommended solution was to install a solid plate, to promote horizontal inflow baffling in the flocculation inflow distribution channel. In 2022, the baffle walls were installed in both the north and south flocculation tanks by Trade-Mark Industrial Inc.

Figure 5: New baffle wall installed in flocculation tank.

Chemical Storage Tank Replacements

In 2016, the two (2) existing Fibreglass Reinforced Plastic (FRP) bulk storage tanks used to store aluminum sulphate at the WTP were inspected and reported to be past their normal service life, and showing signs of age-related deterioration. The tanks were undersized for the WTP current and future needs.

In 2018, R.V. Anderson Associates Ltd. undertook the preliminary design for the replacement of the tanks, made recommendations related to sizing and constructability, and provided cost estimates for replacing the existing FRP tanks.

The project involved installing two (2) new PVC-lined rectangular wood stave tanks at the existing location in the Chemical Building. The new wood stave tanks have a larger operating volume than the old tanks. The spill containment works were also replaced and expanded as a result of the larger tank volumes. Construction was performed in 2022 by BGL Contractors Corp. Both new tanks were fully operational in May 2022.

Figure 6a & 6b: New wood stave chemical storage tanks within a concrete secondary containment wall.

Contractor Site Trailer Pads

For each major capital project being undertaken at the WTP, contractors will bring site trailers for their use as a construction office and for storage of equipment and materials. This often requires operations staff to coordinate a site trailer location and allow the contractor to install temporary electrical connections for their trailer. This project involved the construction of one (1) permanent trailer pad and one (1) permanent electrical pedestal to facilitate ongoing and future construction projects, creating efficiency by eliminating repetitive temporary work to install and remove connections.

Figure 7: Gravel contractor trailer pad with a permanent electrical pedestal

Sodium Hydroxide Assessment Study

The Elgin WTP has a sodium hydroxide system which was constructed and commissioned in 2012 to adjust the pH of the treated water supplied to benefiting municipalities. During a routine inspection of the distribution pipeline and valve chambers, precipitation build up was identified in the discharge header and valves immediately downstream of the sodium hydroxide injection point. The target pH of finished water leaving the WTP was reduced in an effort to reduce or eliminate the precipitate. Periodic camera inspections and monitoring took place over a two (2) year period to observe the precipitate buildup.

In 2022, R.V. Anderson Associates Ltd. was retained to further review the operational challenges caused by the sodium hydroxide system and provide recommendations to mitigate. A Sodium Hydroxide Assessment Study was completed. The final report identifies the cause of the precipitation issues within the discharge header and valve chamber at the WTP. The report includes an engineering solution for enhanced sodium hydroxide injection and mixing, which will reduce the precipitation issues while maintaining effective pH adjustment control within the transmission system. The report also identified a plan to remove the existing precipitate. Capital upgrades are planned for 2024 to implement the recommended solutions in the report.

2022 Flow Summary

As per the water system's current Permit to Take Water (PTTW), the amount of raw water taken into the Elgin Area WTP cannot exceed 91.0 million litres/day. This converts to 1053 litres/second.

The water taking in 2022 was approved under PTTW #6283-8QZM3N (January 1, 2022 to June 1, 2022) and PTTW #P-300-4168104920 (June 2, 2022 to December 31, 2022).

As per the water system's Municipal Drinking Water Licence (MDWL), the rated capacity of the WTP is 91.0 million litres/day. The maximum daily flow of treated water from the treatment plant into the distribution system shall not exceed this value.

The following table contains a flow summary, with a 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 amount of raw water taking	91.0	100.00%	1053
Raw Water Flow – Average Day	45.1	49.6%	898
Raw Water Flow – Max. Day	61.2	67.3%	1037
WTP Rated Capacity	91.0	100.00%	1053
Treated Water Flow – Average Day	43.9	48.2%	762
Treated Water Flow – Max. Day	60.6	66.6%	991

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

Treated Water Flows

The average daily flow from the Elgin Area WTP was 43.9 ML/day, which is a 0.46% increase from the previous year. The maximum daily flow for 2022 was 60.6 ML/day, which is a 3.59% increase from the previous year.

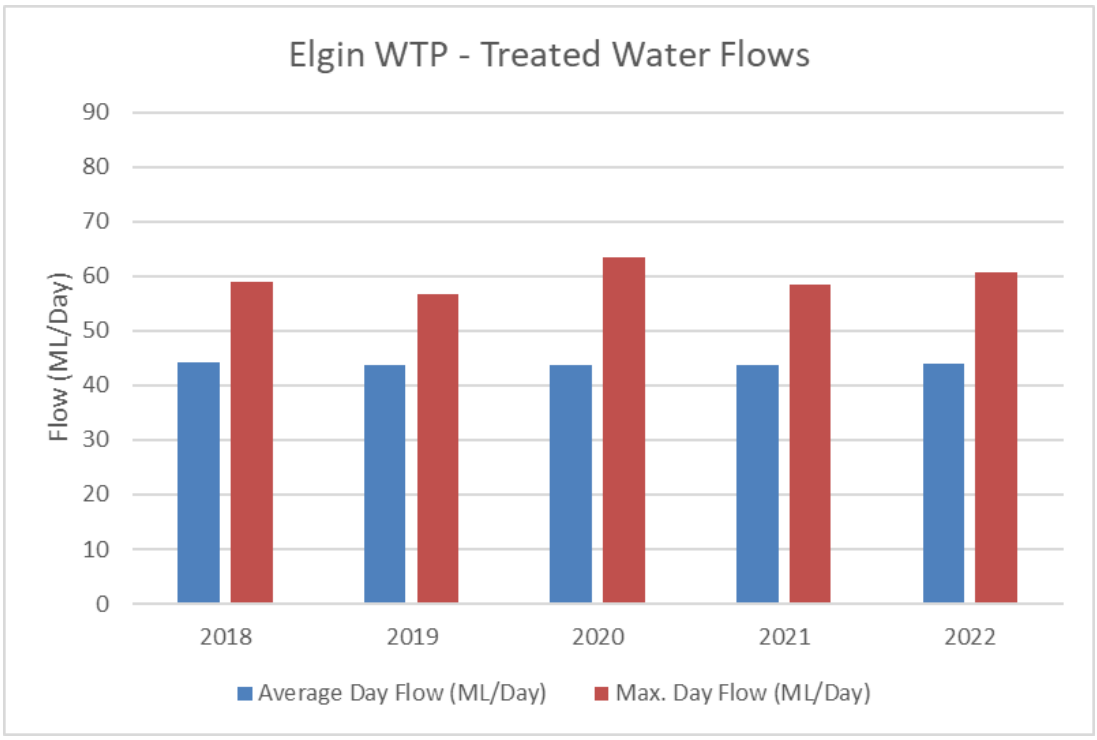

Figure 8: Five (5) Year Treated Water Flow Comparison

The City of London utilizes the largest volume of treated drinking water from the EAPWSS. As shown in Figure 9, the City of London utilizes 51.74% of the volume; the City of St. Thomas utilizes 27.57%, and the other six municipalities utilize the remaining 20.69% of the volume.

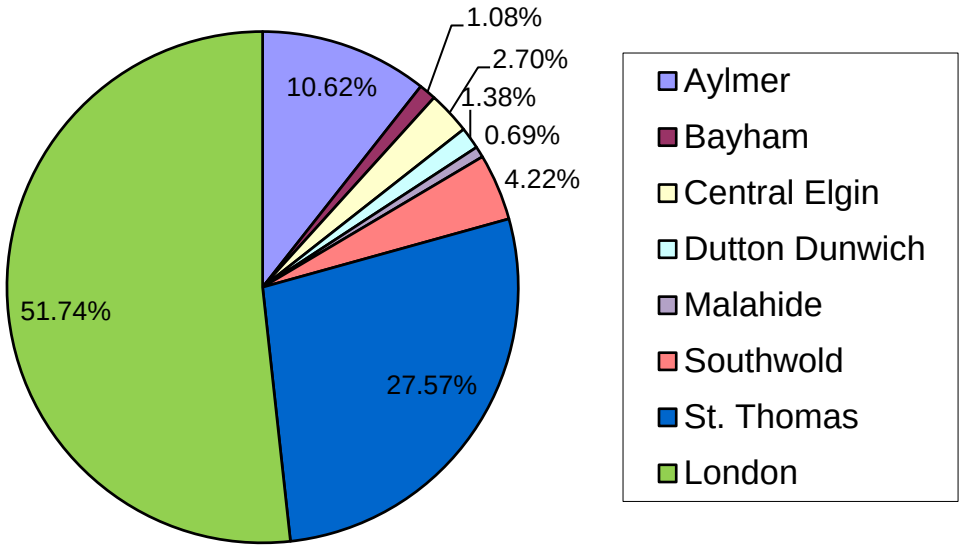

Figure 9: 2022 Treated Water Volumes per Municipality

2022 Chemical Consumption

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

Chemical	Purpose	Total amount used in 2022
Aluminum Sulphate	Coagulant	588,540 kg
Polymer	Coagulant aid	106 kg
Powdered Activated Carbon	Taste and odour control (seasonally)	9,681 kg
Chlorine Gas	Primary disinfection	18,727 kg
Chlorine Gas	Mussel control at the intake crib	5,115 kg
Fluoride	Prevention of dental cavities	9,106 kg
Carbon Dioxide	pH adjustment - injected at the start of the treatment process to lower the raw water pH for improved treatment effectiveness and efficiency	164,592 kg
Sodium Hydroxide	pH adjustment – injected at the end of the treatment process to raise the treated water pH for reduced corrosion potential	253,843 kg
Sodium Bisulphite	Residuals Management Facility Dechlorination	10,736 kg
Polymer	Residuals Management Facility Centrifuge	2240 kg
Polymer	Residuals Management Facility Thickener	436 kg

2022 Water Quality Sampling and Monitoring

The EAPWSS consistently provides treated drinking water with water quality above the standards required by provincial regulation. Where applicable, this is a result of the EAPWSS standards being more stringent than what is required by provincial regulation. For example, the target at the Elgin Area WTP for filtered water turbidity (a measure of the cloudiness of water) is ten times more stringent than the provincial standard. The EAPWSS is utilizing best management practices and continual improvement to ensure that high drinking water standards are maintained and enhanced where possible.

All water quality sampling at the EAPWSS 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 2022, a total of 543 microbiological samples were collected from raw, treated and distribution system water, and were submitted to the laboratory for E. Coli, total coliforms and heterotrophic plate count (HPC) analysis. There were no reported incidents of adverse microbiological test results in 2022. For more information please see the Annual Report which is included as Appendix B.

Annual samples are collected and submitted to the laboratory for inorganics (metals) and organics analysis, which include herbicides, pesticides and volatile organic compounds. Quarterly sampling and laboratory analysis is also completed for trihalomethanes and haloacetic acids (disinfection by-products), nitrates and nitrites.

Seasonal samples are collected and submitted to the laboratory for total microcystin analysis from June through to the end of October as part of the Harmful Algal Bloom (HAB) Monitoring and Sampling Program. The purpose of the HAB program is to keep drinking water safe from potential impacts of aquatic algal bacteria overgrowth (i.e. cyanobacteria) which can 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 collected and submitted to the laboratory for total microcystin analysis. There were no detectable results in the raw water samples.

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 analysis for operational control.

As required by regulation, the EAPWSS also prepares an Annual Report which includes a summary of water quality test results and a maintenance report. The 2022 Annual Report can be found in Appendix B.

Residuals Management Facility (RMF) Compliance

The Municipal Drinking Water Licence for the EAPWSS requires that non-compliant discharges of total chlorine residual to the natural environment must be reported. This annual compliance report includes a report on the date and time of any non-compliant discharges, the duration, maximum total chlorine residual value, volume of non-compliant discharge, reason, and corrective action taken.

In 2022, there were two (2) incidents of reportable non-compliant discharges of total chlorine residual. The 2022 RMF Non-Compliant Discharge Summary Report can be found in Appendix C.

Research and Partnerships

The EAPWSS acknowledges the importance of scientific research on water quality and the effects on human health. The EAPWSS has partnered with the Natural Sciences and Engineering Research Council (NSERC) Chair in Drinking Water Research at the University of Waterloo and the University of Toronto to pursue research opportunities, as well as Western University. The EAPWSS is a member of the Water Research Foundation (WRF). In addition, the EAPWSS 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 EAPWSS annually. A MECP inspection took place on December 2, 2022. The final inspection report was issued on February 21, 2023. A total of one (1) non-compliance and one (1) best management practice was identified in the inspection report. The details of the non-compliance and best management practice can be found in Appendix D. The final inspection rating received for the 2022-2023 reporting year was 97.01%.

Elgin Area
Primary Water Supply System

Regional Water Supply Division
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https://huronelginwater.ca/

Appendix A – 2022 Flow Summary

1. Raw Water Intake – Daily Flow (m^3/Day)

Day	January (m^3/day)	February (m^3/day)	March (m^3/day)	April (m^3/day)	May (m^3/day)	June (m^3/day)	July (m^3/day)	August (m^3/day)	September (m^3/day)	October (m^3/day)	November (m^3/day)	December (m^3/day)
1	37,274	40,624	46,746	51,926	45,472	47,828	53,664	48,388	44,766	42,226	39,884	36,920
2	44,436	52,014	46,440	47,014	48,870	52,648	42,732	43,844	48,994	48,392	51,552	40,428
3	47,410	42,560	43,094	43,568	39,120	46,782	53,990	43,630	47,912	39,560	44,202	47,344
4	41,490	44,146	40,532	44,788	43,484	40,490	43,642	45,230	51,112	52,510	45,022	38,988
5	40,960	39,506	46,610	19,256	48,226	40,792	55,134	48,574	45,824	38,584	40,668	47,304
6	46,960	49,408	48,390	41,972	47,074	53,190	46,414	41,488	44,060	41,980	47,680	39,306
7	41,880	50,728	42,844	42,936	48,976	35,722	53,546	48,536	45,236	41,724	43,934	40,198
8	48,420	45,850	47,598	50,350	45,180	49,248	53,020	47,644	48,614	51,068	50,870	45,944
9	41,890	37,620	40,996	39,102	47,320	42,700	38,050	50,644	48,066	40,450	41,706	42,220
10	46,470	53,846	43,600	44,562	51,408	50,776	52,982	50,112	52,254	47,928	49,870	41,434
11	40,788	49,468	41,300	53,144	51,382	43,692	56,240	46,684	40,514	47,614	38,464	42,800
12	52,056	41,338	55,552	47,278	42,332	44,830	40,970	45,136	47,340	47,708	46,488	38,590
13	42,898	48,282	40,130	14,596	51,906	50,108	60,134	42,650	46,198	47,496	40,632	42,146
14	41,692	43,136	49,894	47,134	46,678	50,282	42,394	52,824	45,474	38,472	44,198	41,452
15	49,278	52,702	34,782	43,194	51,816	47,180	54,520	47,146	55,540	50,372	44,818	44,098
16	38,784	52,510	53,886	46,260	47,184	53,802	52,538	53,532	49,190	48,644	40,150	39,654
17	52,946	45,502	45,520	42,212	44,924	47,832	50,942	40,016	49,176	42,712	47,052	40,202
18	38,304	38,972	46,396	47,078	48,224	51,826	40,866	42,942	42,568	46,746	44,474	37,282
19	49,522	54,444	42,924	40,470	45,598	48,712	54,958	50,864	40,640	43,484	41,284	42,936
20	41,498	42,050	47,784	34,990	51,272	49,518	44,238	48,774	41,844	46,004	42,940	45,732
21	41,160	51,064	49,114	45,036	48,902	41,540	43,724	45,230	33,694	42,234	39,412	44,244
22	47,070	48,594	35,466	48,430	41,248	46,512	50,452	46,740	33,398	48,294	51,618	40,302
23	40,784	30,430	49,188	42,164	46,848	45,784	45,734	43,738	33,672	46,888	35,538	40,170
24	48,304	27,586	41,628	41,110	45,356	49,736	46,410	47,564	33,282	46,298	37,700	32,958
25	43,062	21,270	50,464	24,214	47,338	52,326	44,794	48,570	33,664	38,590	52,080	35,414
26	44,674	50,360	49,476	43,700	47,946	53,828	48,748	52,442	33,692	48,434	39,522	33,390
27	47,842	61,160	45,052	58,252	49,962	43,942	46,010	37,336	33,116	40,356	39,150	34,856
28	44,166	44,314	24,668	52,870	40,502	48,050	48,002	51,196	32,616	54,030	48,750	60,614
29	41,834		54,626	44,616	51,726	52,552	51,356	43,846	40,698	40,812	41,284	52,716
30	44,376		52,092	45,318	43,574	51,262	50,322	43,598	43,696	47,646	44,976	38,238
31	43,702		15,188		53,458		43,264	48,328		45,968		52,722
Monthly Total	1,371,930	1,259,484	1,371,980	1,287,540	1,463,306	1,433,490	1,509,790	1,447,246	1,286,850	1,403,224	1,315,918	1,300,602

Day	January (m^3/day)	February (m^3/day)	March (m^3/day)	April (m^3/day)	May (m^3/day)	June (m^3/day)	July (m^3/day)	August (m^3/day)	September (m^3/day)	October (m^3/day)	November (m^3/day)	December (m^3/day)
Monthly Minimum	37,274	21,270	15,188	14,596	39,120	35,722	38,050	37,336	32,616	38,472	35,538	32,958
Monthly Maximum	52,946	61,160	55,552	58,252	53,458	53,828	60,134	53,532	55,540	54,030	52,080	60,614
Monthly Average	44,256	44,982	44,257	42,918	47,203	47,783	48,703	46,685	42,895	45,265	43,864	41,955

Annual Total (m^3)	16,451,360
Annual Minimum (m^3/day)	14,596
Annual Maximum (m^3/day)	61,160
Annual Average (m^3/day)	45,072

Note: (i) As per the water system's current Permit To Take Water, the amount of raw water taken into the Elgin Area Water Treatment Plant cannot exceed 91,000 m^3/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	869	918	953	979	981	1,037	863	932	918	994	1,006	912
2	973	975	868	816	977	1,000	872	944	895	979	821	992
3	988	889	835	817	995	950	969	947	884	998	800	954
4	960	939	810	918	873	889	780	1,027	904	994	771	981
5	1022	994	809	974	971	940	855	978	910	790	800	979
6	991	955	959	954	947	955	840	910	799	996	800	897
7	981	977	985	921	994	847	867	851	889	923	766	888
8	917	897	787	817	922	985	969	816	918	1,003	800	983
9	945	854	946	788	956	880	915	886	952	990	1,011	946
10	996	862	924	996	936	800	900	959	877	948	878	908
11	954	954	775	954	985	800	833	891	946	886	767	948
12	1005	994	846	975	915	800	887	970	901	931	996	946
13	897	1008	903	843	956	800	807	951	887	930	980	942
14	988	891	941	847	833	913	790	840	906	977	892	954
15	945	952	777	828	877	877	850	978	984	964	931	927
16	991	850	958	935	937	772	886	995	970	996	842	927
17	923	1002	1,019	964	892	906	980	853	853	969	983	861
18	969	1005	787	966	950	960	986	992	813	932	1,001	969
19	894	912	896	804	943	991	878	900	981	983	1,000	981
20	822	1001	915	804	837	972	865	959	816	962	987	909
21	814	975	916	928	841	1,010	875	929	392	800	996	814
22	901	1028	936	979	936	939	989	980	392	800	975	891
23	948	971	973	802	884	928	893	1,024	392	800	945	831
24	909	904	843	865	825	981	941	908	392	800	902	463
25	792	905	877	914	810	873	955	844	500	797	909	922
26	946	910	860	924	800	779	1,000	903	432	800	958	419
27	998	1005	915	906	800	934	887	891	444	800	967	940
28	763	916	925	978	800	974	844	887	496	1,021	985	982
29	936		855	899	800	887	937	902	881	835	989	865
30	840		946	939	720	878	969	881	887	833	979	982
31	911		844		736		776	797		901		930

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	763	850	775	788	720	772	776	797	392	790	766	419
Monthly Maximum	1,022	1,028	1,019	996	995	1,037	1,000	1,027	984	1,021	1,011	992
Monthly Average	929	944	890	901	891	909	892	920	774	914	915	898

Annual Minimum (L/s)	392
Annual Maximum (L/s)	1,037
Annual Average (L/s)	898

Note: (i) As per the water system's current Permit To Take Water, the amount of raw water taken into the Elgin Area Water Treatment Plant cannot exceed 91,000 m^3/day. This converts to 1053 litres/second.

3. Treated Water Daily Flow (m^3/Day)

Day	January (m^3/day)	February (m^3/day)	March (m^3/day)	April (m^3/day)	May (m^3/day)	June (m^3/day)	July (m^3/day)	August (m^3/day)	September (m^3/day)	October (m^3/day)	November (m^3/day)	December (m^3/day)
1	37,336	39,480	43,708	51,820	44,004	42,088	50,372	45,072	42,680	43,276	37,756	36,296
2	42,572	49,824	45,092	44,924	48,096	51,312	42,540	44,636	46,832	45,616	51,268	39,740
3	47,376	39,596	40,876	42,552	39,912	47,040	52,840	42,308	49,384	38,680	42,176	45,984
4	38,640	42,496	40,900	43,736	42,472	39,448	42,088	44,608	48,632	49,680	43,836	39,652
5	41,048	38,232	45,568	16,968	46,528	38,808	54,516	44,984	44,792	36,920	40,144	43,680
6	46,228	46,720	45,032	44,368	47,276	52,144	45,284	41,548	43,512	42,180	48,120	39,392
7	39,700	48,336	41,880	40,400	47,316	36,880	52,632	48,036	45,716	41,592	41,240	39,628
8	45,600	43,752	46,936	49,136	45,192	45,880	51,264	46,444	45,324	48,700	48,608	43,644
9	40,520	36,856	38,256	40,336	44,896	43,508	38,616	48,096	48,168	40,928	39,044	42,056
10	45,188	50,120	42,192	43,568	49,648	49,732	51,312	49,544	50,828	45,780	47,756	40,040
11	39,756	47,584	41,584	52,460	50,956	42,104	56,264	43,888	40,396	47,604	38,856	41,224
12	49,544	39,312	52,520	44,884	41,192	44,384	39,160	45,284	46,192	45,296	44,272	37,600
13	43,244	48,048	37,572	12,632	51,084	46,320	59,664	42,048	42,844	47,932	40,648	41,712
14	39,100	40,620	49,092	46,068	45,228	47,464	41,576	51,072	45,852	39,088	44,224	40,856
15	46,728	50,436	35,152	43,136	51,472	43,936	53,760	45,208	52,976	47,876	42,408	44,264
16	38,704	50,124	50,704	46,032	45,464	51,920	51,560	53,384	48,880	47,352	38,356	38,856
17	49,544	43,956	45,904	39,668	45,556	46,144	49,104	38,232	47,428	42,160	43,392	39,032
18	38,476	37,108	45,072	47,144	46,640	50,708	40,560	43,664	40,672	46,928	45,980	35,520
19	46,732	53,080	40,168	39,108	44,208	46,516	54,160	48,064	39,988	43,824	39,792	41,872
20	39,164	41,776	45,956	32,596	48,800	48,568	44,076	47,816	41,016	44,840	41,696	44,928
21	40,824	48,768	48,740	44,532	48,084	41,736	41,492	46,536	32,680	41,988	38,464	43,344
22	46,144	47,036	34,528	46,848	41,212	45,312	49,304	45,616	33,976	48,312	50,760	36,760
23	38,764	29,652	47,656	43,352	46,376	45,616	44,600	42,368	30,192	45,492	35,928	40,016
24	45,080	27,120	40,352	38,028	43,844	49,936	44,056	46,128	33,304	44,792	35,544	31,912
25	41,584	19,832	49,136	22,692	46,640	51,392	44,344	46,784	32,528	38,784	50,664	35,768
26	42,256	47,072	46,664	44,764	47,276	51,972	48,104	51,500	33,740	46,248	39,584	30,956
27	44,056	60,568	45,992	57,152	48,536	43,136	46,968	37,556	32,960	40,044	39,680	34,096
28	41,396	42,928	23,524	50,280	39,576	48,144	43,792	50,784	31,856	48,744	45,848	56,988
29	42,516		52,388	43,616	51,664	50,016	50,432	41,928	38,988	40,952	39,636	53,376
30	40,592		51,312	44,452	42,608	52,624	48,480	41,616	43,556	45,784	44,252	35,832
31	41,500		13,488		52,552		44,976	49,352		45,580		52,124
Monthly Total	1,319,912	1,210,432	1,327,944	1,257,252	1,434,308	1,394,788	1,477,896	1,414,104	1,255,892	1,372,972	1,279,932	1,267,148

Day	January (m^3/day)	February (m^3/day)	March (m^3/day)	April (m^3/day)	May (m^3/day)	June (m^3/day)	July (m^3/day)	August (m^3/day)	September (m^3/day)	October (m^3/day)	November (m^3/day)	December (m^3/day)
Monthly Minimum	37,336	19,832	13,488	12,632	39,576	36,880	38,616	37,556	30,192	36,920	35,544	30,956
Monthly Maximum	49,544	60,568	52,520	57,152	52,552	52,624	59,664	53,384	52,976	49,680	51,268	56,988
Monthly Average	42,578	43,230	42,837	41,908	46,268	46,493	47,674	45,616	41,863	44,289	42,664	40,876

Annual Total (m^3)	16,012,580
Annual Minimum (m^3/day)	12,632
Annual Maximum (m^3/day)	60,568
Annual Average (m^3/day)	43,858

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 91,000 m^3/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	470	847	861	656	641	868	861	863	859	854	475	487
2	689	862	633	878	643	866	648	856	855	868	860	486
3	853	862	635	641	488	863	870	857	845	645	862	881
4	647	858	865	640	648	830	851	728	858	872	642	633
5	859	474	858	865	860	866	863	746	854	684	857	867
6	872	863	863	876	869	868	866	641	867	649	881	643
7	856	865	861	486	865	848	858	645	851	755	645	471
8	854	851	854	883	645	864	852	645	854	867	869	643
9	634	488	473	609	659	854	466	655	848	650	464	645
10	856	863	868	641	868	865	857	631	858	862	872	610
11	633	991	862	878	876	828	858	857	856	862	464	627
12	635	488	863	863	847	643	850	641	856	866	856	858
13	633	871	469	831	866	648	854	633	851	845	848	861
14	634	637	862	866	858	864	858	852	856	464	855	877
15	633	860	851	636	862	878	867	853	632	981	631	852
16	630	860	873	865	661	860	835	857	633	655	760	465
17	853	867	873	469	642	836	657	844	856	640	862	463
18	842	859	867	870	655	630	628	849	628	865	868	606
19	858	853	646	834	645	629	864	853	861	646	785	869
20	628	861	874	875	859	865	859	860	847	641	629	858
21	628	857	643	869	827	870	855	847	490	641	473	861
22	854	856	653	867	637	867	866	841	467	863	861	862
23	460	861	877	836	642	863	663	778	471	632	462	859
24	845	872	485	642	867	847	630	642	471	623	643	484
25	861	838	881	869	852	647	874	641	476	868	875	875
26	634	861	640	867	871	866	866	651	473	699	474	640
27	871	860	641	878	858	642	873	459	473	642	471	648
28	875	830	859	877	471	646	848	859	489	648	780	863
29	865		871	875	870	862	663	830	490	637	473	864
30	875		872	642	865	865	865	855	874	647	740	852
31	846		855		872		871	843		864		873

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	460	474	469	469	471	629	466	459	467	464	462	463
Monthly Maximum	875	991	881	883	876	878	874	863	874	981	881	881
Monthly Average	748	815	777	779	761	808	806	762	720	740	708	722

Annual Minimum (L/s)	459
Annual Maximum (L/s)	991
Annual Average (L/s)	762

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 91,000 m^3/day. This converts to 1053 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 – 2022 Annual Report

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

Drinking-Water System Number:	210000871
Drinking-Water System Name:	**Elgin Area Primary Water Supply System**
Drinking-Water System Owner:	Elgin Area 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/ Elgin Area Water Treatment Plant 43665 Dexter Line, Union, ON N0L 2L0	**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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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 directly from the EAPWSS:

Drinking Water System Name	Drinking Water System Number
City of London Distribution System	260004917
St. Thomas Area Secondary Water Supply System	260078897
Aylmer Area Secondary Water Supply System	260004722
Port Burwell Area Secondary Water Supply System	260004735
Central Elgin Distribution System	260004761
St. Thomas Distribution System	260002187

Systems that receive their drinking water indirectly from the EAPWSS:

Drinking Water System Name	Drinking Water System Number
Aylmer Distribution System	260002136
Malahide Distribution System	260004774
Dutton Dunwich Distribution System	220002967
Bayham Distribution System	260004748
Southwold Distribution System	210001362
Ontario Police College Distribution System	260002161

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 Elgin Area Primary Water Supply System employs pre-chlorination, screening, process pH adjustment (utilizing carbon dioxide), powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, UV disinfection, post-chlorination, final pH adjustment (utilizing sodium hydroxide) and fluoridation to treat raw water obtained from Lake Erie. The WTP has a rated capacity of 91 ML/day (MLD). Water is pumped from the plant through the primary transmission main (900mm diameter) to various communities enroute to the Elgin-Middlesex Terminal Reservoir located northeast of St. Thomas in the Municipality of Central Elgin. The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system.
A Residuals Management Facility (RMF) provides equalization, clarification, sediment thickening and dechlorination. Thickened sediment is dewatered by centrifuges and the thickened sediment is sent to the landfill for final disposal. Clarified and dechlorinated liquid streams are discharged back to Lake Erie through the plant drain.

List all water treatment chemicals used over this reporting period

Carbon Dioxide
Aluminum Sulphate
Cationic Polymer
Powder Activated Carbon
Chlorine Gas
Hydrofluosilicic Acid
Sodium Hydroxide
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:

- Replaced backwash pump #1 and #2 pressure relief blow off valve body
- Replaced aluminum sulphate chemical storage tanks
- Replaced plant lighting and breaker panels
- Replaced roof drains and exterior building sealants
- Installed North & South flocculation tank railing kick plates
- Installed low lift pump room stairs railings
- Installed railings at Elgin Middlesex Pumping Station (EMPS) valve house

- Replaced 42” isolation valve on St. Thomas suction header at EMPS
- Replaced isolation valve on St. Thomas discharge header at EMPS
- Installed flocculation inlet channel baffle wall
- Rebuilt and repaired low lift pump #3 motor
- Replaced main incoming utility pole at EMPS
- Replaced Filter #2 & #3 drain valve actuators
- Replaced chlorine building roof
- Installed additional security cameras and swipe card access
- Replaced plant surge pressure transmitter
- Replaced low lift and treated water temperature transmitters

Maintenance Projects:

- Installed new Total Chlorine Residual (TCR) analyzer in RMF
- Rebuilt North pre-treatment sample pump
- Rebuilt caustic soda feed pump
- Replaced chlorinator #3 solenoid valve
- Replaced generator G1 charger

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 Report Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
N/A	N/A	N/A	N/A	N/A	N/A

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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/100 mL) (min #)-(max #)	Range of Total Coliform Results (CFU/100 mL) (min #)-(max #)	Range of HPC Results (CFU/100 mL) (min #)-(max #)
Raw Water	103	(0)-(200)	(0)-(38,000)	(<10)-(>2,000)
Treated Water (WTP)	279	(0)-(0)	(0)-(0)	(0)-(30)
Distribution (EMPS Valve House)	107	(0)-(0)	(0)-(0)	(<10)-(690)
Distribution (Fruitridge Surge Facility)	54	(0)-(0)	(0)-(0)	(<10)-(10)

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	(0.44)-(2.91)
Treated Water Free Chlorine (mg/L)	2108	(0.87)-(1.70)
Treated Water Turbidity (NTU)	Continuous Monitoring	(0.012)-(1.73)
Treated Water Turbidity (NTU)	2110	(0.021)-(0.246)
Treated Water Fluoride (mg/L)	Continuous Monitoring	(0.11)-(2.00)*
Treated Water Fluoride (mg/L)	729	(0.27)-(0.80)
Filter #1 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.014)-(0.442)
Filter #2 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.020)-(0.848)
Filter #3 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.017)-(0.727)
Filter #4 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.017)-(0.320)
Combined Filtered Water Turbidity (NTU)	2107	(0.019)-(0.68)

NOTE: *Fluoride spikes > 1.50 mg/L on treated water coincide with pump start-ups or pump changes. Fluoride residual spikes > 1.50 mg/L did not exceed 5 minutes at any time in 2022, therefore not reportable (not an adverse result).

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

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 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Arsenic	January 5, 2022 August 3, 2022	0.0003 0.0003	mg/L mg/L	NO
Barium	January 5, 2022 August 3, 2022	0.0235 0.0253	mg/L mg/L	NO
Boron	January 5, 2022 August 3, 2022	0.018 0.015	mg/L mg/L	NO
Cadmium	January 5, 2022 August 3, 2022	0.000010 0.000008	mg/L mg/L	NO
Chromium	January 5, 2022 August 3, 2022	0.00015 0.00020	mg/L mg/L	NO
Lead (EMPS Valve House)	January 5, 2022 July 5, 2022	0.00003 0.00002	mg/L mg/L	NO
Mercury	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Selenium	January 5, 2022 August 3, 2022	0.00018 0.00062	mg/L mg/L	NO
Uranium	January 5, 2022 August 3, 2022	0.000037 0.000035	mg/L mg/L	NO
Sodium	January 5, 2022	17.1	mg/L	NO
Nitrite	January 5, 2022 April 6, 2022 July 5, 2022 October 11, 2022	Not Detected Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Nitrate	January 5, 2022 April 6, 2022 July 5, 2022 October 11, 2022	0.103 0.168 0.076 0.036	mg/L mg/L mg/L mg/L	NO

Summary of Organic parameters sampled 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
Alachlor	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Atrazine + N-dealkylated metabolites	January 5, 2022 August 3, 2022	0.00008 0.00003	mg/L mg/L	NO
Azinphos-methyl	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Benzene	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Benzo(a)pyrene	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Bromoxynil	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Carbaryl	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Carbofuran	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Carbon Tetrachloride	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Chlorpyrifos	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Diazinon	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Dicamba	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
1,2-Dichlorobenzene	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
1,4-Dichlorobenzene	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
1,2-Dichloroethane	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Dichloromethane	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
2,4-Dichlorophenol	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 5, 2022 August 3, 2022	Not Detected	mg/L mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
		Not Detected		
Diclofop-methyl	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Dimethoate	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Diquat	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Diuron	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Glyphosate	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Haloacetic Acids (HAA's) EMPS Valve House	January 5, 2022 April 6, 2022 July 5, 2022 October 11, 2022	Not Detected Not Detected 0.0059 0.0054	mg/L mg/L mg/L mg/L	NO
Haloacetic Acids (HAA's) EMPS Valve House = Running Annual Average	2022	0.005475	mg/L	NO
Malathion	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
2-Methyl-4-chlorophenoxyacetic acid	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Metolachlor	January 5, 2022 August 3, 2022	0.00002 Not Detected	mg/L mg/L	NO
Metribuzin	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Monochlorobenzene	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Paraquat	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Pentachlorophenol	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Phorate	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Picloram	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO

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Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Polychlorinated Biphenyls (PCB)	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Prometryne	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Simazine	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Total Trihalomethanes (THMs) EMPS Valve House	January 5, 2022 April 6, 2022 July 5, 2022 October 11, 2022	0.0089 0.0092 0.0145 0.0160	mg/L mg/L mg/L mg/L	NO
Total Trihalomethanes (THMs) EMPS Valve House = Running Annual Average	2022	0.01215	mg/L	NO
Terbufos	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Tetrachloroethylene	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
2,3,4,6-Tetrachlorophenol	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Triallate	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Trichloroethylene	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
2,4,6-Trichlorophenol	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Trifluralin	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L mg/L	NO
Vinyl Chloride	January 5, 2022 August 3, 2022	Not Detected Not Detected	mg/L 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.

Appendix C – 2022 RMF Non-Compliant Discharge Summary Report

Appendix C - 2022 Residuals Management Facility (RMF) Non-Compliant Discharge Summary Report

Date & Time	Duration (hh:mm:ss)	Max. Total Chlorine Residual (mg/L)	Volume	Reason	Corrective Actions
February 22, 2022 09:53	00:13:38	0.17 mg/L	40.9 m^3	Total chlorine residual (TCR) spike occurred while running RMF at a steady state, no changes such as plant backwash or operational RMF changes	1. Review Supervisory range for sodium bisulphite (SBS) set point to initiate dosing. Adjust range to ensure adequate dosage. 2. Review re-order point and re-order quantities to ensure a minimum amount of SBS is maintained in the bulk storage tank. 3. Arrange for service representative, to come on site and verify/setup torque settings on all filter drain valve actuators. 4. Review Computerized Maintenance Management System (CMMS) to ensure there are work orders to check filter drain valves and actuators for closing and torque set points. Adjust frequency of work orders accordingly. 5. Look into having a tracer study performed to determine the time for water discharged from the RMF to reach the low lift sampling point

Date & Time	Duration (hh:mm:ss)	Max. Total Chlorine Residual (mg/L)	Volume	Reason	Corrective Actions
December 30, 2022 22:17	00:02:26	0.106 mg/L	5.84 m^3	TCR spike occurred while running RMF clarifiers - Operator failed to collect grab sample to verify total chlorine residual	1. Review Procedure #E-SOP-4-04 (RMF Effluent Total Chlorine Residual) and reporting requirements with Operator 2. Install a second monitor in lab, so that Operators can view SCADA and alarm summary at the same time 3. Update SCADA RMF reporting process to be reviewed daily when RMF has run – current process is running weekdays only

Appendix D – 2022-23 Ministry of the Environment, Conservation and Parks (MECP) Inspection Summary

Summary of Non-Compliance Items

Non-compliance #1

Question Group: Other Inspection Findings

Question: Do only certified operators make adjustments to the treatment equipment?

Legislative Requirement: SDWA | O. Reg. 170/03 | 1-2 | (2);

Observation/Corrective Action(s):

Persons other than certified operators made adjustments to the treatment system.

The Elgin Area Primary Water Supply System currently employ a number of operators that hold an operator-in-training certification. Under O. Reg 128/04 s. 25(5) a person who holds an operator-in-training's certification shall not be designated as an operator-in charge, therefore, the Owner/Operating Authority shall designate a person with a Water Treatment Level 1 Certification or higher as an operator-in-charge as per O. Reg 128/04 s 25(1) for the subsystem.

An OIC is defined as a person who is authorized to set operational parameters for the subsystem or for a process that controls the effectiveness or efficiency of the subsystem; and direct or instruct other operators in the subsystem to set such operational parameters.

A review of logbooks submitted indicated that Operators who hold an Operator-in-Training (OIT) certificate were performing duties of an Operator-in-Charge (OIC). OIT's were found to be making operational decisions such as adjusting chemical dosages and pump changes without consulting with an OIC prior to these changes.

CORRECTIVE ACTIONS:

From herein, the Owner/Operating Authority shall ensure that only OICs are authorized to conduct the following as prescribed by Ontario Regulation 128/04 – Section 26(1):

(a) set operational parameters for the subsystem or for a process that controls the effectiveness or efficiency of the subsystem; and

(b) direct or instruct other operators in the subsystem to set such operational parameters.

The Owner/Operating Authority shall also ensure the following conditions are met as prescribed by O. Reg. 128/04 – Section 26 (2):

(c) ensure that records are maintained of all adjustments made to the processes within his or her responsibility

(d) ensure that all equipment used in the processes within his or her responsibility is

properly monitored, inspected, tested, and evaluated and that records of equipment operating status are prepared and available at the end of every operating shift.

The Owner/Operating Authority shall provide training for all staff on the requirements stipulated in Ontario Regulation 128/04 and shall submit documentation to ensure compliance with the aforementioned including an Operator sign-off sheet to the undersigned inspector; no later than March 31, 2023.

Status Update: The corrective action was completed. The operating authority was required to provide training for all staff on O.Reg. 128/04 (Certification of Drinking Water System Operators and Water Quality Analysts). The operating authority completed the training and provided a copy of the training records and training presentation to the Ministry Inspector on March 16, 2023.

Summary of Best Management Practice Items

Best Management Practice #1

Question Group: Security

Question: Has the owner provided security measures to protect components of the drinking water system?

Legislative Requirement: Not applicable

Observation/Corrective Action(s):

The owner had not provided security measures to protect components of the drinking water system.

The Elgin Area Water Treatment Plant remains locked at all times and is equipped with a security system which includes intrusion alarms, motion detectors and security cameras. The intrusion and motion alarms are connected to the SCADA System to alert the Owner/Operating Authority of an unauthorized entry. Operators are also located on site along with a security guard 24 hours a day, 7 days a week. Any visitors to the facility are required to sign in and out of the facility.

In addition to the aforementioned, all facilities are enclosed with security fencing with lockable gates and out stations are visited regularly by staff.

However, at the time of the inspection it was observed that there were a number of treated water access hatches that did not have an acceptable gasket or were in poor condition in areas which would prevent the entry of contaminates, invertebrates and arachnids.

Recommendations:

It is strongly recommended that the Owner/Operating Authority assess all treated water access hatches and ensure that they are fitted with a proper watertight seal in order to adequately prevent the ingress of contaminates such as invertebrate, small animals and arachnids as per the "Ten States Standards", which states that each manhole shall be fitted with a solid watertight cover which overlaps a framed opening and extends down around the frame at least two inches. The frame shall be at least four inches high. Each cover shall be hinged on one side and shall have a locking device.

Status Update: The recommendation was addressed.