Elgin Area
Primary Water Supply System

2015 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

TABLE OF CONTENTS

PROFILE

WHO WE ARE

The Elgin Area Primary Water Supply System Board of Management owns and governs the drinking water system. The Board of Management is made up of representatives from each of the seven member municipalities that are currently supplied with water from the Elgin Area Primary Water Supply System (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 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 Joint Board of Management.

OPERATING AUTHORITY: ONTARIO CLEAN WATER AGENCY / AGENCE ONTARIENNE DES EAUX

Elgin Area
Primary Water Supply System

EAPWSS Board Member Municipalities

City of London *(administering municipality)*
Town of Aylmer
Municipality of Bayham
Municipality of Central Elgin
Township of Malahide
City of St. Thomas
Township of Southwold

WHAT WE DO

Water Treatment & Supply

The Elgin Area Primary Water Supply System is responsible for the treatment and transmission of drinking water to seven (7) municipalities in southwestern Ontario. The population served by this system is approximately 130,000. Water is provided bulk wholesale to the municipalities who then distribute it to their customers.

The Elgin Area Water Treatment Plant (WTP) employs pre-chlorination, screening, powder activated carbon addition (seasonally on an as-required basis), coagulation, flocculation, sedimentation, dual-media filtration, 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 various communities or to the terminal storage reservoirs. The drinking water system is monitored at various locations throughout the system via a Supervisory Control and Data Acquisition (SCADA) system**.**

Elgin Area Primary Water Supply System: Assets

1 low lift pumping station
1 water treatment plant
2 surge facilities
1 in-ground storage reservoir (consists of 2 reservoir cells)
29.4 km of watermain (twinned 14.7 km pipelines)

Figure 1: Low Lift Pumping Station located on Lake Erie

WHAT'S IMPORTANT

Values of the Water System

The values of the Elgin Area Primary Water Supply System are the inherent beliefs or moral standards that generally reflect what the Elgin Area Primary Water Supply System 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.

ELGIN AREA PRIMARY WATER SUPPLY SYSTEM: AT A GLANCE

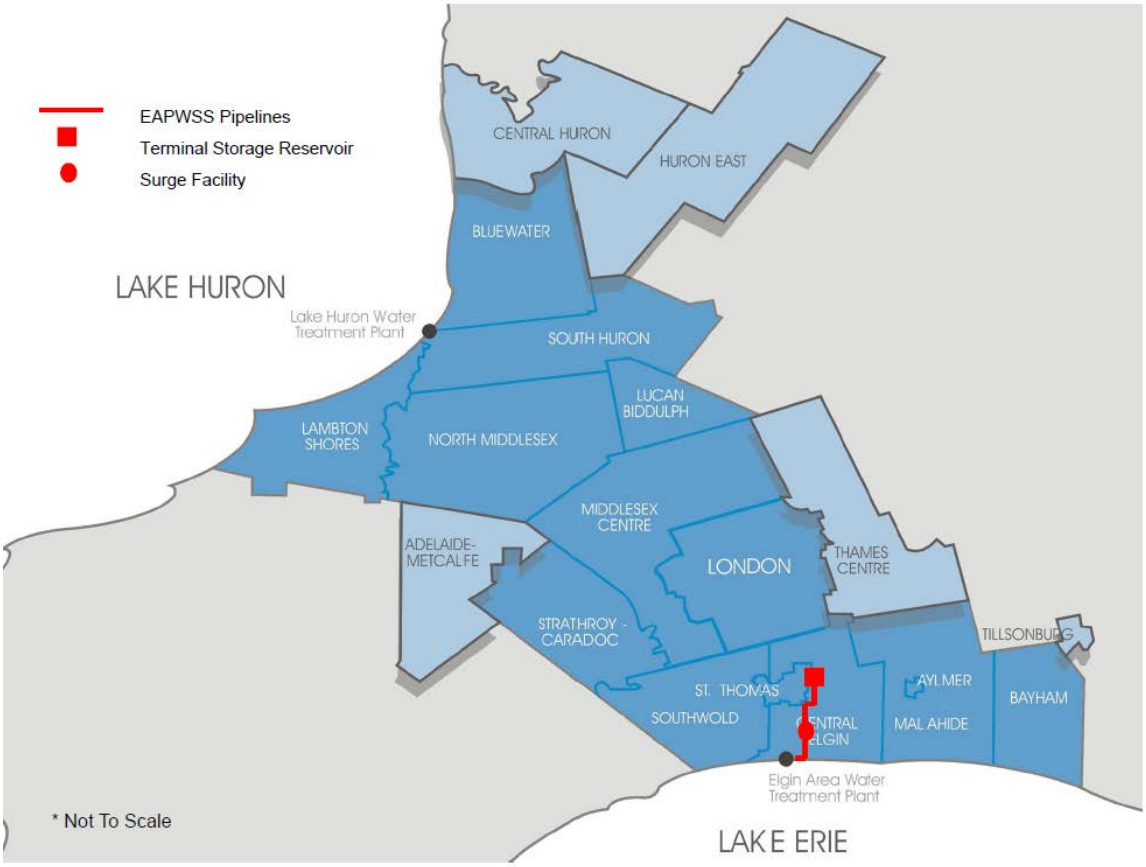

Figure 2: Elgin Area Primary Water Supply System Major Infrastructure Locations

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 Water Treatment Plant, although they are not an exact representation. Some details may vary.

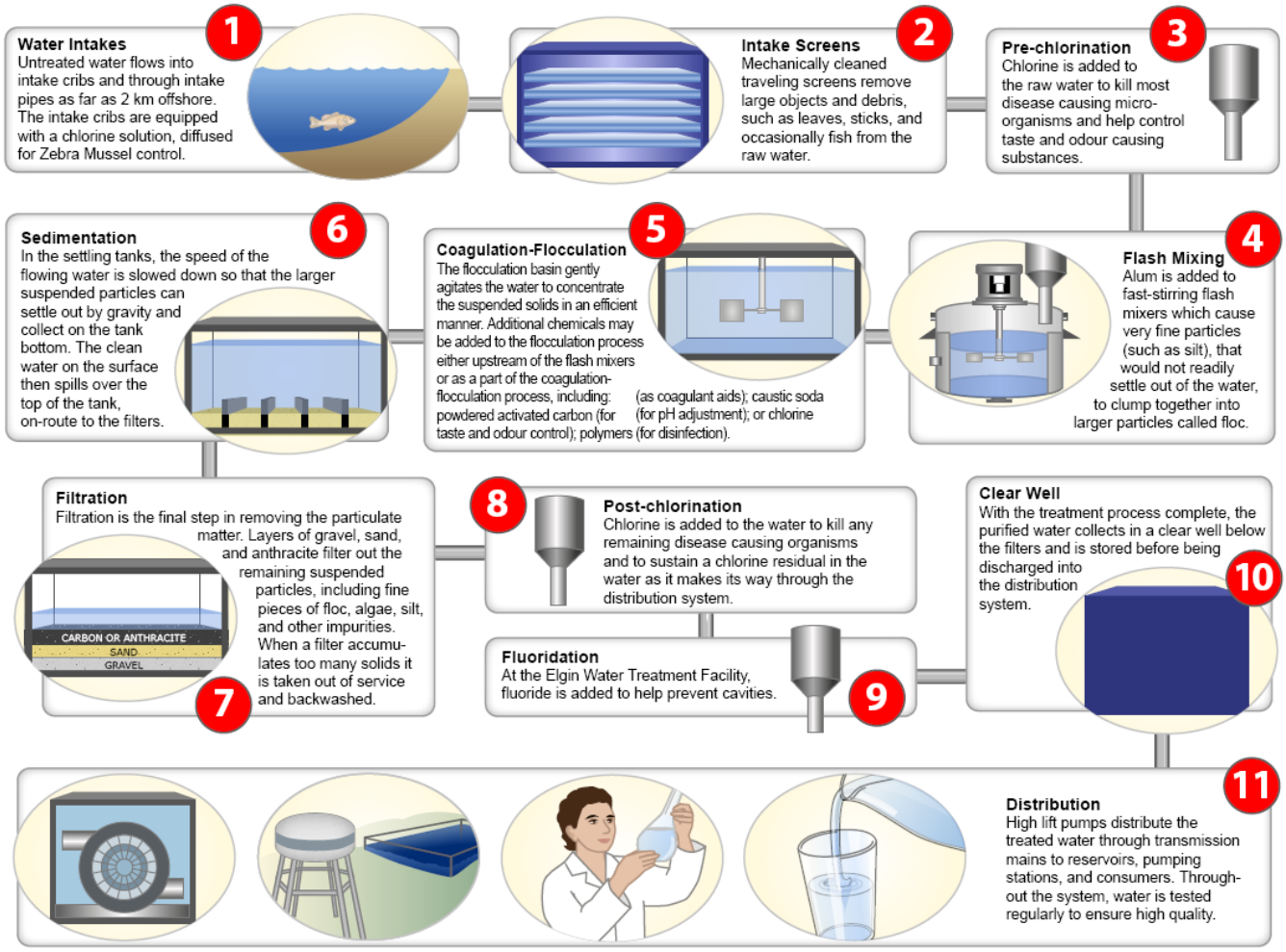

Figure 3: General Overview of the Water Treatment Process

At the Elgin Area Water Treatment Plant, several additional treatment steps take place:

- Carbon dioxide is injected prior to the flash mixing (Step 4) to lower the raw water pH in order 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 water treatment plant and enters the transmission system (Step 11) to raise the treated water pH, resulting in reduced corrosion potential.

2015 HIGHLIGHTS

RESEARCH PROJECT - BIOFILTRATION PILOT

The EAPWSS has partnered with the University of Toronto Natural Sciences and Engineering Research Council (NSERC) Industrial Research Chair to investigate and optimize filtration performance at the Elgin Area Water Treatment Plant.

At many other WTPs, the strategic removal or reduction of chlorination prior to water filtration has been shown to promote healthy biological growth on filter media. In turn, these organisms help clean incoming water through a process termed biofiltration; this practice is generally associated with many benefits such as removal of natural organic matter and turbidity, without compromising water safety. The biofilter pilot will be used to investigate whether these benefits might also be seen at Elgin Area Water Treatment Plant, by serving as an experimental model of the plant's filters where the potential of biofiltration can be safely quantified.

The biofiltration pilot was constructed in May 2015 with de-chlorination accessories being added in November 2015. The pilot has been running continuously since September 2015, with the current phase of experimentation anticipated to end this Fall 2015

Figure 4: Biofiltration pilot, consisting of four small-scale filtration columns.

RESEARCH DAY

On May 21, 2015, the Lake Huron & Elgin Area Primary Water Supply Systems co-hosted a Research Day to share information on the research programs currently being undertaken by the water systems in affiliation with the University of Waterloo and University of Toronto NSERC chairs, and Western University. Although the NSERC chairs periodically hold "technology transfer days" to share information on their research projects with their contributing partners, this Research Day was unique in that it was hosted by a water system, and the water systems' research partners presented their work on the Lake Huron and Elgin Area Water Supply Systems to associated guests. Guests included staff from the Ontario Clean Water Agency (OCWA), the Ministry of the Environment and Climate Change (MOECC), the Health Units in the region, Board staff, and staff of the benefiting municipalities supplied by the Lake Huron & Elgin Area Water

Supply Systems. The research day provided an opportunity to share the researcher's investigations and findings on the treatment plants, proactive source water investigations, and understanding of treatment processes and distribution water. It was an extremely valuable day of sharing project work, research and optimization for the water systems. The day ended with a review of the research program and how the individual projects fit together in the long-term proactive research and capital planning efforts of the water system.

2015 ALGAL TOXINS MONITORING PROGRAM

In recent years, Lake Erie has experienced severe algal blooms. Algal blooms can create challenges for the water treatment plant by producing unpleasant taste and odours, interfering with treatment plant performance, and producing cyanotoxins which can impact human health.

The United States National Oceanic and Atmospheric Administration (NOAA) has indicated that the 2015 bloom in Lake Erie was the most severe experienced this century. Fortunately, the bloom moved into the center of the central basin, rather than staying along the shoreline, resulting in less impact along the coast where the water treatment plant is located. Later in the season, strong winds disrupted bloom growth and weakened the bloom, causing it to decline much faster than previous blooms. As a result, the EAPWSS did not experience any major impacts to the plant or water quality due to the 2015 bloom.

Through the Ministry of the Environment and Climate Change (MOECC) Drinking Water Surveillance Program (DWSP), in 2015 the EAPWSS participated in an algal toxins monitoring program. The purpose of the research study was to monitor algal toxins to determine the levels of microcystins and Anatoxin-a in drinking water. Participation in the study took place for a 6 month period, June through November. A total of 24 samples of raw and treated water were submitted to the MOECC laboratory for analysis. Of these samples, there was only one detectable result in the raw water, which was trace at the detection limit of 0.5 µg/L.

For operational purposes, the EAPWSS also took an additional weekly microcystin-LR sample from mid-July through the end of October. A total of 15 raw water samples were tested for microcystin-LR. Of these samples there were 6 detectable results in the raw water, the highest value detected being 0.12 µg/L.

MASTER WATER PLAN

The EAPWSS 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 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 and 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 (2035 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 2015 and is available on the Regional Water System's website.

2015 CAPITAL PROJECT HIGHLIGHTS

TRAVELLING SCREEN REPLACEMENTS

The two travelling screens at the low lift building, which screen out and prevent large debris from entering the water treatment plant, had reached end of life cycle and required replacement. In 2015, both travelling screens were fully replaced.

Figure 5: Two new travelling screens located in the low lift building.

ZEBRA MUSSEL CONTROL SYSTEM REPLACEMENTS

In order to control zebra mussels at the intake crib in Lake Erie, a chlorine solution is used. Previously, a liquid sodium hypochlorite zebra mussel control system was in place to deliver the chlorinated solution to the intake crib. The previously existing building, pumps, piping and control system had significantly deteriorated. A new gas chlorination system was installed to replace the previous system. The tender was awarded in October 2014. Construction began in November 2014 and was completed in May 2015.

Figure 6: New 68 kg chlorine gas cylinders; chlorine gas is used for zebra mussel control.

BULK CHEMICAL STORAGE TANK REPLACEMENTS

Chemicals used in the treatment of the drinking water at the water treatment plant are stored in bulk storage tanks within the facility. Two "plastic" style bulk storage tanks were showing significant signs of deterioration and cracking due to age, and required replacement. The two bulk storage tanks were replaced in November 2015 with new wood stave tanks.

Figure 7: Two new wood stave bulk chemical storage tanks.

RESIDUALS MANAGEMENT FACILITY (RMF)

When the Elgin Area Water Treatment Plant was originally constructed in the mid 1960's by the Province of Ontario (via the Ontario Water Resources Commission), provision of a residuals management facility to treat the waste by-products from the treatment process was not required. At that time, it was typical practice to discharge the waste from sedimentation basins and the filter backwash processes of conventional water treatment plants back to the source water. With increased concern over environmental impacts, pollution, and general due diligence, the introduction of new environmental standards and regulations are now in place to prevent such practices from occurring with newly constructed water treatment facilities.

The need to install a residuals management facility to address the treatment of residuals materials created during the water treatment (sedimentation) and filtration (filter backwash) processes is essential in order to meet the current legislated requirements for discharges to receiving water bodies. The lack of residuals management in concert with the current practice of allowing residual materials to be discharged directly back to Lake Erie makes the Elgin Area Water Treatment Plant non-compliant with existing environmental regulations. It is noted that the plant is presently operating under a Municipal Drinking Water Licence, and previously a Certificate of Approval, which allow for this operating practice. The construction of an RMF for the Elgin Area Water Treatment Plant is required to improve the quality of process waste water returned to Lake Erie.

The detailed design for the RMF was completed by AECOM in 2012 - 2013. In October 2013, the project tender was awarded to Hayman Construction Inc. Construction began in January 2014, and the construction and commissioning is expected to continue through to June 2016.

Work completed on the RMF in 2015 included:

- Major structural work to the building as well as finishes to the exterior and interior;
- Installation of sedimentation sludge pumping system, mechanical/process plumbing (including pumps, piping and controls), electrical controls, wiring and conduits;
- Installation of thickeners and polymer dosing systems;
- Modification of wall penetration at filtered water conduit for RMF backwash chamber installation;
- Installation of 900 mm butterfly valve on the water treatment plant drain to direct filter backwash water to the Residuals Management Facility;
- Backfill around building, site grading, storm servicing, asphalt paving and curbs.

This project was included as one component of the HELP Clean Water initiative and has received grant funding from senior levels of government.

Figure 8a: February 11, 2015; Main floor slab and beam concrete pours.

Figure 8b: April 15, 2015; Thickener units being installed.

Figure 8c: April 15, 2015; Second floor concrete wall pours.

Figure 8d: December 21, 2015; RMF pipe gallery.

Figure 8e: December 4, 2015; Building exterior work nearing completion.

2015 FLOW SUMMARY

As per the water system's current Permit To Take Water (PTTW), the amount of raw water taken into the Elgin Area Water Treatment Plant cannot exceed 91.0 million litres/day or 63,194 litres/minute. This converts to 1053L/s.

The water taking in 2015 was approved under PTTW #6283-8QZM3N.

As per the water system's Municipal Drinking Water Licence (MDWL), the rated capacity of the Water Treatment Plant is 91.0 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.

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)**
Permit To Take Water (PTTW) – permitted amount of raw water taking	91.0	100%	1053
Raw Water Flow – Average Day	44.957	49.4%	681
Raw Water Flow – Max. Day	64.400	70.8%	1196
Water Treatment Plant Rated Capacity	91.0	100%	1053
Treated Water Flow – Average Day	42.209	46.4%	687
Treated Water Flow – Max. Day	60.201	66.2%	1164

A complete flow summary for the Elgin Area Primary Water Supply System can be found in Appendix A.

Raw water instantaneous peak flow rates exceeded the requirements of the PTTW on seven (7) occasions in 2015:

Date	**Raw Water Instantaneous Flow Rate**	**Reason**
January 29, 2015	1095 L/s	Maintenance – sedimentation basin cleaning
February 24,2015	1196 L/s	Maintenance – sedimentation basin cleaning
February 25, 2015	1116 L/s	Maintenance – sedimentation basin cleaning
April 29,2015	1157 L/s	Maintenance – sedimentation basin cleaning
May 21, 2015	1060 L/s	Maintenance – sedimentation basin cleaning
October 10, 2015	1060 L/s	Pump change – slow pump stop
November 24, 2015	1124 L/s	Maintenance – sedimentation basin cleaning

Treated water instantaneous peak flow rates exceeded the requirements of the MDWL on one (1) occasion in 2015, as listed in the table below. In all cases, the total daily flow did not exceed the 91.0 ML/day plant rated capacity.

Date	Treated Water Instantaneous Flow Rate	Reason
June 6, 2015	1164 L/s	Exceedance occurred when running two high lift pumps to build water for system maintenance.

The majority of the volume of treated drinking water from the EAPWSS is used by the City of London. As shown in Figure 9, London takes approximately 55.4% of the volume, with the other six municipalities using the remaining 44.6%.

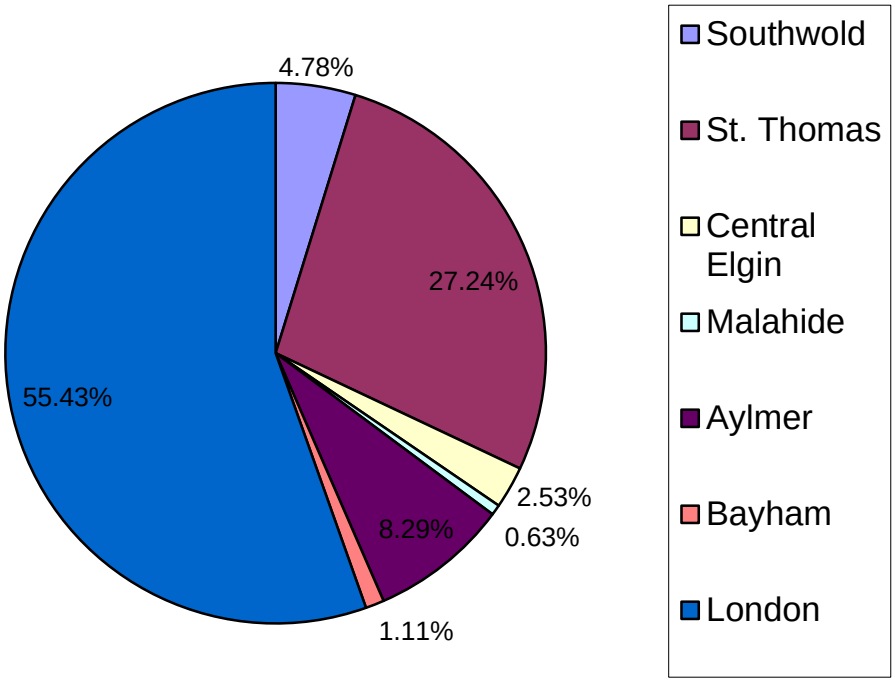

Figure 9– 2015 Treated Water Volume per Municipality

2015 CHEMICAL CONSUMPTION

A variety of water treatment chemicals are used at the Elgin Area Water Treatment Plant to ensure safe, clean drinking water. The following table outlines the chemicals most frequently used for the Elgin Area Primary Water Supply System. 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 2015
Aluminum sulphate	Coagulant	580,703 kg
Polymer	Coagulant	310 kg
Powdered activated carbon	Taste and odour control (seasonally)	9,464 kg
Chlorine gas	Primary disinfection	31,266 kg
Chlorine gas	Zebra mussel control at the intake crib	2,936 kg
Fluoride	Prevention of dental cavities	7,566 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	172,218 kg
Sodium Hydroxide	pH adjustment – injected at the end of the treatment process to raise the treated water pH for reduced corrosion potential	283,200 L

2015 WATER QUALITY SUMMARY

Water Quality Sampling and Monitoring

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

All water quality sampling at the Elgin Area Primary Water Supply System (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 2015, a total of 529 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 were no incidents of adverse microbiological test results in 2015. For more information please see the Annual Report attached. The Annual Report can be found in 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 (a disinfection by-product), nitrates and nitrite.

In addition, the water treatment plant operator samples the raw, in-process and treated water six times per day and carries out a battery of physical and chemical tests 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 Annual Report can be found in Appendix B.

Research & Partnerships

The Elgin Area Primary Water Supply System 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 University of Toronto to pursue research opportunities, as well as University of Western Ontario and 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. The EAPWSS also participates in the Ministry of the Environment's Drinking Water Surveillance Program (DWSP) and intake monitoring studies.

MINISTRY OF THE ENVIRONMENT INSPECTIONS

Annual Inspection

The Ontario Ministry of the Environment and Climate Change (MOECC) conducts an inspection of the Elgin Area Primary Water Supply System annually. A MOECC inspection took place in June 2015. The final inspection report was issued on August 18, 2015. A total of one (1) non-compliance was identified in the inspection report. The final inspection rating received for the 2015-2016 reporting year was 97.36%. A complete summary of the non-compliance and corrective action required by the MOECC can be found in Appendix C.

Elgin Area
Primary Water Supply System

Regional Water Supply Division
235 North Centre Road
Suite 200
London, ON N5X 4E7
519-930-3505 (ext. 2714)

www.watersupply.london.ca

APPENDIX A – 2015 FLOW SUMMARY

1. RAW WATER INTAKE – FLOW (m^3/DAY)

MONTH / DAY	January m^3	February m^3	March m^3	April m^3	May m^3	June m^3	July m^3	August m^3	September m^3	October m^3	November m^3	December m^3	
1	44,010	45,330	45,918	45,705	34,941	44,051	64,400	52,262	51,759	57,616	46,287	55,845	
2	36,181	36,000	45,929	47,440	45,659	56,604	12,037	43,961	42,149	50,456	41,471	50,567	
3	46,249	21,340	34,558	30,647	50,706	53,262	40,173	49,509	49,379	47,699	49,740	51,407	
4	34,909	21,038	42,522	40,886	44,694	51,692	59,890	36,667	42,359	56,588	41,401	52,506	
5	35,721	24,204	44,811	41,736	38,174	58,294	54,899	45,858	53,546	52,533	37,858	52,643	
6	47,393	47,740	37,312	45,006	46,679	57,538	57,577	39,943	44,859	51,230	42,818	46,114	
7	30,229	33,936	46,280	38,076	49,242	52,097	47,630	49,781	43,714	60,328	37,512	39,601	
8	34,327	40,540	43,663	40,339	43,587	56,914	61,397	41,361	49,290	50,559	48,159	46,868	
9	40,017	41,966	34,537	37,807	46,282	48,493	52,489	46,981	47,757	55,083	40,266	33,089	
10	45,217	32,132	45,786	45,752	46,492	47,719	52,831	46,104	35,127	50,323	42,629	40,656	
11	33,896	41,809	45,759	44,728	41,419	49,123	60,710	39,790	51,679	54,211	34,844	47,860	
12	46,690	44,717	45,161	42,685	41,703	62,069	54,413	46,296	50,000	51,422	27,492	36,390	
13	39,948	34,450	35,468	44,478	46,140	46,509	50,792	40,929	37,695	49,983	49,424	45,795	
14	39,003	34,726	44,370	43,492	42,202	58,624	52,845	46,887	42,272	56,820	39,700	45,869	
15	43,578	46,725	46,111	35,539	39,497	48,244	54,398	38,534	41,204	50,080	46,393	16,206	
16	46,804	37,041	45,503	43,967	37,113	56,418	42,727	51,325	50,136	46,866	43,162	47,047	
17	34,957	41,984	36,208	41,994	38,293	58,192	43,700	40,321	42,551	49,831	39,267	44,196	
18	41,894	38,407	41,094	46,020	44,572	53,379	53,954	52,647	45,485	39,653	38,528	52,199	
19	49,512	43,814	44,927	46,076	44,930	48,314	52,642	50,182	35,816	41,532	39,994	37,452	
20	36,197	38,427	38,381	38,349	41,930	55,936	50,336	43,407	47,291	39,657	41,420	50,295	
21	48,815	36,252	45,070	40,108	52,346	52,447	46,040	49,128	36,073	46,694	44,108	51,956	
22	47,017	45,736	45,095	42,138	50,486	60,211	46,363	48,424	43,880	38,280	35,453	47,034	
23	28,778	47,044	44,216	37,640	61,511	33,504	40,613	46,060	43,724	44,493	40,825	46,896	
24	46,059	50,859	24,437	39,604	52,227	31,742	44,574	44,622	49,152	37,802	40,369	53,703	
25	44,170	49,835	17,023	45,863	59,319	38,627	49,186	48,134	38,516	45,290	46,491	48,337	
26	44,113	37,595	35,166	46,143	53,557	29,462	53,733	37,567	48,318	37,654	37,415	51,188	
27	45,432	40,598	41,334	39,773	54,352	52,148	41,471	45,003	44,396	47,693	47,945	52,927	
28	40,926	45,676	36,147	59,654	54,325	50,745	46,679	47,112	49,924	43,438	48,908	49,304	
29	50,022		46,011	47,110	46,580	53,259	46,010	49,697	49,221	45,581	53,418	42,254	
30	43,397		49,954	47,000	58,653	55,260	54,134	49,008	41,582	27,748	46,930	42,524	
31	41,526		47,865		53,644		51,007	43,801		46,406		55,608	
Total	1,286,987	1,099,921	1,276,616	1,285,755	1,461,255	1,520,877	1,539,650	1,411,301	1,348,854	1,473,549	1,270,227	1,434,336	16,409,328
Minimum	28,778	21,038	17,023	30,647	34,941	29,462	12,037	36,667	35,127	27,748	27,492	16,206	12,037
Maximum	50,022	50,859	49,954	59,654	61,511	62,069	64,400	52,647	53,546	60,328	53,418	55,845	64,400
Average	41,516	39,283	41,181	42,859	47,137	50,696	49,666	45,526	44,962	47,534	42,341	46,269	44,957

Note: (i) Elgin Area Primary Water Supply System Permit To Take Water #6283-8QZM3N permits the taking of 91MLD.

APPENDIX A – 2015 FLOW SUMMARY

2. RAW WATER INSTANTANEOUS PEAK FLOW (L/s)

MONTH / 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	801	702	564	565	748	795	910	660	652	773	539	767	
2	570	576	612	569	562	789	909	657	652	701	660	693	
3	571	575	704	410	564	774	575	659	663	565	639	769	
4	621	541	691	578	684	780	913	659	725	703	593	768	
5	707	587	719	570	697	777	712	648	659	783	643	694	
6	1,005	559	658	568	672	707	782	640	654	775	527	561	
7	697	586	572	741	565	791	714	663	650	783	644	693	
8	741	621	577	725	563	831	781	713	653	824	648	589	
9	621	560	590	672	563	908	781	716	651	774	555	621	
10	538	408	584	583	574	905	912	548	624	1,060	709	744	
11	550	657	586	624	695	908	908	714	663	775	809	603	
12	663	577	669	591	642	908	791	657	712	703	811	670	
13	607	593	595	590	569	906	722	657	652	701	563	679	
14	576	600	589	648	767	778	780	658	720	701	564	695	
15	597	585	589	678	710	778	714	716	653	702	598	694	
16	755	757	590	592	594	1,009	780	653	653	569	583	803	
17	426	611	591	611	580	907	781	722	733	682	586	789	
18	755	587	591	592	576	820	830	659	708	684	708	693	
19	585	595	592	592	596	574	781	659	613	611	570	680	
20	425	587	593	593	764	781	781	552	690	737	631	694	
21	585	75	759	596	1,060	780	593	646	650	674	551	694	
22	737	588	595	597	784	779	581	674	650	565	652	692	
23	755	588	772	794	775	778	749	646	652	663	652	693	
24	589	1196	641	603	844	586	645	647	703	654	1,124	696	
25	651	1116	650	593	777	711	689	645	654	541	694	694	
26	589	770	769	593	1,050	710	674	727	642	640	664	784	
27	590	686	596	618	707	707	680	734	538	638	562	693	
28	604	559	700	1,025	707	714	658	681	890	639	561	693	
29	1,095		600	1,157	706	782	557	676	753	534	694	629	
30	569		1,001	703	776	800	567	671	775	637	561	681	
31	569		1,046		776		657	668		637		696	
Minimum	425	75	564	410	562	574	557	548	538	534	527	561	75
Maximum	1,095	1,196	1,046	1,157	1,060	1,009	913	734	890	1,060	1,124	803	1,196
Average	650	623	658	646	698	792	739	665	676	691	643	695	681

Note: (i) Elgin Area Primary Water Supply System Permit To Take Water #6283-8QZM3N permits the taking of 63,194 L/min. This converts to 1053 L/s.

APPENDIX A – 2015 FLOW SUMMARY

3. TREATED WATER FLOW (m^3/DAY)

MONTH / DAY	January m^3	February m^3	March m^3	April m^3	May m^3	June m^3	July m^3	August m^3	September m^3	October m^3	November m^3	December m^3	
1	42,816	42,026	42,333	44,607	32,290	42,936	59,700	48,457	50,226	57,200	40,541	50,928	
2	33,548	33,556	40,737	42,160	44,650	51,726	10,667	39,938	39,747	46,559	38,286	52,213	
3	43,407	17,828	32,506	29,848	44,737	53,942	38,966	48,148	46,684	45,722	47,405	48,339	
4	34,147	20,278	38,729	38,447	42,229	49,552	56,779	34,123	41,149	54,530	39,828	50,363	
5	34,544	22,917	42,945	39,529	35,306	55,565	51,505	42,340	51,977	47,777	34,031	50,468	
6	36,693	46,248	36,030	43,844	40,445	58,158	56,513	38,812	43,329	48,836	39,848	45,790	
7	35,022	32,678	42,594	35,661	44,027	48,446	47,239	47,048	40,777	59,835	35,760	35,886	
8	32,202	37,083	42,664	40,440	43,819	57,170	57,545	40,677	46,343	47,802	47,084	44,173	
9	37,510	40,233	33,028	37,278	45,501	46,936	52,386	42,169	45,387	52,899	36,808	32,604	
10	43,792	29,987	41,238	41,756	46,110	44,206	49,806	46,436	34,660	50,225	40,777	39,548	
11	32,176	37,513	46,044	44,525	38,280	47,806	56,903	39,715	50,380	50,308	33,675	40,657	
12	42,035	42,966	40,303	39,737	39,239	60,201	52,038	41,090	49,495	49,595	30,866	34,972	
13	36,692	30,552	34,228	40,073	43,939	43,433	50,669	37,805	35,950	46,904	46,413	42,049	
14	33,872	33,560	41,729	36,175	42,196	56,922	48,363	46,656	41,079	54,002	34,625	42,588	
15	35,819	44,758	42,309	37,737	36,833	46,985	52,252	33,207	38,898	47,514	38,890	14,447	
16	42,523	31,923	42,008	40,390	33,887	52,595	42,859	50,365	48,271	44,953	39,679	46,690	
17	23,279	41,437	32,247	43,118	36,558	57,007	40,229	39,051	40,847	48,021	37,533	41,537	
18	36,990	35,428	38,389	41,729	43,030	51,922	48,676	49,546	43,833	36,728	32,766	46,978	
19	44,917	37,554	42,195	44,752	44,963	44,868	50,630	47,687	33,857	40,179	38,900	34,220	
20	27,815	37,958	36,366	32,359	36,543	55,185	49,208	41,346	47,614	35,430	40,842	47,873	
21	44,670	33,131	42,219	37,706	45,792	49,778	42,105	41,943	33,712	47,097	39,535	48,944	
22	35,010	41,258	39,777	37,866	49,772	57,948	46,299	49,032	43,619	34,880	34,502	45,857	
23	29,730	41,201	42,294	38,910	57,295	31,361	39,080	41,993	42,534	41,981	39,890	43,391	
24	42,212	37,830	23,825	37,259	53,120	30,887	43,285	39,963	41,975	36,376	36,307	50,557	
25	42,286	45,066	14,137	43,725	55,075	37,213	46,794	45,697	36,734	43,458	41,662	46,084	
26	36,181	36,348	31,153	44,585	47,075	27,244	53,349	35,762	46,835	32,942	37,128	48,693	
27	35,363	38,055	41,058	37,354	53,216	51,647	37,248	43,711	43,726	45,203	44,233	49,565	
28	33,311	46,508	31,918	49,915	53,322	50,477	44,494	43,997	41,095	39,447	48,669	47,480	
29	38,135		40,784	41,413	44,429	49,729	46,246	47,853	48,485	41,551	52,113	39,434	
30	37,424		40,806	44,323	57,721	52,286	49,872	46,903	37,776	24,677	43,429	39,038	
31	40,921		35,119		52,670		47,725	42,933		43,769		52,503	
Total	1,145,041	1,015,878	1,171,712	1,207,220	1,384,068	1,464,133	1,469,430	1,334,403	1,286,995	1,396,399	1,192,026	1,353,870	15,421,173
Minimum	23,279	17,828	14,137	29,848	32,290	27,244	10,667	33,207	33,712	24,677	30,866	14,447	10,667
Maximum	44,917	46,508	46,044	49,915	57,721	60,201	59,700	50,365	51,977	59,835	52,113	52,503	60,201
Average	36,937	36,281	37,797	40,241	44,647	48,804	47,401	43,045	42,900	45,045	39,734	43,673	42,209

Note: (i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 91.0 million litres/day

APPENDIX A – 2015 FLOW SUMMARY

4. TREATED WATER INSTANTANEOUS PEAK FLOW (L/s)

MONTH 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	717	631	860	727	749	921	957	578	711	940	593	712	
2	605	676	599	727	644	745	957	676	632	628	717	706	
3	678	643	385	385	767	727	752	567	708	615	564	788	
4	585	565	717	693	609	733	724	605	732	701	637	704	
5	705	649	607	686	654	913	745	767	947	616	577	634	
6	634	699	703	891	812	1,164	727	625	735	929	609	613	
7	605	554	711	590	733	697	892	643	712	915	702	610	
8	602	658	671	599	812	734	976	813	725	927	562	728	
9	597	784	703	629	691	944	693	708	706	914	572	573	
10	614	381	707	916	680	907	722	619	592	724	603	573	
11	549	659	659	686	834	967	716	790	697	721	578	568	
12	578	649	692	747	593	955	912	620	732	602	602	571	
13	658	743	707	685	744	969	867	842	725	622	602	668	
14	584	576	629	719	772	969	579	608	704	837	603	711	
15	608	572	646	651	610	944	714	634	709	740	592	686	
16	560	554	648	762	636	959	723	710	687	926	573	597	
17	393	573	643	669	632	499	915	647	711	563	614	855	
18	654	563	766	753	684	879	924	746	733	575	594	597	
19	563	621	685	639	753	359	921	699	733	602	602	578	
20	399	563	713	608	789	728	918	770	576	728	571	560	
21	577	612	821	606	773	740	733	641	727	575	566	608	
22	557	712	675	660	734	732	788	566	717	576	574	746	
23	581	630	748	730	918	868	575	591	728	569	564	663	
24	657	639	602	653	737	621	711	597	703	575	697	840	
25	575	664	583	630	710	607	593	700	716	604	700	678	
26	590	589	673	742	903	603	707	596	582	604	591	613	
27	654	770	673	822	730	597	676	612	688	898	698	595	
28	646	670	652	761	725	643	626	579	739	603	589	562	
29	680		602	721	641	631	741	859	710	598	693	733	
30	624		931	630	733	919	712	711	770	828	635	726	
31	692		642		794		644	683		576		716	
Minimum	393	381	385	385	593	359	575	566	576	563	562	560	359
Maximum	717	784	931	916	918	1,164	976	859	947	940	717	855	1,164
Average	604	628	679	691	729	789	769	671	710	704	612	662	687

(i) As per the water system's current Municipal Drinking Water Licence, the rated capacity of the Water Treatment Plant is 1053 litres/second.

APPENDIX B – 2015 ANNUAL REPORT

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, 2015 through December 31, 2015

Complete if your Category is Large Municipal Residential or Small Municipal Residential

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
http://www.watersupply.london.ca

Elgin Area Water Treatment Plant
43665 Dexter Line, Union, ON

Complete for all other Categories.

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 [ ]

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 Secondary Water Supply System	260004735
Municipality of Central Elgin	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
Municipality of Bayham	260004748
Southwold Distribution System	210001362
Ontario Police College Distribution System	260002161
St. Thomas Psychiatric Hospital Distribution Supply	260005255

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
[X] Public access/notice via Public Request
[ ] Public access/notice via a Public Library
[X] Public access/notice via other method ____News Release

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 two 750 mm and 900mm diameter water mains to various communities en route 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.

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

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 low lift cooling coil valves and new building automation system to control the cooling system
- Replaced drain piping in lower filter gallery
- Replaced on-line analytical equipment particle counters filters and settled water
- Replaced two flash mixers
- Replaced travelling screens #1 and #2
- Replaced Motor and VFD for grit pump
- Various SCADA modifications and improvements
- Replace 5 kv UPS switchgear chargers
- Roof replacement filter building
- Install air conditioner unit electrical room
- Connect server room Air conditioner power to emergency power source
- Retrofit chlorine Zebra control system to chorine gas system
- SCADA virtual server replacement

Maintenance Projects:

- Implemented flood alarms on various B Pipeline chambers
- Extended sidewalk at surge building
- Replace chlorine building louver actuators
- Repaired and replaced filter actuator starters
- Replaced air relief valve and repaired pipe stub at valve house
- Removed various old control cabling, air systems and non-current equipment
- Replaced service water pipe support brackets in settling tanks
- Rebuilt grit pump
- Inspected and determined condition of backup 5 kv feeder to low lift
- Replace security camera at low lift and filter building
- Replacement actuators on B Pipeline
- Cleaning of filter conduit and future pipe connection repair
- Repair low lift road catch basins
- CCTV inspections of B Pipeline valves
- Low Lift well cleaning
- Major preventive maintenance on various pumps and valves
- Annual calibrations
- Major preventive maintenance on UV reactors
- Rebuild air control valves surge tanks
- Major preventive maintenance on chlorine feed systems
- Annual filter preventive maintenance
- Replace air relief valves High Lift and Low Lift pumps

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
April 14, 2015	Fluoride	>1.50	mg/L	Fluoride system was turned off and WTP was offline for 3 hrs and 15 minutes. Fluoride was at 1.17mg/L upon WTP start-up.	April 14, 2015
June 25, 2015	*Turbidity	*0.3	NTU	Shut down plant. Inspected blind flange. Repaired seal around blind flange. Flushed the filtered water conduit. Bacti samples collected	June 25, 2015

PLEASE NOTE:
**No Adverse result. During construction work related to the new Residuals Management Facility (RMF), a problem was encountered in which a blind flange located in the filtered water conduit was leaking and required an emergency repair. The incident caused the plant treated water turbidity to exceed the normal range. The adverse water quality incident report was considered "precautionary" as technically the regulatory requirements were met. However the system was in an abnormal operating scenario and undergoing an emergency repair so the operating authority felt it was prudent to report as a precaution in case the situation escalated or a later detailed review determined that there had been any adverse results.*

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

	Number of Samples	Range of E.Coli Results (counts/100 mL) (min #)-(max #)	Range of Total Coliform Results (counts/100 mL) (min #)-(max #)	Range of HPC Results (counts/1 mL) (min #)-(max #)
Raw Water	104	(0)-(350)	(0)-(20,200)	(<10)-(>2,000)
Treated Water (WTP)	265	(0)-(0)	(0)-(0)	(<10)-(>2,000)
Distribution (EMPS Valve House & Fruitridge Surge Facility)	160	(0)-(0)	(0)-(0)	(<10)-(340)

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	(0.43)-(1.93)
	2070	(0.75)-(1.52)
Treated Water Turbidity (NTU)	Continuous Monitoring	(0.003)-(2.00)
	2068	(0.007)-(0.441)
Treated Water Fluoride (mg/L)	Continuous Monitoring	(0.00)-(1.58)
	637	(0.00)-(0.92)
Filter #1 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.003)-(2.00)
Filter #2 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.004)-(2.00)
Filter #3 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.015)-(2.00)
Filter #4 - Filtered Water Turbidity (NTU)	Continuous Monitoring	(0.019)-(1.84)
Combined Filtered Water Turbidity (NTU)	2085	(0.036)-(0.099)

NOTE:
Turbidity spikes above 1.00 NTU on filtered and treated water coincide with instrument calibrations, instrument flushing, pump start-ups, or maintenance. Filter effluent turbidity spikes did not exceed fifteen minutes on any of the filters.

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 13, 2015 August 4, 2015	0.04 0.13	µg/L µg/L	NO
Arsenic	January 13, 2015 August 4, 2015	0.4 0.3	µg/L µg/L	NO
Barium	January 13, 2015 August 4, 2015	17.9 21.1	µg/L µg/L	NO
Boron	January 13, 2015 August 4, 2015	20.7 26.4	µg/L µg/L	NO
Cadmium	January 13, 2015 August 4, 2015	0.009 0.037	µg/L µg/L	NO
Chromium	January 13, 2015 August 4, 2015	0.06 0.05	µg/L µg/L	NO
Lead *(EMPS Valve House)*	January 13, 2015 July 7, 2015	Not Detected 0.03	µg/L µg/L	NO
Mercury	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Selenium	January 13, 2015 August 4, 2015	Not Detected 0.13	µg/L µg/L	NO
Sodium	January 13, 2015 April 9, 2015 July 7, 2015 October 6, 2015	16.0 16.9 18.1 19.0	mg/L mg/L mg/L mg/L	NO

Uranium	January 13, 2015 August 4, 2015	0.041 0.046	µg/L µg/L	NO
Nitrite	January 2015 April 7, 2015 July 7, 2015 October 6, 2015	Not Tested Not Detected Not Detected Not Detected	mg/L mg/L mg/L mg/L	NO
Nitrate	January 2015 April 7, 2015 July 7, 2015 October 6, 2015	Not Tested 0.278 0.749 0.112	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 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Aldicarb	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Aldrin + Dieldrin	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Atrazine + N-dealkylated metobolites	January 13, 2015 August 4, 2015	0.07 0.06	µg/L µg/L	NO
Azinphos-methyl	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Bendiocarb	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Benzene	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Benzo(a)pyrene	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Bromoxynil	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Carbaryl	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Carbofuran	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Carbon Tetrachloride	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Chlordane (Total)	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Chlorpyrifos	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Cyanazine	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO

Diazinon	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Dicamba	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
1,2-Dichlorobenzene	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
1,4-Dichlorobenzene	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Dichlorodiphenyltrichloroethane (DDT) + metabolites	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
1,2-Dichloroethane	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Dichloromethane	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
2-4 Dichlorophenol	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Diclofop-methyl	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Dimethoate	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Dinoseb	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Diquat	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Diuron	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Glyphosate	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Heptachlor + Heptachlor Epoxide	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Lindane (Total)	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Malathion	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Methoxychlor	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Metolachlor	January 13, 2015 August 4, 2015	0.01 Not Detected	µg/L µg/L	NO
Metribuzin	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Monochlorobenzene	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO

Paraquat	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Parathion	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Pentachlorophenol	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Phorate	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Picloram	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Polychlorinated Biphenyls(PCB)	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Prometryne	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Simazine	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Total Trihalomethanes *(EMPS Valve House)*	January 13, 2015 April 7, 2015 July 7, 2015 October 6, 2015	9.2 14 19 14	µg/L µg/L µg/L µg/L	NO
Temephos	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Terbufos	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Tetrachloroethylene	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
2,3,4,6-Tetrachlorophenol	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Triallate	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Trichloroethylene	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
2,4,6-Trichlorophenol	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Trifluralin	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO
Vinyl Chloride	January 13, 2015 August 4, 2015	Not Detected Not Detected	µg/L µg/L	NO

NOTE: *During 2015, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.*

APPENDIX C - MINISTRY OF THE ENVIRONMENT CLIMATE CHANGE INSPECTION SUMMARY

Ministry of the Environment Climate Change (MOECC) Inspection Report – Issued August 18, 2015

Summary of Non-compliance

#	MOECC Inspection Module	MOECC Non-compliance (Summary)	Corrective Action Required by MOECC (Summary)
NC #1	Distribution System	The Owner and Operating Authority are required to follow procedures for the disinfection of water system components as required by the current DWWP, section 2.3. For this inspection review, documents were requested and provided from the Operating Authority for work performed in the water treatment plant and the distribution system. Tasks included valve replacements, filter maintenance, service water line replacement, watermain replacement and other minor maintenance items. There was a section of watermain replaced and the work involved the replacement of a section of asbestos cement (AC) watermain. For this watermain installation, the Owner did provide bacteriological sample results and documentation regarding the disinfection procedure used that included log records for all work performed. The Operating Authority had an Standard Operating Procedure (SOP) for the project. Records reviewed included record of disinfection, record of sampling, record of hydrostatic pressure test, record of testing backflow prevention devices, consent letter from the MOE for discharge of water, and field notes. The AWWA C651-05 disinfection procedure requires the chlorination of the watermain for a 24 hour period and the chlorine residual is to be tested at the beginning of the disinfection procedure and at the end. There is minimum chlorine residual to be met at the beginning and end of the 24 hour disinfection process. Log records provided indicate that the chlorine residual at the start of the disinfection process was greater than 50.0 mg/L of free chlorine and it was measured using test strips. The chlorine residual was not measured at the end of the 24 hour period and the chlorine residual was tested 3 days later with a chlorine residual of 8.8 mg/L. The minimum chlorine residual required at the end of the 24 hour disinfection process is 10.0 mg/L. All other items were in compliance with the disinfection procedure.	The Owner and Operating Authority shall ensure that the AWWA disinfection procedures outlined in the current Drinking Water Works Permit, Schedule B, section 2.0, subsection 2.3 are undertaken as required for water system components. In particular, the disinfection process shall be followed as outlined in AWWA Standard C61-05 - Disinfecting Water Mains. Compliance with this requirement shall be verified during the next physical inspection.