



Elgin Area

Primary Water Supply System

2010 COMPLIANCE REPORT



CONTACT INFO:

Owner:

Elgin Area Primary Water Supply System Joint Board of Management
c/o City of London, Regional Water Supply Division
235 North Centre Road, Suite 200, London, ON N5X 4E7
Contact: Mr. Andrew Henry, P.Eng. - Division Manager, Regional Water Supply
519-930-3505

Operating Authority:

American Water Canada Corp.
P.O. Box 160, Port Stanley, ON N5L 1J4
Contact: Mr. Vaughan Martin – Project Director
519-782-3101

TABLE OF CONTENTS

PROFILE.....	3
WHO WE ARE	3
WHAT WE DO	4
WHAT'S IMPORTANT	5
ELGIN AREA PRIMARY WATER SUPPLY SYSTEM: AT A GLANCE.....	6
THE WATER TREATMENT PROCESS	7
2010 CAPITAL PROJECTS - HIGHLIGHTS.....	8
HVAC SYSTEMS REPLACEMENT	8
LIGHTING UPGRADE PROJECT.....	9
SHORELINE EROSION PROJECT.....	10
2010 FLOW SUMMARY.....	11
2010 CHEMICAL CONSUMPTION.....	12
2010 WATER QUALITY SUMMARY	13
MINISTRY OF THE ENVIRONMENT INSPECTIONS.....	14

APPENDIX A: 2010 Flow Summary

APPENDIX B: 2010 Chemical Consumption

APPENDIX C: 2010 Water Quality Summary

APPENDIX D: 2010 Annual Report

APPENDIX E: Ministry of the Environment Inspection Summary (2010-2011)

PROFILE

WHO WE ARE

The Elgin Area Primary Water Supply System Joint Board of Management owns and governs the drinking water system. The Joint 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 Joint Board. The Joint Board currently utilizes the services of an independent contracted Operating Authority. The water system is operated and maintained by American Water Canada Corp. (AW Canada) under contract to the Joint Board of Management.

Owner:



Joint Board of Management

Operating Authority:



Joint 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 112,000. 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, and fluoridation to treat raw water obtained from Lake Erie. After the water is treated it is pumped from the WTP to various communities or to a terminal storage reservoir. 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
- 14.7 km of watermain



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 Joint 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

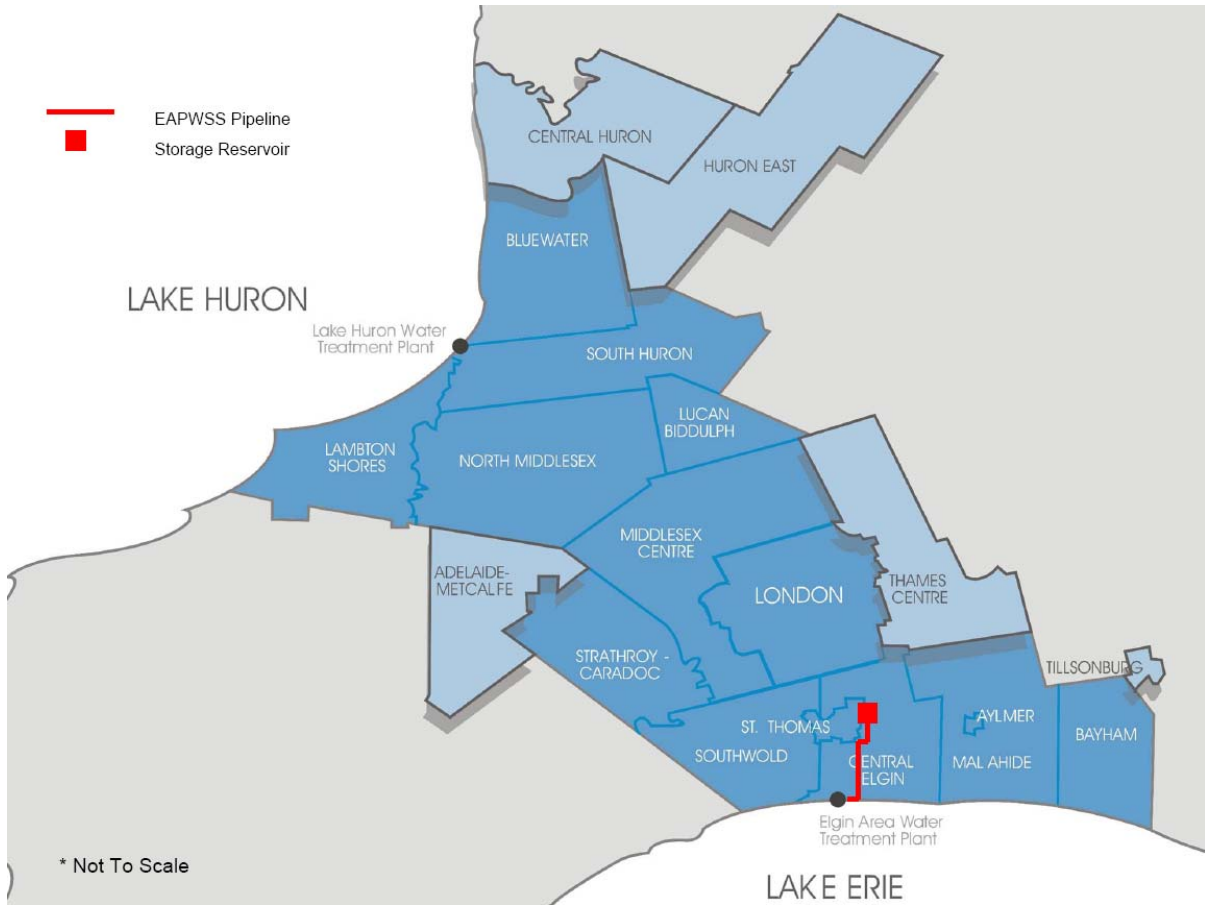


Figure 2: Elgin Area Primary Water Supply System Major Infrastructure Locations

THE WATER TREATMENT PROCESS

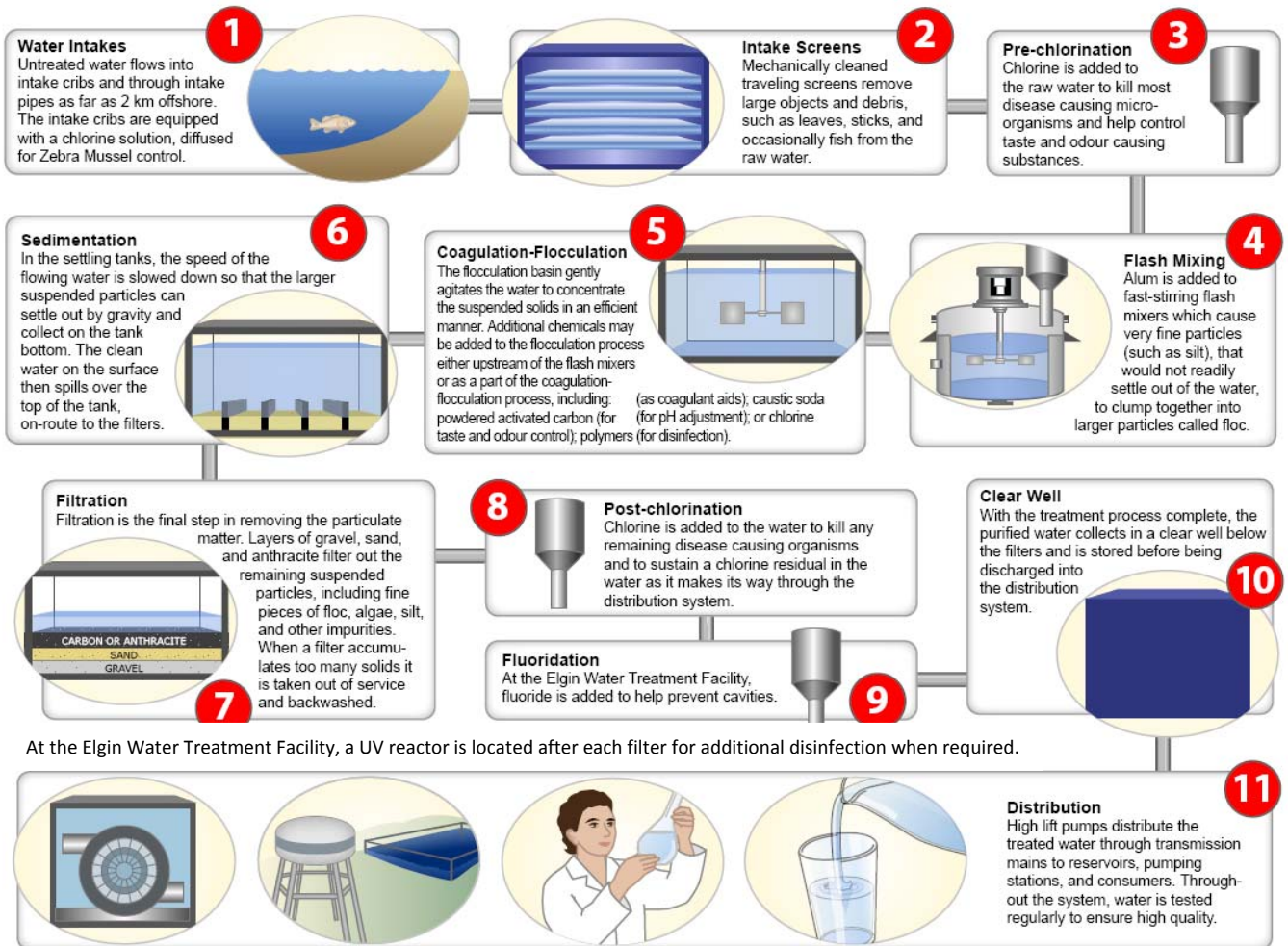


Figure 3: Overview of the Water Treatment Process at the Elgin Area Water Treatment Plant.

2010 CAPITAL PROJECTS - HIGHLIGHTS

HVAC SYSTEMS REPLACEMENT

Replacement of the existing Heating, Ventilating, and Air Conditioning (HVAC) system was scheduled to be completed in two phases between 2009 and 2010. The initial 2009 construction work incorporated urgent and critically necessary repairs and replacements to the HVAC and dehumidification systems, consisting of replacing the dehumidifier, boilers, the unit heaters and installing a rooftop air handling unit for the filter gallery.

Phase II of this project completes the remainder of the recommended work outlined in the original Vanderwesten & Rutherford Consulting Engineers (VRM) report, which mainly consists of replacing the Multi-Zone air handling /air-conditioning unit in the administration area and high lift pump room and their associated ductwork.

Substantial completion for Phase II of this project is anticipated in Spring 2011.



Figure 4: Elgin Water Treatment Plant Boiler Room

LIGHTING UPGRADE PROJECT

The first phase of this project (EA4075 PCB Removal and Plant Lighting) was to identify and remove all PCB containing materials from the Elgin Area Water Supply System facilities, including light ballasts within the water treatment plant. Rather than replacing the PCB containing light fixtures like-for-like, and in an effort to minimize operating costs within the facility, various options to eliminate unnecessary costs through lighting upgrades and lighting control changes were investigated. Many areas of the plant had lighting fixtures that were in place since the plant was originally commissioned in the late 1960's. Most of the lighting was inefficient and some was inadequate for the area. A study was completed by Smylie – Crow Consulting Engineers to recommend more effective and efficient lighting and updated controls, switches, and room sensors, etc. to address various operational needs throughout the water treatment facility.

Phase 2 of the lighting project was initiated in 2010 and is anticipated to be completed in early 2011.



Figure 5: Tunnel at the Elgin Area Water Treatment Plant featuring improved lighting conditions using energy efficient light sources controlled by motion sensors.

SHORELINE EROSION PROJECT

The project involved repairs and upgrades to the existing shoreline revetment at the Elgin Primary Water Supply System low lift station headland located on the north shore of Lake Erie approximately 4 km east of Port Stanley at “Hawk Cliff”, as well as the extension of the existing revetment easterly to prevent the further erosion of the shoreline immediately east of the low lift structure. The existing revetment and headland has been in place since its original construction in 1965.

The north shore in this area of Lake Erie is an actively eroding clay and sand bluff, up to 30m in height, and typically erodes at a rate of 1 to 3 metres per year. The low lift revetment and erosion protection measures originally installed in 1965 was intended to protect the water works infrastructure including the low lift pump station and pipeline infrastructure to the main water treatment plant.

It is assumed that the existing revetment structure protecting the low lift station headland had slumped due to wave impacts extracting filler stone from behind the armourstone cover on west and south faces. In addition, active erosion of the adjoining bluffs and shoreline had outflanked the east end of the revetment, seriously threatening the raw water supply pipe and access roadway connecting the low lift station to the main water treatment plant.

Stantec Consulting Ltd. was retained by the Board to undertake Engineering Services in support of federal and provincial approvals, detailed design and specifications, construction inspection and contract administration for this project. Following a competitive tender process, L82 Construction Limited was retained by the Board to complete the necessary repairs to the existing revetment and undertake an extension easterly to further protect the infrastructure at the Low Lift Station.

Substantial completion of this project was achieved on February 23, 2010.



Pre-Construction Condition



Completed Revetment

Figure 6: Pre and Post Construction photographs of the revetment at the Elgin Area Water Treatment Plant Low Lift Pump Station

2010 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 and the instantaneous peak flow rate cannot exceed 1053 litres/second.

The water taking in 2010 was approved under PTTW # 92-P-0048.

As per the water system's current Certificate of Approval, the rated capacity of the Water Treatment Plant is 91.0 million litres/day or 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.

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 Plant Capacity)	Daily Instantaneous Peak Flow (L/s)
Permit To Take Water (PTTW) – permitted amount	91.0	----	1053
Water Treatment Plant Rated Capacity	91.0	100%	1053
Raw Water Flow – Average Day	46.5	51	709
Raw Water Flow – Max. Day	74.8	82	1,131*
Treated Water Flow – Average Day	44.3	49	669
Treated Water Flow – Max. Day	72.6	80	1026

A complete flow summary for the Elgin Area Primary Water Supply System can be found in Appendix A. Daily Instantaneous Peak Flow Rates exceeded the requirements of the PTTW on 2 occasions in 2010.

The majority of the volume of treated drinking water from the EAPWSS is used by the City of London. As shown in Figure 7, London takes approximately 52.8% of the volume, with the other six municipalities using the remaining 47.2%.

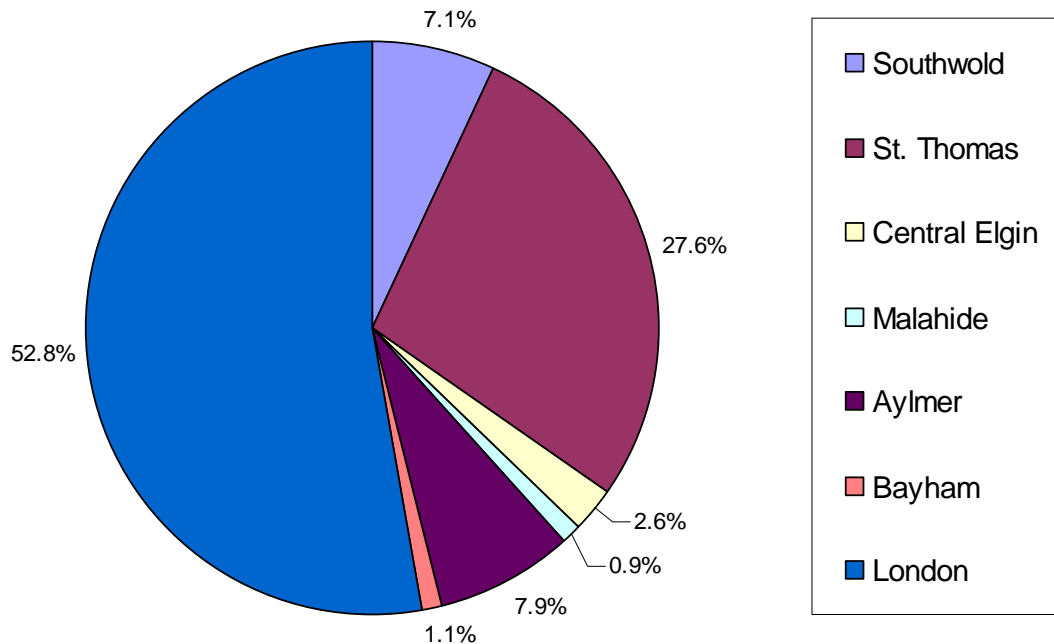


Figure 7: 2010 Treated Water Volume per Municipality

2010 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.

Chemical:	Used for:
Aluminum sulphate	Coagulation
Polymer	Coagulant and filter aid
Powdered activated carbon	Taste and odour control (seasonally)
Chlorine gas	Primary disinfection
Sodium hypochlorite	Zebra mussel control at the intake crib
Fluoride	Prevention of dental cavities

A complete chemical usage summary can be found in Appendix B.

2010 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 CALA/SCC accredited laboratories for both bacterial and chemical analysis.

In 2010, a total of 618 microbiological samples were collected from raw, treated and distribution system water. There were no adverse microbiological test results in 2010.

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. There were no adverse test results in 2010. Two “false” adverse test results were received for NDMA, but the results were confirmed to be laboratory error at an external lab.

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.

A complete water quality summary can be found in Appendix C. This data is collected from the Supervisory Control And Data Acquisition (SCADA) system which is used for continuous monitoring and process 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 2010 Annual Report can be found in Appendix D.

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 (MOE) conducts an inspection of the Elgin Area Primary Water Supply System annually. A MOE inspection took place in November 2010. The final inspection report was issued on March 14, 2011. A total of fourteen (14) non-compliances were identified in the inspection report. The final inspection rating received for the 2010-2011 reporting year was 81.30%. A complete summary of the non-compliances and corrective action required by the MOE can be found in Appendix E.



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 – 2010 FLOW SUMMARY

1. RAW WATER INTAKE – FLOW (m³/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	56,856	45,843	49,843	39,013	43,944	48,644	52,652	46,228	55,178	41,987	53,408	38,601	
2	45,043	49,462	50,283	50,496	49,907	52,873	53,544	51,226	50,218	45,583	48,674	38,223	
3	52,294	49,976	39,158	35,158	49,473	49,978	39,121	50,650	54,643	51,441	42,320	42,931	
4	41,168	40,952	56,656	48,969	50,205	46,503	32,313	51,276	44,178	45,766	49,848	28,883	
5	40,249	51,454	37,474	50,000	46,204	44,971	31,944	49,706	55,321	38,267	38,972	34,496	
6	51,621	50,325	47,915	50,366	51,329	49,287	29,369	52,519	55,930	52,613	38,513	23,983	
7	48,929	42,877	41,283	45,542	42,973	52,743	45,355	46,357	51,988	39,569	49,335	30,880	
8	45,582	47,715	52,758	42,312	41,086	51,552	59,227	50,345	53,616	49,059	56,667	32,981	
9	45,285	43,646	50,460	45,670	50,000	42,764	60,197	50,678	46,740	51,228	47,833	36,771	
10	51,307	52,017	44,145	50,004	50,294	50,013	46,849	46,790	50,446	47,255	52,770	32,325	
11	46,942	39,417	40,772	40,408	49,758	50,557	49,912	50,803	49,185	40,764	35,280	34,288	
12	52,440	50,720	48,992	48,640	44,420	42,717	49,278	51,097	42,319	50,175	34,742	34,735	
13	48,593	43,596	48,216	40,870	42,081	48,336	48,621	50,762	46,608	51,416	47,078	55,482	
14	51,529	50,333	41,687	52,109	44,650	49,843	44,958	50,413	48,902	48,516	34,117	55,365	
15	43,042	40,102	44,338	44,173	43,076	43,732	56,573	49,303	48,441	38,117	41,033	74,813	
16	53,174	51,092	49,965	47,281	47,738	58,046	54,044	48,706	41,503	50,779	36,912	65,008	
17	49,093	49,698	51,123	47,535	54,418	54,477	37,280	50,689	53,097	47,153	34,628	37,373	
18	43,325	43,824	35,358	51,491	44,936	57,423	50,387	50,054	49,752	50,175	36,860	30,361	
19	50,079	50,992	52,898	44,011	49,060	38,113	50,883	50,027	49,951	43,401	39,825	17,415	
20	47,746	34,709	44,533	42,312	51,955	52,796	53,261	56,190	48,612	46,625	36,452	32,057	
21	41,465	52,810	41,389	51,067	45,491	56,514	43,735	50,148	58,722	49,787	45,876	33,806	
22	52,955	41,436	52,257	47,826	52,020	56,921	52,586	51,057	47,105	49,692	37,246	20,387	
23	42,672	52,282	45,713	46,063	50,218	53,156	50,694	50,540	48,620	41,122	32,379	35,779	
24	46,221	41,083	50,005	44,713	45,782	50,269	44,714	36,967	52,693	47,108	36,578	38,937	
25	47,674	39,906	49,824	49,291	51,005	47,285	54,996	52,411	44,575	46,891	32,155	21,260	
26	45,079	45,989	49,262	49,664	50,927	52,655	49,078	51,145	49,992	45,929	46,954	38,125	
27	53,135	42,852	38,713	47,851	50,581	51,192	45,502	48,150	50,537	50,034	34,241	31,737	
28	49,472	46,807	38,093	51,290	53,297	48,892	46,027	50,948	48,770	45,975	35,404	33,182	
29	47,313		70,997	43,043	52,510	51,337	50,877	49,905	51,894	47,551	41,573	27,487	
30	36,513		74,085	37,040	53,148	47,602	50,591	50,633	47,122	38,479	41,133	33,312	
31	50,664		71,046		51,750		51,465	55,103		43,521		36,135	
Total	1,477,460	1,291,915	1,509,241	1,384,208	1,504,236	1,501,191	1,486,033	1,550,826	1,496,658	1,435,978	1,238,806	1,107,118	16,983,670
Minimum	36,513	34,709	35,358	35,158	41,086	38,113	29,369	36,967	41,503	38,117	32,155	17,415	17,415
Maximum	56,856	52,810	74,085	52,109	54,418	58,046	60,197	56,190	58,722	52,613	56,667	74,813	74,813
Average	47,660	46,140	48,685	46,140	48,524	50,040	47,937	50,027	49,889	46,322	41,294	35,713	46,531

Note: (i) Elgin Area Primary Water Supply System Permit-To-Take-Water 92-P-0048 permits the taking of 91MLD.

APPENDIX A – 2010 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	850	669	771	666	668	718	689	835	648	656	668	719	
2	666	666	664	666	843	763	668	761	815	907	688	717	
3	701	775	664	422	754	694	688	813	647	654	652	714	
4	669	666	664	665	669	425	425	921	768	657	652	416	
5	667	745	662	776	715	714	424	784	770	656	649	416	
6	715	663	664	661	668	720	426	851	770	693	651	647	
7	839	668	749	668	744	672	777	733	770	655	651	414	
8	667	665	751	668	697	768	913	840	770	657	772	414	
9	658	716	664	668	747	672	913	755	864	657	773	650	
10	669	741	840	736	774	815	732	845	651	713	650	640	
11	921	745	685	667	776	671	669	666	814	650	650	414	
12	668	747	746	668	669	717	671	827	652	686	418	415	
13	873	824	663	700	670	728	670	836	654	655	650	413	
14	667	665	657	795	671	760	783	663	817	656	417	910	
15	666	688	724	856	753	790	777	660	652	655	650	1,003	
16	668	719	781	669	740	1,023	987	659	654	655	649	906	
17	665	665	892	667	685	1,025	668	658	797	654	653	744	
18	665	664	735	668	669	913	777	655	654	655	762	649	
19	667	665	780	669	730	755	668	693	652	696	401	431	
20	665	421	664	854	1,026	670	722	821	1,017	658	650	415	
21	664	721	846	673	843	777	667	653	1,018	720	672	739	
22	666	665	987	856	682	777	671	803	657	678	650	648	
23	837	671	1,067	772	671	819	669	652	674	655	417	649	
24	714	796	919	772	703	673	709	768	658	653	722	647	
25	403	758	665	672	670	860	856	992	656	662	417	797	
26	837	778	666	726	710	669	752	766	656	658	652	743	
27	1,000	668	732	679	670	758	854	652	656	706	649	415	
28	666	675	711	668	693	860	805	404	824	708	652	647	
29	750		1,018	775	699	777	853	649	657	653	583	648	
30	843		912	1,131	694	864	810	649	656	653	956	667	
31	832		911		688		672	647		651		414	
Minimum	403	421	657	422	668	425	424	404	647	650	401	413	401
Maximum	1,000	824	1,067	1,131	1,026	1,025	987	992	1,018	907	956	1,003	1,131
Average	724	697	770	718	722	761	721	739	732	675	636	615	709

Note: (i) Elgin Area Primary Water Supply System Permit-To-Take-Water 92-P-0048 permits the taking of 63,194 L/min. This converts to 1053 L/s.

APPENDIX A – 2010 FLOW SUMMARY

3. TREATED WATER FLOW (m³/DAY)

MONTH	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	
DAY													
1	51,509	43277	47,785	37,755	38,493	48,246	48,537	47,384	55,064	40,874	49,157	36,076	
2	45,685	44930	48,208	51,004	48,446	48,327	48,719	47,306	51,609	43,579	48,294	36,173	
3	49,420	48251	37,429	30,037	49,977	47,911	38,432	50,293	51,761	48,272	41,551	39,207	
4	38,093	37965	51,666	49,799	46,006	46,709	30,731	47,669	29,963	44,940	48,028	28,951	
5	38,537	49030	35,521	47,299	44,789	42,173	27,792	49,576	42,802	37,515	36,697	32,395	
6	49,631	48578	45,100	47,881	47,915	47,216	28,343	45,862	51,592	48,199	36,640	20,361	
7	44,923	41986	38,803	46,415	41,092	48,348	44,357	45,111	48,351	37,856	50,440	31,017	
8	46,466	41172	48,247	39,290	40,324	48,616	57,100	47,862	51,919	47,789	53,359	32,362	
9	43,568	41453	48,214	42,723	48,045	40,807	59,468	46,357	48,731	46,934	45,075	34,491	
10	48,325	46511	42,272	47,804	48,556	48,378	42,979	48,153	49,350	44,456	48,356	30,536	
11	42,231	38698	38,624	37,783	48,229	48,623	47,577	46,994	48,438	41,446	32,880	34,536	
12	48,443	48135	47,742	45,543	43,697	43,300	45,980	47,775	38,007	48,237	29,229	31,243	
13	42,054	40055	44,855	39,598	40,091	48,392	47,362	49,877	45,447	48,110	46,953	33,120	
14	48,970	49083	38,323	51,493	42,377	48,365	40,555	47,545	46,270	48,294	34,041	55,201	
15	46,791	37156	40,883	42,740	42,188	44,960	54,400	46,606	48,817	37,768	36,025	72,607	
16	48,323	48112	45,645	43,055	47,155	48,613	51,479	46,325	38,553	48,405	34,387	54,054	
17	47,687	48151	47,448	48,735	49,923	49,839	36,717	50,171	49,922	48,019	34,097	38,767	
18	38,686	39815	35,218	47,739	41,957	53,722	47,803	47,534	48,084	45,494	36,255	27,248	
19	47,557	48934	49,336	45,855	47,454	38,027	48,800	48,348	48,318	44,481	37,056	18,155	
20	47,694	35229	43,340	40,093	50,880	48,417	48,190	53,398	39,809	43,730	34,655	26,196	
21	38,496	48987	40,469	48,603	42,482	53,625	45,955	47,304	50,101	48,287	43,487	34,357	
22	51,714	37384	48,392	47,654	49,571	53,667	48,015	47,269	48,074	50,479	37,027	23,362	
23	39,694	48744	40,470	43,459	48,776	51,239	46,401	48,026	48,670	39,533	30,949	33,814	
24	44,669	38921	44,814	44,357	44,244	48,348	45,298	38,432	49,060	46,201	32,803	34,546	
25	46,195	37391	48,319	45,117	49,005	47,123	48,728	48,559	49,045	45,042	31,123	20,490	
26	41,968	44645	45,364	47,903	48,611	49,704	47,446	46,684	48,309	46,383	44,066	34,943	
27	51,519	40878	38,227	48,512	48,665	46,710	45,268	45,464	49,918	45,752	32,925	28,586	
28	44,636	44481	38,696	48,203	51,471	47,270	41,142	47,540	47,991	44,308	36,096	34,920	
29	44,135		64,296	41,530	48,657	48,648	49,695	47,878	49,024	46,572	31,823	25,852	
30	34,394		71,133	39,373	51,413	47,891	48,445	48,574	48,272	34,917	35,826	30,395	
31	49,137		69,607		48,251		47,590	54,044		41,557		33,307	
Total	1,401,150	1,217,952	1,424,446	1,337,352	1,438,740	1,433,214	1,409,304	1,479,920	1,421,271	1,383,429	1,169,300	1,047,268	16,163,346
Minimum	34,394	35,229	35,218	30,037	38,493	38,027	27,792	38,432	29,963	34,917	29,229	18,155	18,155
Maximum	51,714	49,083	71,133	51,493	51,471	53,722	59,468	54,044	55,064	50,479	53,359	72,607	72,607
Average	45,198	43,498	45,950	44,578	46,411	47,774	45,461	47,739	47,376	44,627	38,977	33,783	44,281

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

APPENDIX A – 2010 FLOW SUMMARY

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

MONTH	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
DAY												
1	979	582	581	619	587	574	587	568	1,001	580	570	632
2	584	650	574	1,026	577	575	576	574	1,001	581	577	697
3	582	581	947	559	588	571	929	928	1,005	571	916	849
4	737	705	968	995	616	569	700	570	705	896	796	345
5	708	580	565	578	637	624	341	965	913	662	572	700
6	579	586	670	576	623	576	346	933	981	577	567	706
7	840	654	580	575	637	607	883	674	985	699	578	657
8	582	653	663	569	658	576	884	574	765	574	989	580
9	550	697	580	746	574	643	684	567	586	574	1,001	577
10	574	573	632	576	584	579	711	575	580	702	577	325
11	873	613	713	566	574	574	573	569	850	720	593	644
12	579	647	589	697	582	579	916	575	831	902	352	667
13	659	702	677	578	602	580	563	564	942	580	676	588
14	584	936	665	887	578	596	980	782	653	579	670	1,007
15	575	651	649	627	594	579	949	564	617	569	698	906
16	571	662	695	637	636	571	1,003	570	710	577	627	1,011
17	584	582	916	579	582	712	663	917	576	624	659	890
18	616	590	657	572	576	860	580	929	573	639	681	696
19	577	575	570	584	607	711	579	595	575	577	566	676
20	568	689	631	652	944	573	570	934	670	585	702	686
21	630	584	654	583	618	978	579	566	975	579	655	589
22	1,015	608	585	573	586	979	576	569	642	570	585	703
23	575	584	582	919	587	945	576	563	586	578	611	692
24	582	1,021	625	855	574	578	625	836	582	575	681	700
25	552	1,018	572	648	580	581	698	967	583	634	686	685
26	650	1,014	627	580	585	577	573	567	579	678	710	718
27	843	617	635	576	587	578	575	574	869	654	568	349
28	702	588	575	577	956	575	697	548	575	665	713	596
29	643		996	843	580	580	929	574	582	673	654	565
30	712		886	960	956	575	580	566	578	610	699	597
31	582		1,026		572		579	925		697		602
Minimum	550	573	565	559	572	569	341	548	573	569	352	325
Maximum	1,015	1,021	1,026	1,026	956	979	1,003	967	1,005	902	1,001	1,011
Average	658	677	687	677	630	639	678	683	736	635	664	666

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

APPENDIX B – 2010 CHEMICAL CONSUMPTION

	ZEBRA MUSSEL CONTROL	PRE-TREATMENT				POST-TREATMENT	
MONTH	CL ₂ Used kg	CL ₂ Used kg	ALUM Used kg	PAC Used kg	Polymer Used kg	CL ₂ Used kg	HFS Used kg
January							
Total	-	2,061	44,823	-	37	951	781
Minimum	-	54	628	-	1	21	19
Maximum	-	83	2,304	-	2	39	37
Average	-	66	1,446	-	1	31	25
February							
Total	-	2,022	32,674	-	32	744	673
Minimum	-	51	628	-	1	22	18
Maximum	-	85	1,676	-	1	29	29
Average	-	72	1,167	-	1	27	24
March							
Total	-	2,317	43,357	-	36	905	703
Minimum	-	52	838	-	1	20	14
Maximum	-	123	2,932	-	3	45	36
Average	-	75	1,399	-	1	29	23
April							
Total	-	2,150	34,141	-	28	834	707
Minimum	-	57	838	-	0	20	18
Maximum	-	88	1,676	-	1	32	28
Average	-	72	1,138	-	1	28	24
May							
Total	-	2,449	43,357	-	37	844	781
Minimum	-	63	838	-	1	21	21
Maximum	-	91	2,513	-	2	32	29
Average	-	79	1,399	-	1	27	25
June							
Total	312	2,553	40,424	-	35	849	786
Minimum	0	65	838	-	1	22	21
Maximum	30	99	2,095	-	2	34	30
Average	10	85	1,347	-	1	28	26
July							
Total	869	2,449	34,245	1,530	30	819	818
Minimum	10	49	209	-	0	17	15
Maximum	58	101	1,676	-	2	34	34
Average	28	79	1,105	-	1	26	26
August							
Total	972	2,833	43,419	7,545	48	857	844
Minimum	10	64	838	-	1	25	21
Maximum	53	106	1,885	-	3	34	31
Average	31	91	1,401	-	2	28	27
September							
Total	895	3,153	40,843	17,257	30	1,037	819
Minimum	8	87	838	-	0	25	12
Maximum	40	136	2,095	-	2	55	34
Average	30	105	1,361	-	1	35	27
October							
Total	831	2,485	40,005	1,414	24	641	811
Minimum	0	60	838	-	0	16	19
Maximum	40	107	2,513	-	2	25	30
Average	27	80	1,290	-	1	21	26
November							
Total	-	2,170	40,215	-	17	591	705
Minimum	-	59	838	-	0	14	17
Maximum	-	102	2,932	-	1	25	32
Average	-	72	1,340	-	1	20	23
December							
Total	-	1,861	39,376.9	-	34	540	642
Minimum	-	29	628	-	0	9	8
Maximum	-	110	3,351	-	2	47	43
Average	-	60	1,270	-	1	17	21
Yearly Totals							
Yearly Total	3,880	28,503	476,880	27,746	387	9,612	9,072
Yearly Minimum	0	29	209	-	0	9	8
Yearly Maximum	58	136	3,351	-	3	55	43
Yearly Average	25	78	1,305	-	1	26	25

Note: (i) Chemical use statistics do not include days when chemical was not required.

List of Acronyms
CL ₂ - Liquefied Chlorine Gas
Alum - Aluminum Sulfate
PAC - Powder Activated Carbon
HFS - Hydrofluosilicic Acid

APPENDIX C – 2010 WATER QUALITY SUMMARY

MONTH	RAW WATER			FILTERED WATER					TREATED WATER			
	pH	TURBIDITY NTU	TEMP °C	FILTER #1	FILTER #2	FILTER #3	FILTER #4	Aluminum Residual mg/L	pH	Fluoride mg/L	Free Chlorine Residual mg/L	TURBIDITY NTU
				TURBIDITY NTU	TURBIDITY NTU	TURBIDITY NTU	TURBIDITY NTU					
January												
Minimum	7.91	6.13	0.20	0.03	0.03	0.02	0.02	0.001	7.00	0.38	1.01	0.03
Maximum	8.36	997.76	2.90	1.10	0.91	0.66	0.70	0.026	7.36	1.03	1.49	2.00
Average	8.15	65.82	0.89	0.04	0.04	0.05	0.03	0.006	7.16	0.71	1.24	0.05
February												
Minimum	8.07	4.18	0.12	0.03	0.02	0.02	0.02	0.001	7.07	0.36	1.02	0.04
Maximum	8.33	253.79	2.20	2.00	2.00	2.00	2.00	0.022	7.38	1.10	1.59	2.00
Average	8.18	12.63	0.91	0.04	0.05	0.04	0.05	0.007	7.22	0.70	1.24	0.05
March												
Minimum	7.89	2.27	1.14	0.03	0.02	0.02	0.02	0.001	5.17	0.27	0.92	0.03
Maximum	8.83	1000.00	5.36	0.53	0.60	0.23	1.99	0.026	10.00	1.10	1.53	2.00
Average	8.54	26.98	3.40	0.05	0.05	0.04	0.04	0.006	7.11	0.69	1.20	0.05
April												
Minimum	8.54	4.51	5.10	0.03	0.04	0.01	0.03	0.001	5.23	0.34	0.93	0.04
Maximum	8.91	669.36	10.21	0.69	0.23	0.31	0.72	0.036	8.00	1.40	1.55	1.92
Average	8.70	18.29	8.21	0.05	0.06	0.03	0.04	0.007	7.19	0.73	1.11	0.05
May												
Minimum	8.41	3.57	7.23	0.03	0.04	0.01	0.02	0.001	6.69	0.41	0.86	0.03
Maximum	8.94	1000.00	13.80	0.21	0.40	0.38	1.22	0.049	7.74	1.35	1.43	2.00
Average	8.72	34.43	10.66	0.04	0.06	0.04	0.03	0.017	7.19	0.73	1.11	0.05
June												
Minimum	7.45	0.00	11.20	0.03	0.00	0.02	0.00	0.001	5.43	0.28	0.85	0.02
Maximum	8.77	1000.00	17.66	0.84	1.16	0.59	2.00	0.045	8.33	1.41	1.95	2.00
Average	8.05	25.94	13.87	0.04	0.04	0.04	0.05	0.019	7.19	0.64	1.20	0.04
July												
Minimum	7.66	3.57	12.40	0.02	0.03	0.02	0.04	0.001	5.48	0.25	0.92	0.02
Maximum	8.47	881.49	22.10	2.00	1.52	0.98	1.06	0.065	8.01	1.52	1.62	0.71
Average	7.92	11.03	15.94	0.03	0.04	0.02	0.05	0.026	7.24	0.66	1.19	0.03
August												
Minimum	7.71	3.24	18.36	0.01	0.02	0.02	0.04	0.022	5.85	0.25	0.77	0.02
Maximum	8.69	436.09	25.45	0.47	0.89	0.26	0.76	0.077	8.29	1.28	1.52	1.36
Average	8.20	10.96	22.06	0.02	0.03	0.02	0.05	0.047	7.28	0.65	1.12	0.03
September												
Minimum	7.61	2.27	17.10	0.02	0.03	0.02	0.02	0.001	6.74	0.16	0.10	0.02
Maximum	8.47	981.45	23.59	0.61	0.38	0.39	2.00	0.063	7.47	1.24	1.73	2.00
Average	8.11	24.60	18.71	0.04	0.04	0.04	0.05	0.027	7.20	0.71	1.27	0.04
October												
Minimum	8.10	0.00	13.20	0.03	0.02	0.02	0.01	0.001	6.53	0.26	0.88	0.03
Maximum	8.51	997.47	17.67	0.36	0.26	0.16	0.13	0.039	8.02	1.29	1.55	2.00
Average	8.29	51.32	15.26	0.03	0.03	0.03	0.02	0.023	7.19	0.77	1.26	0.04
November												
Minimum	8.06	0.36	6.90	0.03	0.03	0.02	0.01	0.001	5.95	0.23	0.89	0.03
Maximum	8.38	997.47	12.27	2.00	0.55	0.44	0.89	0.036	7.93	1.06	1.41	2.00
Average	8.27	43.41	10.16	0.05	0.05	0.03	0.02	0.017	7.04	0.60	1.20	0.04
December												
Minimum	7.72	1.95	0.80	0.03	0.03	0.02	0.00	0.001	5.00	0.16	1.01	0.03
Maximum	8.29	561.40	7.20	0.17	0.83	0.92	1.12	0.047	7.98	1.26	1.93	2.00
Average	8.04	39.70	3.12	0.04	0.11	0.03	0.02	0.014	6.83	0.63	1.24	0.04
Yearly Minimum	7.45	0.00	0.12	0.01	0.00	0.01	0.00	0.00	5.00	0.16	0.10	0.02
Yearly Maximum	8.94	1000.00	25.45	2.00	2.00	2.00	2.00	0.08	8.33	1.52	1.95	2.00
Yearly Average	8.26	30.42	10.27	0.04	0.05	0.04	0.04	0.02	7.15	0.69	1.20	0.04

Note: (i) Temperature and aluminum residual values obtained from in-house laboratory tests
(ii) Turbidity, pH and free chlorine residual values obtained from SCADA
(iii) There were a few instances in 2010 when the filter effluent and/or treated water turbidity exceeded 1.00 NTU. The spikes that were witnessed did not exceed more than fifteen minutes, with the exception of Sept. 8, 2010, for which an AWQI report was made to the MOE.

APPENDIX D – 2010 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 c/o the City of London
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2010 through December 31, 2010

<p><u>Complete if your Category is Large Municipal Residential or Small Municipal Residential</u></p> <p>Does your Drinking-Water System serve more than 10,000 people? Yes [X] No []</p> <p>Is your annual report available to the public at no charge on a web site on the Internet? Yes [X] No []</p> <p>Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.</p> <div style="border: 1px solid black; padding: 5px;"> <p>Lake Huron and Elgin Area Water Supply Systems c/o Regional Water Supply Division 235 North Centre Road London, ON N5X 4E7 http://www.watersupply.london.ca</p> <p>Elgin Area Water Treatment Plant 43665 Dexter Line, Union, ON</p> </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <input type="text" value="N/A"/></p> <p>Did you provide a copy of your annual report to all Designated Facilities you serve? Yes [] No []</p> <p>Number of Interested Authorities you report to: <input type="text" value="N/A"/></p> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p>
---	---

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 Secondary Water Supply System	260078897
Aylmer 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 No

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

- Public access/notice via the web**
- 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 News Release**

Describe your Drinking-Water System

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, 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 a 750 mm diameter water main to various communities en route to a 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

12% Sodium Hypochlorite
 Acidified Alum
 Cationic Polymer
 Powder Activated Carbon
 Chlorine Gas
 Hydrofluosilicic Acid

Were any significant expenses incurred to?

- Install required equipment
- Repair required equipment
- Replace required equipment



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

SCADA upgrades
Installed 3 new CL2 analyzers to accurately assess CT through the system
Repaired surface wash sweeps on filter # 4
Installed safety railings around all 4 filters
Replaced filter headloss instruments
Replaced doors and windows throughout the plant, as required to meet fire safety code
Installed rip rap for Shoreline Protection of lowlift building
Filter building roof heating unit insulated
Replaced ballast on UV #1
Replaced ballast on UV #4
Alum pump #3 repaired
Replaced various continuous monitoring equipment
Replaced reservoir hatch pad locks
Replaced worn batteries on UPS's
Installed Backflow preventers, as required, throughout the plant
Repaired siding above main entrance door
Repairs/replacement of various pieces of benchtop analytical equipment
Replaced bearings in South Flash Mixer
Replaced chlorine regulator valves
Rebuilt Low Lift fan
Repaired PAC system valves
Replaced sump pump in valve chamber W004
Repairs to PAC day tank
Replaced Chlorine vacuum switch
Replaced sump pump at Fruit Ridge Surge Building
Purchased pipeline maintenance vehicle (including hydraulic valve operator and pump)
Repaired Solenoid valve on HLP #2
Repaired Fluoride pump #2
Replaced solenoid valve on LLP #2
Replaced A/C unit in Low Lift Hypo Building
Repair and/or replacement of sections of service water piping
Installed 1.5" hoses and reels for filter maintenance
Installed stainless steel tops for obsolete filter control cabinets
Repaired polymer feed screw
Rebuilt Backwash Pump #2 - Repaired valve on Aug. 10
Repairs made to UV #4
Repairs made to HLP #3 asco valve
Repaired check valves on PAC pump #2
Plant lighting upgrades
Installed actuator on Low Lift drain interconnect



Repairs to hypochlorite pump #1 at Low Lift station
 Truck radio system received upgrade
 Repaired Low Lift Chlorine analyzer
 Repaired North Settled Water Turbidity analyzer
 Installed new temperature sensor at Low Lift
 Installed new unit heater at EMPS Valve House
 Replaced Backwash Control Valve on filters #1 through 4
 Replaced Filter Effluent Valves on filters #1 through 4
 Installed pressure switches on PAC pumps and on the Plant discharge main
 Asbestos removal in fan blower rooms
 Repaired UV#2

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

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
June 9, 2010	Turbidity	Finished water turbidity was recorded above 1 NTU	NTU	Report was made in error as discharge turbidity is not considered an adverse situation. The CA for the reading was to increase flow to the turbidity meter and increase levels in the clearwell.	June 9, 2010
June 22, 2010	Turbidity	Failure to record filtered water turbidity	NTU	Restored trending. Reviewed alarm codes and nomenclature to ensure Operator can determine area of concern upon receiving an alarm.	June 22, 2010
June 29, 2010	NDMA	86.1	ng/L	Resampled and submitted to 3 independent labs. Final resolution was that the result was due to laboratory error.	July 12, 2010
July 2, 2010	NDMA	73	ng/L	Resample result from same lab as original adverse sample. Final resolution was that the result was due to laboratory error.	July 12, 2010
July 7, 2010	Fluoride	1.52	mg/L	High lift pumping was suspended for one hour to increase levels in the reservoir and Fluoride feed was temporarily shut off.	July 7, 2010
December 16, 2010	Alum Addition	Failure to meet primary disinfection criterion (20 mins)	N/A	Pump blockage removed and metering pump placed back in service. 3 more pumps placed in service as well.	December 16, 2010

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 #)	Number of Heterotrophic Plate Count (HPC) Samples	Range of HPC Results (counts/1 mL) (min #)-(max #)
Raw	104	(0)-(40)	(0) – (6100)	103	(<10) – (>670)
Treated	256	0 - 0	0 - 0	256	(<10) – (580)
Distribution	154	0 - 0	0 - 0	154	(<10) – (20)

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

Treated Water (Plant Effluent)

Parameter	Number of Continuous Monitoring Samples	Range of Results (min #)-(max #)
Turbidity (NTU)	105120	0.02 – 2.00
Free Chlorine (mg/L)	105120	0.10 – 1.99
Fluoride (mg/L)	105120	0.06 - 1.52

NOTE: There were a few instances in 2010 when the treated water turbidity exceeded 1.00 NTU. Each of these events coincided with a pump start-up. Treated water turbidity spikes did not exceed more than fifteen minutes.

Filter #1 Effluent

Parameter	Number of Continuous Monitoring Samples	Range of Results (min #)-(max #)
Turbidity (NTU)	105120	0.014 – 2.00

Filter #2 Effluent

Parameter	Number of Continuous Monitoring Samples	Range of Results (min #)-(max #)
Turbidity (NTU)	105120	0.020 – 2.00

Filter #3 Effluent

Parameter	Number of Continuous Monitoring Samples	Range of Results (min #)-(max #)
Turbidity (NTU)	105120	0.013 – 2.00

Filter #4 Effluent

	Number of Continuous Monitoring Samples	Range of Results (min #)-(max #)
Turbidity (NTU)	105120	0.012 – 2.00

NOTE: Filter effluent turbidity spikes above 1.00 NTU did not exceed fifteen minutes on any of the filters.

Summary of Inorganic parameters tested during this reporting period

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony	January 5, 2010	Not Detected	µg/L	NO
	September 1, 2010			
Arsenic	January 5, 2010	Not Detected	µg/L	NO
	September 1, 2010			
Barium	January 5, 2010	25	µg/L	NO
	September 1, 2010	22		
Boron	January 5, 2010	20	µg/L	NO
	September 1, 2010	20		
Cadmium	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Chromium	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Lead	January 5, 2010 July 6, 2010	Not Detected	µg/L	NO
Mercury	January 5, 2010 September 1, 2010	Not Detected	mg/L	NO
Selenium	January 5, 2010 September 1, 2010	Not Detected	mg/L	NO
Sodium	January 5, 2010	9.6	mg/L	NO
	September 1, 2010	9.6		
Uranium	January 5, 2010 September 1, 2010	Not Detected 0.1	µg/L	NO
Nitrite	January 5, 2010 April 13, 2010 July 6, 2010 October 5, 2010	Not Detected Not Detected Not Detected Not Detected	mg/L	NO
Nitrate	January 5, 2010	0.2	mg/L	NO
	April 13, 2010	0.3		
	July 6, 2010	0.1		
	October 5, 2010	0.2		

Summary of Organic parameters sampled during this reporting period

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Aldicarb	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Aldrin + Dieldrin	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Atrazine + N-dealkylated metabolites	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO



Azinphos-methyl	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Bendiocarb	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Benzene	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Benzo(a)pyrene	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Bromoxynil	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Carbaryl	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Carbofuran	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Carbon Tetrachloride	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Chlordane (Total)	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Chlorpyrifos	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Cyanazine	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Diazinon	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Dicamba	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
1,2-Dichlorobenzene	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
1,4-Dichlorobenzene	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Dichlorodiphenyltrichloroethane (DDT) + metabolites	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
1,2-Dichloroethane	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
1,1-Dichloroethylene (vinylidene chloride)	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Dichloromethane	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
2-4 Dichlorophenol	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
2,4-Dichlorophenoxy acetic acid (2,4-D)	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Diclofop-methyl	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Dimethoate	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Dinoseb	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Diquat	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Diuron	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Glyphosate	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Heptachlor + Heptachlor Epoxide	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Lindane (Total)	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Malathion	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Methoxychlor	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Metolachlor	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO



Metribuzin	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Monochlorobenzene	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Paraquat	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Parathion	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Pentachlorophenol	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Phorate	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Picloram	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Polychlorinated Biphenyls(PCB)	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Prometryne	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Simazine	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
THM	January 5, 2010 April 16, 2010 July 6, 2010 October 5, 2010	0.0080 0.0107 0.0152 0.0130	mg/L	NO
Temephos	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Terbufos	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Tetrachloroethylene	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
2,3,4,6-Tetrachlorophenol	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Triallate	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Trichloroethylene	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
2,4,6-Trichlorophenol	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Trifluralin	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO
Vinyl Chloride	January 5, 2010 September 1, 2010	Not Detected	µg/L	NO

NOTE: During 2010, no Inorganic or Organic parameter(s) exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

APPENDIX E - MINISTRY OF THE ENVIRONMENT INSPECTION SUMMARY

Ministry of the Environment (MOE) Inspection Report – Issued March 14, 2011

Summary of Non-compliances

#	MOE Inspection Module	MOE Non-compliance (Summary)	Corrective Action Required by MOE (Summary)
NC #1	Permit To Take Water	<p>The maximum water takings were not in accordance with those allowed under the Permit To Take Water.</p> <p>AWCC records indicated there were four (4) exceedances of water taking limits (short duration) during the review period. Some operating authority records are conflicting with SCADA data.</p>	Conduct a detailed review of the process and data collection entries for the review period and compare the records made to ensure accuracy and compliance with the PTTW. Provide a detailed report of the findings and actions taken to prevent the inaccurate collection and recording of data.
NC #2	Treatment Processes **	<p>The facility and equipment did not appear to be maintained or in a fit state of repair.</p> <p>Specific items noted include: -the zebra mussel control building and chlorination components were in poor repair -the chemical storage area for fluoridation has excessive corrosion of equipment and ventilation system -windows located over the filter gallery may need seam replacements</p>	Ensure all findings deficient in the protection of the system are upgraded, repaired or replaced. Documentation regarding a summary of the findings and actions taken shall be forwarded to the inspector.
NC #3	Treatment Processes **	<p>The Operator-in-Charge (OIC) has not ensured that all equipment used in the processes was monitored, inspected and evaluated.</p> <p>The OIC failed to ensure verification checks of monitoring equipment during calibrations conducted by non-certified personnel. The OIC conducted maintenance on regulated continuous monitoring analyzers while water was continually being directed to system users.</p>	Ensure all staff responsible for the operation and maintenance of the EAPWSS are provided training, and implement detailed protocols to ensure that all physical checks, maintenance, calibration, verification and monitoring of equipment is conducted in a way to ensure compliance with O.Reg. 128/04.
NC #4	Logbooks	<p>Logs for the treatment subsystems did not contain the required information.</p> <p>It was found that the OIC on numerous occasions failed to record the date or time of shift change. Many entries state an abnormal situation but there is no explanation of the actions taken.</p>	Integrate record keeping requirements into the training program for operational staff. Provide confirmation that all operational staff has been trained in record keeping requirements as per O.Reg. 128/04.
NC #5	Logbooks	Logs for the distribution subsystems did not contain the required information.	Develop a detailed log for each drinking water system. A separate log

#	MOE Inspection Module	MOE Non-compliance (Summary)	Corrective Action Required by MOE (Summary)
		Logs records for the remote subsystems (Elgin-Middlesex Pumping Station) have been recorded in a general logbook located at the Elgin WTP.	shall be implemented for the St. Thomas Secondary Water Works, Aylmer Secondary Water Works, and London Distribution Water Works.
NC #6	Logbooks	<p>The OIC did not ensure that records were maintained of all adjustments made to the processes within their responsibility.</p> <p>The information provided for the inspection did not always reflect log entries made by the OIC or SCADA trending.</p>	Ensure all record keeping for the operation of the system meets the log and or record keeping requirements as per O.Reg. 128/04. Provide documentation regarding the required actions to the inspector.
NC #7	Certification and Training	<p>All activities that were undertaken by uncertified persons were not overseen by persons having the prescribed qualifications.</p> <p>On numerous occasions the instrument technician (subcontractor) was not being properly supervised during the calibration of regulated continuous online analyzers.</p>	Ensure that all activities undertaken by personnel within the drinking water system are appropriately certified or are under the direct supervision of an individual that has the prescribed qualifications. Ensure that appropriate training and a guidance protocol is provided to the operational staff. Provide documentation to the inspector.
NC #8	Water Quality Monitoring **	<p>All continuous analyzers were not calibrated, maintained, and operated in accordance with the manufacturer's instructions or regulation.</p> <p>On several occasions over an 8 month period it was noted that a filter effluent turbidity analyzer required repair. Calibration records indicated the instrument was outside the required margin of error. The problem continued for an unacceptable length of time.</p>	Conduct an evaluation of the current practices employed at the EAPWSS regarding maintenance and calibration of regulated continuous monitoring analyzers. Ensure all analyzers meet or surpass prescribed requirements. Provide documentation of the evaluation findings and steps taken to the inspector.
NC #9	Water Quality Monitoring **	<p>Operators were not examining continuous monitoring test results of they were not examining the results within 72 hours of the test.</p> <p>The operating authority failed to review and verify filter effluent performance to ensure 95% criteria was met for the calendar month.</p>	Implement the filter performance review criteria to ensure that filtered water turbidity meets the 95% criteria each month. Provide the filter performance calculations for the specified period to the inspector.
NC #10	Water Quality Monitoring **	<p>All continuous monitoring equipment that was being utilized to fulfill O.Reg. 170/03 requirements was not recording data with the prescribed format.</p> <p>Data provided by the operating authority did not provide a true minimum, maximum and mean value as prescribed</p>	Conduct a detailed evaluation of the current SCADA monitoring and recording to ensure that all monitoring and recording frequencies meet the prescribed regulatory requirements. Provide documentation to the inspector.

#	MOE Inspection Module	MOE Non-compliance (Summary)	Corrective Action Required by MOE (Summary)
NC #11	Reporting and Corrective Actions **	<p>by regulation.</p> <p>All required notifications (verbal notifications) of adverse water quality incidents were not immediately provided as per O.Reg. 170/03.</p> <p>On Sept. 8, 2010 the OIC failed to report a filter turbidity exceedance.</p>	Implement clear and concise protocols to ensure that staff responsible for the operation and maintenance of the drinking water system are provided with direction regarding reporting and record keeping. Provide documentation to the inspector.
NC #12	Reporting and Corrective Actions	<p>All required notifications (written notifications) of adverse water quality incidents were not immediately provided as per O.Reg. 170/03.</p> <p>On Sept. 8, 2010 the OIC failed to report a filter turbidity exceedance.</p>	Implement clear and concise protocols to ensure that staff responsible for the operation and maintenance of the drinking water system are provided with direction regarding reporting and record keeping. Provide documentation to the inspector.
NC#13	Reporting and Corrective Actions	<p>In instances where written notice of issue resolution was required by regulation, the notice was not provided as per O.Reg. 170/03.</p> <p>During the review of an Adverse Water Quality Incident, it was found that the written notice of resolution was not provided in the prescribed time frame of seven (7) days or less.</p>	Implement clear and concise protocols to ensure that staff responsible for the operation and maintenance of the drinking water system are provided with direction regarding reporting and record keeping. Provide documentation to the inspector.
NC#14	Reporting and Corrective Actions **	<p>Where required continuous monitoring equipment, used for the monitoring or chlorine residual and/or turbidity triggered an alarm or an automatic shut-off, a qualified person did not respond in a timely manner and/or did not take appropriate actions.</p> <p>An "anomalous event" occurred at the Elgin WTP on Sept. 4, 2010. The OIC failed to take appropriate actions within a timely manner, causing multiple issues including potential loss of primary and secondary disinfection, low water distribution system pressure and reduced chlorine levels impacting other water distribution operations.</p>	Ensure that a person qualified to examine test results caused by an alarm takes appropriate reporting and corrective actions. Provide Director approved training to all personnel responsible for the operation of the EAPWSS defining the need to take appropriate actions and response to alarms generated. Provide documentation to the inspector.