St. Clair Township Water Distribution System

Annual Summary Report – O.Reg. 170/03

2010

(Waterworks # 260006464)

Introduction

The Corporation of the Township of St. Clair owns and operates the St. Clair Township Water Distribution System and supplies potable water to residents and businesses throughout the Township. Potable water is purchased from the Lambton Area Water Supply System (LAWSS), which operates a Water Treatment Plant in Sarnia and a trunk distribution system, serving six Lambton County municipalities.

The Township of St. Clair and the LAWSS operate their facilities in accordance with the Provincial Drinking Water System Regulation 170/03, introduced in June 2003 under the Safe Drinking Water Act, 2002. The new regulation updated Ontario Regulation 459/00 which set standards for all publicly operated water systems in the Province. Among the requirements of the new regulation is the production of an Annual Report summarizing the results of water quality testing and an Annual Summary Report outlining the general operation of the water system.

The reports and detailed test results are available at the St. Clair Civic Centre, 1155 Emily Street, Mooretown, Ontario. The Annual Report may also be viewed on the Internet at www.twp.stclair.on.ca. Copies of LAWSS test results and reports, and the new regulations and standards are also available for review. If you have any questions concerning this report or the operation of the St. Clair Water System, please call the Director of Public Works, Larry Burnham, P. Eng., at 519-867-2125.

History

The current water supply system serving St. Clair Township has evolved significantly over the past 50 years. Initially, several of the urban areas developed their own independent water distribution systems. These systems obtained drinking water from communal wells or the St. Clair River. In the early 1950's, with the development of the Shell Canada Refinery, a piped water supply was obtained from the City of Sarnia to service the Shell Refinery and Corunna.

In the early 1970's, the Ontario Water Resources Commission and local municipalities developed an area water system, LAWSS. It supplied treated water to Point Edward, Sarnia, Moore, Sombra and part of Sarnia Township. This system was expanded in the late 1980's to service municipalities in the northeastern part of Lambton County. The LAWSS provided a safe treated water supply to the urban areas of Brigden, Corunna, Courtright, Mooretown, Port Lambton and Sombra Village in the mid 1970's. In the late 1980's expansion of the Township distribution system began, to service the rural areas of the Township. Today, over 95% of the population is serviced with a piped water supply.

The LAWSS is currently governed by the six member municipalities and operated under contract by the Ontario Clean Water Agency. The Council of the Township of St. Clair controls the St. Clair Township Water Distribution System.

Annual Highlights

Frequent watermain flushing and chlorine residual testing indicates that residuals are remaining at acceptable levels. Chlorine levels in the Froomfield area still require regular monitoring and testing to be maintained at acceptable levels. Monitoring is continuing across the entire Township to ensure that water quality is being maintained.

On October 6, 2010 the MOE conducted an inspection of the St. Clair Township Water Distribution System. A copy of the inspection report was received by the Township on November 9, 2010.

A non-compliance issue with regulatory requirements was identified during the inspection period. A request from the MOE inspector to have the Township supply a disk copy of the five minute SCADA data from the Brigden Water Tower continuous monitoring equipment in a CSV (comma-separated values) format for the 2010 calendar year. The SCADA equipment provider was contacted immediately to provide these records. They are looking in to the issue to see if it is possible for the program to provide this information as requested. The Moe inspector was offered access to the SCADA computer to view these records at the Township office.

Several recommendations relating to best practices were made in order to meet current and future legislative requirements. Below is a summary of these recommendations.

1) The Township continue its efforts to assess, and retrofit where necessary, backflow prevention devices at facilities from which backflow could pose a risk to the water system.
2) The Township correct and submit an updated drinking water system profile information form. This has been completed.

On October 5, 2010 the continuous chlorine analyzer at the Brigden Water Tower and six Pocket Colorimeters were calibrated by Hach Canada.

Water Quality

Testing throughout the distribution system is conducted on a weekly basis for both chlorine residual and microbiological parameters. The maintenance of chlorine residual in the distribution system is one important step used to prevent microbiological contamination of the water supply. Chlorine is added at the treatment plant and at various locations throughout the distribution system to ensure adequate disinfection capabilities are maintained. The Township is careful to avoid possible contamination during the repair of water mains, the installation of new connections and services, and during routine maintenance.

Appendix ‘A’ summarizes the results of distribution system testing conducted from January through December 2010. Monitoring is required for parameters such as lead, quarterly for parameters such as trihalomethanes, weekly for parameters such as E-Coli and daily for parameters such as free chlorine residual. Appendix ‘A’ also summarizes the results from the continuous online chlorine analyzer at the Brigden Water Tower. These readings have been compared with the weekly and monthly testing in the area to confirm the accuracy and reliability of the equipment. An analysis of the data has confirmed that any low readings can be attributed to either a power outage or equipment malfunction. Appendix ‘B’ addresses the various parameters of water quality that are tested for.

The test results confirm that our water met all health-related Ontario Drinking Water Standards.

Compliance

Ontario Regulation 170/03 requires that the Annual Summary Report list any requirements of the Safe Drinking Water Act (SDWA), the regulations under the SDWA or the drinking-water system's approval that the system failed to meet at any time during the period covered by the report. Listed below are the requirements that the system failed to meet in 2010 along with the duration of the failure and the measures taken to correct the failure.

System Capacity

Ontario Regulation 170/03 requires that the Annual Summary Report include a summary of the quantities and flow rates of the water supplied during the year such that the owner of the system will be able to assess the capability of the system to meet existing and planned uses of the system.

Appendix 'C' lists the volumes of water received from the LAWSS distribution system each month throughout the year along with a monthly comparison with the 2009 values and a yearly comparison with the values from the previous 7 years.

Table 1 lists the Average Daily flow for the maximum month for 2009 and 2010 along with the Average Daily flow for each year since 2002.

Table 1 – Average Daily Flows

2010 Average Daily Flow – Max. Month (July)	15,800 cu.m./day
2009 Average Daily Flow – Max. Month (August)	13,500 cu.m./day

2010 Average Daily Flow – Year	11,700 cu.m./day
2009 Average Daily Flow – Year	11,000 cu.m./day
2008 Average Daily Flow – Year	11,900 cu.m./day
2007 Average Daily Flow – Year	11,000 cu.m./day
2006 Average Daily Flow – Year	9,700 cu.m./day
2005 Average Daily Flow – Year	9,200 cu.m./day
2004 Average Daily Flow – Year	9,300 cu.m./day
2003 Average Daily Flow – Year	9,700 cu.m./day

The Lambton Area Water Treatment Plant has a rated maximum daily flow rate of 181,844 cu.m./day. St. Clair Township's proportion of the normal flow rate is approximately 25%. This would translate to a maximum daily flow rate of 45,461 cu.m./day, which is approximately four times the 2010 Average Daily Flow-Maximum Month shown in Table 1.

In comparing the average monthly volumes, the value for 2010 is 6.35% more than the previous year and is due to increased industrial usage.

Large industrial consumers accounted for approximately 65% of the total volume of water used in St. Clair Township in 2010. The largest single user in the water distribution system is the Nova – Moore Site, while the Suncor Ethanol Plant has become the second largest single user of the water system.

Future Requirements

Accreditation of Operating Authority: The operating authority of the drinking water system shall become accredited upon the Minister of the Environment establishing one or more accreditation bodies.

Financial Plans: A financial plan satisfying the requirements of the Sustainable Sewer and Water Systems Act shall be prepared upon the appropriate sections of the Safe Drinking Water Act and the Sustainable Sewer and Water Systems Act coming into effect. The financial plan will be a requirement to obtain the Municipal Drinking Water License.

Drinking Water Works Permits: A drinking water works permit will be required prior to carrying out any alteration or replacement of a drinking water system upon the appropriate section of the Safe Drinking Water Act coming into effect

Municipal Drinking Water License: A municipal drinking water license will be required upon the appropriate section of the Safe Drinking Water Act coming into effect and upon satisfying the requirements of the operational plan, financial plan and accreditation of the operating authority.

APPENDIX 'A'
2010 Water Quality Test Results
(Waterworks # 260006464)

	O.Reg. 170/03	Sampling Period	Number of Samples	Number of Detectable Results	Range	MAC or IMAC	Exceedence ?	Typical Source of Parameter
Microbiological Parameters								
Total Coliforms (membrane filter analysis) (counts / 100ml)	Schedule 10-2	Jan/01 - Dec/31 (sampled weekly)	520[1]	0	0-0	0*	No	Indicates possible presence of fecal matter.
Fecal Coliforms (membrane filter analysis) (counts / 100ml)	Schedule 10-2	Jan/01 - Dec/31 (sampled weekly)	520[1]	0	0-0	0*	No	Definite indicator of fecal contamination.
Background Count (membrane filter analysis) (counts / 100ml)	Schedule 10-2	Jan/01 - Dec/31 (sampled weekly)	520[1]	1	0-3	200	No	Indicates presence of aerobic bacteria and effectiveness of disinfection.
* indicator of adverse water quality if detected in treated water								
Parameters Related to Microbiological Quality								
Free Chlorine (Distribution System) (mg/l)	Schedule 6-3	Jan/01 - Dec/31 (sampled weekly)	520[1]	520	0.72 – 1.61	--	N/A	Recommended level of at least 0.2mg/l in system to maintain microbiological quality.
Free Chlorine (Froomfield)	♦	Jan/01 - Dec/31	36	--	0.33 - 1.21	--	N/A	Recommended level of at least 0.2mg/l in system to maintain microbiological quality.
Free Chlorine (Operational - Flushing)	♦	Jan/01 - Dec/31	808	--	0.56 – 1.50	--	N/A	
Free Chlorine (Daily)	Schedule 7-2(3)	Jan/01 - Dec/31	365	--	0.62 - 1.51	--	N/A	
Free Chlorine (SCADA)	♦ (C of A)	Jan/01 - Dec/31	105120	--	0.00 - 1.83[4]	--	N/A	
Volatile Organics								
Trihalomethanes (running annual average) (ug/l)	Schedule 13-6	Jan/01 – Dec/31 (sampled quarterly)	4	4	48.0	100	No	Byproduct of chlorine reacting with naturally occurring organics.
Inorganic Parameters								
Lead (mg/l)	O. Reg.					10 10	No No	Results from corrosion of lead pipe or lead solder in plumbing.

[1] The number of samples significantly exceeds the required number (24 per month – 288 annually).
[2] Re-sampling and re-testing yielded acceptable results.
[3] A full year of data consists of 105,120 samples when taken at 5 minute intervals.
[4] High / Low chlorine levels were attributed to power outages and/or equipment malfunction.
♦ Indicates additional operational testing not required by O.Reg. 170/03.

APPENDIX 'B'
WATER QUALITY PARAMETERS

What parameters do we test for?

Some parameters may be present in source water before it is treated. Here is a description of the various groups of parameters. The presence of these substances in drinking water does not necessarily mean that the water poses a health risk.

Microbiological parameters such as bacteria may come from sewage plants, livestock operations, septic systems and wildlife. Microbiological quality is the most important aspect of drinking water quality because of its association with dangerous water-borne diseases, which can strike quickly.

Inorganic parameters such as salts and metals can be naturally occurring or a result of urban storm runoff, industrial or domestic wastewater discharge, mining or agriculture. Some may be a result of treatment and distribution of water (for example, lead from old solder in pipes).

Organic parameters can be naturally occurring, but most organics of concern are synthetic. They originate from industrial discharges, urban storm runoff and other sources. Included in this group are pesticides that originate from both rural and urban areas. Some may originate from treatment of drinking water (for example, chlorination byproducts such as trihalomethanes).

Definitions

Here are some terms you should know about before reading the information below.

MAC

Maximum Acceptable Concentration. This is a health-related Ontario drinking water standard established for contaminants that have known or suspected adverse health effects when above a certain concentration. The length of time the MAC can be exceeded without injury to health will depend on the nature and concentration of the parameter.

IMAC

Interim Maximum Acceptable Concentration. This is a health-related Ontario drinking water standard established for contaminants when there are insufficient toxicological data to establish a MAC with reasonable certainty, or when it is not practical to establish a MAC at the desired level.

Parameter

This is a substance that we sample and analyze for in the water

mg/l

milligrams per litre. This is a measure of the concentration of a parameter in water, sometimes called parts per million (ppm).

APPENDIX "C"
2010 FLOWS

Unless otherwise specified, volumes are expressed in cubic metres.

Meter Name	Meter No.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Lasalle Road	3001	3,025	3,200	2,920	3,175	4,405	4,575	4,800	5,110	3,270	2,560	2,915	1,897	**41,852**
Fire School	3002, 3003	1	11	164	1,424	834	1,427	200	300	1,000	1,100	1,150	0	**7,611**
Basell Polyolefins	3004	0	0	0	1,000	2,500	500	500	1,000	1,000	1,000	1,000	1,000	**9,500**
Nova St. Clair	3005, 3006	6,525	5,605	7,115	10,357	8,853	8,127	19,451	11,783	7,404	9,111	10,015	11,799	**116,145**
Corunna	3007, 3008	3,640	4,680	4,060	4,550	8,379	11,501	24,143	10,249	5,126	3,699	5,035	4,140	**89,202**
Industrial Park		56,300	71,400	62,250	69,150	95,750	96,350	120,200	109,250	74,550	65,250	72,450	66,650	**959,550**
Rokeby	3009	40,096	51,679	48,400	44,119	61,246	61,559	39,970	49,170	49,170	49,170	49,170	46,679	**590,428**
Praxair	3010	0	0	0	0	0	0	0	0	0	0	0	0	**0**
Nova Moore	3011, 3012	75,708	71,679	93,632	91,372	85,598	119,979	106,321	102,659	98,906	84,970	100,217	86,595	**1,117,636**
Dow / Dobson		0	0	0	0	0	0	0	0	0	0	0	0	**0**
Mooretown	3013, 3014	1,730	2,245	1,835	2,330	3,915	6,905	10,580	10,200	6,315	4,900	5,090	4,745	**60,790**
Moore / Brigden	3015	16,295	19,740	17,625	18,305	23,440	24,765	25,710	23,495	18,055	17,310	18,830	18,065	**241,635**
Courtright	3017	1,770	24,830	11,915	14,090	18,240	18,630	23,813	22,317	15,645	10,845	11,220	10,535	**183,850**
Oil Springs Line	3018	427	75	435	545	1,290	1,375	2,045	1,820	0	1,465	430	435	**10,342**
Canadian Waste		0	0	0	0	0	0	0	0	0	0	0	0	**0**
GATX		125	115	85	90	80	30	30	55	25	40	60	55	**790**
Residential Homes		0	0	112	0	0	130	0	0	167	0	0	89	**498**
Nova (unmetered)													16,859	**16,859**
Sombra	4001	25,200	30,850	29,250	32,750	45,000	46,400	62,450	53,000	36,750	33,500	30,250	28,100	**453,500**
Greenfield Energy		11,191	18,497	17,310	23,488	31,779	23,147	35,433	31,907	29,118	18,690	29,094	30,767	**300,421**
Envirofresh Produce		2,246	2,852	5,635	6,346	6,386	11,837	12,490	10,154	8,326	4,299	2,126	3,385	**76,082**
2010 Actual Metered Volume		**244,279**	**307,458**	**302,743**	**323,091**	**397,695**	**437,237**	**488,136**	**442,469**	**354,827**	**307,909**	**339,052**	**331,795**	**4,276,691**
(x 1,000 cu.m)		244	307	303	323	398	437	488	442	355	308	339	332	
2010 Average Daily Volume		7,880	10,981	9,766	10,770	12,829	14,575	15,746	14,273	11,828	9,933	11,302	10,703	11,717
2010 Purchased Volume		254,050	319,756	314,853	336,015	413,603	454,726	507,661	460,168	369,020	320,225	352,614	345,067	4,447,758
2009 Actual Metered Volume		257,710	250,177	360,397	289,273	366,289	396,249	398,219	416,132	374,135	323,365	338,134	250,934	**4,021,014**
(x 1,000 cu.m)		258	250	360	289	366	396	398	416	374	323	338	251	
2009 Average Daily Volume		8,313	8,627	11,626	9,642	11,816	13,208	12,846	13,424	12,471	10,431	11,271	8,095	11,016

2008 Metered Volume		4,351,247
2007 Metered Volume		3,319,089
2006 Metered Volume		3,551,022
2005 Metered Volume		3,339,813
2004 Metered Volume		3,387,021
2003 Metered Volume		3,550,373