

St. Clair Township Water Distribution System

Annual Summary Report – O.Reg. 170/03

2013

(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. Monitoring is continuing across the entire Township to ensure that water quality is being maintained.

On September 25, 2013 the MOE conducted an inspection of the St. Clair Township Water Distribution System. We have received a copy of the inspection report from the MOE. There were no items of non-compliance. There were three recommendations and best practice issues detailed in the report. These recommendations are listed below.

A1. It is recommended that the drinking water system owner undertake a risk survey at all industrial, commercial, institutional properties to determine the degree of hazard (minor, moderate, severe) that the facility poses to the drinking water system.

A2. It is recommended that the drinking water system owner develop a backflow prevention program/bylaw appropriate to the risk presented by the service connections to provide regulatory means to impose requirements to protect the community and water users from impacts from backflow into the municipal water distribution system.

A3. It is recommended that the drinking water system owner provide a written response as to how the owner plans to address the backflow prevention risk, the measures to be taken and an implementation schedule for those measures.

On September 26, 2013 the continuous chlorine analyzer at the Brigden Water Tower and seven Pocket Colorimeters were calibrated by Hach Canada.

On November 21, 2013 a tank cleaning and inspection was performed on the Brigden Elevated Water Tower in accordance with AWWA C652-11 Method #2.

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 2013. 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 all monitoring as per O. Reg 170/03. 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 2013 along with the duration of the failure and the measures taken to correct the failure.

On September 16, 2013 St. Clair Township received numerous calls concerned about dirty water in the area of 362-395 Hill Street in Corunna. A chlorine residual was taken at 391 Hill Street with the result of 0.04 mg/L. The Spills Action Centre as well as the Lambton Health Unit was notified. This water quality issue was the result of a water main isolation on LAWSS/Hill Street feed line. Actions were taken to flush the hydrants in the immediate area and flushed the residence service until a residual of 0.69 mg/L was achieved.

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 2013 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 2012 and 2013 along with the Average Daily flow for each year since 2006.

Table 1 – Average Daily Flows

2013 Average Daily Flow – Max. Month (April)	22,186 cu. m./day
2012 Average Daily Flow – Max. Month (August)	15,957 cu. m./day
2013 Average Daily Flow – Year	13,289 cu. m./day
2012 Average Daily Flow – Year	12,435 cu. m./day
2011 Average Daily Flow – Year	13,400 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

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 three and a half times the 2013 Average Daily Flow-Maximum Month shown in Table 1.

In comparing the average monthly volumes, the value for 2013 is 6.58% more than the previous year.

Large industrial consumers accounted for approximately 73% of the total volume of water used in St. Clair Township in 2013. The largest single user in the water distribution system is the Suncor Ethanol Plant, while the Nova – Moore Site has become the second largest single user of the water system.

APPENDIX 'A'
2013 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	2	0-1	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	0.48 – 1.88	--	N/A	Recommended level of at least 0.2mg/l in system to maintain microbiological quality.
Free Chlorine (Operational - Flushing)	◆	Jan/01 - Dec/31	617	--	0.36 – 1.74	--	N/A	Recommended level of at least 0.2mg/l in system to maintain microbiological quality.
Free Chlorine (Daily)	Schedule 7-2(3)	Jan/01 - Dec/31	365	--	0.75 - 1.76	--	N/A	
Free Chlorine (SCADA)	◆ (C of A)	Jan/01 - Dec/31	105120	--	0.00 – 1.93 ⁴	--	N/A	
Volatile Organics								
Trihalomethanes (running annual average) (ug/l)	Schedule 13-6	Jan/01 – Dec/31 (sampled quarterly)	4	4	38.4	100	No	Byproduct of chlorine reacting with naturally occurring organics.
Inorganic Parameters								
Lead (ug/l)	O. Reg. 170/03	2013 Plumbing 2013 Distribution	8	8	0.02 – 0.09	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"														
2013 FLOWS														
<i>Unless otherwise specified, volumes are expressed in cubic metres.</i>														
Meter Name	Meter No.	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.	Total
Lasalle Road	3001	3,267	3,429	3,095	4,432	4,116	4,084	5,130	4,122	3,442	2,774	2,022	3,424	43,337
Fire School	3002, 3003	69	87	1,526	1,996	546	1,253	63	69	1,964	1,841	1,337	85	10,836
Basell Polyolefins	3004	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	60,000
Nova St. Clair	3005, 3006	13,623	13,375	8,837	12,610	10,366	7,738	11,612	9,766	10,059	7,817	6,172	5,379	117,354
Corunna	3007, 3008	150	200	200	200	2,950	4,100	5,450	3,950	17,279	118,379	108,951	136,878	398,687
Industrial Park		75,100	77,700	69,400	76,000	90,750	89,700	115,150	93,200	55,100	1,200	1,400	5,000	749,700
Rokeyby	3009	82,256	82,677	76,863	81,783	102,819	97,698	123,024	102,025	91,707	76,746	62,711	64,058	1,044,367
Praxair	3010	0	0	0	0	0	0	0	0	0	0	0	0	0
Nova Moore	3011, 3012	74,328	71,321	70,246	81,336	104,779	92,172	116,849	90,130	82,575	99,609	74,665	73,022	1,031,032
Dow / Dobson		0	0	0	0	0	0	0	0	0	0	0	0	0
Mooretown	3013, 3014	1,440	1,415	1,245	1,695	3,215	3,025	3,615	3,040	5,110	1,605	1,220	1,340	27,965
Moore / Bridgen	3015	19,065	18,135	17,215	21,420	23,130	22,265	27,530	22,785	20,995	20,235	15,090	19,285	247,150
Courtright	3017	11,805	12,065	11,320	12,935	16,865	5,565	10,265	17,375	17,365	37,320	14,935	14,170	181,985
Oil Springs Line	3018	1,420	2,760	2,100	2,255	3,195	2,275	685	485	420	120	735	320	16,770
Canadian Waste		0	0	0	0	0	0	0	0	0	0	0	0	0
GATX		55	55	40	40	70	55	0	110	50	50	50	65	640
Residential Homes		0	0	248	0	0	217	0	0	384	0	0	264	1,113
Nova (unmetered)		0	0	0	304,029	0	0	0	0	0	0	0	0	304,029
Sombra	4001	22,450	24,650	21,150	27,250	34,250	31,650	35,100	30,600	27,850	29,300	21,450	25,350	331,050
Greenfield Energy		20,639	26,181	26,806	27,950	23,402	22,535	27,654	28,213	15,936	6,137	1,857	34,584	261,894
Envirofresh Produce		69	71	50	59	86	72	76	83	70	15	109	206	966
Greenfield South Power												24	2	26
Plank Road		1	1,920	1,840	4,605	1,985	2,350	2,875	2,405	1,695	1,080	620	1,960	23,336
(Back to Sarnia)		0	0	-74	-1	-95	-12	-2	-43	0	-427	-979	-24	-1,657
2013 Actual Metered Volume		330,737	341,041	317,107	665,594	427,429	391,742	490,076	413,315	357,001	408,801	317,369	390,368	4,850,580
	(x 1,000 cu.m)	331	341	317	666	427	392	490	413	357	409	317	390	
2013 Average Daily Volume		10,669	11,760	10,229	22,186	13,788	13,058	15,809	13,333	11,900	13,187	10,579	12,593	13,289
2013 Purchased Volume		343,966	354,683	329,791	692,218	444,526	407,412	509,679	429,848	371,281	425,153	330,064	405,983	5,044,604
2012 Actual Metered Volume		318,535	315,849	321,920	327,414	429,897	416,622	460,211	494,660	380,789	383,126	346,305	355,922	4,551,250
	(x 1,000 cu.m)	319	316	322	327	430	417	460	495	381	383	346	356	
2012 Average Daily Volume		10,275	11,280	10,385	10,914	13,868	13,887	14,846	15,957	12,693	12,359	11,544	11,481	12,435