

ST. THOMAS AREA SECONDARY WATER SUPPLY SYSTEM

JOINT BOARD OF MANAGEMENT

Thursday, February 22, 2018 at 4:00 p.m.

City Hall – Room 315

AGENDA

DISCLOSURES OF INTEREST

Minutes

Review and approval of the minutes of November 2, 2017

Reports

1. SWB01-18 - St Thomas Secondary System Annual Report and St. Thomas Secondary Summary Report.

Unfinished Business

New Business

Adjournment



Report No.
SWB01-18

File No.

Directed to: **Members of Board of Management for the St. Thomas Area Secondary Water Supply System**

Date Authored: Feb 8 2018

Meeting Date: Feb 22 2018

Department: Environmental Services

Prepared By: Chris Andrew
Manager of Water and Sewer

Attachment

#1 – 2017 Annual Report for St. Thomas Area Secondary Water System
#2 – 2017 Summary Report for St. Thomas Secondary Water System

Subject: **2017 Annual Reports for the St. Thomas Area Secondary Water System and 2017 Summary Report for the St. Thomas Secondary Water System**

Recommendation:

THAT: Report SWB01-18 relating to the St. Thomas Area Secondary Water Supply System and the Summary Report for the St. Thomas Secondary Water System, be received for information.

Background:

The Safe Drinking Water Act, Regulation 170/03, Section 11, requires that owners and administrators of drinking water systems prepare Annual Reports by February 28th of each year. Under Schedule 22, the Regulation also requires the owner of a drinking water system to prepare a Summary Report no later than March 31st of each year.

Analysis:

The City of St. Thomas, Township of Southwold and Municipality of Central Elgin owns the St. Thomas Area Secondary Water Supply System (STASWSS) and the STASWSS portion of the Elgin Middlesex Pumping Station (EMPS) that require that Annual and Summary Reports be prepared to abide by the Safe Drinking Water Act.

The Annual Reports have been completed by the required date of February 28, 2018, on standard forms provided by the Ministry and will be filed as required. The Summary Report has been completed prior to the required submission date of March 31, 2018. The Annual and Summary Reports are attached as required by the regulations and arrangements have been made to post the reports on the City's web site and copies will be sent to the drinking water systems that receive water from the St. Thomas Area Secondary Water Supply System. Copies of the reports will be made available to the Public upon request at the Environmental Services Department.

Water systems are required to have a DWQMS in place to consistently deliver drinking water that meets applicable legislative, regulatory and owner requirements. This will ensure consumer protection and be a continual improvement tool.

The St. Thomas Area Secondary Water Supply System, which includes a portion of the Elgin Middlesex Pumping Station, is administered by the City of St. Thomas on behalf of the owner, the St. Thomas Area Secondary Water Supply Board. This system transmits water to Southwold, Central Elgin, Dutton Dunwich and St. Thomas. The Ontario clean Water Agency (OCWA) operates the pumping station on behalf of the board and the transmission main is operated by the City of St. Thomas. The system complies with the Ontario Safe Drinking Water Act, Regulation 170/03, and with the terms and conditions of the applicable Municipal Drinking Water Licences

Respectfully,

Chris Andrew
Manager of Water and Sewer

Reviewed By:

Justin Lawrence
Env Ser

OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	260078897
Drinking-Water System Name:	St. Thomas Area Secondary Water Supply System
Drinking-Water System Owner:	Joint Board of Management of the St. Thomas Area Secondary Water Supply System
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1, 2017 through December 31, 2017

<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 [] No [X]</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;"> City of St. Thomas, City Hall Environmental Services 545 Talbot Street St Thomas, Ontario </div>	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served:</p> <div style="border: 1px solid black; padding: 5px; width: 100px;">NA</div> <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:</p> <div style="border: 1px solid black; padding: 5px; width: 100px;">NA</div> <p>Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility? Yes [] No []</p>
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Note: For the following tables below, additional rows or columns may be added or an appendix may be attached to the report

List all Drinking-Water Systems (if any), which receive all of their drinking water from your system:

Drinking Water System Name	Drinking Water System Number
City of St. Thomas Water Distribution System	260002187
Municipality of Central Elgin	260004761
Township of Southwold	210001362
Dutton/Dunwich Distribution System	220002967



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

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**

City of St. Thomas Website – www.city.st-thomas.on.ca

☒ **Public access/notice via Government Office**

☐ **Public access/notice via a newspaper**

☒ **Public access/notice via Public Request**

☐ **Public access/notice via a Public Library**

☐ **Public access/notice via other method** _____

Describe your Drinking-Water System

The system consists of an Elevated Water Tower storage tank and trunk water mains. A 750 mm diameter watermain is connected to the Primary System at the West Chamber on South Edgeware Road. The pipeline then connects to the Elevated Storage Tank, a 0.76 ML (200,000 gallon) steel teardrop elevated tank that is located just off Water Tower Line Road near Waterworks Park in the City of St. Thomas. The pipeline then extends west for approximately 2.6 km along Edgeware Road to County Road 26 and then along Ford Road/Wonderland Road before turning northwesterly for approximately 3.6 km. to the Ford Chamber located at the northwest corner of Clinton Line (Concession Road 11) and Wonderland Road. At the intersection of Ford Road and Talbotville Road, the diameter of the pipeline is reduced to 500 mm.

List all water treatment chemicals used over this reporting period

12% Sodium Hypochlorite	Chlorine Gas (EMPS)
Sodium Metabisulphite	

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

EMPS Pump Replacement	\$670,000
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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
NA					

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 Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Raw					
Treated					
Distribution	205	(0)-(0)	(0)-(0)	205	(<10)-(40)

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

	Number of Grab Samples	Range of Results (min #)-(max #)
Turbidity		
Chlorine	897	(.17)-(2.00)
Sample Collection	205	(.55)-(1.30)
SCADA	8760	(0.00)-(5.00)
Fluoride (If the DWS provides fluoridation)	NA	

NOTE: For continuous monitors use 8760 as the number of samples.

NOTE: Record the unit of measure if it is **not** milligrams per litre.
The value of 0.0 was recorded in the continuous chlorine sampler as a result of equipment abnormality/SCADA issue/maintenance work or calibration.

Summary of additional testing and sampling carried out in accordance with the requirement of an approval, order or other legal instrument.

Date of legal instrument issued	Parameter	Date Sampled	Result	Unit of Measure
NA				



Summary of Inorganic parameters tested during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
NA				

*only for drinking water systems testing under Schedule 15.2; this includes large municipal non-residential systems, small municipal non-residential systems, non-municipal seasonal residential systems, large non-municipal non-residential systems, and small non-municipal non-residential systems

Summary of lead testing under Schedule 15.1 during this reporting period

(applicable to the following drinking water systems; large municipal residential systems, small municipal residential systems, and non-municipal year-round residential systems)

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	NA		
Distribution	NA		

Summary of Organic parameters sampled during this reporting period or the most recent sample results

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
HAA5	Feb 07 2017 May 10 2017 Aug 14 2017 Nov 08 2017	16.4	ug/L	no
THM (NOTE: show latest annual average)	Feb 07 2017 May 10 2017 Aug 14 2017 Nov 08 2017	31.5	ug/L	no

List any Inorganic or Organic parameter(s) that exceeded half the standard prescribed in Schedule 2 of Ontario Drinking Water Quality Standards.

Parameter	Result Value	Unit of Measure	Date of Sample
NA			

SUMMARY REPORT 2017

ST. Thomas Secondary System

License Number: 190-101

Permit Number: 190-201

Provincial Regulation 170/03
Summary Report

For the Period
January 1, 2017 – December 31, 2017



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1 Summary Report Requirements

1.1 Introduction

The 2017 Summary Report for the St. Thomas Secondary System is being submitted to satisfy Schedule 22 of Ontario Regulation 170/03, the requirement to prepare and distribute a summary report of water quality.

As per Ontario Regulation 170/03, the summary report must:

- a. List the requirements of the Act, the regulations, the system's approval, drinking water works permit, municipal drinking water licence, and any orders applicable to the system that were not met at any time during the period covered by the report; and
- b. For each requirement referred to in clause (a) that was not met, specify the duration of the failure and the measures that were taken to correct the failure.

The report must also include the following information for the purpose of enabling the owner of the system to assess the capability of the system to meet existing and planned uses of the system:

- A summary of the quantities and flow rates of the water supplied during the period covered by the report, including monthly average and maximum daily flows.
- A comparison of the summary to the rated capacity and flow rates approved in the system's approval, drinking water works permit or municipal drinking water licence, or if the system is receiving all of its water from another system under an agreement, to the flow rates specified in the written agreement.

The information provided is for the purpose of enabling the owner of the system to assess the capacity of the system. This report covers the reporting period from January 1, 2017 to December 31, 2017.

1.2 System Approval

The St. Thomas Area secondary water system is supplied water from the Elgin Area Water Treatment Plant on Dexter Line east of Port Stanley Ontario. The distribution system has various approvals from the Ministry of Environment for the infrastructure as it was constructed.

During the reporting period, The St. Thomas Drinking Water System was operated pursuant to the approvals, licences and permits listed below:

The supply of water to the system governed by the following Municipal Drinking Water Licences (MDWL) and Drinking Water Works Permits (DWWP):

- St. Thomas Area Secondary Water Supply System
 - MDWL No. 190-101, issued on June 28 2016
 - DWWP No. 190-101, issued on June 28 2016

The distribution of water within the system is governed by the following three licences and permits:

- City of St. Thomas Water Distribution System
 - MDWL No. 057-101, issued on July 15 2016
 - DWWP No. 057-201, issued on July 15 2016
- Southwold Distribution System
 - MDWL No. 055-101, issued on July 29 2016
 - DWWP No. 055-201, issued on July 29 2016
- Central Elgin Distribution System
 - MDWL No. 046-101, issued on August 26 2014
 - DWWP No. 046-201, issued on August 7 2014

The DWWP and MDWL were issued in accordance with the Safe Drinking Water Act (SDWA), 2002.

The City of St Thomas Environmental Services Department/Operations Division Water Section received the Certificate of Accreditation for full scope –Entire DWQMS May 17, 2013 Certificate # Cert-0064202 for all four systems they operate:

1. The City of St Thomas Water Distribution - File # 1631369,
2. The St Thomas Area Secondary Water Supply System - File # 1631370.
3. The Municipality of Central Elgin Water Distribution System - File # 1631368
4. Township of Southwold Water Distribution System (Lynhurst) - File # 1631371

SAI Global performed an S2 Surveillance Audit November 28 & 29, 2016 for all four systems noted above

The findings were the overall effectiveness of the St Thomas Environmental Services Department/Operations Division Quality Management System was deemed to be effective with 0 non-conformances and 4 Opportunities for Improvement:

- 1) Commitment statement from Mayor or Council
- 2) Consider Reliability and redundancy in risk assessment
- 3) List control measures on hazard analysis spreadsheet
- 4) Identify timelines for Southwold action item

2 Water Quantity Summary

2.1 Overview

The EMPS is occupied by three booster stations that comprise an integrated booster station consisting of two in-ground storage reservoirs, each having a capacity of 27.3 million liters. The site upon which the three booster stations is situated is owned by the Elgin Area Primary Water Supply System and includes the original St. Thomas pump station, constructed in 1966 that services St. Thomas, and sections of the Municipalities of Central Elgin and Southwold. Two additional pump stations were completed in 1994 and service the City of London, as well as the Municipality of Malahide, Town of Aylmer, and the Municipality of Central Elgin.

The St. Thomas pump station is comprised of three high-lift pumps that deliver water through a transmission main that services the St. Thomas Area Secondary Water Supply System. A gas re-chlorination system provides re-chlorination for water being directed to the St. Thomas Area Secondary Water Supply System.

In the event of a power failure, an on-site generator can provide sufficient standby power to operate the facility and run the St. Thomas pumps.

Remote monitoring and control of all three pump stations is performed by staff at the Elgin Area Primary Water Supply System (EAPWSS) near Port Stanley, Ontario. Remote monitoring and control capabilities are made possible via the EAPWSS and the EMPS SCADA systems.

The St. Thomas Area and Aylmer Area Secondary Water Supply System pump stations both utilize a gas re-chlorination facility. The facility consists of two scaled 68kg gas chlorine cylinders and three chlorinators equipped with booster pumps. The three chlorinators redundantly serve the Aylmer Area Secondary Water Supply System (AASWSS) and St. Thomas Area Secondary Water Supply System (STASWSS) and have a dosage capacity of 1kg/h.

2.2 East, West and Wellington Chambers – St. Thomas Area Secondary Water Supply System

The East, West and Wellington Chamber provide water from the St. Thomas Area Secondary Water Supply System and have volume limits of 54,605 m³/day that was established jointly within the Elgin Middlesex Pumping Station. This Summary Report will summarize flows and capacity for the St. Thomas Area Secondary Water Supply System. The chambers contain flow meters, online chlorine analyzers and pressure gauges that are linked and monitored through SCADA and transmitted back to the back to the Public Works Service Centre located at 100 Burwell Road, St. Thomas Ontario.

2.3 St. Thomas Secondary Water System – Flow Distribution

An overview summary of the flows entering the St. Thomas Water Distribution System is provided on **Table 1**, (based on monthly bulk meter readings not SCADA).

2.4 —System Interruptions

A listing of system interruptions is noted in the Station logbooks.

Table 1 – Annual Water Quantity Summary

Month	EMPS (m ³)	East Chamber (m ³)	West Chamber (m ³)	Ford Chamber (m ³)	Total System Flow (m ³)
January	159,038	38768	57283	8338	297935
February	178,136	79792	27837	10097	273779
March	199,483	90408	37919	8415	297764
April	199,155	51121	70704	8036	300978
May	200,513	48237	78162	8104	328533
June	265,014	84272	73487	9641	356357
July	234,448	122,505	36574	9849	381484
August	290,454	139,933	63022	9471	396123
September	306,706	113,930	80027	8002	350689
October	243,493	93630	72500	8479	350651
November	225,091	88016	63266	6686	301093
December	254,598	93121	75525	6727	311459
2017 Totals	2,756,129	1043736	736309	101847	3946849

2.5 Daily Flow

The previous Certificate of Approval and new Municipal Drinking Water License for the St. Thomas Area Secondary Water Supply System does not identify a rated capacity for the system. The pumping station has an available capacity of 54,605 m³/day, whereby instantaneous peak flow is 632 L/s.

The maximum total daily flow witnessed by the system in 2017 was 11,904 m³/day, approximately 22% of the capacity. The average total daily flow witnessed by the system in 2017 was 7,560 m³/day, approximately 14% of the capacity.

The maximum instantaneous peak flow witnessed by the system in 2017 was 570 L/s, approximately 90% of the capacity. See Appendix A for 2017 total daily flow values and daily instantaneous peak flow rates.

At no time during the year was the max flow exceeded and there were no unusual operating conditions to note in this report

3 Water Quality Summary

3.1 Water Distribution System Samples

Microbiological testing was done under the Schedule 10, 11 or 12 of Regulation 170/03, during this reporting period. **Table 2** summaries the results of the microbiological testing.

Table 2 – Microbiological Testing Summary

	Number of Samples	Range of E.Coli Or Fecal Results (min #)-(max #)	Range of Total Coliform Results (min #)-(max #)	Number of HPC Samples	Range of HPC Results (min #)-(max #)
Secondary Total	205	(0)-(0)	(0)-(0)	205	(<10)-(40)

Table 3 summarizes the incidents where a parameter under Regulation 170/03 exceeded the standard prescribed in the Ontario Drinking Water Quality Standards.

Table 3 – Sampling Parameter Results

Incident Date	Parameter	Result	Unit of Measure	Corrective Action	Corrective Action Date
NA					

All samples taken during the most recent testing period for Inorganic (not including Lead) and Organic parameters met the standards of the Safe Drinking Water Act Regulation 170/03.

3.2 Lead Testing Samples

Lead Testing under Regulation 170/03 Section 15.1 was not conducted at residential or non residential locations due to current exemption

Table 6 – Lead Sampling Summary

Location Type	Number of Samples	Range of Lead Results (min#) – (max #)	Number of Exceedances
Plumbing	NA		
Distribution	NA		

The Secondary System is currently under a lead sampling exemption from the MOECC due to the low number of lead services that have been discovered. Although no longer required to sample for lead, the city continues to actively investigate areas for lead services.

At any locations where the plumbing samples exceeded the standards, the water service to the home was checked and replaced within the City right of way limits by Operations staff if a lead service was found. Home owners were notified of the results and advised to change the lead pipes on the private side of the service if they exist.

Humans are exposed to lead through food, water, and air. Historically, lead in tin cans and paint were major sources of exposure in food and air respectively. The relative importance of water-borne lead sources is increasing as other man-made sources of lead are reduced through changing industrial practices. Ingested lead enters the blood through the stomach; it is then stored in bones and teeth.

4 Summary of Non Compliance Issues

4.1 Ministry of the Environment and Climate Change Drinking Water Inspection

The Ontario Ministry of the Environment and Climate Change (MOECC) conducts an inspection of the St.Thomas portion of the Elgin-Middlesex Pumping Station operated by OCWA annually along with the St Thomas Area Secondary Water System operated by the City of St Thomas. A MOECC inspection took place in September 2017. The final inspection report was issued on November 28, 2017. There were no non-compliances identified in the inspection report. A recommendation was given to change sample points for HAA sampling which will be followed. The final inspection rating of 100% was received for 2017-2018.

APPENDIX A

Date:

2017

West Valve Chamber (WD1) Yearly Report

Month of the Year	Flow	Outlet Pressure	Free Chlorine Residual	Volume
	<i>l/s</i>	<i>kPa</i>	<i>mg/l</i>	<i>m3</i>
January	21.2	668	1.37	57283.75
February	11.4	668	1.44	27837.00
March	14.2	669	1.52	37919.50
April	27.3	666	1.27	70704.50
May	28.8	663	1.18	78162.50
June	28.8	663	1.35	73487.50
July	17.3	666	1.32	36574.00
August	24.3	669	1.27	63022.00
September	32.1	692	1.27	80027.00
October	27.1	695	1.24	72500.50
November	24.6	700	1.34	63266.00
December	28.5	701	1.38	75525.50
Average	23.8	677	1.33	
Minimum	0.7	0	0.00	
Day of Minimum	22	11	23	
Month of Minimum	Jun	May	Nov	
Maximum	169.4	726	2.00	
Day of Maximum	3	3	8	
Month of Maximum	Jun	Jun	Jun	
Yearly Total				736309.75

Minimums of 0.00 mg/l Free Chlorine - result from chlorine analyser calibration, maintenance, and alarm testing.

Date:

2017

East Valve Chamber (WD2) Yearly Report

Month of the Year	Flow	Outlet Pressure	Free Chlorine Residual	Volume
	<i>l/s</i>	<i>kPa</i>	<i>mg/l</i>	<i>m3</i>
January	14.6	267	1.54	38768.50
February	33.4	269	1.49	79792.50
March	34.8	269	1.55	90408.50
April	19.6	269	1.36	51121.50
May	16.8	269	1.31	48237.50
June	33.3	276	1.50	84272.00
July	46.1	289	1.49	122505.50
August	52.4	294	1.40	139933.50
September	45.6	311	1.33	113930.00
October	35.2	313	1.37	93630.00
November	35.4	313	1.39	88016.00
December	36.8	314	1.47	93121.00
Average	33.7	288	1.43	
Minimum	0.7	0	0.00	
Day of Minimum	5	11	27	
Month of Minimum	Jun	May	Dec	
Maximum	139.4	688	5.00	
Day of Maximum	11	11	9	
Month of Maximum	May	May	Jan	
Yearly Total				1043736.50

Minimums of 0.00 mg/l Free Chlorine - result from chlorine analyser calibration, maintenance, and alarm testing.

Date:

2017

Ford Meter Chamber (WS1) Yearly Report

Month of the Year	Flow	Outlet Pressure	Free Chlorine Residual	Volume
	<i>l/s</i>	<i>kPa</i>	<i>mg/l</i>	<i>m3</i>
January	3.1	434	1.17	8338.00
February	4.2	433	1.32	10097.00
March	31.0	406	1.28	8415.75
April	3.1	434	1.04	8036.00
May	3.8	435	0.98	8104.25
June	3.7	435	1.10	9641.00
July	3.7	435	1.07	9849.75
August	3.6	435	0.97	9471.00
September	3.2	435	0.86	8002.25
October	3.3	435	0.89	8479.25
November	2.6	435	0.96	6686.25
December	2.5	435	1.12	6727.00
Average	5.6	432	1.06	
Minimum	0.0	0	0.00	
Day of Minimum	16	11	7	
Month of Minimum	May	May	Mar	
Maximum	454.7	519	2.00	
Day of Maximum	18	11	23	
Month of Maximum	Jul	May	Nov	
Yearly Total				101847.50

Minimums of 0.00 mg/l Free Chlorine - result from chlorine analyser calibration, maintenance, and alarm testing.

Date: 2017

Ford Tower (WS4) Yearly Report

Month of the Year	Level	Discharge Pressure
	<i>m</i>	<i>kPa</i>
January	6.41	532
February	6.33	531
March	6.34	531
April	6.41	532
May	6.49	533
June	6.48	533
July	6.49	533
August	6.48	533
September	6.48	533
October	6.47	533
November	6.47	533
December	6.48	533
Average	6.45	532
Minimum	0.00	0
Day of Minimum	14	14
Month of Minimum	Mar	Mar
Maximum	8.49	553
Day of Maximum	3	3
Month of Maximum	Apr	Apr

Minimums of 0.00 mg/l Free Chlorine - result from chlorine analyser calibration, maintenance, and alarm testing.