St. Andrews/Rosedale Distribution System

Drinking Water Works Permit No. 186-201
Municipal Drinking Water Licence No. 186-101

Works No. 260001250

- 2017 Summary Report -

Prepared by:
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Operations Manager: Chris Eamon

ST. ANDREWS/ROSEDALE DISTRIBUTION SYSTEM

2017 SUMMARY REPORT

Facility description:	**Water booster pumping station**
Capacity:	**898 m^3**
Service area:	**St. Andrews/Rosedale Subdivision**
Service population:	**1850**
Raw water source:	**St. Lawrence River (water supplied by the City of Cornwall)**
Operations manager:	**Chris Eamon (613)-551-2720**

This report is a summary of water quality information for the St. Andrews/Rosedale Distribution System, published in accordance with Schedule 22 of Ontario's Drinking Water Systems Regulation for the reporting period of January 1 to December 31. The St. Andrews/Rosedale Distribution System is categorized as a Large Municipal Residential Drinking Water System.

This report is prepared by Caneau Water and Sewage Operations Inc. on behalf of the Corporation of the Township of South Stormont. A copy of the Summary report is to be provided to the members of the municipal council not later than March 31, 2018.

"The report must list the requirements of the Act, the regulations, the system's approval and any order that the system failed to meet at any time during the period covered by the report and specify the duration of the failure; and for each failure referred to, describe the measures that were taken to correct the failure." – O. Reg. 170/03 s. 22(2)

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

1. 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 and daily instantaneous peak flow rates.
2. A comparison of the summary referred to in paragraph 1 to the rated capacity and flow rates approved in the system's approval."

O. Reg. 170/03 s. 22 (3)

System Description

Water enters from the Cornwall Distribution System at two points, one on Mack Street and Cornwall Centre Road and one at the corner of Highway 138 and Cornwall Centre Road. Each of these locations contains a metering chamber, which is owned and monitored by the City of Cornwall. In each of these metering chambers, a system of check valves has been installed to prevent backflow into the Cornwall Distribution System.

The booster pumping station and re-chlorination facility consists of the following:

- Duty pumps – two vertical in-line centrifugal booster pumps (one duty, one standby) each rated at approximately 10.4 L/s at a Total Dynamic Head (TDH) of 12.5 m,

- Disinfection system – a sodium hypochlorite disinfection system with automatic switchover consisting of two (2) solution feed pumps each rated at approximately 0.315 L/h at a pressure of 1750 kPa; a 100 L capacity hypochlorite solution tank with spill containment,

- Standby power – provision for connection to portable diesel unit,

- Instrumentation – flow meter and chlorine residual analyzer,

together with all necessary mechanical and electrical work, instrumentation and controls.

The elevated tank is located on the south side of County Road 18. It has a ground elevation of 71.5m. The tower's overflow is at an elevation of 120.3 m. The main water storage cavity is 9.4 m in diameter. It has an effective capacity of 770 m^3. It is fed and emptied via a 200 mm diameter riser.

The tower is equipped with a Rosemount pressure sensor, which sends signals to the booster station to turn the pumps on or off.

Compliance with Terms and Conditions of the Municipal Drinking Water Licence

The St. Andrews/Rosedale Distribution System is operated and maintained in accordance with O. Reg. 170/03 dated June 1, 2003 (last amendment – O. Reg. 509/17) and the Municipal Drinking Water Licence.

The average water taking for the year was 726 m^3/day. The maximum flow for the year occurred on November 19, 2017 – 1,719 m^3. The high flow was due to a water main break. The flow meter was calibrated October 18, 2017 by Endress and Hauser.

Free chlorine residual in treated water is continuously monitored at the point of entrance into the distribution system. The Prominent chlorine analyzer is accurate to ±2% of the measured value. The online analyzer is monitored, at minimum, every 72 hours. The on-line chlorine analyzer is checked with the hand-held chlorine analyzer and adjusted as required. An alarm system calls out when the chlorine goes below 0.40mg/L or above 3.50 mg/L. Operators at the St. Andrews Booster Stations try to keep the chlorine residual around 1.00 mg/L. (See Appendix I for flows and chlorine residuals.) The chlorine analyzer was calibrated October 18, 2017 by Endress and Hauser. Operators in charge of the St. Andrews Booster Station keep a daily log book, recording flow meter readings, free chlorine residual (both continuous and grab samples), and other physical and chemical parameters of the treated water. The booster station is checked (at minimum) every 72 hours.

Samples are collected throughout the year from the treated water to determine whether or not the water is safe for human consumption (in accordance with O. Reg. 170/03, Schedule 10 and 13, Microbiological and Chemical Sampling and Testing). Bacteriological analysis is performed weekly (10 samples per month) on the distribution samples and trihalomethanes (THMs) and haloacetic acids (HAAs) are analyzed 4 times a year. See results in Appendix II – 2017 Annual Report for the Ministry of the Environment and Climate Change. All samples are analyzed at Caduceon Environmental Labs in Nepean, Ontario. Caduceon and its subcontracted labs are

accredited by the Standards Council of Canada. Written procedures have been established for the notification of the Medical Officer of Health and the Ministry of the Environment Spills Action Centre should a sample result indicate an exceedance has occurred. In the reporting year, there were no adverse water quality incidents.

Under Ontario Regulation 170/03, Schedule 15, Section 15.1-5 (lead sampling), St. Andrews/Rosedale Distribution system is eligible for reduced sampling and reduced frequency (every 3 years). Samples were collected in 2015/2016, and the next round of sampling will take place in 2018/2019. pH and alkalinity are required to be collected twice per year.

Free chlorine residual in the distribution system is monitored by an alarmed online analyzer with datalogging. The analyzer is checked (at a minimum) every 72 hours. The distribution analyzer will alarm out when the chlorine residual goes below 0.15 mg/L for a period greater than 15 minutes. The distribution chlorine analyzer was calibrated October 18, 2017 by Endress and Hauser.

All records and information relating to, or resulting from the monitoring, sampling and analyzing activities are retained for a minimum of 5 years.

The St. Andrews/Rosedale Distribution System is classified Water Distribution 2 (Certificate Number 3669). Operators responsible for the operation of the St. Andrews/Rosedale Distribution System hold valid licences applicable to this type of water distribution system.

Following all maintenance or repairs to the water distribution system, all affected areas are disinfected in accordance with the MOE's "Procedure for Disinfection of Drinking Water in Ontario" dated June 2006. All chemicals used in the treatment process (Chlorine) and all materials contacting the water meet both the American Water Works Association (AWWA) quality criteria and the American National Standards Institute (ANSI) safety criteria. All chemicals have been registered by a testing institution accredited under the Standards Council of Canada Act or by ANSI.

A contingency plan has been implemented to ensure adequate equipment and material is available for dealing with emergencies, upset conditions and equipment breakdowns in the works.

An operating manual is available at the plant. The manual includes monitoring and reporting of the necessary and in-process parameters essential for control of the treatment process and for the assessment of the performance of the works. It also contains procedures that are required for adequate operation and maintenance of the monitoring equipment.

Drawings have been prepared and kept up-to-date showing the new works as constructed (record drawings), including timely incorporation of all modifications made to the works throughout its operational life.

A Process and Instrumentation Diagram (PID) for the water booster station and the elevated storage reservoir has been prepared and kept up to date, including timely incorporations of all modifications made to the works throughout its operational life.

All record drawings and diagrams and all existing record drawings which are currently in retention throughout the operational life of the water works are readily available for inspection by Ministry staff.

Procedures have been established and are followed for receiving, responding to, and recording complaints about any aspect of the works, including recording the steps that were taken to determine the cause of complaint and the corrective measures taken to alleviate the cause and prevent its reoccurrence.

Non-Compliance with Regulatory Requirements and Actions Required

The 2017-2018 Compliance Inspection was completed on October 3, 2017 by the Ministry of the Environment and Climate Change. The Compliance Inspection Report was received on November 17, 2017 and there was one issue of regulatory non-compliance.

All haloacetic acid water quality monitoring requirements prescribed by legislation are not being conducted within the required frequency and at the required location.

Action(s) Required:
As required by Schedule 13-6.1 (1) of O. Reg. 170/03, the owner and operator are required to collect at least one distribution samples in each calendar quarter in a point in the drinking water system that is likely to have an elevated formation of haloacetic acids. Although the sample collection was missed for the first quarter, sampling resumed as required, and therefore; no actions are required.

A copy of the report is available at the Township office.

Maintenance

- Feb. 7 – telephone pole at tower entrance damaged (12:00pm) causing power loss/communication loss between tower and booster station – at booster station, put pump #1 into manual to fill tower - Bell, Hydro One and Promark on site at 3:00pm to begin repair work. Power was restored at 5:15pm. Returned at 7:30pm to put booster station pump back into auto operation. Reason for returning 2 hours after power was restored – wanted to ensure a constant and stable communication trend between booster and tower. During power outage, tower was checked – power to chlorine analyzer and datalogger transferred to UPS – transferred back once power was restored.
- Mar. 7 – Hach Canada on site for annual calibrations of handheld chlorine analyzers
- Mar. 14 – Capital Controls on site to replace recorders at booster station and tower (2016 Capital Project)
- Mar. 24 – Capital Controls on site to reconfigure recorder to record totalized flow
- June 13 – Capital Controls on site for final setup on ABB data logger at tower and booster station
- Oct. 3 – MOECC annual compliance inspection
- Nov. 23 – notified township of higher than normal flows continuing even since main break on 19th – still using approximately 200-300m^3 more water than normal
- Dec. 15 – Annual distribution meeting with City of Cornwall
- Dec. 27 & 29 – DBC on site to thaw frozen discharge line for the chlorine analyzer at tower

APPENDIX I
Flow Data

ST. ANDREWS/ROSEDALE DISTRIBUTION SYSTEM SUMMARY REPORT

Municipality: Township of South Stormont

Reporting Year: 2017
Water Source: St. Lawrence River

Description: Water received from City of Cornwall

Month	Treated Flow			Treated Water Physical/Chemical Parameters						
	Total Flow m^3	Avg. Day m^3/day	Max. Day m^3/day	Free Chlorine (Booster Station) Avg. mg/L	Min. mg/L	Max. mg/L	THM ug/l	HAA ug/L	Safe Distribution	Unsafe/Poor Distribution
January	19,090	616	724	1.16	0.71	3.65			10	
February	16,790	600	713	1.00	0.52	3.97	34.3		10	
March	18,406	594	750	0.93	0.75	2.76			10	
April	18,824	627	897	0.79	0.60	1.48			10	
May	19,698	635	784	0.94	0.62	1.80	79.8	37.3	10	
June	20,704	668	986	0.91	0.52	3.38			10	
July	20,595	664	774	0.89	0.43	3.35			10	
August	19,854	640	816	1.09	0.59	3.12	85.8	22.3	10	
September	22,958	765	1,009	1.16	0.68	2.91			10	
October	28,403	916	1,031	1.22	0.64	3.06			10	
November	30,528	1,018	1,719	1.08	0.61	2.78	50.1	20.5	10	
December	29,973	967	981	0.98	0.78	1.70			10	
Total	265,823								120	0
Average		726		1.01			62.5	26.7		
Minimum					0.43					
Maximum			1719			3.97				
ODWS							100.0		120	

APPENDIX II

2017 Annual Report

Ministry of the Environment and Climate Change

OPTIONAL ANNUAL REPORT TEMPLATE

Drinking-Water System Number:	**260001250**
Drinking-Water System Name:	St. Andrews/Rosedale Distribution System
Drinking-Water System Owner:	Township of South Stormont
Drinking-Water System Category:	Large Municipal Residential
Period being reported:	January 1 – December 31, 2017

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

Does your Drinking-Water System serve more than 10,000 people? Yes [ ] No [x]

Is your annual report available to the public at no charge on a web site on the Internet? Yes [x] No [ ]

Location where Summary Report required under O. Reg. 170/03 Schedule 22 will be available for inspection.

Township of South Stormont
2 Milles Roches Road
Long Sault, ON
K0C 1P0

Complete for all other Categories.

Number of Designated Facilities served:

Did you provide a copy of your annual report to all Designated Facilities you serve?
Yes [ ] No [ ]

Number of Interested Authorities you report to:

Did you provide a copy of your annual report to all Interested Authorities you report to for each Designated Facility?
Yes [ ] No [ ]

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

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.

- [x] **Public access/notice via the web**
- [x] **Public access/notice via Government Office**
- [x] **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

Water enters from the Cornwall Distribution System at two points, one on Mack Street and Cornwall Centre Road and one at the corner of Highway 138 and Cornwall Centre Road. Each of these locations contains a metering chamber, which is owned and monitored by the City of Cornwall. In each of these metering chambers, a system of check valves has been installed to prevent backflow into the Cornwall Distribution System.

The re-chlorination booster facility is located on Hwy. 138. The boost pumps installed within the re-chlorination facility have a rated capacity of 10.4 L/s at 12.5 m TDH. The sodium hypochlorite chemical feed system consists of a duplex (duty & standby) chemical metering pump system with automatic switchover and dual injection points. A free chlorine analyzer monitors the free chlorine residual of the discharge side of the boost pumps.

The elevated tank is located on the south side of County Road 18. It has a ground elevation of 71.5m. The tower's overflow is at an elevation of 120.3 m. The main water storage cavity is 9.4 m in diameter. It has an effective capacity of 770 m^3. It is fed and emptied via a 200 mm diameter riser.

The tower is equipped with a Rosemount pressure sensor, which sends signals to the booster station to turn the pumps on or off.

List all water treatment chemicals used over this reporting period

Sodium Hypochlorite

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

Annual calibrations - $1,168.00

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

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	120	0	0	36	<2-2

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	**8760**	0.43-3.97mg/L
Fluoride (If the DWS provides fluoridation)		

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

*NOTE: Record the unit of measure if it is **not** milligrams per litre.*

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

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Antimony				
Arsenic				
Barium				
Boron				
Cadmium				

Chromium				
*Lead				
Mercury				
Selenium				
Sodium				
Uranium				
Fluoride				
Nitrite				
Nitrate				

*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

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

Parameter	Sample Date	Result Value	Unit of Measure	Exceedance
Alachlor				
Aldicarb				
Aldrin + Dieldrin				
Atrazine + N-dealkylated metobolites				
Azinphos-methyl				
Bendiocarb				
Benzene				
Benzo(a)pyrene				
Bromoxynil				
Carbaryl				
Carbofuran				
Carbon Tetrachloride				
Chlordane (Total)				
Chlorpyrifos				

Cyanazine				
Diazinon				
Dicamba				
1,2-Dichlorobenzene				
1,4-Dichlorobenzene				
Dichlorodiphenyltrichloroethane (DDT) + metabolites				
1,2-Dichloroethane				
1,1-Dichloroethylene (vinylidene chloride)				
Dichloromethane				
2-4 Dichlorophenol				
2,4-Dichlorophenoxy acetic acid (2,4-D)				
Diclofop-methyl				
Dimethoate				
Dinoseb				
Diquat				
Diuron				
Glyphosate				
Heptachlor + Heptachlor Epoxide				
Lindane (Total)				
Malathion				
Methoxychlor				
Metolachlor				
Metribuzin				
Monochlorobenzene				
Paraquat				
Parathion				
Pentachlorophenol				
Phorate				
Picloram				
Polychlorinated Biphenyls(PCB)				
Prometryne				
Simazine				
THM (NOTE: show latest annual average)		62.5	ug/L	
HAA (NOTE: show latest annual average)		26.7	ug/L	
Temephos				
Terbufos				
Tetrachloroethylene				
2,3,4,6-Tetrachlorophenol				
Triallate				
Trichloroethylene				
2,4,6-Trichlorophenol				

2,4,5-Trichlorophenoxy acetic acid (2,4,5-T)				
Trifluralin				
Vinyl Chloride				

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
THM	79.8	ug/L	May 15, 2017
THM	85.8	ug/L	August 8, 2017
THM	50.1	ug/L	November 6, 2017