

St. Andrews/Rosedale Distribution System

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

Works No. 260001250

- 2022 Summary Report -

Prepared by:

CANEAU WATER AND SEWAGE OPERATIONS INC.
19740 WELLINGTON ST.
WILLIAMSTOWN, ON K0C 2J0

BILL BRYCE, PRESIDENT

ST. ANDREWS/ROSEDALE DISTRIBUTION SYSTEM

2022 SUMMARY REPORT

Facility description:	Water booster pumping station
Capacity:	898 m³
Service area:	St. Andrews/Rosedale Subdivision
Service population:	1850
Raw water source:	St. Lawrence River (water supplied by the City of Cornwall)
Overall Responsible Operator:	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, 2022. 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, 2023.

"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 m³. 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. 269/22) and the Municipal Drinking Water Licence.

The average water taking for the year was 676 m³/day. The maximum daily flow was 1244 m³ and occurred on August 1, 2022. The flow meter was calibrated August 31, 2022, by Endress & 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 August 30, 2022, by Endress & 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 – 2022 Annual

Report for the Ministry of the Environment, Conservation and Parks. 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 was one adverse water quality incident. The incident occurred on October 17, 2022, when a sample of water taken at the booster station was returned with a laboratory result of 1 TC. Resampling was conducted on October 19, 2022, and all results were returned with 0 TC. All required oral and written communication of the adverse was completed.

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 April and October 2022 and will be collected again in 2025. Alkalinity and pH are required to be sampled 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 or above 3.50 mg/L for a period greater than 15 minutes. The distribution chlorine analyzer was calibrated August 30, 2022, by Endress & 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.

Compliance with Regulatory Requirements and Actions Required

The 2021-2022 Compliance Inspection was completed between December 10, 2021, and March 4, 2022, by the Ministry of the Environment, Conservation and Parks. The Compliance Inspection Report was received on March 30, 2022, with a final inspection rating of 100.00%.

The following section is quoted directly from the March 30, 2022, MECP Compliance Inspection Report.

“The following instance(s) of non-compliance were also noted during the inspection:

1. A review of the log book showed that on March 17, 2021, Capital Controls was in adjusting and calibrating drifting values within the tower Pribusin units, which were affecting pump shut off points and tower high level alarm. The log book notes that the Water Tower was overflowing when the operator arrived. Following the inspection, the Operating Authority confirmed that the Water Tower overflowed, but because of the communication failure due to a broken part, the Operating Authority is unsure of the duration and volume of the overflow. It was advised that the overflow of chlorinated water discharged to the ditch. This event was not reported to the MECP. The discharge was not for maintenance and/or repair purposes and the water was not dechlorinated. This overflow of chlorinated water from the tower is a spill since it wasn't planned or due to maintenance and/or repair.

The EPA defines spills as the following:

“spill”, when used with reference to a pollutant, means a discharge,

- (a) into the natural environment,
- (b) from or out of a structure, vehicle or other container, and
- (c) that is abnormal in quality or quantity in light of all the circumstances of the discharge.

This event would be considered a spill as defined under the EPA (as above) and does not meet the Class II exemption criteria under O. Reg. 675/98. The event should have been reported as required under Section 92(1) of the EPA and any adverse effects should have been ameliorated. Condition 1.2 of Schedule C of the Licence does not apply as the discharge was not for maintenance and/or repair purposes.

ACTIONS REQUIRED:

By no later than May 16, 2022, Caneau is to provide to the undersigned Provincial Officer a written action plan for immediately reporting chlorinated overflows from the water tower as a spill to the MECP's Spills Action Centre by calling 1-800-268-6060 in accordance with Condition 1.2 of the MDWL and Section 92(1) of the EPA, unless it was for maintenance and/or repair of the drinking water system. The written action shall include revising Caneau's SOP for reporting of spills to include the above reporting requirements. Caneau shall ensure that all their staff are trained on the reporting requirements.

By no later than May 30, 2022, Caneau is to provide to the undersigned Provincial Officer a copy of their SOP for reporting of spills.

2. The internal ministry guidance states that it is the opinion of the ministry's Approvals and Licensing Section that the following information be included as a minimum with regards to the contents of the Operations and Maintenance Manual: Distribution systems procedures addressing valve exercising, hydrant maintenance, storage tank maintenance, monitoring for chlorine, nitrification, etc. During the inspection, it was advised that the Owner's (Township) Operations Manual still does not include a procedure for valve exercising or a procedure for storage tank maintenance. It was advised that the Owner does have an Infrastructure Maintenance, Rehabilitation & Renewal Review Procedure. In 2021, revisions of the Owner's DWQMS Adverse Water Reporting Procedure included corrective actions and written notification. Section 5.3 of the Procedure needs to be revised to indicate that any distribution sample that is a grab sample with a free chlorine residual <0.05 mg/L is reportable as an adverse result; and any distribution sample that is a grab sample with a combined chlorine residual <0.25 mg/L and free chlorine less than 0.05 mg/L is reportable as an adverse result.

ACTIONS REQUIRED:

By no later than May 16, 2022, the Owner is required to develop SOPs for valve exercising and storage tank maintenance. It is recommended that the SOPs follow the AWWA Distribution Systems Operation and Management (G200-15) for an inspection program and valve exercising program to be developed. The Owner is also required to revise Section 5.3 of the QMS Adverse Water Reporting Procedure to indicate that any distribution sample that is a grab sample with a free chlorine residual <0.05 mg/L is reportable as an adverse result; and any distribution sample that is a grab sample with a combined chlorine residual <0.25 mg/L and free chlorine less than 0.05 mg/L is reportable as an adverse result."

A copy of the report will be available at the Township office.

Maintenance

- January 31 – Capital Steam Cleaning on site at tower to clear the sump pump drain line of ice.
- February 7 – Quarterly samples collected at WTP and distribution points.
- February 17 – Capital Steam Cleaning on site at tower to clear the sump pump drain line of ice.
- March 8 – Pyro Pro on site to conduct fire extinguisher inspections and maintenance.
- April 7 – Cintas on site to check and update first aid equipment.
- April 11 – Samples for lead testing collected in the distribution system.
- May 2 – Quarterly samples collected at WTP and distribution points.
- August 8 – Quarterly samples collected at WTP and distribution points.
- August 30 – Endress & Hauser on site to conduct annual calibrations on chlorine analyzers and flow meters at St. Andrews tower and booster.
- August 31 – Endress & Hauser on site to complete calibration of flow meter at St. Andrews booster.
- October 12 – Samples for lead testing collected in the distribution system.
- November 1 – Township and Capital Steam Cleaning on site to clean valve box on main valve in front of booster station.
- November 10 - Township and Township consultants on site at St. Andrews booster to conduct building assessment.
- November 14 – Township and Capital Steam Cleaning on site to remove broken key from valve box in front of booster station.
- November 14 – Quarterly samples collected at WTP and distribution points.
- November 24 – Township and Township consultants on site at St. Andrews tower to conduct building assessment.

APPENDIX I
Flow Data

ST. ANDREWS/ROSEDALE DISTRIBUTION SYSTEM SUMMARY REPORT

Municipality: Township of South Stormont

Reporting Year: 2022

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)			THM ug/l	HAA ug/L	Safe Distribution	Unsafe/Poor Distribution
				Avg. mg/L	Min. mg/L	Max. mg/L				
January	14,640	472	581	1.00	0.71	1.40			10	0
February	13,770	492	677	0.97	0.70	1.43	34.0	16.9	10	0
March	14,996	484	604	0.97	0.71	1.43			10	0
April	14,341	478	594	0.95	0.56	1.50			10	0
May	21,145	682	930	1.02	0.65	2.09	45.0	30.7	10	0
June	22,698	757	1,181	1.10	0.52	2.51			10	0
July	24,627	794	1,180	1.09	0.53	2.09			10	0
August	21,889	706	1,244	1.09	0.46	1.55	72.0	14.2	10	0
September	20,877	696	911	1.14	0.49	2.18			10	0
October	25,461	821	913	1.15	0.78	1.96			9	1
November	25,790	860	927	1.14	0.57	1.83	54.0	11.7	10	0
December	26,450	853	928	1.18	0.76	1.78			10	0
Total	246,684								119	1
Average		676		1.07			51.3	18.4		
Minimum					0.46					
Maximum			1,244			2.51				
ODWS							100.0	80.0	120	

APPENDIX II
2022 Annual Report
Ministry of the Environment, Conservation and Parks



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, 2022

<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> <table border="1" style="width: 100%;"> <tr> <td>Township of South Stormont 2 Milles Roches Road Long Sault, ON K0C 1P0 Website: southstormont.ca</td> </tr> </table>	Township of South Stormont 2 Milles Roches Road Long Sault, ON K0C 1P0 Website: southstormont.ca	<p><u>Complete for all other Categories.</u></p> <p>Number of Designated Facilities served: <input style="width: 100px; height: 20px;" type="text"/></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 style="width: 100px; height: 20px;" type="text"/></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>
Township of South Stormont 2 Milles Roches Road Long Sault, ON K0C 1P0 Website: southstormont.ca		

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.

- 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 _____**

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 m³. 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

Conduct annual calibrations - \$841
Repair kits for chlorine pumps - \$2,295



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
Oct 17, 2022	Total Coliform	1	CFU/100ml	Resampled	Oct 19, 2022

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	0-1	52	<2-2
Free chlorine residuals tested at the same time as microbiological sample collection: 0.38-1.20 mg/L (120 samples)					

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	0.46 - 2.51mg/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
Plumbing	Exempt*		
Distribution	2 winter samples (Apr 11, 2022)	0.00046-0.00143	0
	2 summer samples (Oct 12, 2022)	0.00010-0.00022	0

*Due to historically low concentrations of lead in its drinking water, the Township of South Stormont is exempt from plumbing sampling for lead and is required to sample for lead in the distribution system every three years in both “winter” (Dec-Apr) and “summer” periods (Jun-Oct). The next distribution lead samples will be collected between Dec 15, 2024, and Apr 15, 2025, and between Jun 15, 2025, and Oct 15, 2025.

Non-Lead Parameter	Winter Period (Dec-Apr)	Summer Period (Jun-Oct)
pH	7.14-7.17 (2 samples on Apr 11, 2022)	7.54-7.54 (2 samples on Oct 12, 2022)
Alkalinity	93-94 mg/L (2 samples on Apr 11, 2022)	86-88 mg/L (2 samples on Oct 12, 2022)

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 metabolites				
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)		51.3	µg/L	
HAA (NOTE: show latest annual average)		18.4	µg/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	72	µg/L	August 8, 2022
THM	54	µg/L	November 14, 2022