

# Long Sault-Ingleside Regional Water Treatment Plant

Drinking Water Works Permit 186-202  
Municipal Drinking Water Licence 186-102

Works No. 260066417

- 2018 Summary Report -

Prepared by:

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Chris Eamon

# LONG SAULT-INGLESIDE REGIONAL WATER TREATMENT PLANT

## 2018 SUMMARY REPORT

<b>Facility description:</b>	<b>Ultrafiltration (Zenon membrane filtration), booster station, elevated tank</b>
<b>Capacity:</b>	<b>9,500 m<sup>3</sup>/day</b>
<b>Service area:</b>	<b>Villages of Long Sault and Ingleside</b>
<b>Service population:</b>	<b>3500</b>
<b>In-service date:</b>	<b>2006</b>
<b>Raw water source:</b>	<b>St. Lawrence River</b>
<b>Disinfection method:</b>	<b>Sodium Hypochlorite</b>
<b>Operations manager:</b>	<b>Chris Eamon (613)-551-2720</b>

This report is a summary of water quality information for the Long Sault-Ingleside Regional Water Treatment Plant, published in accordance with Schedule 22 of Ontario's Drinking Water Systems Regulation for the reporting period of January 1 to December 31. The Long Sault-Ingleside Regional Water Treatment Plant 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 no later than March 31, 2019.

"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**

The Long Sault-Ingleside Regional Water Treatment Plant is located on Moulinette Island, south of the town of Long Sault. The water treatment plant is a membrane filtration plant that began producing water in June 2005. The treatment process includes ultrafiltration (ZeeWeed membrane system manufactured by Zenon Environmental Inc) through one of three membrane cassettes which are housed in large concrete tanks, taste and odour removal through granular activated carbon (GAC) contactors, and primary disinfection provided by sodium hypochlorite, which is injected downstream of the GAC tanks. The water then passes through the chlorine

contact chamber and a baffled clearwell into a high lift pumping well, all of which are located beneath the water treatment plant. A 10 km transmission main joins the distribution systems in Long Sault and Ingleside. The original Ingleside Water Treatment Plant was converted into a booster station. The rated capacity is 9,500 m<sup>3</sup>/day. The distribution system now services a combined population in Long Sault and Ingleside of approximately 3,500.

### **Compliance with Terms and Conditions of the Municipal Drinking Water Licence**

The Long Sault-Ingleside Regional Water Treatment Plant and distribution system was operated and maintained in accordance with O. Reg. 170/03 dated June 1, 2003 (last amendment – O. Reg. 185/18) and the Municipal Drinking Water Licence.

In accordance with Drinking Water Works Permit No. 186-202, condition 1.1, the drinking water system shall not be operated to exceed the rated capacity for the maximum flow rate into the treatment system of 9,500 m<sup>3</sup>/day. (See Appendix I for total flow, average daily flow and maximum daily flow.) The flows into the water treatment plant did not exceed the maximum flow rate at any time.

The Long Sault-Ingleside Regional Water Treatment Plant has a valid Permit to Take Water; number 4278-9XSHHK (issued June 24, 2015 and expiring June 30, 2025), authorizing the taking of no more than 9,500m<sup>3</sup>/day. The average water taking for the year was 5,459 m<sup>3</sup>/day, 57% of the authorized water taking. The maximum daily flow into the treatment system for the year was 7,951 m<sup>3</sup>/day (raw water).

The Long Sault-Ingleside Regional Water Treatment Plant chlorinates at the raw water intake when the water temperature is above 10 degrees Celsius, providing enhanced chlorine contact retention time and also to control zebra mussel populations in the intake pipes.

The works and related equipment and appurtenances used to achieve compliance are properly operated and maintained, including effective performance, adequate funding, adequate operator staffing and training, including training in all procedures and other requirements of the Certificate of Approval and the Act and regulations, adequate laboratory facilities, process controls and alarms, and the use of the process chemical that comes in contact with the water being treated is suitable for the process and appropriate for drinking water.

A flow meter measures the flow rate and daily quantity of water being taken from the source (intake) and conveyed to, and through, the water treatment plant. The raw and treated flows are recorded in Appendix I. The flow meters were calibrated August 13, 2018 by Endress and Hauser.

Free chlorine residual and turbidity in treated water is continuously monitored at the point of entrance to the distribution system. The Prominent chlorine analyzer is accurate to  $\pm 2\%$  of the measured value. A low chlorine alarm calls out at a value that is above the required CT, and the high lift pumps will shut down if the chlorine reaches a level lower than the required CT, or the lowest free chlorine level of 0.20 mg/L, to prevent non-chlorinated water from being produced. A high chlorine alarm calls out at 3.00 mg/L. Operators try to keep the chlorine residual at an average of 1.00mg/L. The on-line chlorine analyzer is checked with the hand-held chlorine analyzer and adjusted as required. Calibration of the on-line chlorine analyzers was performed

by Endress and Hauser on August 14, 2018. The Hach turbidimeters are accurate to  $\pm 0.1$  NTU (Nephelometric Turbidity Unit). The turbidimeters are checked monthly using a hand-held turbidity analyzer and adjusted accordingly. The turbidity analyzers were calibrated on May 8, 2018 by Hach Canada. If the turbidity reaches 1.00 NTU (Nephelometric Turbidity Units) for a period of 14 minutes, 50 seconds, the affected Zenon train will shut down and alarm out to prevent turbid water from entering the contact chamber. (See Appendix I for maximum turbidity, and minimum, maximum and average chlorine residual.)

Operators keep a daily log book recording raw and treated flow meter readings, free and total chlorine residual (both continuous and grab samples), raw and treated turbidity, pH and temperature.

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 Regulation 170/03, Schedule 10 and 13, Microbiological and Chemical Sampling and Testing). Bacteriological analysis is performed weekly - 1 sample each per week from the raw and treated water, 13 samples per month from the distribution system. Nitrates, THMs and HAAs are analyzed 4 times a year in the distribution system. Schedule 23 and 24 (treated water) are analyzed annually. Sodium and fluoride (treated water) are analyzed once every 60 months. (See Appendix II.) 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), Long Sault-Ingleside Regional WTP and distribution system is eligible for reduced sampling and reduced frequency (every 3 years). Samples were collected in 2015/2016 and will be collected again in 2018/2019. pH and alkalinity are required to be collected twice per year.

Effluent discharged from the backwash wastewater facility is analyzed monthly for Total Suspended Solids (annualized average), Total Chlorine Residual, and pH. The results are summarized in Appendix II – 2018 Annual Report for the Ministry of the Environment, Conservation and Parks.

Free chlorine residual in the distribution system is monitored by 2 alarmed online analyzers with datalogging. The analyzers are checked, at minimum, every 72 hours. These analyzers will alarm out when the chlorine goes below 0.15 mg/L for a period greater than 15 minutes. The chlorine analyzers in the distribution system were calibrated on August 14, 2018 by Endress and Hauser.

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

The Long Sault-Ingleside Regional Water Treatment Plant is classified Water Treatment 2 and Water Distribution 2 (Certificate Number 2232 and 2233). Operators hold valid licences applicable to this type of water treatment plant.

Following all maintenance or repairs to the water treatment facility, 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 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 are available for dealing with emergencies, upset conditions, equipment breakdowns in the works and spill scenarios.

An operating manual incorporates the requirements of the Drinking Water Works Permit. 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 are 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 entire water treatment plant has been prepared and is kept up-to-date, including timely incorporation of all modifications that are made to the works.

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 2018-2019 Compliance Inspection was completed on September 18, 2018 by the Ministry of the Environment, Conservation and Parks. The Compliance Inspection Report was received on December 17, 2018 and there were no issues of regulatory non-compliance.

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

### **MAINTENANCE**

- Jan. 2 – Marleau Mechanical on site to troubleshoot furnace – fresh air intake pipe frozen – reconfigured piping and checked unit to ensure it is working properly

- Jan. 17 – Capital Controls on site to troubleshoot fire flow/high flow output – coordinating with Zenon
- Jan. 24 – Bell Canada on site to troubleshoot and repair main phone line
- Jan. 29 – Bergeron Electric on site to troubleshoot fire alarm panel – no issues – issue is with the security panel within the fire alarm panel – Bergeron to speak with Chubb Edwards to identify problem
- Feb. 7 – Process and Steam on site to size new actuators and troubleshoot replacement actuators that don't fit due to new models
- Feb. 12 – Quarterly samples collected at WTP and distribution points
- Feb. 12 – Surgeson Electric on site to troubleshoot actuator valve that is stuck open
- Feb. 26 – Chubb Edwards on site to repair fire alarm panel
- Mar. 1 – Pyro Pro on site to perform annual inspection of fire extinguishers
- Mar. 2 – Surgeson Electric on site to troubleshoot valve on vacuum system – open/close contacts faulty – replaced valve – airlines fit tested and working properly
- Mar. 6 – Bergeron Electric on site to install new receptacle for cell signal booster
- Mar. 8 – Marleau Mechanical on site to troubleshoot exhaust fan and thermostat in chemical room – broken belt on fan and thermostat requires replacing
- Mar. 9 – Marleau HVAC on site to install new thermostat on unit heater in chemical room
- Mar. 21 – Ranguard Security on site to test new cell booster
- Mar. 26 – Capital Controls on site to clean up nuisance alarms/wrong tag names on Scada systems
- Apr. 2 – Annual alkalinity and pH sampling completed as part of lead regulation
- Apr. 23 – Endress and Hauser on site to calibrate level transmitters on all Zenon trains
- Apr. 23 – Surgeson Electric on site to troubleshoot valve
- May 2 – Capital Controls on site to reprogram all distribution analyzers
- May 8 – Eastern Welding on site to repair airline on train #1
- May 8-10 – Hach Canada on site for annual calibration of turbidity analyzers and pocket colorimeters
- May 14 – Annual sampling completed
- May 16 – Capital Controls on site at Ingleside Pumping Station to replace distribution analyzer
- May 29 – Hydrant flushing completed in Long Sault and Ingleside
- May 31 – Marleau Mechanical on site for annual HVAC connect
- June 5 – Surgeson Electric on site to troubleshoot valve on vacuum line
- June 11 – Eastern Welding on site to take measurements to remove and replace valve stem/key for water truck hydrant
- June 12 – Eastern Welding on site to install new stem/key on water truck hydrant
- June 26 – Surgeson Electric on site to install pressure sensor and to troubleshoot and repair flow valve. Also troubleshoot air flow valve leading to inspection of air dryer. Ordering solenoid for air compressor
- June 27 – Marleau Mechanical on site to troubleshoot air dryer
- July 4 – Marleau Mechanical on site to install float on air dryer
- July 11 – Bergeron Electric on site to troubleshoot fire alarm panel – unable to get parts for current panel – working on solution to replace panel
- July 12 – MC Marine on site to perform intake inspection – replaced diffuser
- July 16 – Capital Controls on site to troubleshoot run commands on chlorine pump scada system – reconfigured alarms and tested

- July 19 – Chubb Edwards on site to spec fire alarm panel – will send quote with estimate
- July 20 – Ranguard on site to install signal booster to improve cell signal
- July 27 & 31 – Bergeron Electric on site to replace light fixtures on interior/exterior of plant
- Aug. 7 – Quarterly samples collected at WTP and distribution points
- Aug. 14 – Eastern Welding on site to install union stainless piping to leak on suction end of permeate pump #1 drain valve – will replace airline when they install ball valves
- Aug. 14 – Continental Carbon on site to discuss GAC tanks – collected sample to have tested for performance
- Aug. 16 – Chubb Edwards on site researching power unit to alarm system – blown fuse replaced – upgrading firmware on both alarm units
- Aug. 21 – Eastern Welding on site to install 4 isolation valves on Zenon train air lines – will enable air lines to be isolated to perform repairs, or in case of breakdown
- Aug. 23 – Surgeson Electric on site to remove chlorine bulk tank pump #1
- Aug. 23 – DBC on site to clear raw water sample line at low lift
- Aug. 31 – Ranguard on site to move cell booster
- Sept. 10 – GenRep on site performing annual generator maintenance
- Sept. 17 – Bergeron Electric on site to perform annual fire alarm testing and maintenance
- Sept. 5 – Marleau HVAC on site to install a new exhaust fan in chlorine room
- Sept. 11 – Surgeson Electric on site to troubleshoot primary chlorine analyzer
- Sept. 11 – TC Electric on site to perform final connection on new chlorine bulk tank transfer pump
- Sept. 12 – Township IT Rep on site to map out computer network for secure VPN
- Sept. 13-17 – Marleau HVAC on site for annual HVAC testing and maintenance
- Sept. 14 – Simplex delivered scissor lift to complete in house maintenance repairs
- Sept. 17 – Surgeson Electric on site to replace defective electric control box on flow control valve – also supplied and replaced fuses on flow meter power supply board
- Sept. 18 – Marleau HVAC on site to troubleshoot chlorine exhaust fan #1 – new overload and switch required
- Sept. 20 – Surgeson Electric on site to install solenoid valve on air compressor
- Sept. 20 – Eastern Welding on site to install/weld 3 hand valves to GAC tank pressure lines
- Sept. 21 – Kim's Locksmith on site to unlock broken latch/lock on contact chamber #2
- Sept. 24 – Endress and Hauser on site to calibrate Zenon trains
- October – hydrant flushing in Long Sault and Ingleside
- Oct. 10 – Alkalinity and pH sampling in distribution system (Lead Regulation sampling)
- Oct. 4 – Surgeson Electric on site to replace fuses on compressor in MCC
- Oct. 10 – Marleau Mechanical on site to complete annual HVAC inspections
- Nov. 5 – Quarterly samples collected at WTP and distribution points
- Nov. 27 – GenRep on site for annual maintenance of generator
- Dec. 13 – Capital Controls on site to troubleshoot issues with scada trending and issues with backup scada shutting down when switching screens

APPENDIX I  
Flow Data



APPENDIX II  
2018 Annual Report  
Ministry of the Environment, Conservation and Parks