

**Ingleside Wastewater Treatment System
2019 Annual Performance Report**

**Certificate of Approval No. 8524-5JFP5F
Works No. 120000140**

**Completed by
CANEAU Water & Sewage Operations Inc.
P.O. Box 222
19740 Wellington St
Williamstown, ON
K0C 2J0
(613) 662-9861**

1.0 Introduction

This Annual Performance Report is submitted to satisfy the requirements of the Sewage Certificate of Approval issued to the Ingleside WWTP. (Amended C of A No. 8524-5JFP5F, February, 2003).

This Annual report corresponds with the period from January to December and provides:

- an overview of the wastewater treatment plant performance;
- a summary and interpretation of all monitoring data and analytical results collected during the reporting period, including quality and quantity;
- a summary of the system operation, including calibration, information on operating problems encountered in the reporting period, and modifications to the works to correct the problems;
- a tabulation of the volume of sludge generated in the reporting period, an outline of anticipated volumes to be generated over the next reporting period, and an outline of the sludge handling methods and disposal areas to be utilized over the next reporting period;

2.0 Wastewater Treatment Performance

The current treatment system for Ingleside is extended aeration process with screening of the raw influent, grit removal, aeration, chemically assisted flocculation and sedimentation of solids and phosphorous, chlorination and discharge to Lake St. Lawrence.

Overall, the Ingleside wastewater treatment facility has operated efficiently and has proven to provide consistent removal efficiencies for the design parameters during the reporting period.

Appendix A contains the monthly quantity and quality values.

Please note that the data contained in Appendix A represents all the acquired data throughout the year, including laboratory and "in-house" testing at the plant.

There were no bypasses within the facility for the reporting year.

2.1 Raw Wastewater Characteristics

The average process wastewater flow rate was 3,875 m³/d (96% of the average daily design flow of 4,045 m³/d). The plant is rated at 10,027 m³/d (peak daily flow). Appendix A contains the monthly quantity and quality values for the influent and effluent. The peak daily flow was exceeded on two occasions – April 20, 2019 – influent flow was 11,635m³, and November 1, 2019 – influent flow was 11,994m³ (both flow exceedances occurred due to heavy rains and/or snow melt).

Treatment Performance

Table 2.2 outlines the annual average treatment efficiencies of the treatment process within the facility for the reporting year.

Table 2.2 System Treatment Performance

Constituent	Raw Influent mg/L	Final effluent mg/L	Final effluent C of A mg/L	Average Loading kg/d	Final effluent C of A kg/d	Average Removal Efficiency (%)
BOD (mg/L)	124	7.63	25	29.49	101	93
SS (mg/L)	318	9.60	25	37.10	101	95
TP (mg/L)	14.94	0.63	1	2.43	4	96
E. Coli (cnts/100ml)		7 (geometric mean)	200 (geometric mean)			

3.0 Effluent Monitoring

Composite influent samples are collected and analyzed weekly for Suspended Solids, Total Phosphorous, Dissolved Reactive Phosphorous, Total Kjeldahl Nitrogen, Ammonia + Ammonium Nitrogen, Nitrite + Nitrate Nitrogen, Alkalinity, Chlorides, Conductivity, and BOD₅.

Composite final effluent samples are collected and analyzed weekly for Suspended Solids, Total Phosphorous, Dissolved Reactive Phosphorous, Total Kjeldahl Nitrogen, Ammonia + Ammonium Nitrogen, Nitrite + Nitrate Nitrogen, Alkalinity, Conductivity, Chlorides, and BOD₅.

Grab samples of Total Coliform, Fecal Coliform/E. Coli, Fecal Streptococcus are collected weekly in the final effluent. Testing is performed daily for total chlorine and temperature.

In addition to the routine sampling program above, on site testing is performed twice a week for total phosphorous, dissolved reactive phosphorous, total suspended solids and conductivity. pH is tested three times a week.

Please refer to Appendix A for the monthly quantity and quality results and rolling averages.

3.1 Effluent Quality

In accordance with the C of A:

In compliance

- Non-compliance with respect to concentrations of BOD₅ in the effluent is deemed to have occurred when the annual average concentration exceeds 25 mg/L.

In compliance

- Non-compliance with respect to concentrations of Suspended Solids in the effluent is deemed to have occurred when the annual average concentration exceeds 25 mg/L during any twelve consecutive calendar months.

In compliance

- Non-compliance with respect to concentration of total phosphorus (TP) in the effluent is deemed to have occurred when the monthly average concentration exceeds 1 mg/L.

In compliance

- Non-compliance with respect to loading of BOD₅ in the effluent is deemed to have occurred when the annual average loading exceeds 101 kg/d during any twelve consecutive calendar months.

In compliance

- Non-compliance with respect to total loading of Suspended Solids in the effluent is deemed to have occurred when the annual average loading exceeds 101 kg/d during any twelve consecutive calendar months.

In compliance

- Non-compliance with respect to total loading of Total Phosphorus in the effluent is deemed to have occurred when the annual average loading exceeds 4 kg/d during any twelve consecutive calendar months.

Please refer to Appendix A for a detailed look at the analytical results and rolling averages.

4.0 Plant Operations

A preventive maintenance program is in effect at this treatment facility. Preventive maintenance is scheduled on a weekly basis and records are maintained of completed activities.

In 2001, Caneau had a computerized maintenance program installed to ensure that preventative maintenance is performed on all equipment in accordance with the manufacturer's specifications.

The MOECC performed an inspection of the Ingleside WWTP on February 4, 2020.

The influent and effluent flow meters, respectively, were calibrated on November 14, 2019 by Can-Am Instruments and November 26, 2019 by Capital Controls.

4.1 Operational Problems

A logbook of operational activities and problems is maintained at the treatment facility.

The following is a list of the repairs, calibrations and upgrades which took place at the Ingleside WWTP in the reporting period:

4.2 Maintenance

- January 10 – Surgeson electric on site working on flocculator – back in operation.
- January 24 – Township on site working on secure VPN.
- January 25 – Surgeson Electric on site to look at flocculator – variable frequency drive out of commission.
- February 4 – Surgeson Electric on site to troubleshoot flocculator – VFD needs replacing.
- February 5 – Capital Controls remotely repaired SCADA after issues occurred after anti-virus protection had been installed by Township.

- March 5 – David Brown on site to steam the bar screen drain.
- March 12 – GenRep on site to perform semi-annual inspections on generators.
- March 13 – Pyro Pro on site for annual fire extinguisher inspection.
- March 15 – David Brown on site cleaning out bar screen channel.
- March 20 – CDTEC on site for semi-annual gas detector inspection.
- April 2 – Surgeson Electric on site to commission the long term storage transfer pump.
- April 22 – Surgeson Electric on site at pumping station to commission VFD on pump #2.
- April 25 – David Brown on site to pump out grit from centrate and grit bin.
- May 23 – Marleau Mechanical and Rob Boileau Construction on site to repair roof exhaust vents.
- May 23 – Eastern Welding on site to look at broken bar screen rake.
- May 24 – Eastern Welding on site to repair bar screen rake.
- June 3 – Marleau Mechanical on site to complete roof exhaust vents.
- June 18 – Township on site to install computer software.
- June 19 – DBC on site to flush teacup.
- June 19 – Marleau Mechanical on site to repair photo sensor on yard light.
- June 24 – DBC on site to flush primary tank air lines.
- June 25 – Surgeson Electric on site to replace timer on flocculator.
- July 9 – Eastern Welding on site to measure manhole for Septage dumping.
- July 15 – Surgeson on site to troubleshoot VFD #1 relating to July 12 call-in. Supplied and installed VFD timer rack.
- August 17 – GenRep on site to troubleshoot genset.
- August 17 – Hydro One on site to replace blown transformer into Pumping Station.
- August 19 – Third High Farms on site to haul 640m³ of sludge.
- August 20 – Third High Farms on site to haul 520m³ of sludge.
- August 20 – Eastern Welding on site to replace pump P-21 in Centrate Well.
- August 20 – Marleau Mechanical on site to wire new pump/overload/starter.
- August 20 – David Brown on site to vacuum out Centrate Well.
- August 21 – Third High Farms on site to haul 640m³ of sludge.
- August 23 – Third High Farms on site to haul 600m³ of sludge.
- September 11 – Surgeson on site at sewage pumping station to repair intake fans.
- September 16 – Surgeson on site to replace poly sump pump timer.
- September 25 – Xylim on site to pull sewage pumping station pump #3 for rebuild.
- September 27 – Eastern Welding on site to repair Cl₂ tank.
- October 16 – Gen Rep on site at sewage pumping station for load test.
- October 22 – Surgeson on site to troubleshoot problem with blower #4 motor.
- October 24 – Surgeson on site to work on VFD for RAS pump #3 and fix issue with RAS pump #1.
- October 24 – David Brown on site to clean out east pre-aeration channel, west to be done at a later date.
- October 25 – Marleau on site for yearly HVAC inspection.
- October 30 – Surgeson on site to install new VFD for RAS/WAS #3.
- November 6 – David Brown on site to remove silt/sand/sludge on east side of pre-aeration channel.
- November 6 – Marleau on site at plant and sewage pumping station to fix HVAC faults.
- November 11 – Genrep on site to repair leaking fuel filter on sewage pumping station generator.
- November 11 – Seaway insulation on site to insulate outdoor hose valves and teacup cover.
- November 14 – Can-Am on site to calibrate sewage pumping station and Lactalis flow meters.
- November 19 – Endress & Hauser on site to calibrate RAS/WAS flow meter.
- November 21 – Third High Farms on site to haul from long term storage.

- November 22 – David Brown on site to clean out west side of pre-aeration channel.
- November 22 – Third High Farms on site to haul from long term storage.
- November 25 – Third High Farms on site to haul from long term storage.
- November 26 – Capital Controls on site for annual effluent flow meter calibration.
- December 4 – Capital Controls on site to move SCADA computer to sewage pumping station in advance of mould abatement work.

4.3 Completed Modifications

- There were no completed modifications in 2019.

4.4 Planned Modifications

- There are no planned modifications for 2020.

5.0 Biosolids Management

WSP Canada Inc. was retained to coordinate the transfer and disposal via land application of sewage biosolids from the Ingleside Sewage Treatment Plant (STP) over the course of the spring and fall of 2019.

The beneficial use of the sewage biosolids for the purpose of improving the growth of agricultural crops was demonstrated through laboratory analysis in accordance with O. Reg. 267/03. Material application rates were determined based on field conditions and agronomic and/or crop removal balances incorporating assessment of nutrients, metals and solids loading.

The stored biosolids were transferred by Third High Farms Limited (Iroquois, ON) via tankers and hauled to Land Application Sites with active NASM Plans in accordance with ECA 0936-574KQF. Field markers delineating the required separation distances to sensitive features were placed by Third High Farms at all land-application sites as per the setbacks shown on the appropriate NASM Plan field sketches. The material was land applied by direct injection and/or immediately incorporated to reduce odour and minimize runoff potential.

The total volume of biosolids transferred from the Ingleside STP in 2019 was **5,560 m³**. The receiving field locations and volumes applied are detailed in Table 1 below along with nutrient loadings.

Table 1: NASM Land Application Summary, Ingleside Wastewater Treatment Plant

DATE	NASM PLAN OWNER / ID	FIELD / AREA	MATERIAL SOURCE	TOTAL VOLUME (M ³)	NITROGEN LOADING (KG/HA)	PHOSPHOROUS LOADING (KG/HA) [†]	POTASSIUM LOADING (KG/HA) ^{††}
May 16, 2019	Hartle – 22349	Moak A + B, Lot 7, 8 Con 5, Lot 3, 4 Con 6	Ingleside	560	41	231	8
May 28, 2019	Bruining - 22351	Anderson Road North, Lot 25, 26 Con 2	Ingleside	1,320	28	157	6
August 19, 2019	Habers - 23973	Habers F, Lots 16, 17 Con 6	Ingleside	560	27	185	0

DATE	NASM PLAN OWNER / ID	FIELD / AREA	MATERIAL SOURCE	TOTAL VOLUME (M ³)	NITROGEN LOADING (KG/HA)	PHOSPHOROUS LOADING (KG/HA) [†]	POTASSIUM LOADING (KG/HA) ^{††}
August 20, 2019	Habers - 23973	Habers D + E, Lots 16, 17 Con 6	Ingleside	840	35	237	0
August 21, 2019	Habers - 23973	Habers B + C, Lots 16, 17 Con 6	Ingleside	520	35	237	0
August 22, 2019	Habers - 23973	Habers G + H, Lots 16, 17 Con 6	Ingleside	520	28	187	0
November 18, 2019	Rombough - 23325	Neville South East, Lot 21, 22, 23, 25, 26 Con 5, Lot 18 Con 6	Ingleside	240	28	177	0
November 19, 2019	Rombough - 23325	Neville Home, A, Lot 21, 22, 23, 25, 26 Con 5, Lot 18 Con 6	Ingleside	846	26	170	0
November 19, 2019	Rombough - 23325	Neville Home, B, Lot 21, 22, 23, 25, 26 Con 5, Lot 18 Con 6	Ingleside	154	26	170	0

† Phosphorus as P2O5

†† Potassium as K2O

Based on recent historical (2014 - 2019) annual volumes of biosolids transferred from the facility, the volume of biosolids generated by the Ingleside STP in 2020 is anticipated to be approximately 5,500 m³.

Metals of concern resulting from the land application of sewage biosolids include As, Cd, Co, Cr, Cu, Hg, Mo, Ni, Pb, Se, Zn. Cumulative metal loadings for these fields range from 0% to 18% of the maximum metal loading limit for five (5) years.

Table 2 below provides a summary of the agricultural fields approved to receive Ingleside STP (these fields are also approved to receive Long Sault STP sewage biosolids) and, based on nutrient loadings resulting from current and past applications, the remaining capacity of the field to receive material. Please note this is an estimate as nutrient and metals loadings will vary based on material quality data and application rates established at the time of application.

Table 2: Inventory of Fields Approved Under a NASM Plan to Receive Ingleside and Long Sault Biosolids.

FIELD	NASN PLAN OWNER/ID	AREA AVAILABLE FOR NASM (HA)	COMMENT
Rombough North	Rombough – 23325	9	Unavailable – Maximum five-year Phosphorous loading reached.
Rombough South	Rombough - 23325	27	Unavailable – Maximum five-year Phosphorous loading reached.
Hollister Rd.	Rombough - 23325	16	Available - Field has not received material under this NASM plan.
Neville Rd.- Home	Rombough - 23325	13	Available – Can receive Long Sault material

Ingleside WWTP
 2019 Annual Performance Report - Sewage

FIELD	NASN PLAN OWNER/ID	AREA AVAILABLE FOR NASM (HA)	COMMENT
Neville Rd. - South East	Rombough - 23325	3	Available - Field has not received material under this NASM plan.
Neville Rd. - South West	Rombough - 23325	2	Available - Field has not received material under this NASM plan.
Habers Field B + C	Habers - 23973	7.1	Unavailable – Maximum five-year Phosphorous loading reached.
Habers Field D + E	Habers - 23973	11.5	Unavailable – Maximum five-year Phosphorous loading reached.
Habers Field F	Habers - 23973	9.8	Could receive approximately 500 m3 of Long Sault material at a low application rate
Habers Field G + H	Habers - 23973	9	Unavailable – Maximum five-year Phosphorous loading reached.
Gallinger Edwards Rd	Gallinger - 24012	21	Available - Field has not received material under this NASM plan.
Gallinger Home Field	Gallinger - 24012	28	Available - Field has not received material under this NASM plan.

Fields have been identified for spring 2020 land application of the Ingleside material and will be confirmed closer to land application dates based on field availability and weather conditions.

Appendix A

Wastewater Data & Rolling Averages