



INFRASTRUCTURE DEPARTMENT MEMORANDUM

TO: MAYOR J. LEHMAN AND MEMBERS OF COUNCIL

FROM: S. COULTER, MANAGER OF WASTEWATER OPERATIONS

NOTED: B. ARANIYASUNDARAN, P. ENG., PMP, DIRECTOR OF INFRASTRUCTURE
D. FRIARY, DIRECTOR OF OPERATIONS
A. MILLER, RPP, GENERAL MANAGER OF INFRASTRUCTURE AND GROWTH
MANAGEMENT
M. PROWSE, CHIEF ADMINISTRATIVE OFFICER

RE: 2019 WASTEWATER FACILITY ANNUAL REPORTS (File: A22-AN)

DATE: APRIL 27, 2020

The purpose of this Memorandum is to apprise members of Council of the compliance status of the 2019 reporting year for three City-operated sewage facilities: the Wastewater Treatment Facility (WwTF), the Wastewater Collection System and Lake Simcoe Regional Airport (LSRA) system. The Ministry of Environment, Conservation and Parks (MECP) Environmental Compliance Approvals (ECAs) for these facilities requires that the facility Owner (i.e. Council) report annually to the MECP within 90 days of the end of the reporting period (calendar 2019). This Memo is confirmation that the reports for the year 2019 were indeed submitted to the MECP on March 20, 2020 (WwTF and LSRA) and March 30, 2020 (Collection System) in keeping with requirements of the ECA. A copy of the 2019 Annual Reports, which have been submitted to MECP, have been placed in the Councillor's Lounge for Council's perusal.

Wastewater Treatment Facility, 249 Bradford Street

The City of Barrie's WwTF is located at 249 Bradford Street and operates under the MECP's Amended Environmental Compliance Approval (ECA) No. 0284-B2ML52 dated August 24th, 2018. Sewage treatment processes include mechanical bar screens and solids compaction, grit removal, primary settling, high purity oxygen activated sludge treatment, secondary clarifiers, nitrification by rotating biological contactors, sand filtration and ultraviolet disinfection. Treated effluent is discharged to Kempenfelt Bay. Sludges are converted to biosolids after dual digestion of sludge (aerobic & anaerobic). In addition to using biosolids as a fertilizer on local farms, methane gas generated from this process is 'scrubbed' and used for co-generation of heat and electricity to offset plant energy demands.

In 2019, the effluent average daily flow of 49.9 mega litres per day (MLD) of sewage represented approximately 65.7% of the plant's rated capacity of 76 MLD. The maximum daily effluent flow was 75.4 MLD on March 16, 2019 due to heavy rains, warm weather and spring runoff accessing the sanitary collection system over a 3-day period.

The WwTF was in full compliance with all required effluent concentration limits and loading limits. In addition, the plant met all ECA Objectives with a few exceptions. Over the reporting period the WwTF functioned exceptionally well, producing a high quality of treated effluent. The effluent annual average phosphorous concentration of 0.03 mg/L was the second lowest on record and the average ammonia-N effluent concentration of 0.61 mg/L was the fourth lowest on record. There were no spills or bypasses of sewage in 2019.

The 2019 final effluent phosphorous annual loading was 546 kg/year which is 20% of the annual compliance loading of 2,774 kg. The effluent phosphorous monthly average concentrations met the 0.18 mg/L compliance limit for 2019. The actual effluent annual average phosphorous concentration of 0.03 mg/L for 2019 fully met the Lake Simcoe Phosphorus Reduction Strategy limit of 0.10 mg/L. See Figure 1 for historical WwTF effluent phosphorus trending.

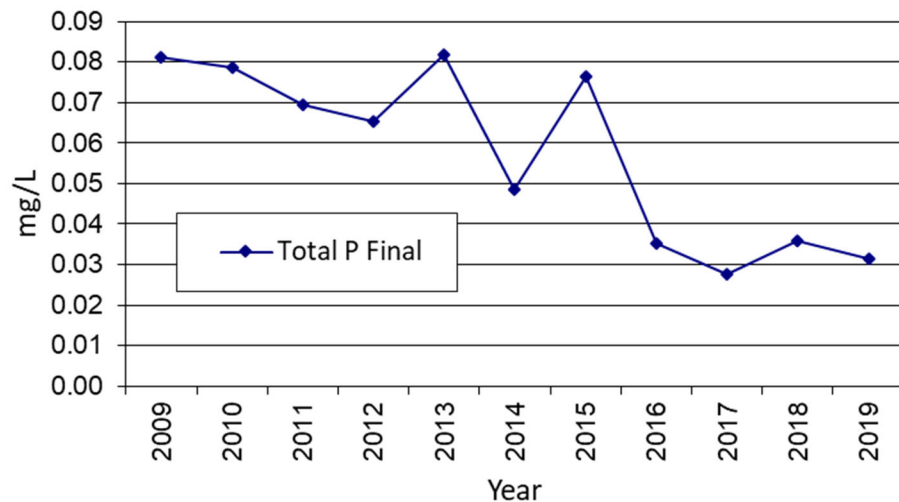


Figure 1 WwTF Final Effluent Total Phosphorus Concentration (mg/L)

Ammonia, like phosphorus, is a nutrient which contributes to eutrophication of receiving waters and is also toxic to fish. Effluent ammonia levels were also among the lowest in recent record as shown in Figure 2.

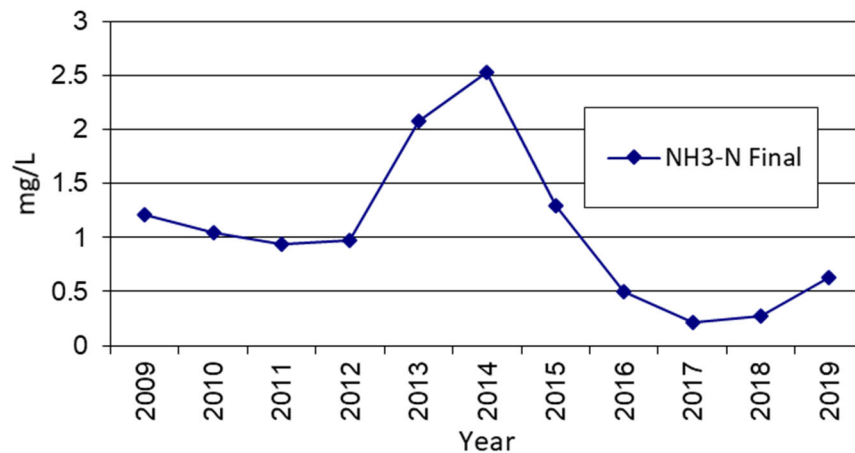


Figure 2 WwTF Final Effluent Ammonia Concentration (mg/L)

Wastewater Collection System

The City of Barrie owns and operates a wastewater collection system which terminates at the Wastewater Treatment Facility located at 249 Bradford Street. The collection system currently operates under Ministry of the Environment, Conservation and Parks Amended Environmental Compliance Approval (ECA) No. 5921-ATUKKR dated January 10, 2018.

Recently completed, in-development or in-progress improvements for wastewater pumping stations and force mains are as follows:

- Capacity is being increased and construction has started at Holly Pump Station to accommodate annexed land.
- The Heritage Park Pump Station force main was damaged in 2018 and was re-routed to the Splash Pond force main in 2019.
- Safety was improved by upgrading the access ladder at Johnsons Beach PS pump chamber.
- Wiring upgrades were done at Tyndale Park SPS and Grove Street SPS.

No spills of sewage occurred at pump stations in 2019. Four overflows of sewage occurred on the gravity system due to blockages which were subsequently removed.

The Roads, Stormwater and Rail Operations Branch operates and maintains the gravity portions of the wastewater collection system currently operating under Ministry of the Environment, Conservation and Parks Amended Environmental Compliance Approval (ECA) No. 5921-ATUKKR dated January 10, 2018. Throughout the 2019 calendar year, the following work was completed on the gravity collection system:

- Root and deposit cutting – Lakeview Crescent
- Full-length CIPP lining – Rose Street
- Deposit cutting, Chemical grouting and full-length CIPP lining - Ottaway Ave., Bothwell Crescent
- Weekly Flushing Program – 10 locations
- Lateral repair/replacement – 57 locations
- Other maintenance (clear blockages, inspect, repair structures, etc.) – 133 service requests

Lake Simcoe Regional Airport

In 2019 the City of Barrie Wastewater Operations Branch operated a private sewage works at the Lake Simcoe Regional Airport (LSRA) located at 224 Line 7 North of Oro-Medonte Township. September 27, 2016 MOECC issued Amended Environmental Compliance Approval No. 3223-ADYKC4 for the operation of two separate treatment systems; one for the terminal building, maintenance building and older hangars and one for a new hangar. The treatment systems generally consist of septic tanks, pump stations, force mains and diffuser bed systems and, in the case of the new hangar, a Waterloo Biofilter (WBF) system. The WBF is a small biological sewage treatment device that can achieve secondary treatment levels of performance. In 2019 the WBF generally met the treatment objectives stipulated in the in ECA approval.

The treatment systems described are intended for small volumes of sewage. Historically extraneous sources of water such as infiltration, inflow or even a running toilet can result in an exceedance of the design capacity of the systems. The Wastewater Operations Branch and the LSRA invested considerable time and effort in excluding these sources of water. In spite of best efforts, the daily flow design capacity of the older system was exceeded in the third week of March 2019. As of January 1, 2020, the County of Simcoe has assumed operation of the airport and has retained OCWA to run the sewage works.

If you have any questions or require further information please contact the undersigned or S. Coulter, Manager of Wastewater Operations at extension 5826.