Infrastructure Department
MEMORANDUM

TO:	**MAYOR J. LEHMAN AND MEMBERS OF GENERAL COMMITTEE**
FROM:	**G. JORDEN, MANAGER OF WASTEWATER OPERATIONS**
NOTED:	**B. ARANIYASUNDARAN, P. ENG., PMP, DIRECTOR OF INFRASTRUCTURE**
	D. FRIARY, DIRECTOR OF OPERATONS
	A. MILLER, RPP, GENERAL MANAGER OF INFRASTRUCTURE & GROWTH MANAGEMENT
	M. PROWSE, CHIEF ADMINISTRATIVE OFFICER
RE:	**2020 WASTEWATER FACILITY ANNUAL REPORTS (File: A22-AN)**
DATE:	**MAY 31, 2021**

The purpose of this Memorandum is to provide members of Council with information on the compliance status of the 2020 reporting year for two City-operated sewage facilities: the Wastewater Treatment Facility (WwTF) and the Wastewater Collection System. The Ministry of the 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 2020). This Memo is confirmation that the reports for the year 2020 were indeed submitted to the MECP on March 31, 2021 in keeping with requirements of the ECAs. A copy of the 2020 Annual Reports, which have been submitted to MECP, would typically be placed in the Councillor's Lounge for Council's perusal, however, to accommodate COIVD-19 polices and restrictions, the reports have been attached to this memo and are also available on the City's Wastewater Operations Branch page on InSite.

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 2020, the effluent average daily flow of 50.4 mega litres per day (MLD) of sewage represented approximately 66.3% of the plant's rated capacity of 76 MLD. The maximum daily effluent flow was 86.3 MLD on January 11, 2020 due to heavy rains, warm weather and snowmelt resulting in runoff that accessed the sanitary collection system.

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 third lowest on record and the average ammonia-N effluent concentration of 0.29 mg/L was the third lowest on record. There were no spills (overflows) of sewage in 2020 and only one bypass event involving partial tertiary treatment of effluent due to the aforesaid heavy flow condition of January 11. The 2020 final effluent phosphorous annual loading was 554 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 2020. The actual effluent annual average phosphorous concentration of 0.03 mg/L for 2020 fully met the Lake Simcoe Phosphorus Reduction Strategy limit of 0.1 mg/L. See Figure 1 for historical WwTF effluent phosphorus trending.

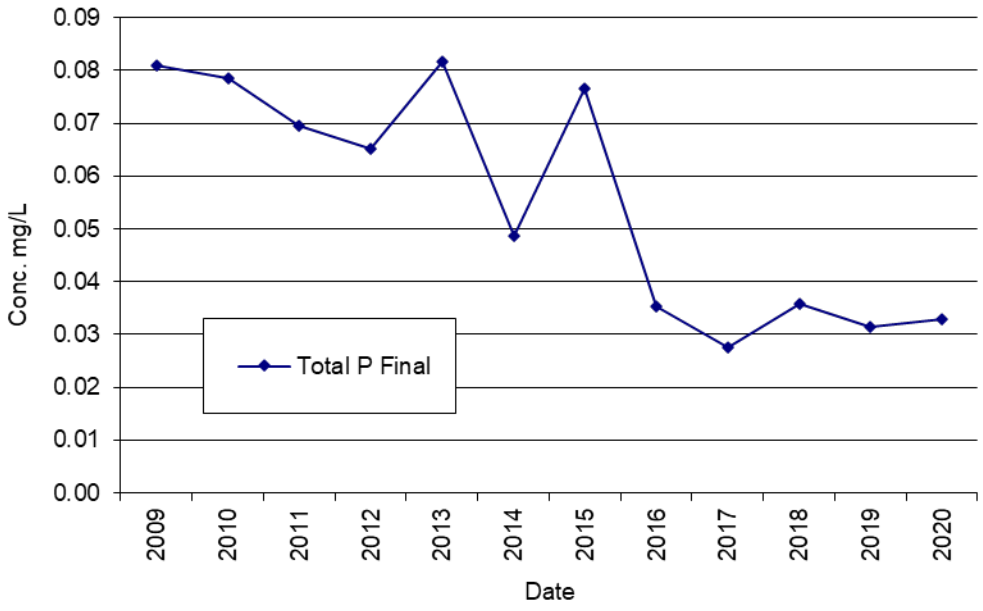

Figure 1 WwTF Final Effluent Total Phosphorus Concentration (mg/L)

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.

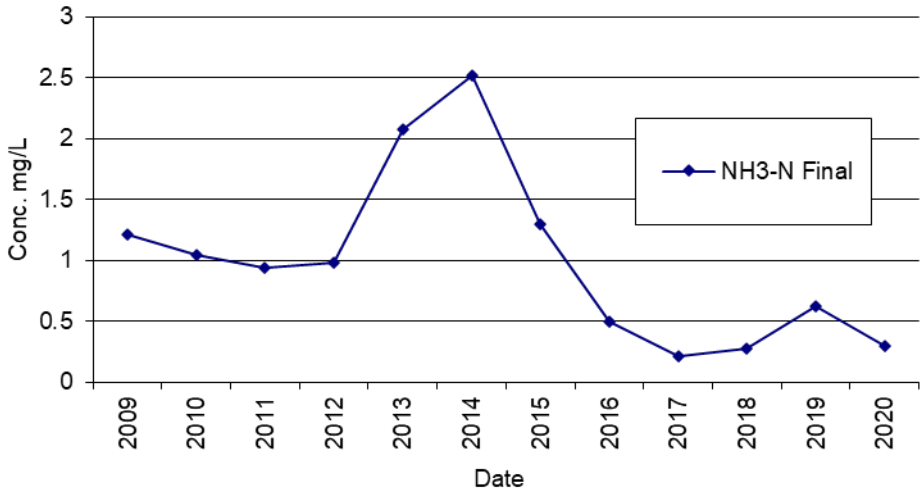

Figure 2 WwTF Final Effluent Ammonia Concentration (mg/L)

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:

a) Capacity was increased and construction continued through 2020 at the Holly pump station to accommodate annexed land as approved by the August 2017 ECA. Contractual and construction issues were experienced that delayed the project. The new station became operational in 2020 and substantial completion obtained in December 2020. The delays resulted in the need to haul sewage from the new Bear Creek Ridge Development to the WwTF in January and February 2020.

b) A twin force main at Little Lake SPS was included in the original system-wide ECA but has not yet been tied into the existing sewer system. In 2020, through a value engineering session between the WWOB, Vertical Infrastructure Projects, and the consultant, the City of Barrie re-scoped the project to eliminate a new valve chamber and incorporate the required valving into the existing wet well chamber. While this change delayed the project, it is expected that the new scope will result in significant cost savings for the City during construction.

c) Most pump stations do not have flow meters. Those that do are Holly, Tyndale, Splash Pond, Little Lake and Mooregate (2).

d) Where there is no flow meter, flows are calculated based on volume change in the well when a pump is running. The City is developing a program to eventually equip all stations with flow meters with larger stations being the priority.

e) A WWOB project commenced in 2019 to install new level measurement equipment at Tyndale SPS and was completed in 2020.

f) In 2019, some wet wells (e.g. at Johnson's Beach SPS and Perry Street SPS) were identified as having unsatisfactory means of entrance. A new, safer ladder design was implemented at Johnson's Beach SPS in 2019 and the Perry Street ladder was completed in 2020.

No spills of sewage occurred at pump stations in 2020. Four overflows of sewage occurred on the gravity system; three due to blockages which were subsequently removed and one resulting from operational issues at the Minet's Point sanitary pump station.

In 2020, staff of the Roads, Stormwater and Rail Operations Branch who operate and maintain 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) were transitioned into the Wastewater Operations Branch. Under the terms of the approval a summary of maintenance and repairs must be submitted. Throughout the 2020 calendar year, work was completed on the gravity collection system as shown in the following tables:

Table 1 In-Situ Repairs to Gravity Sewers in 2020

Street Location	Pipe	Action
Nelson Street	200 mm	Deposit Cutting, Root Cutting, CCTV and CIPP Lining
Melrose	200 mm	Root Cutting, CCTV and CIPP Lining
Codrington	250 mm	Deposit Cutting, Root Cutting, CCTV and CIPP Lining
Bowman Ave	200 mm	Deposit Cutting, Root Cutting, CCTV and CIPP Lining
Rose Street	250 mm	Deposit Cutting, CCTV and CIPP Lining

Table 2 Service Requests for Gravity Sanitary Sewers in 2020

Type of Service Request	Number of Requests
Miscellaneous Service Requests	10
Sanitary Lateral Problems	51
Sewer back up in basement	102
Sewer Smell	10
Maintenance Hole Cover off	11
Maintenance Hole Overflow	4
Maintenance Hole Sunken	6

Table 3 Other Maintenance on Gravity Sanitary Sewers in 2020

Other Maintenance	Number of Locations
Weekly Flushing of Sewers	10
Lateral Repair and Replacement	47
Flow Monitoring	2

If you have any questions or require further information, please contact Greg Jorden, Manager of Wastewater Operations at extension 4349.