INFORMATION REPORT

TO:	Chair and Members Public Works Committee
COMMITTEE DATE:	March 22, 2021
SUBJECT/REPORT NO:	Annual Wastewater Treatment Bypass Report - 2020 (PW21010) (City Wide)
WARD(S) AFFECTED:	City Wide
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SUBMITTED BY: **SIGNATURE:**	Nick Winters Director, Water and Wastewater Operations Public Works Department 

COUNCIL DIRECTION

On January 23, 2019 Council directed staff to provide the Public Works Committee with annual reports on discharges to the natural environment from the Dundas and Woodward Wastewater Treatment Plants (WWTP).

INFORMATION

The following information pertains to WWTP bypass events at the City of Hamilton's (City) two (2) WWTPs. The Woodward WWTP is located at 700 Woodward Avenue, Hamilton and discharges into the Red Hill Creek. The Dundas WWTP is located at 135 King Street East, Dundas and discharges to the Desjardins Canal. Both discharge locations are connected to Hamilton Harbour and the WWTPs are integral for the City to reach its goal of delisting the Harbour.

The City of Hamilton has a large complex wastewater collection network consisting of both separated and combined sewers systems. Combined sewers are found in older areas of the City and carry a combination of stormwater and wastewater in the same pipe. During periods of heavy rainfall, snowmelt, or elevated lake levels, the combined sewers are inundated with large volumes of stormwater that can exceed the capacity of the pipes. This results in combined sewer overflows (CSOs) and/or can overwhelm the WWTPs resulting in a temporary bypass. WWTP Operators monitor incoming flows and

make operational adjustments to the treatment processes as required. To protect the WWTPs from infrastructure damage, prevent flooding, and maintain compliance with the WWTP's Environmental Compliance Approval (ECA) the WWTP Operator will initiate a bypass event.

At the Woodward WWTP a bypass can occur at various stages in the wastewater treatment process. Since the completion of infrastructure upgrades in 2012 almost all bypass events have been classified as a secondary bypass. A secondary bypass means that the wastewater has been partially treated including the removal of large solids, grit and floatable material, and chemicals have been added to assist with phosphorus removal. Between May 15 and October 15 each year, secondary bypasses also receive chlorine disinfection followed by chlorine removal prior to discharge to the natural environment.

Flows to the Dundas WWTP are carefully controlled and flows exceeding the plant capacity are directed to the Woodward WWTP rather than initiating a bypass at Dundas. However, a bypass can occur at Dundas if the WWTP operators are unable to divert flow quickly enough. In these instances, any resulting bypasses would be tertiary bypasses. A tertiary bypass means the wastewater has been almost fully treated including the removal of large solids, grit and floatable material, chemicals have been added to assist with phosphorus removal, biological treatment has completed to break down organic material and nutrients, and almost all of the remaining solids have been removed. Between May 15 and October 15 each year, any tertiary bypasses that did occur would also receive chlorine disinfection but would not have the chlorine removed prior to discharge to the natural environment.

All bypasses are promptly reported to the Ministry of Environment, Conservation and Parks (MECP) Spills Action Centre and to Public Health Services as required by the regulations.

In 2020 all bypass events at the WWTPs were the result of wet weather that generated flows in excess of the WWTP's treatment capacity. There have been no costs associated with the clean-up of a WWTP bypasses to date.

The 2020 data is presented in the following table:

	# of Bypass Events			Total Bypass Volume (ML)		
Bypass Location	5 Year Average (2016 - 2020)	2019	2020	5 Year Average (2016 - 2020)	2019	2020
Dundas WWTP	0	0	0	0	0	0
Woodward WWTP	18.6	34	12	1,900	3,067	1,387

Table 1 - Woodward and Dundas WWTP Bypass Frequency and Volume Comparison (Million Litres - ML)

There was a significant increase in bypass frequency and volume in 2019 at the Woodward WWTP when compared to the 5-year average. This increase was largely due to high lake levels that impacted the WWTP between May and September. The bypass frequency and volume experienced in 2020 is reduced from 2019 and is in line with historical averages.

Temporary capacity restrictions are currently imposed at the Woodward WWTP resulting from the Woodward Upgrades Program construction. While these restrictions do not affect the rated dry weather capacity it does impact the capacity at which the WWTP can operate during wet weather events. These temporary capacity restrictions will be in place until construction is complete in 2022.

APPENDICES AND SCHEDULES ATTACHED

None.