

Quarterly Report: Improving Lake Ontario Wastewater and Stormwater Discharges

Quarterly report number and date:	2 – September 23, 2022
Municipality:	City of Hamilton
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Notes:

- Funding must be used to make improvements to municipal wastewater and stormwater systems that discharge to Lake Ontario.
- Eligible expenses include:
 - a) Wastewater treatment optimization
 - i) Infrastructure upgrades such as instrumentation, pumps, mixers, valves, automation and chemical addition
 - ii) Equipment for enhanced sampling and testing
 - b) Overflow and bypass reduction
 - i) Downspout and sump-pump disconnection programs
 - ii) Collection system optimization such as installation of sensors, flow control devices and automation
 - iii) Sewer lining and leak repair
 - iv) Stormwater separation from combined sewers
 - c) Stormwater management
 - i) Purchase and installation of stormwater management equipment
 - ii) Green stormwater infrastructure installation
 - iii) Stormwater pond cleanout
 - iv) Collection system optimization such as installation of sensors, flow control devices and automation
 - i) Sewer lining and leak repair
 - d) Other capital expenses related to improving management of wastewater and stormwater discharges to Lake Ontario
- Expenses listed above are only considered eligible if they are capital in nature or able to be capitalized based on standard accounting principles. However, engineering, design, or other consultant costs cannot be the significant/sole expenditure. Funding must be used for equipment and construction. Engineering, design, or other consultant costs shall be incidental to that. Municipal staff time and staff costs are not an eligible expense under the Program.
- Eligible expenses do not include any costs (including taxes) for which the Municipality has received, will receive, or is eligible to receive, a rebate, credit, or refund.
- Quarterly report dates are: #1 June 30, 2022; #2 September 30, 2022; #3 December 31, 2022; #4 March 31, 2023; #5 June 30, 2023; #6 September 30, 2023; #7 December 31, 2023; #8 March 31, 2024

Background and Context

By today's design standard sewers are separated into sanitary and storm. In older parts of Hamilton sanitary and storm mix in a combined sewer system. The City of Hamilton owns and operates one of the largest and most complex combined sewer systems on the Great Lakes consisting of over 571 km of combined sewer system. During wet weather events sanitary and stormwater volumes can exceed the capacity of the wastewater collection system and the wastewater treatment plant capacity which results in overflows and bypasses into the environment of partially treated or untreated stormwater and wastewater.

Some combined sewer overflow points are located within the collection system and are known as regulators. These regulators are relief structures that are designed to divert wastewater flows from one system to another. During wet weather events, excessive flow is bypassed to receiving waters or to a combined sewage overflow tank. In 2020, the technical memorandum "Combined Sewer Overflow (CSO) Outfall Monitoring Feasibility Study" (AECOM) identified CSO regulators associated with each CSO outfall as either critical, primary, secondary, "through primary" or controlled. A critical CSO regulator is any primary or secondary CSO regulator that has the potential to spill directly to the environment. The other CSO regulators listed do not have the potential to spill directly to the environment and are not considered critical regulators. There are over 170 critical CSO regulator sites in the City and many of these regulators are approaching or exceeded their life expectancy; therefore, they are at risk of structural or mechanical failure. A regulator failure means that a CSO overflow could occur during dry weather flows when the system is not at full capacity or in need of relief.

Use of Funding

Part One – Targeted Private Disconnection Program

- The City will use this funding to develop, manage and run a Targeted Private Disconnection Program in areas of the City that have confirmed inflow and infiltration into the sewer system.
- The initial focus of this program will begin with the following neighbourhoods before being extended to the rest of the City: Old Dundas, West Mountain, West 18th, Lawsfield & Berrisfield and Beach Boulevard. The focus of the Targeted Private Disconnection Program is to mitigate private sources of inflow into the combined sewer system that contributes to overflow and bypasses during wet weather events. This can include, but will not be limited to, downspout disconnections and sump pump disconnections.
- High level cost estimate for implementation of this program is \$250,000 for the consultant costs and \$250,000 for the labour and equipment to disconnect the private connections.

Part Two – Regulator Renewal Program

- The City intends to use a portion of this funding to replace/upgrade up to 9 combined sewer overflow regulators that have been identified as "critical" (can result in a direct overflow/spill to the environment during high flows or if the regulator fails) and/or in need of repair/replacement. Each of the 9 regulators are located within manholes and will require individual assessments and designs unique to each location.
- The objective is to renew the existing regulators to achieve a more reliable system with lower maintenance demands.
- High level cost estimate for a complete regulator replacement/upgrade is approximately \$50,000, including labour and equipment, but excluding design costs. It is estimated that design costs could range from 5-7% for in house design or 8-12% for consultant design.

Projected Benefits

Part One – Targeted Private Disconnection Program

Implementation of the Targeted Private Disconnection Program will reduce the volume of stormwater entering the combined sewer system and reduce the risks of discharges from combined sewer system during wet weathers. This will, in turn, reduce the volume of water making its way to the wastewater treatment plant during wet weather events and reduce the occurrence of overflows and bypasses into Cootes Paradise, Hamilton Harbour and Lake Ontario. Reducing the volume of bypasses and overflows support the objective to improve the management of wastewater and stormwater discharges to Lake Ontario by lowering phosphorus discharges (and other nutrients), and improving the overall quality of stormwater.

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Sewer flow monitoring is currently being completed in many of the listed neighbourhoods and will continue throughout this program. The flow data captured by these monitors before, during and after the program will be used to quantify the reduction in rainfall derived inflow and infiltration and the reduction in severe wet weather flows in the combined sewer system. Additionally, combined sewer overflow events and wastewater treatment plant bypass events are monitored in many locations so the reduction in wastewater overflow and bypasses due to the success of the program can be quantified.

Part Two – Regulator Renewal Program

Implementation of the Regulator Renewal Program will help to ensure that preventable dry weather combined sewer overflows (spills) do not occur. Regulators control the amount of flow to a downstream sewer pipe or outfall, and protect infrastructure and properties from flooding (roadways and basements) by providing an outlet for flows in excess of the sewer capacity. Adjustment of regulator settings, proper regulator maintenance and timely renewal are control measures that can ensure optimal system performance. The Regulator Renewal Program will further support the objective of optimal wastewater/stormwater management in the combined sewer network by renewing these aged assets and making improvements where possible.

Expenses

Eligible Expense	Description	Amount
Part 1 - Consultant Expenses	Consultant to develop and execute the Targeted Private Disconnection Program	\$ 250,000
Part 1 - Capital Expenses	Labour and equipment to disconnect downspouts and other private connections	\$ 250,000
Part 2 - Consultant Expenses	Consultant to assess each combined sewer overflow regulator location and design the regulator upgrade for each location (5% - 12%)	\$ 22,500 – \$54,000
Part 2 - Capital Expenses	Labour and equipment to upgrade combined sewer overflow regulators	\$ 450,000
Total:		\$ 972,500 - \$1,004,000

Reimbursements

Funding allocation:	\$933,678.00
Reimbursements requested to date:	0
Reimbursement requested for this report:	0
Remaining funding:	\$933,678.00

Eligible Expense: The eligible expense as set out in the funding agreement and on page one of this report. Provide additional detail if needed.

Description: A short sentence or paragraph that provides some details of the expense.

Funding allocation: Amount of funding that has been allocated to your municipality by the program.

Reimbursements requested to date: The total amount of reimbursements that have been requested prior to this quarterly report.

Reimbursements requested for this report: The amount of reimbursement requested for this report

Remaining funding: The amount of the funding allocation remaining after reimbursement of all requested reimbursements.