




CITY OF HAMILTON
OFFICE OF THE AUDITOR GENERAL

TO:	Chair and Members Audit, Finance and Administration Committee
COMMITTEE DATE:	November 16, 2023
SUBJECT/REPORT NO:	Stormwater Asset Management – Investigation of Recent Sewage Leaks (AUD23010) (City Wide)
WARD(S) AFFECTED:	City Wide
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SUBMITTED BY:	Charles Brown, CPA, CA Auditor General Office of the Auditor General
SIGNATURE:	

RECOMMENDATION

- (a) That Report AUD23010, respecting Stormwater Asset Management – Investigation of Recent Sewage Leaks be received;
- (b) That the Management Response, as detailed in Appendix “B” to Report AUD23010 be approved; and
- (c) That the General Manager of Public Works be directed to implement the Management Responses (attached as Appendix “B” to Report AUD23010) and report back to the Audit, Finance and Administration Committee by May 2024 on the nature and status of actions taken in response to the audit report.

EXECUTIVE SUMMARY

Between November 2022 and February 2023 three wastewater spills were reported to the City of Hamilton’s Public Works Committee. An order by the Ministry of Environment, Conservation and Parks (MECP) was issued. The OAG retained forensic

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engineering experts, 30 Forensic Engineering to conduct an origin and cause risk assessment investigation of the incident sewage spills and to undertake a peer review of the Hamilton Water Investigation that responded to the MECP order. The Investigation Report is Appendix “A” to Report AUD23010.

Overall, the Office of the Auditor General (OAG) has made five recommendations to further improve the operations of Hamilton Water to manage relevant risks, Hamilton Water management has agreed with all of the OAG’s recommendations.

Alternatives for Consideration – Not Applicable

FINANCIAL – STAFFING – LEGAL IMPLICATIONS

Financial: None

Staffing: None

Legal: None

HISTORICAL BACKGROUND

A total of three spills of wastewater were reported to the City of Hamilton’s Public Works Committee, one on November 28, 2022 and two on February 12, 2023. The three spill events were at three different locations (Wentworth & Burlington, Rutherford & Myrtle, and Kinrade Avenue).

All three spills were reported to the Ministry of Environment, Conservation and Parks (MECP) via their spill reporting processes and were investigated by Hamilton Water. MECP then undertook inspections and investigations into the City’s operations. Following the second spill, an order was issued by the MECP on January 18, 2023. The order prescribed several activities to be executed with report-back to the MECP by specific deadlines. Hamilton Water engaged Stantec Consulting to assist with responding to the MECP order.

The OAG had a Stormwater Management Audit on the 2019-2022 Term of Council Work Plan (AUD19007). This situation of wastewater spilling into the stormwater system was therefore a relevant topic of interest to the OAG. The OAG retained forensic engineering experts, 30 Forensic Engineering to conduct an origin and cause risk assessment investigation of the incident sewage spills and to undertake a peer review of the Hamilton Water Investigation and the report by Stantec consulting that responded to components of the MECP order.

This report summarizes the findings of 30 Forensic Engineering’s work conducted on behalf of the Office of the Auditor General.

POLICY IMPLICATIONS AND LEGISLATED REQUIREMENTS

Provincial Environmental Protection Act, R.S.O. 1990, c. E.19, Part X. (relevant for spills reporting)

Ontario Water Resources Act, R.S.O. 1990, c. O.40. (relevant for discharges from sewer systems)

Ontario Procedure F-5-5 (a supporting document for Guideline F-5 "Levels of Treatment for Municipal and Private Sewage Treatment Works Discharging to Surface Waters", combined Sewer Systems must be operated in accordance with this Procedures).

RELEVANT CONSULTATION

Appendix “B” to Report AUD23010 includes responses from management responsible in Hamilton Water.

ANALYSIS AND RATIONALE FOR RECOMMENDATION

30 Forensic Engineering (30FE) conducted this investigation on behalf of the OAG. The OAG maintained oversight of 30FE to ensure the deliverables matched the project scope and objectives, and were of sufficient quality.

The Investigation Report of 30FE’s findings can be found at Appendix “A” to Report AUD23010. The OAG highlights some items of note from the report.

- The legacy approach to water quality from the earlier part of the 20th century resulted in a mixed sewer system that incorporated combined sewers and interconnections, increasing the risk of sewage spills.
- The City’s large and complex system of sanitary storm- and combined-sewer lines made the potential for accidental cross-connections and mislabelled lines more likely.
- The legacy pre-digital drawings remain in service and may provide misleading information. The drawings that were used may have been of relatively poor quality due to age, had multiple naming conventions, and used inconsistent standards.

- The availability and application of expert staff – both for construction project oversight and CCTV inspection review – is limited. There remains a relative shortage of personnel with optimal and timely expertise involved in higher-risk projects.
- Asset and data management systems are currently spread across three platforms at the City of Hamilton, which are integrated in a limited fashion, meaning that certain parties may have limited or no access to information that may help reduce risk.
- In general, asset management is a risk and source of complexity for owners and operators of linear infrastructure, insofar as the management of data related to design, construction, and operation and maintenance of water, wastewater, and stormwater systems.
- Canada’s relative abundance of fresh water has historically reduced the value placed on risks related to contamination of discharge water bodies such as Lake Ontario, especially related to stormwater systems, though this has been steadily changing over the past 30 to 50 years
- Cities and regions are facing multiple pressures related to stormwater management where trade-offs must often be made regarding protection of upstream property (e.g., basement flood protection) against protection of the natural environment during storm events, in the context of climate change, and increased insurance and municipal operation costs.

Additional Analysis

- The City of Hamilton was amalgamated in 2001, merging its six constituent municipalities into a single-tier city of Hamilton. The amalgamation resulted in the combination of the wastewater and stormwater infrastructure which had prior to that point been the responsibility of the respective former municipalities. There may be residual risks related to the integration of these systems as a result of amalgamation.
- Legacy drawings and maps require manual access and are difficult to read.
- Climate change is increasing the frequency and severity of storms. This may impact the risk of continued reliance on combined systems. There are “natural, environmental” options, which would be a significant infrastructure investment. However, it does align with Council Priorities.

Sustainable Economic and Ecological Development

- Reduce the burden on residential taxpayers

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- Facilitate the growth of key sectors
- Accelerate our response to climate change
- Protect green space and waterways

The report prepared by 30FE (Appendix “A” to Report AUD23010) contains the findings and recommendations relating to the investigation’s objectives. Five recommendations were made. Management responses were received for all recommendations. Overall management agrees with the five recommendations. We are requesting that Council direct staff to report back on their progress on management response implementation to the Audit, Finance and Administration Committee.

The Recommendations and Management Response can be found in Appendix “B” to Report AUD23010.

ALTERNATIVES FOR CONSIDERATION – Not Applicable

ALIGNMENT TO THE 2016 – 2025 STRATEGIC PLAN

Clean and Green

Hamilton is environmentally sustainable with a healthy balance of natural and urban spaces.

Built Environment and Infrastructure

Hamilton is supported by state-of-the-art infrastructure, transportation options, buildings and public spaces that create a dynamic City.

Our People and Performance

Hamiltonians have a high level of trust and confidence in their City government.

APPENDICES AND SCHEDULES ATTACHED

Appendix “A” to Report AUD23010 – Investigation Into the Origin and Cause of Sewage Spills – Hamilton Harbour (30 Forensic Engineering Report)

Appendix “B” to Report AUD23010 – Recommendations and Management Response