Stormwater Asset Management – Investigation of Recent Sewage Leaks

Audit Recommendations

Update November 2024

Recommendation 1

The approach prescribed in the Stantec report – which was in many respects already underway within Hamilton Water – be continued, namely:

- *The Existing Sewer Lateral Cross-Connection Program.*
- *Existing passive monitoring and complaints-driven processes to identify and investigate suspected cross-connections and spills;*
- *Continue and expand the Risk-Based Proactive Pilot Program in the high-risk central Hamilton combined sewer system and use this as a launching pad for a permanent System-wide Unauthorized Discharges Removal and Inspection Program (SUDRIP); and*
- *Review and revise these programs over time to ensure they remain a good value from a risk-reward program as infrastructure is renewed, cross-connections are repaired, and high-risk areas are cleared.*

Management Response

Agree - Hamilton Water will continue to action the programs highlighted in recommendation one. Hamilton Water took a recommendation report to Public Works Committee on September 8, 2023, recommending the implementation of the System-wide Unauthorized Discharges Removal and Inspection Program (SUDRIP). The recommendations were approved by Council on September 13, 2023 (PW22088(b)).

Status: Complete

The Enhanced Sewer Inspection Program, formerly referred to as the System-wide Unauthorized Discharges Removal and Inspection Program, builds upon the successful Proactive Sewer Inspection Pilot program initiated in January 2023. The revised inspection methodology, endorsed by the City's Office of the Auditor General and the Ministry of Environment, Conservation and Parks, employs historical drawings and background information review to accurately verify existing field conditions within the City's sewer maintenance chambers where potential cross-connections may occur. The program includes physically inspecting approximately 3,000 maintenance chambers within the combined sewer network.

The cyber security incident that the City experienced in February of this year has affected Hamilton Water's ability to access to digital records, limiting inspections under this program to physical inspections in 2024, with an accompanying review of data within the City's Geographical Information System.

To support the Enhanced Sewer Inspection Program, Hamilton Water has hired two Wastewater Collection Operators and one Operations Technologist. Hamilton Water is working to hire a Superintendent to support this program as well.

As of September 1, 2024, 90 modified inspections have been completed under this program, with no cross-connected sewers identified.

Hamilton Water has also introduced the In-Pipe Dry Weather Sampling Program. This program is designed to survey, sample, and trace storm sewer outfalls within the City's

combined sewer system area, primarily identifying unauthorized in-pipe discharges and improving stormwater quality. The survey includes identifying the location and characteristics of all outfalls, sampling those with dry weather flow, and determining if there is any evidence of contamination. If contamination is detected, investigations are initiated with the goal of identifying and eliminating the source. A preliminary approach for identifying unmapped city-owned outfalls and updating maps has also been created.

To support the In-Pipe Dry Weather Sampling Program, Hamilton Water has hired one Supervisor, two Field Technologists, one Environmental Quality and Compliance Technologist, and one Laboratory Technician.

As of September 1, 2024, 102 outfalls have been identified. Initial chemical constituents to be analyzed under the program and their limits have been selected. Sampling and/or inspections commenced in June 2024. Of the 102 Identified outfalls 60 have been sampled and/or inspected, with 42 remaining.

Recommendation 2

Use and refine Hamilton Water's risk-scaled communication and response (for as-yet-undiscovered leaks/cross-connections). As it is likely that residual risk exists that new leaks/spills may be uncovered; therefore, transparency and response planning remain important.

Management Response

Agree - Council approved the Hamilton Water Sewage Spills Communications Guideline on February 22, 2023 (PW22088(a)). As a result, Hamilton Water created the procedure "PW-WW-P-012-018 - Sewage Spills Communication Plan" under Hamilton Water's wastewater quality management system. Procedures are reviewed at a minimum every 3 years. Since this is a new procedure that is critical to ensuring effective and transparent communication with Council, the community, and the City's partners this procedure is scheduled for a review in Q1 2024.

Status – Complete

The Council-approved procedure "PW-WW-P-012-018 - Sewage Spills Communication Plan" is currently being reviewed, with recommended changes scheduled to go to council on November 4, 2024

Recommendation 3

Continue with protocols for the validation and integration of asset management information across the IPS, WIMS, and SPIDER systems during design, construction, and maintenance activities. Long-term establishment of a unified asset management database should remain a priority to facilitate inter-divisional collaboration and communication which were a hallmark of the excellent response to the three identified spills.

Management Response

Agree - The existing protocols that have been refined over time will continue to be followed for the verification and integration into the different systems noted in recommendation three. Currently there is a Public Works project to implement an Enterprise Asset Management (EAM) system that will consolidate the various asset management systems used across

Public Works. This system is expected to be operational for Hamilton Water by quarter one 2026.

Status – Ongoing – Estimated Completion Q2 2025

The cyberattack on the City has significantly impacted several software programs, including SPIDER and IPS, which were identified in the audit findings and have yet to be reinstated. Initially, the Enterprise Asset Management (EAM) system was slated for phased implementation across various divisions of Public Works, with full operational capability for Hamilton Water targeted for Q1 2026. As a result of the cyberattack, however, this timeline has been accelerated. A minimum viable product of the EAM system is now expected to be available to Hamilton Water staff by Q1 2025. This expedited rollout aims to consolidate multiple asset management systems and enhance the integration and validation of asset management information across divisions.

Recommendation 4

Consider the incorporation of risk-based inclusion of Hamilton Water and Hamilton ES expertise across divisions on design and construction projects at key milestones (e.g., pre-tender design reviews, pre-construction field surveys, CCTV inspections) to increase the frequency of personnel with optimal and timely expertise being part of projects, particularly those wastewater projects with higher risks of cross-connections, spills, or other community impacts.

Management Response

Agree - The current Engineering Services Division capital delivery process incorporates cross divisional scope collection and design reviews at key milestones. These activities will continue to evolve as part of an overall effort and commitment to continuous improvement and quality management.

Action Items:

Develop and establish a process for Infor Public Sector (IPS) data collection standard so that all stakeholders undertaking CCTV sewer inspection capture and record the data in IPS.

1. *Establish and formalize a process for data collection for CCTV sewer inspection and escalation.*
2. *Training – Ensure staff are being trained and updated on sewer inspection standards and methodologies.*

Status – Ongoing – Estimated Completion Q4 2025

As a result of the cyberattack, City staff no longer have access to the Infor Public Sector (IPS) system. The City has decided not to restore IPS but rather expedite the implementation of the Enterprise Asset Management (EAM) software across Public Works. The initial version of EAM is expected to be available to Hamilton Water staff in Q1 2025

Data Integration: All CCTV sewer inspections will follow Pipeline Assessment Certification Program (PACP) standards to ensure consistent and reliable data collection. Once EAM is fully operational, CCTV inspection data may be uploaded, allowing automated triggers for

further actions based on system information.

Training: Staff responsible for sewer inspections and data entry will be trained on inspection methods and uploading data to EAM. This will ensure that staff are skilled in conducting inspections to standard and using EAM for better data management, analysis, and continuous improvement

Recommendation 5

Continue to evaluate opportunities for improvement on a cost-benefit basis including costs to the natural environment and community, for policies associated with infrastructure investment and operation as they relate to stormwater management.

Management Response

Agree - The City will continue to look for and evaluate opportunities for improvement in the areas noted in recommendation five as they relate to stormwater management. This will be done in accordance with Hamilton Water's Wastewater Quality Management System, the City's Water, Wastewater and Stormwater Master Plan and industry best practices.

Status – Complete

The City is committed to implementing the audit recommendation to evaluate and act on opportunities for improvement in stormwater management, including assessing cost-benefit impacts on the natural environment and community. Improvements will be implemented wherever possible and will continue. Implementation of any improvements will align with Hamilton Water's Wastewater Quality Management System, the City's Water, Wastewater and Stormwater Master Plan, and industry best practices.