REPORT TO:	**Halton-Hamilton Source Protection Committee**
REPORT NO.:	**SPC-21-12-03**
FROM:	Chitra Gowda, Senior Manager, Watershed Planning and Source Protection **cgowda@hrca.on.ca**
DATE:	December 14, 2021
SUBJECT:	Potential IPZ-3 for Aged and Defective Stormwater and Wastewater Infrastructure

Recommendation

THAT the Halton-Hamilton Source Protection Committee **endorses the Staff report Potential IPZ-3 for Aged and Defective Stormwater and Wastewater Infrastructure.**

Report

Background

The Clean Water Act, 2006 technical framework allows for the development of intake-protection zone – three (IPZ-3) based on scientific information, such as modelling studies that can demonstrate that a municipal source of drinking water can be adversely affected by a spill during a weather event.

In the first round of source protection planning, the Halton-Hamilton Source Protection Committee (SPC) led the development of IPZ-3s for three types of activities: failure of a sewage treatment plant, bulk fuel storage failure in Oakville, Ontario, and liquid hydrocarbon pipeline rupture resulting in spills. These activities and their applicable policies to protect Lake Ontario drinking water sources are included in the Source Protection Plan.

One of the SPC general public/environmental sector representatives, Carla Coveart of GM BluePlan Engineering, presented to the SPC in the past about the issues of contamination leaked from aged and/or defective wastewater and stormwater infrastructure, and also innovative methods to identify and manage the issue. Discussions were had about the municipal input and effort required, and it was determined to be a low to moderate level of effort.

The steps involved are summarized below:

- Flow monitoring and water sampling and analysis
- Field investigation of storm water and wastewater infrastructure assets
- Maps of asset management and water quality
- Feedback on Storm Sewer Management Practices.

Below is a table showing the map types and detailed information used in the analysis, and the benefits of the maps.

Table 1: Storm and Wastewater Infrastructure Asset Maps and Benefits

Map Type	Benefit
Pipe Vintage	Understand high risk areas for potential structural/operational defects.
Material map	
GISLocation Reference Maps: • Combine Sewer Overflows • Sanitary connections to the Storm system – known overflow locations • Storm Outlets to watercourses • Sanitary sewers which cross watercourses	Understand location on natural watercourses.
Closed-Circuit Television (CCTV) Data Gaps	Understand areas with and without condition assessment data for future planning.
Defect Analysis	Condition assessment data analyze to understand defects & severity for future planning of rehabilitation efforts.
Cross-Connection Analysis	High risk defects for natural watercourse water quality degradation. Comparing sanitary defects and storm defects to understand high risk areas for cross-connection flow between systems (based on defect and severity of defect on both systems).

Source of table: Carla Coveart, GM BluePlan Engineering

In summary, GIS data map visuals that will be generated (with results also shown in tabular format) include:

- Locations with CCTV condition inspection data vs. none
- Year CCTV data taken
- Vintage analysis (installation age) map for storm/sanitary wastewater/combined mainline
- Storm outlets & Combined Sewer Overflow outlet locations
- Storm/sanitary wastewater/combined pipes crossing watercourse locations
- Material map
- How many breaks and large fractures exist for each system (defects which would allow exfiltration).

While the issue of aged and defective infrastructure is not a new matter, it has become an emerging concern especially given climate change trends and impacts including increased precipitation and flooding, warmer weather promoting higher bacterial and algae growth, etc.

For the IPZ-3 delineation under the Clean Water Act technical framework, modelling would be involved to utilise the results of the mapping and other analyses described above with a climate change lens applied. This approach would result in IPZ-3s to protect the Lake Ontario drinking water sources from the combined impacts of aged and defective storm and water infrastructure and climate change.

Halton-Hamilton Source Protection Region (HHSPR) staff are preparing a workplan for provincial funding for 2022-24. The workplan will include request to fund the development of IPZ-3s for the Lake Ontario drinking water sources in HHSPR as described above.

Signed & respectfully submitted:

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