

MEMORANDUM

TO: Keith Nastasia, PE, Water and Sewer Superintendent, Town of Stoughton

FROM: Patrick Cotton, Senior Associate, Weston & Sampson

DATE: December 23, 2024

SUBJECT: Annual Town-Wide Sewer Investigation & Rehabilitation Program Summary

The Town of Stoughton, Massachusetts is a residential community located approximately 19 miles southwest of Boston. Apart from the population with on-site disposal systems, wastewater drains northwest to the Stoughton/Canton town line where it enters the Massachusetts Water Resource Authority (MWRA) Stoughton Extension Sewer. The town's wastewater collection system consists of approximately 472,000 linear feet (LF) of gravity sewer and 2,700 manholes. Figure 1, attached, shows each sewer subarea and the limits of the wastewater collection system.

In order to protect their substantial investment in sewer infrastructure, the Town of Stoughton is taking a proactive approach towards operating and maintaining the sewer system and is conducting a comprehensive annual Town-Wide Sewer Investigation & Rehabilitation Program (Annual I/I Program). The Annual I/I Program is intended to provide a phased approach for identifying deficiencies in the sewer system. The phases include identifying inflow and infiltration (I/I) sources and structural defects, evaluating rehabilitation options, design, and construction on a continuous set schedule.

In May 2005, Weston & Sampson developed a Priority Evaluation Report which outlined a ten-year plan for investigating and rehabilitating the sanitary sewer system. Data from previous I/I studies and rehabilitation projects was compiled and included in the Priority Evaluation Report. Using this data, sewer subareas were ranked according to the need for rehabilitation, which was primarily based on the infiltration rates estimated through a 2001 flow monitoring effort. Further adjustments were made to these rankings using an analysis of flow data obtained during the 2018 hydraulic model update. Sewers with recurring operational problems identified by the Public Works Department were also considered when developing the priority evaluation.

The 15 sewer subareas were ranked according to the above-mentioned criteria in the Priority Evaluation Report, which served as the road map for the Annual I/I Program and was reprioritized in 2009 based on the flow metering results from the 2008 Sewer System Evaluation project. The Annual I/I Program was again reprioritized in 2016 to focus the proceeding investigations on sewers radiating outwards from the FEMA 100-year flood zone. Following the completion of the second round of investigations, the investigation strategy for the Annual I/I Program was modified to investigate the town's larger diameter interceptor pipelines, with the proceeding investigations radiating out. Streets scheduled to be paved throughout Stoughton were also included if not investigated or repaired within the last five years. This approach was chosen to maximize I/I identification/removal during the next construction phases and address any potential open cut repairs prior to paving.

The Annual I/I Program aims at inspecting every manhole and every sewer segment in each selected area to obtain a complete record of the condition of the sewer system. The investigation and rehabilitation program also meets MassDEP I/I control plan requirements outlined in 314 CMR 12.04(2). The Annual I/I Program also

defines the town's ongoing effort to identify and eliminate sources of I/I. Identifying and correcting problems reduces I/I, and subsequently, aims at reducing flows to the MWRA. It is critical that the town continues to keep up with the other MWRA communities reducing flows in an attempt to lower the town's overall flow share to the MWRA. Since a significant portion of the annual fee is flow based, reductions in the town's overall flow share may help minimize cost increases. The goal is to initiate the following steps in selected areas of the sewer system each year:

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|--|-------------------------|
| • Manhole & Television Inspections | Spring |
| • Engineering Review/Reporting/Update Database | Summer/Fall |
| • Design | Fall/Winter |
| • Bid & Award | Winter/Spring |
| • Construction | Following Spring/Summer |

The first round of the ten-year plan concluded with the Years Eight, Nine & Ten Construction project in summer 2015. The second round began in spring 2015 and the inspection phase has now been completed through Year Ten. Construction of rehabilitations for Round Two, Years Eight, Nine, and Ten is currently in the construction phase and work is scheduled to be complete in Summer 2025. With the conclusion of the second round of the program, inspection or rehabilitation will have been attempted for the majority of previously uninspected gravity sewer pipelines and manholes. The third round of inspections began in 2023 and is currently in Year Two, which began in 2024. Approximately 25 percent of the Town's manholes and pipelines have been lined to date. See attached Figure 1 for rehabilitations performed to date. An additional 5 percent of the Town's manholes and pipelines will be rehabilitated upon completion of the Years 8, 9, & 10 Construction project.

Weston & Sampson recommends that the town continue with its proactive approach towards inspection and rehabilitation of its sewer system by continuing the Annual I/I Program in Spring 2025 with the Year Three investigations. The results of the November 2018 Hydraulic Model Update indicate a significant level of infiltration remains to be located and removed. It is also recommended that a town-wide flow metering program and hydraulic model update be completed in order to obtain up to date flows and I/I estimates. The results of this effort will be used to reprioritize the ten-year plan for investigating and rehabilitating the sanitary sewer system, if needed. The program is designed to protect the Town of Stoughton's substantial investment in sewer infrastructure by operating in a proactive rather than reactive manner. In addition, Weston & Sampson recommends the town continue its current, reprioritized approach for infiltration and inflow investigations rather than the designated subarea inspection approach from round one of the program. The current approach for inspection is based on the following key factors:

- Period of time since last inspection/rehabilitation
- Street paving schedule
- Adjacency to flood zones and large diameter interceptor sewers
- Known problem areas

Due to the desire to avoid disrupting newly paved streets, Weston & Sampson suggests a review of the town's upcoming paving projects with the intent to inspect and rehabilitate sewers prior to paving. Any sewers or manholes on the 2025-2026 paving list streets that have not been investigated/rehabilitated within the last five years are recommended for the Year Three investigations as part of the Annual I/I Program so that any open cut repairs can be addressed. Weston & Sampson also recommend that the investigation expand into other low-lying areas of town to include any sewerage between 0 and 400 feet of the town's large diameter interceptor sewers not inspected or rehabilitated in the past five years, and areas with any known problems.

Weston & Sampson recommends that Year Three of the Annual I/I Program be scheduled for investigation in Spring 2025, during periods of high groundwater. Selected areas are typically comprised of approximately 50,000 LF of sewers and approximately 300 manholes. Following the reporting phase for Year Three, it is

recommended that the cost-effective repairs identified in Years One, Two and Three be combined into a comprehensive rehabilitation project.

On average, the town spends approximately \$1,017,000 per year on I/I investigation, design, construction, and construction services related projects.

The town is in an excellent position to continually investigate the sewer system on an annual basis because of the television inspection capabilities of town forces. This has saved significant costs over the course of the Annual I/I Program along with the use of MWRA's I/I Local Financial Assistance Community Support Program (75% grant and 25% interest-free loan).

Please let me know if you have any questions or need any additional information.

