NEW YORK STATE | Environmental Facilities Corporation

Preliminary Inflow and Infiltration Study Outline for New York State Wastewater Infrastructure Projects

March 11, 2026

For Preliminary Studies to be Accepted by the NYS Environmental Facilities Corporation (EFC)

I. Statement of Purpose

This document outlines the elements of preliminary engineering evaluations that can be used to make informed decisions about prioritizing and implementing sanitary sewer evaluation surveys (SSES) to locate and eliminate sources of inflow and infiltration throughout an existing sanitary sewer system.

A Preliminary Inflow and Infiltration (PII) Study (Study) is a high-level evaluation of a municipality's entire sewer collection system that estimates inflow and infiltration (I/I). The Study compiles and analyzes system data to identify relationships between rainfall, I/I flows, and sanitary sewer overflow (SSO) or combined sewer overflow (CSO) events in the collection system or at the wastewater treatment plant. Based on these findings, the Study recommends a approach for future SSES(s), either by evaluating the entire system at once or by presenting a prioritized sewer system sub-areas for phased investigation.

The scope of the work performed to develop the Study must include surveys of physical damage to the sewer system infrastructure, capacity limitations, effects of corrosion and sewer system deterioration, and identification of excessive I/I within the system, and accurate mapping of the sewer system. The study must evaluate the entire sewershed[1] owned by the municipality. If the sewershed is owned by more than one municipality, the study should start with the endpoint municipality and include applicable monitoring data for contributing users.

SSES are expected to be eligible to compete for Wastewater Infrastructure Engineering Planning Grants. SSES findings and proposed capital improvements and are expected to follow the NYS Department of Environmental Conservation (DEC) and NYS Environmental Facilities Corporation (EFC) Engineering Report Outline for New York State Wastewater Infrastructure Projects.

II. PII Study Preparation Standards

A report shall be prepared, stamped, and signed by a qualified professional licensed to practice in New York State and developed in accordance with the latest editions of the following standards whenever practicable and as appropriate:

1. Water Environment Federation Manual of Practice FD-6 "Existing Sewer Evaluation and Rehabilitation", 4th Edition.
2. EPA Handbook 625/6-91-030 "Sewer System Infrastructure Analysis and Rehabilitation" dated October 1991
3. EPA Guide for Estimating Infiltration and Inflow dated June 2014 https://19january2017snapshot.epa.gov/www3/region1/sso/pdfs/Guide4EstimatingInfiltrationInflow.pdf

[1] A sewershed is defined as a geographic area from which all the sewers flow to a single endpoint wastewater treatment facility.

III. Table of Contents

Each report should contain a Table of Contents, including page numbers. The Table of Contents below sets forth the basic outline of information that should be included in the report. Please refer to the appropriate page number for details and guidance on each of the sections.

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1. Cover

The cover of the engineering report should contain:

a. A descriptive project title,
b. Name of the Owner/Municipality,
c. Applicable State Pollutant Discharge Elimination System (SPDES) permit number or Publicly Owned Sewer System (POSS) registration number,
d. Name of the engineering firm preparing the report,
e. Date of the report, including any revision dates,
f. Professional Engineer stamp and signature from a qualified P.E. licensed to practice in New York State, and
g. The EFC grant ID.

2. Executive Summary

Provide a brief description of the purpose of the Study, need for the project, evaluations conducted, recommended sub-areas (if applicable), schedule, cost, and next steps.

3. Definition of the Problem

Succinctly define the water quality issue(s) to be addressed by the Study.

4. Project Background and History

4.1 Sewershed

Describe the entire sewershed and identify ownership of all sewers in the sewershed including outside users. Define the extent of sewers owned by the municipality and any other municipalities or outside users that are part of the sewershed.

4.2 Condition of Existing Sewer System

Document the existing records that were reviewed to develop the Study, including, but not limited to:

a. As-built sewer maps and municipal wastewater treatment plant and collection system records.

b. Existing geographical, geological, climatological, and topographical records.

c. Sewer system monitoring records such as treatment plant Discharge Monitoring Reports, lift station flow records, overflows, and bypasses.

d. Rainfall monitoring and depth to groundwater data.

e. Water use records, population, and user history.

f. Industrial user waste survey.

g. Input and observations from system operations staff.

4.3 Sewer System Evaluation

Provide a high-level evaluation of the entire sewershed owned by the municipality, dividing it into sub-areas when applicable.

a. Update sewer mapping including collection system inspections and preparation of GIS or CAD maps of the system. DEC's Asset Management Guide outlines how GIS data can be used with an asset management plan.

b. Include and evaluate flow measurement and sampling data collected or evaluated for collection system sub-areas.

    i. Include applicable monitoring data for the flow contributions of any upstream municipalities.

c. Include monitoring data for sulfide and corrosion measurement, if appropriate.

5. Summary and Next Steps

Summarize findings from the sewer system evaluation including:

a. Correlating rainfall intensity and duration, sewer flows and sanitary sewer overflow (SSO) or combined sewer overflow (CSO) events in the collection system or at the wastewater treatment plant.

b. Identifying locations and types of inflow or infiltration and the impact to the sewer system.

c. Estimating expected and actual baseline sanitary sewer flows based on population, water consumption, and/or wastewater flow records.

d. Analyzing estimated I/I rates on a peak and annual basis for each sub-area and the sewershed under both dry and wet weather conditions.

e. Comparing I/I rates for each sub-area and the entire system against standard metrics such as gallons wet weather flow per capita (gpd/capita) or gallons per day per inch of diameter per mile of pipe (gpd/idm).

f. Prioritizing the sub-areas based on excessive I/I flow rates and opportunity to reduce I/I.

g. Recommending subsequent SSES investigations and studies of priority areas or sub-areas that will result in proposed capital I/I correction projects.

h. Evaluating the need for additional PII Studies for upstream municipalities connected to the sewershed based on the upstream municipality's expected contribution to I/I.

i. Defining costs, objectives, and timeframes for implementing all investigations necessary for a complete sewershed analysis.