

PWEA Position Statement

Wet Weather Guidance Document for Separate Sanitary Sewer Collection and Conveyance Systems Evaluations

Adopted by PWEA on October 19, 2017

PWEA Mission Statement

The mission of the Pennsylvania Water Environment Association (PWEA) is to enhance the knowledge and abilities of Pennsylvania's water quality professionals, promote sound sustainable water policies, and promote public awareness of the need to protect water resources.

“Sewer discharges of raw or diluted sewage from separate sanitary sewers before treatment can cause significant public health and environmental problems.”⁽¹⁾ As collection systems age, inflow and infiltration (I/I) rates increase, resulting in high wet weather flows, solids wash outs, and effluent violations at wastewater treatment plants. Additional impacts from I/I are Sanitary Sewer Overflows (SSOs) in the collection and conveyance system and basement back-ups. Strategies that should be considered when evaluating systems are discussed herein.

Key Elements of Wet Weather Evaluation Plan

Each wastewater collection, conveyance and treatment system is unique and, therefore, each wet weather evaluation plan will be system specific. All plans, however, should have the following elements:

1. **Goals of the Plan:** Define the overall objectives of the wet weather evaluation plan with respect to protecting water quality and system performance.
2. **Critical Components:** Identify and characterize the critical components of the system that significantly impact wet weather performance. For each critical component, define specific objectives.
3. **Operating Guidelines:** Until excessive flows are removed or additional capacity constructed, for each critical component develop step-by-step guidance for operation, maintenance and management procedures to be followed before, during and after a wet weather event.
4. **List of Contacts:** The list should include supervisors and other involved public officials, equipment representatives, service organizations and the regulatory agencies. This list must be updated at least annually or as needed.

Characterize Wet Weather Flows

A thorough understanding of the collection system provides necessary information when identifying options for addressing wet weather issues. Before a wet weather evaluation is developed, the collection and conveyance system must first be characterized. Some items to consider include the following:

1. Age, material, and condition of the sewer system.
2. Capacity of each major interceptor and pumping station.
3. Sources of inflow, such as footing drains, roof leaders, sump pumps and manhole covers.
4. Sources of infiltration, such as leaking pipes, manholes, and laterals.
5. Operational strategies employed to deal with wet weather.

A suggested methodology to follow in understanding your system includes the following general principles:

1. Obtain or develop accurate collection and conveyance system mapping.
2. Identify major drainage basins and the major system components in those basins.
3. Divide the basins into sub-basins of the collection system determined by points of connection to major conveyance components i.e. interceptors or pumping stations.
4. Perform flow monitoring or visual studies on these basins to prioritize areas of excessive inflow and infiltration (I/I) by comparing wet and dry weather flows.
5. Monitor groundwater elevations and rain gauges
6. Isolate sub-basins in the same way as item 4 above and prioritize areas for follow-up investigation.
7. Employ hydraulic analyses, such as modeling.

The follow-up field investigations could include:

1. Internal inspection of sewers with Closed Circuit Televisual equipment (CCTV). (Infiltration source identification)
2. Air testing of joints. (Infiltration source identification)
3. Smoke testing of lines and laterals. (Infiltration source identification)
4. Acoustic, laser and electro-magnetic methodologies. (Inflow source identification)
5. Monitor key manholes during wet weather events to look for surcharge conditions. (Inflow source identification)

The information gathered by these investigations should then be used in developing follow-up plans for removing I/I or otherwise providing additional capacity. The cost of the different means and methods is a consideration for the system owner to factor into the approach. These costs should be weighed against the potential impacts on public health and the environment caused by taking no action. All Authorities/Owners should be cognizant however, the PADEP could impose bans on connections if SSOs or other capacity related issues occur. It is the goal of this Guidance Document to encourage and assist communities and system owners to take a proactive approach to wet weather issues

(1) EPA document “**THE ENFORCEMENT MANAGEMENT SYSTEM -NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (CLEAN WATER ACT) CHAPTER X: Setting Priorities for Addressing Discharges from Separate Sanitary Sewers**”