

ACTION ITEM 7.3 – SEWER SYSTEM INSPECTION PROGRAM

ACTION ITEM

Maintain a sanitary sewer system inspection program that determines the condition of the sanitary sewer system and identifies any needed maintenance and rehabilitation activities.

OBJECTIVE

Sanitary sewer inspections are critical in identifying existing problems as well as identifying future collection system operational challenges. Sanitary sewer system inspections can be used to:

- Evaluate the prevailing conditions of various sewer system components
- Identify the types and locations of sewer system defects that allow the entry of extraneous flow (I/I)
- Estimate the volume of I/I from various sewer system defects and the total I/I entering the system, to the extent possible, and document I/I estimation method
- Gather data needed to facilitate the correction of sewer system defects

Responsible Party

- Local Government
- Local Wastewater Provider
- Other: _____

In Coordination With

- Site Plan Review Staff
- Community Development/ Zoning
- Local Stormwater Program
- Local Water Provider
- County Board of Health
- Other: _____

DESCRIPTION OF MEASURE

The sewer system inspections program may be regularly scheduled inspections of the entire system or may follow a criticality-based asset management approach. Older areas of the wastewater system, areas with higher flow volumes, and certain pipe materials are more prone to failures, therefore local wastewater providers may choose to inspect these areas more regularly due to the greater risk of failure or sanitary sewer overflows in these areas.

There are a number of sewer system inspection methods, depending on the area of the system being investigated and the purpose of the investigation. Table 7-1 lists several example inspection techniques and their applicability. The wastewater system inspection program must identify the regularity and type of inspections that will occur depending on the type and/or criticality of the assets in the wastewater collection system. The wastewater system inspection program must identify who is responsible for documentation of the inspections, using either handheld devices connected to the inventory database or using paper records.

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TABLE 7-1
Example Sanitary Sewer System Inspection Methods

Inspection Method	Where it should be used	What it will find
Physical inspections of manholes and sewer pipes/lines	Manholes and above-ground sewer pipes	Manholes Frame & cover defects Structural defects Flow surcharging Root intrusion Sewer pipes Signs of leakage and blockages Exterior structural defects
Smoke testing	Manholes and sewer pipes	Sources of I/I Location of illegal connections Location of broken sewers Location of buried manholes
Dye-water testing	Sewer pipes	Sources of Exflow/Exfiltration Proof of building connection to sewer system Location of illegal connections Estimating flow velocity
Closed Circuit Television Inspection (CCTV) or other internal pipe evaluation	Sewer pipes	Structural defects Maintenance Needs Sources of I/I at joints, breaks, connections Cross connections or illegal connections
Right-of-way/easement inspection		Missing/unrecorded sewer pipes and manholes Flow surcharging Trees with potential for root intrusion

SPECIFIC SUB-TASKS

Sub-Task	Description
Establish inspections procedures	Develop an inspection schedule, inspection types to be performed, and necessary procedures for system inspections.
Execute inspection program	Perform inspections, tracking information using the CMMS or asset management program.

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IMPAIRED WATERS (OPTIONAL)

Local wastewater providers may choose to inspect portions of the collection system that are adjacent to impaired waterbodies more regularly than other areas of their system. Surface water data revealing high fecal coliform levels, for example, may indicate a sewer line failure. Therefore, increased inspections of these areas may be a priority, depending on local conditions.

STANDARDIZED CONDITION ASSESSMENT (OPTIONAL)

Predicting and monitoring the internal conditions of sanitary sewer gravity pipes is challenging. Many local wastewater providers in the Metro Water District have developed programs to assess the condition of their sanitary sewer collection system. The most common inspections are of gravity sewers and manholes. There are standards for the assessment of both gravity pipelines and manholes developed by the National Association of Sewer Service Companies (NASSCO). Local wastewater providers may elect to use NASSCO programs or any other method of assessing infrastructure condition. This standardized condition assessment is outlined as one option available to Metro Water District communities.

The NASSCO Pipeline Assessment and Certification Program (PACP) presents a standardized assessment methodology of manholes based on a visual assessment and of gravity sewer pipes based on internal inspections (such as CCTV). The PACP ranking system was developed to be direct and objective, allowing for the true prioritization of pipes within the system for maintenance or rehabilitation. The PACP assigns a condition grade on a scale of 1 through 5, where 5 indicates sewer system infrastructure requiring immediate attention. Grades are based on the potential for further pipe deterioration or failure. Grades are assigned for two categories, structural defects that would be handled through a pipe rehabilitation program (Action Item 7.5) or Operation and Maintenance (O&M) defects that would be handled through pipe maintenance (Action Item 7.4). Using the assessment of each segment of pipe and the overall pipe rating, there is a PACP procedure to calculate a pipe rating index, which is an indicator of the distribution of severe defects for that pipe. Priorities for maintenance and rehabilitation can then objectively be made based on the pipe rating index.

The NASSCO manhole condition assessment and certification program (MACP) was developed for the standardized grading of defects within manholes. It offers a reliable and consistent manhole evaluation system to the sanitary sewer industry. The MACP uses the defect coding system, form and style established in the PACP, and incorporates manhole standards developed by the American Society of Civil Engineers (ASCE).