Appendix D

ST. MARY'S COUNTY
METROPOLITAN COMMISSION

STANDARD PROCEDURES & POLICIES

SP Number:	Approval Date:04/01/2024 Revision Dates:	Effective Date: 04.01.2024
OPS-24-073	Approved by: E. Hogan	

SUBJECT: **POST SSO ANALYSIS/INVESTIGATIONS/TRACKING**

Purpose of Investigations and Tracking

The purpose of a post-response SSO investigation is to reduce the risk of another SSO happening in the future at the same location for the same or similar reason and to develop a plan for a proper corrective action if the root cause is determined to require a long-term solution such required to correct system-wide capacity issues.

Root cause resolution complexity and the corrective action period required vary. Investigations and corrective actions in this Chapter apply primarily those that are quickly resolved. Complex or unique SSOs require additional time to identify root cause (e.g., hydraulic modeling) and perform the corrective action (6 months or more).

Performing Post-Remediation Investigations

The investigation is performed by Operations after the SSO has been stopped and/or contained. In many cases, the initial documentation recorded by the Collections Superintendent, or designated staff (i.e., the initial 24-Hour Report) will properly describe the situation, root cause, and remedy. In other cases, there may be contributory factors or additional information disclosed

that was not initially available that needs to be considered. For example, addition investigation and enforcement action may be needed to support pursuing an
apparent illicit discharge or violation of the Sewer Use Regulation FOG regulations.

The post-remediation investigation may include activities such as:

- Reviewing the SSO 24-Hour Report
- Reviewing past maintenance records;
- Conducting a CCTV inspection within 10 days, if the SSO occurred within a gravity sewer line to determine the condition of the gravity line segment and;
- Interviewing staff who responded to the SSO.

Additional resources to consider using as part of the SSO Investigation:

- GIS – configuration of sewer system in vicinity of affected area.
- CITYWORKS historical maintenance and complaint records
- SSO Database – records of past SSOs in the affected area.
- Location and records for Food Service Establishments (FSE).
- Location, type and records for industries in vicinity of affected area.

In some cases, the investigation may include hydraulic modeling of the conveyance system to evaluate capacity or operational issues. For these more complex root cause investigations, the investigation team (which is likely to include both Operations and EFS staff) will issue a report for use in the 5 day SSO regulatory report, and also as supporting information for the semi annual report.

CCTV Inspection

A post-remediation CCTV inspection of the pipe as necessary should identify structural defects in the pipe, FOG or other blockage indictors that may have contributed to the overflow. CCTV inspections would aid in the identification of offset joints, protruding lateral connections, roots, collapsed pipes, or sags in pipes where debris or grease is likely to accumulate and in time cause additional overflows. If such is the case, appropriate data should be tracked in the CITYWORKS database and preventative maintenance of the pipe segment modified and/or pipe renewal planned as appropriate. The post-remediation CCTV inspection may extend to adjacent pipes and aid in further identification of upstream or downstream sources that are the cause of the SSO or function in a contributory role.

The post-remediation CCTV when combined with other inspection methodologies may also aid in the identification of I/I sources that contribute to the wet weather capacity related SSOs. In some cases other methods such as manhole inspections, building inspections, dye testing can be included in the investigation to find sources of I/I, if considered appropriate.

The CCTV could be forgone in those cases where it appears to already be sufficient information for determining the root cause of the SSO and the remedial action has been sufficient. Such may be the case related to a pump station or forcemain failure. Please refer to *OPS-11-06 Sanitary Sewer Televising Operating Guidelines*.

Hydraulic Modeling

A post-remediation T

Recurrent SSOs

Recurrent SSOs are those known to have occurred at the same general location more than once in two consecutive years. MetCom should keep track of these SSOs in the SSO by feature identification number, street address, or coordinates. Recurrent SSOs may be dry or wet weather events and a separate list of recurrent SSOs should be maintained for the two types of weather related SSOs.

Pipe segments where wet weather recurrent SSOs are located should be inspected after significant rain events. The significant rain event in this SSOERP is chosen by Metcom staff. The following guidelines are for conducting the post rainfall SSO inspections:

1. Perform baseline sewer system inspections to document each site in dry weather conditions.
2. Perform inspections during normal business hours following a rainfall equal to or exceeding the significant rain event.
3. Staff assigned to perform these inspections shall comply with the BWSC guidance for safety in assessing areas that could be affected by excessive rainfall (erosion and flooding that limit or prevent access).
4. If an SSO is observed, staff should follow the protocols described by the appropriate SOP and take appropriate actions. Staff should document the location, date, time, and rainfall amount in the preceding 24 hours along with an indication that an SSO was observed.

Preventive and Corrective Collection System Measures

Possible follow-up preventive Collection System measures include:

- Securing manhole lids.
- Targeted sewer rehabilitation or replacement.
- Modifications to scheduled sewers for high-frequency cleaning and maintenance.
- Accelerating planned or ongoing capital improvement projects.

Defect Causing SSO: Blockage or Restriction in Pipes

(a) Root cause: Roots

Develop a preventative management strategy to chemically treat roots or perform high frequency cleaning and CCTV inspections on this segment of pipe. Most root masses can be removed using high pressure hydraulically driven root cutting devices. Some root masses must be removed by performing a point repair to remove the section of pipe (joint or crack) through which the roots have entry to the pipe.

(b) Root cause: FOG

The FOG Program is under development and will include protocols to work with the local Food Service Facilities (FSF) to reduce the amount of FOG entering the sewer system. The FOG Program will include procedures for addressing problematic FSFs when they are identified as part of an SSO root cause investigation or from regularly scheduled FSF inspections. Regardless, FOG can be removed by jet washing or the combination of jet washing and hydraulically driven cutters.

(c) Root cause: Collapsed Pipe (includes sag and offset failures)

Perform pipe repairs or replace the pipe as part of the Preventive Maintenance or Capital Improvement Plan.

(d) Root cause: Private Lateral
Private property owner is responsible for repairs.

(e) Root cause: Debris/Sediment Introduced by External Source
If debris has been introduced by an external source which cannot be identified, it may be an act of vandalism. Consider system-wide or local outreach (depending on the magnitude of the debris and act of vandalism) in response to the act.
If it appears that illicit dumping of debris into the sewer system is ongoing, develop a strategy for additional investigation to identify the source and take appropriate enforcement action to prosecute vandals. Another option is to install locking manhole covers to deter unauthorized access to manholes in areas that are considered in a high risk of vandalism or illicit dumping.

Defect Causing SSO: Force Main Failure

(a) Root cause: Air Release Valve Failure
Air release valves should be regularly inspected. If the valve is identified as not functioning properly and/or appears significantly corroded, replace the valve or perform the appropriate preventative maintenance measures.

(b) Root cause: Break in Force Main
While the force main break is being repaired (open cut point repair), assess the condition of the pipe in the adjoining sections. Additional corrosion investigation may be performed using ultrasonic methods or by taking pipe samples to assess defects in wall thickness. If there appears to be evidence of corrosion in the pipe wall, perform additional investigation to determine the extent of corrosion and need for additional pipe replacement as a preventative measure.

Defect Causing SSO: Siphon Failure or Blockage

(a) Root cause: Debris
Consider measures to improve the operation of the siphon minimize accumulation of grit and debris due to lack of scour velocity in the line. Perform a sonar and/or CCTV inspection of the siphon pipes to determine if debris or sediment is restricting the flow.

(b) Root cause: Corrosion
Make appropriate repairs of pipe damaged by the corrosion. Consider the addition of appropriate chemicals that hinder the formation of hydrogen sulfide to minimize corrosion or other measures to improve the operation of the siphon.

Defect Causing SSO: Capacity Deficiency

(a) Root cause: Inflow/Infiltration (Capacity)
Make appropriate repairs to eliminate sources of I/I based on a structured I/I flow and rainfall monitoring plan and subsequent sewer system evaluation survey and analysis.

(b) Root cause: Excessive Baseflow

If hydraulic modeling determined that portions of the sewer system exceed the capacity of the collection and conveyance system plan upgrades as appropriate to be considered in CIP planning.

If the Director deems it necessary to enlist the assistance of an outside firm for various operational or other technical assistance, the Commission has also entered into a long-term Intergovernmental Agreement For Environmental and Technical Services that includes; planning, design, engineering, construction, operations, maintenance and technical services with the Maryland Environmental Service (MES), Contract No. 2-17-4-32.