

**HANOVER TOWNSHIP, LEHIGH COUNTY
2202 GROVE ROAD
ALLENTOWN, PA 18109**

**MANAGEMENT, OPERATIONS,
AND
MAINTENANCE PROGRAM (MOM)**

JUNE 2018

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HANOVER TOWNSHIP, LEHIGH COUNTY
SEWER SYSTEM MAINTENANCE PLAN
JUNE 2018

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SECTION 1

COLLECTION SYSTEM MANAGEMENT

1.1 MOM OBJECTIVES AND GOALS

Hanover Township, Lehigh County's Preventative Maintenance Plan (PMP) covers the assets they manage in their wastewater collection system and is one component of their overall MOM plan. The PMP combines preventative, predictions, and corrective maintenance strategies with best management practices. The MOM plan along with the PMP have been prepared to assist the Township effectively manage their wastewater collection system and achieve the following objectives.

1.1.1 OBJECTIVES

- Provide quick response to disruption of service that may occur
- Protect the Township's investment in the sanitary sewer collection system
- Reduce and/or prevent public health hazards and expenditures for emergency maintenance
- Provide a safe work environment for employees, employers, and Township residents
- Utilize evolving technology to increase their effectiveness and efficiency
- Provide reliable service now and into the future

Hanover Township, Lehigh County remains committed to reduce peak flows during heavy rainfall events and continue to implement source removal, flow monitoring, CCTV and manhole inspection of their sewer system on a regular basis and to repair all system defects as may be necessary.

The management plan describes the approach Hanover Township, Lehigh County will undertake to implement their overall MOM plan and to achieve the following goals:

1.1.2 GOALS

- a. Compliance with system permitted requirements.
- b. Prevent public health hazards, mitigate the impact of SSOs, basement backups and damage to property, unless under extreme conditions.
- c. Minimize disruption of service and complaints.
- d. Provide adequate capacity to convey peak flow and reduce or minimize infiltration/inflow into the system.
- e. Conduct maintenance and repairs to prevent problems, reduce emergency repairs and extend the life of the system and assets.
- f. Efficiently use Township funds to maintain infrastructure and operation of service.
- g. Perform all obligations in a safe manner to prevent personal injury.

1.2 **ORGANIZATION**

Hanover Township, Lehigh County, Department of Public Works oversees the sanitary sewers and is responsible for all aspects of the wastewater collection system. The Township's Public Works employs a staff of four full time employees.. The Township reviews staffing on a regular basis and also out-sources sewer repairs to private contractors for support and emergency repairs as needed.

1.2.1 **TOWNSHIP STRUCTURE**

Council	Five-member board of elected officials who serve in a policy making role for the Township.
Township Manager	Reports to Council and manages all aspects of the Township's overall operations.
Public Works/Maintenance Supervisor	Responsible for implementing and monitoring all field operations in the Township including the wastewater collection system. Leads staff, delegates responsibilities, and prepares sewer system budget.
Crew Chief	Supervises the sewer crew, manages field operations and maintenance activities related to collection system, Reports directly to Public Works Director.
Field Crew	Conducts daily staff operations, responds to complaint/emergencies, performs daily operation and maintenance activities, reports directly to the Crew Chief.
Administrative Assistance	Support staff operations, customer service issues, assist with data entry, quality control, and dispatch billing and customer issues.

1.3 **TRAINING AND SAFETY**

Hanover Township, Lehigh County's training program provides a mechanism for educating employees and establishing their technical competence as well as safety awareness through on-the-job training programs, seminars and conferences, vendor training programs, operator certification programs and skills training for all employees.

Technical training involves, but is not limited to:

- Routine sewer line/manhole operation, maintenance and safety programs
- Equipment operation/maintenance
- Meter station operations and maintenance
- Confined space entry procedures
- Emergency response procedures

- Public relations

Hanover Township, Lehigh County expects all employees to be knowledgeable and adhere to the written safety policies and procedures of the Township and the Department of Labor and Industry, Occupational Safety and Health Administration Act (OSHA) requirements and the following:

- Confined space entry procedures/hard hat policy and personal protection equipment (provided by the Township) policies
- Vehicle and equipment operation and safety policies
- Injury reporting policy, First Aid, CPR, AED
- Hazardous waste/Evacuation safety policy
- Maintenance and traffic control policies

Training, safety records and certifications are maintained by the Township for all employees.

1.4 **CUSTOMER SERVICE**

Customer issues such as complaints or requests are received and recorded by the administrative staff by various means (e.g. phone calls, e-mail and in person). All complaints and requests are transferred to the Public Works Director for investigation and/or action. Once the issue is addressed and/or completed, close-out information is reported back to the Township Manager.

1.4.1 **PUBLIC INFORMATION / EDUCATION POLICY**

The Township maintains and constantly updates their website which is used to inform utility customers of upcoming projects, provides access to sewer use ordinances, complaint procedures, newsletters and staff contact information.

1.5 **ASSET MANAGEMENT PLAN**

Hanover Township, Lehigh County uses both paper forms and an electronic GIS database system to record and track all sewer system activities and reviews and updates the forms, spreadsheets, and system maps on a regular basis.

1.5.1 **SANITARY SEWER SYSTEM MAPS AND INFORMATION TRACKING**

Hanover Township, Lehigh County maintains a complete set of sanitary sewer system maps. The sewer system base index is maintained and updated in a GIS format. Record drawings are in paper format and more recent drawings are on a DVD network. The Township is presently working towards adding the record drawings to the GIS system. The Township mapping system provides key asset information relative to the existing sanitary sewer system. In addition, the Township Engineer maintains and updates all system plans on the

Township Engineer's GIS system. All new development sewer extensions and capital improvements projects are incorporated into the GIS system.

The Township's collection system mapping information includes:

- Main Line Pipe Information – Location, size, slope, length of run, type of material and service wye locations.
- Manhole Data – Manhole ID numbers, locations, invert and top of rim elevations, and depth.
- Sewer meter station - Locations of structures, Size, depth, type of flume data, meter type and manufacturer.

In addition to the above information, the Township maintains the following information:

- Basement inspections
- Sump pump inspections and removals
- Smoke test locations
- Wet weather observations
- CCTV inspections
- Manhole inspections and rehabilitation/repair locations
- Sewer main replacement and rehabilitation locations
- Lateral inspections and rehabilitation locations
- Main line spot repairs
- Meter station data analysis

All data is entered into the GIS system by date, location, type of repair or rehabilitation, material type and contractor.

1.6 **LEGAL AUTHORITY AND CONTROL**

Hanover Township, Lehigh County has established and implemented regulations regarding the use of the wastewater collection system. The Township has a comprehensive sewer ordinance in place, and as regulations and requirements have changed, the Township has updated their ordinances to address those issues. Ordinances are kept up-to-date and are available by contacting the Township.

1.6.1 **SEWER AGREEMENTS**

Hanover Township, Lehigh County has in place an agreement with the City of Allentown through the Lehigh County Authority for the treatment of their wastewater flows at the City's wastewater treatment plant at Klines Island.

SECTION 2

GENERAL INFORMATION/SANITARY SEWER SYSTEM

2.1 BACKGROUND INFORMATION

Hanover Township, Lehigh County is a Home Rule Township located in North Eastern Lehigh County and is led by an elected five-member Board of Commissioners. Today the Township has a population of approximately 1,571 people and covers 4 square miles.

The Township owns, operates and maintains a sanitary sewer collection system under direct control of the Council. The Township's sanitary sewer system serves approximately 255 residential (240 apartments) and 22 commercial customers that connects to the City of Allentown, and is comprised of approximately 15,630 linear feet of 8", 10" and 12" gravity sewer main.

The Township's Maintenance/Public Works Staff maintains the mains, manholes, and that portion of the customer's service lateral from the main connection to the edge of the road right-of-way line or easement line. The remainder of the customer's service lateral from the right-of-way to the house or structure is privately owned.

The Township's Maintenance/Public Works Staff performs planned sewer system maintenance tasks at scheduled frequencies. Maintenance frequencies are established based on experience and collection system information to minimize the risk of blockages, or system failure that could lead to sewer system overflows.

2.2 COLLECTION SYSTEM DETAILS

Inventory of system tributary to Klines Island WWTP

- 1) Length of gravity sewer – 15,630 linear feet
 - a. 8" VCP – 3,680 ft
 - b. 8" PVC – 7,640 ft
 - c. 10" VCP – 750 ft
 - d. 10" PVC – 2,980 ft
 - e. 12" PVC – 580 ft
- 2) Number of manholes - 67
- 3) Flow metering stations - 1

Service connections

- 1) Residential - 255

2) Commercial - 22

2.3 **AGE DISTRIBUTION COLLECTION SYSTEM**

Hanover Township, Lehigh County conducts ongoing system inspections to assess the structural condition and maintenance needs of the collection system as part of their cleaning and CCTV inspection and assessment program described in Section 3 "Operation and Maintenance".

Age of Sanitary Sewer System Components

<u>Age (Years)</u>	<u>Gravity Sewers (LF)</u>
0-25	10,880
> 25	4,750

2.4 **SANITARY SEWER OVERFLOW HISTORY**

Hanover Township, Lehigh County has not experienced sanitary sewer overflows (SSOs) since 2011.

To assure sewer system capacity, the Township has developed programs to address capacity, infiltration/inflow, and condition of the collection system. These programs are described in Section 3 of this document.

2.5 **SEWER SYSTEM MAP**

An overall map of the Township's sanitary sewer system is shown in Appendix "A" of the document. The sewer system map is periodically updated by the Township Engineer to show the current sanitary sewer mains, manholes, and facilities. Appendix "B" depicts the system map in GIS.

SECTION 3

GENERAL INFORMATION/SANITARY SEWER SYSTEM

3.1 BACKGROUND INFORMATION

Hanover Township, Lehigh County, in 2012, began development of a preventative maintenance plan (PMP). This includes sewer main cleaning, Periodic CCTV inspection, infiltration/inflow prevention, manhole inspection and assessment program to evaluate the maintenance needs and structural condition of the entire collection system.

The PMP and assessment program, after 2012, focused primarily on the priority basins where infiltration/inflow was determined to be problematic as a result of the system wide metering program undertaken in response to the EPA Administrative Order.

3.2 SEWER CLEANING PROGRAM

The Township does have a scheduled cleaning program which coincides with the 10-year TV inspection program. All scheduled sanitary sewer mains are high pressure jet cleaned prior to TV inspection.

The Township has historically and routinely cleaned selected mains that have been identified as maintenance problems to insure uninterrupted operations and prevent main line backups. Typically, these mains tend to be in and low flow conditions or are in areas serving restaurants where grease build-up can result in a line blockage.

The Township has adopted a "Fats, Oils, Grease" (FOG) Ordinance to assist in the reduction of grease within the system. Currently it is proven that a reduction of grease has occurred and inspections are completed in each Food Service Establishment every 6 months. There are currently 42 establishments throughout the Township that are subject to the FOG Ordinance requirements.

3.3 SEWER MAIN INSPECTION

CCTV is completed on a "as needed" basis.

3.4 MANHOLE INSPECTION

The Township has also adopted an annual inspection program of the entire sewer system's manholes. All defect conditions are identified, recorded and reviewed for repairs. All repairs are prioritized and selected repairs or rehabilitation is budgeted and scheduled for repair typically by private contractors.

3.5 **LATERAL INSPECTION**

The Township does not currently have a plan in place to review service laterals on a regular basis. The Township staff along with the Township Engineer collectively reviews all CCTV tapes for lateral issues related to I/I problems and structural issues and if necessary, will develop a lateral rehabilitation project to address and/or repair laterals.

At this time the Township does not currently have a program in place to address and/or repair laterals. Typically, laterals are assessed from the main line CCTV inspection. Since 2011, the Township has inspected and repaired sanitary laterals within the Allendale Apartment complex, as well as laterals at Lloyd Street, Hoover Avenue and Airport Road.

The Township is committed to develop a program to investigate and rehabilitate laterals within the priority areas in order to reduce I/I problems associated with the EPA administrative order.

3.6 **INSPECTION OF EASEMENTS**

The Township routinely inspects and maintains all sanitary sewer easements in order to keep the area clear and accessible for maintenance vehicles and equipment generally used for sewer line cleaning, CCTV inspection and emergency repairs.

3.7 **ROOT CONTROL**

Annually the Township budgets and releases a chemical root treatment contract to private vendors. After the initial chemical treatment, all previously treated mains are re-TV inspected on a three to four-year cycle and retreated if necessary.

3.8 **CONDITION ASSESSMENT**

The data from the CCTV and manhole inspection program is logged into the GIS system data base and is used to prioritize areas needing repairs or rehabilitation. Data from the CCTV and manhole inspection reports is used to develop short and long-term maintenance and repair strategies. Based on the condition assessment review for recommendation for repairs, rehabilitation and/or replacement are established, budgeted and scheduled for repair.

3.9 **INSPECTION OF CRITICAL FACILITIES**

The Township owns, operates, and maintains one sewerage meter station within their system that flows to Klines Island. That station is inspected on a weekly basis for operation, maintenance and data retrieval by trained staff personnel. The meters are calibrated and certified for flow accuracy annually by an outside meter consultant. Calibration records and reports are kept on file with the Township. The metering station is connected with a remote monitoring system and information can be reviewed immediately if needed.

SECTION 4

EQUIPMENT AND TOOL INVENTORY

4.1 TOOLS

Hanover Township, Lehigh County maintains and provides field crews with all the necessary work-related tools and items they need on a daily basis. All tools or items needed or replaced will be acquired by a purchase order by the Public Works Director through the request from the Crew Chief.

4.2 EQUIPMENT

All heavy equipment owned by the Township is provided for sewer system maintenance from the Department of Public Works equipment pool.

Hanover Township, Lehigh County owns and maintains the following equipment:

<u>Description</u>	<u>Model/Year</u>	<u>Qty.</u>	<u>Capacity</u>
Sewer Jetter Truck	Mack Camel Jetter/Vac Truck	1	1000 Gal.
Root Cutters		1	
Confined Space Entry Equip. (Tripod Truck Mount/ Harness w/Retrieval Equipment	Miller Miller	1 1	
Air/Gas Monitors	Industrial Scientific MX4	1	
Ventilation Blowers			

4.3 SUPPLIES PROVIDED TO SEWER CREW

<u>Description</u>	<u>Use</u>
Hard Hat & Vest	Safety
Work Boots & Gloves	Safety
Disposable Gloves	Safety
Mobile/Cell Phones	Communication
Uniforms/Overalls	Personal

All above supplies are provided by the Township

4.4 TRAINING

Hanover Township, Lehigh County provides and periodically reviews all employee job safety training as well as equipment operation, confined space entry training, and use and

calibration of air and gas meters. The Township also provides employees the opportunity to attend various seminars for credit points and employee certifications as may be required or necessary for their job classification. Safety training is important to the Township and is mandatory for all field personnel.

SECTION 5

CAPACITY MANAGEMENT PLAN

5.1 BACKGROUND INFORMATION

Hanover Township, Lehigh County is committed to maintaining sufficient downstream capacity during dry weather and to manage peak wet weather flows in their system. This would include investigating areas of individual drainage basins where excess flow from I/I occurs during wet weather conditions.

5.2 CAPACITY

5.2.1 CAPACITY CERTIFICATION/CONNECTION POLICY

All new subdivision and land development projects are required to submit a sewage planning module to the Township which designates the average and peak daily sewer flow anticipated from the proposed development. The Township in turn will evaluate the current or existing flow data with the proposed development flow from their connection point and within the existing downstream system for available capacity.

5.2.2 DRY WEATHER CONDITIONS

The Township, has not to date, exceeded design capacity within their sanitary sewer system.

5.2.3 WET WEATHER CONDITIONS

The Township, has not to date, experienced any SSOs or basement backups as a result of wet weather events. The Township has completed a flow study during both wet and dry weather conditions and has identified priority I/I drainage basins. The priority areas are then evaluated for specific rehabilitation field tasks to identify I/I sources, and develop system repair or rehabilitation projects to reduce I/I.

The Township remains committed to continue to investigate, identify and reduce I/I within their sewer system.

5.3 FIELD INVESTIGATION

The Township Field Crew along with the Township Engineer regularly perform sewer system evaluation tasks and field investigations to identify I/I defects and other potential problems.

5.4 **FLOW MODELING/MONITORING**

5.4.1 **FLOW MODELING**

The Township does not currently use flow modeling to evaluate current and/or future flow trends and capacity constraints.

5.4.2. **FLOW MONITORING**

The Township owns and maintains a permanent metering station at the downstream tie-in point with the City of Allentown system. This meter station is inspected weekly and is connected with a remote monitoring system.

SECTION 6

SANITARY SEWER OVERFLOW (SSO) RESPONSE, REPORTING, AND RECORDKEEPING PROGRAM

6.1 **PURPOSE**

Hanover Township, Lehigh County has the responsibility under State Law to respond, report and keep records on releases from their sanitary sewer system. The purpose of the SSO program is to prevent or reduce the environmental and/or public health impact of the SSO by providing structured guidance for release, response, compliance reporting and accurate record keeping of the SSOs. The Township ensures program compliance by:

- Correctly identifying sewage overflows
- Responding, tracking, documenting, and resolving overflows
- Reporting to appropriate governmental agencies and other affected groups
- Properly training employees who respond, report and record SSOs
- Providing emergency operations
- Meeting reporting and recordkeeping requirements

The Township reports all unauthorized release or spills of the wastewater where endangerment of public health or the environment is likely, as soon as practical, but no later than 24-hours from the time the Township Sewer Maintenance/Public Works Staff become aware of the discharge.

6.2 **GOALS AND PERFORMING MEASURES**

- A. SSO Response
 - Respond to sanitary sewer overflows for public and environmental protection
 - Respond within 2-hours of notification
- B. SSO Release Reporting
 - Meet regulatory reporting requirements of PADEP for SSOs
 - Provide initial notice within 24-hours
- C. SSO Training
 - Train employees who report, respond, and record SSOs
 - Provide the necessary training to all involved personnel
- D. SSO Mapping
 - Input all SSOs into GIS data base for tracking and analysis

6.3 **CALCULATING SPILL VOLUMES**

Spill volumes during an SSO event can be based on a number of parameters. The volume is dependent on the nature or origin of the spill, the method or methods used to remediate the spill, the characteristics of the area receiving the spill, the operational data available, and the actual observations of the spill.

6.3.1 **MEASURED VOLUME METHOD**

1. Draw a sketch of the spill SSO Volume Estimated by Area Work Sheet
2. Draw shapes and dimensions used on your worksheet
3. Use correct formula for various shapes

Rectangle	$L \times W \times D$
Circle	$3.14 \times R^2 \times D$
Polygons	Show formula used

6.3.2 **DURATION AND FLOW RATE METHODS WORKSHEET:**

Start date and time	1.
End date and time	2.
Total time elapsed of SSO event	3.
Average Flow Rate	4
Total volume estimate using duration and flow rate method	5

6.4 **METHODS OF NOTIFICATION/TRACKING SPILLS/REPONSE**

The Township's sewer overflow (spill) compliance report notes the specific details of an SSO event. A copy of the SSO compliance report is shown in Appendix "G". Once the SSO has been neutralized, the Crew Leader completes the SSO compliance report and forwards it to the Public Works Director for review and submittal to PADEP. The Public Works Department retains the SSO compliance report on file with the Township.

During normal business hours, incoming messages are routed to the Public Works Department. The Administrative Staff will gather the pertinent information to locate the spill and will notify the Public Works Director for action. The Township goal is to have a crew on site within one-hour of the initial notification. After normal business hours the call will be received by the Public Works Director who will immediately return the call to collect critical information on the incident and dispatch a field crew to evaluate the site and, if necessary, begin remediation. In addition, it is the goal to have a crew on site within 1-1/2-hours of the initial notification.

6.5 **SPILL RESPONSE/REMEDATION PRACTICES**

The response and remediation practices taken in response to an SSO are dependent on several factors. Upon arrival on site, the Crew Leader will quickly evaluate the situation and determine an appropriate course of action and follow the necessary procedures. The Field Crew will determine the cause and make every effort to contain the spill, reduce any further damage, restore flow in the main line and document the event, including regulatory requirements.

After every gravity sewer SSO, the main line is CCTV inspected as soon as possible, to determine the root cause or underlying exacerbating cause for the wet/dry SSO. These results are used to determine if the main line requires a more systematic cleaning schedule or if other corrective action should be taken.

Disinfection of the spill area occurs using one of several products approved by PADEP.

In the event an SSO response is beyond the Township's in-house capabilities to respond and handle, a local contractor is called to provide emergency assistance on an as needed basis.

6.6 **EMERGENCY RESPONSE TRAINING**

The most important part of any emergency response plan includes the presence of skilled and knowledgeable crew leader and staff personnel. Township employees receive initial and periodic follow-up refresher training in emergency response skills. The attendance of staff personnel at training in these skills is recorded and kept on file with the Township. Where outside contractor assistance is necessary, on-site supervision and direction will be provided by trained Township staff.



HANOVER TOWNSHIP, LEHIGH COUNTY
ALLENTOWN SANITARY SEWER SYSTEM
KRS SCALE: APPROX. 1" = 433.33' JULY 11, 2018



Sanitary Sewer Overflow (SSO) Report to PADEP

1. Date, Name, Phone # of person completing this report	Date : Name : Phone # : Signature :
2. Your organization name and address ?	
3. Date found and <u>specific</u> location of SSO ?	
4. How was SSO discovered? By who ?	
5. Start and end time of SSO (actual or estimate?)	
6. Date, time and name of person who notified PADEP of SSO ?	Date : Time : Name :
7. Description and actual or estimated volume of SSO	
8. Where, <u>precisely</u> , did SSO go ? (land, roadway, basement, swale, storm sewer, creek, etc)	
9. What caused SSO ? How was it stopped ?	
10. Describe extent of contamination and how it was cleaned up	
11. What actions will be taken to prevent a re-occurrence ? When ?	
12. Other comments ?	