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UTILITIES

Water, sewer, and stormwater utilities are essential to supporting existing community and economic uses and enabling future development in the Hanover area. The purpose of this chapter is to provide an overview of public water-related utility conditions and needs in the Hanover area. Information on current service areas and usage, facility capacities, current inadequacies, and future needs are discussed, followed by recommendations for system maintenance, improvement, and expansion. More detailed planning for each of these utilities is referenced.

THE REGIONAL WATER SYSTEM

WATER SUPPLY

The Borough of Hanover Water Department supplies potable water to a population of approximately 40,900 in Hanover Borough, Penn Township, Conewago Township and McSherrystown Borough. Combined, its customers use approximately 5.2 million gallons per day (mgd). The Water Department serves all water-served properties in Hanover Borough, estimated at 6,176 properties (100%), and 6,119 of properties (96%) in Penn Township, as shown on Map 6 Sewer and Water Services Areas. Approximately 210 residential lots in the Township are without water service. The Water Department serves all of McSherrystown and a majority of Conewago Township.

The Water Department supplies this water through a system of collection, treatment and distribution facilities. Raw water is normally collected from the South Branch of the Conewago Creek. During periods of low flow, water is pumped from Slagle Run as needed. Two upland reservoirs, the Sheppard-Myers Reservoir and the Lawrence-Baker-Sheppard (Long Arm) Reservoir, discharge into the South Branch of the Conewago Creek and augment its water supply.

The Sheppard-Myers Reservoir, formed by construction of the Sheppard-Myers Dam in 1931, has a storage volume of 190.4 million gallons. Its surface area is approximately 46.5 acres. Groundwater, springs, tributaries and runoff from agricultural, forest, and low-



The Sheppard-Myers Reservoir

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density development across West Manheim Township, York County, Pennsylvania, and Carroll County, Maryland flow into the reservoir.



The Long Arm Reservoir

The Long Arm Reservoir was constructed in 1965. The reservoir has a storage volume of 1,660 million gallons and a surface area of approximately 225 acres. Groundwater, springs, tributaries and runoff from agricultural and forest land and low-density development across southern York County, Pennsylvania and Carroll County, Maryland feed the reservoir. The reservoir discharges into Long Arm Creek, which converges with the South Branch of the Conewago Creek upstream of the Kitzmiller Dam.

The Kitzmiller Dam provides the water retention needed to raise the water level of the creek to the intake. The water then flows by gravity from the intake to a raw water storage reservoir, Clear Lake, located adjacent to the water treatment plant. Clear Lake has a storage capacity of approximately 60 million gallons.

Water from Slagle Run is pumped to Clear Lake when the South Branch of the Conewago Creek/Clear Lake Intake cannot meet the demand. The Slagle Run Intake is located on a small in-stream pool along Slagle Run and feeds a raw water pumping station that discharges to Clear Lake. Stream flow at the intake is essentially derived from groundwater that is pumped from the Vulcan Materials Company mining operations immediately upstream from the intake, as well as the Slagle Run drainage area. Discharge from the mining operation is treated onsite by sedimentation prior to discharge to Slagle Run approximately 200 feet upstream of the intake.

As noted in the Pennsylvania planning code, lawful activities, such as extraction of minerals, impact water supply sources. Such activities are governed by statutes regulating mineral extraction that specify replacement and restoration of water supplies affected by such activities. Commercial agriculture production may also impact water supply sources. Neither mineral extraction nor commercial agriculture production exist at any significant scale in the Hanover Area, however they do exist in surrounding communities and could have indirect effects on local streams and surface supplies and storage. Significant expansion of these types of activities should be carefully observed.

WATER SUPPLY CONDITIONS AND NEEDS

Source water quality from the South Branch of the Conewago Creek is typically not an issue. During periods of high turbidity, the intake at Kitzmiller Dam is inactivated, and the water treatment plant utilizes the stored water in Clear Lake. When raw water from Slagle Run is utilized, customer complaints have been reported. At rates of 10-50% flow from Slagle Run, the

water hardness level in the finished water increases. Customers report a difference but the increased water hardness level is still within regulatory standards.

The Pennsylvania Department of Environmental Protection (PADEP) performs periodic visual inspections at each dam in order to monitor constantly changing physical condition. The Water Department also performs annual inspections of each dam to ensure public safety. These inspection reports are then utilized to prioritize repairs and develop the scope of future improvements.

In 2009, the Pennsylvania Department of Environmental Protection (PADEP), Division of Dam Safety conducted an in-depth review of Sheppard-Myers Reservoir and determined that the existing dam spillway is undersized. The dam is not at risk of imminent failure, but the Water Department plans to make improvements to increase the spillway capacity. In June 2013, an Initial Condition Assessment and Conceptual Design Report was developed to further evaluate the existing dam and provide recommended improvements. The Water Department intends to conduct a Condition Assessment of the Long Arm Dam. These deficiencies have initially been classified as a lower priority in comparison to the required Sheppard-Myers Reservoir improvements, but the Condition Assessment will confirm priority. Following this assessment, the findings for both dams will be evaluated and a prioritized improvement plan and schedule will be developed.



Water Treatment Plant

WATER TREATMENT

The Water Department's water treatment plant includes two process trains, referred to as the "Old Plant" and the "New Plant". Each process includes conventional flocculation, sedimentation, filtration and disinfection. The Old Plant has a permitted capacity of 3.6 million gallons per day (mgd) and the New Plant has a permitted capacity of 8.0 mgd, for a total capacity of 11.6 mgd. The oldest portions of the plant date to the 1920s, and the most recent improvements to the plant occurred in 1991.

The WTP performs well. It has reported high water quality and achieved a "satisfactory" performance rating from the PADEP 2010 Filter Plant Performance Evaluation. However, due to the age of the facility, the Water Department is exploring various improvements to ensure long term dependability and to ease operations.

In June 2013, a Water Treatment Plant Evaluation report was developed outlining recommended improvements to the facility. These improvements will be implemented using a two-phase approach over 3-5 years. These improvements, by phase, include:

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Phase One Improvements:

- Old Plant Improvements
 - Install raw water quality analyzers.
 - Install rapid mixer and baffles.
 - Replace Low Duty Pumps.
 - Filter renovation: Modify underdrain, install dual media, install air scour equipment, coat interior of filter boxes, construct curbs and raise troughs.
 - Filter structural repairs: Pressure inject cracks, coat exterior of filter boxes.
 - Filter instrumentation: Install controls, motor operated valves, and instrumentation.
 - Replace all filter piping.
 - Filter electrical repairs: Replace filter pipe gallery lighting and receptacles.
 - Install heating and ventilation improvements within filter pipe gallery.
- Electrical System Upgrades
 - Construct new Electrical Room, located above floodplain elevation.
 - Replace switchboard with new equipment.
 - Implement generator control improvements.
- Monitoring and Controls
 - Control system programming, startup, and testing.
 - Chemical Facilities: Install controls and instrumentation.
- Security
 - Install card access system on primary entry doors in each building.
 - Install fence around WTP site.
- Architectural Improvements
 - Install handrail, stairway, and door improvements at the chemical delivery area.
 - Implement code compliance improvements.
- Miscellaneous Phase One Improvements
 - Backwash Waste Recycle: Replace pumps and install piping to New Plant. Install controls and instrumentation to operate and split flow.
 - Clear Basin: Install influent chlorine feed points. Install effluent water quality analyzers.
 - Backwash Water Tank: Install control valve and instrumentation.
 - New Chemical Building: Construct new chemical building housing storage and feed equipment for chemicals and install appropriate safety devices.

Phase Two Improvements:

- New Plant Improvements
 - Install new raw water quality analyzers.
 - Install rapid mixer and baffles.
 - Filter renovation: Modify underdrain, install dual media, install air scour equipment, and raise troughs.
 - Filter instrumentation: Install controls, motor operated valves, and instrumentation.
 - Replace all filter piping.
 - Filter electrical repairs: Replace filter pipe gallery lighting and receptacles. Install new boiler switch disconnect.
 - Install heating and ventilation improvements within filter pipe gallery.
- Electrical System Upgrades
 - Replace MCC-1 with new equipment.
 - Replace MCC-2 with new equipment.
 - Install generator control improvements.
- Monitoring and Controls
 - High Service Pumps: Install controls and instrumentation. Install disconnect switch.
 - Waste Sludge Pumping Station: Install instrumentation.
 - Install new primary control station.
 - Control system programming, startup, and testing.
 - Install fiber optic communications network.
- Architectural Improvements
 - Painting and masonry cleaning.
- Miscellaneous Phase Two Improvements:
 - High Duty Pumping Station: Replace pumps with variable speed pumps and pipe to a common flow meter.
 - Backwash Equalization Basin: Install floating decanter.
 - Clear Basin: Clean and repaint interior of galvanized roof.
 - Improve garage ventilation.

It is anticipated that Phase One Improvements will be designed by the end of 2014 and constructed by 2016. Phase Two Improvements will be designed during the Phase One Improvements construction period, and constructed by 2018.

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WATER DISTRIBUTION

The Water Department's distribution system consists of the following:

- two finished water reservoirs ("the Parr's Hill Reservoirs") with a combined volume of approximately 13 million gallons of finished water,
- the Parr's Hill Pump Station adjacent to the reservoirs,
- a 250,000 gallon elevated tank in McSherrystown,
- a 500,000 elevated water tank on Terrace Drive in Hanover Borough,
- 190 miles of water mains ranging in size from 4 inch to 20 inch in diameter,
- 16,850 service connections, and approximately 730 fire hydrants.

The distribution system is comprised of a "low service" pressure zone and a "high service" pressure zone. Pressure in the low service pressure zone is provided by the water treatment plant's pumps and by the system storage tanks and reservoirs via gravity. The high service zone consists of a high elevation area within Penn Township that must be served by the Parr's Hill Pump Station, utilizing the Parr's Hill Reservoirs as a source of supply. This configuration allows for all customers to be served with adequate water pressure.

Water supply to the high service pressure zone is constrained by the fact that the zone has no storage capacity and the existing pumps can draw only approximately 5 million gallons from the reservoir's 13 million gallon capacity. For this reason, the pump station will be replaced with a new pump station housing higher capacity vertical turbine pumps that will be able to utilize the full volume of the reservoirs and accommodate projected future demands and fire flows. Construction of the new pump station is anticipated to begin in the spring of 2014. Additionally, in the long term, the Water Department also plans to install a new elevated water storage tank in the high service pressure zone to add additional storage and fire flow capacity.

Water Department staff performs maintenance throughout the distribution system to ensure that a high level of water quality and service dependability can be provided. The McSherrystown and Terrace Drive tanks were painted in 2011. The two finished water reservoirs were rehabilitated with new liners and covers in 2013. Existing cast iron water mains are lined or replaced, as appropriate, to provide adequate distribution. Valves are tested on a regular basis to confirm performance. Hydrants are also flushed and inspected annually and repaired/replaced, as needed.

In 2013, a Hydraulic Modeling and Water Distribution Evaluation was initiated to identify areas of hydraulic constraint, such as small diameter or aged piping, that could result in pressure inadequacies, and to recommend distribution system improvements. This evaluation will be completed in 2014 and the report will recommend distributions system improvements to the Water Department. (Preliminary recommendations will be incorporated in the Comprehensive Plan as they are available.)

WASTEWATER SYSTEMS

All properties in the Borough and the majority of the Township's developed parcels are served by one of the two public sewer systems: the Hanover (Borough) Area Regional sewer system and the Penn Township sewer system. The service areas for both systems extend into adjacent municipalities, including a service exchange between the Borough and the Township. The service areas are shown on Map 6 Water and Sewer Service Areas.

The Pennsylvania Sewage Facilities Act of 1966 (as amended), which is more commonly known as "Act 537," is the primary law controlling individual and community sewage disposal systems. Act 537 requires local municipalities to submit official sewage facility plans to the PADEP for approval. These plans show the current and projected needs of the municipality and assess wastewater facility options to address these needs. The Borough's Act 537 plan was updated in 2007, and the Township submitted a plan update in 2008, for which PADEP review was deferred until the facility improvements required by the Chesapeake Bay Strategy were completed. The Township completed the improvements in late 2013, and anticipated a new plan update in 2014 with subsequent PADEP review and approval. The following descriptions of wastewater systems and their needs are drawn from these plans, annual water quality reports (Chapter 94 reports), and interviews with municipal staff.

HANOVER AREA REGIONAL WASTEWATER SYSTEM

SERVICE AREAS AND COLLECTION SYSTEMS

According to the 2012 Borough of Hanover Chapter 94 report, the Hanover Area Regional Wastewater System serves 11,993 customers: 5,883 connections in Hanover Borough, 2,439 connections in Penn Township, 2,801 connections in Conewago Township and 870 connections in McSherrystown Borough. Each contributing municipality is responsible for the operation and maintenance of the collection system serving their respective jurisdiction, including inflow and infiltration (I&I) control activities to identify failures in the underground pipes and sediment buildup. Within Hanover Borough, the wastewater is transported by gravity through 72 miles of pipeline to the Hanover Regional Wastewater Interceptor System.

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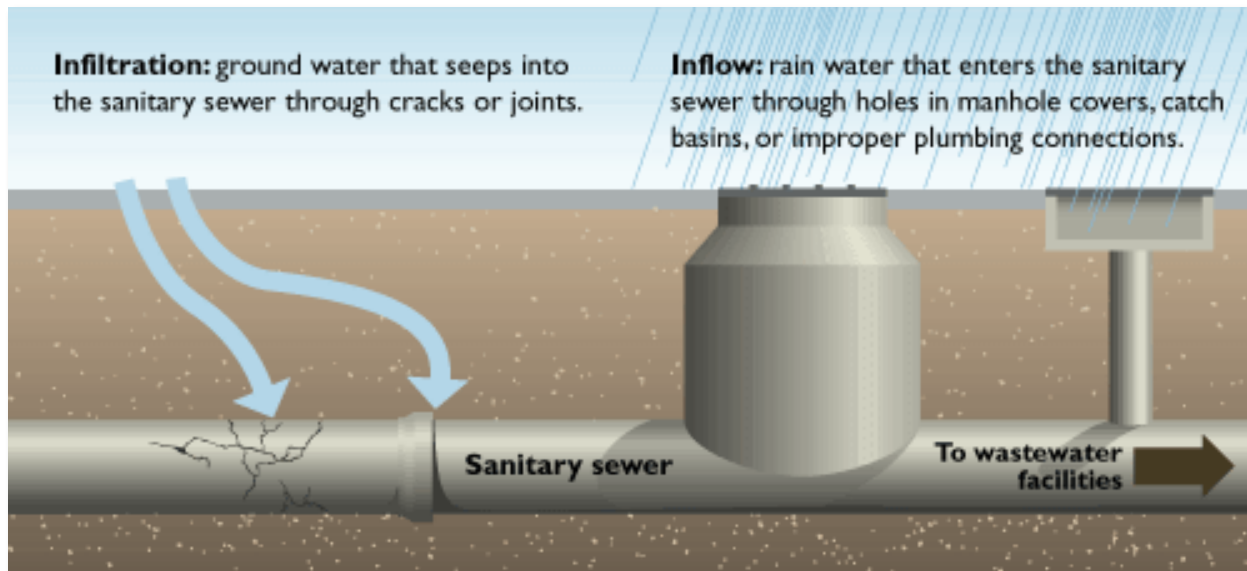


Figure 7-1 Inflow and infiltration Diagram

Four pumping stations lift wastewater from the contributing collection systems and low points in the Borough into the Borough's gravity fed system: one for the Conewago Township collection system, one for the Penn Township system, one in the Borough at the water treatment plant, and one dedicated to the Regional Interceptor system.

The pumping stations are reported to be in good condition and the two serving Conewago Township have additional capacity. The Conewago Township owned pump station, Allwood Manor Pumping Station, is designed to pump 350 gpm with provisions to allow for 500 gpm of pumping capacity in the future. The Regional Interceptor pumping station is located near the Village of Edgegrove in Conewago Township. This pumping station, the Edgegrove Station, was upgraded to 6.2 mgd in 2007. The average annual measured flow during 2012 was 0.94 mgd, however flows are expected to increase as development in Conewago Township occurs.

Prior to 2005, the Borough occasionally experienced Sanitary Sewer Overflows (SSOs) throughout the collection system as well as at the Hanover Regional WWTP. The SSOs occurred as a result of heavy wet weather flows into the sewer system caused by inflow and infiltration (I&I) into aging service laterals and collections lines and by hydraulic bottlenecks. This results in raw sewage discharging into the surrounding environment prior to reaching the wastewater treatment plant.

Since 2005, the Borough has implemented an extensive sewer inspection program consisting of manhole inspection and closed-circuit television inspection of main sewers and service laterals. More than 13.5 miles of sewer mains have been televised and more than 100,000 gallons per

day of excessive infiltration was detected from specific defects. Responding to these deficiencies, the Borough has completed improvements that included:

- The Edgegrove Pumping station upgrade (construction completed in 2007),
- Enlargement of a portion of the Plum Creek Interceptor (construction complete in 2011),
- An extended commitment to implement a sewer evaluation survey and maintenance/repair program of the Borough of Hanover's wastewater collection system (ongoing),
- Improvements to the North and West Side Trunk Sewers (construction complete in 2011), and
- Improvements to the Hanover Regional WWTP (construction substantially complete in 2013).



Hanover Area Regional Wastewater Treatment Plant

In addition, the Borough has allotted funds for lining approximately 20,000 linear feet (3.8 miles) of 8-, 10-, and 12-inch diameter sewer mains and approximately 80 point repairs within the HB and HC subsheds, located at the north end of the Borough. These improvements were completed in 2014.

WASTEWATER TREATMENT AND DISCHARGE

The Hanover Area Regional Wastewater Treatment Plant (WWTP) is located in Conewago Township, and is operated by the Borough of Hanover. The WWTP has an average daily flow permitted capacity of 5.6 mgd. According to the Borough of Hanover Chapter 94 Report, the plant averaged 4.124 mgd with a five-year average (2008-2012) of 373 gallons per day per equivalent dwelling unit. The projected 2017 average daily flow is 4.6 mgd.

The Hanover Regional WWTP was originally constructed and placed into operation in 1987. In 2012, the WWTP experienced its most recent upgrade to increase hydraulic capacity and organic loading capacity, and to remove adequate Total Nitrogen and Total Phosphorus in consonance with the Chesapeake Bay Tributary Strategy Nutrient Requirements. The treatment process consists of fine screening, grit removal, primary clarification, oxidation ditch activated sludge biological treatment, final clarification and continuous backwash filtration for denitrification. The finished water is disinfected using chlorine gas and dechlorinated using sulfur dioxide prior to being discharged to the South Branch of the Conewago Creek in Conewago Township during normal flow conditions. As part of the 2012 upgrade, a second outfall was installed to allow plant discharge to Plum Creek during peak flow events. Because substantial improvements have recently been made to the Hanover Regional WWTP, no upgrades are projected in the near future.

PENN TOWNSHIP WASTEWATER SYSTEM

SERVICE AREAS AND COLLECTION SYSTEMS

The Penn Township wastewater collection system serves approximately 10,565 customers: 5,286 connections in Penn Township, 1,176 connections in Hanover Borough, 1,612 connections in West Manheim Township, and two non-residential customers in Heidelberg Township. In total, the waste stream consists of 60% domestic wastewater and 40% industrial wastewater. As a result of the flow exchange agreement between the municipalities, 2,467 connections from Penn Township flow to the Hanover Regional WWTP. The remaining properties in the northern and southeastern extremes of the Township utilize on-lot disposal.

The collection system includes 399,745 feet of gravity sewer lines, and 11 pumping stations with 30,398 feet of force main (a pressurized line).

The existing wastewater collection system utilizes 11 pumping stations, as listed in Table 7-1 with their respective rated capacities and recent flows. A routine preventive maintenance, checks, and services program was implemented for each of these stations.- The pump stations are checked every weekday, and the wet wells are cleaned every three months. These measures help prevent equipment fatigue and extend their service life. Since the program was established, the stations have experienced very few problems. If a pump fault or high wet well level does occur, each pumping station is outfitted with an alarm system to notify the system operator of a problem.

Penn Township has undertaken various projects to improve the condition of its collection system. Projects include televising sewer lines, inspecting manholes, installing flow meters, repairing leaking laterals, and installing water tight manholes. For example, several developments were constructed during the 1970s and 1980s, using clay pipe for the main sewer lines. Over the years, the joints between these sections of pipe have failed which allowed roots and groundwater to enter the sewer system. The Township has televised the lines in several of these developments and completed point repairs. In addition, at least twice per year all the lines that lay relatively flat are cleaned with high-pressure water equipment.

The most recent improvements include the replacement of the main interceptor line, installed in 1963, from the wastewater treatment plant to York Street at Breezewood Drive. This project included the installation of 35 manholes, 176 feet of 30" pipe, 4,231 feet of 27" pipe, 1,466 feet of 24" pipe and 2,600 feet of 18" pipe. Existing branch connections from the old interceptor were connected to the new line and the original interceptor was abandoned.

TABLE 7-1 PENN TOWNSHIP WASTEWATER TREATMENT SYSTEM PUMPING STATIONS, 2013

Station Location	No. of Pumps	Gallons Per Minute (gpm)	Installed	Type	Annual Average Daily Flow (mgd)	Capacity (mgd)
Mullertown	2	309	1964	W/D	0.052	0.44
Codorus State Park	2	275	1972	W/D	1.060	0.40
Penn Village	2	153	1975; Upgraded in 1986	S	0.010	0.22
Janet Street	2	60	1981	S	0.004	0.09
Lark Avenue	2	207	1981	S	0.021	0.30
Colonial Hills	2	250	1985	S	0.050	0.36
Barnhart Drive	2	457	1986	S	0.064	0.63
Grandview Acres	2	123	1987	S	0.042	0.18
Breezewood Drive	2	88	1987	S	0.009	0.13
Northview Acres	2	115	1989	S	0.037	0.17
Nottingham Village	2	116	1989	S	0.006	0.17
Laurel Drive	Taken off-line, April 2011					
Timberland II	Taken off-line, February 2012					

Notes: S = Submersible, W/D = Wet/Dry Well

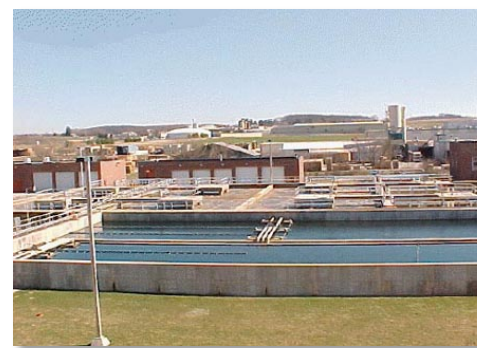
Source: Annual Chapter 94 Report (Year Ending 2013), Penn Township, York County.

PLANNED IMPROVEMENTS

The Mullertown Pumping Station was built in 1963 and is scheduled to be replaced in 2014. The Codorus State Park Pumping Station was built in 1971 and is a buried metal station. Township staff has recommended that this station be replaced in 2016, prior to potential “rust through” of the existing station. The Laurel Drive and Timberland II pumping stations were replaced by a gravity main.

WASTEWATER TREATMENT AND DISCHARGE

Based on data included in the Township 2013 Chapter 94 Report, the Penn Township wastewater treatment plant’s existing annual average flow rate is 2.08 mgd, which constitutes approximately 49 percent of the treatment capacity of 4.2 mgd. The five-year projected average flow rate is 2.5 mgd. Demand is not expected to increase significantly from the domestic/residential portion of the customer base in Penn Township. Only limited infill development and sewer service extension could occur and would be developer funded. The biggest contributor of the industrial wastewater is Hanover Foods Corporation who is a processor of fresh vegetables. This important employer may request additional capacity as it



Penn Township Wastewater Treatment Plant

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expands its operations. Hanover Foods also operates a direct discharge wastewater treatment facility. West Manheim Township holds 0.64 mgd in reserve and could need more in the long term.

Penn Township wastewater treatment plant is located in the Township at 1020 Wilson Avenue. It was originally constructed in 1964, expanded in 1979, and upgraded in 2012 to comply with the Chesapeake Bay Tributary Strategy Nutrient Reduction Requirement. During the 2012 upgrade, all the mechanical equipment throughout the plant was replaced. The treatment process consists of raw water screening, grit and grease removal, anoxic and aerobic treatment (MLE process), cloth filters and chlorination/dechlorination. The treated effluent is conveyed to Oil Creek, a tributary of the West Branch of Codorus Creek.

The Township's current five-year maintenance plan outlines the following maintenance and improvement projects for the wastewater treatment plant:

- Roof Replacement on Blower Building – scheduled for 2014.
- Sandblast/Repaint or Replace Sludge Storage Pad Cover – scheduled for 2015.
- Sandblast/Repaint Lime Silo – scheduled for 2015.
- Boiler Replacement – scheduled for 2016.
- Centrifuge Feed Pumps Replacement – scheduled for 2016.

ON-LOT SEWAGE DISPOSAL SYSTEMS

In the interest of protecting public health and as recommended in the Township's 2008 draft Act 537 plan update, Penn Township enacted an on-lot sewage management program in 2008. The program requires the inspection, pumping, maintenance and rehabilitation of on-lot sewage disposal systems to protect water quality. Pumping is required at least once every four years, unless the Township approves a longer cycle, and proof of pumping must be submitted to the Township. Repair, modification or replacement is required of a malfunctioning system. In extreme circumstances of imminent health hazard, the Township has the authority to perform or to contract to have performed the work necessary to abate the hazard. The Township has not put this program into effect but is prepared to do so as an implementation of the next plan update.

STORMWATER MANAGEMENT SYSTEMS

Stormwater is water that accumulates on the ground surface after rain or snow events or as a result of melting ice and snow. Stormwater is a concern for two reasons: the volume and timing of water movement can cause flooding and erosion, and the water can pick-up and carry pollutants into surface waters and water treatment systems. Stormwater management is the control and release of runoff in ways that minimize these negative impacts on human life, property, the environment, and the cost of water infrastructure and its operation.

In the past, stormwater management focused on minimizing the amount of stormwater generated by newly constructed impervious surfaces, such as buildings, parking lots and roads, and managing the location of stormwater infiltration or discharge facilities – both on a site development basis. Pennsylvania’s Stormwater Management Act (No. 167) was passed in 1978 and required counties to prepare stormwater management plans for each watershed within its boundary. Municipal development regulations were to comply.

More recently, as water quality conditions in the Chesapeake Bay have not improved as quickly as desired by the U.S. Environmental Protection Agency (EPA), the EPA has required the states to develop strategies to include water quality among the management objectives. York County covers the Act 167 Stormwater Management Plan Requirements and addresses water quality within its Integrated Water Resources Plan dated March 2011.

STREAM IMPAIRMENT AND MAXIMUM POLLUTANT LOADS

As identified in the Integrated Water Resources Plan, the Borough and the Township have areas located within the Conewago Creek and Codorus Creek watersheds. This portion of the Conewago Creek watershed is drained by the South Branch of the Conewago Creek and includes Plum Creek, Beaver Creek, and Indian Run. The Codorus Creek watershed is drained by the West Branch of the Codorus Creek and includes Furnace Creek, Oil Creek, Long Arm Creek, and Gitt Run. These watercourses within the Borough and Township along with their respective watersheds are shown throughout the maps in the Appendix.

According to eMapPA, all streams located in the Hanover area are designated as warm water fisheries. Table 7-2 lists these streams and their impairment status and source. Siltation from agriculture is the most common source of impairment in local streams, however only a small portion of the Hanover area is actively farmed. The source of this impairment is likely the farmland surrounding the Hanover area in Berwick, Conewago, Heidelberg, and West Manheim Townships.

According to York County’s Integrated Water Resources Plan, a Total Maximum Daily Load (TMDL) or total allowable pollutant load is to be established for each impairment of each impaired waterway. The Pennsylvania Department of Environmental Protection (PADEP) established a TMDL for siltation for Oil Creek in 2003 and has proposed a TMDL for siltation for the entire Conewago watershed.

TABLE 7-2 STREAMS AND STREAM CLASSIFICATIONS, HANOVER BOROUGH AND PENN TOWNSHIP

	Designated Use	Impaired Cause	Source of Impairment	TMDL Status (6/13)
Streams in the South Branch Conewago Creek watershed				
Beaver Creek	WWF	Siltation	Agriculture	Tentative
Indian Run	WWF	Not Impaired	-	-
Plum Creek	WWF	Siltation	Agriculture, Urban Runoff/Storm Sewers	Tentative
South Branch Conewago Creek (main stem)	WWF	The portion closest to Penn Township is not Impaired.		Tentative
Streams in the West Branch Codorus Creek watershed				
Oil Creek	WWF	Metals, PH, Suspended Solids, Nutrients, Siltation	Abandoned Mine Drainage, Crop Related Agricultural, Agriculture	Final for Siltation
Gitts Run	WWF	Siltation	Agriculture	Tentative
Furnace Creek	WWF	Not Impaired	-	-
Long Arm Creek	WWF	Not Impaired	-	-
West Branch Codorus Creek (main stem)	WWF	Not Impaired	-	-

Source: York County Integrated Water Resources Plan, March 2011 and PA eMap.

POLLUTANT DISCHARGE ELIMINATION FROM MUNICIPAL STORM SEWER SYSTEMS

Phase I of the U.S. Environmental Protection Agency's (EPA) stormwater program was promulgated in 1990 under the Clean Water Act. Phase I relies on National Pollutant Discharge Elimination System (NPDES) permit coverage to address stormwater runoff from: (1) "medium" and "large" municipal separate storm sewer systems (MS4s) generally serving populations of 100,000 or greater, (2) construction activity disturbing 5 acres of land or greater, and (3) ten categories of industrial activity.

In 1999, Phase II extended coverage of the NPDES stormwater program to include certain small MS4s. It requires operators of MS4s in urbanized areas, as classified by the US Census Bureau, to implement programs and practices to control polluted stormwater. Each MS4 must outline its program, including the six minimum controls listed below, identify its goals and best management practices, and report annually to the NPDES permitting authority on its progress.

SIX MINIMUM MS4 CONTROLS

1. Public education and outreach (often fulfilled by information in municipal newsletters).
2. Public participation and involvement.
3. Illicit discharges detection and elimination.
4. Construction site runoff control.
5. Post-construction stormwater management in new development and redevelopment.
6. Pollution prevention and good housekeeping for municipal operations and maintenance.

The Phase II Final Rule enabled PA DEP, as a NPDES permitting authority, to phase-in coverage for small MS4s serving jurisdictions with a population under 10,000 on a schedule consistent with its state watershed approach. Both the Borough and portions of the Township were classified as urban areas in the 2010 Census. To date, PADEP has not mandated municipalities newly classified as urbanized areas to apply for an MS4 NPDES stormwater permit, however, it is anticipated that notification will occur in 2014.

In summary, stormwater management has become increasingly regulated. The municipalities are required to adopt ordinances consistent with the County's Integrated Water Resources Plan, the requirements of the NPDES MS4 permit, and consistent with the TMDL. Once enacted, developers will be required to follow the local drainage regulations as well as comply with the PADEP NPDES permits associated with Construction Activities.

The Penn Township Board of Commissioners adopted a stormwater management ordinance in November 2011. The Penn Township Stormwater Ordinance has both volume of runoff controls and peak rate runoff controls. No increase in the post-development total runoff volume for all storms equal to or less than the 2-year 24-hour duration precipitation is permitted. Post-development discharge rates shall not exceed the pre-developed discharge rates for the 1 through 100-year 24-hour storms. The Township may modify its ordinance and procedures to comply with MS4 program as it reviews its efforts after notification.

The Borough of Hanover has not yet adopted a dedicated Municipal Stormwater Ordinance, the stormwater control requirements are embedded within the Subdivision and Land Development Ordinance. The Borough has no requirements for peak runoff or volume controls. The Borough of Hanover is at the preliminary stages of developing a dedicated Stormwater Ordinance to comply with the Act 167 plan and the MS4 program.

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POTENTIAL PARTNERS

The federal mandate for a municipal stormwater program, including the municipal NPDES permit, was not accompanied by funding assistance. Municipalities must develop, implement, enforce and report on their programs using local funds. In several counties in Pennsylvania, municipalities and others have formed voluntary partnerships to share successful approaches to meeting the new requirements.

In York County, the York County Coalition for Clean Waters is such as partnership. This group began as the York County TMDL Work Group tasked with developing the County's Watershed Implementation Plan (WIP)) to reduce nutrients and sediment. Once developed, the group's interest was drawn to implementation. The York County Commissioners have endorsed this organization as the lead advocate for the implementation of the WIP. In addition, the York County Planning Commission is preparing a countywide pollutant reduction plan.

The Watershed Implementation Plan Appendix F contains information on an array of local, State, and Federal financial resources. It also includes a brief description of, and links to, guidance documents, case studies, and training materials that can assist local governments and other stakeholders in understanding the many available funding options for stormwater projects.

With regard to fundraising, it may be advantageous to have a fiscal sponsorship. Through a fiscal sponsorship, a municipality or organized group can raise funds as charitable contributions without the necessity of obtaining its own 501(c)(3) status. This can serve as an impetus to stimulate project interest and donations. A fiscal sponsorship also allows municipalities and organizations to access grant funds requiring a 501(c)3 applicant. The Community Foundation of York is one entity to pursue for a fiscal sponsorship. Another is the Partnership for Economic Development of York County (PEDYC), however, it only acts as a fiscal sponsor for economic and community development projects in the County that support the goals of the York County Economic Development Plan. There is potential for some stormwater BMP projects to be considered a community or economic development project, particularly when it is a park, parking area, or business area improvement project.

The implementation plan indicates that a municipality that financially participates in a project to improve impaired waters within an impaired watershed, whether within its jurisdiction or in another jurisdiction, will be acknowledged as having implemented watershed improvements. It further notes that such multi-municipal or regional project applications typically are more competitive for grant funding than single municipality applications.

GOAL, OBJECTIVES AND RECOMMENDATIONS

The Hanover area already demonstrates smart growth principles in the coordination of its utility infrastructure with land use policies. Therefore water and wastewater planning appropriately focuses on operations by the municipalities and usage behaviors by utility customers. Stormwater management is not a utility service with customer subscribers. However, increasing regulation and reporting requirements, integrated with other water resource planning and permitting, suggests that stormwater management is becoming a more complex municipal responsibility.

GOAL

Our long-standing goal in the area of municipal utilities is to provide adequate, reliable water, sewer and stormwater utilities to the Primary Growth Area and portions of the Rural Area in the interest of public health.

OBJECTIVES

To achieve this goal, the Borough and Township need to continue to:

1. Maintain facilities to meet state and federal requirements and to sustain/improve efficiency.
2. Update utility standards, as needed, for compliance with state and federal regulations and best local practices.
3. Coordinate utilities for system efficiency.
4. Extend utilities in coordination with the land use planning and the PGA.
5. Educate citizens on water conservation in water, sewer and stormwater utilities.

LEADS AND PARTNERS FOR IMPLEMENTATION

As the owners and operators of the water and wastewater systems, the Borough and Township are responsible for the condition of facilities and the quality of these utility services. Neither has created a municipal authority to govern these facilities and services, therefore the responsibility for operation, maintenance and improvement, and service extension lie directly with Borough Council and the Penn Township Board of Commissioners.

The Borough and Township can look to others for assistance in programming and funding utility recommendations. Developers will pay the cost of constructing service line extensions.

The Pennsylvania Department of Environmental Protection provides partial funding for Act 537 plan updates and works in conjunction with PENNVEST to fund water resource projects.

The Pennsylvania Infrastructure and Investment Authority (PENNVEST) administers the Clean Water State Revolving Fund and the Drinking Water State Revolving Fund and uses Commonwealth General Obligation bonds to provide loans and grants for water projects. The

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Drinking Water State Revolving Fund offers low interest loans with flexible terms to assist a variety of borrowers for construction, expansion and maintenance of drinking water facilities (treatment plants, distribution mains, storage facilities), and improvements and upgrades to water quality systems. The Clean Water State Revolving Fund program provides low interest loans with flexible terms for the construction and maintenance of wastewater treatment facilities, storm water management projects, nonpoint source pollution controls, and watershed and estuary management. It also finances water management, solid waste disposal, sewage treatment and pollution control projects undertaken by or on behalf of private entities. PENNVEST funding can be leveraged in support of redevelopment, where waters have been impacted by previous development. Like many public agencies, PENNVEST tracks its progress through performance measures. Projects that help PENNVEST reach its goals for increasing compliance and reducing pollutants may be more competitive for available funding.

The York County Planning Commission and the York County Coalition for Clean Waters can provide local examples of successful water resource management practices.

Recommendations	Leads; Partners	Priority: Year of Completion
1. Design and construct Phase One Improvements to the Water Treatment Plant.	Borough; Township and others served by the system	High: Design, 2014; Construction, 2015
2. Replace the Parr's Hill Pump Station.		High: Construction Completed in Fall 2014
3. Complete Condition Assessment and construct improvements to Long Arm Dam and Reservoir.		High: Assessment, 2015; Construction TBD
4. Construct improvements to Sheppard-Myers Dam and Reservoir.		High: Construction, TBD
5. Complete evaluation and program improvements recommended by the Hydraulic Modeling and Water Distribution Evaluation.		High: Evaluation, 2015; Improvements, TBD
6. Line the 8-, 10-, and 12-inch diameter sewer mains and complete point repairs within the HB and HC subsheds.	Borough	High: Completed in 2014
7. Replace the Mullertown Pumping Station.	Township	High: 2015
8. Prepare and adopt a stormwater ordinance consistent with the County's Integrated Water Resources Management Plan. The County's model ordinance or one consistent with it will fulfill the pending MS4 ordinance	Borough; Township, County for example ordinances	High: 2015

Recommendations	Leads; Partners	Priority: Year of Completion
requirement.		
9. Review stormwater ordinance for compliance, after notice of MS4 requirement is provided by PADEP.	Township; County, WAY	High, after notice by PADEP
10. Design and construct Phase Two Improvements to the Water Treatment Plant.	Borough; Township and others served by the system	Medium: Design, 2015; Construction, 2016/2017
11. Miscellaneous WWTP Improvements: Blower building roof replacement, Sludge storage pad rehabilitation, Lime silo rehabilitation, replace boiler, replace centrifuge feed pumps.	Township	Medium: 2014-2016
12. Replace the Codorus State Park Pumping Station.	Township	Medium: 2016
13. Install an elevated water storage tank in the high service pressure zone.	Borough; Township and others served by the system	Medium/Low
14. Broadway, Oak Hills, Hershey Heights collection system and pumping station installation.	Township	Medium
15. Extend water and wastewater service to new development within the Primary Growth Area (PGA).	Borough, Township and others served by the system	Low: As constructed by developers
16. Evaluate all new infrastructure and capital improvements for nutrient loading reductions, green infrastructure opportunities, and low impact development feasibility.	Borough and Township	Medium: Ongoing
17. Work with landowners to evaluate existing aboveground stormwater management facilities for potential upgrades.	Borough and Township	Medium: 2020

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