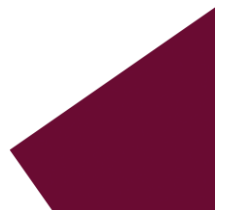




Uniform Environmental Review



**ACT 537 OFFICIAL SEWAGE FACILITIES PLAN
EASTERN PIKE COUNTY
Pennsylvania**

ENVIRONMENTAL REPORT

1.0 PROJECT DESCRIPTION AND NEED

1.1 Purpose of and Need for Project

Enacted by Pennsylvania Legislature in 1966, The Pennsylvania Sewage Facilities Act (Act 537) requires every municipality within the Commonwealth to develop and maintain an up-to-date Sewage Facilities Plan. Westfall Township, Pike County, Pennsylvania, had previously adopted a Sewage Facilities Plan in 2000 and approved the PADEP in May 2001. Westfall Township Municipal Authority has authorized the preparation of this Environmental Report as a portion of the Act 537 Official Sewage Facilities Plan (Act 537 Plan) for Westfall Township, Borough of Matamoras, Borough of Milford, and Milford Township. This authorization was a voluntary decision primarily based on mandated requirements, but also due to growth patterns, increasing sewage disposal needs of the Township and to be consistent with other municipal planning objectives set forth by the Township. The Act 537 Plan examines options for extending public sanitary sewer to areas of the Township currently served by OLDS. The Planning Area for this Act 537 Plan (Planning Area) consists of Westfall Township, Matamoras Borough, Milford Borough, and Milford Township in their entirety, a map of which is provided in Section 6.0 of this Report.

A majority of the properties in the planning area are served by private On-Lot Sewage Disposal Systems (OLDS). Some of these systems were installed prior to the enactment of Title 25 and are not permitted systems. A majority of the systems appear to be functioning properly; however, a few systems installed after permitting regulations appear to be malfunctioning. The ability for a system to function properly depends on the construction techniques used during the installation of the system and subsequently the preventative maintenance applied to the system throughout its life. As further described below, there are also three (3) additional sewerage system and wastewater treatment facilities that are located within the Planning Area.

This Report has been prepared in accordance with the *Guidelines for the Uniform Environmental Review Process in Pennsylvania* published by the Pennsylvania Department of Environmental Protection (PA DEP). Section 1.0 of the Report summarizes activities and analyses completed during preparation of the Westfall Township Regional Act 537 Plan Update. A summary of alternatives considered by the Act 537 Plan is included as Section 2.0 of this Report. Environmental consequences of the alternatives selected for implementation by the Act 537 Plan are included in Section 3.0 of this Report.

1.1.1 Existing Community Wastewater Facilities

There are currently three (3) community sewage systems and wastewater treatment facilities located within Westfall Township, both municipal and non-municipal. Maps containing the locations of these areas are provided in Section 6.0 of this Report. The majority of the Township utilizes on-lot disposal systems as further described in Section 1.1.4.

The sewerage systems and facilities consist of the following:

1. The Municipal Authority of Westfall Township (MATW)

- a. The Municipal Authority of Westfall Township's (MATW) sewage collection and conveyance systems conveys wastewater from approximately 992 EDUs within MATW's Wastewater Treatment Plant (WWTP), where the wastewater is treated and is discharged into the Delaware River. All wastewater from the Service Area in Westfall Township (see Map 11 in Exhibit C) discharge to the sanitary sewer system and to the Westfall Township the MATW's WWTP.

The plant discharges into the Delaware River via the outfall structure. The outfall structure is comprised of twin 12-inch pipes that convey the effluent flow into the midstream of the river. The outfall structure is constructed and permitted for an average daily flow of 374,000 gpd to the Delaware River.

- b. The MATW's WWTP discharges treated effluent to the Delaware River under National Pollutant Discharge Elimination System (NPDES) permit number PA0061611. The current NPDES permit is valid from September 1, 2019 through August 31, 2024. The DRBC docket renewal was submitted in June 2018, and the WWTP's current annual permitted discharge flow is 0.374 million gallons per day (mgd), with a design capacity for organic loading at 1,081 pounds per day. Table 1-5 presents the current NPDES discharge limits for the MATW's WWTP.

- i. The original collection system was constructed in the 1990's and consists of approximately 5 miles of gravity sewer and force mains ranging in sizes from 4 inches through 8 inches in diameter. Map 11 in Appendix C shows the location of the existing Township collection and conveyance mains, pump stations, and WWTP.

- c. MATW has six (6) pump stations and currently utilizes four (4) pump stations throughout the sanitary sewer system. Katz and Rosetown Pump stations have been offline since they were constructed in 2011 and 2007 respectively. The pump stations throughout the Westfall Township service area are visited regularly to monitor the operation and maintain the equipment in good condition.

- i. **Westfall #1 Pump Station** is located on Westfall Town Drive and conveys flow directly to MATW WWTP. The original pump decommissioned in 2012 and replaced with a new pump station in April 2013. It has variable pump speeds from 360,000 to 1,209,000 gpd. There are 747.5 EDUS directly connected to it, and since all of the Authority's pump stations are tributaries to it, any new EDUs will increase the flow through the pump station.

- ii. **Westfall #2 Pump Station** is located along US Route 6/209. It has a design pumping rate of 302,400 gpd. There is no sewage metering, so average daily flow data is not available. There are no EDUs directly connected but there are 314 connected to the pump station.
 - iii. **River's Edge Pump Station** serves the River's Edge residential development. It has a capacity of 141,120 gpd. There are currently 208 EDUs connected to the pump station.
 - iv. **Rosetown Pump Station** was designed to serve the Katz Rosetown Estate property when it was built in 2007 with a design pumping rate of 1,083,888 gpd. However, it has not been operated yet due to a lack of development of the Katz property.
 - v. **Katz Pump Station** was designed to serve the Katz Commercial property when it was constructed in 2011 with a pumping rate of 230,400 to 432,000 gpd. Due to a lack of development in the area, the pump has been offline since it was built.
 - vi. **Westfall Senior Apartments Pump Station** serves the Westfall Senior Apartment Building Complex. It was built in 2017 and has a pumping rate of 60,480 gpd. It currently serves 11.5 EDUs.
- d. The MATW WWTP (PA0024457) is located at 155 Westfall Town Drive within the Township of Westfall. The plant utilizes an SBR Treatment process for wastewater treatment and an open channel ultraviolet light system for disinfection. The treated sewage is discharged into the Delaware River.
- i. The WWTP is rated at 0.374 MGD and is composed of an influent wet well and pumping station, a comminutor and bar screen, two (2) reactor tanks (each with a central clarifier and ringed by aerated zones and an aerobic sludge digester for biological treatment), control building connected to the chlorine contact tank, and sludge beds.
 - ii. EPA's ECHO website was searched to determine any permit violations incurred by the Authority. No violations were found. According to the U.S.E.P.A.'s Enforcement and Compliance History Online (ECHO) program, no violations have been reported for the past 5 years.

Table 1-5 NPDES Effluent Limits and Discharge Characteristics for MATW's WWTP

Parameter	NPDES Effluent Limits⁽¹⁾
Flow, mgd	0.374
pH (standard units)	6.0 (minimum) 8.5 (maximum)
CBOD, mg/L	10.0 ⁽¹⁾
TSS, mg/L	10.0 ⁽¹⁾
Fecal Coliform, CFU/100 ml (summer) ⁽³⁾	50
Fecal Coliform, CFU/100 ml (winter) ⁽³⁾	50
Total Phosphorus, mg/L	2.0 (monthly) ⁽¹⁾

Notes:

⁽¹⁾ NPDES Permit Discharge Limits, average monthly values.

⁽²⁾ NPDES Permit Discharge Limits, average weekly values.

⁽³⁾ Summer limits from May 1 to September 30. Winter limits from October 1 through April 30.

2. Milford Senior Care and Rehabilitation

Milford Senior Care and Rehabilitation Center (NPDES Permit #PA0060020) has a non-municipal package treatment facility and is permitted to have 18,000 GPD of flow. There have been no reported issues or violations.

3. Delaware Valley School District

The Delaware Valley School District (NPDES Permit #PA0032166) has a non-municipal package treatment facility and is permitted to have 20,000 GPD of flow. There have been no reported issues or violations.

1.1.3 Existing Individual On-Lot Systems

Based on the well water and sewage survey performed for the preparation of this Plan, there are several types of on-lot sewage disposal systems in use within the Township, including septic tank with conventional trench or bed system, elevated sand mound, cesspool, and seepage pit. In addition, there are gray water disposal systems in use in the planning area, including conventional bed systems, seepage pits, bore holes and pipe to surface or ditch.

1.1.4 Types of On-lot Disposal Systems in Use

Westfall Township, Matamoras Borough, Milford Borough, and Milford Township utilize on-lot disposal systems (OLDS) for treatment and disposal of domestic wastewater. The type of system implemented varies, but is classified as one of the following:

- **In-Ground** – Systems consisting of absorption areas, trenches and other disposal systems that rely solely on the surrounding soil for treatment.
- **Elevated Sand Mound** – Systems utilizing a bed of sand, elevated above the existing surface, to enhance the treatment provided by the underlying soil.
- **Holding Tanks** – Holding tanks and privies that require periodic pumping for removal of waste and residual solids.
- **Aerobic Treatment Tanks** – Systems that use either mechanical or diffused aeration to increase the level of effluent treatment by encouraging aerobic bacteria growth prior to treatment provided by the underlying soil of a drainage field.

Types of systems observed during the sanitary survey (as described in Section 1.1.5) included:

1. Standard in-ground systems (septic tank with below-grade seepage bed).
2. Elevated Sand Mounds (septic tank with above-grade seepage bed or trench)
3. Cesspools
4. Drywell
5. Holding tank
6. Seepage Pit

Current regulations regarding on-lot disposal systems began in 1966, and most systems that were installed before 1972 did not use best available technologies or methods that would be acceptable today.

Westfall Township has ordinances for the periodic maintenance of holding tanks and privies; however, the Township does not have ordinances for the periodic maintenance requirements for the on-lot sewage disposal systems. The other three Municipalities do not have holding tank ordinances.

1.1.5 Public Health Needs

The DEP has designated "public health needs" as a general needs category relating to sewage disposal that must be considered. The definitions and requirements stated in this section are taken from the DEP's SDNIG document. Public health needs are considered to be those health hazards and water pollution problems that involve discharging untreated or inadequately treated sewage to the surface of the ground or waters of the Commonwealth, including groundwater. Most commonly, these needs are found to be malfunctioning OLDS and malfunctioning community on-lot disposal systems (COLDS). On-lot disposal system malfunctions are classified into three categories: confirmed, suspected, and potential. When determining the

public health needs of an area using OLDS/COLDS, all systems inventoried, mapped, and analyzed must be placed into one of four categories:

1. Confirmed Malfunctions are malfunctions documented by dye testing, laboratory test results, observation by a Sewage Enforcement Officer (SEO) or a professional with experience in OLDS, "Best Technical Guidance" repair permits, and seasonally wet absorption areas. Also included are piped discharges from a single structure with direct evidence of sewage (i.e. direct observation of soap suds, food residue, solids, odors, etc.), reported system backups, malfunctions with photographic documentation, or other similar evidence.
2. Suspected Malfunctions are systems exhibiting some malfunction characteristics such as abnormally green grass in the vicinity of an absorption area, piped discharges from a dwelling without direct evidence of sewage (i.e. no observation of soap suds, food residue, solids, odors, etc.), absorption areas located in known unsuitable soils (observed wetlands, rock outcropping, etc.), cesspools in high-density development areas, and pit privies.
3. Potential Malfunctions are systems that appear to be operating satisfactorily but were constructed prior to system permitting requirements, systems located in areas extremely unlikely to receive permitting by current standards, systems constructed in areas having soils mapped as unsuitable or with severe limitations for OLDS and systems located on exceptionally steep slopes greater than 25 percent. Included as potential malfunctions are permits issued for OLDS repairs that meet Chapter 73 standards. While this needs category does not represent "stand alone" existing needs, the information may be utilized in a needs analysis to locate areas affected by poorly defined adverse circumstances. For example, clusters of legitimate repairs will often indicate areas requiring closer scrutiny.
4. No Malfunction are those systems that appear to be operating satisfactorily, were constructed since the implementation of system permitting requirements, and appear to have been constructed in accordance with the permitting requirements in effect at the time of construction. For the purpose of needs identification, OLDS permitting under Act 537 became effective on May 15, 1972.

Several other situations exist that must be inventoried, mapped, and analyzed when identifying public health needs for an Act 537 Official Plan or Plan Update Revision. These include wildcat sewers, borehole disposal, holding tanks, public complaints, and sanitation-related illnesses.

1. Wildcat Sewers are collection systems (community sewers) serving more than one equivalent dwelling unit (EDU) and discharging untreated or partially treated sewage to the surface of the ground, storm sewers, or other waters of the Commonwealth.
2. Borehole Disposal is an individual or community system that discharges to a borehole, abandoned water well, dry well, ventilation shaft, or other subterranean structure.

3. Holding Tanks are watertight receptacles designed to retain sewage for disposal at another location. All holding tanks installed as repairs are counted as "needs." Specifically excluded are holding tanks installed to serve new land development or low flow commercial facilities. While not actually discharging sewage into the environment, properly maintained holding tanks, when used in OLDS repair situations, are included in the confirmed malfunction category.
4. Public Complaints are legitimate complaints received by the PA DEP or the municipality concerning improper sewage disposal. The number, nature, and location of public complaints concerning improper sewage disposal are important, yet often overlooked indicators of sewage disposal problem areas.
5. Sanitation Related Illness is any reported illness, either resulting from or suspected to be resulting from improper sewage disposal. Records and incidents in which polluted water supplies have been suspected or confirmed as the cause of disease is documentation establishing a community's wastewater treatment needs. Confirmed or suspected vector-borne disease that may be attributed to surface ponding of sewage should also be considered.

1.1.6 Sanitary Survey

In order to determine the extent of the conditions as stated above in the planning area that could endanger public health, a sanitary sewage survey was completed in the areas utilizing OLDS systems. There are approximately 1,934 residences within the area served by OLDS. A total of 450 surveys were collected from random property owners throughout the planning area. The survey inquired about the age, type and condition of the OLDS and water systems on the property. A summary of the surveys is included in Appendix F.

Follow-up field verifications ("door-to-door surveys") were performed for a percentage of the properties based on guidelines set forth in the SDNIG document. According to the SDNIG document, a recommended minimum number of properties with OLDS within each Sewage Management Area (SMA) should be surveyed in order to conduct a "representative", or "valid" door-to-door sanitary sewage survey of the SMA. The minimum percentage of the properties that should be surveyed varies with the total number of properties in the SMA in accordance with the requirements published in the SDNIG (Table 1-6).

Table 1-6 Minimum OLDS Requirements for Door-To-Door Sanitary Survey – Tier 2

OLDS in the MATW	Minimum Percentage of OLDS to Survey
Up to 50	50%
51 to 100	35%
101 to 500	25%
501 to 1,000	20%
Greater than 1,000	15%

In accordance with the SDNID, a Tier 2 survey was conducted for the entire planning area and more than the minimum percentages of the OLDS were surveyed for each planning area. In total, approximately 24% of the OLDS in all of the planning area were surveyed. At each home where the sewage survey was completed, the field inspectors made general observations of the properties and performed closer investigations of sites that demonstrated evidence of sewage malfunctions including direct observation of sewage, soapsuds, food residues, solids, or odors. Other environmental conditions including abnormally green grass, piped discharges and swampy or wet areas in the vicinity of the on-lot systems were also noted.

During the survey, a total of 477 properties were surveyed. Based on the Tier 2 Survey, the number and percentage of the properties in the planning area that were determined to have confirmed, suspected, potential, and no malfunctions are summarized in Table 1-7. Complete results are presented in Exhibit D.

Table 1-7 Summary of Tier 2 Survey Malfunction Categories

Planning Area	OLDS Surveyed	Malfunction (% of OLDS Surveyed)							
		Confirmed		Suspected		Potential		None	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent
Milford Borough	123	5	4%	72	59%	2	2%	44	36%
Milford Township East	21	1	5%	9	43%	0	0%	11	52%
Milford Township West	19	1	5%	6	32%	0	0%	12	63%
Westfall Township-Northeast	42	3	7%	15	36%	0	0%	24	57%
Westfall Township-Southwest	52	6	12%	13	25%	0	0%	33	63%
Matamoras Borough	220	11	5%	100	45%	5	2%	104	47%

1.1.7 Soil Suitability for On-Lot Sewage Disposal

The characteristics of the soils located in the Township were compiled using information presented in GIS mapping provided by Pike County and the United States Department of Agriculture, Natural Resources Conservation Service (USDA-NRCS), and the NRCS's online Soil Data Mart and the Pennsylvania State University's Soil Map. These characteristics were used to determine the areas of the Township suitable for the use of OLDS. Factors taken into consideration for OLDS suitability include the following:

1. Depth to limiting zone (bedrock or water table).
2. Percent slope.
3. Hydric soils (soils with hydric components or inclusions of hydric components).

The criteria used to determine areas suitable for the use of either elevated sand mound OLDS or in-ground OLDS, are presented in Table 1-9. Using these criteria, in combination with the soil characteristics presented in the USDA's Soil Survey, a determination was made regarding the suitability of areas of the Township for the use of elevated sand mound OLDS, or in-ground OLDS. (See Table 1-9).

Table 1-9 Suitability Criteria for On-Lot Sewage Disposal Systems

System	Hydric Soils	Depth To Bedrock	Depth to Seasonal High Water Table	Slope
Unsuitable for Any System	Yes	< 16 Inches	< 10 Inches	> 25%
Suitable for Elevated Sand Mound	No	20 Inches or Greater	20 Inches or Greater	<12%
Suitable for Conventional In-Ground System	No	60 Inches or Greater	60 Inches or Greater	<25% for Standard Trenches <8% for Seepage Beds

Note: In addition to limitations relating to soils, subsurface conditions, and slopes, absorption areas shall not be located within 100-year floodways.

1.1.8 Well Water Survey

The Matamoras Municipal Authority supplies water to all of the Borough of Matamoras and an adjacent portion of Westfall Township (Westfall Township Northeast). The Milford Municipal Authority supplies water to all of the Borough of Milford and parts of Milford and Westfall Township in the planning area. In the Study Areas of Milford Township East and Westfall Township Southwest, there are a number of wells in the Study Areas.

According to the guidelines for well water surveys published in the SDNIG document, well water

surveys may be completed in two tiers (or steps). In tier one, a minimum of 15 percent of the wells in the study area must be sampled. For the second tier, representative sampling must be completed with percentages the same as for the Door-to-Door Survey. Each well water sample was analyzed for total coliform bacteria, fecal coliform bacteria and nitrate-nitrogen concentration.

The Sewage Disposal Needs Identification Guidance requires representative sampling, or second tier sampling in any Study Area, if:

1. The total coliform bacteria contamination rate is 10 percent or greater in the first tier well water samples; and
2. The fecal coliform bacteria contamination rate is 20 percent or greater in the first tier well water samples that had total coliform bacteria contamination.

A total of 36 wells were sampled during the Tier 1 and 2 analysis of Westfall Township and Mifflord Township, and the results are summarized in Table 3-5. No well water samples in either Study Area indicated elevated levels of Nitrate or any detectable amounts of Fecal Coliform.

Table 1-10 Summary of Tier 2 Well Water Sampling Results

Planning Area	Approximate # of Wells	# of Water Samples needed		# of Water Samples Completed	Nitrate Test Results				Total Coliform	Fecal Coliform
					Non-Detectable (<0.05 mg/l)	0-5 mg/L	5-10 mg/L	10+ mg/l	Detectable >1	Detectable >1
Mifflord Township East	10	50%	5	5	0	5	0	0	0	0
Westfall Township-Southwest	128	25%	32	32	8	24	0	0	7	0

1.1.9 Summary and Conclusions

Table 1-7 displays the results of the sanitary surveys completed for the planning area as part of this Act 537 Plan. Map 13 in Appendix B "OLDS Malfunction Exhibit" displays the locations where the sanitary surveys were completed and the corresponding malfunction category. The Tier 2 survey indicated a 5.7% confirmed malfunction rate based on field observations.

It is recommended that an On-lot Sewage Management Program be implemented by the Borough to assist homeowners in developing a regular maintenance schedule to help maintain the functionality of the existing OLDS. The implementation of a Sewage Management Program for the Authority and construction of public sanitary sewer to areas of the Authority currently served by OLDS is further discussed and evaluated.

1.2 Project Description

The Planning Area for this Act 537 Sewage Facilities Plan consists of the Northeast Branch and

Southwest Branch within Westfall Township, Milford Township East, Milford Township West, Matamoras Borough, and Milford Borough. This Planning Area encompasses is surrounded by the Delaware River and New Jersey to the East, Shohola Township and Dingman Township to the West, and the State of New York to the North. A general location map of the planning area is detailed on Map No. 1 in Exhibit B. Only portions of Westfall Township have sewage, which is provided by the Municipal Authority of Westfall Township. None of the other municipalities have any wastewater collection systems.

An evaluation of existing on-lot disposal systems throughout the Planning Area indicated that there is a need for improved wastewater disposal in Matamoras Borough, Westfall Township Southwest, Milford Township East, and Milford Borough. The results of the sanitary survey are summarized in Section 1.1.6. The maps summarizing the results of the surveys and a complete summary of the results of the sanitary survey are presented in Section 6.0 of this Report.

The needs areas were identified based on needs derived from the number of on-lot malfunctions, potential growth, and commercial needs. Structural alternatives for providing improved sewage facilities to these study areas were evaluated on the basis of environmental soundness, cost-effectiveness, and structural feasibility.

1.2.1 Potential Wastewater Treatment Alternatives

Rules and regulations pertaining to the content of Act 537 plans are contained in Title 25 Pennsylvania Code Chapter 71. These rules and regulations require that each Act 537 plan present and evaluate alternatives for sewage service within the project area. The following sections present several alternatives available to the Region for meeting the wastewater planning needs identified in Chapter 4. The topics covered in this chapter include the following:

1. No Action.
2. Increased OLDS/Decentralized System Management.
3. Community On-lot Disposal Systems (COLDS).
4. Extension of new public sewers with connection to Authority's system.
5. Potential Land-Based Alternatives such as irrigation or spray.

For planning areas outside of the proposed sewer extension areas, alternatives to be evaluated during the plan preparation for these areas include:

1. No Action
2. Increased OLDS/Decentralized System Management

These general wastewater alternatives have been considered for areas within the planning area currently served by OLDS. Initially, many alternatives were considered, however some were dismissed immediately and eliminated from further consideration in the Plan due to cost and technical feasibility. 24 sewer extension alternatives to provide public sewer service to these areas of the planning area currently served by OLDS have been evaluated to determine whether they are cost-effective, environmentally sound, and structurally feasible. These alternatives are listed below:

Alternative No. 1A provides public sewer service to Matamoras Borough along Pennsylvania

Avenue and Westfall Township Northeast along Route 6/209. For this alternative, the entire extension is a conventional gravity system. Due to the topographical features of this extension, no additional pump stations will be required with this alternative. All flows would be conveyed via gravity to MATW's WWTP through MATW Pump Station #1 on Route 6/209. For Alternatives 1A-1C., there are 84 projected connections with this alternative.

Alternative No. 1B provides public sewer service to Matamoras Borough and Westfall Township Northeast along Pennsylvania Avenue. For this alternative, the entire extension is a low pressure system, and it is anticipated that 80 properties will require a grinder pump and low pressure sewer laterals. The low pressure main will tie into the existing force main where Pennsylvania Avenue and Route 6/209 merge with this alternative.

Alternative No. 1C provides public sewer service to Matamoras Borough along Pennsylvania Avenue and Westfall Township Northeast along Route 6/209. For this alternative, the system is largely a conventional gravity system but with a pump station located approximately 500 feet from the existing force main. The remainder of the system is a force main that will tie directly into the existing system, which is located where Route 6/209 and Pennsylvania Avenue merge. The capacity for the proposed pump station would be over 35,200 GPD with this alternative

Alternative No. 2A provides public sewer service to Matamoras Borough and Westfall Township Northeast along Pennsylvania Avenue as well as the municipal roads in Matamoras Borough. The municipal roads included in this alternative were determined based on the needs identification surveys described in Chapter 3. Conventional gravity sewer is proposed to collect the wastewater and convey it to Westfall Authority Pump Station #1 along Route 6/209. No additional pump stations are assumed to be required for this alternative. For Alternatives 2A-2C, there are 222 projected connections.

Alternative No. 2B provides public sewer service to Matamoras Borough along Pennsylvania Avenue as well as the municipal roads in Matamoras and also in Westfall Township Northeast along Route 6/209. The municipal roads included in this alternative were determined based on the Tier 2 Survey Results described in Chapter 3. Low pressure sewer is proposed to collect the wastewater and convey it to the existing force main where Pennsylvania Avenue and Route 6/209 merge.

Alternative No. 2C provides public sewer service to Matamoras Borough and Westfall Township Northeast along Pennsylvania Avenue as well as the municipal roads in Matamoras Borough. The municipal roads included in this alternative were determined based on the Tier 2 Surveys described in Chapter 3. Conventional gravity sewer is proposed to collect most of the wastewater and convey it to a proposed pump station near 10th Street. A force main from the proposed pump station would be used out of the pump station to convey flow to the existing force main where Pennsylvania Avenue and Route 6/209 merge for this alternative. The capacity for the proposed pump station would be over 63,400 GPD.

Alternative No. 3A provides public sewer service to the Westfall Township Southwest planning area along Route 6/209 to the Milford/Westfall Township border. A combination of gravity collection lines and a pump station, proposed to be located on Route 6/209 near Kittatinny Canoes, are proposed to collect the wastewater and convey it to the existing system, which

currently terminates near the McDonalds on Route 6/209. Properties will directly connect to the force main via lower pressure sewer with grinder pumps following the proposed pump station with this alternative. For Alternative 3A-3B, there are 14 probable connections (382 EDUs). The pump station capacity should be rated at over 43,000 GPD.

Alternative No. 3B provides public sewer service to the Westfall Township Southwest planning area along Route 6/209 to the Milford/Westfall Township border. Low pressure sewer is proposed to collect the wastewater and convey it to the existing system, which currently terminates by the McDonald's on Route 6/209.

Alternative No. 4A provides public sewer service to the Westfall Township Southwest, Milford Township, and Milford Borough planning areas. In Westfall Township Southwest and Milford Township East, the area proposed is along Route 6/209, and in Milford Borough, it is along Broad Street. Low pressure sewer is proposed along Broad Street through Milford Borough for this alternative. The system's low pressure line transitions into a gravity line in Milford Township before it enters a proposed pump station and force main that eventually ties into the MATW system at its new proposed termination in Alternatives 3A and 3B. Properties along the low pressure system and force main would require grinder pumps and low pressure lateral connections. For Alternatives 4A-4C, there are 49 projected connections. The pump station capacity to tie into new proposed improvements would be rated at over 21,200 GPD.

Alternative No. 4B modifies Alternative No. 4A by replacing the pump stations, gravity collection systems, and force main with a low pressure system and grinder pumps. It would connect to the proposed force main in Alternatives 3A and 3B, which is located along Route 6/209 at the Westfall Township/ Milford Township Line.

Alternative No. 4C modifies Alternative No. 4B by replacing the proposed low pressure system with a combination of gravity lines and pump stations. From Harford Street to George Street, there are proposed gravity lines with a proposed pump station located near the intersection of Broad Street and East George Street.. Downstream of the proposed pump station, the remainder of the system would be force main with properties requiring grinder pumps to tie into the proposed improvements. The proposed force main would tie into the existing MATW force main located near McDonald's in Westfall Township. The proposed pump station would be rated for over 21,200 GPD.

Alternative No. 4D modifies Alternative No. 4B by replacing the proposed low pressure system along Broad Street with two low pressure lines along Gooseberry Alley and Blackberry Alley before converging at Broad Street and Route 6/209. The proposed low pressure system will connect to the proposed force main termination in Alternatives 3A and 3B. Alternatives No. 4D and 4E are projected to have 68 connections.

Alternative No. 4E modifies Alternative No. 4D by replacing the proposed low pressure system with a combination of gravity sewer and a pump station. Gravity collection lines would be along Blackberry Alley and Gooseberry Alley until the two lines converge on Broad Street, where a pump station is proposed. The proposed force main would convey the wastewater along the remainder of Broad Street and Route 6/209 before connecting to the proposed termination point in the MATW system on the border of Westfall Township and Milford Township. The

proposed pump station would have a capacity of 26,600 GPD.

Alternative No. 5A modifies Alternative No. 4C by adding a proposed extension of the gravity collection line along West Harford Street. No additional pump stations are assumed to be required to Alternative 4A. The proposed pump station would have a capacity of 35,800 GPD for this alternative. Alternatives 5A and 5C are projected to have 87 connections.

Alternative No. 5B modifies Alternative by No. 5A by replacing the proposed gravity collection lines along Broad Street and West Harford Street with proposed gravity lines along West Pearl Alley, Blackberry Alley, and Gooseberry Alley. The proposed pump station would have a capacity of 37,000 GPD for this alternative. Alternatives 5B and 5D are projected to have 102 connections.

Alternative No. 5C modifies Alternative No. 5A by replacing the proposed gravity mains and proposed pump station with a low pressure system. There are no proposed pump stations, and properties will be required to have grinder pumps In this alternative.

Alternative No. 5D modifies Alternative No. 5C by replacing the proposed low pressure mains along Broad Street and West Harford Street with low pressure lines along West Pear Alley, Blackberry Alley, and Gooseberry Alley for this alternative.

Alternative No. 6A modifies Alternative No. 5A by adding a proposed extension of the low pressure line along East Harford Street. For Alternatives 6A-6C, approximately 114 commercial, 9 government, 3 Institutional, and 5 residential connections are proposed. The proposed pump station would have a capacity of 65,000 GPD in this alternative.

Alternative No. 6B modifies Alternative No. 6A by replacing the low pressure lines and one pumps station with gravity collection. There is a pump station at the end of East Harford Street with a proposed force main that connects to the proposed main gravity line on Broad Street. Thie proposed pump station would have a capacity of 54,200 GPD. There is a second pump station proposed near the in Milford Borough near the intersection of Broad Street and East George Street in this alternative. The second proposed pump station would have a capacity of 11,200 GPD in this alternative

Alternative No. 6C modifies Alternative No. 6B by replacing all proposed conveyance lines with low pressure lines. No pump stations are assumed to be required, but properties will need grinder pumps in this alterantive

Alternative No. 6D modifies Alternative No. 6B by replacing the proposed gravity collection lines along Broad Street and Harford Street with lines along Gooseberry Alley, Blackberry Alley, and Pear Alley. The conveyance line splits at East and West George Street before entering the alleys. The pump station, gravity, and force main lines on East Harford Street are to be replaced with low pressure conveyance lines and grinder pumps East Pear Alley. This pump station would have a capacity of 54,200 GPD. Alternatives 6D-6E have 78 commercial, 11 government, 5 Institutional, and 28 Residential connections.

Alternative No. 6E modifies Alternative No. 6D by replacing the proposed gravity lines as well as

the pump station with low pressure conveyance lines and grinders pumps.

Alternative No. 6F modifies Alternative No. 6D by replacing the proposed conveyance lines along Pear Alley with proposed low pressure conveyance line along East and West Harford Street. Alternative 6F has 123 commercial, 12 government, 5 institutional, and 9 residential connections.

Alternative No. 7 modifies Alternative No. 6B by including low pressure lines in municipal roads in Milford Borough based on the Tier 2 Survey Results described in Chapter 3. There are 140 commercial, 9 government, 7 institutional, and 71 residential connections.

All of the alternative extensions presented above are proposed to be conveyed to the Municipal Authority of Westfall Township wastewater treatment plant and system as described in 1.1.1.

A hydraulic analysis was performed to confirm if the plant, pump stations, and conveyance system have sufficient capacity to accept flows from the proposed extensions. Using the 2019 Westfall Township Chapter 94 Report data as well as SewerCAD models for the MATW Plant, there is sufficient hydraulic and organic capacity for the plant. Figures 1.1 and 1.2 show the projected hydraulic and organic demands of the selected alternatives (2B, 3B, and 6F) based on immediate and probable connections.

Figure 1.1: Projected Hydraulic Loads

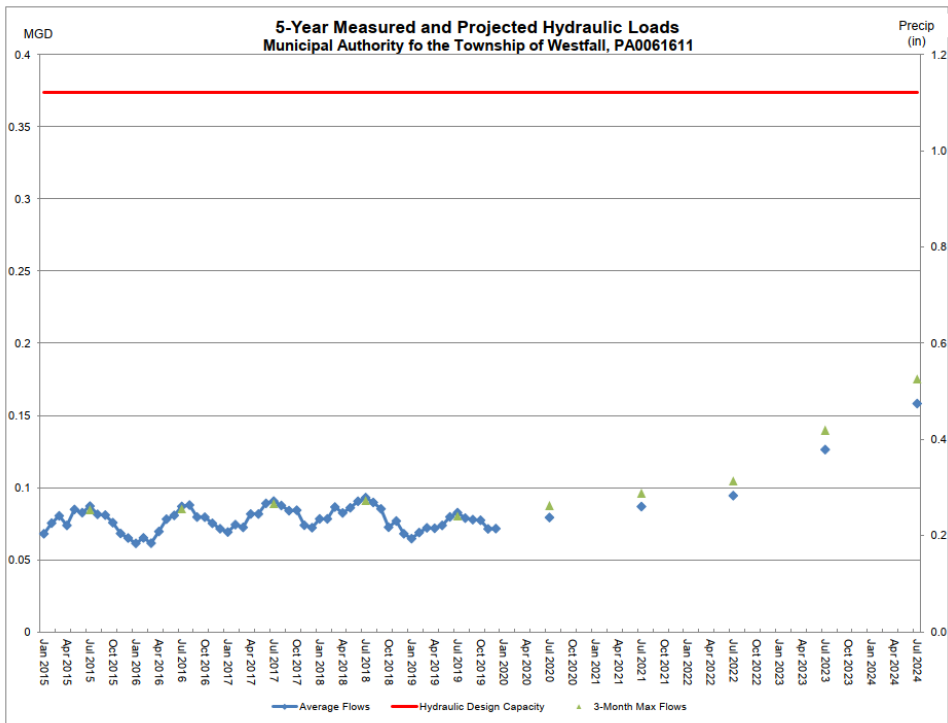
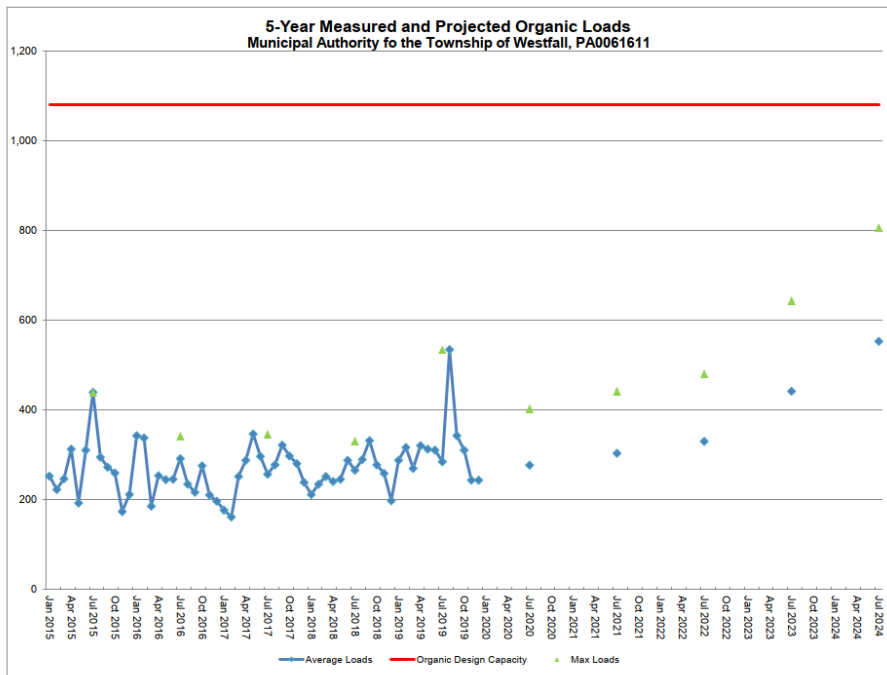


Figure 1.2: Projected Organic Loads



A hydraulic analysis was performed to confirm that the plant, pump stations, and conveyance have enough capacity to accept flows from the proposed extensions. No WWTP upgrades are planned or needed for any of the proposed alternatives.

Presently, public sewer only exists within parts of Westfall Township and Matamoras Borough and extends Northeast to the Price Chopper located on Pennsylvania Avenue. The majority of the Township is served by OLDS.

1.2.2 Conveyance Alternatives

New collection and conveyance facilities were evaluated to extend public sewer and are required to serve the sewer service areas identified by this Act 537 Plan. The apparent needs areas are the major roads and commercial zoning areas which are along Route 6/209, Broad Street and Harford Street in Milford Borough, and Pennsylvania Avenue in Matamoras Borough. The needs areas in Matamoras Borough were addressed in Alternatives 1A-1C and Alternatives 2A-2C. The needs areas in Westfall Township Southwest, Milford Township, and Milford Borough were addressed in Alternatives 3-7. The plant can handle significantly more flow than projected, and therefore will not need upgrades at this time. The extensions are proposed for the 5-10 year planning window; depending on available funding. Far Future connections are projected beyond the 10-year planning window and may require upgrades to the conveyance system and/or the plant.

Conventional Gravity Sewers

Conventional gravity sewers convey wastewater by using gravity. The sewers must be set deep enough to receive flows from individual buildings. The building sewer or lateral is typically comprised of 4-inch or 6-inch diameter pipe laid at a minimum slope of 1%. Building sewers connect directly to the collecting sewers. Where financially feasible, the collecting sewer is set at a depth that is capable of receiving basement flows. Conventional gravity sewers are constructed to meet minimum state and local requirements. Generally, they are constructed of 8-inch diameter or larger pipe with access manholes spaced a maximum of 400 feet apart and at each change of direction. Conventional systems are connected directly to existing or proposed conveyance and treatment systems. The feasibility of conventional gravity sewers is dependent on factors such as topography, presence of rock, high groundwater tables, and density of homes. The costs of a conventional gravity system can vary dramatically depending on the above noted factors.

Low-pressure Systems

Low-pressure systems which rely on Grinder Pumps (GP) are an alternative to conventional gravity systems. The GP systems shred or reduce the size of raw wastewater solids, producing a pumpable slurry which is conveyed to the treatment plant through low-pressure sewer lines. Pressure sewers are most cost-effective in areas where the terrain is rolling, or the line needs to be close to the surface due to low depth to bedrock or a high water table. Pressure sewers have disadvantages such that the sewage may be septic and odor problems may arise depending on the length of the system. The homeowner would be responsible for the maintenance of their grinder pump.

When discussing GP systems, it is necessary to consider both the on-lot element as well as the collection system elements. The on-lot elements of a GP system consist of a 4-inch or 6-inch

building sewer that conveys business / household sewage to the GP. On existing homes, either a new connection is made to the existing plumbing system or the existing building sewer is intercepted by the new building sewer and directed to the GP. The GP typically consists of a fiberglass basin with a minimum capacity of 50 gallons. The pumps are either centrifugal or semi-positive displacement units with 1-2 HP motors. The basin includes appropriate valves for isolation of the pump. Each basin package is provided with a pump control panel, which can either be located remotely at the business / house or locally at the GP. For single-family homes, there is only one pump. The homeowner would be responsible for extending the power out to the control panel, and if a new electrical service would be required, it would be the homeowner's responsibility.

The second component of any GP system is the collection system. A typical low-pressure sewer system consists of small diameter, less than 4 inches in diameter, high-density polyethylene (HDPE) pressure piping. All piping downstream of the grinder pump is under low pressure, usually 60 psi or less. The low-pressure collection system is arranged as a branch network with no loops in the system. Appurtenances of a low-pressure system consist of in-line and terminal clean-outs located at 400'-600' intervals, at changes in direction or at changes in pipe size. Air release valves are located within the system at all high points. Isolation valves are installed strategically throughout the system to facilitate maintenance. GP systems have been most applicable in areas where the topography is very flat, has rolling hills, significant rock may be present, high groundwater table is present, or where the system outfall is at a higher elevation than the service area. In this planning area, the elevation changes suddenly at multiple points along the proposed alternatives, so the utilization of the GP system would eliminate the need for multiple pump stations.

The purchase and installation of grinder pumps is included in the project cost. Once the project is complete, the grinder pumps become the homeowner's property, and they are responsible for the O&M. The homeowner would be responsible for extending power out to the control panel, and in some instances, a new service is required as well, which would be the homeowner's responsibility.

Collection System Construction Costs

Typically, an authority or municipality would be responsible for the construction and funding of an extension of public facilities to a previously developed area. In the case of a new development, sewage facilities are generally extended by the developer at their cost and dedicated to the authority or municipality under a written agreement. Estimates of construction cost, overall project costs are included in the focused assessment of the needs areas in Section 2.1.

1.2.3 Repair or Replacement of Existing Collection and Conveyance System Components

No alternatives are anticipated which would facilitate the need for repair or replacement of existing collection or conveyance system mains or interceptors. As the municipalities do not own or operate a collection and conveyance system, it is owned and operated by MATW.

1.2.4 Upgrade of Existing Wastewater Treatment Plant

Westfall Township Authority currently has a hydraulic capacity of 0.374 MGD, and its 2019 average flow was 0.0742 MGD. Based on the chosen alternatives, the WWTP has sufficient hydraulic and organic capacity to implement the alternatives.

The wastewater flow projections developed for this Act 537 Plan were based on the following conditions and assumptions:

- Wastewater flows generated for all Structural Alternatives are based on 200 gallons per day (gpd) per equivalent dwelling unit (EDU).
- Delaware Valley High School connection is based on an annual average flow of 15,000 gpd from existing flow records.
- Milford Senior Care Rehabilitation Center connection is based on annual average flow of 15,000 gpd from existing flow records.
- In Milford Borough and Milford Township, the existing water meter usage was used to project wastewater flow for commercial buildings.
- In Westfall Township, PA Title 25 Chapter 73 was used to project wastewater flow for non-residential buildings.
- In Matamoras Borough, water meter usage data was used to project wastewater flow for non-residential buildings.
- Each residential building was assumed to be one EDU.

Table 1-12 Estimated Wastewater Flow Scenarios By Alternative

Potential Service Area	Initial EDUs	Initial Flow (GPD)	Future Connection EDUs	Future Connection Flow
Alternative 1	140	28,000	177	35,400
Alternative 2	328	65,600	336	63,400
Alternative 3	128	25,600	389	77,800
Alternative 4A-4C	106	21,200	222	44,400
Alternative 4D-4E	126	25,200	242	48,400
Alternative 5A, 5C	172	34,400	288	57,600
Alternative 5B, 5D	178	35,600	294	58,800
Alternative 6A-6C	264	52,800	380	76,000
Alternative 6D-6E	236	47,200	352	70,400
Alternative 6F	284	56,800	400	80,000
Alternative 7	363	72,600	479	95,800

1.2.5 Continued Use of On-Lot Disposal Systems

Additional On-lot disposal systems (OLDS) are not being considered as an option in this Act 537 Planning Effort for areas where public sewer is not currently available. Therefore, no additional soil, slope and/or hydrogeological evaluations are assumed. The majority of the soil within the planning area is suitable for OLDS. However, it is not being further considered due to the high cost to individual residents and environmental issues. It is anticipated that the existing OLDS will remain in use while non-failing and permissible in Areas where sewer extensions are not proposed.

1.2.6 Repair, Replacement or Upgrade of Existing Malfunctioning Systems

Each municipality's certified SEO is authorized to require the repair of any on-lot malfunction by the following methods approved by Title 25, Chapter 73 of the Pennsylvania Code: cleaning, repair or replacement of components of the existing system, adding capacity or otherwise altering or replacing the system's treatment tank, expanding the existing disposal area, replacing the existing disposal area, replacing the gravity distribution system with a pressurized system, replacing the system with a holding tank, or other alternatives as appropriate for the specific site.

It is recommended that the confirmed malfunctions be rehabilitated and/or repaired by providing a suitably sized drainage bed or replaced. The suspected and potential malfunctions are recommended to be further investigated by the SEO to determine the needs for rehabilitation, replacement, or upgrades.

1.2.7 Water Conservation

Another method for improving the operation of on-lot systems is to encourage the use of water conservation devices. In lieu of repair by methods mentioned above, the SEO may require the installation of water conservation equipment and the institution of water conservation practices in structures served. Water using devices and appliances in the structure may be required to be

retrofitted with water saving appurtenances or they may be required to be replaced by water conserving devices and appliances. Wastewater generation in the structure may also be reduced by requiring changes in water use patterns in the structure served. The use of laundry facilities may be limited to one load per day or discontinued altogether.

1.2.8 Community On-Lot, Small Flow or Package Treatment

According to the Tier 2 surveys, Green Acres Community on Roberts Lane, Milford PA has two Community On-lot Disposal Systems, or COLDS, for the mobile-home park community, which consists of 55 mobile-homes. There are also two COLDS in the Milford Town Green complex. COLDS are essentially small, centralized collection systems that serve isolated developed areas and involve the discharge of treated effluent to the subsurface. Many COLDS simply consist of a large septic tank followed by an absorption bed, while others consist of a conventional treatment plant with effluent discharged into the subsurface. COLDS commonly service relatively small, isolated communities (i.e. less than 50 EDU's); however, there are some large COLDS that service larger communities of several hundred households. Since the majority of the planning areas already have individual on-lot systems, this alternative would be too expensive and lack funding sources. As a result, additional COLDS are not recommended. Therefore, no further evaluations were completed and no COLDS are proposed.

There are two (2) non-municipal package or small flow treatment facilities located within Westfall Township as described in Chapter 3. Milford Senior Care and Rehabilitation Center (NPDES Permit #PA0060020) and Delaware Valley School District (NPDES Permit #PA0032166) own and operate the two Wastewater Treatment Facilities. Milford Senior Care and Rehabilitation Center is permitted for 18,000 GPD, and Delaware Valley School District is permitted for 20,000 GPD.

No costs associated with the abandonment and acceptance of flows from existing wastewater treatment facilities are included in the cost opinions because each of the NPDES permits for these respective facilities indicates the following within Paragraph D, under "Other Requirements," *"If, after the issuance of this permit, DEP approves a municipal sewage facilities official plan or an amendment to an official plan under Act537 (Pennsylvania Sewage Facilities Act, the Act of January 24, 1966, P.L. 1535 as amended) in which sewage from the herein approved facilities will be treated and disposed of at other planned facilities, the permittee shall, upon notification from the municipality or DEP, provide for the conveyance of its sewage to the planned facilities, abandon use and decommission the herein approved facilities including the proper disposal of solids, and notify DEP accordingly."*

1.2.9 Holding Tanks

Holding tanks are vessels designed and constructed to store sewage prior to ultimate disposal at another site. Pumper trucks are the preferred method of conveyance of holding tank wastes. Due to the high maintenance costs resulting from frequent pumping, holding tanks are not considered to be a viable long-term alternative for typical residential demands. However, they may be viable solutions for transient residential, commercial or industrial sites with minimal wastewater flow.

Installation of a holding tank may be required by the municipality's SEO as a rehabilitative measure to repair an OLDS. In the event that rehabilitative or replacement measures are not

feasible or do not prove effective, the municipality may require the owner to apply for a permit to construct a holding tank. It is recommended that the municipality should issue holding tank permits only as required for the temporary repair of malfunctioning OLDS. The issuance of holding tank permits shall continue in accordance with DEP regulations and requirements of Westfall Township's Ordinances. Westfall Township's existing Holding Tank Ordinance is provided in Appendix B. Matamoras Borough, Milford Borough, and Milford Township do not have holding tank ordinances but should adopt a similar one to Westfall Township's existing ordinance.

1.2.10 Sewage Management Programs

The OLDS management Ordinance would intend to provide requirements for the permitting, inspection, operation, maintenance, and rehabilitation of OLDS within the study area and throughout each Municipality. A draft Ordinance Template is included in Appendix D. Select items from the Ordinance may include the following:

- No person shall install, construct, or request bid proposals for construction, or alter an individual sewage system or community sewage system or construct or request bid proposals for construction or install or occupy any building or structure for which an individual sewage system or community sewage system is to be installed without first obtaining a permit from the Municipality's Sewage Enforcement Office. The permit shall indicate that the site and the plans and specifications of such system are in compliance with the provisions of the Clean Streams Law and the Pennsylvania Sewage Facilities Act and the regulations adopted pursuant to those Acts.
- Applicants for sewage permits will be required to notify the Sewage Enforcement Officer of the schedule for construction of the permitted OLDS so that inspection(s) in addition to the final inspection required by the Sewage Facilities Act may be scheduled and performed by the Sewage Enforcement Officer.
- Any On-lot Sewage System may be inspected by an authorized agent at any reasonable time as of the effective date of the Ordinance. Such inspection may include a physical tour of the property, the taking of samples from surface water, wells and /or, other groundwater sources, the sampling of the contents of the sewage disposal system itself and/or the introduction of a traceable substance into the interior plumbing of the structure served to ascertain the path and ultimate destination of wastewater generated in the structure.
- An authorized agent shall inspect systems known to be, or alleged to be, malfunctioning. Should said inspections reveal that the system is indeed malfunctioning; the authorized agent shall order action to be taken to correct the malfunction.
- Each person owning a building served by an On-lot Sewage Disposal System which contains a septic tank shall have the septic tank pumped by an authorized pumper/hauler within three years of the effective date of the Ordinance. Thereafter that person shall have the tank pumped at least once every five years or whenever an inspection reveals that the septic tank is filled with solids or scum in excess of 1/3 of the liquid depth of the tank. Justification, including sufficient evidence that the septic tank does not require pumping every five years, may be submitted to the SEO for review and approval. Receipts from the authorized pumper/hauler shall be submitted to the Township within the prescribed one and five year pumping periods.

- The required pumping frequency may be increased or decreased at the discretion of the municipality if the septic tank is undersized, if solids buildup in the tank is above average, if the hydraulic load on the system increases significantly above average, if a garbage disposal is used in the building, if the system malfunctions or for other good cause shown.
- Within seven (7) days of notification by the municipality that a malfunction has been identified, the property owner shall make application to the Sewage Enforcement Officer for a permit to repair or replace the malfunctioning system. Within 30 days of initial notification by the municipality, construction of the permitted repair or replacement shall commence.

Please refer to the template Ordinance – included in Section 6.0 of this Report – that will be considered for the preparation of each Municipality's Draft On-Lot Sewage Management Ordinance.

1.2.11 Public Education

Each municipality will publically educate residents on the potential requirements of a proposed OLDS Management Ordinance and provide resources to the municipality's residents as necessary.

Each municipality will publicly advertise and make the Plan available at both the municipality Office and through the municipality's website, where the public will have an opportunity to review and comment on the Plan during a 30-day public comment period. The Plan is also proposed to be posted on each municipality's website. Following adoption of the Plan by the municipality, a copy will remain on file at each municipal Office.

1.2.12 Non-Structural/Planning Activities

The existing municipality rules, regulations and planning activities for each Municipality in the Planning Area appear sufficient to sustain the anticipated level of development in each municipality as long as sufficient public sewage facilities are provided to handle anticipated growth rates within the Growth Area as described above. In addition, the Municipality's development and adoption of the On-lot Sewage Management Program will recommend regular maintenance of on-lot systems in each Municipality thereby reducing the frequency of malfunctioning systems. It does not appear that new non-structural planning activities are needed at this time.

1.2.13 No Action Alternative

The no action alternative is the continued use of residential on-lot systems. The impacts of no action to address existing, short-term, and long-term sewage facilities include several considerations. Most of the discussion within this Plan has focused on the environmental and public health and safety concerns associated with the functioning of the existing on-lot sewage systems. The impacts of no action include possible degradation of ground water, possible loss of recreational use of waterways and environmental hazards. Economically, the no action alternative could result in substantial fines and/or penalties and restrict or prohibit growth to the planning area's potential growth and development areas. Several businesses have informed the municipalities that it is not financially feasible to stay in the area without central sewage, and other businesses have expressed concerns that the cost of being part of a central system would

hamper their economic viability. Assessing the economic viability of businesses is outside the scope of this study. The No Action Alternative was briefly considered and rejected.

2.0 SUMMARY OF REASONABLE ALTERNATIVES CONSIDERED

2.1 Structural Alternatives for Un-Sewered Areas

Alternatives to provide public sewer service to Matamoras Borough, Westfall Southwest, and Milford Borough Planning Areas are provided in Section 1.2.1. These Areas are all needs Areas due to the density of potential, suspected, and confirmed OLDS malfunctions, zoning classifications, and potential growth.

The 24 focused alternatives for providing public sewer service to the areas defined above are presented below and are evaluated on the basis of cost-effectiveness, environmental soundness, and structural feasibility. Cost estimates for the alternatives are provided in the tables provided below. Maps of each of the structural alternatives which identified proposed facilities are presented in Appendix I. Cost estimates are presented for comparative purposes when applicable and are detailed in the tables provided. Present worth, annual debt service, annual O&M and total annual cost per EDU for each alternative are also presented in the tables provided. Annual debt service is estimated based on a 20-year, 1.000% term as provided by PENNVEST cap rate funding for Pike County, a 40-year, 1.75% term as provided by USDA, and a 20-year, 4.5% term as assumed by tax exempt (Bond) financing. Actual debt service will depend on the financing scheme chosen and the actual finances of the project when completed. Present worth is estimated based on a 20-year, 4.25% term.

An analysis of the funding methods available to finance the alternatives evaluated in a later section. It is important to note that the preparation of detailed funding scenarios, analyses of financial service charges, cash flow analyses based on anticipated revenues, a user service charge system, administrative costs, and personnel costs would require additional information beyond the scope of this Plan. Please refer to the funding analysis later in this section.

2.1.1 Alternatives for the Matamoras Borough Planning Area

As mentioned in this Plan, Matamoras Borough is considered a needs area, especially along Pennsylvania Avenue. This area is considered to be of the highest need with the largest concentration of OLDS issues observed where there is also concentrated commercial demand for central sewage. Some residential streets were also included in some of the alternatives based on the Needs Identification Study in Chapter 3. All alternatives evaluated for inclusion in this Plan have the flexibility for a future extension to serve this area if the need arise or additional funding becomes available. Alternatives 1A-2C are the proposed alternatives in this planning area and are described in Section 5.1 of this chapter.

2.1.2 Alternatives for Westfall Township Southwest

Westfall Township Southwest is also a needs area along Route 6/209. There are a number of businesses and commercial buildings with high sewage demand with needs and desires to connect to MATW's system. Alternatives 3A-3B are the proposed alternatives in this planning area.

2.1.3 Alternatives for Milford Borough

Milford Borough is another needs area, especially along Broad Street and East and West Harford Street. Milford Borough is one of the larger needs areas in the Study due to commercial zoning and demands as well as needs areas identified in the Tier 2 Surveys. In Alternatives 5 and 6, the alleys behind East and West Harford Streets are proposed rather than East and West Harford Streets because it would allow for a lower cost for property owners to connect to the system as most building's existing on-lot systems are located in the back of the property. In addition, there would be lower restoration costs as these alleys are not PennDOT roads. The conveyance line would through along Route 6/209 in Milford Township until it converged with the conveyance line in Westfall Township. However, there are no planned connections in Milford Township at this time. Alternatives 4A-7 are the proposed alternatives in this planning area and are described in Section 2.0.

2.1.4 Alternatives for Milford Township

No structural alternatives for Milford Township have been contemplated at the time of this Study. The study areas of Milford Township East and Milford Township West are not significant needs areas based on the OLDS surveys, the well water sampling data, and the good drainage in Milford Township East and West. Due to the lack of a mandatory connection ordinance, the Study anticipates no immediate connections in the next five years and does not account for any financial contribution from these future connections. The properties along Rt. 6/209 are projected as future connections and would have the option to voluntarily connect to the proposed sewer collection system.

2.1.5 Alternative for Future Flow Capacity

The proposed systems outlined in the alternatives address current needs and provide for only minimal growth in the planning area.

2.1.6 No Action Alternative

The No Action structural alternative represents the status quo. It proposes the continued repair and construction of on-lot sewage disposal systems in compliance with Chapter 72 Standards and under the guidance and permitting of the Municipal SEO. In some cases, these systems will not be feasible based on the site limitations, including unsuitable soil, slope, and space restrictions.

This option is the least disruptive to the community, however, it does not address the issues raised in the Tier 2 survey – malfunctioning systems and business economic viability in the Plan Areas.

Costs for repair and replacement of individual on lot sewage disposal systems vary greatly from property to property; therefore, a realistic cost estimate for comparison purposes could not be prepared for this alternative.

2.2 COMPARISON OF ALTERNATIVES

2.2.1 Comparative Cost Estimates of Study Area Structural Alternatives

The following assumptions were used to develop the cost estimates presented in this report and were replicated in the Act 537 Plan:

- 1 Based on 2022 Dollars
- 2 The proposed extensions and cost estimate are conceptual and subject to change.
- 3 It is assumed that all proposed utility work will be completed as one project.
- 4 Length of HDD Laterals: 25' per connection
- 5 Inline cleanout required every 500 feet.
- 6 Assume 1 ARV per 5,280 feet.
- 7 Gravity, Force Main, and LPS Main - assume 75% suitable backfill, 25% aggregate backfill.
- 8 Depth of Manholes: 10 feet.
- 9 Manhole is required every 350 feet.
- 10 Length of gravity lateral connections: 20' per connection; Aggregate Backfill 50% of total length and Suitable Backfill 50% of total length.
- 11 Temporary Paving is assumed to be 2" of 19.5mm HMA.
- 12 Municipal Paving is assumed to be 3" 25mm base and 1.5" 9.5mm wearing.
- 13 PennDOT Paving is assumed to be 5" 37.5mm base and 2" 12.5mm wearing mill and overlay wearing (approximately one-lane width).
- 14 Assume one Clay Dike between every manhole
- 15 Assumes no Construction Administration cost
- 16 It was assumed that there are 200 GPD in an EDU
- 17 EDU flows were calculated using PA Code 25 Chapter 73 for dwellings in Westfall Township and Matamoras Borough.
- 18 EDU flows were calculated using Water Usage data from Milford Water Authority
- 19 For Gravity Sewer, assume one cleanout for each lateral connection.
- 20 Borings should be 10 feet deep with standard penetration resistance testing.
- 21 Test pits every 400 feet and at every pump station.
- 22 Assume Low Pressure Sewer and Force Main are HDD and vegetative restoration included in costs.
- 23 Assume all grinder pumps are outside of 100 year floodplains and will not require risers.

Using the assumptions outlined above, several cost opinions were prepared to use as a basis to compare the cost effectiveness of each structural alternative. Where applicable, a direct cost comparison of alternatives has been provided. Annual costs per EDU are based on these project costs and an assumed loan on the full project cost. It should be noted that the cost estimates prepared in this Act 537 Plan are first level cost estimates appropriate for planning level detail and should not be considered as final costs for financing purposes. The estimated tapping fees of \$1,600.00(current MATW tapping fees) and a wholesale rate of \$25/EDU have been used for the financial alternative comparisons.

Tables No. 2-1 through 2-24 present the cost estimates for the structural alternatives and Table No. 2-25 provide a summarization and comparison of the estimates. Table No. 5-26 includes the estimated annual cost and payment of annual debt service for several funding scenarios of the recommended alternatives. As a means of comparison, the Westfall Township Municipal Authority currently charges residential users \$60 per month (per EDU).

TABLE 2-1 COST OPINION FOR MATAMORAS BOROUGH ALTERNATIVE 1A

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MATAMORAS EXTENSION MAIN ROAD GRAVITY ALTERNATIVE 1A: GRAVITY SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 298,400.00	\$ 298,400.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 149,200.00	\$ 149,200.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 89,500.00	\$ 89,500.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	2,100	L.F.	\$ 230.00	\$ 483,000.00
5	8" PVC MAIN - SUITABLE BACKFILL	6,505	L.F.	\$ 175.00	\$ 1,138,375.00
6	8" X 6" WYE	81	EA.	\$ 435.00	\$ 35,235.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	810	L.F.	\$ 140.00	\$ 113,400.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	810	L.F.	\$ 125.00	\$ 101,250.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	81	L.F.	\$ 1,500.00	\$ 121,500.00
10	CONNECTION TO EXISTING PUMP STATION	1	EA.	\$ 11,000.00	\$ 11,000.00
11	CLAY DIKE	35	EA.	\$ 600.00	\$ 21,000.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	36	EA.	\$ 8,000.00	\$ 288,000.00
13	MANHOLE FRAME AND COVER	36	EA.	\$ 1,000.00	\$ 36,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
15	PENNDOT CROSSING	1	L.S.	\$ 35,000.00	\$ 35,000.00
16	STREAM CROSSING	4	L.S.	\$ 15,000.00	\$ 60,000.00
SURFACING					
15	TEMPORARY PAVING	2,910	L.F.	\$ 15.00	\$ 43,650.00
16	PENNDOT PAVING RESTORATION (BASE)	2,910	L.F.	\$ 90.00	\$ 261,900.00
17	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	3,300	S.Y.	\$ 25.00	\$ 82,500.00
18	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
19	VEGETATIVE RESTORATION	7,315	L.F.	\$ 20.00	\$ 146,300.00
ESTIMATED CONSTRUCTION COSTS					\$ 3,521,000.00
CONSTRUCTION CONTINGENCY @ 20%					\$ 705,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%					\$ 1,057,000.00
TOTAL ESTIMATED PROJECT COSTS					\$ 5,283,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					140
ESTIMATED CAPITAL COST PER EDU					\$ 38,000.00

TABLE 2-2 COST OPINION FOR MATAMORAS BOROUGH ALTERNATIVE 1B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MATAMORAS EXTENSION MAIN ROAD LOW PRESSURE ALTERNATIVE 1B: LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 183,100.00	\$ 183,100.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 91,600.00	\$ 91,600.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 55,000.00	\$ 55,000.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	1,058	L.F.	\$ 70.00	\$ 74,025.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	3,173	L.F.	\$ 65.00	\$ 206,212.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	2,025	L.F.	\$ 65.00	\$ 131,625.00
7	AIR/VACUUM RELEASE VALVES	4	EA.	\$ 12,000.00	\$ 50,760.00
8	INLINE CLEANOUT	9	EA.	\$ 4,500.00	\$ 40,500.00
9	TERMINAL CLEANOUT	2	EA.	\$ 3,000.00	\$ 6,000.00
10	GRINDER PUMP - SIMPLEX	43	EA.	\$ 9,000.00	\$ 387,000.00
11	GRINDER PUMP - DUPLEX	38	EA.	\$ 15,000.00	\$ 570,000.00
12	LOW PRESSURE LATERAL CONNECTION	81	EA.	\$ 900.00	\$ 72,900.00
13	CURBSTOP AND CHECK VALVE ASSEMBLY	81	EA.	\$ 850.00	\$ 68,850.00
14	TEST PITS	11	EA.	\$ 950.00	\$ 10,450.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 12,000.00	\$ 12,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
17	STREAM CROSSING	4	L.S.	\$ 15,000.00	\$ 60,000.00
SURFACING					
18	TEMPORARY PAVING	1,058	L.F.	\$ 15.00	\$ 15,862.50
19	PENNDOT PAVING RESTORATION (BASE)	1,058	L.F.	\$ 90.00	\$ 95,175.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	1,175	S.Y.	\$ 25.00	\$ 29,375.00
21	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	\$ -
ESTIMATED CONSTRUCTION COSTS					\$ 2,161,000.00
CONSTRUCTION CONTINGENCY @ 20%					\$ 433,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%					\$ 648,500.00
TOTAL ESTIMATED PROJECT COSTS					\$ 3,242,500.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					140
ESTIMATED CAPITAL COST PER EDU					\$ 24,000.00

TABLE 2-3 COST OPINION FOR MATAMORAS BOROUGH ALTERNATIVE 1C

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MATAMORAS EXTENSION MAIN ROAD GRAVITY ALTERNATIVE 1C: GRAVITY SEWER GRAVITY AND PUMP STATION SEWER EXTENSION					
ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 206,200.00	\$ 206,200.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 103,100.00	\$ 103,100.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 61,900.00	\$ 61,900.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	933	L.F.	\$ 230.00	\$ 214,475.00
5	8" PVC MAIN - SUITABLE BACKFILL	2,798	L.F.	\$ 175.00	\$ 489,562.50
6	8" X 6" WYE	81	EA.	\$ 435.00	\$ 35,235.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	810	L.F.	\$ 140.00	\$ 113,400.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	810	L.F.	\$ 125.00	\$ 101,250.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	81	L.F.	\$ 1,500.00	\$ 121,500.00
10	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 11,000.00	\$ 11,000.00
11	CLAY DIKE	15	EA.	\$ 600.00	\$ 9,000.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	16	EA.	\$ 8,000.00	\$ 128,000.00
13	MANHOLE FRAME AND COVER	16	EA.	\$ 1,000.00	\$ 16,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
FORCE MAIN					
15	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	125	L.F.	\$ 110.00	\$ 13,750.00
16	4" HDPE FORCE MAIN - SUITABLE BACKFILL	375	L.F.	\$ 100.00	\$ 37,500.00
17	TEST PITS	1	EA.	\$ 950.00	\$ 950.00
PUMP STATION					
18	PUMP STATION	1	L.S.	\$ 400,000.00	\$ 400,000.00
CROSSING					
19	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
20	STREAM CROSSING	4	L.S.	\$ 15,000.00	\$ 60,000.00
SURFACING					
21	TEMPORARY PAVING	1,743	L.F.	\$ 15.00	\$ 26,137.50
22	PENNDOT PAVING RESTORATION (BASE)	1,743	L.F.	\$ 90.00	\$ 156,825.00
23	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	2,000	S.Y.	\$ 25.00	\$ 50,000.00
24	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
25	VEGETATIVE RESTORATION	3,608	L.F.	\$ 20.00	\$ 72,150.00
ESTIMATED CONSTRUCTION COSTS					\$ 2,433,000.00
CONSTRUCTION CONTINGENCY @ 20%					\$ 487,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%					\$ 730,000.00
TOTAL ESTIMATED PROJECT COSTS					\$ 3,650,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					140
ESTIMATED CAPITAL COST PER EDU					\$ 27,000.00

TABLE 2-4 COST OPINION FOR MATAMORAS BOROUGH ALTERNATIVE 2A

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MATAMORAS RESIDENTIAL GRAVITY ALTERNATIVE 2A: GRAVITY SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 502,800.00	\$ 502,800.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 251,400.00	\$ 251,400.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 150,900.00	\$ 150,900.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	3,550	L.F.	\$ 230.00	\$ 816,500.00
5	8" PVC MAIN - SUITABLE BACKFILL	10,855	L.F.	\$ 175.00	\$ 1,899,625.00
6	8" X 6" WYE	202	EA.	\$ 435.00	\$ 87,870.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	2,020	L.F.	\$ 140.00	\$ 282,800.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	2,020	L.F.	\$ 125.00	\$ 252,500.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	202	L.F.	\$ 1,500.00	\$ 303,000.00
10	CONNECTION TO EXISTING PUMP STATION	1	EA.	\$ 11,000.00	\$ 11,000.00
11	CLAY DIKE	17	EA.	\$ 600.00	\$ 10,200.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	43	EA.	\$ 8,000.00	\$ 344,000.00
13	MANHOLE FRAME AND COVER	43	EA.	\$ 1,000.00	\$ 43,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
15	PENNDOT CROSSING	1	L.S.	\$ 35,000.00	\$ 35,000.00
16	STREAM CROSSING	4	L.S.	\$ 15,000.00	\$ 60,000.00
SURFACING					
17	TEMPORARY PAVING	5,570	L.F.	\$ 15.00	\$ 83,550.00
18	PENNDOT PAVING RESTORATION (BASE)	3,295	L.F.	\$ 90.00	\$ 296,543.66
19	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	3,661	S.Y.	\$ 25.00	\$ 91,525.82
20	MUNICIPAL PAVING RESTORATION	2,275	L.F.	\$ 65.00	\$ 147,879.58
21	VEGETATIVE RESTORATION	12,875	L.F.	\$ 20.00	\$ 257,500.00
ESTIMATED CONSTRUCTION COSTS					\$ 5,933,000.00
CONSTRUCTION CONTINGENCY @ 20%					\$ 1,187,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%					\$ 1,780,000.00
TOTAL ESTIMATED PROJECT COSTS					\$ 8,900,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					276
ESTIMATED CAPITAL COST PER EDU					\$ 33,000.00

TABLE 2-5 COST OPINION FOR MATAMORAS BOROUGH ALTERNATIVE 2B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MATAMORAS RESIDENTIAL LOW PRESSURE ALTERNATIVE 2B LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION	
GENERAL					
1	MOBILIZATION @ 10%	1	L.S. \$ 397,700.00	\$ 397,700.00	
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S. \$ 198,900.00	\$ 198,900.00	
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S. \$ 119,400.00	\$ 119,400.00	
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	2,508	L.F. \$ 70.00	\$ 175,525.00	
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	7,523	L.F. \$ 65.00	\$ 488,962.50	
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	5,050	L.F. \$ 65.00	\$ 328,250.00	
7	AIR/VACUUM RELEASE VALVES	11	EA. \$ 12,000.00	\$ 132,000.00	
8	INLINE CLEANOUT	21	EA. \$ 4,500.00	\$ 94,500.00	
9	TERMINAL CLEANOUT	2	EA. \$ 3,000.00	\$ 6,000.00	
10	GRINDER PUMP- SIMPLEX	163	EA. \$ 9,000.00	\$ 1,467,000.00	
11	GRINDER PUMP- DUPLEX	39	EA. \$ 15,000.00	\$ 585,000.00	
12	LOW PRESSURE LATERAL CONNECTION	202	EA. \$ 900.00	\$ 181,800.00	
13	CURBSTOP AND CHECK VALVE ASSEMBLY	202	EA. \$ 850.00	\$ 171,700.00	
14	TEST PITS	26	EA. \$ 950.00	\$ 24,700.00	
15	CONNECTION TO EXISTING FORCE MAIN	1	EA. \$ 5,000.00	\$ 5,000.00	
CROSSING					
16	PENNDOT CROSSING	0	L.S. \$ 35,000.00	\$ -	
17	STREAM CROSSING	4	L.S. \$ 15,000.00	\$ 60,000.00	
SURFACING					
18	TEMPORARY PAVING	2,508	L.F. \$ 15.00	\$ 37,612.50	
19	PENNDOT PAVING RESTORATION (BASE)	1,058	L.F. \$ 90.00	\$ 95,175.00	
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	1,175	S.Y. \$ 25.00	\$ 29,375.00	
21	MUNICIPAL PAVING RESTORATION	1,450	L.F. \$ 65.00	\$ 94,250.00	
22	VEGETATIVE RESTORATION	0	L.F. \$ 20.00	\$ -	
ESTIMATED CONSTRUCTION COSTS				\$	4,693,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	939,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,408,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	7,040,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					276
ESTIMATED CAPITAL COST PER EDU				\$	26,000.00

TABLE 2-6 COST OPINION FOR MATAMORAS BOROUGH ALTERNATIVE 2C

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MATAMORAS RESIDENTIAL GRAVITY ALTERNATIVE 2C: GRAVITY SEWER GRAVITY, PUMP STATION SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 415,200.00	\$ 415,200.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 207,600.00	\$ 207,600.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 124,600.00	\$ 124,600.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	2,383	L.F.	\$ 230.00	\$ 547,975.00
5	8" PVC MAIN - SUITABLE BACKFILL	7,148	L.F.	\$ 175.00	\$ 1,250,812.50
6	8" X 6" WYE	202	L.F.	\$ 435.00	\$ 87,870.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	2,020	L.F.	\$ 140.00	\$ 282,800.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	2,020	L.F.	\$ 125.00	\$ 252,500.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	202	L.F.	\$ 1,500.00	\$ 303,000.00
10	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 12,000.00	\$ 12,000.00
11	CLAY DIKE	17	EA.	\$ 600.00	\$ 10,200.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	29	EA.	\$ 8,000.00	\$ 232,000.00
13	MANHOLE FRAME AND COVER	29	EA.	\$ 1,000.00	\$ 29,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
FORCE MAIN					
15	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	125	L.F.	\$ 110.00	\$ 13,750.00
16	4" HDPE FORCE MAIN - SUITABLE BACKFILL	375	L.F.	\$ 100.00	\$ 37,500.00
17	TEST PITS	1	EA.	\$ 950.00	\$ 950.00
PUMP STATION					
18	PUMP STATION	1	L.S.	\$ 400,000.00	\$ 400,000.00
CROSSING					
19	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
20	STREAM CROSSING	4	L.S.	\$ 15,000.00	\$ 60,000.00
SURFACING					
21	TEMPORARY PAVING	4,403	L.F.	\$ 15.00	\$ 66,037.50
22	PENNDOT PAVING RESTORATION (BASE)	1,723	L.F.	\$ 90.00	\$ 155,080.72
23	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	1,915	S.Y.	\$ 25.00	\$ 47,864.42
24	MUNICIPAL PAVING RESTORATION	2,679	L.F.	\$ 65.00	\$ 174,159.76
25	VEGETATIVE RESTORATION	9,168	L.F.	\$ 20.00	\$ 183,350.00
				ESTIMATED CONSTRUCTION COSTS	\$ 4,900,000.00
				CONSTRUCTION CONTINGENCY @ 20%	\$ 980,000.00
				ENGINEERING, ADMIN, & LEGAL FEES @ 25%	\$ 1,470,000.00
				TOTAL ESTIMATED PROJECT COSTS	\$ 7,350,000.00
				ESTIMATED NUMBER OF EDUs TO BE SERVED	276
				ESTIMATED CAPITAL COST PER EDU	\$ 27,000.00

TABLE 2-7 COST OPINION FOR WESTFALL TOWNSHIP SOUTHWEST ALTERNATIVE 3A

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN WESTFALL TOWNSHIP EXTENSION GRAVITY/FORCE MAIN ALTERNATIVE 3A: COMBINATION OF PUMP STATION, GRAVITY SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 351,400.00	\$ 351,400.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 175,700.00	\$ 175,700.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 105,500.00	\$ 105,500.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	1,588	L.F.	\$ 230.00	\$ 365,125.00
5	8" PVC MAIN - SUITABLE BACKFILL	4,763	L.F.	\$ 175.00	\$ 833,437.50
6	8" X 6" WYE	1	EA.	\$ 435.00	\$ 435.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	90	L.F.	\$ 140.00	\$ 12,600.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	90	L.F.	\$ 125.00	\$ 11,250.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	9	L.F.	\$ 1,500.00	\$ 13,500.00
10	1.25" HDPE LOW PRESSURE LATERAL - SUITABLE BACKFILL	50	L.F.	\$ 65.00	\$ 3,250.00
11	GRINDER PUMP - DUPLEX	2	EA.	\$ 15,000.00	\$ 30,000.00
12	LOW PRESSURE LATERAL CONNECTION	2	EA.	\$ 900.00	\$ 1,800.00
13	CURBSTOP AND CHECK VALVE ASSEMBLY	2	EA.	\$ 850.00	\$ 1,700.00
14	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 11,000.00	\$ 11,000.00
15	CLAY DIKE	26	EA.	\$ 600.00	\$ 15,600.00
MANHOLE					
16	MANHOLE - 4 FT DIAMETER	27	EA.	\$ 8,000.00	\$ 216,000.00
17	MANHOLE FRAME AND COVER	27	EA.	\$ 1,000.00	\$ 27,000.00
18	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
19	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
20	STREAM CROSSING	10	L.S.	\$ 15,000.00	\$ 150,000.00
PUMP STATION					
21	PUMP STATION	1	L.S.	\$ 400,000.00	\$ 400,000.00
FORCE MAIN					
22	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	1,625	L.F.	\$ 110.00	\$ 178,750.00
23	4" HDPE FORCE MAIN - SUITABLE BACKFILL	4,875	L.F.	\$ 100.00	\$ 487,500.00
24	1.25" HDPE LOW PRESSURE SEWER LATERAL	275	L.F.	\$ 65.00	\$ 17,875.00
25	GRINDER PUMP - SIMPLEX	0	EA.	\$ 9,000.00	\$ -
26	GRINDER PUMP - DUPLEX	11	EA.	\$ 15,000.00	\$ 165,000.00
27	LATERAL CONNECTION	11	EA.	\$ 500.00	\$ 5,500.00
28	CURBSTOP AND CHECK VALVE ASSEMBLY	11	EA.	\$ 850.00	\$ 9,350.00
29	TEST PITS	17	EA.	\$ 950.00	\$ 16,150.00
SURFACING					
30	TEMPORARY PAVING	3,303	L.F.	\$ 15.00	\$ 49,537.50
31	PENNDOT PAVING RESTORATION (BASE)	3,303	L.F.	\$ 90.00	\$ 297,225.00
32	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	3,669	S.Y.	\$ 25.00	\$ 91,736.11
33	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
34	VEGETATIVE RESTORATION	4,853	L.F.	\$ 20.00	\$ 97,050.00
ESTIMATED CONSTRUCTION COSTS				\$	4,146,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	622,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,192,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	5,960,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					128
ESTIMATED CAPITAL COST PER EDU				\$	47,000.00

TABLE 2-8 COST OPINION FOR WESTFALL TOWNSHIP SOUTHWEST ALTERNATIVE 3B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN WESTFALL TOWNSHIP EXTENSION LOW PRESSURE ALTERNATIVE 3B LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	EST. QUANTITY	UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 93,300.00	\$ 93,300.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 46,700.00	\$ 46,700.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 46,700.00	\$ 46,700.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	3,213	L.F.	\$ 70.00	\$ 224,875.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	9,638	L.F.	\$ 65.00	\$ 626,437.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	350	L.F.	\$ 65.00	\$ 22,750.00
7	AIR/VACUUM RELEASE VALVES	13	EA.	\$ 12,000.00	\$ 156,000.00
8	INLINE CLEANOUT	26	EA.	\$ 4,500.00	\$ 117,000.00
9	TERMINAL CLEANOUT	2	EA.	\$ 3,000.00	\$ 6,000.00
10	GRINDER PUMP - SIMPLEX	1	EA.	\$ 9,000.00	\$ 9,000.00
11	GRINDER PUMP - DUPLEX	13	EA.	\$ 5,000.00	\$ 65,000.00
12	LOW PRESSURE LATERAL CONNECTION	14	EA.	\$ 900.00	\$ 12,600.00
13	CURBSTOP AND CHECK VALVE ASSEMBLY	14	EA.	\$ 850.00	\$ 11,900.00
14	TEST PITS	33	EA.	\$ 950.00	\$ 31,350.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
17	STREAM CROSSING	10	L.S.	\$ 15,000.00	\$ 150,000.00
SURFACING					
18	TEMPORARY PAVING	3,213	L.F.	\$ 15.00	\$ 48,187.50
19	PENNDOT PAVING RESTORATION (BASE)	3,213	L.F.	\$ 90.00	\$ 289,125.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	3,569	S.Y.	\$ 25.00	\$ 89,236.11
21	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	\$ -
				ESTIMATED CONSTRUCTION COSTS	\$ 2,052,000.00
				CONSTRUCTION CONTINGENCY @ 20%	\$ 411,000.00
				ENGINEERING, ADMIN. & LEGAL FEES @ 25%	\$ 616,000.00
				TOTAL ESTIMATED PROJECT COSTS	\$ 3,079,000.00
				ESTIMATED NUMBER OF EDUs TO BE SERVED	128
				ESTIMATED CAPITAL COST PER EDU	\$ 25,000.00

TABLE 2-9 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 4A

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH- BROAD ST ONLY LOW PRESSURE, FORCE MAIN, GRAVITY ALTERNATIVE 4A COMBINATION OF LOW PRESSURE, GRAVITY, PUMP STATION SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 303,600.00	\$ 303,600.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 151,800.00	\$ 151,800.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 151,800.00	\$ 151,800.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	683	L.F.	\$ 70.00	\$ 47,775.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	2,048	L.F.	\$ 65.00	\$ 133,087.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	1,200	L.F.	\$ 65.00	\$ 78,000.00
7	LOW PRESSURE LATERAL CONNECTION	48	EA.	\$ 900.00	\$ 43,200.00
8	AIR/VACUUM RELEASE VALVES	1	EA.	\$ 12,000.00	\$ 12,000.00
9	INLINE CLEANOUT	6	EA.	\$ 4,500.00	\$ 27,000.00
10	TERMINAL CLEANOUT	1	EA.	\$ 3,000.00	\$ 3,000.00
11	GRINDER PUMP - SIMPLEX	27	EA.	\$ 9,000.00	\$ 243,000.00
12	GRINDER PUMP - DUPLEX	21	EA.	\$ 15,000.00	\$ 315,000.00
13	CURBSTOP AND CHECK VALVE ASSEMBLY	48	EA.	\$ 850.00	\$ 40,800.00
14	TEST PITS	8	EA.	\$ 950.00	\$ 7,600.00
15	CONNECTION TO EXISTING MANHOLE	1	EA.	\$ 5,000.00	\$ 5,000.00
GRAVITY SEWER					
16	8" PVC MAIN - AGGREGATE BACKFILL	443	L.F.	\$ 230.00	\$ 101,775.00
17	8" PVC MAIN - SUITABLE BACKFILL	1,328	L.F.	\$ 175.00	\$ 232,312.50
18	8" X 6" WYE	0	EA.	\$ 435.00	\$ -
19	6" SERVICE LATERAL - AGGREGATE BACKFILL	0	L.F.	\$ 140.00	\$ -
20	6" SERVICE LATERAL - SUITABLE BACKFILL	0	L.F.	\$ 125.00	\$ -
21	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	0	EA.	\$ 1,500.00	\$ -
22	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 11,000.00	\$ 11,000.00
23	LATERAL CONNECTION	0	EA.	\$ 500.00	\$ -
24	CURBSTOP AND CHECK VALVE ASSEMBLY	0	EA.	\$ 850.00	\$ -
25	CLAY DIKE	6	EA.	\$ 600.00	\$ 3,600.00
MANHOLE					
26	MANHOLE - 4 FT DIAMETER	7	EA.	\$ 8,000.00	\$ 56,000.00
27	MANHOLE FRAME AND COVER	7	EA.	\$ 1,000.00	\$ 7,000.00
28	MANHOLE PROTECTIVE LINING	2	EA.	\$ 5,000.00	\$ 10,000.00
CROSSING					
29	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
30	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
PUMP STATION					
31	PUMP STATION	1	L.S.	\$ 400,000.00	\$ 400,000.00
FORCE MAIN					
32	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	12,983	L.F.	\$ 110.00	\$ 1,428,075.00
33	4" HDPE FORCE MAIN - SUITABLE BACKFILL	4,328	L.F.	\$ 100.00	\$ 432,750.00
34	1.25" HDPE LOW PRESSURE SEWER LATERAL	425	L.F.	\$ 65.00	\$ 27,625.00
35	GRINDER PUMP - SIMPLEX	5	EA.	\$ 9,000.00	\$ 45,000.00
36	GRINDER PUMP - DUPLEX	12	EA.	\$ 15,000.00	\$ 180,000.00
37	LOW PRESSURE LATERAL CONNECTION	17	EA.	\$ 900.00	\$ 15,300.00
38	CURBSTOP AND CHECK VALVE ASSEMBLY	17	EA.	\$ 850.00	\$ 14,450.00
37	TEST PITS	44	EA.	\$ 950.00	\$ 41,800.00
SURFACING					
38	TEMPORARY PAVING	14,108	L.F.	\$ 15.00	\$ 211,612.50
39	PENNDOT PAVING RESTORATION (BASE)	14,108	L.F.	\$ 90.00	\$ 1,269,675.00
40	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	15,675	S.Y.	\$ 25.00	\$ 391,875.00
41	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
42	VEGETATIVE RESTORATION	1,328	L.F.	\$ 20.00	\$ 26,550.00
ESTIMATED CONSTRUCTION COSTS				\$	6,680,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,336,000.00
ENGINEERING, ADMIN. & LEGAL FEES @ 25%				\$	2,004,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	10,020,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					106
ESTIMATED CAPITAL COST PER EDU				\$	95,000.00

TABLE 2-10 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 4B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH- BROAD ST ONLY LOW PRESSURE ALTERNATIVE 4B LOW PRESSURE, GRAVITY SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION	
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 396,600.00	\$ 396,600.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 198,300.00	\$ 198,300.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 119,000.00	\$ 119,000.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	5,453	L.F.	\$ 70.00	\$ 381,675.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	16,358	L.F.	\$ 65.00	\$ 1,063,237.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	1,725	L.F.	\$ 65.00	\$ 112,125.00
7	AIR/VACUUM RELEASE VALVES	22	EA.	\$ 12,000.00	\$ 264,000.00
8	INLINE CLEANOUT	44	EA.	\$ 4,500.00	\$ 198,000.00
9	TERMINAL CLEANOUT	1	EA.	\$ 3,000.00	\$ 3,000.00
10	GRINDER PUMP - SIMPLEX	34	EA.	\$ 9,000.00	\$ 306,000.00
11	GRINDER PUMP - DUPLEX	35	EA.	\$ 15,000.00	\$ 525,000.00
12	LOW PRESSURE LATERAL CONNECTION	69	EA.	\$ 900.00	\$ 62,100.00
13	CURBSTOP AND CHECK VALVE ASSEMBLY	69	EA.	\$ 850.00	\$ 58,650.00
14	TEST PITS	55	EA.	\$ 950.00	\$ 52,250.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
17	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
SURFACING					
18	TEMPORARY PAVING	5,453	L.F.	\$ 15.00	\$ 81,787.50
19	PENNDOT PAVING RESTORATION (BASE)	5,453	L.F.	\$ 90.00	\$ 490,725.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	6,058	S.Y.	\$ 25.00	\$ 151,458.33
21	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	\$ -
ESTIMATED CONSTRUCTION COSTS				\$	4,679,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	936,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,404,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	7,019,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					106
ESTIMATED CAPITAL COST PER EDU				\$	67,000.00

TABLE 2-11 COST OPINION MILFORD BOROUGH ALTERNATIVE 4C

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH- BROAD ST ONLY FORCE MAIN ALTERNATIVE 4C COMBINATION OF GRAVITY, PUMP STATION SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 455,300.00	\$ 455,300.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 227,700.00	\$ 227,700.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 136,600.00	\$ 136,600.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	398	L.F.	\$ 230.00	\$ 91,425.00
5	8" PVC MAIN - SUITABLE BACKFILL	1,193	L.F.	\$ 175.00	\$ 208,687.50
6	8" X 6" WYE	38	EA.	\$ 435.00	\$ 16,530.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	380	L.F.	\$ 140.00	\$ 53,200.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	380	L.F.	\$ 125.00	\$ 47,500.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	38	EA.	\$ 1,500.00	\$ 57,000.00
10	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 11,000.00	\$ 11,000.00
11	CLAY DIKE	5	EA.	\$ 600.00	\$ 3,000.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	6	EA.	\$ 8,000.00	\$ 48,000.00
13	MANHOLE FRAME AND COVER	6	EA.	\$ 1,000.00	\$ 6,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
15	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
16	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
PUMP STATION					
17	PUMP STATION	1	L.S.	\$ 400,000.00	\$ 400,000.00
FORCE MAIN					
18	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	5,058	L.F.	\$ 110.00	\$ 556,325.00
19	4" HDPE FORCE MAIN - SUITABLE BACKFILL	15,173	L.F.	\$ 100.00	\$ 1,517,250.00
20	1.25" HDPE LOW PRESSURE SEWER LATERAL	750	L.F.	\$ 65.00	\$ 48,750.00
21	GRINDER PUMP - SIMPLEX	14	EA.	\$ 9,000.00	\$ 126,000.00
22	GRINDER PUMP - DUPLEX	16	EA.	\$ 15,000.00	\$ 240,000.00
23	LOW PRESSURE LATERAL CONNECTION	30	EA.	\$ 900.00	\$ 27,000.00
24	CURBSTOP AND CHECK VALVE ASSEMBLY	30	EA.	\$ 850.00	\$ 25,500.00
25	TEST PITS	51	EA.	\$ 950.00	\$ 48,450.00
SURFACING					
26	TEMPORARY PAVING	5,835	L.F.	\$ 15.00	\$ 87,525.00
27	PENNDOT PAVING RESTORATION (BASE)	5,835	L.F.	\$ 90.00	\$ 525,150.00
28	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	6,483	S.Y.	\$ 25.00	\$ 162,083.33
29	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
30	VEGETATIVE RESTORATION	1,573	L.F.	\$ 20.00	\$ 31,450.00
ESTIMATED CONSTRUCTION COSTS				\$	5,373,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,075,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,612,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	8,060,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					106
ESTIMATED CAPITAL COST PER EDU				\$	77,000.00

TABLE 2-12 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 4D

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH- BROAD ST ALLEYS LOW PRESSURE ALTERNATIVE 4D LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION	
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 371,600.00	\$ 371,600.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 185,800.00	\$ 185,800.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 111,500.00	\$ 111,500.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	5,753	L.F.	\$ 70.00	\$ 402,675.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	17,258	L.F.	\$ 65.00	\$ 1,121,737.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	1,675	L.F.	\$ 65.00	\$ 108,875.00
7	AIR/VACUUM RELEASE VALVES	1	EA.	\$ 12,000.00	\$ 12,000.00
8	INLINE CLEANOUT	47	EA.	\$ 4,500.00	\$ 211,500.00
9	TERMINAL CLEANOUT	1	EA.	\$ 3,000.00	\$ 3,000.00
10	GRINDER PUMP - SIMPLEX	44	EA.	\$ 9,000.00	\$ 396,000.00
11	GRINDER PUMP - DUPLEX	23	EA.	\$ 15,000.00	\$ 345,000.00
12	LOW PRESSURE LATERAL CONNECTION	67	EA.	\$ 900.00	\$ 60,300.00
13	CURBSTOP AND CHECK VALVE ASSEMBLY	67	EA.	\$ 850.00	\$ 56,950.00
14	TEST PITS	58	EA.	\$ 950.00	\$ 55,100.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
17	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
SURFACING					
18	TEMPORARY PAVING	5,753	L.F.	\$ 15.00	\$ 86,287.50
19	PENNDOT PAVING RESTORATION (BASE)	5,058	L.F.	\$ 90.00	\$ 455,175.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	5,619	S.Y.	\$ 25.00	\$ 140,486.11
21	MUNICIPAL PAVING RESTORATION	695	L.F.	\$ 65.00	\$ 45,175.00
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	\$ -
ESTIMATED CONSTRUCTION COSTS				\$	4,385,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	877,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,316,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	6,578,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					126
ESTIMATED CAPITAL COST PER EDU				\$	53,000.00

TABLE 2-13 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 4E

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH- BROAD ST ALLEYS ONLY FORCE MAIN ALTERNATIVE 4E COMBINATION OF GRAVITY, PUMP STATION, FORCE MAIN SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 481,100.00	\$ 481,100.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 240,600.00	\$ 240,600.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 144,400.00	\$ 144,400.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	695	L.F.	\$ 230.00	\$ 159,850.00
5	8" PVC MAIN - SUITABLE BACKFILL	2,085	L.F.	\$ 175.00	\$ 364,875.00
6	8" X 6" WYE	37	EA.	\$ 435.00	\$ 16,095.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	370	L.F.	\$ 140.00	\$ 51,800.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	370	L.F.	\$ 125.00	\$ 46,250.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	37	EA.	\$ 1,500.00	\$ 55,500.00
10	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 12,000.00	\$ 12,000.00
11	CLAY DIKE	8	EA.	\$ 600.00	\$ 4,800.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	9	EA.	\$ 8,000.00	\$ 72,000.00
13	MANHOLE FRAME AND COVER	9	EA.	\$ 1,000.00	\$ 9,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
15	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
16	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
PUMP STATION					
17	PUMP STATION	1	L.S.	\$ 400,000.00	\$ 400,000.00
FORCE MAIN					
18	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	5,058	L.F.	\$ 110.00	\$ 556,325.00
19	4" HDPE FORCE MAIN - SUITABLE BACKFILL	15,173	L.F.	\$ 100.00	\$ 1,517,250.00
20	1.25" HDPE LOW PRESSURE SEWER LATERAL	750	L.F.	\$ 65.00	\$ 48,750.00
21	GRINDER PUMP - SIMPLEX	14	EA.	\$ 9,000.00	\$ 126,000.00
22	GRINDER PUMP - DUPLEX	16	EA.	\$ 15,000.00	\$ 240,000.00
23	LOW PRESSURE LATERAL CONNECTION	30	EA.	\$ 900.00	\$ 27,000.00
24	CURBSTOP AND CHECK VALVE ASSEMBLY	30	EA.	\$ 850.00	\$ 25,500.00
25	TEST PITS	42	EA.	\$ 950.00	\$ 39,900.00
SURFACING					
26	TEMPORARY PAVING	6,123	L.F.	\$ 15.00	\$ 91,837.50
27	PENNDOT PAVING RESTORATION (BASE)	5,383	L.F.	\$ 90.00	\$ 484,451.79
28	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	5,981	S.Y.	\$ 25.00	\$ 149,522.16
29	MUNICIPAL PAVING RESTORATION	740	L.F.	\$ 65.00	\$ 48,080.65
30	VEGETATIVE RESTORATION	2,455	L.F.	\$ 20.00	\$ 49,100.00
ESTIMATED CONSTRUCTION COSTS				\$	5,677,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,136,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,704,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	8,517,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					126
ESTIMATED CAPITAL COST PER EDU				\$	68,000.00

TABLE 2-14 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 5A

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH- BROAD ST+ W HARFORD ST GRAVITY FORCE MAIN ALTERNATIVE 5A COMBINATION OF LOW PRESSURE, GRAVITY, PUMP STATION, FORCE MAIN SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 515,800.00	\$ 515,800.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 257,900.00	\$ 257,900.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 154,800.00	\$ 154,800.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	880	L.F.	\$ 230.00	\$ 202,400.00
5	8" PVC MAIN - SUITABLE BACKFILL	2,640	L.F.	\$ 175.00	\$ 462,000.00
6	8" X 6" WYE	56	EA.	\$ 435.00	\$ 24,360.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	560	L.F.	\$ 140.00	\$ 78,400.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	560	L.F.	\$ 125.00	\$ 70,000.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	56	EA.	\$ 1,500.00	\$ 84,000.00
10	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 11,000.00	\$ 11,000.00
11	CLAY DIKE	11	EA.	\$ 600.00	\$ 6,600.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	12	EA.	\$ 8,000.00	\$ 96,000.00
13	MANHOLE FRAME AND COVER	12	EA.	\$ 1,000.00	\$ 12,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
15	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
16	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
PUMP STATION					
17	PUMP STATION	1	L.S.	\$ 400,000.00	\$ 400,000.00
FORCE MAIN					
18	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	5,058	L.F.	\$ 110.00	\$ 556,325.00
19	4" HDPE FORCE MAIN - SUITABLE BACKFILL	15,173	L.F.	\$ 100.00	\$ 1,517,250.00
20	1.25" HDPE LOW PRESSURE SEWER LATERAL	750	L.F.	\$ 65.00	\$ 48,750.00
21	GRINDER PUMP - SIMPLEX	14	EA.	\$ 9,000.00	\$ 126,000.00
22	GRINDER PUMP - DUPLEX	16	EA.	\$ 15,000.00	\$ 240,000.00
23	LATERAL CONNECTION	30	EA.	\$ 500.00	\$ 15,000.00
24	CURBSTOP AND CHECK VALVE ASSEMBLY	30	EA.	\$ 850.00	\$ 25,500.00
25	TEST PITS	42	EA.	\$ 950.00	\$ 39,900.00
SURFACING					
26	TEMPORARY PAVING	6,498	L.F.	\$ 15.00	\$ 97,462.50
27	PENNDOT PAVING RESTORATION (BASE)	6,498	L.F.	\$ 90.00	\$ 584,775.00
28	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	7,219	S.Y.	\$ 25.00	\$ 180,486.11
29	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
30	VEGETATIVE RESTORATION	3,200	L.F.	\$ 20.00	\$ 64,000.00
ESTIMATED CONSTRUCTION COSTS				\$	6,086,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,218,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,826,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	9,130,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					172
ESTIMATED CAPITAL COST PER EDU				\$	54,000.00

TABLE 2-15 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 5B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH- BROAD ST+ W HARFORD ST ALLEYS FORCE MAIN ALTERNATIVE 5B COMBINATION OF LOW PRESSURE, GRAVITY, PUMP STATION, FORCE MAIN SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 578,700.00	\$ 578,700.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 289,400.00	\$ 289,400.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 173,700.00	\$ 173,700.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	3,360	L.F.	\$ 230.00	\$ 772,800.00
5	8" PVC MAIN - SUITABLE BACKFILL	1,120	L.F.	\$ 175.00	\$ 196,000.00
6	8" X 6" WYE	71	EA.	\$ 435.00	\$ 30,885.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	710	L.F.	\$ 140.00	\$ 99,400.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	710	L.F.	\$ 125.00	\$ 88,750.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	71	EA.	\$ 1,500.00	\$ 106,500.00
10	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 11,000.00	\$ 11,000.00
11	CLAY DIKE	13	EA.	\$ 600.00	\$ 7,800.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	14	EA.	\$ 8,000.00	\$ 112,000.00
13	MANHOLE FRAME AND COVER	14	EA.	\$ 1,000.00	\$ 14,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
15	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
16	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
PUMP STATION					
17	PUMP STATION	1	L.S.	\$ 400,000.00	\$ 400,000.00
FORCE MAIN					
18	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	5,058	L.F.	\$ 110.00	\$ 556,325.00
19	4" HDPE FORCE MAIN - SUITABLE BACKFILL	15,173	L.F.	\$ 100.00	\$ 1,517,250.00
20	1.25" HDPE LOW PRESSURE SEWER LATERAL	750	L.F.	\$ 40.00	\$ 30,000.00
21	GRINDER PUMP - SIMPLEX	14	EA.	\$ 9,000.00	\$ 126,000.00
22	GRINDER PUMP - DUPLEX	16	EA.	\$ 15,000.00	\$ 240,000.00
23	LOW PRESSURE LATERAL CONNECTION	30	EA.	\$ 900.00	\$ 27,000.00
24	CURBSTOP AND CHECK VALVE ASSEMBLY	30	EA.	\$ 850.00	\$ 25,500.00
25	TEST PITS	52	EA.	\$ 950.00	\$ 49,400.00
SURFACING					
26	TEMPORARY PAVING	9,128	L.F.	\$ 15.00	\$ 136,912.50
27	PENNDOT PAVING RESTORATION (BASE)	7,473	L.F.	\$ 90.00	\$ 672,539.02
28	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	8,303	S.Y.	\$ 25.00	\$ 207,573.77
29	MUNICIPAL PAVING RESTORATION	1,655	L.F.	\$ 65.00	\$ 107,564.87
30	VEGETATIVE RESTORATION	1,830	L.F.	\$ 20.00	\$ 36,600.00
ESTIMATED CONSTRUCTION COSTS				\$	6,829,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,366,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	2,049,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	10,244,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					178
ESTIMATED CAPITAL COST PER EDU				\$	58,000.00

TABLE 2-16 COST OPINION MILFORD BOROUGH ALTERNATIVE 5C

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH- BROAD ST+ W HARFORD ST LOW PRESSURE ALTERNATIVE 5C LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION	
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 409,000.00	\$ 409,000.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 204,500.00	\$ 204,500.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 122,700.00	\$ 122,700.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	5,938	L.F.	\$ 70.00	\$ 415,625.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	17,813	L.F.	\$ 65.00	\$ 1,157,812.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	2,150	L.F.	\$ 65.00	\$ 139,750.00
7	AIR/VACUUM RELEASE VALVES	5	EA.	\$ 12,000.00	\$ 60,000.00
8	INLINE CLEANOUT	48	EA.	\$ 4,500.00	\$ 216,000.00
9	TERMINAL CLEANOUT	1	EA.	\$ 3,000.00	\$ 3,000.00
10	GRINDER PUMP - SIMPLEX	54	EA.	\$ 9,000.00	\$ 486,000.00
11	GRINDER PUMP - DUPLEX	32	EA.	\$ 12,500.00	\$ 400,000.00
12	TEST PITS	60	EA.	\$ 950.00	\$ 57,000.00
13	LOW PRESSURE LATERAL CONNECTION	86	EA.	\$ 900.00	\$ 77,400.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	86	EA.	\$ 850.00	\$ 73,100.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
17	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
SURFACING					
18	TEMPORARY PAVING	5,938	L.F.	\$ 15.00	\$ 89,062.50
19	PENNDOT PAVING RESTORATION (BASE)	5,938	L.F.	\$ 90.00	\$ 534,375.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	6,597	S.Y.	\$ 25.00	\$ 164,930.56
21	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	\$ -
ESTIMATED CONSTRUCTION COSTS				\$	4,826,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	966,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,448,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	7,240,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					172
ESTIMATED CAPITAL COST PER EDU				\$	43,000.00

TABLE 2-17 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 5D

OPINION OF PROBABLE PROJECT COST FOR WESTFALL TOWNSHIP ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH- BROAD ST+ W HARFORD ST ALLEY LOW PRESSURE ALTERNATIVE 5D LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$190,500.00	\$ 190,500.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 95,300.00	\$ 95,300.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 95,300.00	\$ 95,300.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	6,178	L.F.	\$ 60.00	\$ 370,650.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	18,533	L.F.	\$ 55.00	\$ 1,019,287.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	2,900	L.F.	\$ 40.00	\$ 116,000.00
7	AIR/VACUUM RELEASE VALVES	5	EA.	\$ 7,800.00	\$ 39,000.00
8	INLINE CLEANOUT	50	EA.	\$ 2,700.00	\$ 135,000.00
9	TERMINAL CLEANOUT	1	EA.	\$ 2,500.00	\$ 2,500.00
10	GRINDER PUMP - SIMPLEX	78	EA.	\$ 8,000.00	\$ 624,000.00
11	GRINDER PUMP - DUPLEX	38	EA.	\$ 12,500.00	\$ 475,000.00
12	TEST PITS	62	EA.	\$ 550.00	\$ 34,100.00
13	LATERAL CONNECTION	116	EA.	\$ 500.00	\$ 58,000.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	116	EA.	\$ 650.00	\$ 75,400.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 12,000.00	\$ 12,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 30,000.00	\$ -
17	STREAM CROSSING	14	L.S.	\$ 10,000.00	\$ 140,000.00
SURFACING					
18	TEMPORARY PAVING	6,178	L.F.	\$ 20.00	\$ 123,550.00
19	PENNDOT PAVING RESTORATION (BASE)	5,058	L.F.	\$ 80.00	\$ 404,600.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	5,619	S.Y.	\$ 20.00	\$ 112,388.89
21	MUNICIPAL PAVING RESTORATION	1,120	L.F.	\$ 60.00	\$ 67,200.00
22	VEGETATIVE RESTORATION	0	L.F.	\$ 15.00	\$ -
ESTIMATED CONSTRUCTION COSTS				\$	4,190,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	838,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,257,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	6,285,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					178
ESTIMATED CAPITAL COST PER EDU				\$	36,000.00

TABLE 2-18 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 6A

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH EXTENSION W/ HARFORD AND BROAD ST LOW PRESSURE GRAVITY ALTERNATIVE 6A COMBINATION OF GRAVITY SEWER, LOW PRESSURE, FORCE MAIN, PUMP STATION SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 607,900.00	\$ 607,900.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 304,000.00	\$ 304,000.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 182,400.00	\$ 182,400.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	1,590	L.F.	\$ 70.00	\$ 111,300.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	4,770	L.F.	\$ 65.00	\$ 310,050.00
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	2,825	L.F.	\$ 65.00	\$ 183,625.00
7	AIR/VACUUM RELEASE VALVES	7	EA.	\$ 12,000.00	\$ 84,000.00
8	INLINE CLEANOUT	13	EA.	\$ 4,500.00	\$ 58,500.00
9	TERMINAL CLEANOUT	4	EA.	\$ 3,000.00	\$ 12,000.00
10	GRINDER PUMP - SIMPLEX	77	EA.	\$ 9,000.00	\$ 693,000.00
11	GRINDER PUMP - DUPLEX	36	EA.	\$ 12,500.00	\$ 450,000.00
12	TEST PITS	16	EA.	\$ 950.00	\$ 15,200.00
13	LATERAL CONNECTION	113	EA.	\$ 500.00	\$ 56,500.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	113	EA.	\$ 850.00	\$ 96,050.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
GRAVITY SEWER					
16	8" PVC MAIN - AGGREGATE BACKFILL	443	L.F.	\$ 230.00	\$ 101,775.00
17	8" PVC MAIN - SUITABLE BACKFILL	1,328	L.F.	\$ 175.00	\$ 232,312.50
18	8" X 6" WYE	0	EA.	\$ 435.00	\$ -
19	6" SERVICE LATERAL - AGGREGATE BACKFILL	0	L.F.	\$ 140.00	\$ -
20	6" SERVICE LATERAL - SUITABLE BACKFILL	0	L.F.	\$ 125.00	\$ -
21	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	0	EA.	\$ 1,500.00	\$ -
22	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 12,000.00	\$ 12,000.00
23	1.25" HDPE LOW PRESSURE SEWER LATERAL	0	L.F.	\$ 65.00	\$ -
24	GRINDER PUMP - SIMPLEX	0	EA.	\$ 9,000.00	\$ -
25	GRINDER PUMP - DUPLEX	0	EA.	\$ 15,000.00	\$ -
26	LATERAL CONNECTION	0	EA.	\$ 500.00	\$ -
27	CURBSTOP AND CHECK VALVE ASSEMBLY	0	EA.	\$ 850.00	\$ -
28	CLAY DIKE	6	EA.	\$ 600.00	\$ 3,600.00
MANHOLE					
29	MANHOLE - 4 FT DIAMETER	7	EA.	\$ 8,000.00	\$ 56,000.00
30	MANHOLE FRAME AND COVER	7	EA.	\$ 1,000.00	\$ 7,000.00
31	MANHOLE PROTECTIVE LINING	2	EA.	\$ 5,000.00	\$ 10,000.00
CROSSING					
32	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
33	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
PUMP STATION					
34	PUMP STATION	1	L.S.	\$ 400,000.00	\$ 400,000.00
FORCE MAIN					
35	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	4,328	L.F.	\$ 110.00	\$ 476,025.00
36	4" HDPE FORCE MAIN - SUITABLE BACKFILL	12,983	L.F.	\$ 100.00	\$ 1,298,250.00
37	1.25" HDPE LOW PRESSURE SEWER LATERAL	425	L.F.	\$ 65.00	\$ 27,625.00
38	GRINDER PUMP - SIMPLEX	5	EA.	\$ 9,000.00	\$ 45,000.00
39	GRINDER PUMP - DUPLEX	12	EA.	\$ 15,000.00	\$ 180,000.00
40	TEST PITS	45	EA.	\$ 950.00	\$ 42,750.00
41	LOW PRESSURE LATERAL CONNECTION	17	EA.	\$ 900.00	\$ 15,300.00
42	CURBSTOP AND CHECK VALVE ASSEMBLY	17	EA.	\$ 850.00	\$ 14,450.00
SURFACING					
43	TEMPORARY PAVING	6,360	L.F.	\$ 15.00	\$ 95,400.00
44	PENNDOT PAVING RESTORATION (BASE)	6,360	L.F.	\$ 90.00	\$ 572,400.00
45	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	7,067	S.Y.	\$ 25.00	\$ 176,666.67
46	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
47	VEGETATIVE RESTORATION	1,328	L.F.	\$ 20.00	\$ 26,560.00
ESTIMATED CONSTRUCTION COSTS				\$	7,173,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,435,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	2,152,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	10,760,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					264
ESTIMATED CAPITAL COST PER EDU				\$	41,000.00

TABLE 2-19 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 6B

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH EXTENSION W/ HARFORD AND BROAD ST GRAVITY FORCE MAIN ALTERNATIVE 6B GRAVITY, FORCE MAIN, PUMP STATION SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 640,300.00	\$ 640,300.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 320,200.00	\$ 320,200.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 192,100.00	\$ 192,100.00
GRAVITY SEWER					
4	8" PVC MAIN - AGGREGATE BACKFILL	1,305	L.F.	\$ 230.00	\$ 300,150.00
5	8" PVC MAIN - SUITABLE BACKFILL	3,915	L.F.	\$ 175.00	\$ 685,125.00
6	8" X 6" WYE	114	EA.	\$ 435.00	\$ 49,590.00
7	6" SERVICE LATERAL - AGGREGATE BACKFILL	1,140	L.F.	\$ 140.00	\$ 159,600.00
8	6" SERVICE LATERAL - SUITABLE BACKFILL	1,140	L.F.	\$ 125.00	\$ 142,500.00
9	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	114	EA.	\$ 1,500.00	\$ 171,000.00
10	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 11,000.00	\$ 11,000.00
11	CLAY DIKE	15	EA.	\$ 600.00	\$ 9,000.00
MANHOLE					
12	MANHOLE - 4 FT DIAMETER	16	EA.	\$ 8,000.00	\$ 128,000.00
13	MANHOLE FRAME AND COVER	16	EA.	\$ 1,000.00	\$ 16,000.00
14	MANHOLE PROTECTIVE LINING	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
15	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
16	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
PUMP STATION					
17	PUMP STATION	2	L.S.	\$ 400,000.00	\$ 800,000.00
18	TEST PITS	53	L.S.	\$ 550.00	\$ 29,150.00
FORCE MAIN					
19	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	5,058	L.F.	\$ 110.00	\$ 556,325.00
20	4" HDPE FORCE MAIN - SUITABLE BACKFILL	15,173	L.F.	\$ 100.00	\$ 1,517,250.00
21	1.25" HDPE LOW PRESSURE SEWER LATERAL	750	L.F.	\$ 65.00	\$ 48,750.00
22	GRINDER PUMP - SIMPLEX	14	EA.	\$ 9,000.00	\$ 126,000.00
23	GRINDER PUMP - DUPLEX	16	EA.	\$ 15,000.00	\$ 240,000.00
24	TEST PITS	51	EA.	\$ 950.00	\$ 48,450.00
25	LOW PRESSURE LATERAL CONNECTION	30	EA.	\$ 900.00	\$ 27,000.00
26	CURBSTOP AND CHECK VALVE ASSEMBLY	30	EA.	\$ 850.00	\$ 25,500.00
SURFACING					
27	TEMPORARY PAVING	7,503	L.F.	\$ 15.00	\$ 112,537.50
28	PENNDOT PAVING RESTORATION (BASE)	7,503	L.F.	\$ 90.00	\$ 675,225.00
29	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	8,336	S.Y.	\$ 25.00	\$ 208,402.78
30	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
31	VEGETATIVE RESTORATION	5,055	L.F.	\$ 20.00	\$ 101,100.00
ESTIMATED CONSTRUCTION COSTS				\$	7,556,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,512,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	2,267,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	11,335,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					264
ESTIMATED CAPITAL COST PER EDU				\$	43,000.00

TABLE 2-20 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 6C

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH EXTENSION W/ HARFORD AND BROAD ST LOW PRESSURE ALTERNATIVE 6C LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 522,800.00	\$ 522,800.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 261,400.00	\$ 261,400.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 156,900.00	\$ 156,900.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	6,363	L.F.	\$ 70.00	\$ 445,375.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	19,088	L.F.	\$ 65.00	\$ 1,240,687.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	3,275	L.F.	\$ 65.00	\$ 212,875.00
7	AIR/VACUUM RELEASE VALVES	26	EA.	\$ 12,000.00	\$ 312,000.00
8	INLINE CLEANOUT	51	EA.	\$ 4,500.00	\$ 229,500.00
9	TERMINAL CLEANOUT	4	EA.	\$ 3,000.00	\$ 12,000.00
10	GRINDER PUMP - SIMPLEX	90	EA.	\$ 9,000.00	\$ 810,000.00
11	GRINDER PUMP - DUPLEX	41	EA.	\$ 15,000.00	\$ 615,000.00
12	TEST PITS	64	EA.	\$ 950.00	\$ 60,800.00
13	LOW PRESSURE LATERAL CONNECTION	131	EA.	\$ 900.00	\$ 117,900.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	131	EA.	\$ 850.00	\$ 111,350.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
17	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
SURFACING					
18	TEMPORARY PAVING	6,363	L.F.	\$ 15.00	\$ 95,437.50
19	PENNDOT PAVING RESTORATION (BASE)	6,363	L.F.	\$ 90.00	\$ 572,625.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	7,069	S.Y.	\$ 25.00	\$ 176,736.11
21	MUNICIPAL PAVING RESTORATION	0	L.F.	\$ 65.00	\$ -
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	\$ -
ESTIMATED CONSTRUCTION COSTS				\$	6,169,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,234,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,851,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	9,254,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					264
ESTIMATED CAPITAL COST PER EDU				\$	36,000.00

TABLE 2-21 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 6D

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH EXTENSION W/ HARFORD AND BROAD ST ALLEYS LOW PRESSURE, GRAVITY, FORCE MAIN ALTERNATIVE 6D LOW PRESSURE SEWER, GRAVITY, FORCE MAIN, PUMP STATION SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION	
GENERAL					
1	MOBILIZATION @ 10%	1	L.S. \$ 588,300.00	\$	588,300.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S. \$ 294,200.00	\$	294,200.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S. \$ 176,500.00	\$	176,500.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	348	L.F. \$ 70.00	\$	24,325.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	1,043	L.F. \$ 65.00	\$	67,782.50
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	825	L.F. \$ 65.00	\$	53,625.00
7	AIR/VACUUM RELEASE VALVES	1	EA. \$ 12,000.00	\$	12,000.00
8	INLINE CLEANOUT	3	EA. \$ 4,500.00	\$	13,500.00
9	TERMINAL CLEANOUT	1	EA. \$ 3,000.00	\$	3,000.00
10	GRINDER PUMP - SIMPLEX	26	EA. \$ 9,000.00	\$	234,000.00
11	GRINDER PUMP - DUPLEX	7	EA. \$ 15,000.00	\$	105,000.00
12	TEST PITS	56	EA. \$ 950.00	\$	53,200.00
13	LATERAL CONNECTION	33	EA. \$ 500.00	\$	16,500.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	33	EA. \$ 850.00	\$	28,050.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA. \$ 5,000.00	\$	5,000.00
GRAVITY SEWER					
16	8" PVC MAIN - AGGREGATE BACKFILL	1,058	L.F. \$ 230.00	\$	243,225.00
17	8" PVC MAIN - SUITABLE BACKFILL	3,173	L.F. \$ 175.00	\$	555,187.50
18	8" X 6" WYE	64	EA. \$ 435.00	\$	27,840.00
19	6" SERVICE LATERAL - AGGREGATE BACKFILL	640	L.F. \$ 140.00	\$	89,600.00
20	6" SERVICE LATERAL - SUITABLE BACKFILL	640	L.F. \$ 125.00	\$	80,000.00
21	6" SERVICE LATERAL CLEANOUT - SUITABLE BACKFILL	64	EA. \$ 1,500.00	\$	96,000.00
22	CONNECTION TO EXISTING FORCE MAIN	1	EA. \$ 12,000.00	\$	12,000.00
23	CLAY DIKE	13	EA. \$ 600.00	\$	7,800.00
MANHOLE					
24	MANHOLE - 4 FT DIAMETER	14	EA. \$ 8,000.00	\$	112,000.00
25	MANHOLE FRAME AND COVER	14	EA. \$ 1,000.00	\$	14,000.00
26	MANHOLE PROTECTIVE LINING	1	EA. \$ 5,000.00	\$	5,000.00
CROSSING					
27	PENNDOT CROSSING	0	L.S. \$ 35,000.00	\$	-
28	STREAM CROSSING	14	L.S. \$ 15,000.00	\$	210,000.00
PUMP STATION					
29	PUMP STATION	1	L.S. \$ 400,000.00	\$	400,000.00
FORCE MAIN					
30	4" HDPE FORCE MAIN - AGGREGATE BACKFILL	5,058	L.F. \$ 110.00	\$	556,325.00
31	4" HDPE FORCE MAIN - SUITABLE BACKFILL	15,173	L.F. \$ 100.00	\$	1,517,250.00
32	1.25" HDPE LOW PRESSURE SEWER LATERAL	750	L.F. \$ 40.00	\$	30,000.00
33	GRINDER PUMP - SIMPLEX	14	EA. \$ 8,000.00	\$	112,000.00
34	GRINDER PUMP - DUPLEX	16	EA. \$ 12,500.00	\$	200,000.00
35	LOW PRESSURE LATERAL CONNECTION	30	EA. \$ 900.00	\$	27,000.00
36	CURBSTOP AND CHECK VALVE ASSEMBLY	30	EA. \$ 850.00	\$	25,500.00
SURFACING					
37	TEMPORARY PAVING	7,103	L.F. \$ 15.00	\$	106,537.50
38	PENNDOT PAVING RESTORATION (BASE)	5,558	L.F. \$ 90.00	\$	500,252.29
39	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	6,176	S.Y. \$ 25.00	\$	154,398.86
40	MUNICIPAL PAVING RESTORATION	1,544	L.F. \$ 65.00	\$	100,369.18
41	VEGETATIVE RESTORATION	4,215	L.F. \$ 20.00	\$	84,300.00
ESTIMATED CONSTRUCTION COSTS				\$	6,942,000.00
CONSTRUCTION CONTINGENCY @ 15%				\$	1,389,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	2,083,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	10,414,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					235
ESTIMATED CAPITAL COST PER EDU				\$	45,000.00

TABLE 2-22 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 6E

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH EXTENSION W/ HARFORD AND BROAD ST ALLEYS LOW PRESSURE ALTERNATIVE 6E LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION	
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 481,300.00	\$ 481,300.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 240,700.00	\$ 240,700.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 144,400.00	\$ 144,400.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	6,540	L.F.	\$ 70.00	\$ 457,800.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	19,620	L.F.	\$ 65.00	\$ 1,275,300.00
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	3,175	L.F.	\$ 65.00	\$ 206,375.00
7	AIR/VACUUM RELEASE VALVES	2	EA.	\$ 12,000.00	\$ 24,000.00
8	INLINE CLEANOUT	53	EA.	\$ 4,500.00	\$ 238,500.00
9	TERMINAL CLEANOUT	1	EA.	\$ 3,000.00	\$ 3,000.00
10	GRINDER PUMP - SIMPLEX	98	EA.	\$ 9,000.00	\$ 882,000.00
11	GRINDER PUMP - DUPLEX	29	EA.	\$ 15,000.00	\$ 435,000.00
12	TEST PITS	66	EA.	\$ 950.00	\$ 62,700.00
13	LOW PRESSURE LATERAL CONNECTION	127	EA.	\$ 900.00	\$ 114,300.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	127	EA.	\$ 850.00	\$ 107,950.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
17	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
SURFACING					
18	TEMPORARY PAVING	6,540	L.F.	\$ 15.00	\$ 98,100.00
19	PENNDOT PAVING RESTORATION (BASE)	5,058	L.F.	\$ 90.00	\$ 455,175.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	5,619	S.Y.	\$ 25.00	\$ 140,486.11
21	MUNICIPAL PAVING RESTORATION	1,483	L.F.	\$ 65.00	\$ 96,362.50
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	\$ -
ESTIMATED CONSTRUCTION COSTS				\$	5,679,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,136,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,704,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	8,519,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					235
ESTIMATED CAPITAL COST PER EDU				\$	37,000.00

TABLE 2-23 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 6F

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH EXTENSION W/ HARFORD AND BROAD ST ALLEYS LOW PRESSURE ALTERNATIVE 6F LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION	UNIT	UNIT PRICE	EXTENSION	
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 518,600.00	\$ 518,600.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 259,300.00	\$ 259,300.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 155,600.00	\$ 155,600.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	6,660	L.F.	\$ 70.00	\$ 466,200.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	19,980	L.F.	\$ 65.00	\$ 1,298,700.00
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	3,725	L.F.	\$ 65.00	\$ 242,125.00
7	AIR/VACUUM RELEASE VALVES	1	EA.	\$ 12,000.00	\$ 12,000.00
8	INLINE CLEANOUT	54	EA.	\$ 4,500.00	\$ 243,000.00
9	TERMINAL CLEANOUT	1	EA.	\$ 3,000.00	\$ 3,000.00
10	GRINDER PUMP - SIMPLEX	107	EA.	\$ 9,000.00	\$ 963,000.00
11	GRINDER PUMP - DUPLEX	42	EA.	\$ 15,000.00	\$ 630,000.00
12	TEST PITS	67	EA.	\$ 950.00	\$ 63,650.00
13	LATERAL CONNECTION	149	EA.	\$ 500.00	\$ 74,500.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	149	EA.	\$ 850.00	\$ 126,650.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	\$ -
17	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
SURFACING					
18	TEMPORARY PAVING	6,660	L.F.	\$ 15.00	\$ 99,900.00
19	PENNDOT PAVING RESTORATION (BASE)	5,965	L.F.	\$ 90.00	\$ 536,850.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	6,628	S.Y.	\$ 25.00	\$ 165,694.44
21	MUNICIPAL PAVING RESTORATION	695	L.F.	\$ 65.00	\$ 45,175.00
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	\$ -
ESTIMATED CONSTRUCTION COSTS				\$	6,119,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,224,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	1,836,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	9,179,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					284
ESTIMATED CAPITAL COST PER EDU				\$	33,000.00

TABLE 2-24 COST OPINION FOR MILFORD BOROUGH ALTERNATIVE 7

OPINION OF PROBABLE PROJECT COST FOR EASTERN PIKE COUNTY REGIONAL ACT 537 SEWAGE FACILITIES PLAN MILFORD BOROUGH EXTENSION W/ RESIDENTIAL LOW PRESSURE ALTERNATIVE 7 LOW PRESSURE SEWER SEWER EXTENSION					
ITEM NO.	DESCRIPTION		UNIT	UNIT PRICE	EXTENSION
GENERAL					
1	MOBILIZATION @ 10%	1	L.S.	\$ 577,600.00	\$ 577,600.00
2	TRAFFIC MAINTENANCE & PROTECTION @ 5%	1	L.S.	\$ 288,800.00	\$ 288,800.00
3	EROSION AND SEDIMENTATION CONTROL @ 3%	1	L.S.	\$ 173,300.00	\$ 173,300.00
LOW PRESSURE SEWER					
4	2" HDPE LOW PRESSURE SEWER - AGGREGATE BACKFILL	7,445	L.F.	\$ 70.00	\$ 521,150.00
5	2" HDPE LOW PRESSURE SEWER - SUITABLE BACKFILL	22,335	L.F.	\$ 65.00	\$ 1,451,775.00
6	1.25" HDPE LOW PRESSURE SEWER LATERAL	5,375	L.F.	\$ 65.00	\$ 349,375.00
7	AIR/VACUUM RELEASE VALVES	26	EA.	\$ 12,000.00	\$ 312,000.00
8	INLINE CLEANOUT	60	EA.	\$ 4,500.00	\$ 270,000.00
9	TERMINAL CLEANOUT	4	EA.	\$ 3,000.00	\$ 12,000.00
10	GRINDER PUMP - SIMPLEX	169	EA.	\$ 9,000.00	\$ 1,521,000.00
11	GRINDER PUMP - DUPLEX	46	EA.	\$ 15,000.00	\$ 690,000.00
12	TEST PITS	60	EA.	\$ 950.00	\$ 57,000.00
13	LOW PRESSURE LATERAL CONNECTION	215	EA.	\$ 900.00	\$ 193,500.00
14	CURBSTOP AND CHECK VALVE ASSEMBLY	215	EA.	\$ 850.00	\$ 182,750.00
15	CONNECTION TO EXISTING FORCE MAIN	1	EA.	\$ 5,000.00	\$ 5,000.00
CROSSING					
16	PENNDOT CROSSING	0	L.S.	\$ 35,000.00	-
17	STREAM CROSSING	14	L.S.	\$ 15,000.00	\$ 210,000.00
SURFACING					
18	TEMPORARY PAVING	7,445	L.F.	\$ 15.00	\$ 111,675.00
19	PENNDOT PAVING RESTORATION (BASE)	6,363	L.F.	\$ 90.00	\$ 572,625.00
20	PENNDOT PAVING RESTORATION (MILL AND OVERLAY)	7,069	S.Y.	\$ 25.00	\$ 176,736.11
21	MUNICIPAL PAVING RESTORATION	1,083	L.F.	\$ 65.00	\$ 70,362.50
22	VEGETATIVE RESTORATION	0	L.F.	\$ 20.00	-
ESTIMATED CONSTRUCTION COSTS				\$	7,747,000.00
CONSTRUCTION CONTINGENCY @ 20%				\$	1,550,000.00
ENGINEERING, ADMIN, & LEGAL FEES @ 25%				\$	2,325,000.00
TOTAL ESTIMATED PROJECT COSTS				\$	11,622,000.00
ESTIMATED NUMBER OF EDUs TO BE SERVED					363
ESTIMATED CAPITAL COST PER EDU				\$	33,000.00

Table 2-25 Summary of Costs

Summary of Cost Opinions for Structural Alternatives													
Study Area	Alternative	Estimated Project Cost	Tapping Fee Towards Project	Estimated Project Cost Less Tapping Fee	Estimated Annual Debt Service	Estimated Annual O&M Cost	Estimated Annual Cost	Present Worth of Annual O&M	Total Present Worth	Number of EDUs	Estimated Present Worth Per EDU	Estimated Annual Cost Per EDU	Cost per EDU without Assistance
Matamoras Main Road	Alternative 1A	\$5,300,000	\$0	\$5,300,000	\$293,000	\$7,000	\$300,000	\$93,061	\$5,393,061	140	\$38,521.86	\$2,142.86	\$204
	Alternative 1B	\$3,300,000	\$0	\$3,300,000	\$183,000	\$3,000	\$186,000	\$39,883	\$3,339,883	140	\$23,856	\$1,329	\$136
	Alternative 1C	\$3,700,000	\$0	\$3,700,000	\$205,000	\$9,000	\$214,000	\$119,649	\$3,819,649	140	\$27,283	\$1,529	\$152
Matamoras Residential	Alternative 2A	\$8,900,000	\$0	\$8,900,000	\$492,000	\$12,000	\$504,000	\$159,532	\$9,059,532	276	\$32,824	\$1,826	\$177
	Alternative 2B	\$7,100,000	\$0	\$7,100,000	\$392,000	\$7,000	\$399,000	\$93,061	\$7,193,061	276	\$26,062	\$1,445.65	\$145
	Alternative 2C	\$7,400,000	\$0	\$7,400,000	\$409,000	\$13,000	\$422,000	\$172,827	\$7,572,827	276	\$27,438	\$1,528.99	\$152
Westfall Southwest	Alternative 3A	\$6,000,000	\$300,000	\$5,700,000	\$332,000	\$15,000	\$347,000	\$199,415	\$6,199,415	128	\$48,433	\$2,711	\$225.91
	Alternative 3B	\$3,100,000	\$300,000	\$2,800,000	\$171,000	\$8,000	\$179,000	\$106,355	\$3,206,355	128	\$25,050	\$1,398.44	\$116.54
Milford Broad St Only	Alternative 4A	\$7,000,000	\$0	\$7,000,000	\$428,000	\$21,000	\$449,000	\$279,182	\$7,279,182	106	\$68,672	\$4,236	\$378
	Alternative 4B	\$4,000,000	\$0	\$4,000,000	\$245,000	\$14,000	\$259,000	\$186,121	\$4,186,121	106	\$39,492	\$2,443	\$229
	Alternative 4C	\$5,000,000	\$0	\$5,000,000	\$306,000	\$21,000	\$327,000	\$279,182	\$5,279,182	106	\$49,804	\$3,085	\$282
	Alternative 4D	\$3,500,000	\$0	\$3,500,000	\$214,000	\$14,000	\$228,000	\$186,121	\$3,686,121	126	\$29,255	\$1,810	\$176
	Alternative 4E	\$5,500,000	\$0	\$5,500,000	\$336,000	\$22,000	\$358,000	\$292,476	\$5,792,476	126	\$45,972	\$2,841	\$262
Milford Broad+W Harford	Alternative 5A	\$6,100,000	\$0	\$6,100,000	\$373,000	\$22,000	\$395,000	\$292,476	\$6,392,476	172	\$37,166	\$2,297	\$216
	Alternative 5B	\$7,200,000	\$0	\$7,200,000	\$440,000	\$23,000	\$463,000	\$305,770	\$7,505,770	178	\$42,167	\$2,601	\$242
	Alternative 5C	\$4,200,000	\$0	\$4,200,000	\$257,000	\$15,000	\$272,000	\$199,415	\$4,399,415	172	\$25,578	\$1,581	\$157
	Alternative 5D	\$4,200,000	\$0	\$4,200,000	\$257,000	\$15,000	\$272,000	\$199,415	\$4,399,415	178	\$24,716	\$1,528	\$152
Milford Harford+Broad	Alternative 6A	\$7,700,000	\$0	\$7,700,000	\$471,000	\$23,000	\$494,000	\$305,770	\$8,005,770	264	\$30,325	\$1,871	\$181
	Alternative 6B	\$8,300,000	\$0	\$8,300,000	\$507,000	\$29,000	\$536,000	\$385,537	\$8,685,537	264	\$32,900	\$2,030	\$194
	Alternative 6C	\$6,200,000	\$0	\$6,200,000	\$379,000	\$16,000	\$395,000	\$212,710	\$6,412,710	264	\$24,291	\$1,496	\$150
	Alternative 6D	\$7,400,000	\$0	\$7,400,000	\$452,000	\$24,000	\$476,000	\$319,065	\$7,719,065	235	\$32,847	\$2,026	\$194
	Alternative 6E	\$5,500,000	\$0	\$5,500,000	\$336,000	\$16,000	\$352,000	\$212,710	\$5,712,710	235	\$24,309	\$1,498	\$150
	Alternative 6F	\$6,100,000	\$0	\$6,100,000	\$373,000	\$16,000	\$389,000	\$212,710	\$6,312,710	284	\$22,228	\$1,369.72	\$139
Milford Residential	Alternative 7	\$8,600,000	\$0	\$8,600,000	\$526,000	\$18,000	\$544,000	\$239,299	\$8,839,299	363	\$24,351	\$1,499	\$150

Notes:

- 1. Annual Debt Service Calculations Assuming 1% for 20 Years
- 2. Tapping Fees are based on the existing MATW tapping fee of \$1600/EDU and the number of EDUs
- 3. Present Worth Calculations Assume 4.25% for 20 Years
- 4. Annual O&M Estimated based on typical common usage
- 5. Wholesale rate of \$25/edu.

Table 2-26 Summary of Financing Options for Selected Alternatives

Milford - Selected Alternative 6F			Project Cost: \$ 6,100,000		Annual O&M Cost: \$ 101,200		No. of EDUs 284			
Option	Description	Tapping Fee Towards Pjt	Grant	Loan	Interest Rate	Term (Yrs)	Annual DS Cost	Resulting Annual User Rate/EDU*	Resulting Monthly User Rate/EDU*	Total Interest over Term of Loan
6F - 1a	PENNVEST - w/ Anticipated Grant	\$ -	\$ 1,785,000	\$ 4,315,000	1.000%	20	\$239,117	\$ 1,410	\$ 117	\$467,342
6F- 1b	PENNVEST - w/ Max Grant	\$ -	\$ 4,250,000	\$ 1,850,000	1.000%	20	\$102,518	\$ 844	\$ 70	\$200,367
6F- 2	USDA - w/ 45% Grant	\$ -	\$ 2,745,000	\$ 3,355,000	1.875%	40	\$119,972	\$ 916	\$ 76	\$1,443,875
6F- 3	Bank Loan	\$ -	\$ -	\$ 6,100,000	4.250%	20	\$458,841	\$ 2,320	\$ 193	\$3,076,820
6F- 4	Bond Issue	\$ -	\$ -	\$ 6,100,000	4.500%	30	\$374,488	\$ 1,971	\$ 164	\$5,134,652

Matamoras - Selected Alternative 2B			Project Cost: \$ 7,100,000		Annual O&M Cost: \$ 89,800		No. of EDUs 276			
Option	Description	Tapping Fee Towards Pjt	Grant	Loan	Interest Rate	Term (Yrs)	Annual DS Cost	Resulting Annual User Rate/EDU*	Resulting Monthly User Rate/EDU*	Total Interest over Term of Loan
2B - 1a	PENNVEST - w/ Anticipated Grant	\$ -	\$ 819,000	\$ 6,281,000	1.000%	20	\$348,064	\$ 1,866	\$ 156	\$680,272
2B - 1b	PENNVEST - w/ Max Grant	\$ -	\$ 1,950,000	\$ 5,150,000	1.000%	20	\$285,389	\$ 1,599	\$ 133	\$557,777
2B - 2	USDA - w/ 45% Grant	\$ -	\$ 3,195,000	\$ 3,905,000	1.875%	40	\$139,639	\$ 978	\$ 82	\$1,680,576
2B - 3	Bank Loan	\$ -	\$ -	\$ 7,100,000	4.250%	20	\$534,061	\$ 2,659	\$ 222	\$3,581,217
2B - 4	Bond Issue	\$ -	\$ -	\$ 7,100,000	4.500%	30	\$435,880	\$ 2,241	\$ 187	\$5,976,399

Westfall - Selected Alternative 3B			Project Cost: \$ 3,100,000		Annual O&M Cost: \$ 672,600		No. of Total EDUs 1121			
							No. of New EDUs 128			
Option	Description	Reserve Funds & Tapping Fee Towards Pjt	Grant	Loan	Interest Rate	Term (Yrs)	Annual DS Cost	Resulting Annual User Rate/EDU*	Resulting Monthly User Rate/EDU*	Total Interest over Term of Loan
3B - 1a	PENNVEST - w/ Anticipated Grant	\$ 880,640	\$ -	\$ 2,219,360	1.000%	20	\$122,987	\$ 767	\$ 64	\$240,371
3B - 1b	PENNVEST - w/ Max Grant	\$ 880,640	\$ -	\$ 2,219,360	1.000%	20	\$122,987	\$ 767	\$ 64	\$240,371
3B - 2	USDA	\$ 880,640	\$ -	\$ 2,219,360	1.875%	40	\$79,362	\$ 725	\$ 60	\$955,135
3B - 3	Bank Loan	\$ 880,640	\$ -	\$ 2,219,360	4.250%	20	\$166,940	\$ 810	\$ 67	\$1,119,438
3B - 4	Bond Issue	\$ 880,640	\$ -	\$ 2,219,360	4.500%	30	\$136,250	\$ 780	\$ 65	\$1,868,138

- Notes:
- 1. Rate projections assumes 7.25% delinquency rate for retail customers and 15% for wholesale.
 - 2. Assumes existing Westfall Authority reserve funds put towards capital project costs and used to lower amount financed by debt.
 - 3. Assumes tapping fee revenue received by Westfall from new connections will be set aside in a reserve account for future capital improvement needs
 - 4. Assumes annual retail and wholesale user charges from Westfall Authority are reduced by \$20/month and \$10/month respectively to eliminate budgeted depreciation expense for the initial years of service.
 - 5. Assumes initial wholesale rate of \$25/EDU/month.

As discussed throughout the Act 537 Plan and UER, there is adequate documentation available and reasoning to justify the provision of public to sewer within the Study Areas, specifically Matamoras Borough, Route 6/209 in Westfall Township, and Broad and Harford Street in Milford Borough. The most advantageous alternative for Matamoras Borough is Alternative No. 2B, Alternative No. 3B for Westfall Township, and Alternative No. 6F for Milford Borough.

Milford Township has selected no structural alternative due to the OLDS survey results, well water sampling results, and the adequate drainage based on the soil data. Instead, Milford Township will focus on OLDS maintenance. Since there is no plan for a mandatory connection ordinance in Milford Township, no immediate connections are projected in the Study, but the potential future flows in Milford Township are accounted for in the Study.

These alternatives are dependent upon the finalization of inter-municipal agreement between each of the four municipalities, Municipal Authority of Westfall Township (MATW), Milford Water Authority (MWA), and Matamoras Municipal Authority (MMA), availability of favorable funding with maximum grants, and the potential contributions made by land developers or private entities at the time of implementation. Alternative No. 2B provides public sewer to the Matamoras Borough Planning Area along Pennsylvania Avenue as well as municipal roads that had been identified as needs areas in the Tier 2 Surveys. These areas are proposed to be collected through low-pressure sewer which is directly conveyed to the existing MATW force main near McDonald's, where the flows would be fed to the MATW Pump Station #1. MATW Pump Station #1 would then convey the wastewater flow into MATW WWTP. Both the WWTP and MATW Pump Station #1 have the hydraulic capacity to handle projected flows from Alternatives No. 2B, No. 3B and No. 6F. Alternative No. 3B provides sewer to Westfall Township Southwest along Route 6/209 using a low-pressure system. The low-pressure line would extend the existing MATW force main to the Milford Township/ Westfall Township border. Alternative 6F provides sewer to Milford Borough along Route 6/209, Broad Street, and East and West Harford Street. In addition, future capacity allocation has been assumed for potential future connections along Route 6/209 in Milford Township. The low-pressure sewer line is proposed to extend through Milford Township along Route 6/209 before connecting with the proposed sewer line in Alternative No. 3B. The estimated cost per EDU for each proposed structural alternative are presented in Table 2-26 at the end of this Chapter.

The implementation of Alternatives No. 2B, No. 3B, and No. 6F has been chosen and is anticipated to be completed in accordance with the projected implementation schedule assuming that an finalized inter-municipal agreement between all municipalities and authorities is finalized and funding is secured. Without the finalized inter-municipal agreement, development agreement(s), and favorable funding (public and private) these structural alternatives are not considered to be feasible and will not be implemented.

This project schedule is contingent upon the receipt of affordable funding and an updated inter-municipal agreement with MATW. The following activities should be undertaken to ensure successful implementation of the selected alternatives within the specified timeframes:

Table 2-28 Implementation Schedule (OLDS Sewage Management Ordinance)

Years from DEP Approval	OLDS Sewage Management Ordinance Phase I
0	Develop Draft On-Lot Disposal System Management Ordinance
	Provide Public Education for On-Lot Disposal System Management Ordinance
1	Finalize and Adopt On-Lot Disposal System Management Ordinance
2	Implement On-lot Disposal System Management Ordinance, Begin Pumping Cycles

Table 2-29 Implementation Schedule (Sewer System Extensions)

Years after DEP Approval (1)	Selected Alternatives Phase II
0	Finalize Inter-municipal Agreements with MATW
	Pursue Funding Opportunities for Construction of Alternative 2B, 3B, 6F Facilities
1	Design and Submit Part II WQM Permit for Alternative 2B, 3B, and 6F Facilities
2	Receive Part II WQM Permit Approval
2.5	Apply for and Obtain Project Financing
3	Bidding of Project
3.1	Finance Closing
3.5	Initiation of Construction
3.5	Substantial Completion
6	Construction Completion/ Final Restoration and connections

Note (1): Without a finalized inter-municipal agreement (including updates to the MATW rules and regulations), development agreement(s), and favorable funding (public and private) these alternatives are not feasible and will not be implemented.

Alternatives formulated to provide public sewer service to municipal roads and other commercial zoning districts in Matamoras and Milford Borough as presented in Chapter 5 of the Plan, were also evaluated due to malfunctioning OLDS as well as the potential development and growth of these areas. As grant monies or other capital contributions become available and the selected structural alternative is completed, the provision of public sewer service to these may be re-evaluated to determine cost effectiveness.

2.2.2 Conclusions

Based on the discussion above, the following are recommendations for the wastewater planning needs enumerated in Sections 1 and 2 of the UER.

Based on the discussion above, the following are recommendations for the wastewater planning needs enumerated in above in the UER. All of the selected alternatives make it feasible for future growth and collection of future flows. These alternatives are environmentally favorable, resulting in the abandonment of malfunctioning OLDS in the study area as well as two package facilities that the DEP requires to connect if public sewer is available. These alternatives also provide proper planning for potential future growth in the planning areas. The four Municipalities may consider providing public sewer service in different areas if more funding becomes available through developers or private entities. However, without a finalized inter-municipal agreement, development agreements, and favorable funding (public and private), neither alternative is feasible. Once the user sewage rates are set and agreed upon, it is not anticipated that there will be any other complications regarding the inter-municipal agreement.

1. Public sewer service has been selected for Matamoras Borough (Alternative No. 2B) along Pennsylvania Avenue and select municipal roads.

As shown in the cost analyses, the provision of public sewer service to Matamoras Borough along Pennsylvania Avenue (Alternative No. 2B) with an assumed 45% grant and USDA financing would be an estimated monthly cost of \$82/EDU. Matamoras Borough will identify additional grants and funding to make it financially feasible upon implementation of the Plan. Matamoras Municipal Authority is the selected institutional alternative for this structural alternative.

The structural alternatives evaluated in this Act 537 Plan to provide public sewer service to Matamoras Borough, represent technically feasible solutions for wastewater management in these areas, but not all of the solutions are cost effective as presented. Of the structural alternatives evaluated for Matamoras Borough, it is recommended that Matamoras Borough pursue Alternative No. 2B. Alternative No. 2B utilizes a low-pressure system that has the lowest estimated cost per user among the alternatives that serve all of the needs areas within the Borough.

2. Public sewer service has been selected for Westfall Township (Alternative 3B) along Route 6/209

As shown in the cost analyses, the provision of public sewer service to Westfall Township along Route 6/209 (Alternative No. 3B) with USDA financing would be an estimated monthly cost of \$60/EDU, which matches the existing MATW user rate. For the Structural Alternatives Financial Estimates, the Westfall Authority reserve funds would be utilized for the project costs to lower the amount financed by debt. MATW is the selected institutional alternative for this structural alternative.

The structural alternatives evaluated in this Act 537 Plan to extend public sewer service in Westfall Township, represent technically feasible solutions for wastewater management in Westfall Township, but not all of the solutions are cost effective as presented. Of the structural alternatives evaluated for Westfall Township, it is recommended that Westfall Township pursue Alternative No. 3B. Alternative No. 3B utilizes a low-pressure system that has the lowest estimated cost per user among the alternatives that serve all of the needs areas within Westfall Township, specifically the remainder of the commercial district.

3. Public sewer service has been selected for Milford Borough along Broad and Harford Street (Alternative No. 6F).

As shown in the cost analyses, the provision of public sewer service to Milford Borough along Broad Street and Harford Street (Alternative No. 6F) with an assumed 45% grant and USDA financing would be an estimated monthly cost of \$76/EDU. Milford Borough will identify additional grants and funding to make it financially feasible upon implementation of the Plan. Milford Water Authority is the selected institutional alternative for this structural alternative.

The structural alternatives evaluated in this Act 537 Plan to provide public sewer service to Milford Borough, represent technically feasible solutions for wastewater management in these areas, but not all of the solutions are cost effective as presented. Of the structural alternatives evaluated for Milford Borough, Milford Borough has selected Alternative No. 6F. Alternative No. 6F utilizes a low-pressure system that has the lowest estimated cost per user among the

alternatives that serve all of the needs areas within the Borough, in particular, the commercial district. Prior to connections for Alternative No. 6F, Alternative No. 3B would need to be completed.

4. No Structural Alternative selected for Milford Township.

No Structural Alternative has been selected for Milford Township. There is a proposed transmission line that runs through Route 6/209 in Milford Township, conveying flow from Milford Borough into Westfall Township. At the time of this Study, Milford Township has not expressed interest in requiring residents to connect or to assist with funding the sewer extension from Milford Borough to Westfall Township in the immediate future. Capacity has been reserved and planned for future from Milford Township as noted in Chapter 4. As a result, there are no immediate connections. Based on the OLDS surveys, Well Water Sampling, and good drainage based on the soil data, Milford Township will focus on maintaining the existing OLDS and COLDS in the Township and pass an OLDS Management Ordinance. For future connections, Milford Water Authority is the selected alternative.

5. Milford Borough, Westfall Township, Milford Township, and Matamoras Borough shall each implement their own OLDS Management Ordinance.

As mentioned above, Milford Borough, Westfall Township, Milford Township, and Matamoras Borough shall implement an OLDS management ordinance. The Ordinance would provide requirements for the permitting, inspection, operation, maintenance, and rehabilitation of OLDS within the Study Areas and throughout the municipalities. Recommended periodic pumping of OLDS would be included within the Ordinance. Successful implementation of such an Ordinance would be expected to have a positive impact on surface water and drinking water supplies in areas of the four Municipalities where OLDS systems are utilized. Periodic pumping of the tanks will provide for improved operation of the systems and will help to eliminate the occurrence of OLDS malfunctions. Currently, none of the municipalities have any ordinances or regulations requiring mandatory OLDS pumping. The implementation of an OLDS Management Ordinance would allow the Municipalities to further evaluate the need for improved sewage facilities after tank pumping activities have commenced for some period of time.

2.2.3 Sources of Up-Front Revenue

For smaller communities, it is important to obtain as much up-front revenue as reasonably possible for public sewer projects in order to reduce the total amount of the project that must be financed. In the past, there were several federal programs that provided grants for these types of projects. Over the years, these programs have been gradually eliminated as the federal government has transferred most of the financial responsibility for these programs to the state and local level. Consequently, competition for these funds is strong and the majority of available grant money is generally funneled to the most economically distressed communities. As a result, most up-front revenue is now generated locally through tapping fees and contributions by land developers. A summary of the various sources of up-front revenue for public sewer projects is provided as follows:

A. Pennsylvania Infrastructure Investment Authority (PENNVEST)

The PENNVEST program was established by the Pennsylvania State Legislature to address the health risks posed by inadequate water and wastewater facilities within the Commonwealth.

The principle mission of the PENNVEST program is to provide financial assistance for projects that protect the public health and promote economic development in Pennsylvania. Since its inception, this program has developed into primarily a low cost revolving loan program. Grants are rare and are only made when PENNVEST has determined that the financial condition of the recipient is so poor that the repayment of a loan is unlikely, and that the project will not be able to proceed without a direct grant. The recent Growing Greener Initiative has allowed PENNVEST to allocate greater amounts of loans and grants for infrastructure development projects making them more affordable for the users who ultimately must pay for them.

Recent initiatives by the current administration have indicated a priority of funding toward infrastructure projects tied to economic development. As such, the future of funding for projects not involving economic development is uncertain.

B. Developer Contributions

Contributions by land developers are becoming a relatively common source for up-front revenue. The funds provided by the developer are directly related to the benefits that the development will derive from the use of the public facilities. In some cases, the developer may actually construct the necessary improvements at his expense and then transfer ownership of the improvements to the local municipality. In other cases, in lieu of actually constructing the improvements, the developer may make a cash payment to the municipality to offset a portion of the costs for the improvements. As previously stated, no land development plans are proposed within the planning area.

C. Capital Charges Fees

Capital charges fees, or tapping fees, are an equitable means by which a system can assess a portion of the capital costs of constructing the new facilities to all users of the proposed system. The imposition of these fees is based upon the concept that all users of the system derive a benefit from this use, and that the costs of this benefit should be allocated among all users without prejudice or penalty. For this reason, tapping fees are usually based on a measure of the total flow contributed by the service connection or lateral.

PA Act 57 of 2003 contains extensive provisions regarding calculation and types of fees that may be charged by municipalities and authorities. Each community must establish its own fee criteria in accordance with this Act. Capital charges fees are an established method for raising up-front revenue and would be an appropriate part of the community's financing plan for the proposed project.

Connection and tapping fees have the greatest financial impact on residents of existing homes. Unlike new residential development, where the connection and tapping fee costs are included in total construction costs and financed accordingly, existing residents must pay these fees from their own resources or by securing a loan from a local bank. In addition to these fees, the residents must also pay the costs to extend a sewer lateral from the lateral stub provided to the point of interconnection with the building sewer.

2.2.4 Sources of Financing

After all sources of up-front revenue have been identified, a reasonable forecast of the amount of the project that must be financed can be determined. There are several alternatives for financing

a public sewer project. Not all of these alternatives are equally suitable for application to the project. The choice of financing method varies from project to project, and is dependent upon the financial specifics of each situation and the amount to be borrowed. A summary of the various means of financing public sewer projects follows.

A. Pennsylvania Infrastructure Investment Authority (PENNVEST)

The PENNVEST program offers grants and below market interest financing for financing public sewer projects in the Commonwealth of Pennsylvania. The PENNVEST Authority may receive funds from the following sources:

1. State funds appropriated to the Municipality;
2. Federal funds appropriated to or granted to the State or Municipality; and
3. Proceeds from the sale of bonds.

PENNVEST is also required to establish a Water Pollution Control Revolving Fund, which is administered in accordance with the requirements of the Water Quality Act of 1987. PENNVEST's Board may also establish non-revolving funds and accounts. The monies deposited with PENNVEST as repayment of the principal and interest due on loans issued from the program are used to pay PENNVEST's indebtedness. The criteria considered by the PENNVEST Board when evaluating applications are summarized as follows:

1. The project's ability to improve the health, safety, welfare, or economic well-being of the citizens of the Commonwealth.
2. The project's ability to lead to an effective or complete solution to the problems of the system and bring it into compliance with state and federal regulations.
3. The cost-effectiveness of the proposed project when compared with other alternatives.
4. The consistency of the project with state and regional resource management and economic development plans.
5. Demonstration of the applicant's ability to operate and maintain the project in the proper manner.
6. The ability to promote consolidation of water and wastewater systems where consolidation would provide more effective service of the customers.
7. The availability of other sources of funds at reasonable rates to finance all or portions of the project.

During the preparation of this report and similarly of the prepared Act 537 Plan, Cap Interest Rates for PENNVEST loans in Dauphin County were listed at 1.512% for years 1 to 5 and 2.063% for years 6 to 20 on the PENNVEST Website. This loan may cover the entire project costs or only a portion of the total costs at the discretion of PENNVEST, and based on community need. Applications are received, and funding granted four times per year.

PENNVEST financing offers several advantages in addition to below-market interest rates and possible grants. For example, PENNVEST funding is available to pay for engineering and planning costs prior to the completion of the final design under their advance loan procedure. Construction inspection costs are also eligible under the PENNVEST program. Participation in this program does, however, impose additional responsibilities upon the municipality. Good accounting and administrative procedures must be followed and the use of funds from this program is subject to audit at any time by the State Comptroller's office. Additionally, PENNVEST relies on DEP to evaluate the cost effectiveness of the proposed project and verify that PENNVEST funds are being utilized in the appropriate manner. DEP will conduct occasional site visits on PENNVEST's behalf and they also provide input to PENNVEST on whether or not to approve payment for changes made during construction.

In order for PENNVEST to maximize the use of its funds, public sewerage projects must meet federal requirements as well as state requirements since PENNVEST receives funds from the federal government to capitalize the Water Pollution Control Revolving Loan Fund. In addition to an approved Act 537 Plan, the following additional planning assessments and investigations must be completed:

1. Assessment of innovative and alternative technologies.
2. Investigation of open space and recreational opportunities in conjunction with the public sewer project.
3. Alternative evaluation that provides thorough justification for the selected alternative.
4. Environmental assessment to assure that the project complies with the Water Quality Act and will undergo a review in accordance with the National Environmental Policy Act (NEPA).
5. Public participation.

Other special requirements of the PENNVEST program include the following:

1. A value engineering review of all projects having an estimated treatment works construction cost exceeding \$10 million to verify that the proposed work is cost-effective.
2. The applicant must have an adequate user charge system, sewer use ordinance, and financial capability. The applicant must demonstrate sufficient legal, institutional, managerial, and financial capability to construct, operate, and maintain the proposed project.
3. The applicant must comply with the federal Davis-Bacon Act regarding labor wage rates.
4. The applicant must comply with MBE/WBE/DBE affirmative action steps.
5. One (1) year after the completion of construction and the initiation of operation, the

applicant must certify that the treatment facility meets all design specifications and effluent limitations stipulated in its operation permit.

To initiate a request for PENNVEST financial assistance, an application form must be completed. The information provided in this application would be the basis by which PENNVEST makes its decision on whether the project is eligible for funding.

The decision to seek PENNVEST funding must be analyzed on an individual basis depending on the terms and interest rate of the loan. If a decision is made to seek PENNVEST funding, the implementing party must be prepared to comply with the regulatory requirements that are inherent to the program. Delays in the application review and loan approval process are common and the documentation requirements are quite extensive.

Rural Utility Service (RUS) – U.S. Department of Agriculture

The R.U.S. Loan Program makes funding available for the development of water and waste disposal systems in rural areas and towns with populations not in excess of 10,000. The funds are available to public entities such as municipalities, counties, special-purpose districts, Indian tribes, and corporations not operated for profit. R.U.S. also guarantees water and waste disposal loans made by banks and other eligible lenders.

Three interest rates are used. They are set periodically based on an index of current market yields for municipal obligations. The rates are as follows:

1. The *Poverty Rate* interest rate applies when:
 - a. The primary purpose of the loan is to upgrade existing facilities or construct new facilities required to meet applicable health or sanitary standards; and
 - b. The median household income (MHI) of the service area is below the poverty line for a family of four or below 80 percent of the Statewide Nonmetropolitan MHI (SNMHI).
2. The *Market Rate* is set quarterly based on the average of the "Bond Buyer" 1-Bond Index over a four week period prior to the beginning of the quarter. It applies to loans for projects where the MHI of the service area exceeds the SNMHI.
3. The *Intermediate Rate* is the poverty rate plus half of the difference between the poverty rate and the market rate, but not to exceed 7 percent. It applies to loans that do not meet the criteria for either the poverty rate or the market rate.

The law authorizing the R.U.S. program allows a maximum repayment period of 40 years. However, the repayment period cannot exceed the useful life of the facilities financed or any statutory limitation on the applicants borrowing authority.

To initiate a request for R.U.S. financial assistance, an application form must be completed and filed with the USDA Rural Development office serving the applicant's area. The information provided in this application would be the basis by which R.U.S. makes its decision on whether the project is eligible for funding.

Municipal Bond Issue

There are several types of bonds, some are taxable and some are tax-exempt. The general classification of municipal bonds usually refers to tax-exempt bonds. There are three (3) types of municipal bonds generally used to finance public works projects:

1. *General Obligation Bonds* are tax-free bonds that are secured by the pledge of the full faith, credit, and taxing power of the issuing municipality. This means that this type of bond is backed by all of the taxes on real estate and personal property within the jurisdiction of the issuing municipality. It involves minimum risk to the investor and, therefore, can be issued at a lower rate of interest than other types of bonds.
2. *Dedicated Tax Bonds* are payable only from the proceeds from a special tax and they are not guaranteed by the full faith, credit, and taxing power of the issuing agency. An example of a special dedicated tax is the special assessment against property, which is adjacent to, and the principal beneficiary of the improvement. The gasoline tax used to finance highway construction is another example.
3. *Revenue Bonds* are payable from revenues derived from the use of the improvement such as tolls, sewer bills, or rent paid by users of the improvement and do not otherwise represent an obligation of the issuing municipality. Revenue Bonds are not ordinarily subject to statutory or constitutional debt limitations. They are often issued by commissions, authorities, and other public agencies created for the specific purpose of financing, constructing, and operating essential public projects.

Typically, municipal bonds are sold to an investment-banking firm, which then resells the bonds to individual investors. The advantage of municipal bonds to the investor is their tax-free status. A bond discount (a percentage of the total bond issue) serves as the investment banker's commission. Before bonds are sold, they must be rated on the basis of the risk to the investor by a rating agency such as Standard and Poor's or Moody's. The higher the rating, the lower the risk to the investor and, consequently, the lower the interest rate that must be paid on the bond. The legal instrument that sets forth the rules that must be observed by the issuing agency is the Trust Indenture. The Trust Indenture is prepared by the Bond Counsel and must be printed along with the bonds. Due to specific requirements as to the denominations of the bonds and the methods and materials used to print the bonds and Trust Indenture, the printing costs can be substantial. A Trustee is required to administer the bond issue and ensure the terms of the Trust Indenture are observed. For these services, the Authority will incur an annual Trustee fee.

Interest rates on bond issues vary depending upon market trends, the rating of the issuing agency, and other factors. The longer the repayment period is extended the lower the annual debt service and the higher the total amount of interest that must be paid.

A municipal bond issue offers the advantage of long-term fixed rate financing and the opportunity for local investment. The financing arrangement and approval period is shorter than what it is with the PENNVEST program and the Authority would retain more flexibility for future borrowing. The disadvantage of a municipal bond issue is that the interest rates are often higher than the maximum PENNVEST interest rates. Since there are no grants involved, the cost of the bond issue is 100% locally funded. The additional costs incurred to prepare the Trust Indenture,

pay the Trustee Fees, fund the cover percentage, and to establish a Debt Service Reserve Fund must also be considered. The financial services costs associated with the issuance of a municipal bond issue are also much higher than the costs for PENNVEST funding.

Bank Loan

Because of favorable interest rates, bank loans can be a viable source for funding small to medium sized public works projects. As a general rule, they are not available for projects \$10 million or greater, and the attractiveness of the terms of the loan may vary depending upon the bank and the amount of money to be borrowed. The interest rate available from banks varies depending upon market conditions; however, the rate available to municipalities will generally be at a discount due to the tax advantages received by the bank. Terms and conditions of bank loans vary in a manner similar to personal loans and home mortgages.

The principle advantage of a bank loan is that it can usually be obtained at a favorable interest rate without the cumbersome requirements of a bond issue. The financial service costs associated with obtaining the loan are also much less than for a similar bond issue. Since these financial service costs are generally included in the total project costs, the impact of these charges on the overall project costs can be minimized. Another advantage of the bank loan is that it does not have restrictive coverage requirements, trustee fees, and Trust Indenture preparation charges, as does a bond issue.

2.2.5 Funding Considerations

The funding options available to finance the proposed structural alternative been briefly examined in this chapter; however, the four municipalities and MATW should involve their solicitors and financial advisor(s) to determine the most viable method of financing the project.

3.0 ENVIRONMENTAL CONSEQUENCES OF THE PROJECTS

Selected Sanitary Sewer Collection and Conveyance Alternative

The sanitary survey conducted as part of this report and replicated in the Act 537 Plan indicated the existence of malfunctioning OLDS. The greatest areas of concern are the Matamoras Borough, Westfall Township Southwest, and Milford Borough Planning Areas due to their close proximity to the Delaware River, commercial needs, and potential development and growth.

Sewage Management Program

As previously stated, three of the municipalities in the Planning Area have proposed to develop and eventually adopt an On-lot Sewage Management Ordinance as a method to prevent further malfunction of OLDS and degradation of drinking water supplies in throughout the Planning Area. Milford Borough has proposed to implement a 5 year enhanced monitoring program and re-evaluate after 5 years.

Table 3-1 Implementation Schedule (OLDS Sewage Management Ordinance)

Years from DEP Approval	OLDS Sewage Management Ordinance Phase I
0	Develop Draft On-Lot Disposal System Management Ordinance
	Provide Public Education for On-Lot Disposal System Management Ordinance
1	Finalize and Adopt On-Lot Disposal System Management Ordinance
2	Implement On-lot Disposal System Management Ordinance, Begin Pumping Cycles

Description of the Affected Area

The majority of the properties within the Alternative 2B, 3B, and 6F sewer service area are commercial. The collection system portion of the proposed projects will be placed within the State, Township and private rights-of-way. A portion of the private rights-of-way will be along managed lawns.

Environmental Consequences of the Reasonable Alternatives

The potential environmental consequences of the reasonable alternatives include direct, indirect, and cumulative effects. Direct effects are consequences directly related to project activity. These typically include vegetation clearing, earth disturbance, and stream crossings. Indirect effects occur later in time or removed in distance from the project area and include community growth, population density changes, altered land use practices, and other changes in the natural environment. Cumulative effects are the total changes to the environment resulting from the selected alternative when added to other past, present, and future actions.

An Erosion and Sedimentation (E&S) Plan will be established and submitted to the Pike County Conservation District to ensure the preservation of surrounding natural environments. In order to minimize the potential for soil erosion and resulting sediment pollution from leaving the construction site, a construction sequence will be outlined in the E&S Plan. The contractor shall minimize the area of disturbed soil at any one time by following the construction sequence, and shall prevent sediment pollution by installing pollution control measures as detailed in the E&S Plan.

3.1 Land Use/Important Farmland/Formally Classified Lands

3.1.1 Land Use

Since there are four municipalities in the planning area, there are four different Land Use Plans that formally establish the desired land uses, real estate orientations, and development design guidelines in each township or borough. The Land Use Plan also outlines in more detail the location of land use planning districts and describes how each municipality should be developed in the future. Parallel to County and Regional population and economic growth, the Comprehensive Plan anticipates continued increases in population, housing units, and other economic activity within the planning area. The planning area municipalities as well as Pike County itself have experienced significant growth in the population since its last Act 537 Plan. Pike County is the second fastest growing county Pennsylvania according to its 2006 Comprehensive Pla.

A generalized classification of the planning area's land base was determined following a review and analysis of the physical features maps, environmental limitations maps, municipality comprehensive plans, Planning Commission input and other community input. Westfall Township, Matamoras Borough, Milford Township, and Milford Borough each have their own Land Use Plan with each area being designated for residential, commercial, or conservation. The Land Use in Matamoras Borough and Westfall Township is shown below as well as the zoning maps for every municipality in the planning area.

Figure 3.1: Westfall Township and Matamoras Borough Land Use Plan Tables

Land Use	Matamoras Borough		Westfall Township	
	Acres	% of Total	Acres	% of Total
Residential - Single-Family	165.25	37.95%	1321.06	6.97%
Residential - Multi-Family/Townhome	9.42	2.16%	82.07	0.43%
Commercial	14.58	3.35%	390.91	2.06%
Institutional	7.00	1.61%	141.03	0.74%
Forestland/Agriculture	77.68	17.84%	8024.96	42.32%
Recreation (Federal/State/Local/ Community Assoc.)	63.65	14.62%	5817.86	30.68%
Club (Rod & Gun Clubs)	0	0.00%	1828.91	9.64%
Conservation Easement	0	0.00%	662.62	3.49%
Utility/Railroad	0	0.00%	191.53	1.01%
Roadway	97.93	22.49%	503.74	2.66%
Total	435.49	100.00%	18964.69	100.00%

Existing Land Use - 2008 (Source: Consultant/Planning Committee Analysis)

Land Use	Matamoras Borough		Westfall Township	
	Acres	% of Total	Acres	% of Total
Residential - Single-Family	211.16	48.49%	5073.06	26.75%
Residential - Multi-Family/Townhome	9.42	2.16%	82.07	0.43%
Commercial	16.05	3.69%	442.75	2.33%
Institutional	7.00	1.61%	141.03	0.74%
Forestland/Agriculture	30.30	6.96%	4221.12	22.26%
Recreation (Federal/State/Local/ Community Assoc.)	63.65	14.62%	5817.86	30.68%
Club (Rod & Gun Clubs)	0	0.00%	1828.91	9.64%
Conservation Easement	0	0.00%	662.62	3.49%
Utility/Railroad	0	0.00%	191.53	1.01%
Roadway	97.93	22.49%	503.74	2.66%
Total	435.49	100.00%	18964.69	100.00%

Conservation Zoning Potential Build-Out

Land Use	Matamoras Borough		Westfall Township	
	Acres	% of Total	Acres	% of Total
Residential - Single-Family	211.16	48.49%	6791.06	35.81%
Residential - Multi-Family/Townhome	9.42	2.16%	82.07	0.43%
Commercial	16.05	3.69%	442.75	2.33%
Institutional	7.00	1.61%	141.03	0.74%
Forestland/Agriculture	30.30	6.96%	2503.12	13.20%
Recreation (Federal/State/Local/ Community Assoc.)	63.65	14.62%	5817.86	30.68%
Club (Rod & Gun Clubs)	0	0.00%	1828.91	9.64%
Conservation Easement	0	0.00%	662.62	3.49%
Utility/Railroad	0	0.00%	191.53	1.01%
Roadway	97.93	22.49%	503.74	2.66%
Total	435.49	100.00%	18964.69	100.00%

Existing Zoning Potential Build-Out

Figure 3.2: Westfall Township Zoning Map

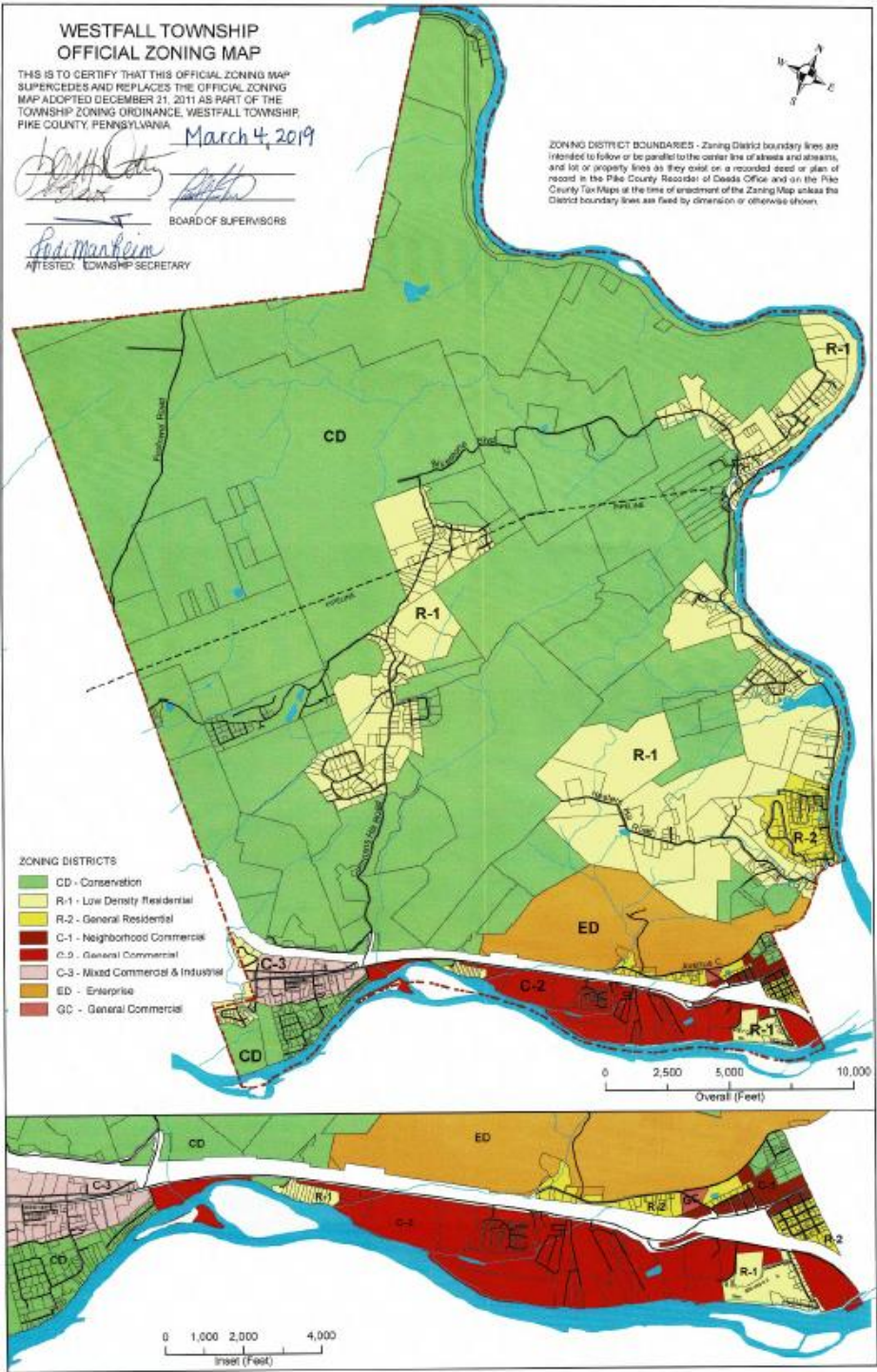


Figure 3.3: Zoning Map of Matamoras Borough

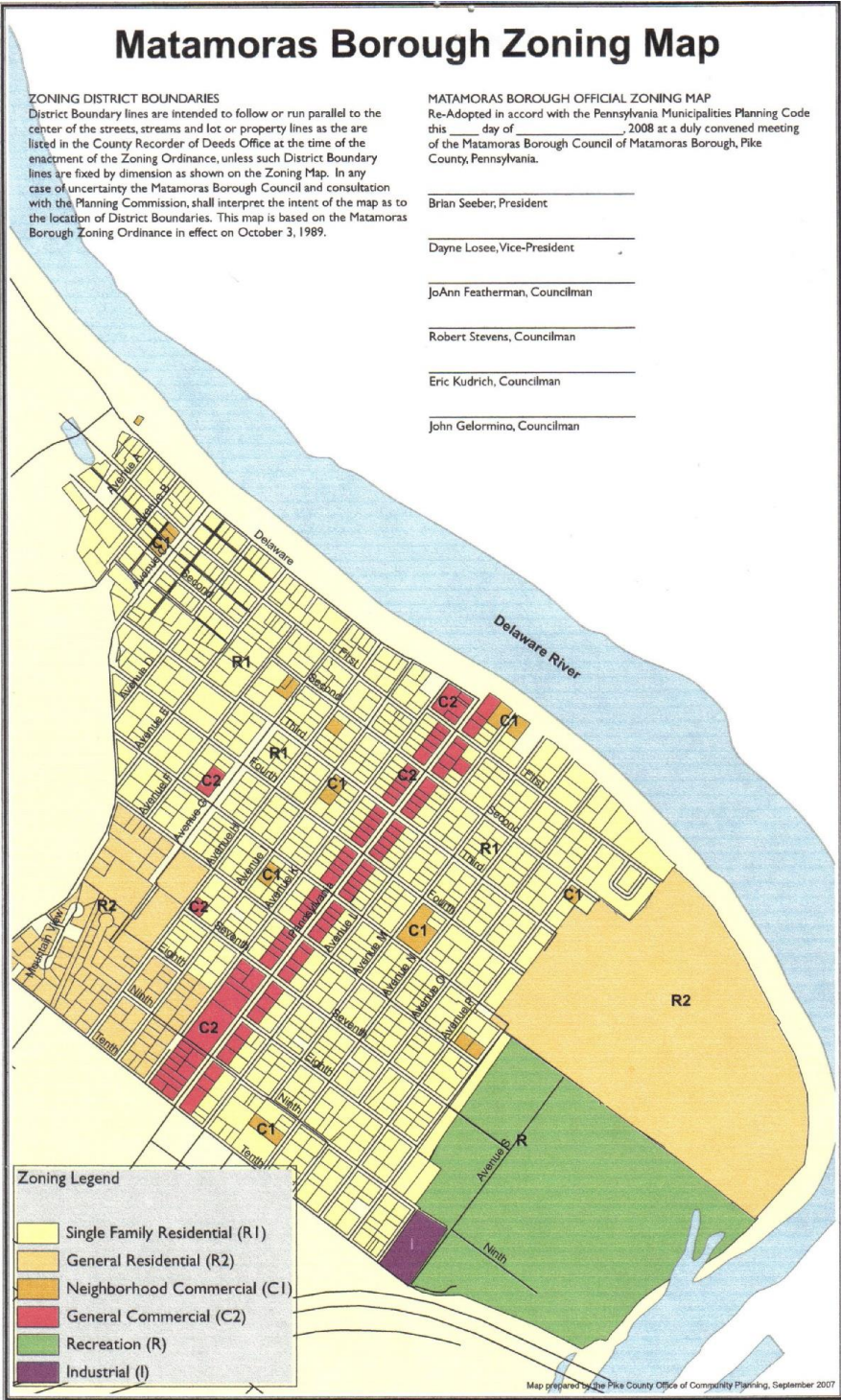


Figure 3.4: Zoning Map of Milford Township

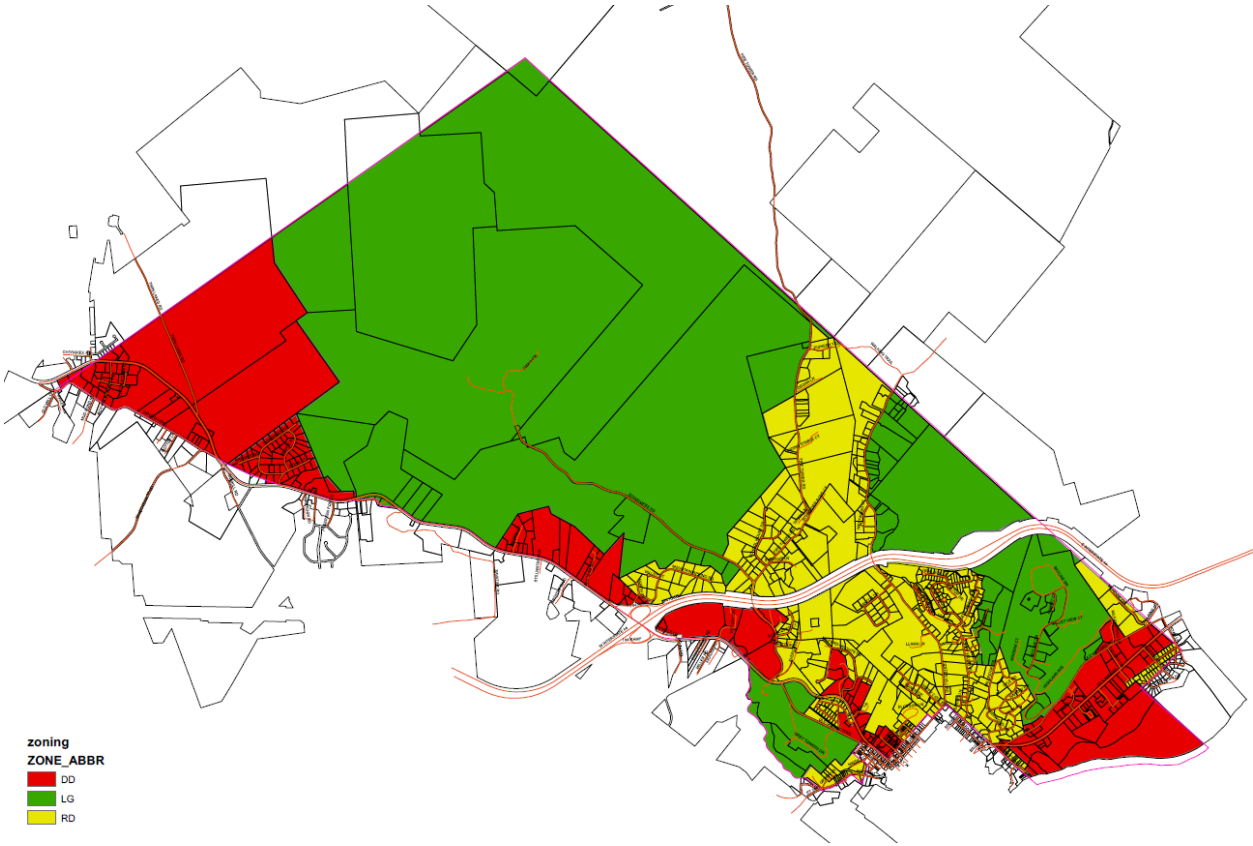
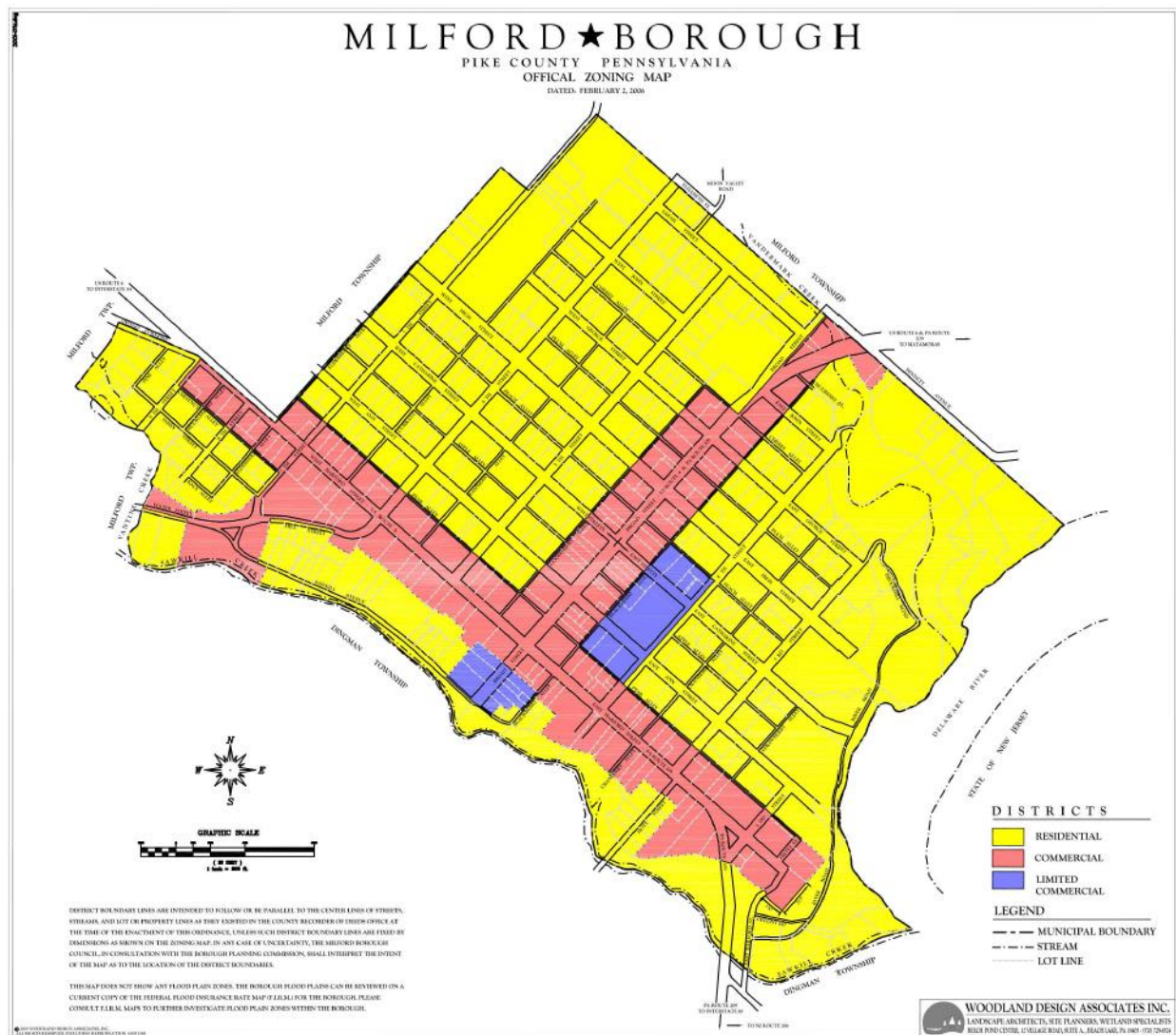


Figure 3.5: Zoning Map of Milford Borough



Based on the zoning maps for each municipality in the figures above, the proposed alternatives predominately are almost entirely through the commercial zoning districts.

3.1.2 Important Farmland

Prime farmland, as defined by the United States Department of Agriculture – Natural Resources Conservation Service (USDA-NRCS), is the land that is best suited for producing food, feed, forage, fiber, and oilseed crops. It has the soil quality, growing season, and water supply needed to economically produce a sustained high yield of crops when it is treated and managed using acceptable farming methods. According to the NRCS, prime farmlands generally include Class I and II soils, which produce the highest yields with minimal inputs of energy and economic resources. Qualities that characterize prime agricultural soils include high permeability to water and air, few or no rocks, optimum levels of acidity and alkalinity, 0 to 8

percent slopes, and the absence of flooding during the growing season. These soils may currently be utilized for crops, pasture, woodland, or land covers other than urban land or water areas.

Prime agricultural soils within the planning area are depicted in Map 4 in Appendix C. The following soils are considered to be prime agricultural soils in the Municipalities:

- Barbour fine sandy loam (Ba)
- Braceville fine sandy loam (Br)
- Chenango gravelly fine sandy loams (ChB)
- Delaware fine sandy loams (DeA, DeB)
- Mardin channery silt loams (MrB)
- Philo loam (Ph)
- Pope fine sandy loam (Po)
- Unadilla silt loam (Un)

The following soils are considered to be farmlands of statewide importance in the Municipalities:

- Chenango gravelly fine sandy loams (ChC)
- Mardin channery silt loams (MrC)
- Suncook loamy sand (SuB)
- Wyoming cobbly sandy loams (WyB)

The characteristics of the soils in the Municipalities were reviewed and analyzed to determine the probable limitations for OLDS based upon the Pike County Soil Survey Report as prepared by the USDA-NRCS. Additional soils information was provided by the NRCS's Web Soil Survey. Each soil was assigned a suitability based on the presence of hydric soils, depth to bedrock and seasonally high water table, and slope.

The results of this analysis are presented in Table 3-5 and Map 5 in Appendix C. In order to compare the Chapter 73 and Soil Survey information to determine the suitability classification, the following criteria were used.

Table 3-5 – Soil Limitations for On-Lot Sewage Disposal Systems

Soil Symbol	Soil Name	Description	Slope (%)	Depth to Seasonal High Water Table (inches)	Depth to Bedrock (inches)	Hydric Soil (H) or Inclusions (I)	General Limitations					
							Conventional In-Ground Systems			Elevated Sand Mounds		
							Suitable	Marginal	Unsuitable	Suitable	Marginal	Unsuitable
ArC2	Arnot	Channery Loam	9	> 80	17	-			X		X	
ArE2	Arnot	Channery Loam	25	> 80	17	-			X			X
Ba	Barbour*	Fine Sandy Loam	2	54	> 80	-		X		X		
Br	Braceville*	Fine Sandy Loam	2	21	27	I			X	X		
ChB3	Chenango*	Gravelly Fine Sandy Loam	4	> 80	> 80	-	X			X		
ChC3	Chenango**	Gravelly Fine Sandy Loam	12	> 80	> 80	-	X			X		
ChD3	Chenango	Gravelly Fine Sandy Loam	20	> 80	> 80	-	X			X		
CrB	Craigsville – Wyoming	Complex	3	72	85	I	X			X		
DeA3	Delaware*	Fine Sandy Loam	2	> 80	85	-	X			X		
DeB3	Delaware*	Fine Sandy Loam	6	> 80	85	-	X			X		
DeC3	Delaware	Fine Sandy Loam	14	> 80	85	-	X			X		
EdA	Edgemere	Stony Loam	2	0	24	H			X			X
EgB	Edgemere – Shohola	Complex	9	0	24	H			X			X
Fr	Freetown	Mucky Peat	1	0	> 80	H			X			X
LrB2	Lordstown – Swartswood	Complex	4	> 80	30	-			X	X		
LrC2	Lordstown – Swartswood	Complex	12	> 80	30	-			X		X	
MaB2	Manlius	Channery Silt Loam	6	> 80	30	I			X	X		
MaC2	Manilus	Channery Silt Loam	12	> 80	30	I			X		X	
MdB2	Mardin	Stony Loam	4	15	21	I			X		X	
MdC2	Mardin	Stony Loam	12	15	21	I			X			X
MnD2	Manlius – Arnot	Rock Outcrop Complex	23	> 80	30	-			X	X		
MnF2	Manilus – Arnot	Rock Outcrop Complex	55	> 80	30	-			X			X
MoB	Morris	Channery Loam	4	10	16	I			X			X
MrB2	Mardin*	Channery Silt Loam	4	15	21	I			X		X	
MrC2	Mardin**	Channery Silt Loam	12	15	21	I			X			X
Pa	Paupack	Muck Peak	1	0	> 80	H			X			X
Ph	Philo*	Loam	2	27	> 80	I			X	X		
Pi	Pits, shale, and gravel	-	20	> 80	1	-			X			X

Soil Symbol	Soil Name	Description	Slope (%)	Depth to Seasonal High Water Table (inches)	Depth to Bedrock (inches)	Hydric Soil (H) or Inclusions (I)	General Limitations					
							Conventional Inground Systems			Elevated Sand Mounds		
							Suitable	Marginal	Unsuitable	Suitable	Marginal	Unsuitable
Po	Pope*	Fine Sandy Loam	2	> 80	> 80	I	X			X		
ShB2	Shohola - Edgemere	Complex	4	12	24	I			X		X	
ShC2	Shohola – Edgemere	Complex	12	12	24	I			X			X
SuB	Suncook**	Loamy Sand	3	> 80	> 80	I	X			X		
SwB	Swartswood	Fine Sandy Loam	4	30	32	-			X	X		
Un	Unadilla*	Silt Loam	2	> 80	> 80	-	X			X		
W	Water	-	0	-	-	-	-	-	-	-	-	-
Wa	Wyalusing	Fine Sandy Loam	2	3	> 80	H			X			X
Wu	Wurtsboro	Fine Sandy Loam	4	19	22	-			X		X	
WyB2	Wyoming**	Cobbly Sandy Loam	5	> 80	> 80	-	X			X		
WyF2	Wyoming	Cobbly Sandy Loam	23	> 80	> 80	-	X			X		

The soil limitations presented in Table 3-1 are graphically shown in the On-Lot Septic Suitability Map included in Section 6.0 of this Report. As shown on the On-Lot Septic Suitability Map.

Hydric soils are poorly drained soils that develop an anaerobic (limited oxygen) surface layer because of long periods of saturation or inundation by water. These soils display slow permeability. A seasonal high water table is often commonplace in areas where hydric soils are dominant. Hydric soils are typically an indication of wetland areas. The following planning area soils have major hydric components:

- Edgemere stony loam (EdA)
- Edgemere – Shohola complex (EgB)
- Freetown mucky peat (Fr)
- Paupack muck peak (Pa)
- Wyalusing fine sandy Loam (Wa)

The following planning area soils have inclusions of hydric components:

- Braceville fine sandy loam (Br)
- Craigsville – Wyoming complex (CrB)
- Manlius channery silt loams (MaB, MaC)
- Mardin channery silt loams (MrB, MrC)
- Mardin stony loams (MdB, MdC)
- Morris channery loam (MoB)
- Philo loam (Ph)
- Pope fine sandy loam (Po)
- Shohola – Edgemere complex (ShB, ShC)
- Suncook loamy sand (SuB)

The areas in the Municipalities with soils having major hydric components or inclusions of hydric components are shown on Map 2 in Exhibit B.

3.2 Floodplains

Floodplains are located along the Delaware River, Sawkill Creek, Vandermark Creek and a fragment of the Deep Brook, and a portion of the Cummins Creek. In accordance with the policies and procedures of the National Flood Insurance Program, the Federal Emergency Management Agency (FEMA) has prepared mapping of the 100-year floodplains for the Delaware River, Sawkill Creek, Vandermark Creek, and the Cummins Creek, as well as some of their tributaries (see Map 2 in Exhibit B).

The majority of the properties in the Planning Area are located outside of the 100-year floodplains of the Municipalities; however, there are some properties in the Planning Area within the 100-year floodplains of the Delaware River and its tributaries. The 100-year floodplain is an area based on past experience and high statistical probability that a destructive flood event will occur. The Planning Area is currently in compliance with the Federal Flood Insurance Program, and the State Flood Plain Management Act. Map provided in Section 6.0 of this Report.

3.3 Wetlands

Wetlands are those areas that are inundated or saturated by surface or groundwater at a frequency and duration to support a prevalence of vegetation typically adapted for life in saturated soils. Wetlands generally include swamps, marshes, bogs, and other areas that exhibit the three criteria for defining a wetland area: (1) hydrophytic vegetation, (2) hydric soils, and (3) wetland hydrology.

As more information has become available about the beneficial aspects of wetland habitats, scientists, engineers, environmental interest groups, and governmental agencies have worked to protect and maintain the unique environments. Along with the traditional uses of wetlands as fish and wildlife habitat, wetlands are now being used for stormwater management and wastewater treatment.

Wetlands are a critical component in many ecological processes and are consequently protected by the federal government. Wetlands provide the following benefits or functions:

- Fish and Wildlife Habitat
- Water Quality Maintenance
- Pollution Filter
- Oxygen Production
- Nutrient Recycling
- Chemical and Nutrient Absorption
- Aquatic Productivity
- Flood Control
- Recreational Land Preservation
- Educational Opportunities
- Microclimate Regulation
- World Climate Regulation
- Sediment Removal
- Energy Source (Peat)
- Open Space Preservation

The National Wetlands Inventory (NWI) mapping, as compiled by the U.S. Fish and Wildlife Service, is useful as a background source of information regarding wetland locations. The maps are prepared through the use of color infrared aerial photographs, and the quality of the maps varies dependent upon the time of year that the photos were taken and other factors. Field investigation, conducted by a trained scientist or engineer, is necessary to determine the actual presence or absence of wetland areas. Map 2 in Appendix B includes the available NWI information for the Planning Area.

The following wetland types (NWI mapping codes) are found in the Planning Area:

- PEM1Ad – Palustrine, Emergent, Persistent, Temporary Flooded, Partially Drained/Ditched
- PEM1E – Palustrine, Emergent, Persistent, Seasonally Flooded/Saturated
- PFO1A – Palustrine, Forested, Broad-Leaved Deciduous, Temporary Flooded
- PUBF – Palustrine, Unconsolidated Bottom, Semi permanently Flooded
- PUBHh – Palustrine, Unconsolidated Bottom, Permanently Flooded, Diked/Impounded
- PUBHx – Palustrine, Unconsolidated Bottom, Permanently Flooded, Excavated
- PSS1A – Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Temporary Flooded
- R2UBH – Riverine, Lower Perennial, Unconsolidated Bottom, Permanently Flooded
- R3UBH – Riverine, Upper Perennial, Unconsolidated Bottom, Permanently Flooded
- R5UBH – Riverine, Unknown Perennial, Unconsolidated Bottom, Permanently Flooded

3.4 Historic Resources

The Pennsylvania Historic and Museum Commission (PHMC) was consulted to review the potential impact of the alternatives evaluated by this Plan. On October 1, 2020, the Plan and USGS Mapping was submitted to PHMC for review. On October 15, 2020, their review letter was received and they indicated that the project will have no effect on historic properties (Exhibit H). The Plan was re-submitted for review on August 24th, and no above ground or archaeological concerns were found. The review is included in Exhibit H as well.

3.5 Sensitive Biological Resources.

The Act 537 and all relevant mapping was submitted to the Pennsylvania Natural Diversity Inventory (PNDI) for Pennsylvania listed species, and the US Fish and Wildlife Services for federally listed species on August 23rd and August 30th respectively. No major conflicts were determined other than taking efforts to minimize erosion, sedimentation, and pollution during construction for the endangered dwarf wedgemussel per the USFWS response. The responses are included in Exhibit H.

3.6 Water Quality Issues

Implementation of the structural alternatives will not require new public wastewater treatment facilities or stream discharges as wastewater from these areas will be conveyed to the existing MATW WWTP.

No permanent, deleterious water quality issues are anticipated to occur as a result of implementation of the selected alternative(s) in the Planning Area. During construction activities, sedimentation to surface waters will be controlled by accepted erosion and sedimentation control methods outlined in an approved E&S Control Plan. Once completed, the proposed project may enhance water quality in the Planning Area by reducing the number of active, improperly functioning septic systems in the Township.

Water supplies, both public and private, will not be negatively impacted by the selected alternatives proposed in this report and replicated in the Act 537 Plan. In fact, water supplies may be positively impacted through elimination of pollution entering the groundwater from existing malfunctioning on-lot systems.

3.7 Coastal Resources

There are no coastal areas within planning area; therefore, no impacts to coastal resources are expected.

3.8 Socio-Economic Issues

The proposed alternative is anticipated to promote community viability, improve public health, and to protect property investments.

The locations of the proposed collection facilities are based entirely upon the topography of the land with no consideration given to race or household income. The proposed projects will have no unjust impacts on minorities or disadvantaged populations.

3.9 Recreation and Open Space

The alternatives recommended by this report and replicated in the Act 537 Plan will not themselves create any new recreational or open space opportunities.

3.10 Air Quality

With the exception of the minimal dust and exhaust during the construction of new sewer lines and pumping stations, the proposed projects will not create any significant impacts on air quality.

3.11 Transportation

There will be no permanent impact on transportation. There will be minimal disruption of traffic patterns during construction of the recommended structural alternative. All traffic control and construction methods will be permitted as required by the Pennsylvania Department of Transportation and each Municipality.

3.12 Noise Abatement and Control

Noise will only be an issue during construction activities. Noise will be controlled by best management practices and engineering controls outlined in the construction contract. Construction noise is of a fixed duration and ceases at the completion of the construction phase of the project. Noise from construction vehicles differs from normal vehicular traffic noise in that it is usually limited to normal working hours (8 a.m. to 5 p.m.), whereas traffic noise is usually continuous.

3.13 Wild and Scenic Rivers

There are no Pennsylvania or Federally designated Scenic Rivers in the Planning Area according to the Pennsylvania Scenic Rivers Program.

3.14 Miscellaneous Environmental Considerations

There are no other environmental issues, such as biosolids generation, treatment, and disposal; impacts on or from local landfills; impacts on or from Superfund/HSCA sites; and generation of hazardous, explosive, flammable, toxic, radioactive materials which pertain to the projects proposed by this report and were replicated in the Regional Act 537 Plan.

Appropriate state and federal permits, where required, will be obtained prior to the construction of the proposed projects.

4.0 SUMMARY OF MITIGATION

Due to the temporary nature of all environmental disturbances associated with the construction of the alternatives proposed by this report and replicated in the Act 537 Plan, mitigation is not necessary.

5.0 PUBLIC PARTICIPATION

As part of the Act 537 Planning process, a 30-day public comment period was advertised and held. During this time, the public can review and submit written comments regarding the Act 537 Plan. Additionally, public meetings were held to allow the public to participate in the planning process.

6.0 EXHIBITS

The following exhibits have been included in this Environmental Report:

EXHIBIT A – MUNICIPAL ORDINANCES AND COMPREHENSIVE PLAN
EXHIBIT B – MUNICIPAL MAPPING
EXHIBIT C – SURVEY RESULT MAP
EXHIBIT D – SUMMARY OF SURVEYS
EXHIBIT E – MATW INFORMATION
EXHIBIT F – DRAFT SEWAGE MANAGEMENT ORDINANCE TEMPLATE
EXHIBIT G – ALTERNATIVE EXHIBITS
EXHIBIT H – CONSISTENCY DOCUMENTATION