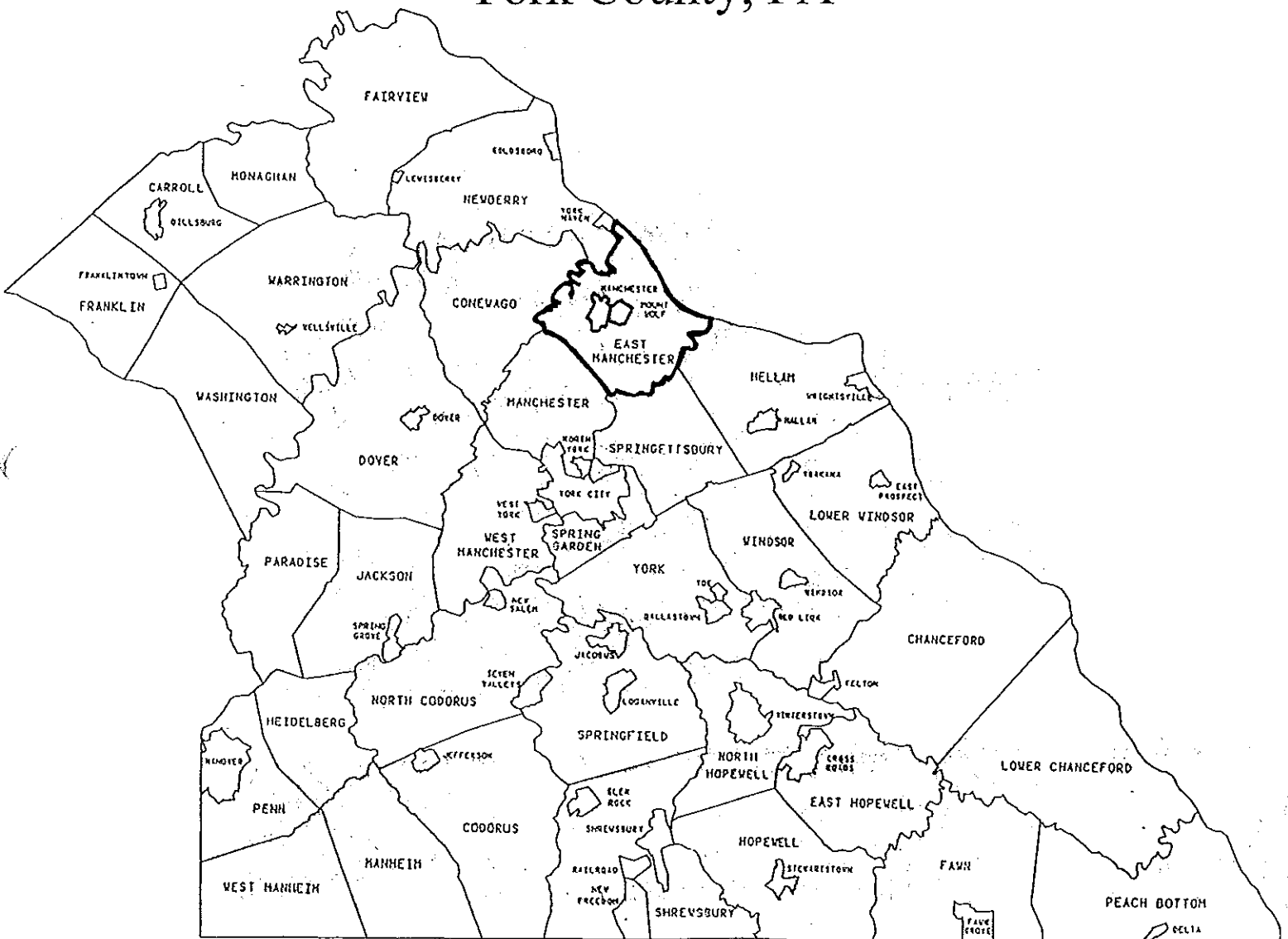


Resolution 2001-13 adopted 11/13/01

ACT 537 PLAN

East Manchester Township York County, PA



December 2001

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Chapter 1

EXECUTIVE SUMMARY

The Pennsylvania Sewage Facilities Act (Act 537) requires that every municipality in the state develop and maintain an up-to date sewage facilities plan. There are three purposes for the Act 537 Plan. The primary purpose is to protect the health, welfare and safety of the residents in each community. Secondly, the sewage facilities plan is intended to prevent future sewage disposal problems from occurring while the third purpose is to protect both the groundwater and surface waters of Pennsylvania. Wastewater planning is not new to East Manchester Township. The needs of the Township have been included in several Countywide studies as well as the East Manchester Township Act 537 Update, Manchester/Mt. Wolf Sewage Treatment Plant Study completed in 1985. The 1985 plan resulted in the formation of the Northeastern York County Sewer Authority, the expansion of the Manchester/Mt. Wolf Wastewater Treatment Plant and the extension of sewers to a variety of identified need areas. With continued development and the identification of several additional need areas within East Manchester Township, it was recognized that an updated evaluation of the Township's sewage disposal needs and practices was necessary.

Need Areas

Several need areas were identified as a part of the evaluation. The identification and evaluation of these areas is discussed in Chapter 2. Five major need areas were identified and are depicted on Exhibit VIII, Proposed Sewage Facilities Plan. Three of these areas were considered immediate need areas, requiring the provision of public sewer service. The five need areas are:

- **Area 1** - *immediate need area* - the Village of Saginaw
- **Area 2** - *immediate need area* - along Griffith Lane, Canal Road, Park Street, Old School Lane and Conewago Creek Road
- **Area 3** - *immediate need area* - the Oaks
- **Area 4** – the area around Don Rene Road and Bonita Drive which includes Morning Star Heights

- **Area 5** – the development which includes Big Conewago Creek Road, Creek Bottom Road and unsewered portions of Canal Road

Factors used to determine the type and locations of the need areas included 1) well water analysis conducted on wells which supply water to households within the Township not served by a public water system, 2) surveys conducted in conjunction with the well water analysis, 3) records of On-Lot Sewage Disposal System (OLDS) malfunctions, 4) analysis of soils and their suitability for on-lot sewage disposal systems, OLDS, and 5) the location of wetlands within the Township.

Selected Alternatives

Various alternatives were evaluated to provide sewerage facilities for the need areas identified herein. The selected alternatives are listed below.

- 1) Public Sewer System for **Areas 1** including gravity sewers, satellite package WWTP, pumping station and force main;
- 2) Public Sewer System for **Area 2** including gravity sewers, pumping station and force main to the Manchester/Mt. Wolf WWTP;
- 3) Public Sewer System **Area 3** including gravity sewers to the Manchester/Mt. Wolf WWTP;
- 4) On-Lot Management Program, Ordinance and Education Program for **Areas 4 & 5** Program;
- 5) Requirement for Hydrogeologic Evaluation for subdivisions within ¼ mile of a documented well sample result with nitrates > 5 mg/l: Preliminary hydrogeologic evaluation is also required for (1) large volume OLDS, and (2) subdivisions with more than 50 EDU's and a density of more than 1 lot per acre. Adoption of an Operation and Maintenance Agreement for Denitrification Systems.

- 6) Adoption of Water Well Ordinance; and
- 7) Revisions to the Zoning Ordinance including an increase to the lot size for all residential districts to 1 acre for properties without public sewer or water facilities and a clarification that any Apartment District requires the connection to public sewage facilities.

Costs

Three cost estimates were developed for this Plan covering two public sewer / WWTP construction projects and the implementation of an On-Lot Management Plan. Details of each estimate are provided in Chapter 3. The cost estimates are as follows:

- 1) Public Sewer System for **Areas 1 & 3** including gravity sewers, satellite WWTP, pumping station and force main.

<i>Project Cost</i>	=	\$ 1,981,000
<i>O&M Cost</i>	=	\$ 20,500/year
<i>Present Worth</i>	=	\$ 2,444,000 (based on a 3.0 % avg. annual inflation rate)
<i>Tapping fee</i>	=	\$ 3,000/connection
<i>User costs</i>	=	\$ 216/Quarter (based on loan rate of 5.50 % for 40 years)

- 2) Public Sewer System for **Area 2** including gravity sewers, pumping station and force main.

<i>Project Cost</i>	=	\$ 2,200,000
<i>O&M Cost</i>	=	\$ 3,000/year
<i>Present Worth</i>	=	\$ 2,270,000 (based on a 3.0 % avg. annual inflation rate)
<i>Tapping fee</i>	=	\$ 3,000/connection

User costs = \$ 156/Quarter (current quarterly rate in Township)

3) Implementation of an On-lot Management Program for the Township.

Initial Cost =

- Service Septic System and Inspection: \$ 150 (to be paid by the homeowner)
- Potential Repairs: (to be paid by the homeowner, if required)
 - \$ 4,000 conventional system
 - \$ 8,000 elevated sand mound
- Service Septic System and Inspection (on a four year cycle): \$ 150 (to be paid by the homeowner)
- Administer On-Lot Management Program: \$ 30,000/year (to be covered under East Manchester Township's general fund)

User costs for the two construction projects are based on the projects being financed by a 40 year loan at 5.50% through Rural Utilities Service. Refer to Appendix G.

Municipal Commitments

To implement the recommendations noted herein, the Township will need to update to several municipal ordinances as well as prepare new ones. It will also have to set up the administrative aspects of the on-lot management plan. The administration will most likely be accomplished through a contract with the Township's SEO. The Township has requested that the Northeastern York County Sewer Authority implement the proposed construction projects. This Authority currently owns, operates and maintains the Manchester – Mt. Wolf WWTP and is in the position to finance and administer the contracts required to accomplish the specified projects. The user costs presented herein

are based on the new customers financing the projects through tapping fees and quarterly sewer bill. It is anticipated that another WWTTP operator will need to be hired to support the new treatment and collection facilities.

Implementation

Table No. 1-1 presented on the following page provides East Manchester Township's plan of implementation for the selected alternatives presented in this Chapter.

**TABLE NO. 1-1
IMPLEMENTATION SCHEDULE**

2001

November - Adoption of Act 537 Plan by Township

2002

January - DEP approves Act 537 Plan

- Township initiates education program for on-lot management through flyer distribution

June - Authorization for design service for **Areas 1 & 3** by Township and Northeastern York County Sewer Authority

- Township advertises the following ordinances for public comment period:

1. Water Well Ordinances;
2. Municipal Management On-Lot Subsurface Sewage Disposal Ordinance;
3. Minor Changes to Zoning Ordinance; and
4. Revision to Subdivision and Land Development Ordinance to include Hydrogeologic Evaluation

July - Submit Part I permit application for **Areas 1 & 3**

August - Township adopts advertised ordinances

October - Receive Part I permit for **Areas 1 & 3**

2003

- January - Review of design and submission of Part II permit application for to DEP for **Areas 2 & 3**
- February - Initiation of inspection of on-lot systems (to be completed within two years)
- April - Receipt of permits for **Areas 1 & 3** project
- May - Advertisement of **Areas 1 & 3** project
- July - Award of construction project for **Areas 1 & 3**
 - Authorization for design of public sewers for **Area 2**
- September - Commence construction of **Areas 1 & 3** project

2004

- February - Township and Authority review of design for **Area 2** project and submission of permit application to DEP
- May - Receipt of permit for **Area 2** project
- June - Advertise **Area 2** project
- August - Award of **Area 2** project
- September - Complete construction of **Area 1** project and startup WWTP
 - Commence construction on **Area 2** project

2005

- March - Complete 2 year period of initial inspection of on-lot sewage disposal systems – **Areas 4 & 5**
- August - Complete construction of **Area 2** project

Municipal Actions

1. East Manchester Township has exhibited through its Resolution of Adoption, it

commitment to implement the provisions of this Act 537 Plan. The Resolution is provided in Appendix I.

2. The Township also requested review comments from the York County Planning Commission. The Commission had no comments. All correspondence with the Commission is provided in Appendix J.
3. A 30-day public comment period was begun by Public Notice on August 13, 2001. A proof of Publication is provided in Appendix K. No public comments were received.
4. As noted in Chapter 3, Section VI, appropriate agency reviews of the proposed project work was accomplished with no adverse comments. The correspondence associated with the PNDI and the PA Historic and Museum Commission is provided in Appendices E and F respectively.

Chapter 2

BACKGROUND INFORMATION

I. PLANNING OBJECTIVES AND NEEDS

A. Identification and Analysis of Existing Wastewater Planning

East Manchester Township commenced sewage facility planning activities with the adoption of the 1972 York County Comprehensive Sewerage Study. Since that time the Township has continued planning activities with the East Manchester Township Act 537 Update, Manchester/Mt. Wolf Sewage Treatment Plant Study (1985), and the Northern York County Regional 201 Facilities Plan (1987). The Comprehensive Water Quality Management Plan (COWAMP) for the Lower Susquehanna River (1975) and the State Water Plan for Subbasin 7 the Lower Susquehanna River (1980) provide additional planning information relative to the Township. The following paragraphs summarize these planning activities.

YORK COUNTY COMPREHENSIVE SEWERAGE STUDY (1972)

The York County Comprehensive Sewerage Study divided the County into 21 separate planning regions. East Manchester Township is comprised of portions of 3 of these regions: R-4, R-8 and R-9. The County Study investigated the wastewater needs for each of the regions and recommended an action plan to address these needs to the year 2000. The study dealt with 5 general areas: 1) a brief discussion of the concepts and problems involved in wastewater management; 2) an identification of areas where public sewerage facilities are required; 3) a general layout of the proposed facilities; 4) preliminary cost estimates for the proposed facilities; and (5) possible methods of administration and financing.

R-4 Manchester - Mount Wolf Region - This region encompassed the Boroughs of Manchester, Mount Wolf, Saginaw (formerly New Holland), all in East Manchester Township, and the Borough of York Haven in Newberry Township. Also included were

portions of Newberry and Conewago Townships. Only a small area of approximately 12 homes clustered along North Front Street Extended in the Borough of Mount Wolf, East Manchester Township was identified as an "On-Lot Disposal Problem Area". In the proposed 1980 sewerage plan the existing Manchester-Mount Wolf wastewater treatment facility would be expanded to 0.7 MGD and a 0.15 MGD interim plant would be constructed at New Holland (Saginaw) to serve both the New Holland and Starview areas. A third plant with a 0.60 MGD capacity which would later be converted to a regional plant, would be constructed in York Haven to serve the remaining unsewered areas of the region. By the year 2000 all sewage facilities in Region 4 would be integrated into a single system with the wastewater directed to a 1.90 MGD regional wastewater treatment plant at York Haven. The interim plants at Mount Wolf and New Holland would be phased out. The Manchester – Mt. Wolf wastewater treatment plant has been expanded to 1.70 MGD. The Starview and New Holland areas have been sewered and are served by the Manchester – Mt. Wolf wastewater treatment plant. An integrated system to the wastewater treatment plant in York Haven has not been pursued.

R-8 Dover - Manchester Region - This region included the Borough of Dover in Dover Township and portions of 8 Townships, including a small portion of western East Manchester Township. The proposed Dover Township wastewater treatment facility would serve as the interim plant for all of Dover Township and parts of 5 additional Townships, not including any area in East Manchester Township. This treatment plant would eventually serve as the regional plant through the year 2000. The study proposed another treatment plant along the south bank and near the downstream end of Little Conewago Creek to serve Zions View, Strinestown and the industrial area along Interstate 83. The alternate solution proposed for this treatment facility would be to phase out this plant and to pump the plant influent to either to the regional plant or into the Region R-4 system. The western portion of East Manchester Township remains unsewered.

R-9 Greater York Region - This region included the City of York, the Boroughs of North York, West York, Dallastown, Red Lion, Yoe and Windsor, the Township of Spring Garden, plus portions of York, Springettsbury, Manchester, East Manchester, West

Manchester and Windsor Townships. The existing York City and Springettsbury wastewater treatment plants would serve jointly as a single entity regional plant to serve the Greater York area both in the interim and long term. The southern portion of East Manchester Township was not included in the service area for planning purposes in Region R-9.

ACT 537 UPDATE MANCHESTER-MT. WOLF SEWAGE TREATMENT PLANT STUDY (1985)

This study investigated three (3) major wastewater problems that exist within the Township: 1) in the Boroughs of Manchester and Mt. Wolf, an area south of the Boroughs, 2) between North George Street Extended and Sherman Street Extended, and 3) a smaller area to the north between Board Road and North George Street Extended. The problems were as follows:

- 1) Continued hydraulic overload and failure to consistently meet effluent requirements of the treatment plant's NPDES permit.
- 2) Hydraulic overloading at the Manchester Borough Pump Station.
- 3) Malfunctioning of on-lot sewage systems in the Starview, Board Road North and North George Street areas.

The primary purposed of the study was to develop a plan of action to address the problems listed above. The specific recommendations made and the activities implemented are listed below

Recommendations/Activity Implemented

- I. Recommendation: Upgrade and expand the Manchester/Mt. Wolf Sewage Treatment Plant to a 1.70 MGD Capacity - Alternate V of 1985 Act 537.

Activity Implemented: The treatment plant was expanded to a trickling filter plant with anaerobic sludge digestion and a capacity of 1.70 MGD.

- II. Recommendation: Sludge disposal to continue under the existing system, land application for agricultural purposes.

Activity Implemented: Application of digested sludge to agricultural fields continues to date.

- III. Recommendation: Manchester Borough and East Manchester Township should work together to alleviate the overload and provide capacity for future development in the Manchester Borough Pump Station drainage area.

Activity Implemented: Formation of Northeastern York County Sewer Authority and construction of an interceptor to alleviate the overload has been completed.

- IV. Recommendation: Provide public sewer service in three (3) areas: 1) Starview, Board Road N and North Main Street Extended areas, 2) along Beshore School Road and South Main street, and 3) Blossom Drive. Also, construct an interceptor to Mt. Wolf Borough.

Activity Implemented: Areas were sewerred and interceptor constructed.

- V. Recommendation: Regulate development in areas not provided with public sewer per PA DEP Chapter 73.

Activity Implemented: Township controlled.

- VI. Recommendation: Establishment of Northeastern York County Sewer Authority.

Activity Implemented: Authority was created.

- VII. Recommendation: Continue I/I programs within Manchester Borough, Mount Wolf Borough, and East Manchester Township.

Activity Implemented: Ongoing program to reduce I/I has been established.

The Township Subdivision and Land Development Ordinance sets forth the guidelines for growth and development within the Township. This ordinance requires planning

module approval or exemption to be obtained prior to submission of a Final Subdivision and Land Development Plan. Active subdivisions are discussed in Section IV of this chapter, "Future Growth and Land Development."

B. Identification of Municipal and County Planning Documents Adopted Pursuant to Act 247.

YORK COUNTY COMPREHENSIVE PLAN

The York County Comprehensive Plan was approved on June 3, 1992 in accordance with the provisions of Article III of the Pennsylvania Municipalities Planning Code (Act 247 of 1968, as amended by Act 170 of 1988). East Manchester Township is part of the County's Greater York Planning Region, which includes the central portion of the County. The Land Use Plan, Chapter II of the County Comprehensive Plan, is important to the Township in that it establishes generalized development goals for the County. The goals of the Land Use Plan are:

- a) To protect and preserve important natural resources
- b) To facilitate coordinated planning at all levels of government
- c) To direct growth and development to appropriate locations

The Land Use Plan divides the County into development and preservation areas. Development areas include urban growth areas, villages and rural residential, while preservation areas include natural resources, agricultural lands, parks and recreation lands, plus scenic, historic, and cultural resource areas.

EAST MANCHESTER TOWNSHIP COMPREHENSIVE PLAN

On April 17, 1991, East Manchester Township adopted a Comprehensive Plan. During 1989 a detailed land use survey of East Manchester Township's existing land use was conducted. The Comprehensive Plan identified eight (8) major land use categories: 1) Residential, 2) Commercial, 3) Industrial, 4) Public and Quasi-Public, 5) Utilities and

Transportation, 6) Agricultural, 7) Woodland, and 8) Vacant. The Residential and Public and Quasi-Public categories are further subdivided to allow for more detail. A brief description of each follows:

Residential All residential land uses are classified by type of enclosed dwelling unit - one, two, multiple, etc. One dwelling unit represents a household having the customary facilities necessary to accommodate one family.

Single Family - One detached dwelling unit.

Two Family - Two dwelling units over or attached to other use.

Multi-Family - Three or more dwelling units, row housing, three or more dwellings over or attached to other use, multi-story apartments.

Mobile Home - Prefabricated mobile homes fixed as non-transient living unit - either single units or placed in courts, camps and parks.

Commercial - Any building or floor use whose economic function involves engaging in the sale of goods, food and drink, and services of a business, personal, or professional nature or for entertainment.

Industrial - Establishments engaged in the production of goods or non-manufactured products or services (e.g., construction, mining, warehousing, etc.), and the grounds used by these companies.

Public and Quasi-Public

Any building or floor area devoted to the use of public administration, health, safety, welfare, and education as listed in the accompanying categories. This classification also includes recreational areas.

Schools and Recreation - School buildings and the grounds associated with the school, and areas used exclusively for recreational purposes, such as golf courses, parks, camping areas, etc.

Institutional and Public - Churches and associated grounds, municipal buildings, fire company buildings, fraternal organizations, nursing homes, etc.

Utilities and Transportation

Buildings and associated grounds for various utility companies; communications facilities; transportation facilities such as airports; and rights-of-way of public streets and roads, and railroads.

Agriculture Land occupied by farms and farming related uses, including farmsteads. This category includes small wood lots when they are part of the farm property. Also included are orchards, nurseries, greenhouses, etc.

Woodland Wooded areas, excluding small wood lots that are a part of farm property.

Vacant Open spaces not being used for any specific purpose, including land being occupied by abandoned buildings.

EAST MANCHESTER TOWNSHIP ZONING ORDINANCE

In 1992 East Manchester Township adopted its current Zoning Ordinance. Since then, it has been amended eight times, most recently on June 9, 1998. The Zoning Ordinance identifies ten (10) zoning districts, which are briefly described below. See Exhibit I.

Conservation District (CO) Minimum Lot Size = 1 Acre.

This District seeks to preserve environmentally sensitive areas and encourage the retention and proper use of such land, limit the use of land and activities to these areas and activities which are related to conservation activity and open space, and to prevent the intrusion of development into environmentally sensitive areas. Permitted uses within this District are limited to single family dwellings, limited to one (1) dwelling per lot with a minimum lot size of one (1) acre. Uses by Special Exception include public buildings/uses and agricultural operations.

Agricultural District (A) Minimum Lot Size = 1 Acre.

This District was established to preserve areas of prime agricultural capability and encourage the retention and proper use of such land, limit the use of land and activities to those uses and activities which are related to agricultural activity, and to prevent the intrusion of intensive development into prime agricultural areas. Permitted uses within this District include farm dwellings, single family dwellings, public buildings/uses, livestock auction, agricultural operations and kennels or stables. Uses by Special Exception include places of worship, cemeteries, educational institutions, health and welfare institutions, membership clubs and camps, commercial camps and resorts, cluster developments, trailer camps, resource removal, airports and landing strips, auction houses, farm equipment sales and service, lawn and garden equipment sales and service, bed and breakfast inns, and wind energy conversion systems.

Low Density Duplex Residential District (R-1).

<u>Minimum Lot Size (R-1)</u>		
<u>Single Family</u>	<u>Duplex</u>	
30,000 SF	45,000 SF	Without Sewer and Water
25,000 SF	37,500 SF	With Sewer or Water
10,000 SF	20,000 SF	With Sewer and Water

The intent of this District is to encourage the retention of existing agricultural uses, to provide for low-density residential uses in locations where on-lot utilities may be feasible or centralized utilities may be available, and to retain the rural characteristics of the area to the extent possible. Permitted uses within this District include farm dwellings, single family dwellings, duplex dwellings, public buildings/uses and agricultural operations. Uses by Special Exception are the same as the Agricultural District (A) except for the exclusion of airports and landing strips, farm equipment sales and service, lawn and garden equipment sales and service, bed and breakfast inn. Conversions of existing single family dwelling structures to a two or more family dwellings, and kennels, are also Special Exception uses.

Medium Density Residential District (R-2).

<u>Minimum Lot Size (R-2)</u>		
<u>Single Family</u>	<u>Duplex or Boarding House</u>	
30,000 SF	40,000 SF	Without Sewer and Water
20,000 SF	37,500 SF	With Sewer or Water
10,000 SF	20,000 SF	With Sewer and Water

The intent of this District is to encourage medium density residential development in areas where centralized utilities are generally available, encourage planned and serviced residential subdivisions, and to provide residential environments which can create good living qualities and which will be in harmony with existing development and least detrimental to natural features and resources. Permitted uses within this District include single family dwellings, duplex dwellings, boarding or lodging houses and agricultural operations. Uses by Special Exception include places of worship, cemeteries, educational institutions, health and welfare institutions for medical care, membership clubs and camps, cluster developments, bed and breakfast inns, wind energy conversion systems, conversions of existing residential structures from one-family dwellings to two or more family dwellings, multiple dwelling structures, and mobile home parks.

High Density Residential District (R-3) Minimum Lot Size = 8,000 SF (Single Family Dwelling and 10,000 SF (Duplex). Note: All lots must have public sewer and water.

The purpose of this District is to encourage high density residential development in areas where centralized utilities exist or are to be provided in conjunction with the proposed use, encourage planned and serviced residential subdivisions, and to provide residential environments which can create good living qualities and which will be in harmony with existing development and least detrimental to natural features and resources. Permitted uses include single family dwellings, duplex dwellings, and multiple dwelling structures. Permitted uses by Special Exception include places of worship, educational institutions and cluster developments.

Apartment/Office District (A-O) Minimum Lot Size = 8,000 SF (Single Family Dwelling), 10,000 SF (Duplex) and 20,000 SF (Boarding House). Note: Utility requirements not stated, but designated areas are in the sewer service area.

The intent of this District is to encourage higher density multi-family townhouse and apartment residential developments and planned office developments in areas where centralized utilities are available, encourage planned and serviced higher density residential subdivisions and mixed office space, and provide residential and office environments which can create good living and working qualities and which will be in harmony with existing development and least detrimental to natural features and resources. Permitted uses include single family dwellings, duplex dwellings, public buildings and facilities, boarding/lodging houses, bed and breakfast inns, residential conversions, multiple dwelling structures, medical and dental offices, medical retail and accessory uses, professional uses and day care centers. Permitted uses by Special Exception include public utility facilities, hotels, motels and tourist homes, educational institutions, health and welfare institutions, as well as cluster developments.

Village District (V).

<u>Minimum Lot Size (V)</u>		
<u>Single Family</u>	<u>Duplex</u>	
30,000 SF	45,000 SF	Without Sewer and Water
20,000 SF	37,500 SF	With Sewer or Water
8,000 SF	10,000 SF	With Sewer and Water

The specific intent of this District is to encourage a mix of residential and commercial development in areas where centralized utilities are available, encourage planned and serviced mixed residential/commercial subdivisions, and to provide mixed residential and commercial environments which can create good living and working qualities and which will be in harmony with existing development and are least detrimental to natural features and resources. Permitted uses include single family dwellings, duplex dwellings, public buildings and uses, boarding or lodging houses, retail businesses, business services, personal services, repair services, places of worship, bed and breakfast inns, residential conversions, multiple dwelling structures, medical/dental offices, medical retail and accessory uses, professional services, and home occupation. Uses granted by Special Exception include public utility facilities, automotive services, product processing, education institutions, health and welfare institutions, and day care centers.

Commercial District (C) Minimum Lot Size = 10,000 SF. Note: Utility requirements not stated, but all designated areas are in the sewer service area.

The specified intent of this District is to permit the logical development of land for businesses which are designed to meet the daily needs of residential areas, insure a business environment of sustained desirability, assure the suitable development of such business so that the surrounding residential development is protected, and to avoid increases in traffic volumes which would be in excess of the designed capacities of any access streets. Permitted uses include a wide variety of commercial, personal service, recreational, wholesale and retail activities and motel and hotel facilities.

Industrial District (I) Minimum Lot Sizes: 4 Acres without water and sewer, 3 Acres with water or sewer, and 2 Acres with water and sewer.

This District seeks to establish industrial areas which will consolidate the various locations of industry-related land uses which, because of their shipping, storage and other requirements, exert special demands on the Township, provide locations for industrial uses which are readily accessible to established transportation routes, reduce negative aesthetic impact on other land uses in the Township, and to insure that the land most suitable for industrial activities will be protected from intrusion of non-compatible uses. Permitted uses in this District include resources removal, wholesaling and storage, newspaper and printing establishments, bus and truck terminals, manufacturing uses, research and development, railroad, public utility structures and right-of-way, and day care centers. Uses permitted by Special Exception include automotive services, office buildings, and retail businesses for sale of products manufactured on site. Residences are prohibited from this District.

In addition to establishing lot sizes in the Zoning Ordinance, Section 9.6 of the East Manchester Township Subdivision and Land Development Plan requires the Developer/Subdivider of a proposed subdivision, mobile home park, or land development to design and install a sewer system which shall be connected to the existing system if that existing system is within one thousand (1,000) feet of the proposed subdivision, mobile home park or land development. The Developer/Subdivider must install a capped

sewer system if the development is located within one thousand (1,000) feet of a planned public sewer system to be built within five (5) years and provide on-site disposal facilities.

Floodplain District (FP) - The specific intent of this District is to:

- a) Protect areas of floodplain subject to flood waters;
- b) Protect and encourage the retention of open land uses which will be so located and designed to constitute a harmonious and appropriate part of the physical development of the Township;
- c) Combine with present zoning requirements, certain restrictions made necessary for the flood plains to promote the general health, welfare, and safety of the Township;
- d) Prevent the erection of structures in areas unfit for human use by reason of danger from flooding, unsanitary conditions or other hazards;
- e) Minimize danger to public health by protecting the water supply and promoting safe and sanitary drainage;
- f) Reduce the financial burdens imposed on the community, its governmental units and its individuals by frequent and periodic floods and overflow of lands;
- g) Permit certain uses which can be appropriately located in the flood plain as herein defined and which will not impede the flow of flood waters;
- h) Permit only those uses in the floodplain compatible to the preservation of natural conditions and provide sufficient drainage courses to carry abnormal flows of stormwater in periods of heavy precipitation.

The floodplain areas, or districts, are delineated by the 100-year flood elevation as determined by the Federal Emergency Management Agency (FEMA) Flood Insurance Study, Township of East Manchester, York County, Pennsylvania (Washington DC - January 1980), or in undelineated areas based upon a hydrologic and hydraulic analysis.

Permitted uses are limited to agricultural, recreation and utility transmission lines, sanitary sewers, sewage pumping stations, and sewage treatment plants. Permitted uses by Special Exception include residential lots, parking lots and agricultural, recreational,

forestry, game farm and fish hatchery related structures. Structures and buildings in the floodplain district are permitted by Special Exception upon the submission of the proper engineering and architectural design materials as proof that the ponding or flooding hazards will be controlled or eliminated by reasonable protective measures. Buildings permitted in this District must adhere to reasonable flood proofing standards as follows:

- a) Building Elevation: 1) The finished surface or the ground is higher than, or is raised by filling, to an elevation of at least one foot (1'-0") above the elevation of the one hundred (100) year flood and, 2) No floor shall be constructed at an elevation of less than one foot (1'-0") above the elevation of the one hundred (100) year flood.
- b) Structural Anchoring: Any structure permitted shall be firmly anchored to prevent the structure from floating away.
- c) Structural Effect: Any structure permitted shall be constructed and placed on the lot so as to offer the minimum obstruction to the flow of water, and shall be designed to have a minimal effect upon the flow and height of flood water.
- d) Obstructions: The following shall not be placed or caused to be placed in the flood hazard area: Fences except two (2) wire fences, other structures or material which may impede, retard or change the direction of the flow of water, or that will catch or collect debris carried by such water, or that is placed where the natural flow of the stream or flood waters would carry the same downstream to the damage or detriment of either public or private property adjacent to the floodplain.
- e) On-Site Sewage Disposal Systems: No part of any on-site sewage disposal system shall be constructed within this area.

COMPREHENSIVE WATER QUALITY MANAGEMENT PLAN (COWAMP)

The Lower Susquehanna River Comprehensive Water Quality Management Plan (COWAMP) was completed under Sections 4 and 5 of the Clean Streams Law of 1975. The report used York County Planning Commission population projections for York

County, which indicated that the County would increase in population from 272,603 to 399,947 people between the years 1970 and 2000. This projection remains in line with the 1990 census data of 339,574.

East Manchester Township was not specifically identified as one of the areas in the County that should experience major future growth, but significant growth was expected in the Township between York Haven and Mt. Wolf. A small portion of the Township, located along Codorus Creek and adjacent to Springettsbury and Manchester Townships was included in the area committed to the 201 Facilities Planning Study area which was independent of COWAMP evaluation. The remainder of the Township was included in Planning Area YO-15 (Manchester – Mt. Wolf) and Subareas a (Manchester – Mt. Wolf), c (Sherman St.) and f (Village of Saginaw). The area was identified as needing expanded wastewater treatment facilities by the year 1980.

STATE WATER PLAN

The State Water Plan was published by the PADEP (formerly DER) in February 1980. East Manchester Township is discussed in the Plan's Subbasin 7 Report for the Lower Susquehanna River. According to the plan, "Subbasin 7 contains the lower reach of the Susquehanna River from the mouth of the Juniata River to the Maryland State line, The subbasin is divided into 11 watersheds, A through K." East Manchester Township is located within watersheds F and H. The major waterway of the subbasin is the Susquehanna River. The main waterways for watersheds F and H are the Conewago Creek and the Codorus Creek respectively. The plan reviews both water quality and quality problems in the subbasin. The plan states, "Most water quality problems in Subbasin 7 arise from nutrient enrichment associated with agriculture runoff and untreated and inadequately treated municipal wastewater. The general quality of the Susquehanna River is good." Construction of several treatment plants was anticipated to help improve water quality. The Plan directs the reader to the COWAMP for further evaluation of water quality resources within the subbasin.

East Manchester Township is located entirely within The York Water Company franchise area. The State Water Plan identified a yield deficiency of 0.705 MGD for The York Water Company by the year 2020. The Plan then identifies six solution alternatives. Three alternatives, industrial and commercial water conservation, metering gravity flow connections, and increasing the filter plant capacity have been implemented. The long term plans of The York Water Company include: bascule gates on Lake Redman, a third reservoir on the Codorus Creek and an intake on the Susquehanna River.

II. PHYSICAL DESCRIPTION OF THE PLANNING AREA

A. Identification of Planning Area Boundaries, Political Subdivision Boundaries, and General Physical Characteristics of the Area.

The study area includes all of East Manchester Township which is located in northeastern York County, approximately 8 miles northeast of the City of York. The study area shown on the attached Study Area Map, Exhibit II, contains 17.5 square miles (11,200 acres) of land area. East Manchester Township is bordered to the north by Big Conewago and Little Conewago Creeks, as well as Newberry Township and Conewago Township. To the east, the Township is bordered by the Susquehanna River and Lancaster County. To the west lies Manchester Township, while the southern border is formed by the Codorus Creek, Hellam Township, and Springettsbury Township. The Boroughs of Manchester and Mt. Wolf are located within the Township's borders.

The Northeastern York County Sewer Authority services a portion of the Township with collection, conveyance and treatment of wastewater. The area of the Township serviced by the Authority is indicated on Exhibit II. The majority of the sewerage area lies within the Boroughs of Manchester and Mt. Wolf, north of Mt. Wolf Borough, and to the south of Manchester Borough along both North George Street Extended and Board Road. The Manchester-Mt. Wolf wastewater treatment plant also serves the area southeast of Mt. Wolf Borough along Starview Road and North Sherman Street Extended and York Industries in Manchester Township along Willow Springs Lane.

B. Identification of Streams, Bodies of Water, and Major Drainage Basins

Within East Manchester Township, surface waters flow entirely to the Susquehanna River. The Township is divided into three (3) large drainage areas formed by major ridgelines that run in a northeasterly direction through the Township. These large drainage areas are the Little Conewago Creek, the Hartman Run, and Codorus Creek. They are further subdivided into smaller areas by secondary ridgelines. The large drainage areas each drain approximately equal areas of the Township. The southernmost area of the Township is drained by Codorus Creek. The drainage pattern of the Codorus is from the west and north toward the south. For the most part this area is wooded with isolated areas of farmland. Residential development in this area is scattered due to steep slopes, which cause the streams draining into Codorus Creek to be swift. The central portion of the Township is drained by Hartman Run and several small streams that drain directly into the Susquehanna River. For the most part, the streams flow in a northeasterly direction. Development in this drainage area is concentrated in and around the Boroughs of Manchester and Mt. Wolf. The remaining area is largely farmland except on the ridges where woodland is prevalent. The farmland presents a potential problem during extended periods of heavy rain, or short intense periods of rain as the cultivated fields are subject to erosion. The erosion of tilled fields results in stream turbidity. The third drainage area, the Little Conewago Creek, drains the area of the Township around and to the north of Manchester Borough. The streams to the east of Manchester Borough flow in a northeasterly direction while the streams northwest of the Borough flow in a northwesterly direction. Streams, bodies of water, and major/minor drainage basins are shown on Exhibit III, Natural Features Map.

C. Soils – Analysis with Mapping

IDENTIFICATION OF PRIME AGRICULTURAL LANDS

Prime Agricultural Soils are generally those soils with a subclass rating of I or II in the York County Soil Survey. The Prime Agricultural Soils found in East Manchester

Township are shown on the Soils Map, Exhibit IV and listed in Table No. 2-1 below.

TABLE NO. 2-1

PRIME FARMLAND SOILS FOUND IN EAST MANCHESTER TOWNSHIP

<u>Symbol</u>	<u>Soil Name</u>	<u>Slope</u>
AbA	Ashton Loam	0 - 3 percent
AbB	Ashton Loam	3 - 8 percent
BdA	Bedford Silt Loam	0 - 3 percent
BeA	Bermudian Silt Loam	0 - 3 percent
Ck	Chewacla Silt Loam	
DuB2	Duffield Silt Loam, Moderately Eroded	3 - 8 percent
EcB2	Edgemont Channery Loam, Moderately Eroded	3 - 8 percent
EdB2	Edgemont Silt Loam, Moderately Eroded	3 - 8 percent
EIA	Elk Silt Loam	0 - 3 percent
EIB2	Elk Silt Loam, Moderately Eroded	3 - 8 percent
GnB2	Glenville Silt Loam, Moderately Eroded	3 - 8 percent
HaA2	Hagerstown Silt Loam, Moderately Eroded	0 - 3 percent
HaB2	Hagerstown Silt Loam, Moderately Eroded	3 - 8 percent
Hn	Huntington Silt Loam	
HuB	Huntington Silt Loam, Local Alluvium	3 - 8 percent
LcB2	Lansdale Channery Loam	3 - 8 percent
LdA2	Lansdale Loam, Moderately Eroded	0 - 3 percent
LdB2	Lansdale Loam, Moderately Eroded	3 - 8 percent
Ls	Lindside Silt Loam	
PeB2	Penn Loam, Moderately Eroded	3 - 8 percent
PgA2	Penn Silt Loam, Moderately Eroded	0 - 3 percent
PgB	Penn Silt Loam	3 - 8 percent
PgB2	Penn Silt Loam, Moderately Eroded	3 - 8 percent
PnB2	Penn-Lansdale Loams, Moderately Eroded	3 - 8 percent
RdA	Readington Silt Loam	0 - 3 percent
Ro	Rowland Silt Loam	

ANALYSIS OF SOILS, SUITABILITY FOR ON-LOT SEWAGE DISPOSAL AND
LAND APPLICATION.

Severe Development Constraints

In the areas of the Township not served by public sewers, the type of permitted on-lot disposal system depends greatly on the soil characteristics, the bedrock geology and the slope of the area. Information for soil suitability for on-lot sewage disposal was taken

from the Soil Survey of York County, PA issued 1963. Table No. 2-2 lists those soils found in East Manchester Township that possess severe constraints for on-lot sewage disposal systems as determined by the USDA Soil Conservation Service.

TABLE NO. 2-2
SOILS WITH SEVERE DEVELOPMENT CONSTRAINTS

<u>Soil Symbol</u>	<u>Soil Name</u>	<u>Severe On-Lot Sewage Disposal Constraint</u>
AbA	Ashton Loam, 0 - 3 percent slopes	Flooding
AbB	Ashton Loam, 3 - 8 percent slopes	Flooding
BeA	Bermudian Silt Loam, 0 - 3 percent slopes	Flooding
Bn	Bowmansville Silt Loam	Flooding
BrD3	Brecknock Channery Silt Loam, Severely Eroded, 15 - 25 percent slopes	Slope
CrA	Croton Silt Loam, 0 - 3 percent slopes	High water table and slow permeability
CrB2	Croton Silt Loam, moderately eroded, 3 - 8 percent slopes	High water table and slow permeability
DuD2	Duffield Silt Loam, moderately eroded, 15 - 25 percent slopes	Slope
EcD2	Edgemont Channery Loam, moderately eroded, 15 - 25 percent slopes	Slope
EcD3	Edgemont Channery Loam, severely eroded, 15 - 25 percent slopes	Slope
EgE2	Edgemont Soils, moderately eroded, 25 - 35 percent slopes	Slope
EhD	Edgemont Very Stony Loam, 8 - 25 percent slopes	Slope
EhF	Edgemont Very Stony Loam, 25 - 60 percent slopes	Slope
HaD2	Hagerstown Silt Loam, moderately eroded, 15 - 25 percent slopes	Slope
HdD3	Hagerstown and Duffield Silty Clay, Loams, severely eroded, 15 - 25 percent slopes	Slope
Hn	Huntington Silt Loam	Flooding
HuB	Huntington Silt Loam, local alluvium, 3 - 8 percent slopes	Flooding
LcD2	Landsdale Channery Loam, moderately eroded, 15 - 25 percent slopes	Slope
Ls	Lindside Silt Loam	High water table and flooding

<u>Soil Symbol</u>	<u>Soil Name</u>	<u>Severe On-Lot Sewage Disposal Constraint</u>
Mm	Melvin Silt Loam	High water table and flooding
PhD3	Penn Soils, severely eroded, 15 - 25 percent slopes	Slope
PhE3	Penn Soils, severely eroded, 25 - 35 percent slopes	Slope
RdA	Readington Silt Loam, 0 - 3 percent slopes	High water table and slow permeability
RdB	Readington Silt Loam, 3 - 8 percent slopes	High water table and slow permeability
RdB2	Readington Silt Loam, moderately eroded, 3 - 8 percent slopes	High water table and slow permeability
Ro	Rowland Silt Loam	High water table and slow permeability
SsD3	Steinsburg Channery Loam, moderately eroded, 15 - 25 percent slopes	Slope
SsE2	Steinsburg Channery Loam, moderately eroded, 25 - 35 percent slopes	Slope
SsE3	Steinsburg Channery Loam, severely eroded, 25 - 35 percent slopes	Slope
We	Wehadkee Silt Loam, local alluvium, 3 - 8 percent slopes	High water table and slow permeability

The definitions guiding a determination of severe limitations are provided in Table No.2-3.

**TABLE NO. 2-3
SOIL LIMITATIONS FOR BUILDING SITES**

<u>Limiting Factor</u>	<u>-----Degree of Limitation-----</u>		
	<u>None to Slight</u>	<u>Moderate</u>	<u>Severe</u>
Depth to seasonal high water table	More than 4' below surface	1-1/2' to 4' below surface	Less than 1-1/2' below surface
Slope	0 -- 8 Percent	8 -- 15 Percent	15+ Percent
Depth to hard bedrock	More than 5'	3' to 5'	Less than 3'
Stoniness	Stony	Very stony	Extremely stony to stony land
Flood hazard	None to seldom		

Source: U.S. Department of Agriculture Soil Conservation Service.

Note: There are other properties unique to particular soils that limit building sites, such as unstable slopes, high shrink/swell ratios, and low-bearing capacities. Therefore, it is necessary for the Township's Sewage Enforcement Officer (SEO) to review constraints on any site that is propose for development.

The information from the Soil Survey of York County has been further refined by the Pennsylvania Department of Environmental Protection (PADEP) to classify the soils by the type(s) of on-lot sewage disposal system(s) permitted. These permitted systems include: 1) septic or aerobic tank with drainfield, 2) elevated sand mound with a septic or aerobic tank, and 3) elevated sand mound with a septic or aerobic tank, sand lined trenches and beds. A description of each system follows:

- 1) Septic or Aerobic Tank with an Absorption Field - A septic tank is a horizontal continuous flow, one-story sedimentation tank through which sewage flows. As the sewage flows through the tank, the solids settle to the bottom where they are retained until an aerobic decomposition occurs. This process changes some of the organic matter into liquid gaseous substances. The liquid discharged from the tank is essentially free of solids. From the septic tank the liquid passes into the drainfield where it slowly percolates through the soil purifying the liquid before it enters the ground water.
- 2) Elevated Sand Mound with a Septic or Aerobic Tank - The elevated sand mound was designed to overcome problems with permeability, poor drainage, and shallow soils. It utilizes a bed of sand over natural soil with a soil berm to protect the mound interior and provides a material on which a vegetative cover can grow. The sand mound acts as the absorption field for the liquid effluent generally employed on soils which have a slow, permeable layer, or a high water table problem. The sand mound provides maximum lateral dispersion of the effluent from the septic tank providing maximum treatment before the effluent reaches the limiting zone. The sand plays an important role in the function of the system: a) it traps the suspended solids from the treatment

tank in its upper layers where clogging can be controlled, b) the sand mound is naturally aerated and helps the biological treatment process in the natural soil below, and c) the sand disperses the liquid throughout the bed allowing it to seep into the soil over a larger area.

- 3) Elevated Sand Mound with a Septic or Aerobic Tank with Sand Lined Trenches and Beds - This type of system functions in the same manner as the first method discussed above. However, the distribution system employs sand-lined trenches, beds and a pressurized distribution system.

Exhibit V depicts the resultant constraints for on-lot sewage disposal systems based on the soils within the Township.

Significant portions of the soils in the southern part of the Township are suitable for elevated sand mounds with a septic or aerobic tank. Two areas in the southern part of the Township where the depth of soil is shallow, require that elevated sand mounds with septic or aerobic tanks be placed at a shallow depth. These areas are located in the southwestern corner of the Township, and in areas along the Susquehanna River southeast of the Borough of Mt. Wolf. The areas south and southeast of Mt. Wolf Borough along the boundary between the Township and Manchester Township are suitable for elevated sand mounds with a septic or aerobic tank with sand lined trenches and beds placed at a shallow depth. Soils that are suitable for all on-lot systems are dispersed throughout the south, southeast and southwest portion of the Township. The areas that are unsuitable for any on-lot system generally parallel the streams and the Susquehanna River.

The northern portion of the Township is dominated by soil that is suitable for elevated sand mounds with a septic or aerobic tank and sandlined trenches and beds. There are some areas where the soil is suitable for all methods of on-lot disposal. Dispersed throughout the northern portion of the Township, there are areas that are suitable for sand mounds and septic or aerobic tanks. As with the southern portion of the Township the

areas that are unsuitable for any on-lot septic system parallel the streams and the Susquehanna River.

Although soil is a major determinant of suitability for on-lot septic systems, slope may cause a soil that is suitable for conventional on-lot systems to be unsuitable. Slopes of eight percent (8%) to fifteen percent (15%) present a moderate limitation. Slopes greater than fifteen percent (15%) present a severe limitation as unfiltered effluent may surface on the downhill slope. This is not to say that on-lot systems are prohibited on slopes greater than 15%, but such systems must be designed by a professional engineer registered by the State of Pennsylvania. A significant portion of the Township that was suitable for on-lot septic systems as based on soils alone may, due to excess slopes, be either unsuitable for on-lot systems, or require the system to be designed by a professional engineer.

D. Geologic Features

York County lies in two Physiographic Provinces, the Piedmont Province and the Blue Ridge Province. East Manchester Township is located in the Gettysburg Plain, a subdivision of the Piedmont Province. The plain consists of undulating to rolling low uplands. There are low ridges and hillocks that dissect the area and run in a northeast to southwest direction. The geologic formations in the East Manchester area are closely related to the physiographic subdivision. There are three distinct geologic periods, listed according to age from oldest to youngest: the Cambrian, the Ordovician and the Triassic. The Cambrian rocks, primarily Phyllite and Quartzite, are located in the southeastern portion of the Township. The southwestern portion of the Township contains rocks of the Ordovician age, primarily Limestone. Sandstone and shale covering the northwestern half of the Township are from the Triassic period. Exhibit VI depicts the geology within East Manchester Township.

According to the York County Comprehensive Sewage Study, the limestone in York County is found in two strips crossing the County in a northeast – southwest direction. The major area underlain with limestone is the York-Hanover Valley and varies in width

from 2 to 4 miles. Limestone is soluble in rainwater because of the dissolved carbon dioxide. The rainwater enlarges cracks and pores and dissolves tunnels. This occurs along every crack and fissure where the rainwater can penetrate. Over time, the limestone becomes honeycombed with sinks and caverns, providing continuous channels for the rainwater to flow through. Sinkholes are a concern, but also, when the limestone is near the surface, effluent from failed on-lot disposal systems and other pollutants have direct access to the ground water without any filtering. With extensive solution channels, untreated or partially treated effluent may quickly travel away from the point of pollution making it difficult to pinpoint system failures.

E. Topography

The analysis of topography as it relates to the suitability for the construction of on-lot sewage disposal systems is discussed in Section II-C, Soils.

F. Identification of Potable Water Supply Sources

All of East Manchester Township is within the franchise area of The York Water Company. The area currently served by The York Water Company within the Township is indicated on Exhibit VII, Water Sample Results and Water Service Area. To understand how public water is supplied to the Township, interviews were conducted with Ryan M. Ural of The York Water Company. He supplied the following information concerning The York Water Company's facilities within the Township.

Presently the entire public water system owned by The York Water Company within the Township serves 716 customers, of which 650 are residential customers. The estimated population served is 2,850 people. Most of the industrial/business water customers are located in the southwestern corner of the Township in the Board Road and North George Street Extended area. It is anticipated that as growth continues in this area, The York Water Company will continue to expand its service area to meet the greater water demand. The York Water Company does not own any water wells within the Township. All water supplied by The York Water Company to its Township customers originates

from the Lake Williams and Lake Redman reservoirs. Large force mains, 10" and 12" in diameter, supply water to the Township along Board Road, North George Street Extended and North Sherman Street Extended. Smaller diameter mains, sub-mains and distribution lines distribute the water within the Township. Besides this supply and distribution system, The York Water Company owns a 100-foot tall water storage tank along Board Road to provide its customers with a constant water supply and water pressure. The tank has a capacity of 2,000,000 gallons.

Potable water for the Starview Mobile Home Park (MHP) and the Asbury Point residential development is supplied by private water systems. The system serving the Asbury Point development is operated under Permit No. 6791512. It currently consists of one (1) well with a 25 gallon per minute (gpm) maximum pumping rate. The system is limited to 78 connections until a second source of water is permitted. The average daily usage is 4,500 gallons. The only water treatment provided in this system is liquid pypochlorite for disinfection. Besides the pumping, water treatment and distribution system, there is also a 300,000 gallon standpipe for water storage.

Starview MHP is served by a private water system operated under Permit No. 67875005. It consists of one (1) well with a 25 gpm average flow rate. The maximum rate allowed is 30 gpm. The system currently has 239 connections with an average daily use of 37,700 gallons. Water treatment provided is iron removal and softening. A 92,000 gallon reservoir provides distribution storage.

G. Identification of Wetlands

The National Wetlands Inventory (NWI), prepared by the U.S. Department of the Interior's Fish and Wildlife Service, shows no large concentrations of wetlands within East Manchester Township. Instead, the National Wetlands Inventory mapping indicates that the majority of those wetlands inventoried are small and widely scattered. The largest concentration of wetlands occurs along the Susquehanna River. Smaller groups of wetlands occur just south of Mt. Wolf Borough, and along the Township's western Boundary. This characteristic is closely related to Palustrine wetlands, which are

commonly known as ponds or small lakes. Conversely, riverine wetlands are those associated with water courses, such as streams, runs, creeks, brooks, and rivers. Riverine wetlands in East Manchester Township are generally found along the Conewago and Codorus Creeks. These wetlands are shown on the Natural Features Map, Exhibit III. NWI mapping, however, does not come close to identifying all existing wetlands in the Township.

The Soil Survey of York County, PA (1963) was utilized to identify potential wetland areas based on soil profiles containing hydric components. Table No. 2-4 lists those East Manchester Township soils that possess a hydric component, as determined by the Interim List (Revised January 1991) of the USDA Soil Conservation Service.

TABLE NO. 2-4
SOILS WITH HYDRIC COMPONENTS

<u>Map Symbol</u>	<u>Map Name</u>	<u>Component</u>	<u>Location Notes</u>
<u>Map Units with Major Hydric Components:</u>			
Bn	Bowmansville silt loam	Bowmansville	-----
CrA	Croton silt loam, 0 to 3 percent slopes	Croton	-----
Hn	Huntington silt loam	Huntington	-----
Mm	Melvin silt loam	Melvin	-----
We	Worsham silt loam	Worsham	-----
<u>Map Units with Inclusions of Hydric Components:</u>			
BdA	Bedford silt loam, 0 to 3 percent slopes	Wet Spots	Depressions
BeA	Bermudian silt loam, 0 to 3 percent slopes	Bowmansville	Bottom Lands
GnB2	Glenville silt loam, 3 to 8 percent slopes	Worsham	Depressions
HuB	Hunting silt loam, local alluvium, 3 to 8 percent slopes	Melvin	Bottom Lands
Ls	Lindside silt loam	Watchung	Bottom Lands
RdA	Readington silt loam, 0 to 3 percent slopes	Croton	Depressions
RdB	Readington silt loam, 3 to 8 percent slopes	Croton	Depressions

RdB2	Readington silt loam, 3 to 8 percent slopes, moderately eroded	Croton	Depressions
Ro	Rowland silt loam	Bowmansville	Bottom Lands

The locations of the soils containing hydric components are shown on the Natural Features Map, Exhibit III. The areas containing hydric components are widely spread throughout the Township and are generally found in depressions and bottom lands. The area of hydric soils found in East Manchester Township represents a much larger area than the amount of wetlands found in the National Wetlands Inventory.

The Soil Conservation Service defines wetlands as:

“Areas that have a predominance of hydric soils and that are inundated or saturated or, saturated by surface or groundwater at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence or hydrophytic vegetation typically adapted for life in saturated soil conditions”. Hydric soils are those soils that are saturated, flooded, or ponded long enough during the growing season to develop anaerobic conditions in the upper tier of the soil. Two broad categories of hydric soils exist. These include organic soils (histosols) which are commonly known as peats and mucks, and mineral soils which consist of predominately mineral matter and contain less than twenty percent (20%) organic matter by bulk weight. Mineral soils that are hydric are saturated long enough to affect chemical and physical soil properties.”

Wetland hydrology is the total of wetness characteristics in an area that are inundated or have been saturated for a sufficient period of time to support hydrophytic vegetation. As indicated, this inundation or saturation may come from many sources. Wetlands in East Manchester Township are the result of direct precipitation, surface runoff, groundwater, and overland flooding.

The value of a wetland is often overlooked. However, their value warrants protection as they serve as fish and wildlife habitats, they function as flood protection and erosion control facilities, and they help to improve water quality. Additionally, wetlands support a productive aquatic environment which is vital to aquatic animals and fish. Wetlands benefit man by providing forage fish for predatory fish which serve as human food, and they provide recreation areas and aesthetic qualities.

III. EVALUATION OF EXISTING WASTEWATER TREATMENT AND CONVEYANCE SYSTEMS

A. Identification of Municipal and Non-Municipal Wastewater Treatment Systems

The Northeastern York County Sewer Authority currently owns, operates and maintains the municipal wastewater collection and treatment facilities within the Township. The wastewater collection system contains eight (8) pump stations which serve residential and professional/commercial developments. One (1) private treatment facility with its own collection system serves the Asbury Point residential development in the eastern corner of the Township at the confluence of the Susquehanna River and Codorus Creek

Northeastern York County Sewer Authority Wastewater Treatment Plant

The existing municipal wastewater treatment plant located north of Mount Wolf Borough, and operated under NPDES Permit No. PA 0023744 services approximately 1669 EDU's and 10 commercial/business establishments producing industrial wastes primarily in the Boroughs of Mount Wolf and Manchester, the developed areas along North George Street Extended and Sherman Street Extended to the south, and along Board Road to the north. The treatment plant is a 1.70 MGD permitted plant and employs trickling filters with anaerobic sludge digestion using the following treatment units: aerated grit chamber, comminutors, primary clarifiers, synthetic media trickling filters, contact secondary clarifiers, chlorine contact tanks, sludge thickener and anaerobic digester. The following figure provides a schematic of the plant's treatment process. Influent flows enter through an aerated grit chamber, and then splits for separate flow monitoring and comminution into two paths. Each flow path enters a primary clarifier, then is pumped into separate secondary treatment synthetic media trickling filters. Flows from the trickling filters are recombined prior to discharge through two aerated solids contact secondary clarifiers, chlorinated and discharged through an outfall sewer paralleling Hartman Run across

Brunner Island to the Susquehanna River. Sludge removed from the clarifiers is pumped to a thickener, followed by a two-stage heated anaerobic digester with gas collection and methane-burning facilities. The plant is equipped to feed liquid alum for phosphorus removal and gas chlorine for disinfection. No major expansion of the plant is anticipated in the foreseeable future. The plant operates very efficiently and is in good condition. Digested sludge from the anaerobic digester is transported by Authority trucks to permanent agricultural utilization sites and injected using Authority equipment.

The plant effluent limitations as specified on the NPDES permit are as follows:

**TABLE NO. 2-5
EFFLUENT LIMITATIONS
NORTHEASTERN YORK COUNTY SEWER AUTHORITY WWTP**

	Mass Units (lb/d)		Concentrations (mg/l)			Measurement Frequency
	Avg. Monthly	Max Weekly Avg.	Avg. Monthly Avg.	Max Weekly Avg.	Inst. Max	
5 day BOD	354	532	25	40		Twice/Month
Total Suspended Solids	425	638	30	45		Twice/Month
Phosphorus as P	28		2			
D.O. Minimum					5.0	Daily
Chlorine Residual			Report			Daily
Ph			6.0 (Min)		9.0	Daily
Fecal Coliform			200 (5/1 – 9/30) 10,000 (10/1-4/30)			Twice/Month

According to Discharge Monitoring Report records, the facility has performed satisfactorily in meeting effluent requirements. The Chapter 94 Report for 1999 projects a 2004 flowrate of 801,000 gpd. The 3 month maximum average daily flowrate for 2004 is projected to be 1,097,000 gpd, 64.6% of the plant's hydraulic capacity. The 1999 Chapter 94 also reports on the plant's organic loading. The average organic loading for 2004 is

projected to be 1,420 pounds per day (ppd). The one month maximum loading for 2004 is projected to be 2,259 ppd, 78.14% of the plant's organic loading capacity.

The Chapter 94 Report did not identify any problems at the WWTP. It does, however, report the enactment of a resolution for sewer use and control of industrial wastes. This resolution will apply to the industrial contributors to the WWTP. There are currently 8 industrial connections with 2 additional connections projected.

Collection System

The primary service areas served by the treatment plant are shown on Exhibit VIII. The sewerage areas include the Boroughs of Mount Wolf and Manchester, the areas along Board Road north of Mount Wolf Borough, and the developed areas south along North Sherman Street Extended including Starview Mobile Home Park and Sherman Oaks development. Commercial, professional and residential development south from Manchester Borough along North George Street Extended also contributes flow to the wastewater treatment facility. There are a total of eight (8) pump stations located throughout the system. These pump stations are used to transport sewage through force mains over ridges and low hills to gravity sewers/interceptors which eventually flow to the treatment plant. See Exhibit VIII for the locations of the existing pump stations. Table 2-6 lists the pump stations within the Township and provided pertinent data as included in the 1999 Chapter 94 Report for the Northeastern York County Sewer Authority. Capacities for the pump stations shown on the table are either as designed or determined during by field rating. Flows from the Poplar Estates pump station were not determined due to the fact that the pump station receives very little flow at this time.

**TABLE NO. 2-6
SUMMARY OF PUMP STATIONS**

Subdivision	Outfall Location	Design Capacity		Field Rating		Gallons Pumped/Day	
		GPM	MGD	GPM	MGD	AVG	MAX
Sherman Oaks	Gravity to North Sherman St. P.S.	180	0.259			17,064	20,412

Subdivision	Outfall Location	Design Capacity		Field Rating		Gallons Pumped/Day	
		GPM	MGD	GPM	MGD	AVG	MAX
Wago Road	Gravity to WWTP	80	0.115			1,584	2,112
Orchard Bus. Park	Gravity to WWTP	80	0.115			4,752	30,720
North Sherman St.	Gravity to WWTP	80	0.115	276	0.397	30,305	66,240
Greenwood Estates	Gravity to WWTP			189	0.272	24,041	46,267
Musser Run	Gravity to WWTP			615	0.886	220,662	623,241
Kennington	Gravity to WWTP	80	0.115			6,528	36,816
Poplar Estates	Gravity to WWTP			Not determined due to low flows			

According to the 1999 chapter 94 Report, the collection system is generally in fair to good condition depending on the age or portion of the system. In 1998, the Greenwood Pump Station force main was relocated to eliminate surcharging in the area of the 4200 block of North George Street Extended. A section of the Smith Gardens Interceptor from Forge Hill Road to Maple Street was replaced and upgraded in 1999. Future projects include the replacement of the interceptor from the WWTP to Chestnut Street, from Maple Street to the section along Hartman Run and the Smith Gardens relief interceptor. The Chapter 94 Report also indicates that all of the pump stations have adequate capacity for the anticipated future growth.

A sewer collection system maintenance program was instituted in 1995. The program included flushing and videotaping of sanitary sewer lines. This program is to continue on a yearly basis, with a portion of the system to be completed each year.

Asbury Point Wastewater Treatment Facility

There is one privately owned WWTP within the Township. This facility serves the Asbury Point development located at the easternmost point of the Township. Asbury Point is approved for 224 EDUs of which 78 currently exist. The extended air WWTP has a rated capacity of 80,000 gpd. Using a standard flow rate of 350 gpd/edu, it is estimated that the plant currently operates at 27,300 gpd/edu. The rated capacity should be adequate for the build out of the subdivision. The owner/operator of the WWTP indicated that there is information available about the treatment plant, however, although requested on

several occasions, no documentation was ever furnished. The Township does not intend to extend the service area of this privately owned wastewater treatment facility. If this facility ever becomes a problem, East Manchester Township anticipates the construction of a pump station to redirect the wastewater flows to the proposed WWTP in Saginaw. Another option would be for the Authority to assume control of the Asbury Point WWTP.

B. Sewage Disposal Needs Analysis

Two methods were used to determine existing problems in the non-sewered areas of the Township. The first method involved the review of existing Sewage Enforcement Officer (SEO) records, which identified reported system malfunctions. The available SEO records generally cover the period 1992-1999. A total of 48 on-lot sewage disposal systems (OLDS) malfunctions were identified during this time period. Table No. 2-7 presents the known OLDS malfunctions and the action taken (when recorded) to correct them. The locations are shown on Exhibit XI, On-Lot Sewage Disposal Systems Malfunctions Map.

**TABLE NO. 2-7
ON-LOT SEWAGE DISPOSAL SYSTEM MALFUNCTIONS
1992-1999**

Number	Location	Year	Type of Repair
1	Finks Drive	92	Add Elevated Sand Mound
2	Market Street	92	Replace Drain Field
3	Canal Road		Added 2 laterals to drain field
4	Market Street		Holding Tank
5	Old Schoolhouse Lane	96	Install new system
6	Canal Road		Added 3 laterals to drain field
7	Conewego Creek Rd.	95	Holding Tank
8	Hill View Drive		Added 3 laterals to drain field
9	Canal Road		Added 1 lateral to drain field
10	Hill View Drive		Added 3 laterals to drain field
11	Blossom Drive		Added 3 laterals to drain field
12	York Street		Added 1 lateral to drain field
13	Canal Road		Seepage Reduction
14	Donrene Road		Added 2 laterals to drain field
15	Donrene Road		Added 2 laterals to drain field
16	Donrene Road		Added 2 laterals to drain field
17	Locust Street		Added 2 laterals to drain field
18	Locust Street		Added 2 laterals to drain field
19	Locust Street		Added 2 laterals to drain field

Number	Location	Year	Type of Repair
20	115 Griffith Lane	94	Replace system
21	Conewago Creek Rd.	97	Replaced clay pipe
22	N. George St. Extended	97	New septic tank
23	Codorus Furnace Rd.	97	Replaced septic tank
24	Griffith Lane	92	Added 1 lateral to drain field
25	Dellinger Road	95	New sand mound
26	York Street	93	Added 1 lateral to drain field
27	Jerusalem School Rd.	93	New septic tank
28	N. Sherman St. Extended	94	Added 2 laterals to drain field
29	Starview & Dellinger Rds.	95	New sand mound
30	Park Street	95	Replace pipe & outlet baffle
31	Conewago Creek Rd.	95	Holding Tank
32	Donrene Road	95	Replace drain field
33	Codorus Furnace Rd.		Added 2 laterals to drain field
34	Conewago Creek Rd.	96	New system
35	Jerusalem School Rd.		Added 2 laterals to drain field
36	Old School Road		Added 2 laterals to drain field
37	Codorus Furnace Road	96	Install new drain field
38	Starview Road	96	New tank to increase capacity
39	Creek Bottom Road	95	Holding Tank
40	Canal Road	97	Replace drain field
41	York Street		Added 2 laterals to drain field
42	2 nd Street	97	Holding Tanks
43	N. George St. Extended	98	Replace system
44	Saginaw Road	98	Replace system
45	Codorus Furnace Road	99	Replace system
46	Codorus Furnace Road	99	Replace system
47	Conewago Creek Road	99	Replace system
48	Dellinger Road	99	Replace system

An analysis of the known OLDS malfunctions did not indicate any recognizable pattern throughout the unsewered part of the Township, other than areas with more concentrated development did tend to have a higher concentration of malfunctions. These areas included: 1, the Morning Star Heights Development (Don Rene Road); 2, The Village of Saginaw, and 3, an area along Little Conewago Creek in the northeastern part of the Township. This third area included malfunctions along Canal Road, Conewago Creek Road, Griffith Land and Park Street.

A survey of 194 properties was accomplished in the Township to evaluate homeowner OLDS and private well water quality. The survey was accomplished in July-September 1996 and November 2000. The survey consisted of the following: Gather raw water samples to test for nitrate/nitrogen, total coliform and fecal coliform: interview the

homeowner regarding both their OLDS and well: and view the property around the drainfield to observe possible signs of malfunctions. A copy of the questionnaire is provided in Appendix A along with the survey results. The survey results were tabulated and each system was categorized in accordance with PADEP guidance. Each system was considered acceptable or placed into a need category based on the following criteria:

- 1) Confirmed Malfunctions – Systems under active repair permits, system overflow problems, wet and spongy areas, odors or the presence of fecal coliforms in the well analysis.
- 2) Suspected Malfunctions – Green lush grass, sluggish drains, water ponding of surfacing or wastewater backing up in the home.
- 3) Potential Malfunctions – Systems greater than 25 years old, systems with previous repairs or systems located in an area with slopes > 25%.

Based on these criteria, 46 of the 194 properties surveyed or 23.7% were categorized under confirmed malfunctions. Fifteen of the 194 properties or 7.7% have suspected malfunctions, while another 52 properties or 26.8% were categorized as potential malfunctions. Therefore, a total of 113 of the 194 properties (58.2%) surveyed are of concern. The results of the evaluation as well as the location of the previously recorded OLDS malfunctions are depicted on Exhibit XII, On-Lot Malfunctions: Confirmed, Suspected and Potential. It is noted that most areas with a concentration of malfunctions are proposed for public sewer service in this report. Additionally, as presented in this report, an on-lot management program is recommended for all unsewered portions of the Township. In recognition that there are several properties of concern in the southern portion of the Township not proposed for public sewer service, the area south of Star view and Codorus Furnace Roads has been targeted as District I in the on-lot management program.

HYDROGEOLOGICAL ANALYSIS OF GROUNDWATER

The quality of groundwater is generally accepted as an indicator of areas which may have malfunctioning on-lot sewage disposal systems. The most effective method of evaluating groundwater is through the sampling of water wells. A water well sampling program was

conducted throughout the Township during the summer months of 1998. The sampling and water testing were distributed as evenly as possible throughout the areas of the Township that are dependent on on-lot septic facilities. Criteria used for well sampling included:

- 1) A total of 194 wells were sampled throughout the Township. This number represents approximately 18 percent of the wells currently in use in the Township. The number of samples taken and tested correlated directly with the density of development.
- 2) Sampling was provided for all areas outside the service area of the public sewer system. For those areas having public water but no public sewer, abandoned or seldom used wells, if possible, were sampled (Saginaw area).
- 3) Each well was tested for nitrate-nitrogen levels, as well as for total and fecal coliform contamination.

Nitrate/Nitrogen in excessive amounts may contribute to the illness known as methemoglobinemia in infants. A limit of 10 mg/l for nitrates as nitrogen has been imposed by the United States Environmental Protection Agency (USEPA) on drinking water to prevent the disorder. For this reason, well tests showing nitrates over 10 mg/l are considered hazardous; well tests showing results between 5 and 10 mg/l nitrates may be approaching levels for concern.

Total Coliforms. The coliform group of bacteria is the principal indicator of suitability of a water supply for domestic, dietetic or other uses. The presence of any coliform bacteria renders the water potentially unsatisfactory and unsafe. The quality limit is 0 coliform colonies/100 ml.

Fecal Coliform (Bacteria). The limit for Fecal Coliform in drinking water has been established at less than 1 colonies/100 ml.

Water Well Survey

A total of 194 homeowners were interviewed. A copy of the questionnaire used during the homeowner interviews, along with the survey results, is provided in Appendix A. A complete table of the water well survey results is provided Appendix B. The water survey results are summarized in Table No. 2-8 below. Exhibits VIII and IX depict the results of the well sampling.

**TABLE NO. 2-8
WATER WELL SAMPLING RESULTS**

	Number of Wells	% of Sampled Wells
Total wells sampled	194	21% of Township
Nitrates/nitrogen > 10 mg/l	3	1.55
10 mg/l > nitrate/nitrogen > 5 mg/l	50	25.77
5 mg/l > nitrate/nitrogen > 0 mg/l	98	50.52
Total Coliform > 0 colonies/ 100 ml	92	47.42
Fecal Coliform > 0 colonies/ 100 ml	31	15.98
Wells with Total Coliform > 0 colonies/ml that also have Fecal Coliform > 0 colonies/ 100 ml	31	33.70

In addition to the water sampling and testing, an interview was conducted with each property owner. Interview questions were designed to collect information about the well including: well type, well construction, water source, water treatment and previous testing. Most homeowners reported that their wells were drilled with a few reporting hand dug wells. Questions regarding existing on-lot sewage disposal systems (OLDS) provided information on the type of system, distance from the well and history of system malfunctions. Of the homeowners who have had their wells previously tested, 10% reported some sort of contamination with another 3% reporting hard water and/or minerals. Twenty six percent (26%) of the homeowners use some sort of water treatment, most being softeners or filtration and 23% report that their wells are located within 100' of their septic system.

Of the 194 wells sampled, only 3 tests (1.55%) were found to exceed the acceptable limit of 10 mg/l nitrate/nitrogen set by the USEPA for drinking water. An additional 50 samples (25.77%) were in the range of 5 to 10 mg/l. Results in this range are indicative of wells which may exceed the acceptable limit of 10 mg/l on a seasonal basis. Areas of the Township where levels of nitrates/nitrogen in the drinking water fell between 5 and 10 mg/l are of concern because with additional development, these levels could increase to unacceptable levels.

The proposed use of on-lot sewage disposal systems in areas of the Township experiencing high levels of Nitrates/Nitrogen, as determined during well water analysis, is of special concern. These areas are shown on Exhibit IX, Water Sample Results: Nitrates/Nitrogen. Developers and/or homeowners proposing to utilize on-lot systems equipped with denitrification units would be required to sign an Operation and Maintenance Agreement with the Township. The Agreement will help to insure that the denitrification unit is operated and maintained in proper working order. A sample proposed Agreement is included as Appendix M.

Of the 194 wells tested for total coliform contamination, 92 (47.42%) had total coliform levels greater than 0 colonies/100 ml. Of these wells, 31 (33.70%) had fecal coliform levels greater than 0 colonies/100ml.

Exhibit VIII, Water Sample Results: Coliforms and Exhibit IX, Water Sample Results: Nitrates/Nitrogen graphically display the results of the water sampling and testing conducted within the Township. The results are also summarized in Table No. 2-8, Water Well Sampling Results and completely listed in Appendix B, Well Analysis Results.

Though the Village of Saginaw is now served by public water, water sampling results taken from well still in use in the Village indicate both a severe level of coliform and nitrate/nitrogen contamination. On-lot system malfunctions are also numerous in this area. The small lot sizes typical in the Village make the expansion of drain field impractical, if not impossible. Numerous proposals to sewer Saginaw have been put forward since the early 1970's, but none have been acted upon to date. Numerous reported discharges of raw sewage into the Susquehanna River from the Saginaw area have also been reported, lending and urgency to provide public sewers for Saginaw.

Another area of concern is in the northwester part of the Township around Griffith Lane, Park Street and Canal Road. As in Saginaw, the well testing results indicate high coliform and nitrate/nitrogen levels in the groundwater. Also, numerous reports of on-lot system malfunctions in this area have been recorded over the years. The installation of

public sewers with a resulting reduction in groundwater contamination seems to be warranted for this part of the Township.

The Morning Star Heights development containing Don Rene Road and Bonita Drive also exhibits several reported on-lot system malfunctions/repairs in the past several years. Water well sampling results also indicate a high coliform contamination level. Although this area is presently too far from the public sewer system, it should be closely monitored. Therefore, this area has been included in District I of the proposed on-lot management program.

C. Identification of Wastewater Sludge and Septage Generation, Transport and Disposal Methods.

Sludge generated at the existing Northeastern York County Sewer Authority Wastewater Treatment Plant is land applied at Sinking Springs Farm, Inc. in York County under Permit No. 603318. The Township uses approximately 100 of the available 500 acres. The plant generated 1,668,000 gallons (6,956 dry tons) of sewage sludge during calendar year 1999. Sludge is transported to the land disposal site by tanker truck. The treatment plant does not accept septage from any municipalities or private sources. Septic haulers who pump out septic or holding tanks within the Township dispose of the septage outside of the Township, most likely to the Dover or Springettsbury Township WWTP's. The small amount of sludge generated by the Asbury Point wastewater treatment plant is also hauled outside of the Township for disposal by an independent contractor. The owner of the Asbury Point WWTP did not provide and data on sludge generation.

When the on-lot management program is implemented, it is anticipated that the septage would be hauled to one of the local treatment plants currently accepting septage.

IV. FUTURE GROWTH AND DEVELOPMENT

A. Delineate and Describe the Following Through Map, Text and Analysis.

1. Areas with existing development or plotted subdivisions.

Exhibit X depicts various subdivisions and developments within East Manchester Township and Table No. 2-9 below lists each of these areas including the zoning district, the status of development and the type of sewage disposal. The data is based on a review of Township records, Chapter 94 Reports, property lot counts and developer furnished information.

**TABLE NO. 2-9
SUBDIVISIONS WITHIN EAST MANCHESTER TOWNSHIP**

Name of Subdivision	Zoning	Total EDUs	Connected EDUs	Type of Disposal	Status
Sherman Oaks	R-2	317	97	Public	Build out to continue over the next 10 years
Poplar Estates	R-2	40	31	Public	Build out to continue over the next 5 years
Poplar Creek Apartments	R-3	54	54	Public	Connection completed in 1999
Starview MHP	R-3	280	160	Public	MHP expansion to occur over the next 10 years
Dauberton	R-2	152	143	Public	Build out to continue over the next 5 – 10 years
Chestnut Valley	R-2	299	0	Public	Proposed subdivision. Building to commence in 2003 and continue beyond the next 10 years.
Greenwood Estates	R-2	107	107	Public	Connection completed in 1999
Greenfield Village	R-2	72	39	Public	Build out to continue over the next 10 years
Orchard View	R-2	56	20	Public	Build out to continue over the next 10 years
Orchard Business Park	I	159	65	Public	Build out to continue over the next 5 years
Kennington – with Steffie Dr.	R-2	25	25	Public	Connection completed in 1999
Hoffman Farms	A	9	3	Public	Build out to continue over the next 5 years
Alder Court	R-3	15	6	Public	Build out to continue over the next 5 - 10 years
Orchard Glen Townhomes	R-3	80	18	Public	Build out to continue over the next 10 years
Smith Gardens	R-2			Public	Development Complete

Name of Subdivision	Zoning	Total EDUs	Connected EDUs	Type of Disposal	Status
Asbury Point	R-1	224	78	Private WWTP	Build out to continue over the next 10 years
Saginaw	V	115	115	OLDS	Evaluate for public sewer service
Peach Tree Acres	R-2	7	7	OLDS	Evaluate for public sewer service
Long Road	R-2	21	21	OLDS	Evaluate for public sewer service
Griffith Road	R-1	23	23	OLDS	Evaluate for public sewer service
Manor Village	R-1	43	34	OLDS	Build out to continue over the next 10 years. Evaluate for public sewer service

R-1 = Low Density Residential

R-2 = Medium Density Residential

R-3 = High Density Residential

I = Industrial

C = Commercial

A = Agricultural

CO = Conservation

V = Village

A/O = Apartment/Office

2. Land use designations established under the Pennsylvania Municipalities Planning Code including residential, commercial and industrial areas. Include a comparison of proposed land use as allowed by zoning and existing sewage facilities planning.

East Manchester's Zoning Map was most recently revised on July 8, 1999. The map has clearly designated the corridor along North George Street Extended for higher density residential, commercial and industrial uses. A second growth corridor follows North Sherman Street Extended.

Public sewer service is provided along both of these corridors. There are four industrial areas designated within the Township:

- a) Along the east side of North George Street Extended, below Manchester Borough
- b) Along Willow Springs Lane, northwest of North George Street Extended
- c) South of Starview Road and west of Sherman Oaks
- d) Brunners Island and Lows Island

Public sewer service is extended to the first two listed industrial areas. The third area is a quarry and the fourth contains the Brunner Island Steam Electric Station. The third

Industrial District lies within the portion of the Township underlain by limestone. It is recommended that this industrial district be designated for public sewer service.

One existing Village District lies outside of the public sewer service area. The area, known as Saginaw will be evaluated for public sewer service.

Other than the development corridors, the Industrial Districts and the Village Districts, most of the Township is designated for Low Density Residential, Agricultural and Conservation uses. The zoning map is well designed to encourage higher density development within the public sewer service area. There are some need areas within the Low Density and Medium Density Residential Districts that appear to meet the designated lot sizes for properties without public sewer or water service and yet have experienced system failures. It is recommended that the Zoning Ordinance be evaluated to increase the lot size in the Low Density and Medium Density Residential Districts to a minimum of 1 acre for properties without public sewer or water service.

3. Future Growth Areas with population and EDU projections for these areas using historical, current and future population figures and projections of the municipality. Discuss and evaluate discrepancies between local state and federal projections as they relate to sewage facilities.

The 1990 Census data was used as the reference point for growth projections within the Township. Earlier projections by the York County Planning Commission were much lower than the actual 1990 data and therefore not used in this report. Population data for the Township, neighboring Boroughs is presented in Table No. 2-10.

**TABLE NO. 2-10
POPULATION DATA FROM THE 1990 CENSUS**

Municipality	1960	1970	1980	1990
East Manchester Township	2252	1735	3564	3714
Manchester Borough	1454	2391	2027	1830
Mount Wolf Borough	1514	1811	1517	1365

A review of the population data indicates that people are leaving the smaller, more densely populated Boroughs to reside in the new residential developments within the Township. It also appears that the 1970 data for East Manchester Township may be inaccurate, based on the otherwise indicated upward trend.

The 1990 Census data was reviewed to determine the number of housing units in the Township. The 1999 housing was calculated by adding the number of building permits issued annually to the 1990 Census data. The York County BonData provides permit data though 1995. Since 1995, The Township Manager has indicated that 40-50 building permits are issued annually. Table No. 2-11 presents the 1999 housing count.

**TABLE NO. 2-11
EAST MANCHESTER TOWNSHIP HOUSING**

	No. of Houses
1990 Census	* 1,407
1990-1995	+ 275
1996-1999	** + 180
Total Housing	1862

* occupied units

** 45 units per year

The 1999 Chapter 94 Report predicts and aggressive growth in East Manchester Township of 101 sewerer units per year. This projection does not account for the growth within the unsewered portions of the Township. The Chapter 94 Report also indicates that the sewerer growth within the Township was 95 EDUs in 1999. This growth however, includes the complete occupancy of a 54-unit apartment complex. Based on a review of the current development activity within East Manchester Township, a 10-year growth of approximately 70 units per year is projected. This projection is somewhat less than that included in the Chapter 94 Report however, the projection does include all of the developments identified in the Chapter 94 Report. The projection herein indicates that all of the developments identified in the Chapter 94 report will be completed within the next

10 years. Additionally, the Authority has agreed to accept the connection of 388 existing EDU's from Conewago Heights in Newberry Township. Based on a visual count of available vacant lots within Conewago Heights, it is estimated that a total of 450 EDU's from Newberry Township may connect to the Manchester-Mt. Wolf WWTP by 2010. The Newberry Township connection, which is scheduled to occur in 2003, will be addressed in the next Chapter 94 Report for the Manchester-Mt. Wolf WWTP.

Table No. 2-12 presents the growth projections for the sewerer portions East Manchester Township within the next 5 and 10 years. The table also includes the timing for providing public sewer service to identified needs areas, as well as a need area in Newberry Township.

TABLE NO. 2-12
EDU GROWTH IN EAST MANCHESTER TOWNSHIP
Public Sewer Service Areas

Name of Development		Type of System	Total EDUs	Existing EDUs	Remaining EDUs	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	Totals
MANCHESTER-MT WOLF WWTP - COMMERCIAL																
Northeast Devco	C	Public	21	7	14	2	2	2	2	2	2	2				14
Wheatlyn Professional	C	Public	5	0	5	2	2	1								5
Orchard Business Park	C	Public	159	65	94	25	25	25	19							94
TOTAL - Commercial with Sewers			185	72	113	29	29	28	21	2	2	2	0	0	0	113
MANCHESTER-MT WOLF WWTP - RESIDENTIAL																
Dauberton	R	Public	152	143	9	1	1	1	1	1	1	1	1	1		9
Greenwood Estates	R	Public	107	107	0											0
Greenfield Village	R	Public	72	39	33	4	4	4	3	3	3	3	3	3	3	33
Orchard View	R	Public	56	20	36	4	4	4	4	4	4	3	3	3	3	36
Alder Court	R	Public	15	6	9	1	1	1	1	1	1	1	1	1		9
Orchard Glen TH	R	Public	80	18	62	7	7	6	6	6	6	6	6	6	6	62
Kennington	R	Public	23	23	0											0
Steffle Dr.	R	Public	1	1	0											0
Chestnut Valley	R	Public	299	0	299			40	50	60	50	25	25	25	24	299
Poplar Creek Apartments	R	Public	54	54	0											0
Sherman Oaks	R	Public	317	97	220	22	22	22	22	22	22	22	22	22	22	220
Poplar Estates	R	Public	40	31	9	1	1	1	1	1	1	1	1	1		9
Starview MHP	R	Public	160	160	0											0
Starview MHP Expansion	R	Public	120	0	120	12	12	12	12	12	12	12	12	12	12	120
Hoffman Farms	R	Public	9	3	6	1	1	1	1	1	1					6
TOTAL - Residential with Sewers			1,505	702	803	53	53	92	101	111	101	74	74	74	70	803
MANCHESTER-MT WOLF WWTP - OLDS Targeted for Sewer Service																
Manor Village	R	OLDS	43	34	9				34	9						43
Griffith Road	R	OLDS	23	23	0				23							23
Canal Road Area	R	OLDS	127	127					127							127
Conewego Heights - Newberry	R	OLDS	450	388	62			388	10	10	10	10	10	10	2	450
The Oaks	R	OLDS	25	25	0				25							25
TOTAL - OLDS Targeted for Sewers			668	597	71	0	0	388	219	19	10	10	10	10	2	668
MANCHESTER - MT WOLF WWTP																
TOTALS				1,669		82	82	508	341	132	113	86	84	84	72	1,584
						1,751	1,833	2,341	2,682	2,814	2,927	3,013	3,097	3,181	3,253	
NEW WWTP																
Saiginaw	R	OLDS	115	115	0			115								115
TOTAL			115	115	0	0	0	115	2	2	2	2	2	2	2	129

4. Zoning and Subdivision Regulations; local, county or regional comprehensive plans; and existing plans; and existing plans of a Commonwealth agency relating to the development, use and protection of land and water resources.

Section 1B, Identification of Municipal and County Planning Documents, identifies both County and Township level planning accomplished with the intent to protect and preserve natural resources and to direct growth and development to appropriate locations. The Township future land use map identifies eight land use categories to direct growth within the Township. From the land use plan, the Township developed a Zoning Ordinance that focuses high density growth along major road corridors in the Township. These corridors are provided with both public water distribution and sewer collection facilities. The Zoning Ordinance also designates large areas within the Township as Conservation and Agricultural districts. The Conservation District was established to protect environmentally sensitive areas and the Agricultural District was established to preserve areas of prime agricultural capability in the Township. Also included in the Zoning Ordinance is a Floodplain District which is designed to protect areas of floodplain subject to floodwaters and to protect and encourage the retention of open land uses which will be located to create a harmonious part of the Township's development. In an effort to protect wetland features within the East Manchester Township, the Subdivision and Land Development Ordinance requires wetlands to be identified and delineated during the approval process.

5. Sewage planning to provide adequate wastewater treatment for the municipality. The planning must be related to both the five and ten year future planning periods and be based on growth impacts on existing and proposed wastewater collection and treatment facilities.

Table No. 2-13 projects the future growth within East Manchester Township for the 5-year (2005) and 10-year (2010) planning horizons. The flows for new connections were calculated using an average daily flow of 350 gpd/EDU. For the Manchester-Mt. Wolf WWTP, flows were projected by adding flows from new connections to the present WWTP flow. As presented in Table No. 2-12 the Township currently anticipates the construction of a new wastewater treatment plant near Saginaw.

TABLE NO. 2-13
FUTURE WASTEWATER FLOWS WITHIN EAST MANCHESTER TOWNSHIP
FOR THE 5-YEAR AND 10-YEAR PLANNING HORIZONS

WWTP	Current Flows	2005 Flows	2010 Flows	Long Term Flows
Manchester / Mt. Wolf	0.762	1.162	1.121	1.491
Percent of WWTP Capacity	45%	68%	77%	88%
Saginaw - new WWTP	0.000	0.040	0.045	0.052

All flows expressed in million gallons per day (MGD)

Long term flows to the Manchester-Mt. Wolf WWTP anticipates a continued growth of 50 EDUs per year through 2020.

Long term flows at the Saginaw plant anticipates minor connections of approximately 2 EDUs per year. Should any of the larger properties in this area be developed, subsequent evaluation of this area and the treatment facilities would be required.