DAUPHIN COUNTY

SEWERAGE PLAN

1995

Prepared and Assisted By:

Tri-County Regional Planning Commission
and
Herbert, Rowland & Grubic, Inc.

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1995

ADOPTED MARCH 15, 1995

PREPARED FOR:

Dauphin County Board Of Commissioners

PREPARED BY:
Tri-County Regional Planning Commission

ASSISTED ENGINEERING SERVICES PREPARED BY:
Herbert, Rowland & Grubic, Inc

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1. INTRODUCTION

This report presents the findings and recommendations resulting from a study of the immediate and future needs for sewage collection and treatment in Dauphin County. The plan described in this report should promote orderly and efficient community growth by preventing overlapping and duplication of facilities. Future planning tools such as zoning ordinances, Act 537 Sewage Facilities Plans, and others will benefit by the completion of a County Sewer Plan. Eligibility for federal and state grant programs is also dependent upon conformity with a plan for sewerage development.

The Dauphin County Commissioners and Planning Commission prioritized the following objectives to be considered in development of this plan:

- Document the importance of sewerage facilities planning to promote orderly growth and development in the County;
- Establish a precedent for improved water quality in the Commonwealth;
- Provide a tool for use by municipal officials in gathering preliminary information related to Act 537 Sewage Facilities Planning;
- Inventory existing domestic wastewater treatment collection and conveyance facilities in the County;
- Identify and project future sewerage facilities needs in the County;
- Identify existing and potential sewage disposal problem areas in the County as related to increased development and natural environmental features; and,
- Provide an overall County Sewerage Facilities Plan to be referenced by the County Planning Agency in reviewing sewerage planning documents.

During the study it was found that 14 municipal sewer systems now provide sewage collection and treatment for a large majority of the county's population. Residents of the areas where sewers are not currently available must resort to private on-lot subsurface methods for sewage disposal, or private wastewater treatment facilities with a permitted discharge to a receiving stream.

The study included an evaluation of the existing systems with respect to both their treatment capabilities and service areas. Existing and proposed treatment facilities were examined using as a basis the upgraded water quality criteria established by the Pennsylvania Department of Environmental Resources. Studies were made of the unsewered areas to determine where sewers are needed at present and where needs are likely to occur. Based upon the results of these studies, the comprehensive sewerage plan was developed.

Separate reports have been published by the Tri-County Regional Planning Commission concerning economic conditions, other public utilities, transportation, natural resources, community facilities, and other factors. Much of this information can be located in the updated County Comprehensive Plan.

This plan should not be considered as an engineering report on existing or proposed sewerage systems. Although engineering principles were used in developing this plan, no individual system was investigated in the detail required for an engineering study. Where results of engineering studies were available, information pertaining to existing conditions was assumed to be correct. All estimates of sewage flows and costs were, however, calculated independently of any previous work. Therefore, detailed engineering and feasibility studies must be made before any projects proposed in this plan are designed and constructed.

There are forty municipalities in the county, each of which seeks to cope with its sewerage responsibilities individually, wherever possible. Because the limits of development and the patterns of natural drainage do not always coincide with political boundaries; and all sewage discharges in the county eventually flow into the Susquehanna River, the opportunities for joint planning of sewage facilities are very real.

The sewerage program presented in this plan uses three time horizons: 1994, 2004 and 2014 (Future). The construction prescribed for 1994 will satisfy existing needs for facilities, and that set for 2004 should be built within the next nine years. Costs incurred in sewerage construction are such that the facilities are normally constructed for more than 10 years life. Therefore, the Future phase of development extends beyond the year 2014. No end point has been designated for the Future time period. The design of facilities to be constructed in the future should conform to the County Comprehensive Plan as well as existing Municipal Act 537 Sewage Facilities Plans.

In Section 7, Existing Wastewater Treatment and the Sewerage Needs Analysis, Map 7-1, illustrates the sanitary sewer service areas for the three periods of sewerage planning. Detailed maps and descriptions of the work required to serve these areas can be found in this section. Map 7-2 shows the locations of all the municipal, private, school district, and state owned municipal sewage treatment plants. Maps 7-3 through 7-24 show the sewer service areas in the municipalities containing public sewer service.

2. POPULATION TRENDS

Population statistics and projections go hand in hand with the planning of water and sewer services. By relating past population trends with existing and projected population figures, the proper projections can be made concerning service line expansions and future service areas. Population changes result from the movement of people for various reasons from natural increase or decrease of population through births and deaths. Many factors influence the movement of people, but economic opportunity, housing, environment, transportation planning, and education are of prime importance.

In 1980 Tri-County Regional Planning Commission published estimates for Dauphin County's future population that were derived by establishing a growth pattern based on the historical growth rate for each municipality. Table 2.1 presents the change in population for each Dauphin County municipality from 1940 to 1990. Each projection was then examined in relation to existing land use patterns and availability of vacant land. Each municipal projection was then altered, where appropriate, according to the proposed future land use patterns and anticipated development projects (e.g. redevelopment/renewal projects). The 1990 census data will be utilized throughout this plan. Population projection figures from the Department of Environmental Resources (DER) will be used. DER's methodology for population projections for the years 2000, 2010 were estimated based on the average growth of the population in the decades from 1970 to 1990.

According to the population data from 1970 to 1980, the population of Dauphin County increased approximately 3.8 percent. The rate of increase slowed to 2.4 percent from 1980 to 1990. The population growth rate is not expected to increase from 1990 to 2000.

Dauphin County's population is slowly moving farther from its nucleus - Harrisburg. Factors contributing to this movement are greater availability of public services outside the City, better accessibility, and an expanding marketing center, however, comprehensive planning for the region could be assumed that this trend will continue. Population estimates and percentage changes for Dauphin County are listed in Table 2.2. Table 2.2 illustrates the historic population trends experienced by Dauphin County. Since the early 1800's the County's population has steadily increased, with the exception of a loss between the 1810 and 1820 censuses. This decline was due to the separation and creation of Lebanon County out of Dauphin County in 1813.

No explanation was available from the DER for the projected decrease in population during the years 2020-2040. However, this negative percentage change could be explained as the effect of the mortality of the "Baby Boomers" period. Population densities per municipality in Dauphin County for 1990 are listed in Table 2.3.

TABLE 2.1
POPULATION CHANGE BY MUNICIPALITY - DAUPHIN COUNTY 1940-1990

	1940	1950	1960	1970	1980	1990	Change 1980-90	% Change 1970-80	% Change 1980-90
Berrysburg Boro	426	386	434	443	447	376	-71	0.9	-15.9
Conewago Twp	929	966	1,353	1,124	2,471	2,832	361	119.8	14.6
Dauphin Boro	620	667	638	998	901	845	-56	-9.7	-6.2
Derry Twp	8,653	9,993	12,388	15,452	18,115	18,408	293	17.2	1.6
East Hanover Twp	1,213	1,557	1,535	2,938	3,574	4,569	995	21.6	27.8
Elizabethville Boro	1,410	1,506	1,455	1,629	1,531	1,467	-64	-6	-4.2
Gratz Boro	692	653	704	675	678	696	18	0.4	2.7
Halifax Boro	813	822	824	907	909	911	2	0.1	0.2
Halifax Twp	1,276	1,424	1,747	2,038	2,943	3,449	506	44.4	17.2
Harrisburg City	83,893	89,544	79,697	68,061	53,264	52,376	-888	-21.7	-1.7
Highspire Boro	2,371	2,799	2,999	2,947	2,959	2,668	-291	0.4	-9.8
Hummelstown Boro	3,264	3,789	4,474	4,723	4,267	3,981	-286	-9.7	-6.7
Jackson Twp	883	998	1,016	1,156	1,568	1,797	229	35.6	14.6
Jefferson Twp	134	150	178	164	340	385	45	107.3	13.2
Londonderry Twp	1,307	1,595	3,053	3,453	5,138	4,926	-212	48.8	-4.1
Lower Paxton Twp	4,157	6,546	17,618	26,517	34,830	39,162	4332	31.3	12.4
Lower Swatara Twp	1,184	3,557	4,508	5,267	6,772	7,072	300	28.6	4.4
Lykens Boro	3,048	2,735	2,527	2,506	2,181	1,986	-195	-13	-8.9
Lykens Twp	1,060	1,000	975	997	1,138	1,238	100	14.1	8.8
Middle Paxton Twp	1,683	2,155	3,124	3,362	4,745	5,129	384	41.1	8.1
Middletown Boro	7,046	9,184	11,182	9,080	10,122	9,254	-868	11.5	-8.6
Mifflin Twp	486	488	501	475	553	676	123	16.4	22.2
Millersburg Boro	2,959	2,861	2,984	3,074	2,770	2,729	-41	-9.9	-1.5
Paxtang Boro	1,707	1,857	1,916	2,039	1,649	1,599	-50	-19.1	-3
Penbrook Boro	3,627	3,691	3,671	3,379	3,006	2,729	-277	-11	-7.2
Pillow Boro	329	323	348	332	359	341	-18	8.1	-5
Reed Twp	245	246	251	259	289	259	30	11.6	-10.4
Royalton Boro	1,201	1,175	1,128	1,040	981	1,120	139	-5.7	14.2
Rush Twp	109	103	113	160	212	201	-11	32.5	-5.2
South Hanover Twp	1,475	1,581	1,841	2,689	4,046	4,626	580	50.5	14.3
Steelton Boro	13,115	12,574	11,266	8,556	6,484	5,152	-1332	-24.2	-20.5
Susquehanna Twp	8,716	11,081	17,474	17,008	18,034	18,636	602	6	3.3
Swatara Twp	6,866	9,350	14,795	17,178	18,796	19,661	865	9.4	4.6
Upper Paxton Twp	1,747	2,225	2,555	2,718	3,435	3,680	245	26.4	7.1
Washington Twp	978	912	932	1,114	1,734	1,816	82	55.7	4.7
Wayne Twp	343	363	432	513	698	847	149	36.1	21.4
West Hanover Twp	1,009	1,495	2,770	4,407	6,115	6,125	10	38.8	0.2
Wiconisco Twp	2,273	1,992	1,801	1,471	1,566	1,372	-194	6.5	-12.4
Williams Twp	1,394	1,109	951	945	1,033	1,146	113	9.3	10.9
Williamstown Boro	2,769	2,332	2,097	1,919	1,664	1,509	-155	-13.3	-9.3
TOTAL COUNTY	177,410	197,784	220,255	223,713	232,317	237,751	5,494	3.8	2.37

SOURCE: U.S. CENSUS

TABLE 2.2
POPULATION TRENDS 1810 - 1990
DAUPHIN COUNTY

Year	Total Population	% Change
1810	31,883	N/A
1820	21,653	-32.1*
1830	25,243	16.5
1840	30,118	19.3
1850	35,754	18.7
1860	46,756	30.8
1870	60,740	29.9
1880	76,148	25.4
1890	96,977	27.3
1900	114,443	18.3
1910	136,152	18.9
1920	153,116	12.4
1930	165,231	7.9
1940	177,410	7.3
1950	197,784	11.4
1960	220,255	11.3
1970	223,713	1.6
1980	232,317	3.8
1990	237,813	2.4
2000	242,901	2.14
2010	244,620	0.71
2020	242,124	-1.02
2030	238,074	-1.67
2040	233,069	-2.10

* Dauphin County was reduced to its present limits by the separation and establishment of Lebanon County in 1813.

TABLE 2.3 POPULATION DENSITY Dauphin County - 1990			
MUNICIPALITY	**POPULATION**	**AREA SQ. MI.**	**DENSITY (Persons/Sq. Mi.)**
Berrysburg Borough	376	0.7	376.0
Conewago Township	2,832	16.3	173.7
Dauphin Borough	845	0.4	845.0
Derry Township	18,408	27.1	679.3
E. Hanover Township	4,569	39.1	116.9
Elizabethville Borough	1,467	0.4	1467.0
Gratz Borough	696	2.7	257.8
Halifax Borough	911	0.2	911.0
Halifax Township	3,449	26.7	129.2
Harrisburg City	52,376	7.6	6891.6
Highspire Borough	2,668	1.0	2668.0
Hummelstown Borough	3,981	1.4	2843.6
Jackson Township	1,797	39.2	45.8
Jefferson Township	385	24.4	15.8
Londonderry Township	4,926	22.1	222.9
Lower Paxton Township	39,162	28.4	1378.9
Lower Swatara Township	7,072	12.4	570.3
Lykens Borough	1,986	0.9	1986.0
Lykens Township	1,238	26.0	47.6
Middle Paxton Township	5,129	53.1	96.6
Middletown Borough	9,254	1.7	5443.3
Mifflin Township	676	15.6	43.3

TABLE 2.3 POPULATION DENSITY Dauphin County - 1990			
Millersburg Borough	2,729	0.6	2729.0
Paxtang Borough	1,599	0.4	1599.0
Penbrook Borough	2,729	0.5	2729.0
Pillow Borough	341	1.0	341.0
Reed Township	259	6.2	41.6
Royalton Borough	1,120	0.4	1120.0
Rush Township	201	22.4	8.9
S. Hanover Township	4,626	11.5	402.3
Steelton Borough	5,152	3.3	1561.2
Susquehanna Township	18,636	13.5	1380.4
Swatara Township	19,661	12.7	1548.1
Upper Paxton Township	3,680	26.1	141.0
Washington Township	1,816	17.0	106.8
Wayne Township	847	13.9	60.9
W. Hanover Township	6,125	22.7	269.8
Wiconisco Township	1,372	9.7	141.4
Williams Township	1,146	8.5	94.3
Williamstown Borough	1,509	0.3	1509.0
COUNTY TOTAL	**237,813**	**517.7**	**459.4**

SOURCE: U.S. Census 1990, Pennsylvania Department of Commerce

The major trend that has occurred in Dauphin County over the years 1970 to 1990 is the reduction of population in municipalities with dense populations and population growth in municipalities with sparsely populated areas. Table 2.4 illustrates the trend.

TABLE 2.4
POPULATION DENSITY VS. PERCENT CHANGE IN POPULATION

Municipality	Density (Persons/Sq. Mi.)	% Population Change 1970-1980	% Population Change 1980-1990
Williamstown Borough	1,509.0	-13.3	-9.3
Steelton Borough	1,561.2	-24.2	-20.5
Millersburg Borough	2,729.0	- 9.9	-1.5
Berrysburg Borough	376.0	.9	-15.9
Harrisburg City	6,892.0	-21.7	-1.7
Paxtang Borough	1,599.0	-19.1	-3.0
Highspire Borough	2,668.0	0.4	-9.8
Middletown Borough	5,443	11.5	-8.6
East Hanover Twp.	117	21.6	27.8
Conewago Twp.	174	119.8	14.6
South Hanover Twp.	402	50.5	14.3
Lower Paxton Twp.	1,379	31.3	12.4
Halifax Twp.	129.2	44.4	17.2
Williams Twp.	94	9.3	10.9

Table 2.4 provides two sets of data: small municipalities with large densities and their respective previous population changes, and municipalities with smaller densities (<1500 persons/square mile) and their respective previous population increases. Declining populations were evidenced in all large density municipalities. Municipalities with growth in excess of 10% per decade are shown to have smaller population densities.

Population data and projections for each municipality of Dauphin County are provided in Table 2.5. Population data from 1970, 1980, and 1990 was recorded by the U.S. Bureau of Census. Population projections for the years 2000 and 2010 were completed by PADER in 1991.

Several important population trends should be highlighted:

- The City of Harrisburg lost 23% of its population between 1970 and 1990.
- The Borough of Steelton lost 40% of its population between 1970 and 1990.
- The population of Lower Paxton Township grew by 48% between 1970 and 1990.
- The County population grew by only 6.3% between 1970 and 1990.

The following population projection trends, based on projections provided by PADER, should be highlighted:

- The County population is expected to grow by only 2.9% between 1990 and 2010.
- The City of Harrisburg is expected to lose 14% of its population between 1990 and 2010.
- The population of East Hanover Township is expected to grow by 34% between 1990 and 2010.
- The population of Halifax Township is expected to grow by 27% between 1990 and 2010.

These trends reinforce the before-mentioned shift in population away from the nucleus of Harrisburg and its environs towards the municipalities of Lower Paxton Township, East Hanover Township, and Halifax Township.

TABLE 2.5
MUNICIPAL POPULATION GROWTH

	1970	1980	1990	2000*	2010*
Berrysburg Boro	443	447	376	356	322
Conewago Twp	1,124	2,471	2,832	3,212	3,486
Dauphin Boro	998	901	845	797	737
Derry Twp	15,452	18,115	18,408	18,906	18,781
East Hanover Twp	2,938	3,574	4,569	5,435	6,105
Elizabethville Boro	1,629	1,531	1,467	1,420	1,346
Gratz Boro	675	678	696	713	711
Halifax Boro	907	909	911	923	906
Halifax Twp	2,038	2,943	3,449	3,976	4,367
Harrisburg City	68,061	53,264	52,376	47,322	44,897
Highspire Boro	2,947	2,959	2,668	2,593	2,389
Hummelstown Boro	4,723	4,267	3,981	3,748	3,459
Jackson Twp	1,156	1,568	1,797	2,038	2,211
Jefferson Twp	164	340	385	432	465
Londonderry Twp	3,453	5,138	4,926	5,187	5,075
Lower Paxton Twp	26,517	34,830	39,162	43,785	47,002
Lower Swatara Twp	5,267	6,772	7,072	7,443	7,558
Lykens Boro	2,506	2,181	1,986	1,822	1,702
Lykens Twp	997	1,138	1,238	1,348	1,412
Middle Paxton Twp	3,362	4,745	5,129	5,557	5,798
Middletown Boro	9,080	10,122	9,254	9,467	8,963
Mifflin Twp	475	553	676	791	878
Millersburg Boro	3,074	2,770	2,729	2,622	2,499
Paxtang Boro	2,039	1,649	1,599	1,420	1,369
Penbrook Boro	3,379	3,006	2,791	2,605	2,393
Pillow Boro	332	359	341	349	335
Reed Twp	259	289	259	262	243
Royalton Boro	1,040	981	1,120	1,164	1,175
Rush Twp	160	212	201	213	207
South Hanover Twp	2,689	4,046	4,626	5,237	5,675
Steelton Boro	8,556	6,484	5,152	4,542	4,416
Susquehanna Twp	17,008	18,034	18,636	19,432	19,568
Swatara Twp	17,178	18,796	19,661	20,722	21,072
Upper Paxton Twp	2,718	3,435	3,680	3,957	4,099
Washington Twp	1,114	1,734	1,816	1,915	1,948
Wayne Twp	513	698	847	999	1,115
West Hanover Twp	4,407	6,115	6,125	6,206	6,090
Wiconisco Twp	1,471	1,566	1,372	1,351	1,235
Williams Twp	945	1,033	1,146	1,255	1,324
Williamstown Boro	1,919	1,664	1,509	1,379	1,292
TOTAL COUNTY	223,713	232,317	237,813	242,901	244,625

SOURCE: U.S. CENSUS * Population projections provided by DER

3. ON-LOT SEWAGE DISPOSAL

A. System Design Criteria and Requirements

Many areas of Dauphin County that are not sufficiently developed are not able to provide sewage conveyance and/or sewage treatment facilities for their residents. These area residents must rely On-Lot Sewage Disposal Systems (OLDS) for their sewage needs. The following chapters under the Pennsylvania Code, Title 25 Environmental Resources, govern the installation and use of OLDS.

CHAPTER 71 - ADMINISTRATION OF SEWAGE FACILITIES PLANNING PROGRAM

Under this chapter "municipalities are required to develop and implement comprehensive official plans which provide for the resolution of existing sewage disposal problems, provide for the future sewage disposal needs of new land development and provide for future sewage disposal needs of the municipality."

CHAPTER 72 - ADMINISTRATION OF SEWAGE FACILITIES PERMITTING PROGRAM

This chapter's rules state that individual or community OLDS may not be installed, constructed or used without a permit. No local agency may issue a permit except by and through a Certified Sewage Enforcement Officer (SEO) employed by them. Permits are granted after the issuance of a thorough and proper application. SEO's are certified through an examination issued by the certification board and prepared by the department.

CHAPTER 73 - STANDARDS FOR SEWAGE DISPOSAL FACILITIES

Under this chapter design and construction standards are established for absorption areas, sewers, tanks, distribution systems, and experimental and alternative systems. The following standards are notably important:

- The location of absorption areas is limited.
- Systems must maintain minimum isolation distances.
- Limiting zones and percolation rates must be determined.
- The minimum capacity of a tank should be 900 gallons.
- The type of absorption area is determined by the soils and slopes.

B. Soil Suitability

Within this plan, cesspools and privies are not considered acceptable as OLDS. Holding or retaining tanks should be used only as a temporary disposal means. The success of OLDS in treatment of wastewater depends greatly upon the characteristics of the site. Specific criteria governing the design are:

- Soil Permeability Rate: The rate at which water will move through saturated soil. This must be sufficient to allow for percolation of the liquid portion of the sewage into the soil, but must not be so rapid as to allow contamination of ground and surface water supplies.

- Depth to Bedrock: The depth from the ground surface to the solid mass of rock that underlies the soil or other surface formation.

- Seasonal High Water Table: The upper limit of the part of soil or underlying rock material that is wholly saturated with water during the season of the year with maximum rainfall.

- Slope: The rise or fall of the land; usually measured in feet per hundred (or percent).

- Flooding: A condition experienced when water overtops the natural banks of a creek, stream, or river.

The On-Lot Disposal System (OLDS) Limitations Map (3-1) shows areas in the County with slight to moderate, severe and hazardous soil limitations for OLDS.

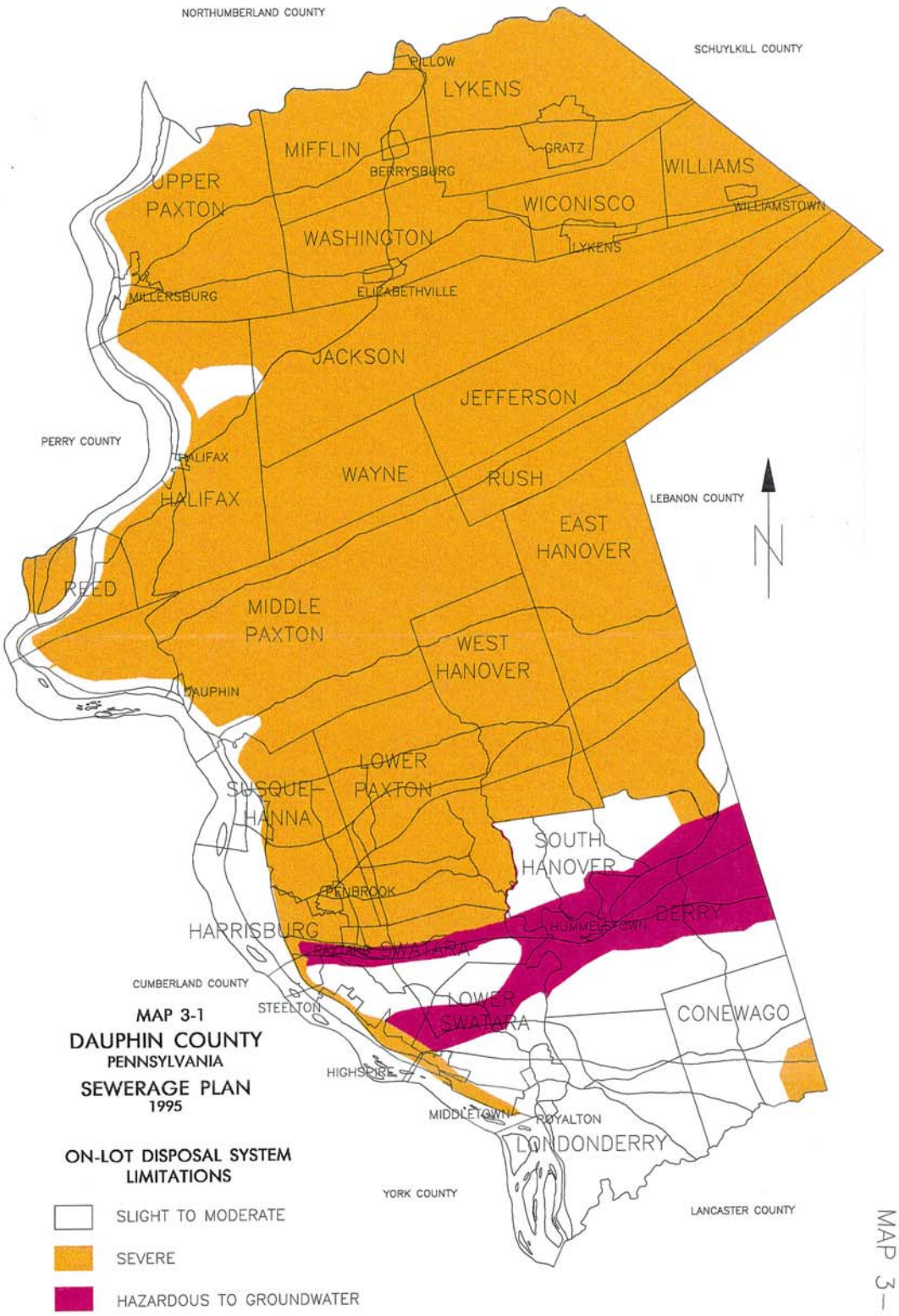
The County Soil Conservation Service (SCS) has presented three soil classifications based upon on-site disposal of effluent from septic tanks. These ratings are listed and described below:

- *Slight*: These soils have few, if any limitations on the use of conventional OLDS.

- *Moderate*: These soils have one or more properties that may limit their use of conventional OLDS. Further investigation is warranted.

- *Severe*: These soils have one or more properties that seriously limit their use.

In addition to the above ratings the SCS identifies soils which are "hazardous" to groundwater quality. Soils may be rated as hazardous due to: thin soil cover, a high seasonal water table, rapid soil permeability, or a combination of the above.


NORTHUMBERLAND COUNTY
SCHUYLKILL COUNTY
PILLOW
LYKENS
MIFFLIN
GRATZ
BERRYSBURG
WILLIAMS
UPPER PAXTON
WICONISCO
WILLIAMSTOWN
WASHINGTON
LYKENS
MILLERSBURG
ELIZABETHVILLE
JACKSON
JEFFERSON
PERRY COUNTY
HALIFAX
WAYNE
RUSH
LEBANON COUNTY
HALIFAX
EAST HANOVER
REED
MIDDLE PAXTON
WEST HANOVER
DAUPHIN
LOWER PAXTON
SUSQUEHANNA
SOUTH HANOVER
PENBROOK
HARRISBURG
HUMMELSTOWN
DERRY
SWATARA
CUMBERLAND COUNTY
STEELTON
LOWER SWATARA
CONEWAGO
HIGHSPIRE
MIDDLETOWN
ROYALTON
LONDONDERRY
YORK COUNTY
LANCASTER COUNTY
MAP 3-1
DAUPHIN COUNTY
PENNSYLVANIA
SEWERAGE PLAN
1995
ON-LOT DISPOSAL SYSTEM LIMITATIONS
SLIGHT TO MODERATE
SEVERE
HAZARDOUS TO GROUNDWATER

MAP 3-1

The DER has also provided categories for soils in the document: A Technical Manual for Sewage Enforcement Officers (September, 1985). The four categories provided for interpreting soil suitability for subsurface disposal of septic tank effluent are:

- Suitable - deep, well-drained, permeable soil with good filtration. Thirteen percent of Pennsylvania has such soil.

- Suitable, but with hazard of groundwater pollution - deep, well-drained, permeable soil over gravel or limestone fissures. Six percent of Pennsylvania has such soil.

- Marginal - moderately deep or moderately sloping soils. Thirty-nine percent of Pennsylvania has such soil.

- Unsuitable - steep, shallow, not well-drained or subject to flooding. Forty-two percent of Pennsylvania has such soil.

C. Dauphin County Soil Suitability

Dauphin County may be divided into four (4) zones when considering soil suitability for on-lot wastewater disposal. The zones include a mid zone, a southern zone, and a river zone.

The northern zone consists of approximately the northern half of Dauphin County from Blue Mountain to the northernmost boundary of Dauphin County. This zone consists primarily of soils that are rated severe for subsurface on-lot wastewater disposal. This zone will require primarily above grade systems (sand mounds) when slopes are not in excess of 12%. The series of northeast-southwest trending ridges precludes on-lot systems in a sizeable portion of this zone. A small area in the northwestern section of this zone contains soils which would have few limitations. These areas are noted on Map 3-2.

The mid zone consists primarily of the townships of Susquehanna, Lower Paxton, West Hanover, and East Hanover. The northern boundary of this zone is approximately Blue Mountain and the southern boundary is the southern boundaries of the townships mentioned. Sand mounds will be required throughout most of this zone. Small areas with steep slopes may prohibit on-lot systems.

The southern zone consists of the remainder of the county. The soils are rated such that few limitations for on-lot systems can be expected. A small section in the southeastern portion of this zone may require sand mounds due to soil limitations. Several steep areas in the middle portion of this zone may prohibit on-lot systems.

The river zone consists of the soils adjacent to the Susquehanna River. These soils have been rated as "severe" for on-site disposal of effluent from septic tanks due to:

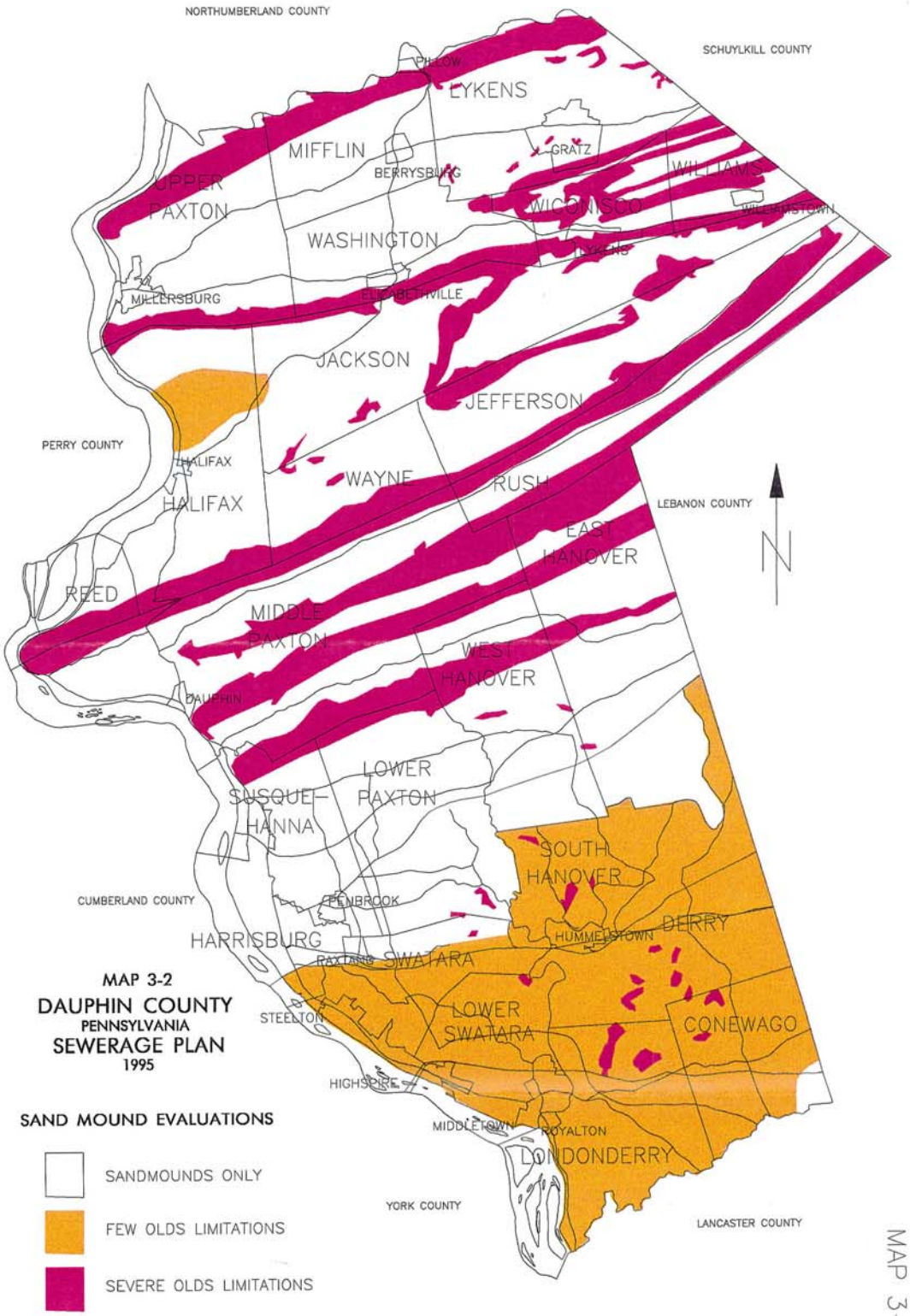
- Flooding
- Stoniness
- Shallow Depth to Bedrock
- Slope
- Slow permeability

In summary, the northern three-quarters of Dauphin County requires sand mounds. Several steeper areas may prohibit any on-lot system. The southern quarter of Dauphin County has few limitations, except for isolated areas. Soils near the river are rated severe for on-lot systems.

Examination of the soils map discloses that the opportunities for development in areas not served by sewers are limited. If otherwise suitable soils are available in areas rated hazardous, test excavations may reveal that sufficient depth exists. There may be suitable conditions for septic tanks at individual sites in areas rated severe or hazardous. Each site proposed for septic tank installation must be judged on individual merit after the necessary soil tests and test excavations. In some cases municipalities with extreme soil limitations, may be subject to regulations requiring an alternative site for septic tanks on each lot. This requirement normally increases lot size in order to accommodate municipal regulations.

D. On-Lot Septic System Design

Septic Tank Design Criteria - Before the design for a septic system can be determined, there must be a site investigation. Soil tests are needed to determine the presence of a limiting zone and the permeability of the soil to permit the passage of water. These tests shall be conducted prior to permit issuance. An absorption area must be designated and must meet PADER requirements. The minimum liquid capacity of a septic tank for any installation shall be 900 gallons. For single-family dwelling units, not served by a community system, a minimum daily flow of 400 gpd shall be used to determine required septic tank capacity. This figure shall be increased by 100 gallons for each additional bedroom over three. The daily flow indicated provides for use of garbage grinders, automatic washing machines, dishwashers, and water softeners. Septic tanks may be connected in series to attain required capacity.


NORTHUMBERLAND COUNTY
SCHUYLKILL COUNTY
PILLOW
LYKENS
MIFFLIN
GRATZ
BERRYSBURG
WILLIAMS
UPPER PAXTON
WICONISCO
WILLIAMSTOWN
WASHINGTON
LYKENS
MILLERSBURG
ELIZABETHVILLE
JACKSON
JEFFERSON
PERRY COUNTY
HALIFAX
WAYNE
RUSH
LEBANON COUNTY
HALIFAX
EAST HANOVER
REED
MIDDLE PAXTON
WEST HANOVER
DAUPHIN
LOWER PAXTON
SUSQUEHANNA
SOUTH HANOVER
CUMBERLAND COUNTY
PENBROOK
HUMMELSTOWN
DERRY
HARRISBURG
PAXTANG
SWATARA
LOWER SWATARA
CONEWAGO
STEELTON
HIGHSPIRE
MIDDLETOWN
ROYALTON
LONDONDERRY
YORK COUNTY
LANCASTER COUNTY
N
MAP 3-2
DAUPHIN COUNTY
PENNSYLVANIA
SEWERAGE PLAN
1995
SAND MOUND EVALUATIONS
SANDMOUNDS ONLY
FEW OLDS LIMITATIONS
SEVERE OLDS LIMITATIONS

MAP 3-2

4. EFFLUENT QUALITY STANDARDS

A. Water Quality Standards

The Department of Environmental Resources established water quality standards for the waters of the Pennsylvania Commonwealth under Chapter 93 of the Pennsylvania Code. These standards are based upon water uses which are to be protected and will be considered by the Department of Environmental Resources in its regulations of discharges.

Present and future uses to be considered for each stream are:

- *Aquatic Life*: (a) Warm water fish; (b) Cold water fish; (c) Trout (stocking only); (d) Migratory fishes.
- *Water Supply*: (a) Potable; (b) Industrial; (c) Livestock; (d) Wildlife; (e) Irrigation.
- *Recreation*: (a) Boating; (b) Fishing; (c) Water contact sports; (d) Esthetics.
- *Special Protections*: (a) High quality waters; (b) Exceptional value waters.
- *Other*: (a) Navigation

Table 4.1 was adopted directly from Chapter 93 of the Pennsylvania Code.

Table 4.1 lists the streams in Dauphin County and their protected uses. All the streams in Dauphin County are protected for the statewide uses and some Dauphin County streams are protected as Cold Water Fisheries, Trout Stocking Fisheries and High Quality Cold Water Fisheries as shown above. Under the column entitled "Zone" of Table 4.1, the portion of the stream that falls under the particular designation is indicated as such. The table also includes water quality criteria that may be used in determining specific limitations on the discharge of pollutants to the receiving stream.

The effects of treatment plants on stream quality are related to the presence in effluent of some of the most common indicators of pollution: biochemical oxygen demand (BOD), nitrogen, phosphorous and indicator microorganisms.

The minimum level of treatment for effluent discharged to streams of the Commonwealth is referred to as secondary treatment. Where stream quality standards require treatment in excess of this minimum amount, tertiary processes will be required. Secondary treatment has been defined by the Pennsylvania Department of Environmental Resources in the Pennsylvania Code Chapter 95 Wastewater Treatment requirements as being: ...that treatment which will reduce the organic waste load as measured by the biochemical

oxygen demand (BOD) test by at least 85 percent during the period May 1 to October 31 and by at least 75 percent during the remainder of the year based on five consecutive day average of values; will remove practically all of the suspended solids; will provide effective disinfection to control disease-producing organisms during the swimming season (May 1 through September 30); will provide satisfactory disposal of sludge; and will reduce the quantities of oil, grease, alkalis, toxics, taste and odor-producing substances, and color levels that will not pollute the receiving stream.

BOD removals up to 90 percent and possibly as high as 92 percent can be achieved consistently with some types of secondary treatment processes. For high BOD removals and for phosphate and/or nitrogen reduction other advanced methods of waste treatment may be needed. Costs escalate rapidly for advance treatment, so treated waste discharges into streams requiring such treatment should be avoided if possible.

B. NPDES Discharge Requirement

The National Pollutant Discharge Elimination System (NPDES) permits define the acceptable quality of the various treatment plants' effluent. These parameters must be monitored by the treatment facilities and are presented in monthly Discharge Monitoring Reports. Table 4.2 lists Dauphin County's existing wastewater treatment plants and some of their current NPDES permitted parameters. The purpose of these parameters is to ensure that the quality of the stream is protected for its designated uses.

Recently, the DER has promulgated the final rules on water quality standards which have revised the discharge criteria of Chapter 93. These changes impose a Total Residual Chlorine (TRC) requirement on all WWTP's using chlorine for disinfection. Most treatment facilities will require modifications. The modifications will be either the substitution of alternative means of disinfection for chlorine disinfection or the addition to the plant to dechlorinate. Alternative means of disinfection are ozone and ultraviolet (UV) radiation.

TABLE 4.1
WATERSHED EFFLUENT REQUIREMENTS

Symbol	Dauphin County Stream Designations	Zone	Protected Use
WWF	Fishing Creek	Basin	Warm Water Fishes - Maintenance and/or propagation of fish species and additional flora and fauna which area indigenous to a warm water habitat
	Paxton Creek	Basin	
	Spring Creek	Basin	
	Laurel Run	Basin	
	Mahantango Creek	Basin, Pine Creek to mouth	
	Wiconisco Creek	Main Stem bridges at Loyalton to mouth	
	Little Wiconisco Creek	Basin	
	Gurdy Run	Basin	
	Manada Creek	I-81 to mouth	
	Beaver Creek	Basin	
	Iron Run	Basin	
	Swatara Creek	Main Stem, proposed Swatara Gap Dam to mouth	
	Unnamed Tributaries to Swatara Creek	Basin, proposed Swatara Gap to mouth	
	Unnamed Tributaries to Susquehanna River	Basin, west branch Susquehanna River to Juniata River	
		Basin, Juniata River to Muddy Run	
	Unnamed Tributaries to Wiconisco Creek	Basins, US 209 Bridge at Loyalton to mouth	
CWF	Armstrong Creek	Basin (Source to LR 22028 Bridge)	Cold Water Fishes - Maintenance and/or propagation of fish species including the family Salmonidae and additional flora and fauna which are indigenous to cold water habitat
	Northfork Powell Creek	Basin, source to confluence with Southfork	
	Southfork Powell Creek	Basin, source to confluence with Northfork	

TABLE 4.1
WATERSHED EFFLUENT REQUIREMENTS
(continued)

Symbol	Dauphin County Stream Designations	Zone	Protected Use
CWF (cont'd)	Wiconisco Creek	Unnamed tributaries to Wiconisco Creek, Source to U.S. 209 Bridge at Loyalton	
	Bear Creek	Basin	
	Stoney Creek	Basin, Ellendale Dam to mouth	
	Manada Creek	Basin, source to I-81	
	Yellow Breeches Creek	Main stem, LR 21012 to mouth	
TSF	Armstrong Creek	Basin, LR 22028 - Bridge to mouth	Trout Stocking - Maintenance or stocked trout from February 15-July 31 and maintenance and propagation of fish species and additional flora and fauna which are indigenous to a warm water habitat
	Powell Creek	Basin, confluence to north and south forks to mouth	
	Conewago Creek	Basin	
HQ-CWF	Clark Creek	Basin	High Quality Col Water - Fishes - High Quality Waters - A stream of watershed which has excellent quality waters and environment or other features that require special water quality protection
	Rattling Creek	Basin	
	Stoney Creek	Basin, source to Ellendale Dam	

SOURCE: Department of Environmental Resources (DER), Chapter 93, Water Quality Standards amended July 25, 1992, and conversation with DER representative Roger Musselman January 12, 1993.

TABLE 4.2
NPDES PERMITTED PLANT EFFLUENT QUALITY PARAMETERS

Treatment Plant NPDES Permit #	Permitted Flow	BOD_5 mg/l Mo. Avg.	Suspended Solids mg/l Mo. Avg.	Fecals/100 ml 5/1 to 9/30	Fecals/100 ml 10/1 to 4/30	Dissolved Oxygen mg/l	Ammonia Nitrogen mg/L as N	Phosphorus mg/l mo/avg	Receiving Stream
Berrysburg Mun Auth WWTP PA 0080900	0.35	25	30			5.0			Wiconisco Crk
Dauphin Boro Mun Auth PA 0024350	0.20 MGD	25	30	200	100,000	5.0	-	-	Susquehanna
Derry Twp (North) Mun Auth WWTP PA 0026484	5.0 MGD	25	30	200	10,000	5.0	22.5	2	Swatara Creek
Derry Twp (South) Mun Auth WWTP PA 0082392	0.6 MGD	25	30	200	86,000	5.0	-	2	Swatara Creek
Elizabethville Boro Auth WWTP PA 0037737	0.27	25	30			5.0			Wiconisco Crk
Halifax Mun Auth WWTP PA 0024457	0.140 MGD	25	30	200	100,000	5.0	-	-	Susquehanna
Harrisburg AWTF PA 0027197	37.7 MGD	25	30	200	22,000	5.0	15	2	Susquehanna
Highspire Boro Auth WWTP PA 0024040	2.0 MGD	25	30	200	100,000	5.0	-	2	Susquehanna
Lykens Boro Auth WWTP PA 0043575	0.27 MGD	25	30	200	48,000	5.0	-	-	Wiconisco Crk
Middletown Boro Auth WWTP PA 0020664	2.2 MGD	25	30	200	100,000	5.0	-	2	Susquehanna

TABLE 4.2
NPDES PERMITTED PLANT EFFLUENT QUALITY PARAMETERS

Treatment Plant NPDES Permit #	Permitted Flow	BOD_5 mg/l Mo. Avg.	Suspended Solids mg/l Mo. Avg.	Fecals/100 ml 5/1 to 9/30	Fecals/100 ml 10/1 to 4/30	Dissolved Oxygen mg/l	Ammonia Nitrogen mg/L as N	Phosphorus mg/l mo/avg	Receiving Stream
Millersburg Area Auth WWTP PA 0022535	1.0 MGD	25	30	200	100,000	5.0	-	-	Susquehanna
Swatara Twp Auth PA 0026735	6.3 MGD	25	30	200	9,000	5.0	18	2	Swatara Crk
Wiconisco Twp WWTP PA 0084697	0.125 MGD	25	30	200	6,300	5.0	-	-	Bear Creek
Williamstown Boro Sew Auth WWTP PA 0021491	0.375 MGD	25	30	200	13,500	5.0	-	-	Wiconisco Crk

* For the period May 1 through October 31 for the remainder of the year - no limit.

NOTE: No information for Berrysburg and Elizabethville's Sewage Treatment Facilities available at this time.

By using the approach of setting treatment plant effluent parameters based on the stream's designated uses and not on what a treatment plant process can produce, the Commonwealth's streams are better protected.

5. REGULATORY REQUIREMENTS

A. Act Sewage Facility Planning Modules

Pursuant to Chapter 71 of the Pennsylvania Code, PADER requires the revision of an official plan for new land development (in the form of a completed sewage facilities planning module) when the following occur:

- A new subdivision is proposed except as provided by 71.55 of the Pennsylvania Code.
- The official plan, or its parts, is inadequate to meet the sewage needs of the new land development.
- Newly discovered or changed facts, conditions or circumstances make the plan inadequate to meet the sewage needs of new land development.
- A permit is required from the Department under Section 5 of the Clean Streams Law.

The new land developer or their agent begins the planning module process by submitting a completed "post card application" to the DER.

PADER then returns the necessary module(s) to be completed by the developer with an assigned code number that is applicable to the project. The applicant also receives a letter with a check list of items to be completed. The required module may consist of one (1) or several components. There are four (4) components that exist for sewage facilities planning modules. Table 5.1 outlines those components.

TABLE 5.1
SEWAGE FACILITY PLANNING MODULE COMPONENTS

Component	Description
1	Minor Subdivision (10 or Less)
2	On-Lot Sewage Disposal
3	Sewage Collection and Treatment Facilities
4	Planning Agency Review

For minor subdivisions (single family dwelling units in a subdivision of ten lots or less) a Component 1 - Sewage Facilities Planning Module must be completed and submitted to the appropriate municipal planning agency. The local planning agency must determine if the proposed subdivision is consistent with the municipality's Official Act 537 Sewage Facilities Plan within sixty (60) days. PADER also has a 60-day review period and must take action within the allotted sixty (60) days or the Module is considered approved.

Major subdivisions require the submission of an Application for Sewage Facilities Planning Module (post card application) to PADER. Upon receipt of the post card application, PADER will determine and return to the applicant the appropriate planning module component(s).

Component 2 is required when subsurface sewage disposal systems are proposed within a subdivision. Component 3 is required when a new land development requires the issuance or modification of a Water Quality management Part II Permit. Also, all projects proposing the construction of a sewer extension must complete a Component 3. Component 4 is required for all new land developments with the exception of minor subdivisions (Component 1). A component 4 is required to be completed by the municipal planning agency, county planning agency or planning agency with area wide jurisdiction, and the county or joint county department of health.

A completed Component 4 is required to be submitted along with Components 2 or 3 to the municipality for determination of the land developments consistency with the official Act 537 Sewage Facilities Plan. Each agency is allowed sixty (60) days to complete the Component 4. If no response is received from an agency within the allotted sixty days, the developer may submit the planning module package to the municipality for consideration without the agency's comment.

The developer or their agent must take into consideration any existing state requirements affecting the development, use, and protection of water. Archaeologic and historic preservation must also be considered. A listing of the homes or structures of historical classification can be found in the Dauphin County Comprehensive Plan.

A municipality is required to act upon a planning module package within sixty (60) days of receipt of the completed package. If the municipality does not approve the revision to the Official Act 537 Sewage Facilities Plan, the module package is returned to the developer for additional study. If the municipality approves the module package, a resolution is adopted revising the Official Act 537 Sewage Facilities Plan. The module package, resolution of adoption, transmittal letter, and supporting documentation is then submitted to PADER for action. PADER is required to act on the revision within 120 days. If PADER fails to act on the revision within the allotted 120 days, the revision is considered approved.

The Planning Module requires specific information about proposed projects such as:

- Type of Development
- Wastewater treatment proposed to be used and location
- Name of water body where point of discharge is proposed
- Retaining tank information, if applicable
- Availability of drinking water supply; private or public
- Soils information
- Preliminary & Detailed Hydrology
- Permeability Testing
- Sewage Enforcement Officer Action
- False Swearing Statement
- Notification of potential effect of proposed action on Archaeological and Historic Resources
- Alternative Sewage Facilities Analysis
- General Site Suitability
- Wetland Protection
- Planning Agency Review

PADER also administers grants to counties, municipalities and authorities to assist them in preparing official Act 537 Sewage Facilities Plans and revisions to official plans for sewage systems and for carrying out related studies, surveys, investigations, inquiries, research and analyses. Funding, given by the General Assembly, equals one-half the cost of preparing such plans.[1]

B. Water Quality Management Permitting Requirements

Permits issued by PADER, Bureau of Water Quality Management are required for all developments if the discharge of wastewater (domestic sewage or industrial wastewater) into the waters of the Commonwealth of Pennsylvania is proposed.

The Water Quality Management Part I Permit, also known as the National Pollutant Discharge Elimination System (NPDES) permit, authorized discharges and establishes effluent limitations, monitoring requirements, and compliance schedules.

The Water Quality Management Part II Permit is the permit to construct and operate wastewater facilities in the Commonwealth of Pennsylvania. Water Quality Management Part II Permits are required for any projects proposing the construction and operation of wastewater treatment facilities (domestic or industrial) discharging to the waters of the Commonwealth of Pennsylvania, including on-lot disposal facilities with a design flow in excess of 10,000 gallons per day. Also, Water Quality Management Part II Permits are required for projects proposing the construction and operation of new collection and conveyance facilities including pumping stations and certain sewer extensions.

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[1] Pennsylvania Sewage Facilities Act' of 1965, P.L., 1535, No. 537.

6. WASTEWATER TREATMENT PLANT DESIGN CRITERIA

There are three general sources of sewage: domestic, commercial, and industrial. Since commercial development of a community is closely related to the population, the domestic and commercial sewage contributions should be combined and related to the residential population to establish a basis for projecting future requirements. Industrial flows and significant sewage flows from institutions such as schools are handled separately. These institutions will draw a large part of their population from areas that would not be sewered. Also, sewage flows from institutions are large when compared to the flow from the nearby community. The population served and the per capita sewage flow are the two factors considered when determining capacities of sewage facilities.

A. Sanitary Sewer Design

In determining the design and construction of sanitary sewers, the following factors should be considered:

- Maximum hourly quantity of sewage
- Additional maximum sewage or waste from industrial plants
- Groundwater infiltration
- Topography of area
- Location of sewage treatment plant
- Depth of excavation
- Pumping requirements

New sewer systems should be designed on the basis of an average daily per capita flow of sewage of not less than 100 gallons per day unless a rigorous justification for a lesser per capita flow can be established. This figure is assumed to cover normal infiltration, but an additional allowance should be made when conditions are unfavorable. Generally, the sewers should be designed to carry, when running full, not less than the following, exclusive of sewage or other waste from industrial plants:

- Laterals and sub-main sewers should have a carrying capacity of 400 gallons/capita/day (gal/cpd).

- Main, trunk interceptor and outfall sewers have a carrying capacity of 250 gal/cpd.

Interceptors carrying combined domestic and storm wastewater normally should not be designed for less than 350 percent of the gauged or estimated average dry weather flow.

During the design and construction phase for sewer lines and facilities, details such as: minimum pipe size, depth of sewers, slope, alignment, increasing size, high velocity

protection against displacement by shock and erosion, and sewer system shall all be reviewed.

In general, manholes must be installed at all changes in grade, line size, direction and every 400 feet for sewers 15 inches or less and 500 feet for sewers 18 inches and larger.

B. Wastewater Treatment Plant Location & Design

(1) Location

Plant location is an important consideration. A sewage treatment site should be as far as practicable from any present built-up area or any area proposed for future development. Compatibility of treatment process with the present and planned future land use, including: noise, potential odors, air quality, and anticipated sludge processing and disposal techniques should be considered. Local soil characteristics, geology, hydrology, topography, and downstream uses of the receiving stream should be reviewed.

(2) Design

Plant design is another important issue which deserves careful consideration. The Department of Environmental Resources should be conferred with before proceeding with the design of detailed plans for sewage treatment plants. Plants should be designed to provide for the estimated population 15 to 25 years hence. Factors which influence the type of treatment are:

- Location and topography
- The effect of industrial wastes likely to be encountered
- The effect of cold temperatures on treatment efficiently
- Operating costs
- The type of plant supervision and operation proposed
- Present and future effluent requirements

There are other important factors to consider such as space available for future plant expansion, ultimate disposal or utilization of sludge, energy requirements, process complexity and environmental impact on present and future adjacent land uses. Wastewater Treatment System design also involves analyzing the following:

Design Loads - In general, the design of treatment units shall be based on the annual average rate of sewage flow per 24 hours, except where significant deviation from normal diurnal flow patterns are noted. Industrial waste design flows shall be determined from the observed rate of flow

during the significant period of discharge. The following considerations shall be included in determining design flow:

- Peak rates of flow over a sufficient length of time to adversely affect the detention time of treatment units or the flow characteristics of conduits.
- Data from similar municipalities, in the case of new systems.
- Wet weather flows including infiltration/inflow in separate and combined sewerage systems.
- Flow generated by recirculation within the treatment facility.

The design for sewage treatment plants to serve new sewerage systems shall be based on an average daily flow of 100 gallons per capita. If deviations are made, it should be based on an estimate using available water use data. Adequate justification shall be provided to PADER to establish the reliability and applicability of such data.

Upgrading Existing Systems - Where there is an existing system, the volume of existing flows shall be determined and pre-determined for future conditions. The determination shall include both dry weather and wet weather conditions. At least one year's flow data should be taken as the basis for the preparation of hydrographs for analysis to determine the flow conditions of the system.

Flow Equalization - Wastewater treatment facilities, especially those with industrial contributors, are subject to daily peaks in flows and organics that are detrimental to the efficiency of plant operation. Flow equalization simply dampens the flow rate variations so that a nearly constant flowrate is achieved. The principal benefits are as follows:

- Biological treatment is enhanced.
- Improved effluent quality and thickening performance.
- Improved filter performance.
- Improved chemical feed control.

Organic Design - The organic loading is made up of a combination of domestic loading and industrial loading. For new systems the domestic waste treatment design shall be on the basis of at least 0.17 pounds of

BOD capita per day and 0.20 pounds of suspended solids/cpd, unless information is submitted to justify alternate designs. When garbage grinders are used in areas tributary to a domestic treatment plant, the design basis may be increased to 0.22 pounds of BOD capita per day and 0.25 pounds of suspended solids capita per day. Domestic waste treatment plants that will receive industrial wastewater flows shall be designed to include these industrial waste loads. When an existing treatment facility is to be updated, or expanded, the organic design shall be based on the maximum monthly average organic load the facility is required to treat during the design life of the facility. The determination shall include both dry weather and wet weather conditions. Composite samples should be taken so as to be accurately representative of the strength of the wastewater.

The design of sewerage collection and conveyance systems as well as the treatment facility are detailed and require comprehensive planning and a thorough review process. The location of the system has proven to be as important as the type of system planned. Many factors are considered when finalizing design plans for a sewer system and or treatment facility. Regulations for design standards and installation of on-lot septic systems should also be enforced throughout the county. Design information for on-lot septic systems can be obtained from the PADER.

Source: Domestic Wastewater Facilities Manual, A Guide for the Preparation of Applications, reports and plans, published by: PA Department of Environmental Resources, Bureau of Water Quality Management, Publication No. 1357, Rev. 8/91.

Source: Pennsylvania Code: Title 25, Environmental Resources, Chapter 73, Standards for Sewage Disposal Facilities

7. MUNICIPAL SEWERAGE TREATMENT, SEWERAGE PLANNING AND NEEDS ANALYSIS

Municipal Sewerage Treatment Information

Fourteen treatment plants receive flow from public systems in Dauphin County. Four other municipalities have joint working agreements to receive public sewage service and two municipalities will be constructing sewage treatment facilities, collection lines and associated pumping stations. There are private sewage treatment facilities however this report will concentrate solely on public sewer systems. These systems are not included because they are either too small or improperly located to be included in a regional sewerage plan.

Modifications or expansion to provide additional capacity or upgraded treatment may be required at various public treatment facilities during the next few years regardless of whether this plan is implemented. Orders have been issued to several communities by the Pennsylvania Department of Environmental Resources calling for various system improvements such as line replacement or addition, pumping station improvements, and upgrading the degree of treatment provided from either primary to secondary or secondary to various types or forms of tertiary treatment in some cases.

Without performing a detailed engineering study of each treatment plant it is impossible to determine specific needs for renovation of existing plants. However, some general conclusions can be drawn from the age of the facilities. Mechanical equipment has a longevity of approximately 12-16 years, tanks (usually made of concrete) can last at least 30 years or more, and electrical instrumental control equipment is said to have a life of 8-10 years. Regular monitoring and maintenance will increase the longevity of any equipment. The treatment plants in the County are assumed to be in reasonably good condition considering a few of the plants are older and are still using equipment.

Data presented in Table 7.1 pertains only to existing sewage treatment facilities. A description of each treatment and collection system will be included in this section, along with tables listing various characteristics of the facilities and their service areas. Map 7-1 shows the public sewer service areas in Dauphin County. Map 7-2 shows the locations of all the sewage treatment plants. Maps 7-3 through 7-24, located at the end of Section 7, show the sewer service areas in the municipalities containing public sewer service.

Sewerage Planning

A sewerage planning section was added to those municipalities planning sewer line extensions, pump station construction, sewage treatment plant construction or treatment upgrade, OLDS Management Ordinance implementation and any Act 537 Sewerage Facility Planning.

Dauphin County municipalities, in which there is an abundance of sewerage needs information, have the pertinent information detailed in this section. Municipalities are presented in alphabetical order. Those municipalities in which information is limited and have similar needs characteristics were grouped together based upon those needs.

Sewerage Needs Analysis

A Dauphin County sewerage needs analysis was performed based upon the data research and interviews. The sewerage needs analysis utilized SEO interviews, on-lot soil suitability, future population projections, review of pertinent Act 537 plans, and the Pennsylvania Infrastructure Investment Authority program, PENNVEST, and PADER information.

The SEO's of most municipalities maintaining on-lot septic systems were interviewed. Information concerning problem areas of the municipality and the number and type of permits issued were noted. The suitability of on-lot sewerage disposal in Dauphin County was thoroughly discussed in Section 3B, page 3-2, of this plan. Suitability was found to be both a function of soils and steep slopes. Soils bordering the Susquehanna River were rated severe for on-lot disposal systems suitability. Areas with steep slopes may preclude on-lot systems by the rules and regulations of Chapter 73. PADER has projected slow population growth for Dauphin County for the next 20 years. The County population is expected to grow form 237,813 in 1990 to 244,625 in 2010; a 2.9% increase. Those municipalities with higher growth projections will have to accommodate the sewerage needs of the increased population. Recent Act 537 Plans were reviewed to illustrate the sewerage needs and to update the progress of municipalities that have addressed sewerage needs. As published in the Pennsylvania Bulletin, (October 30, 1993), the Pennsylvania Infrastructure Investment Authority and PADER Water Pollution Control Revolving Fund have provided a project priority list for funding wastewater projects throughout the state. A meeting was organized with key personnel in PADER to discuss the sewerage needs of Dauphin County municipalities. Table 7.5 Sewerage Needs Analysis Matrix, page 57, was developed from a compilation of all the data received for on-lot soil suitability, mail-in surveys, PENNVEST, and PADER information, Act 537 Plan Reviews, population projections, and the SEO interviews.

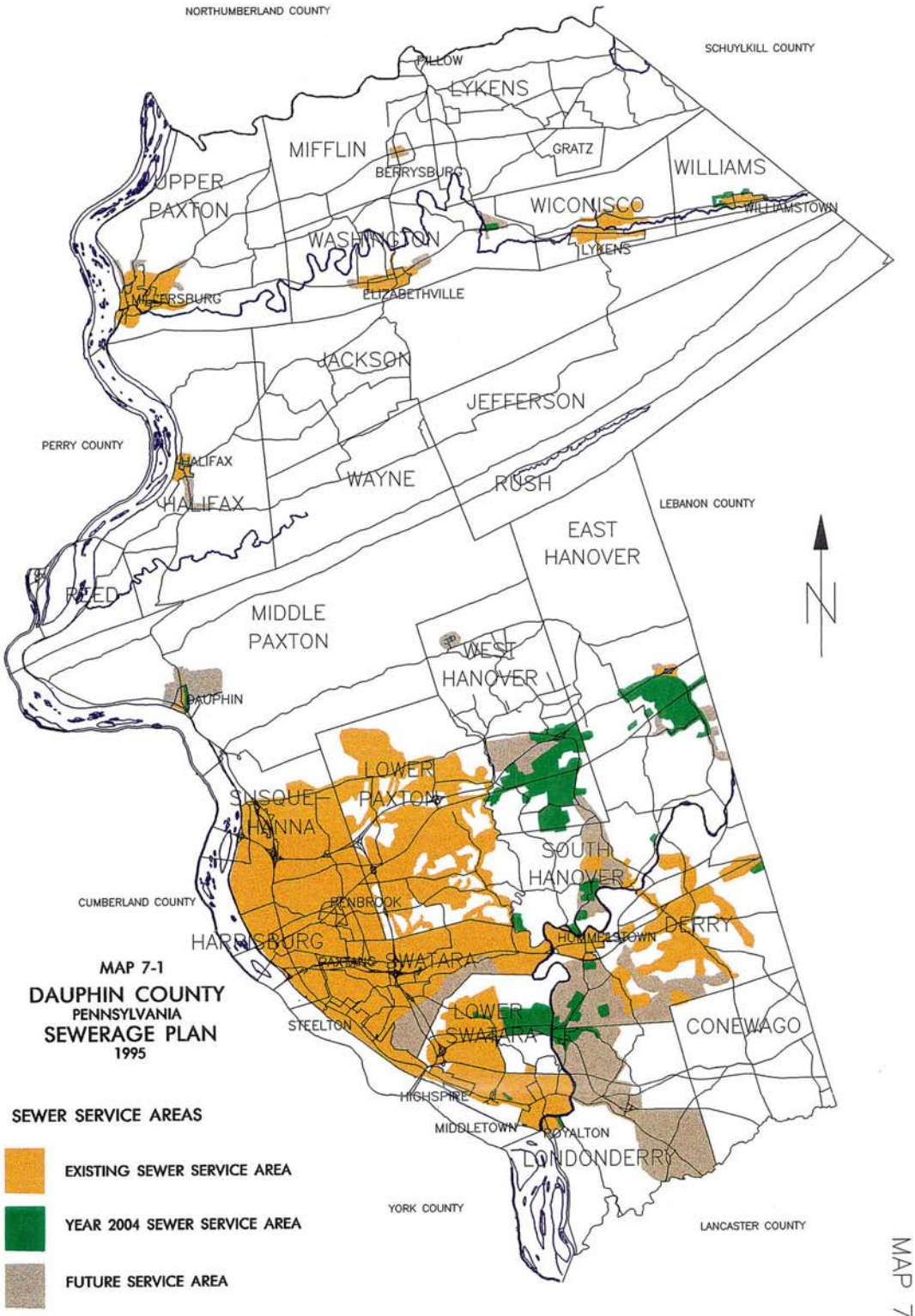
The Matrix (Table 7.5) points out several key facts about Dauphin County's current sewerage services:

- Various municipalities which have poor soils or slopes too steep for septic tank installation.
- Several Township's did not or do not have adequate sewerage planning.
- Population projects reveal substantial potential growth to occur in Halifax, East Hanover, South Hanover, and Lower Paxton Townships.
- SEO interviews concluded that three Townships have reported poor soil problems and alternative methods of sewerage treatment should be considered.

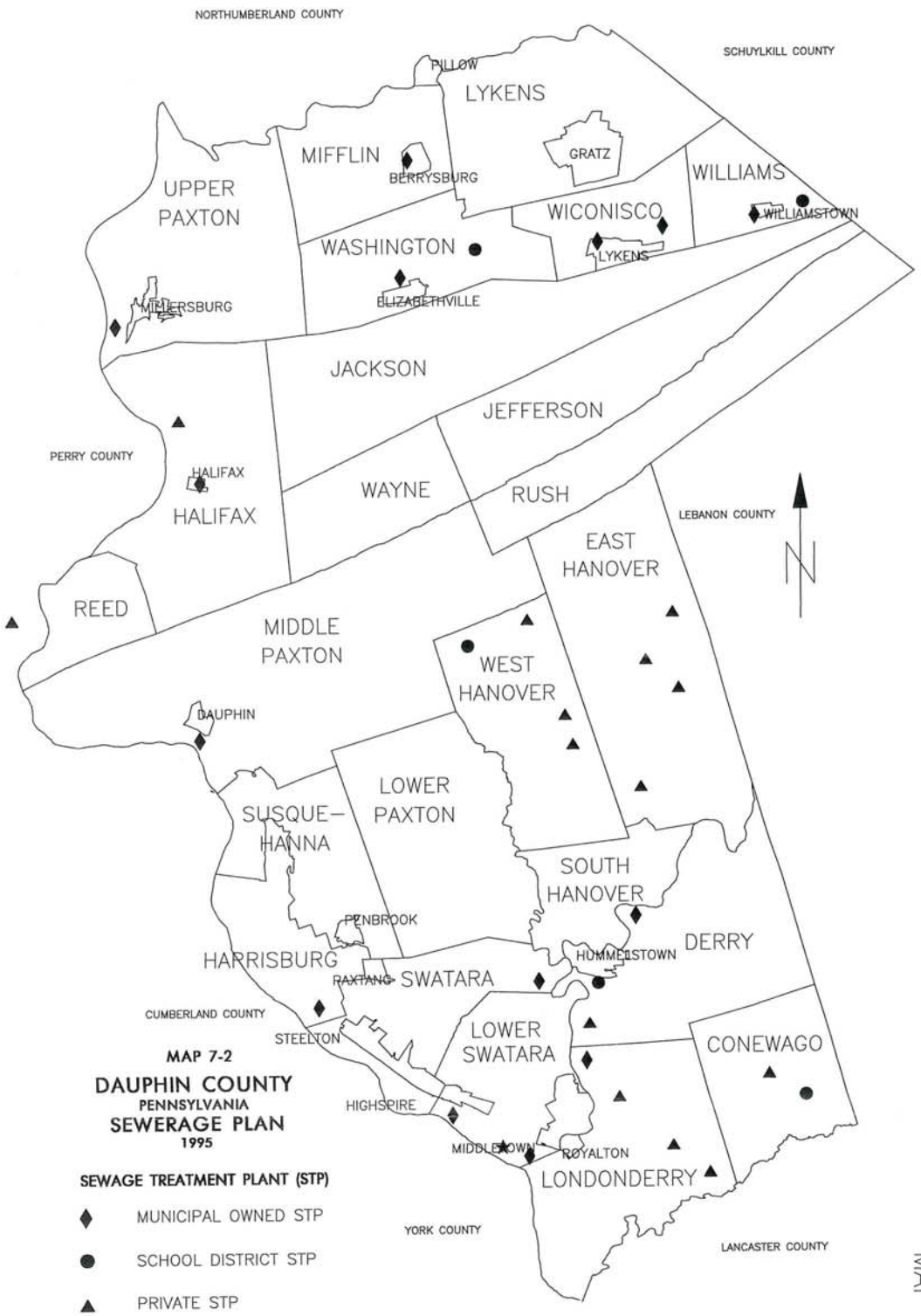
TABLE 7.1
MUNICIPAL SEWAGE TREATMENT FACILITIES
DAUPHIN COUNTY

STP (Site)	Pop. Served	Avg. Daily Flow (mgd)	Permitted Capacity (mgd)	Type Treatment	Receiving Stream	Other Munic. Served
Berrysburg Boro.	300	0.021	0.035	Secondary	Wiconisco Creek	
Dauphin Boro.	1,200	0.100	0.200	Secondary	Susquehanna	Middle Paxton Twp.
East Hanover Twp. (under Construc.)	N/A	Not Known	0.200	Secondary	Bow Creek	
Derry Twp. (North)	18,000	2.90	5.0	Secondary	Swatara Creek	South Hanover Twp. Hummelstown Boro. Conewago Twp.
Derry Twp. (Southwest)	400	0.04	0.60	Secondary	Swatara Creek	Lower Swatara Twp.
Elizabethville Boro.	1,900	0.208	0.273	Secondary	Wiconisco Creek	Washington Twp.
Halifax Boro.	1,700	0.071	0.14	Secondary	Susquehanna	Halifax Twp.
Harrisburg City	185,000	22.8	37.7	Secondary	Susquehanna	Swatara Twp. Susquehanna Twp. Lower Paxton Twp. Penbrook Boro. Paxtang Boro. Steelton Boro.
Highspire Boro.	8,639	0.845	2.0	Secondary	Susquehanna	Lower Swatara Twp. Middletown Boro.
Lykens Boro.	2,140	0.22	0.27	Secondary	Wiconisco Creek	
Middletown Boro.	14,397	1.12	2.2	Secondary	Susquehanna	Lower Swatara Twp. Royalton Boro.
Millersburg Boro.	4,650	0.374	1.0	Secondary	Susquehanna	Upper Paxton Twp.
Swatara Twp.	20,590	3.159	6.3	Secondary	Swatara Creek	Lower Paxton Twp. South Hanover Twp. Hummelstown Boro.
West Hanover (Construction set for completion in May 1996)	N/A	N/A	Not Known	Secondary	Manada Creek	South Hanover Twp.
Wiconisco Twp.	1,250	0.125	0.734	Secondary	Bear Creek	
Williamstown Boro.	1,500	0.177	0.375	Secondary	Wiconisco Creek	Williams Twp.

N/A = Not Applicable


NORTHUMBERLAND COUNTY
SCHUYLKILL COUNTY
PILLOW
LYKENS
MIFFLIN
GRATZ
BERRYSBURG
WILLIAMS
UPPER PAXTON
WICONISCO
WILLIAMSTOWN
WASHINGTON
LYKENS
MILLERSBURG
ELIZABETHVILLE
JACKSON
JEFFERSON
PERRY COUNTY
HALIFAX
WAYNE
RUSH
HALIFAX
LEBANON COUNTY
EAST HANOVER
REED
MIDDLE PAXTON
WEST HANOVER
DAUPHIN
LOWER PAXTON
SUSQUE-HANNA
SOUTH HANOVER
CUMBERLAND COUNTY
PENBROOK
HUMMELSTOWN
DERRY
HARRISBURG
PAXTANG
SWATARA
LOWER SWATARA
CONEWAGO
STEELTON
HIGHSPIRE
MIDDLETOWN
ROYALTON
LONDONDERRY
YORK COUNTY
LANCASTER COUNTY
N
MAP 7-1
DAUPHIN COUNTY
PENNSYLVANIA
SEWERAGE PLAN
1995
SEWER SERVICE AREAS
EXISTING SEWER SERVICE AREA
YEAR 2004 SEWER SERVICE AREA
FUTURE SERVICE AREA

MAP 7-1


NORTHUMBERLAND COUNTY
SCHUYLKILL COUNTY
PILLOW
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WILLIAMS
UPPER PAXTON
WICONISCO
WILLIAMSTOWN
WASHINGTON
LYKENS
ELIZABETHVILLE
MILLERSBURG
JACKSON
JEFFERSON
PERRY COUNTY
HALIFAX
WAYNE
RUSH
LEBANON COUNTY
HALIFAX
EAST HANOVER
REED
MIDDLE PAXTON
WEST HANOVER
DAUPHIN
LOWER PAXTON
SUSQUE-HANNA
SOUTH HANOVER
PENBROOK
DERRY
HARRISBURG
HUMMELSTOWN
RAXTANG
SWATARA
CUMBERLAND COUNTY
STEELTON
LOWER SWATARA
CONEWAGO
HIGHSPIRE
MIDDLETOWN
ROYALTON
LONDONDERRY
YORK COUNTY
LANCASTER COUNTY
MAP 7-2
DAUPHIN COUNTY
PENNSYLVANIA
SEWERAGE PLAN
1995
SEWAGE TREATMENT PLANT (STP)
MUNICIPAL OWNED STP
SCHOOL DISTRICT STP
PRIVATE STP
STATE STP

MAP 7-2

A. Municipal Sewerage Treatment

Berrysburg Borough

Existing Sewerage Facilities

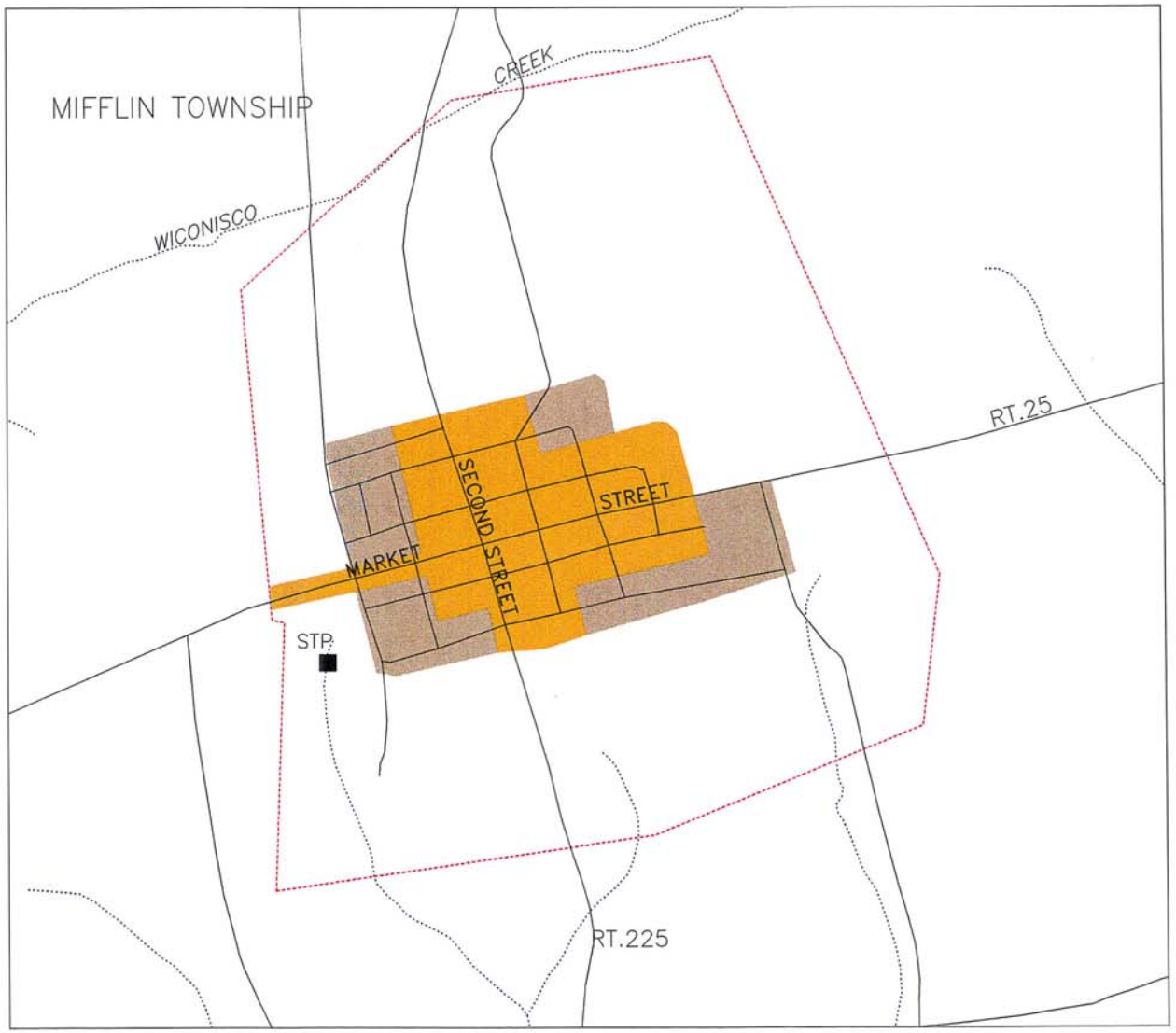
Berrysburg Wastewater Treatment Plant, built in 1985, is located in the Borough of Berrysburg and currently services the Borough area only. The treatment facility serves approximately 300 people, mainly residential and sparse commercial land uses. The hydraulic loading capacity of the plant is 0.035 mgd. The 1992 average daily flow was 0.021 mgd.

The treatment process involves carbon nitrogen wastewater secondary treatment. The effluent is discharged into the Wiconisco Creek. The excess sludge is found to have a high copper content and is hauled to a landfill in Elizabethville. The facility may be expected to serve an ultimate population of 495. The projected 1997 hydraulic loading is 0.023 mgd.

The Borough of Berrysburg owns the sewage treatment facility, however, the municipal authority operates and maintains the facility on a daily basis. The system is reported to be in good condition. The billing is handled quarterly based on a flat rate.

Sewerage Planning

The Municipal Authority does anticipate some sewer line extensions on streets within the Borough boundaries. However, these extensions are not included in a 5 to 10 year planning time period. The Borough's population has been decreasing since 1980 and is expected to continue to decrease through the year 2000.



MAP 7–3
BERRYSBURG BOROUGH
SERVICE AREA

EXISTING
FUTURE

* THERE ARE NO SEWER EXTENSIONS PLANNED BEFORE YEAR–2004

Conewago Township

PADER provided information of sewerage needs in Conewago Township noting the Township has had poor sewage enforcement in the past and is suspected of ground water contamination. Map 3-2 shows areas which have soil limitations for OLDS for both moderate and severe classification. Discussions concerning the formation of a joint authority have occurred between Londonderry and Conewago Townships of Dauphin County, and Elizabethtown Borough and Mt. Joy and West Donegal Townships of Lancaster County. There are no plans for service for Conewago Township within the next five (5) years.

Gratz Borough

The Borough of Gratz has applied for PennVEST funding for a wastewater treatment facility and the sewer line collection and conveyance system to service the entire Borough. Of the five municipalities that applied for the funding, Gratz was ranked fifth.

Lykens Township

Lykens Township totally utilizes on-lot disposal systems and are not planning for public sewage treatment service for the next 10 years. However, the possibility of public sewer near Gratz Borough exists once the plant and collection lines are constructed.

PADER has reported that the Township has not initiated Act 537 Planning. Malfunctioning septic systems have also been reported. Lykens Township is in an area of steep slopes that may prohibit the use of sand mounds.

Dauphin Borough Authority

Existing Sewerage Facilities

The Dauphin Borough Municipal Authority owns the wastewater facility which is operated by Dauphin Borough. The facility is a 0.200 mgd secondary treatment plant which operates under the Bureau of Water Quality Management Permit No. 2290401, dated April 9, 1990. The facility currently serves approximately 1190 residents.

The plant was reconstructed and became operational on April 8, 1992. The projected 1997 peak and average flows for the treatment facility are 0.134 mgd and 0.102 mgd. The projected 1997 peak and average organic loadings were 237 lb/day and 163 lb/day and hydraulic or organic overloads are not expected to occur in the next five years. To remain within the available capacity of the permit, the number of connections per year is limited to 36 for the next five years.

The Market Street pumping station is the only pumping facility in the Dauphin Sewer System. The capacity of this pump is 150 gpm and presently operates less than 40% of the time.

On-lot suitability is not an issue since the Borough is served by the facility.

Sewerage Planning

The 1988 Act 537 Plan was reviewed. The Borough's Act 537 Plan indicated the necessity of upgrading the WWTP from primary to advanced secondary treatment. A sequencing batch reactor (SBR) system was determined to be the most cost-effective means of providing advanced secondary treatment. The construction of a 200,000 gallon per day WWTP on the Borough's existing site, replacement of the pumping station, and the conversion of the existing plant units was an economically feasible solution for the sewage treatment problem.

MAP 7–4
DAUPHIN BOROUGH
SERVICE AREA

EXISTING

YEAR – 2004

FUTURE

Derry Township Municipal Authority

Existing Sewerage Facilities

The Derry Township Municipal Authority owns and operates a wastewater collection, conveyance and advanced treatment facility in operation since 1977. The facility is located on Clearwater Road off Hershey Park Drive in Derry Township, Hershey. The facilities serve approximately 5,400 customers in Derry, portions of South Hanover Township and isolated residents in the Hummelstown Borough and Conewago Township. The facility has a design capacity of 5.00 mgd and is currently running at 70% capacity. The collection and conveyance system consists of more than 110 miles of pipeline and nine (9) wastewater pumping stations. The facility maintains the following units processes listed in sequential order, beginning from the head of the plant through to discharge.

Screening
Equalization
Primary classification
Complete mix activated sludge
Phosphorus removal through chemical additions
Final clarification
Chlorine disinfection
Multi-media gravity filtration
Effluent polishing via carbon adoption

The sludge is thickened, lime stabilized, and disposed of by agricultural utilization (90%) or incinerated (10%).

TABLE 7.2
DTMA LOADINGS AND CAPACITIES

Year	AAF	M3MAF	AAOL	M1MOL
1992	3.10	3.50	5007	6159
1997 (Projected)	3.77	4.27	6133	7544
* Permitted Capacity =		5.00 MGD (ADF) = 9160 lbs BOD_5/day (ADOL)		

Table 7.2 shows the Average Annual Flows (AAF), the Maximum 3 Month Average Flow (M3MAF), the Average Annual Organic Loading (AAOL) and the Maximum 1 Month Organic Loading (M1MOL) for the years 1992 and projected 1997.

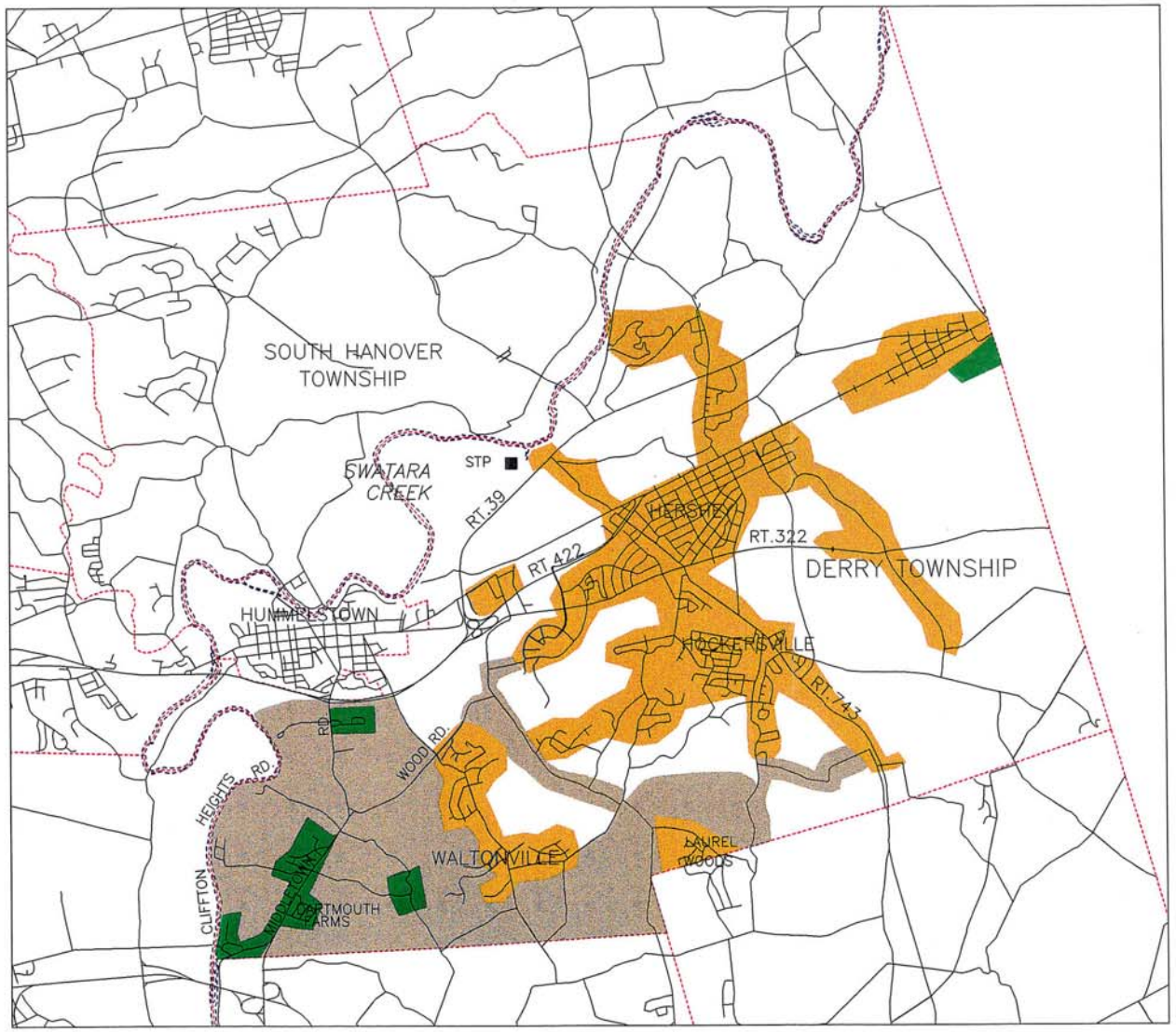
Based on the projected M3MAF and M1MOL the plant would need to be upgraded by the year 2003.

The Derry southwest plant recently came on line in November of 1993. The plant has mirror oxidation ditches and has a present day capacity of 0.6 MGD with the capability of double its capacity if necessary. This plant also services a small portion of Lower Swatara Township.

Sewerage Planning

The SEO of Derry Township, David Wright, was consulted about Township sewerage needs. Mr. Wright has indicated no regional problems since the problems areas are now sewered. Problems now appear isolated, with only localized homes having OLDS malfunctioning problems. In 1993, six (6) permits were issued; three (3) were new, three (3) repairs.

Sewer line extensions are expected to occur in the next 10 years in the Dartmouth Farms and Laurel Woods developments and on portions of Middletown Road, Clifton Road, and the intersection of Stoverdale Road and Kaylor Road.



MAP 7–5
DERRY TOWNSHIP
SERVICE AREAS

EXISTING

YEAR – 2004

FUTURE

East Hanover Township

Existing Sewerage Facilities

There are no municipally-owned wastewater treatment and conveyance systems located in East Hanover Township. However, there are three private community wastewater disposal systems and one single family residence system located within the Township. All other remaining areas utilize on-lot disposal systems. determined.

Sewerage Planning

The SEO of East Hanover Township, Mark Mills, was consulted regarding the Township's sewerage needs. Mr. Mills had indicated that the Grantville/Shellsville areas are a continuing source of on-lot problems. A new problem area may be "Fairfield Acres" since many OLDS are approximately 10-15 years old. Seventeen permits were issued in 1993 with approximately 5-7 of these for were reported for system repairs.

PaDER populations show strong growth is expected in the Township for the next decade. Population growth and sewerage needs were addressed in the 1989 Act 537 Plan.

The recommendations of the Act 537 Plan address both structural and non-structural requirements for improved wastewater management. The plan concludes that a central sewer system be constructed in the Grantville and Shellsville areas close to I-81. The treatment plant location was proposed to be sited in the vicinity of Shellsville on Spring Road. The Township will be constructing a wastewater treatment plant, three pumping stations, and the necessary collection lines. Planned areas of service are: Shellsville, Partridge Hills, and the Village of Grantville. Approximately 400+ residents are to be connected to public sewer.

The Township will retain ownership of the facility and also regular maintenance and operation duties. The total construction cost is estimated to be approximately $5.3 million; however, the operation and maintenance costs have not been projected. The plan concluded that all areas not planned for central sewers shall continue to utilize on-lot sewage disposal.

The Act 537 Plan recommends that water well and alternate OLDS site locations be identified in all new developments relative to proposed subsurface disposal areas.

The existing sewage treatment plants located in the area of I-81 interchange would be eliminated by connecting those systems into the proposed central sewer system.

The Act 537 Plan concluded that the Township should update their comprehensive plan pursuant to Act 247. Since then, an updated Comprehensive Plan was prepared in 1992. The Act 537 Plan was in accordance with the existing comprehensive planning and zoning, except for a proposed revision to the one-half acre lot size in the central sewer district.

Implementation of the Sewage Facilities Plan required that the following steps be accomplished:

1.) Revise the zoning and subdivision ordinances to recognize an allowance for higher density development in the central sewer service area.

2.) Supervisors secure adequate financing.

3.) Develop a standard developer's agreement.

4.) Authorize engineering design to proceed.

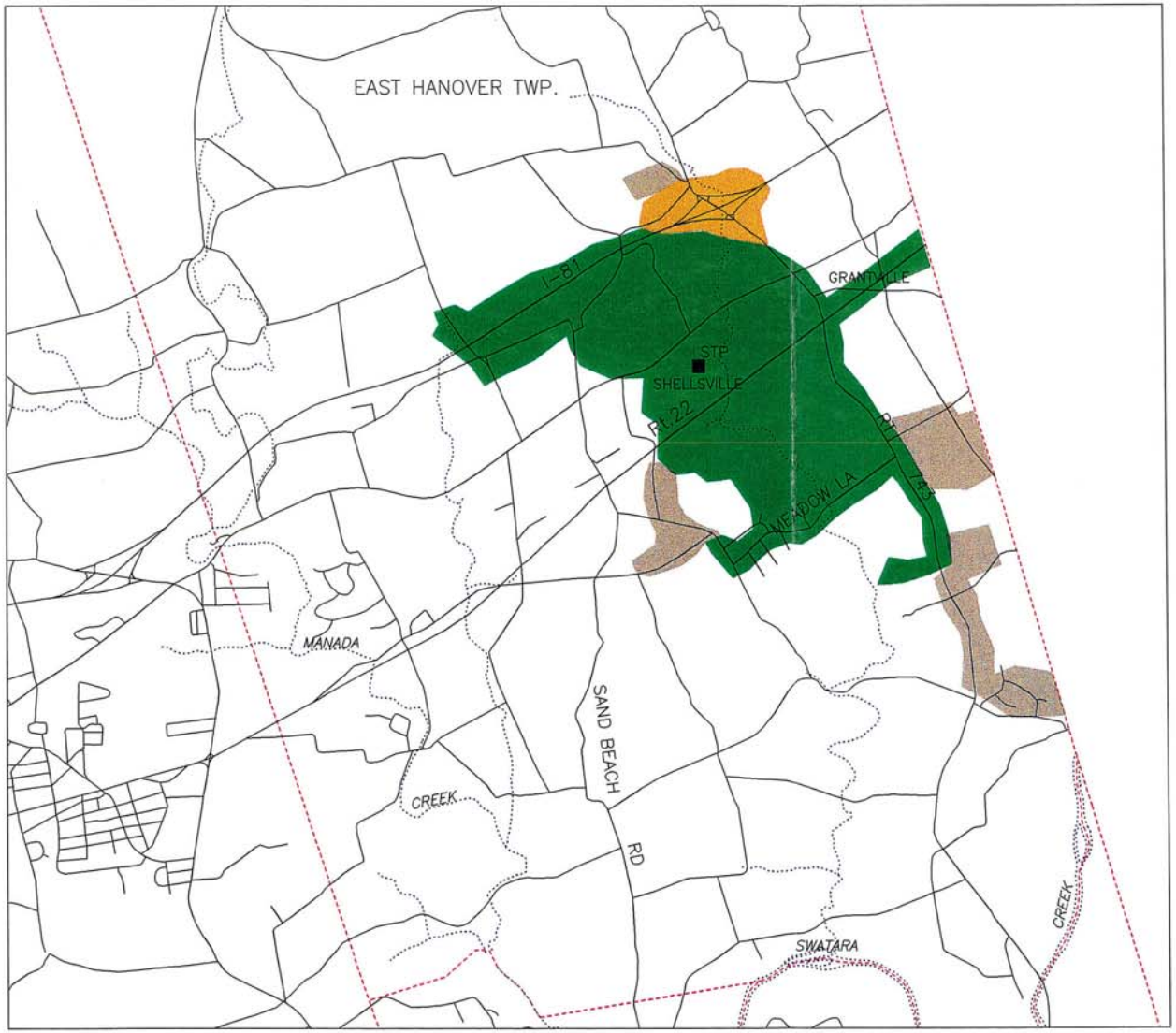
5.) Secure necessary permits for construction.

6.) Begin construction.

7.) Complete construction.

8.) Obtain required treatment level.

The estimated project and operation/maintenance costs in 1994 dollars is $3,000 and $2,800,000 respectively. The user fee per EDU would be $697/yr.



MAP 7–6
EAST HANOVER TOWNSHIP
SERVICE AREA

EXISTING

YEAR – 2004

FUTURE

Elizabethville Area Authority

Existing Sewerage Facilities

The Authority owns, operates and maintains the sewage treatment system located in Washington Township. The primary treatment system was built in 1969 and upgraded to secondary treatment facilities in 1975. The plant services approximately 1900 persons in Elizabethville Borough and adjacent portions of Washington Township.

This primary and secondary treatment facility experiences problems caused by aging equipment. The plant has undergone system upgrading which resulted in improved sludge, grit and grease removal. The excess sludge is currently being stored on-site however, a permit from the Pennsylvania Department of Environmental Resources (PADER) is being sought to haul sludge to local landfills. The Authority bills it's customers quarterly based on a flat rate. Commercial uses pay a flat rate based on the number of persons employed by such use.

Sewerage Planning

The Borough of Elizabethville has reportedly initiated Act 537 Planning. Future sewered areas include residential development extending from the Borough on Route 209. There are no immediate projects planned in the next 10 years.

Halifax Borough/Halifax Township

Existing Sewerage Information

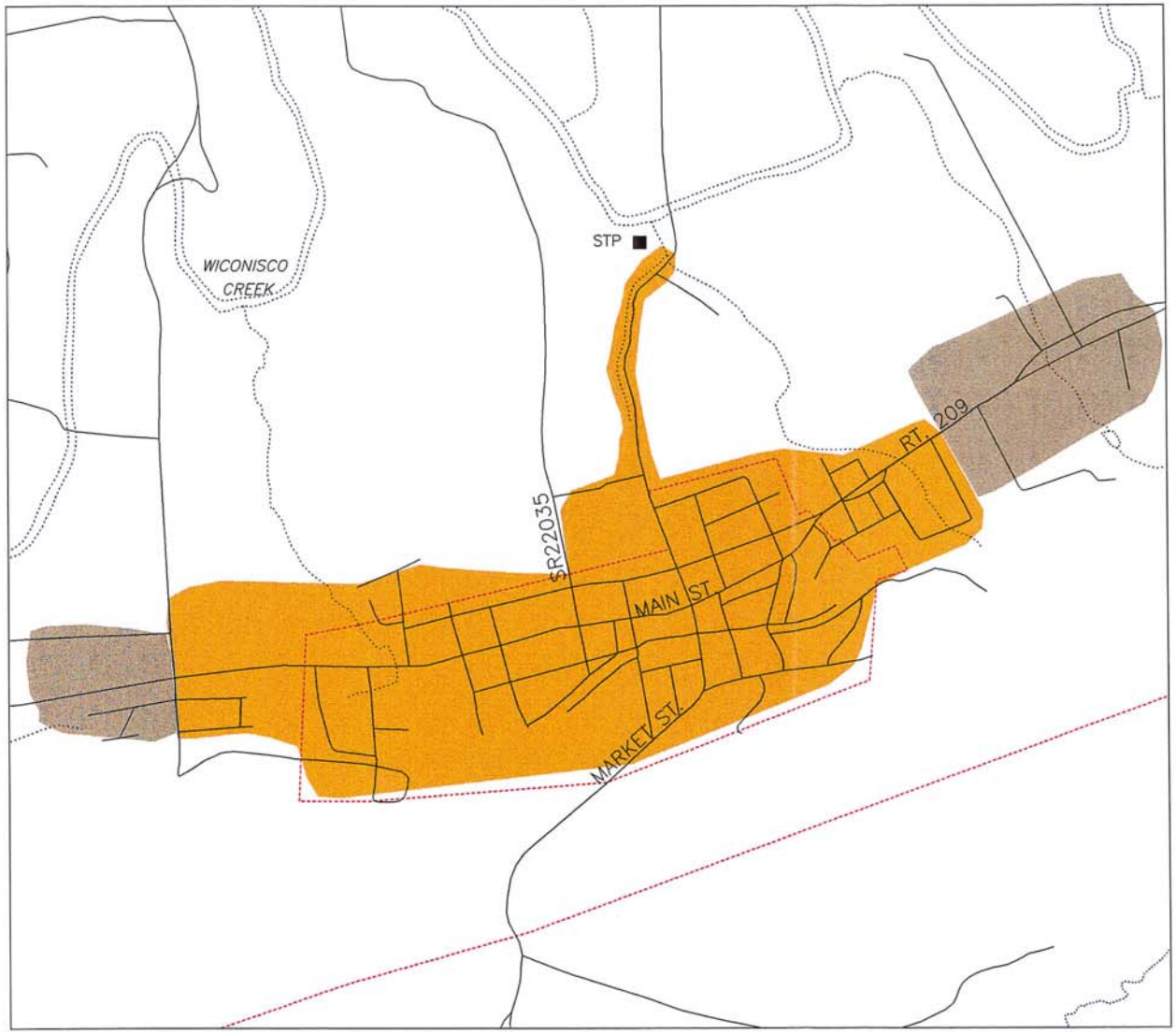
The wastewater treatment plant located in Halifax Borough was built in 1971. The plant presently has 654 EDU's connected to the system. Based on the estimated number of people per household in 1990 in the Township and Borough of Halifax, 2.7 and 2.5 respectively, the plant serves approximately 1,700 people. The Authority owns and operates the 0.14 mgd contact stabilization plant. The Authority also handles the billing quarterly based on a flat rate per dwelling unit or commercial unit. The design organic loading at the plant is 297 pounds per day BOD_5 and treated effluent is discharged into the Susquehanna River. There are no industrial waste discharges connected to the Authority's system.

The average daily flow per EDU over the past five years was 115.3 gallons. It is estimated that a total of 1067 EDU's can potentially be connected to the plant based on hydraulic load. The organic loading was such that a total of 1115 EDU's could be connected to the plant. Since the hydraulic loading is limiting, due to inflow problems, only an additional 413 EDU's could potentially be connected to the system. The plant can serve its present customers and an additional 20 EDU's per year for the next twenty years.

No portion of the sewer system is known to be hydraulically overloaded or expected to be overloaded during the next five years. There are two pumping stations: the main pumping station at the treatment plant and the Boyer Street pumping station. The main pumping station was replaced in 1991 and both pumps are reported to be in good condition.

Sewerage Planning

The Township of Halifax is located in an area likely to have poor soils for OLDS. The soils are likely to be poor because of their proximity to the Susquehanna River and the steep slopes in the area. The mail-in survey form identified Halifax Township as not having an Act 537 Plan. Halifax Township is expected to have strong future population growth and it is recommended that an Act 537 Sewage Facilities Plan be initiated by the Township to properly address future sewage flows for the projected population growth. Sewer extensions are expected to occur along Route 225 and 147.



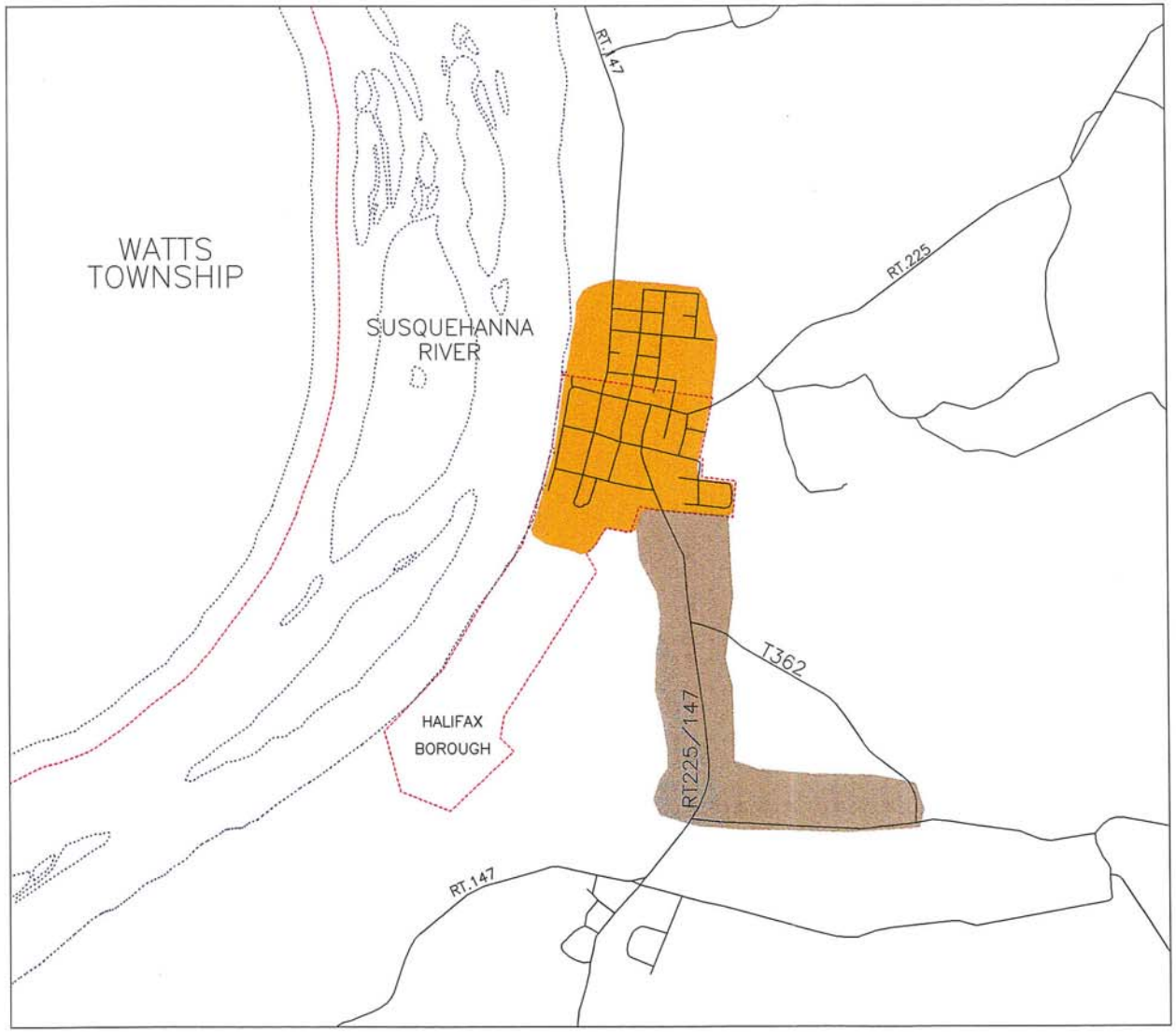
MAP 7–7
ELIZABETHVILLE BOROUGH

SERVICE AREA

EXISTING

FUTURE

*THERE ARE NEW SEWER EXTENSIONS PLANNED BEFORE YEAR–2004



MAP 7–8
HALIFAX TOWNSHIP
AND HALIFAX BOROUGH
SERVICE AREAS

EXISTING

FUTURE

* THERE ARE NO SEWER EXTENSIONS
PLANNED BEFORE YEAR–2004

Harrisburg Authority

Existing Sewerage Facilities

The Harrisburg Authority manages The Harrisburg Advanced Wastewater Treatment Facility (HAWTF) built in 1959 and is located in the City of Harrisburg, Swatara Township. The Harrisburg Wastewater Service Area (see Harrisburg City Authority map, following page 42) is comprised of the following municipalities:

City of Harrisburg
Borough of Paxtang
Borough of Penbrook
Borough of Steelton
Lower Paxton Township
Susquehanna Township
Swatara Township

All or part of each of these municipalities is serviced by the Harrisburg Conveyance and Treatment Systems. Each municipality pays for varied amounts of capacity and any lines or pump stations located within its municipal boundaries. This system consists of six major sewer interceptors, 63 floor control diversion chambers, 5 pumping stations and an advanced wastewater treatment facility. The conveyance system owned by The Harrisburg Authority consists of 6 intercepter sewers, 2 pumping stations and 1 force main.

The components of the conveyance and treatment system are owned by the Harrisburg Authority and operated by the City of Harrisburg. Each of the contributing communities is assessed a quarterly fee for its use of these facilities. This fee is used for debt service payments, as well as operation and maintenance of the system.

The facility has a design permitted hydraulic capacity of 37.7 mgd and a design permitted organic capacity of 54,100 pounds BOD per day. The treated effluent is discharged into the Susquehanna River under NPDES Permit No. 0027197 (October 10, 1990). The treatment facility maintains the following processes listed in sequential order from the head of the plant through to discharge:

Degritting
Primary Settling
Pure Oxygen Activated Sludge
Chemical Addition for Phosphorous Removal
Secondary Clarification
Chlorination

The primary and waste activated sludge is thickened, anaerobically digested, belt filter pressed and landfilled.

The five year (1988-1992) average daily hydraulic and organic loading was 23.7 mgd and 22,284 lb BOD/day respectively. Hydraulic or organic overloads are not expected within the next ten years.

The City of Harrisburg has approximately 120 miles of sewer collectors. Approximately 75% of the sewer system is a combined storm and sanitary lines. When the combination of wastewater and stormwater exceeds the designed dry weather peak flow, regulators and diversion chambers along the interceptors divert the excess flow to either the Susquehanna River or the Paxton Creek.

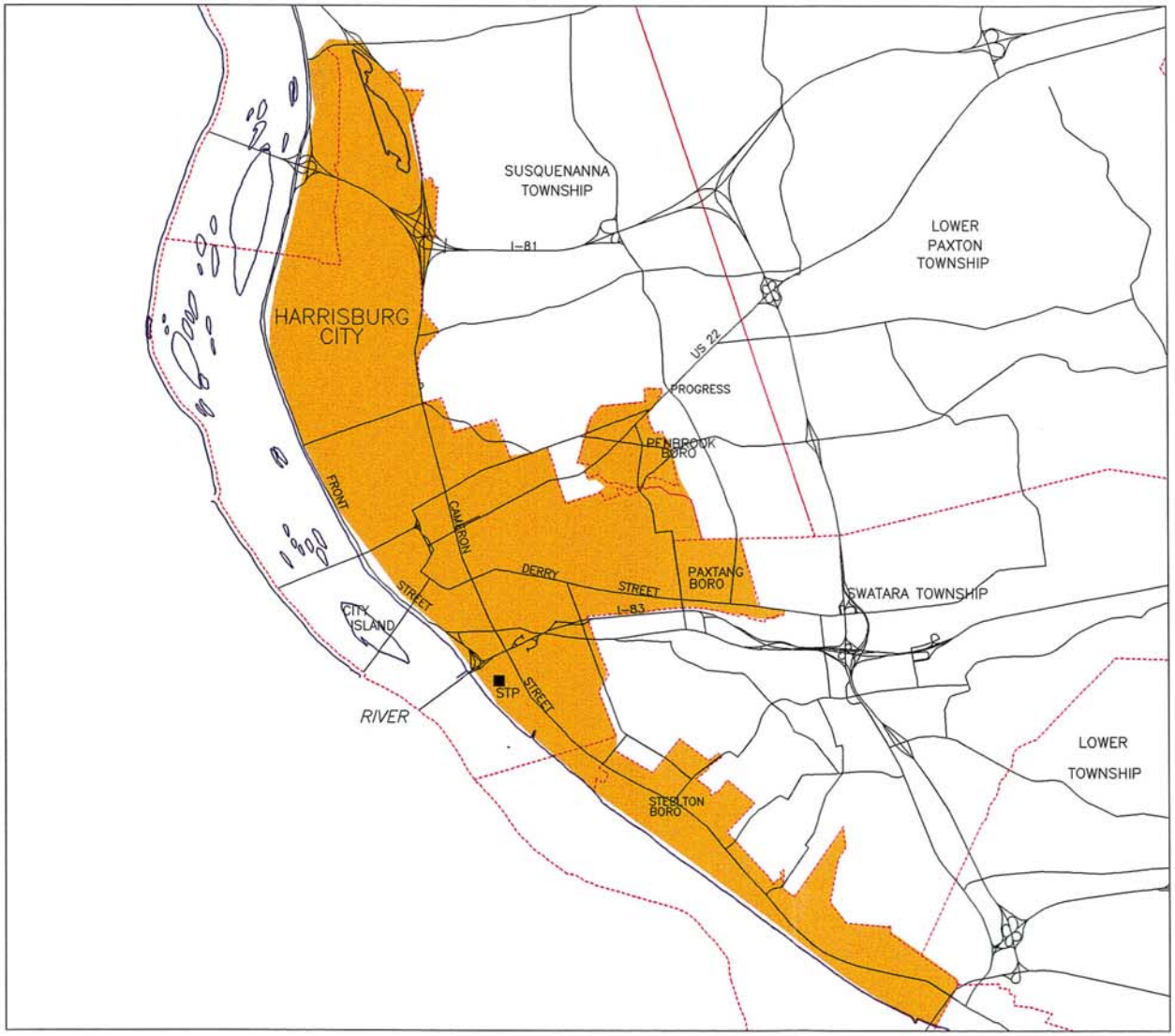
Approximately 80% of the sewer system was constructed before 1940. The major problem with the collection system are thought to be associated with storm sewer inlets.

The City of Harrisburg owns, maintains, and operates one (1) sewage pumping stations on City Island. The City Island Pump Station was constructed in 1989 and has a capacity of approximately 300 gpm.

Sewerage Planning

The Authority is not planning any further future sanitary sewer line extensions at least for the next 10 years. The system is reported as almost built-out. The Authority is correcting any problems as they occur and is concentrating on modifications to its overflow system.

The Pennsylvania Department of Environmental Resources has been concerned about the City's combined sewer/stormwater system and has advised the Harrisburg Authority to study and modify any current problems.



MAP 7–9
HARRISBURG CITY AUTHORITY
SERVICE AREAS

EXISTING

Highspire Borough Authority

Existing Sewerage Facilities

The sewage treatment facility is located within the Borough on Industrial Road and Lumber Street and currently services Highspire Borough and a portion of Lower Swatara Township. The facility services approximately 9,000 residents and its average flow is approximately 845,000 gallons per day.

The Highspire Borough Authority owns and operates the wastewater treatment facility and currently spends an estimated $475,000 in operation and maintenance costs. The billing is handled quarterly and is based on a flat rate per dwelling unit.

The treatment plant includes primary and secondary treatment. The facility maintains the following unit processes listed in sequential order from the head of the plant through to discharge:

Screening
Grit Removal
Comminution
Primary Clarification
Conventional Activated Sludge
Chemical Addition for Phosphorus Removal
Final Clarification
Ultraviolet Disinfection

Treated effluent is discharged into the Susquehanna River. The sludge is anaerobically digested with ultimate disposal utilizing land application (50%) and the Harrisburg Authority facility (50%). The plant is running at approximately 50% capacity. The Borough Authority is presently involved in putting together a comprehensive study of the collection system which will assess the need for upgrading various collection lines. No overloading conditions are anticipated through 1997, as long as infiltration and inflow can be minimized.

Sewerage Planning

The Borough is not planning any sewer extension projects, however, Lower Swatara Township is continuing to grow.

Londonderry Township Sewerage Planning

Existing Sewerage Facilities

The Londonderry Township SEO, Marvin Stoner, was consulted regarding the sewerage needs of the Township. Mr. Stoner had indicated that the whole southern portion of the Township is a problem area for OLDS. There is no on-lot management program or ordinance in place at the present time. Approximately forty-five (45) permits were issued in 1993 with approximately one-third of these for system repairs.

Portions of Londonderry Township have soils which have been rated poor for OLDS. Because the Township relies completely with on-lot disposal, the Township has sought alternative means of wastewater disposal.

Sewerage Planning

The Township's Act 537 Plan recommended the formulation of three (3) primary Sewer Districts as the most cost-effective approach to providing community-wide solutions to the Township's sewage disposal problems and needs. The sewage disposal problems stem from increasing incidents of malfunctioning on-site sewage disposal systems. Several sewage collection and disposal alternatives for three Sewer Districts were examined in the Plan. Sewer District 1 is located on the Township's northern boundary. A gravity sewer system is recommended for construction. The gravity sewers will send Sewer District 1 flows to the new Derry Township Municipal Authority Wastewater Treatment Facility. Areas in this district include:

- Swatara Creek Road
- Schoolhouse Road (East)
- Schoolhouse Road (West) between Swatara Creek Road and Strickler Mennonite Church
- Vine Street interchange

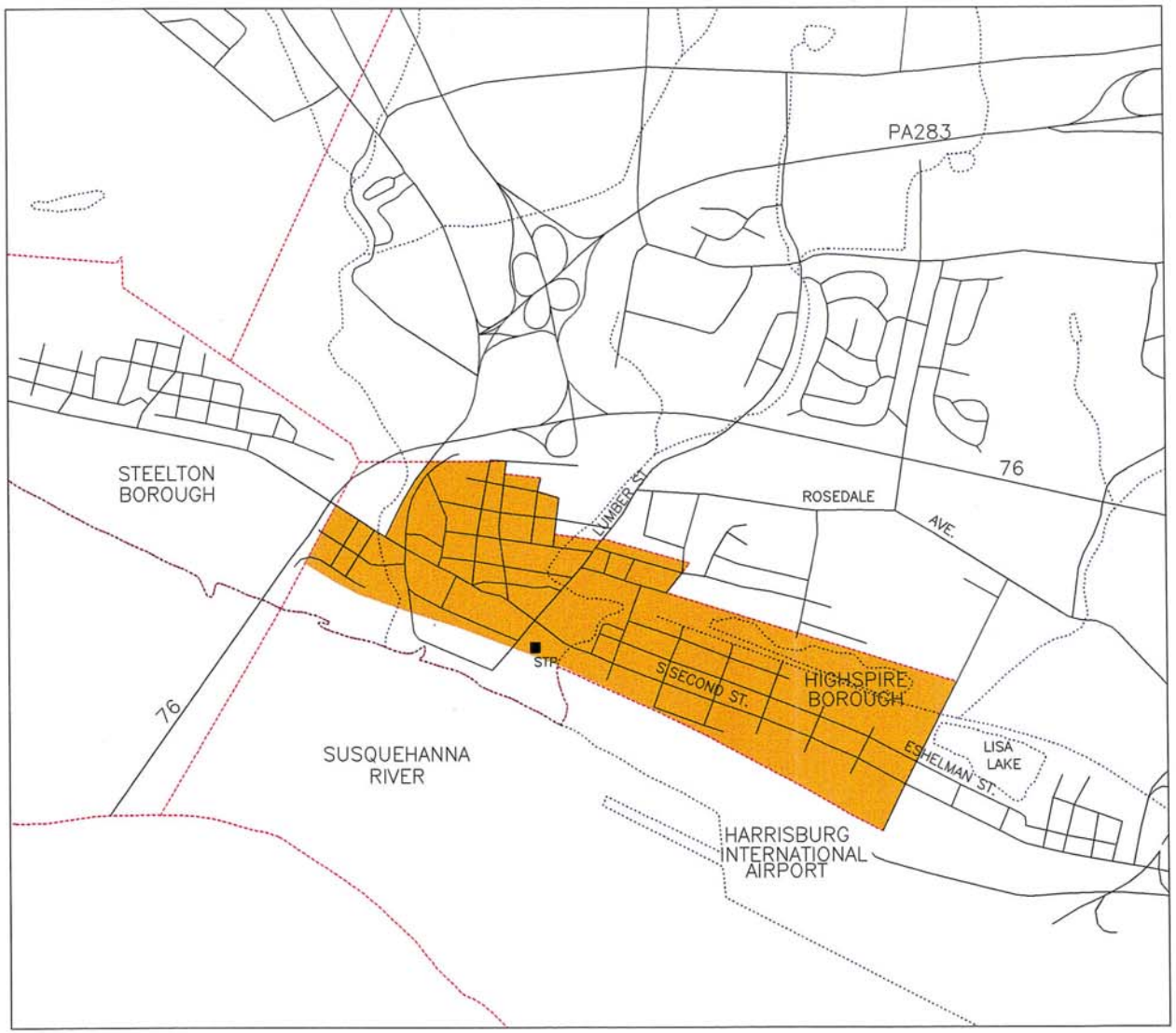
Project flows on the project are approximately 162 EDUs. Sewer District 2 encompasses:

- Schoolhouse Road east of Newberry Road
- Hillside Farms

Treatment alternatives include:

- Conveyance to the Middletown Treatment Plant
- Construction of a new wastewater treatment facility

The Township anticipates that developer contributions will fund a significant portion of any sewer extension in Sewer District 2. The recommended alternative for District 2 was the design and construction of a gravity wastewater collection system and WWTP located near the Conewago Creek.

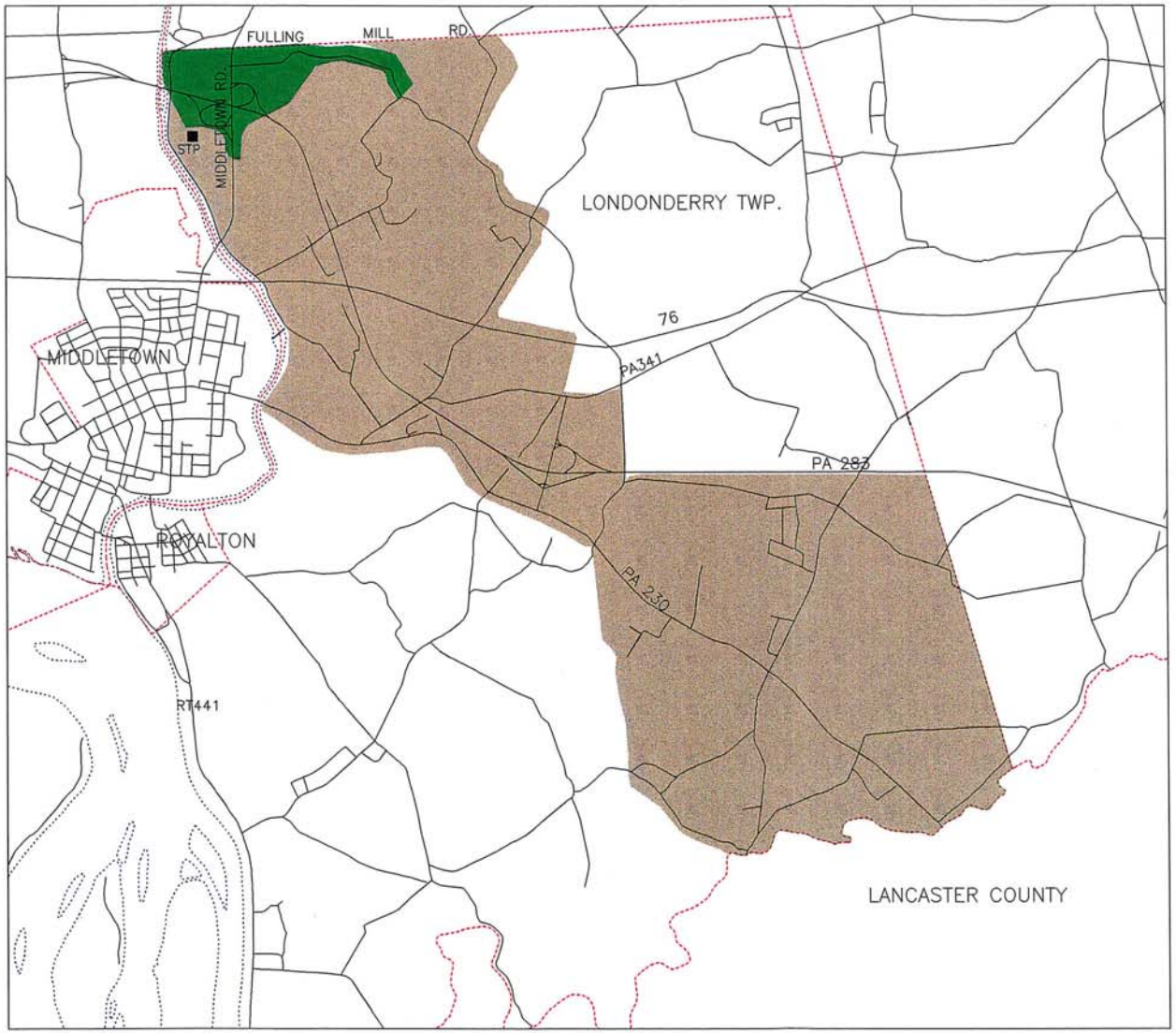


MAP 7–10
HIGHSPIRE BOROUGH

SERVICE AREAS

EXISTING

* THERE ARE NO SEWER EXTENSIONS PLANNED BEFORE YEAR–2004 OR FUTURE



MAP 7–11
LONDONDERRY TOWNSHIP
SERVICE AREAS

YEAR – 2004

FUTURE

Londonderry Township is proposing the preparation of cooperative agreements with Derry Township and the Borough of Middletown to provide wastewater treatment capacity for Sewer District No. 1 and No. 2 respectively. The Township has also contacted Mount Joy, Conewago, and West Donegal Townships concerning the creation of a regional wastewater treatment facility.

In a June, 1993 feasibility study by Acer Engineers, it was determined that the construction of a Township owned and operated treatment facility is not economically feasible considering the size of the user base. Acer concluded that a collection and conveyance system that encompasses the Base Study Area and the Rose Crest PRD, as well as a treatment facility with a capacity of 500,000 gpd, represented the best option for providing the long-term sewage treatment and disposal needs of Sewer District No. 3. This study demonstrated that the costs of the proposed project currently exceed the financial means of the residents of Sewer District No. 3.

Londonderry Township was ranked first in Dauphin County by Pennsylvania Infrastructure Investment Authority (PIIA). The project that is listed as requiring funding is a wastewater treatment facility and sanitary sewer collection and conveyance system. The cost of the project was listed at $ 4,140,000. The project was ranked 36 in the state of Pennsylvania.

Lower Paxton Township

Existing Sewerage Facilities

Lower Paxton Township receives sewage treatment services from both Swatara Township Sewage Treatment Plant and the City of Harrisburg Advanced Wastewater Treatment Facility (AWTF). The Lower Paxton Authority was formed in 1956, when extended collection lines into the Township were constructed from the Harrisburg AWTF. Since then, the Swatara Township STP has also provided public sewer services to Lower Paxton Township. A population of approximately 27,600 receive public sewer services.

Currently, improvements are made periodically to reduce infiltration and inflow. The Township foresees system expansions of which the cost will be borne by the developer.

The existing agreement between all three of the Authorities states that Lower Paxton Township shall maintain the service lines and not the lateral lines. These lines will remain the operator's responsibility.

Sewerage Planning

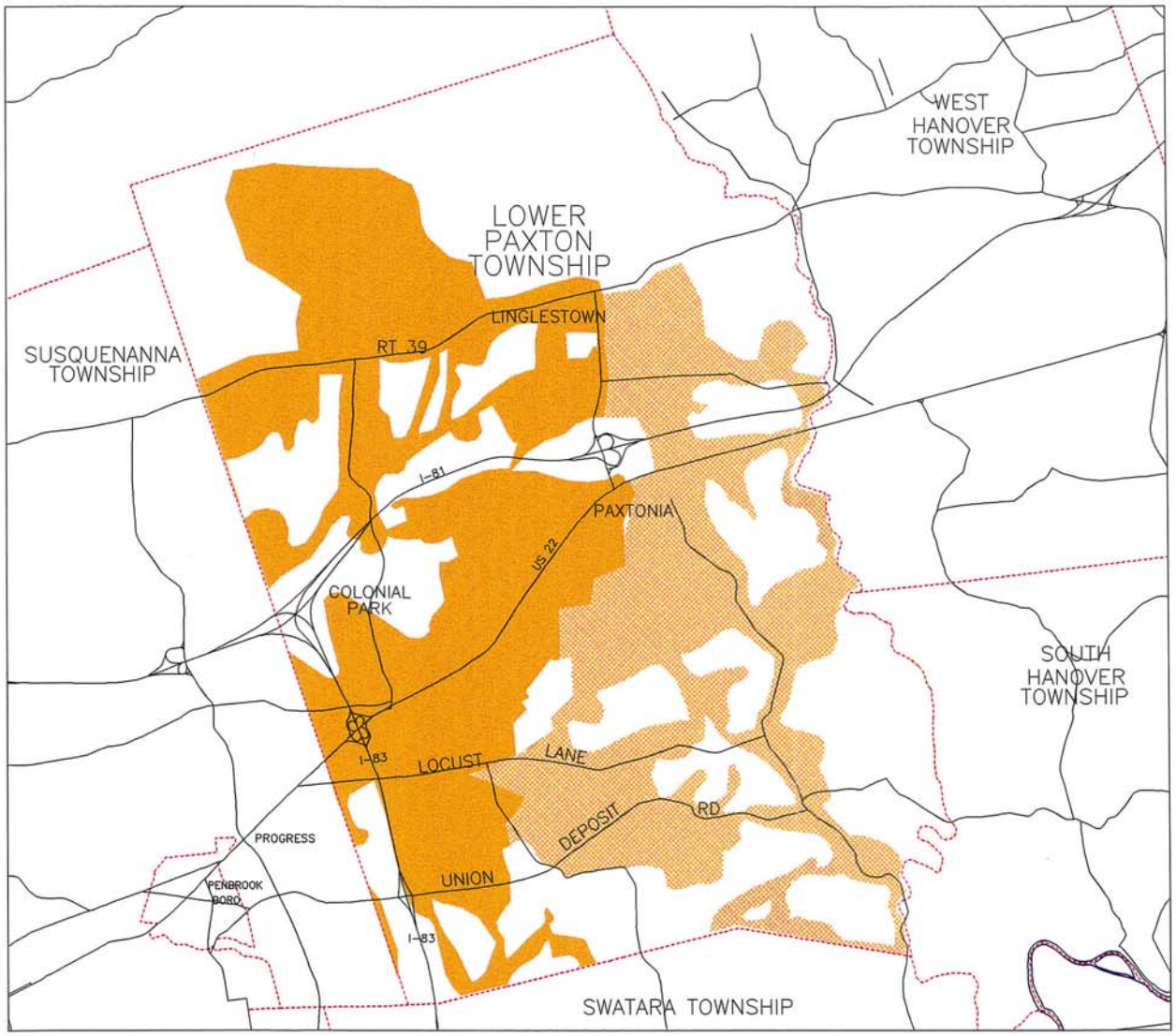
Lower Paxton Township is expected to have very strong population growth in the next 20 years. The population is expected to grow by 4,623 persons in the years 1990 through 2000 and projected to grow by an additional 3,217 persons in the years 2000 through 2010.

Until recently a sewer connection moratorium was imposed by the PaDER throughout three drainage basins (Spring Creek, Paxton Creek, and Beaver Creek). Currently, the Township is addressing infiltration and inflow (I & I) in sewer lines throughout the three basins. The Township has posted a $22 million bond for the correction of the I & I problems by the following measures:

- Employment of six(6) full time employees dedicated to the I & I study and sanitary sewer rehabilitation.
- Utilization of state of the art televising and grouting.
- Reconnaissance of illegal connections.
- Lateral repairs using saturation testing.

Presently, the status of the PaDER moratorium is as follows:

- Spring Creek Basin - work is completed, moratorium has been lifted.
- Paxton Creek Basin - limited moratorium
- Beaver Creek Basin - complete moratorium



MAP 7-12
LOWER PAXTON TOWNSHIP
SERVICE AREAS

EXISTING
HARRISBURG AWTF SERVICE DISTRICT

EXISTING
SWATARA WWTF SERVICE DISTRICT

Lower Swatara Township

Existing Sewerage Facilities

The Highspire wastewater treatment facility provides capacity to the Lower Swatara Township Authority. The areas served are depicted on the Lower Swatara Sewer Service map.

Lower Swatara Township receives public sewer service and treatment from three wastewater treatment facilities: Highspire, Middletown, and Derry Townships. The Township Authority plans to continue its cooperative agreements with the three municipal authorities for its future sewer expansion projects.

The small remainder of the Township relies on on-lot disposal systems for sewage disposal. However, the number of septic permits per year is minimal. Nearly all development is required to hook onto public sewer service at the developer's expense. The southeastern portion of the Township, especially near Swatara Creek, contains poor soils for the installation of on-lot disposal systems. This factor has limited development in this area as well as the cost of public sewer expansion from the Middletown Wastewater Treatment Facility.

Sewerage Planning

The Township completed its Act 537 Plan Amendment in February of 1983. This plan was considered not useful for the time periods specified in this plan. Through discussions with the sewage enforcement officer areas targeted in a 10-year period are:

- Fulling Mill Road
- Route 283
- Areas near the Swatara Creek
- Portions of Rt. 441
- Vine Street (near Swatara Creek)

Future:

- Rt. 441 (east)
- Areas just north of the Middletown High School

Lykens Borough

Existing Sewerage Facilities

Lykens Borough residents receive public sewage services from the Lykens Borough Authority Sewage Treatment. The plant services a population of approximately 2,140 and is located on South Second Street in Lykens Borough. The system does not currently service any other municipalities or portions thereof.

The excess sludge is hauled away and the treated effluent is discharged into the Wiconisco Creek. The Borough is experiencing hydraulic overloading problems which has forced the Borough to research the possibility of plant upgrade, line expansion and improvements. The Borough has estimated the project may cost anywhere from $2 to $3 million. The upgrade would result in an increase in the current flow capacity of 0.27 mgd to 0.41 mgd.

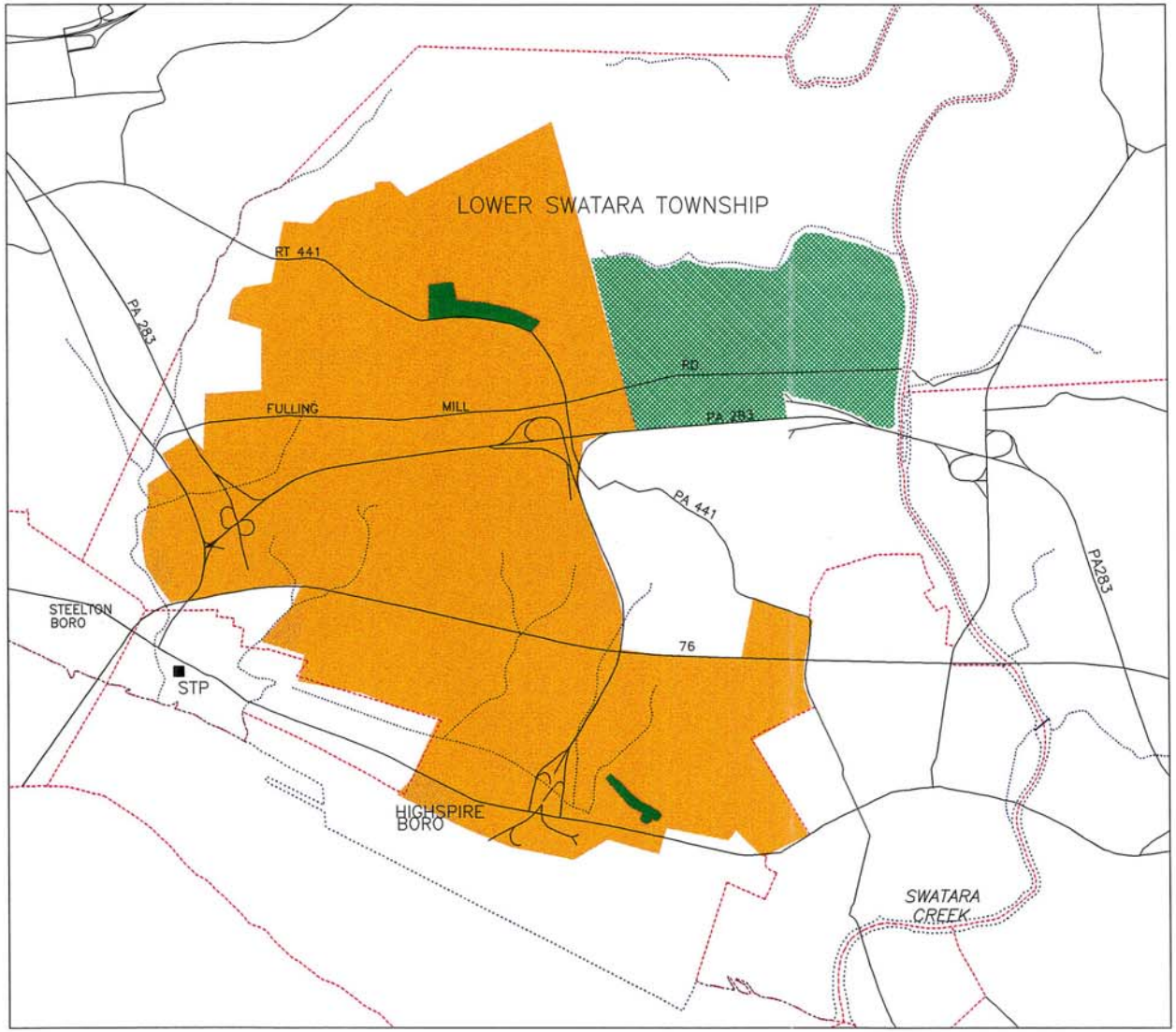
The Borough Authority owns and operates the STP and its collection lines. The billing is sent quarterly and is based on a flat rate. However, this rate differs depending on the type of use (residential, commercial, or institutional).

Sewerage Planning

The Borough of Lykens reportedly has existing wildcat sewers and over 20 known cesspools. The Borough has initiated an Act 537 Plan. Lykens Borough was ranked second in the state by the PIIA for PennVEST funding. The project listed for funding was a WWTF modification including the following:

* New SBR treatment process
* Aerobic digestion within existing basins
* Sludge dewatering and lime addition
* Dewatering sludge storage

The cost of this project was estimated at $1,049,000.

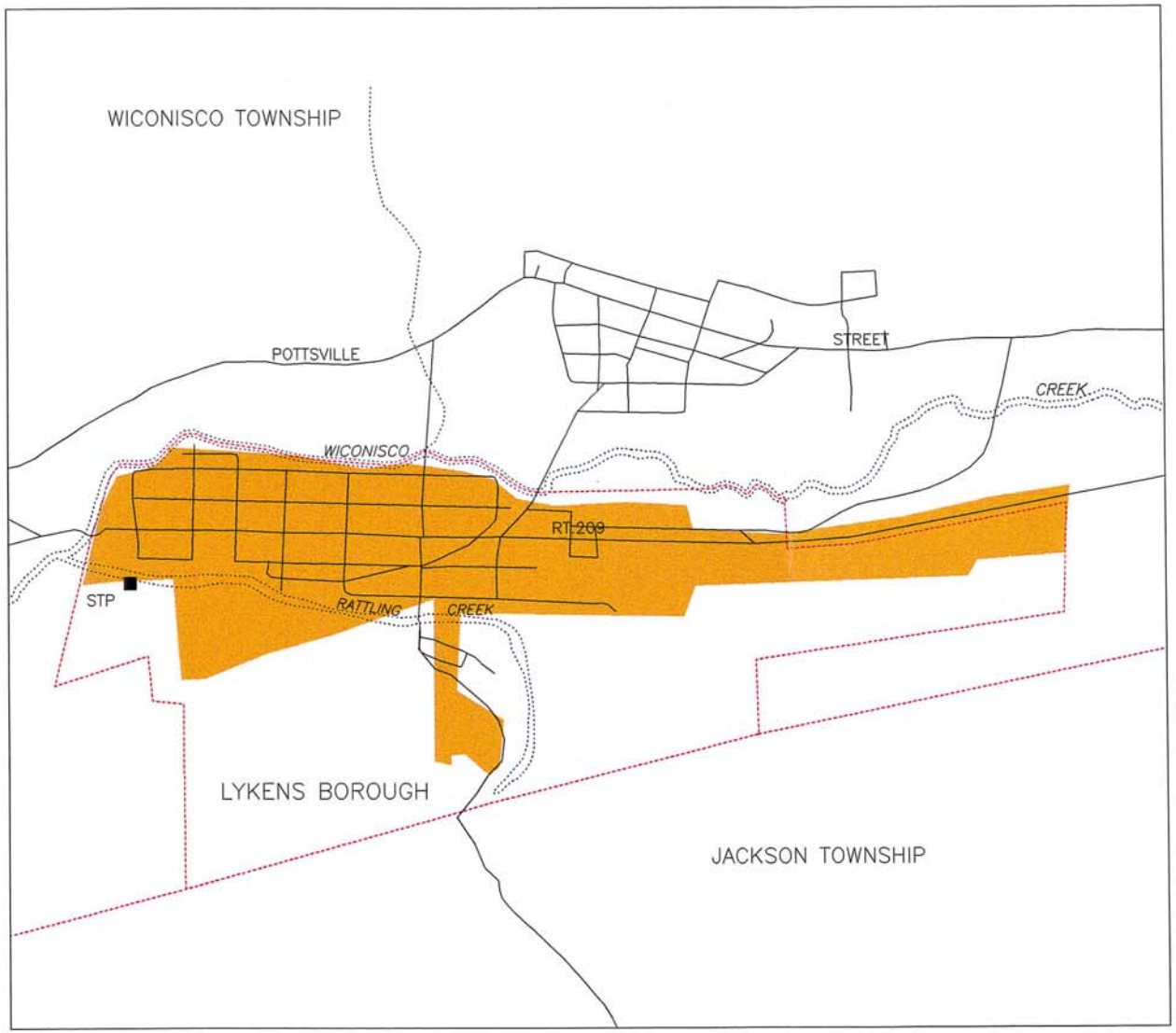


MAP 7–13
LOWER SWATARA
TOWNSHIP
SERVICE AREAS

EXISTING

YEAR – 2004
HIGHSPIRE BORO SEWER
SERVICE DISTRICT

YEAR – 2004
DERRY TOWNSHIP SEWER
SERVICE DISTRICT



MAP 7–14
LYKENS BOROUGH

SERVICE AREA

EXISTING

* THERE ARE NO SEWER EXTENSIONS PLANNED FOR YEAR–2004 AND FUTURE

Middletown Borough

Existing Sewerage Planning

The Middletown Borough Authority wastewater treatment plant was constructed in 1977 and is located in the Borough of Middletown. The wastewater facility services primarily the Borough of Middletown with small portions allocated that service Royalton (5%) and Lower Swatara Township (16%). The facility served a 1992 population of 14,400.

The facility has a design permitted hydraulic and organic capacity of 2.2 mgd and 3740 lbs BOD_5/day. The treated effluent is discharged into the Susquehanna River. The treatment facility is comprised of the following processes which are listed in sequence from the head of the facility through to discharge:

Comminution
Grit Removal
Primary Clarification
Two-stage activated sludge with intermediate clarification
Final Clarification
Chlorination Disinfection
Effluent Reaeration

Phosphorus reduction is provided through chemical precipitation using ferrous sulfate. Waste sludge is aerobically digested, and can be applied to PADER approved agricultural lands. A belt filter press is provided for dewatering the stabilized sludge prior to lime addition.

The five year (1988-1992) average daily hydraulic and organic loading was 1.05 mgd and 1,042 lbs BOD/day. Hydraulic or organic overloads are not expected within the next ten years.

The Borough of Middletown's wastewater collection system includes approximately 23.3 miles of gravity sewer, with four major wastewater collection interceptors in the system including: the New Ann Street, Mill Street, Pine Street, and Union Street interceptors. As of 1992, PADER has maintained control over the number of new connections made per year.

The Borough Authority owns and operates the STP and the collection lines located within the Borough. The Borough of Royalton and Lower Swatara Township are responsible for their own collection line maintenance.

Sewerage Planning

The Borough Authority is planning some sewer extensions on the most eastern portion of Royalton Borough (Ulrich Street). As noted above, PADER does regulate the number of connections permitted.

Millersburg Borough

Existing Sewerage Facilities

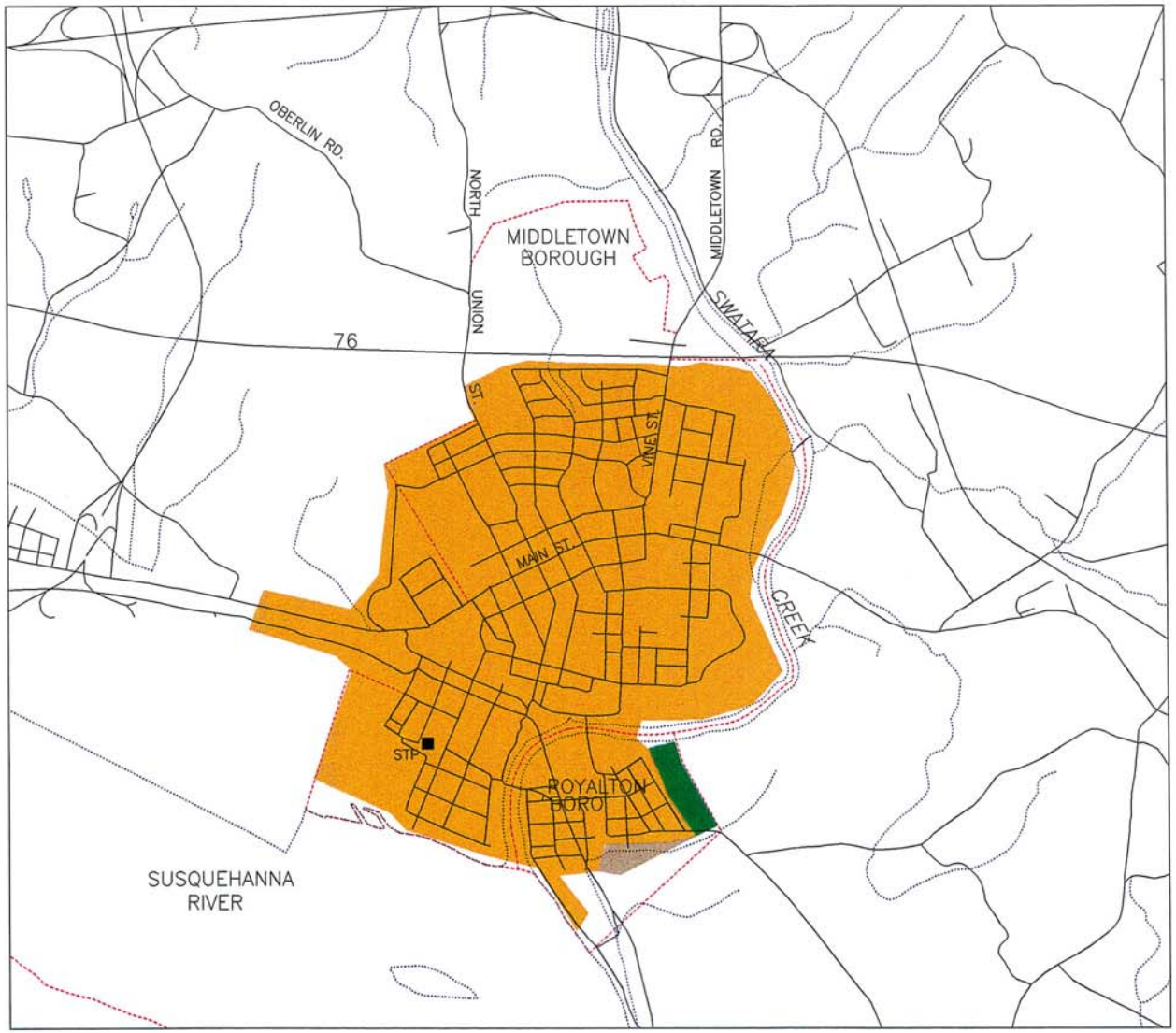
The sewage treatment facility located in Millersburg Borough serves the entire Borough and an adjoining portions of Upper Paxton Township. The facility is owned and operated in part by Millersburg Borough Authority and Upper Paxton Township. It has a design capacity of 1.0 MGD and an organic loading capacity of 1700 lbs BOD_5/day. The plant is running at 40% of its capacity. The facility utilizes primary settling and the activated sludge process. Sludge is stabilized by aerobic digestion. Residents who receive sewer service are billed on a quarterly basis or metered water consumption.

The 1992 hydraulic and organic loadings were 0.374 and 557 lbs BOD_5/day respectively. No overloading is projected to occur in the next 5 years.

The main pumping station operated at 19% of total capacity in 1992. The Zimmerman Road pumping station operated at approximately 0.4% of total capacity.

Sewerage Planning

There are no immediate plans for sewer extensions, treatment upgrades, line construction, or pump station replacements or additions. The Authority does foresee a population increase north of Millersburg Borough in Upper Paxton Township and feels public sewer service will be needed in those growing areas. Residential growth is expected to occur extending north on Route 147, SR 4002, north on Route 25, and T369, or Charles Road.



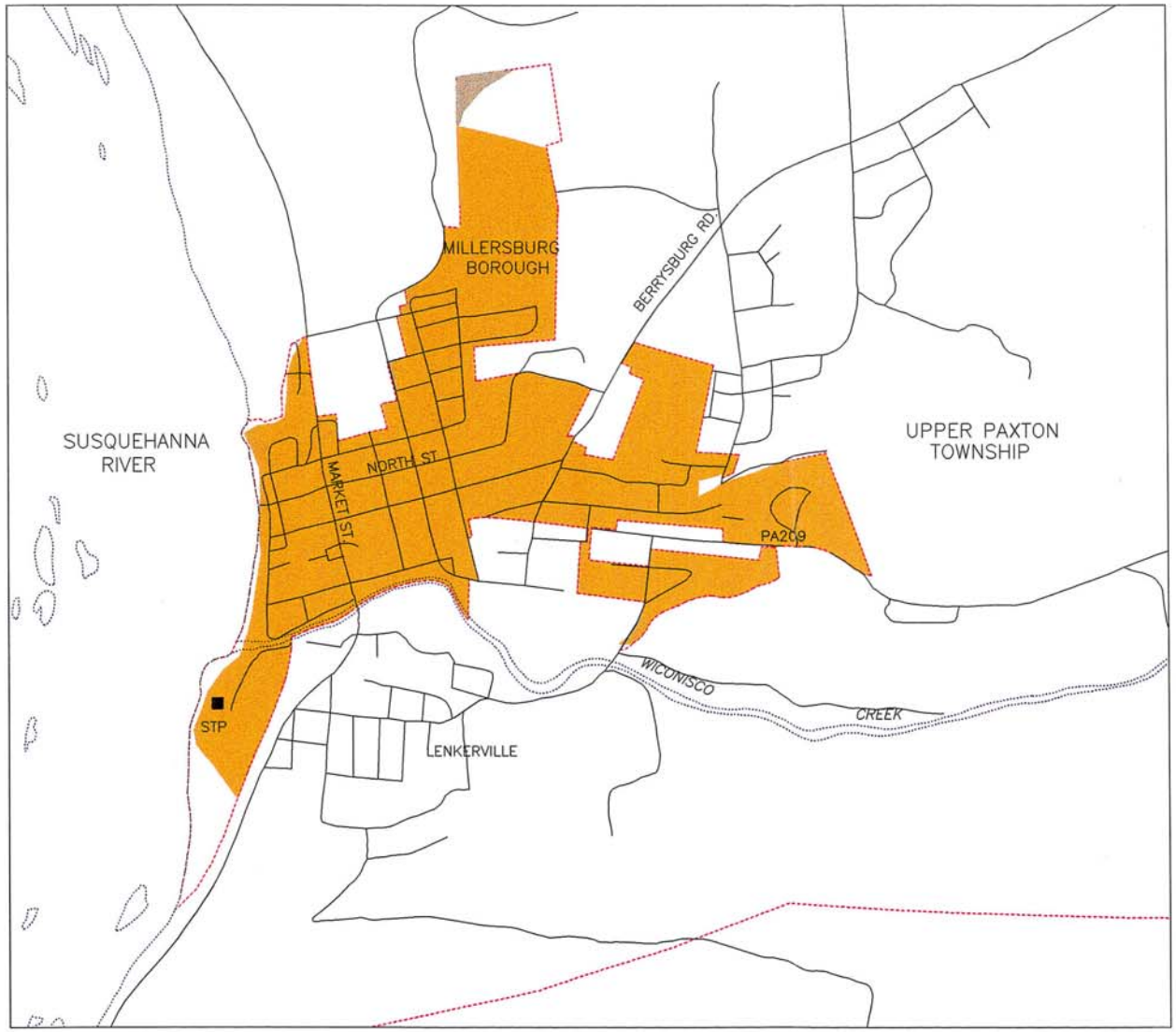
MAP 7–15
MIDDLETOWN
AND
ROYALTON
BOROUGHS

SEWER SERVICE AREAS

EXISTING

YEAR – 2004

FUTURE



MAP 7–16
MILLERSBURG
BOROUGH
SERVICE AREAS

EXISTING

FUTURE

Paxtang Borough, Penbrook Borough, and Steelton Borough

Existing Sewerage Facilities

The Harrisburg AWTF extends its lines to service the entire Borough. Each municipality is almost built out and do not plan to apply for additional capacity from the Harrisburg Authority. Each Borough is responsible for maintenance of the lines located within its corporate limits.

South Hanover Township

Existing Sewerage Facilities

South Hanover receives public sewer service from the Derry Township Wastewater Treatment Plant. Portions of Canal Street, Shetland Drive, and the Greenbriar area currently receive sewer service. The remainder of the Township utilizes OLDS.

The Township completed an Act 537 Plan in 1989 to identify and address existing and future wastewater OLDS problems. Water sampling and analyses in these areas indicated that there is evidence of groundwater contamination.

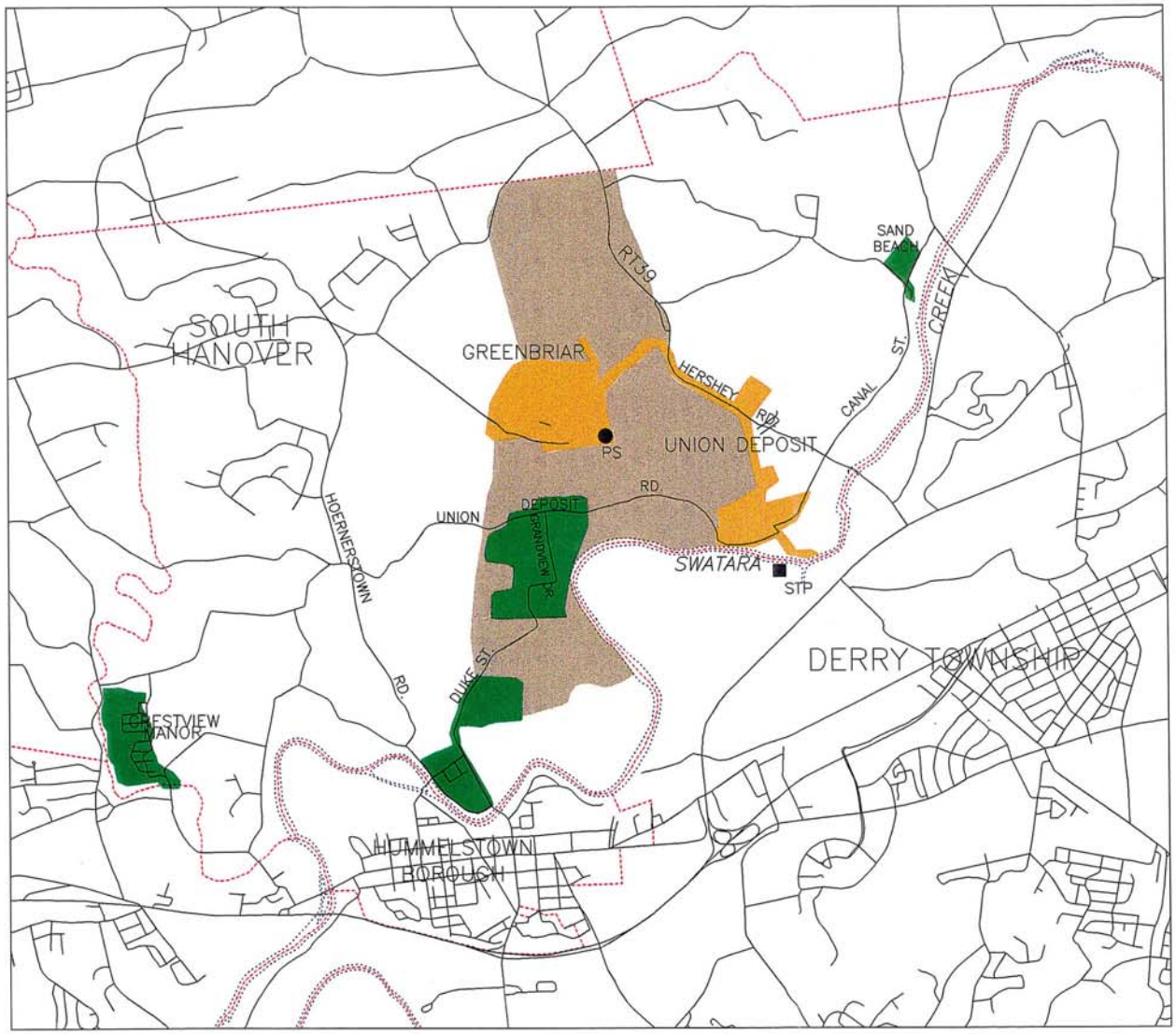
The alternatives being considered are gravity sewers with local treatment facilities and gravity sewers with treatment by adjoining municipalities. Each alternative was found to be economically unfeasible, due to the small population and the dispersed location of these communities. The Act 537 Plan recommendations included: educational programs, a homeowner well monitoring system, and a construction fund to offset future construction costs.

Sewerage Planning

The Township is expected to have strong population growth in the following decades. The expected population growth has been addressed in the Act 537 Plan adopted in 1989. The conclusions and recommendations from the Act 537 Plan identified four areas of concern including: Crestview Manor, Duke Street/Grandview Manor area, Sand Beach area, Diff's Corner/Arwin Acres.

The implementation schedule allowed for the Crestview Manor area (Sewer District #1) to be served by acquired reserve capacity at the Swatara WWTF within five (5) years of the approved Act 537 Plan.

Within ten (10) years time Duke Street/Grandview Manor area (Sewer District #2), Diff's Corner/Arwin Acres (Sewer District #2), and Sand Beach area (Sewer District #3) will be served by acquired reserved capacity at the Derry WWTF.



MAP 7–17
SOUTH HANOVER TOWNSHIP
SERVICE AREAS

EXISTING
YEAR – 2004
FUTURE

Susquehanna Township

Existing Sewerage Facilities

Susquehanna Township resting along the Susquehanna River just north of Harrisburg contains large areas of soils rated as severe for on-lot septic systems. The SEO of Susquehanna Township has indicated that there are two areas in the Township that are experiencing a number of malfunctioning on-lot systems: Mountain View Road and North Progress Avenue. Most of these malfunctioning systems can only be repaired by installing a temporary holding tanks. In the Mountain View Road area there are twenty-four (24) single family dwellings utilizing on-lot disposal systems. Five (5) of these homes have systems with the potential to malfunction at any time or have failed and are not replaceable by another OLDS. The age of most of the systems is a prevalent reason for malfunctioning. The Progress Avenue and Paxton Church Road area also have reported system malfunctions.

The possibility of malfunctions occurring is increasing dramatically with every year that goes by. Replacement areas are difficult to find due to the steep slopes, the depth to high water table and the necessary well isolation distances.

The southern and eastern portions of Susquehanna Township currently is sewered by the Harrisburg Advanced Wastewater Treatment Facility.

Sewerage Planning

All public sewerage treatment services are provided by the Harrisburg City Authority.

The wastewater treatment facility has available capacity, however, the facility is under PADER advisement to modify the system overflow problems. Susquehanna Township is not planning any major 10 year sewer line expansion projects.

Swatara Township

Existing Sewerage Facilities

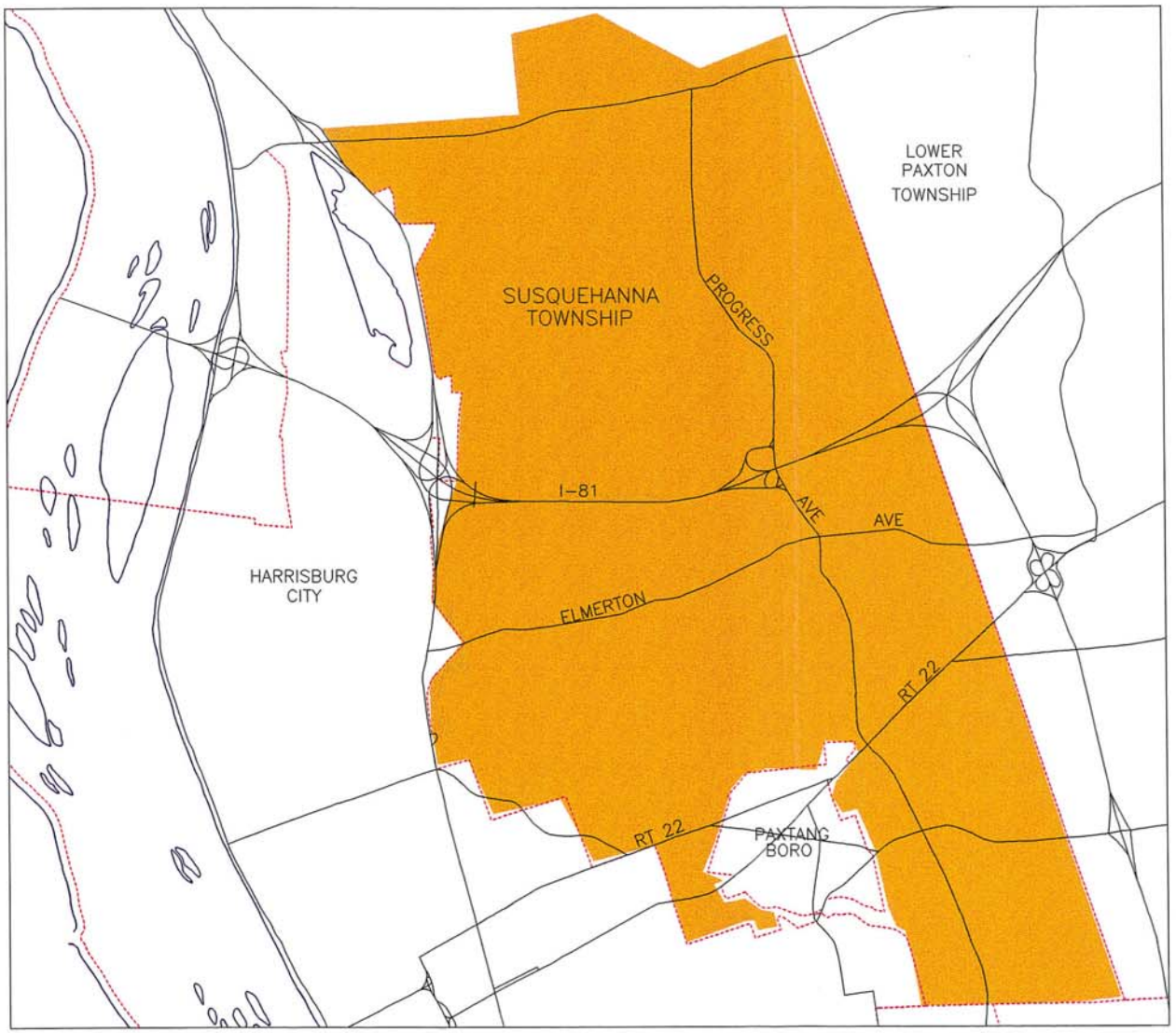
Swatara Township Municipal Authority provides a majority of its residents with sewage service as well as portions of Lower Paxton and South Hanover Townships and Hummelstown Borough. The plant is located in Swatara Township and serves a population of approximately 20,590 residents. A portion of Swatara Township also receives wastewater treatment services provided by The Harrisburg AWTF.

The treatment plant has an average flow of 2.3 mgd and has the capacity of 6.3 mgd. The plant is running at 35% of its total capacity. The treatment process involves secondary treatment with nutrient removal. The excess sludge is thickened, dewatered and hauled away for subsequent incineration; and the treated effluent is discharged into the Swatara Creek. The plant was upgraded and expanded in 1988 to accommodate increased flow.

The Authority owns and operates the STP and its collection lines within the Township. The billing is based on a flat rate as well as water consumption and is distributed quarterly.

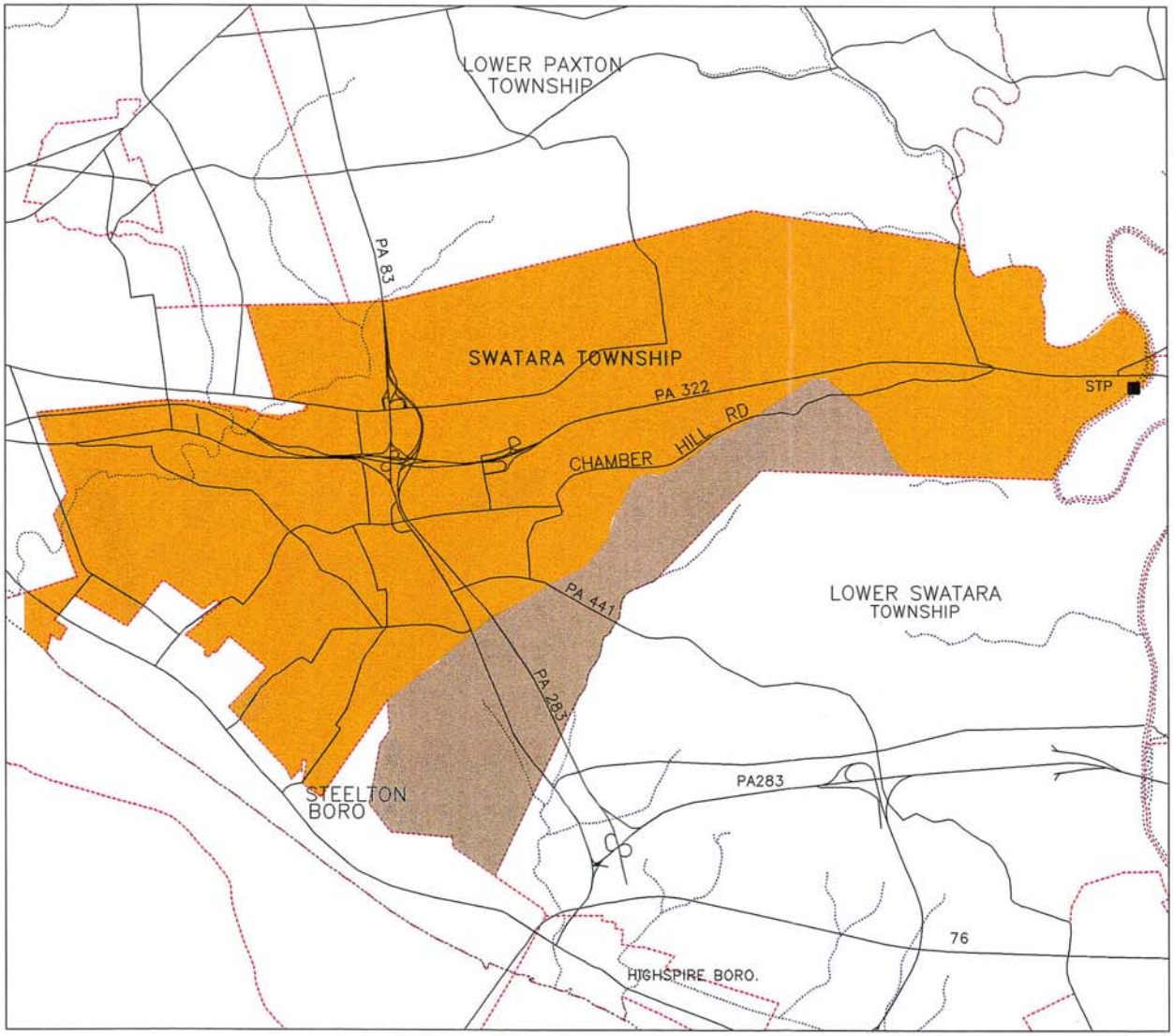
Sewerage Planning

Swatara Township has one pending project involving the replacement of an interceptor line. Lower Paxton and Susquehanna Townships are contributing municipal funds toward the project design and construction.



MAP 7-18
SUSQUEHANNA TOWNSHIP
SERVICE AREAS

EXISTING



MAP 7–19
SWATARA TOWNSHIP

SERVICE AREAS

EXISTING

FUTURE

* THERE ARE NO SEWER EXTENSIONS PLANNED BEFORE YEAR–2004

Upper Paxton Township

Existing Sewerage Facilities

Upper Paxton Township is predominantly dependent upon on-lot disposal systems as a means of sewerage disposal. Small areas near Millersburg Borough and the Upper Dauphin Middle School receive public sewer service (see Map 7-20).

Sewerage Planning

Currently the Upper Paxton Municipal Sewer Authority has not planned for additional sewer line expansion. The Township is actively pursuing Act 537 Plan update. The Plan will be broken down into two phases. The first phase will focus on planned sewer areas along Route 209 outside of Millersburg Borough. This area is planned for primarily commercial land uses. The second phase will involve a complete Act 537 Plan update encompassing the entire municipality. The first phase is scheduled for completion in September of 1995; the second phase will begin at that time.

Washington Township

Existing Sewerage Facilities

Currently over 90% of all residents utilize on-lot disposal systems. The residents immediately adjacent to Elizabethville Borough are hooked to the public sewer system and pay user fees to the Borough for service and the Loyalton area is serviced by the Upper Dauphin Area Middle School Treatment Plant.

Sewerage Planning

Washington Township is expected to have strong population growth in the following decades. The Township Act 537 Plan concluded that all of the Township soils have been designated as having severe limitations for on-lot disposal of effluent from septic tanks. High coliform bacteria counts have been found in private drinking water supplies.

The selected alternative of the 1989 Act 537 Plan update provides the Village of Loyalton with a public sewer system. The Upper Dauphin Area Middle School (UDMS) Treatment Plant would service the sewage needs by the construction of additional sewer collection lines extending into the Township. However, it was determined that this alternative was not feasible and the UDMS would service the Loyalton Village area.

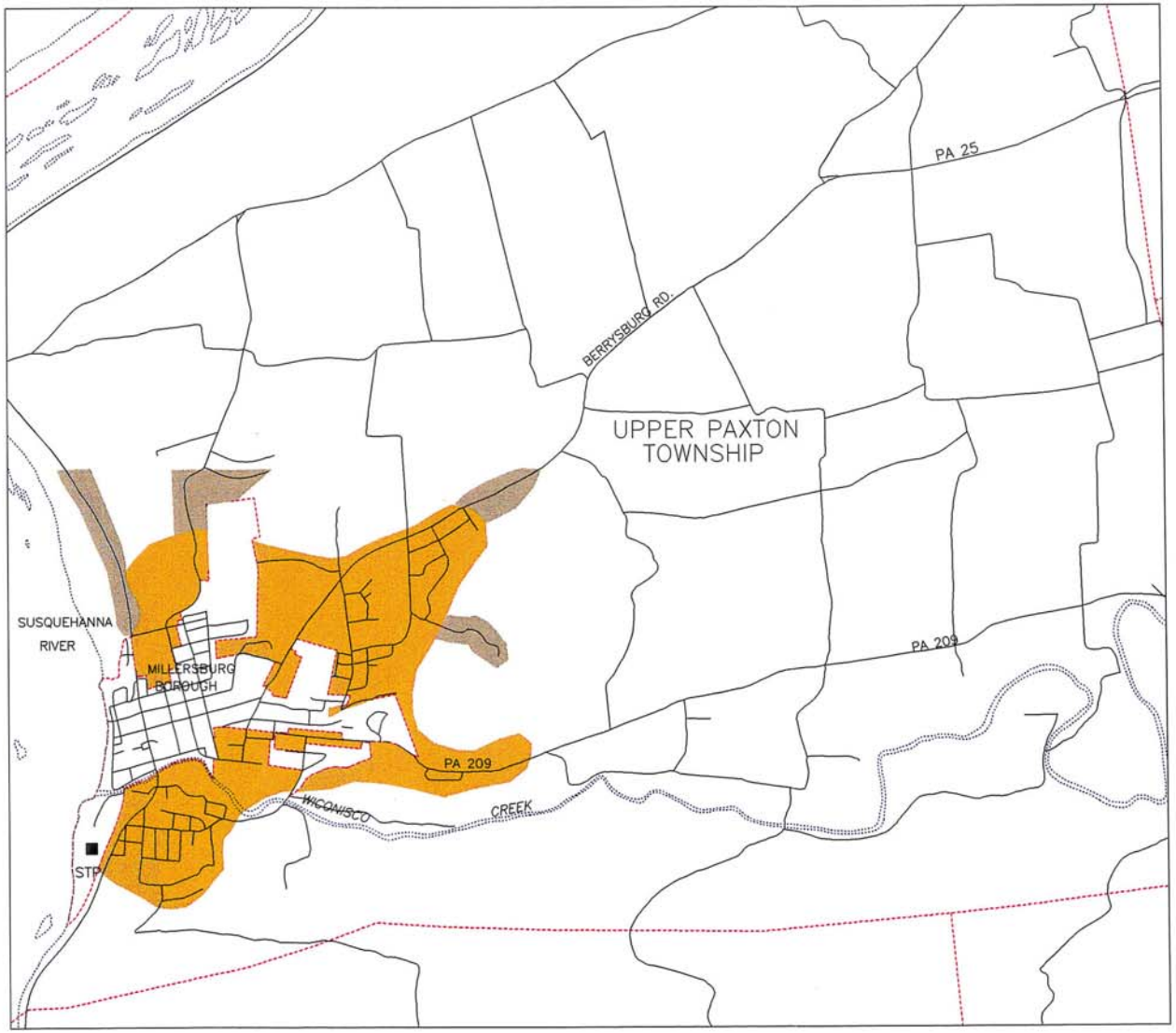
Washington Township is currently planning for the construction of a wetland lagoon wastewater treatment facility and sewer construction to serve the Village of Loyalton (pop. 115). The estimated cost of this project is $1,100,000. Sewer construction and connection to the Upper Dauphin School is expected within the decade following the WWTF start-up. The Borough of Gratz is currently updating their Act 537 Plan.

The plan recommended that growth in the Elizabethville area be limited while the Borough and the Township negotiate a capacity allotment agreement. The plan also recommended that a solution to the infiltration problem at the Elizabethville's WWTP be remedied as part of the proposed regional system.

The Township recommended to amend its ordinances to require that the approval of any plan containing a new home or development, which will not be served by a public sewage treatment system, be contingent upon:

1) The provisions of a site-specific hydrogeological test which meets the minimum nitrate as nitrogen NO_3-N standards as set by PaDER.

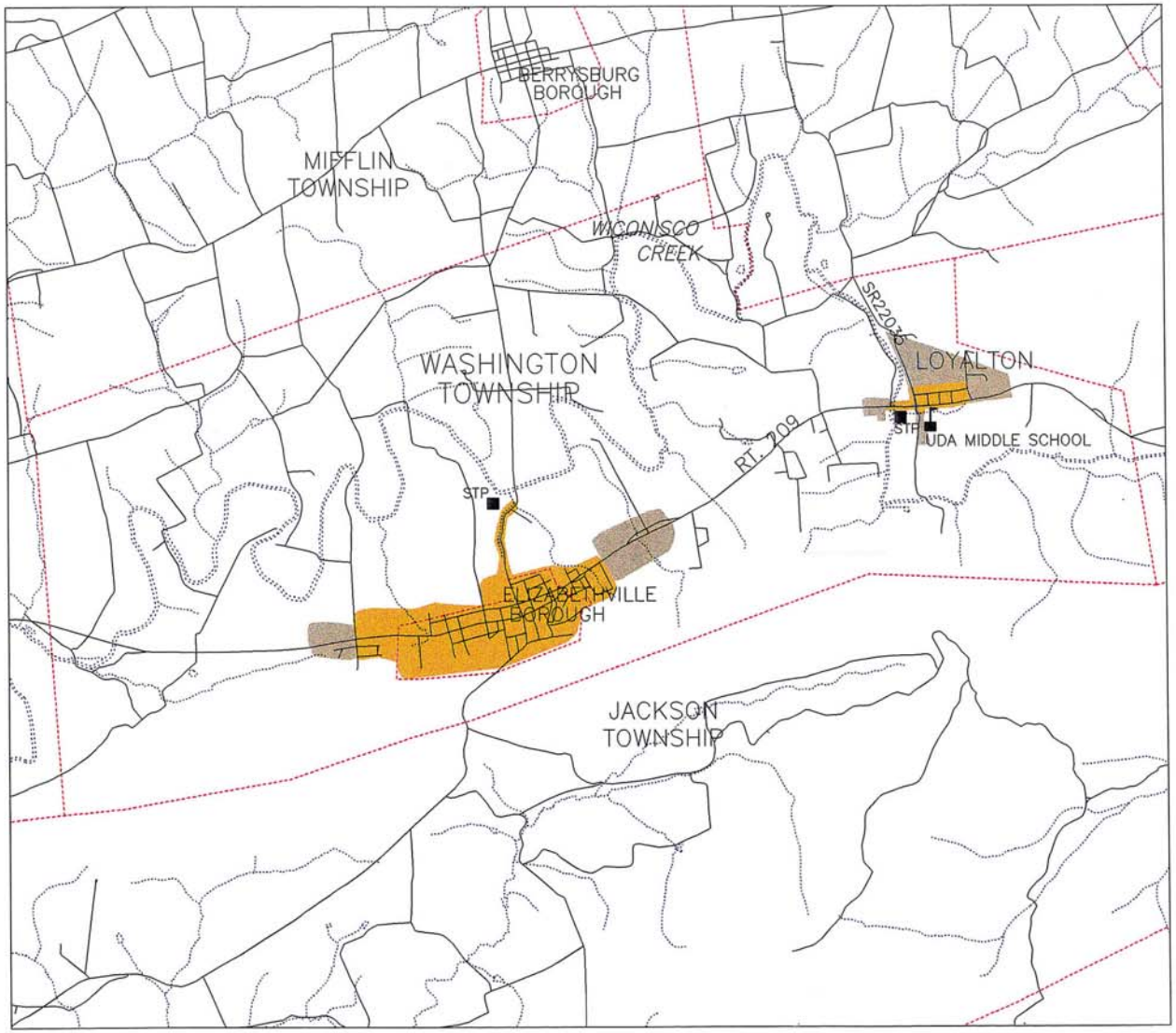
2) That the OLDS has been designed and will be installed to meet all minimum site-related restrictions as set by PaDER.



MAP 7–20
UPPER PAXTON
TOWNSHIP
SERVICE AREAS

EXISTING

FUTURE



MAP 7–21
WASHINGTON TOWNSHIP
ELIZABETHVILLE BOROUGH AND
LOYALTON SERVICE AREA

EXISTING

FUTURE

The Township will establish an Authority which will coordinate and implement all policies related to the public treatment of wastewater. A monitoring and maintenance program for on-lot systems will be adopted which empowers the SEO to solicit documentation of compliance and enforce maintenance of on-lot systems.

Washington Township was listed by PIIA for PennVEST funding. The project listed for funding included WWTF modifications, a pumping station, and an interceptor.

Future sewer extensions are expected to occur along Route 209, SR 22036 and other areas adjacent to Loyalton.

West Hanover Township

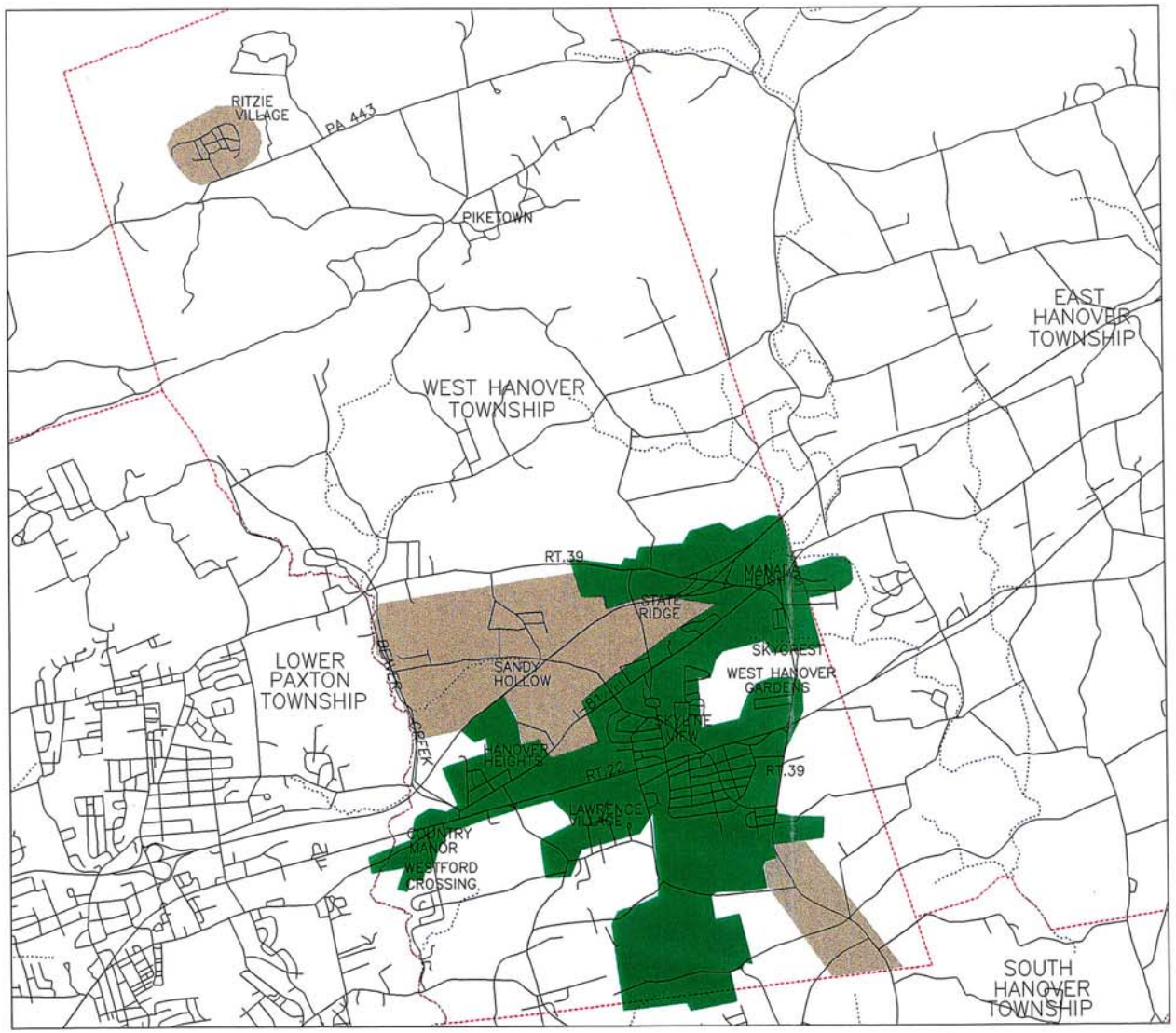
Existing Sewerage Facilities

The entire Township utilizes on-lot disposal systems. There are many problem areas involving old on-lot disposal systems and poor water quality resulting in many system malfunctions. The Township is actively studying the sewerage situation by preparing an Act 537 Plan.

Sewerage Planning

West Hanover Township is currently completing their Act 537 Plan. The Plan's recommended alternative is the construction of a conventional gravity collection and treatment system to be located within the Township. The treatment plant, a sequencing batch reactor (SBR) would be located in the vicinity of Manada Heights and discharge to the Manada Creek. Construction of the facilities is scheduled for May, 1996. The evaluation of alternatives for Ritzie Village indicates that public sewerage is not presently practical. A package WWTF has been proposed for Ritzie Village in the distant future. Wastewater management in all areas of the Township outside the immediate and 5-year plan service areas will be in accordance with the OLDS Management Plan that allows for monitoring of specifically identified areas. Persistent OLDS problems will require the study of small community or public sewerage systems.

West Hanover Township has also been listed by the PIIA as a possible recipient of a PENNVEST loan. The loan monies are for the construction of a pumping station. The cost was not reported.



MAP 7–22
WEST HANOVER TOWNSHIP

SERVICE AREAS

YEAR – 2004

FUTURE

Wiconisco Township

Existing Sewerage Facilities

Wiconisco Township has recently constructed a wastewater treatment facility, collection lines, and the associated pumping stations (1993). Its projected population to be served is 430 with a maximum capacity permitted of 0.734 mgd. The plant is located in the western portion of the Village Area near Bear Creek.

The treatment process involves a gravity sewer system which will convey wastewater to receive primary treatment using aerated facultative lagoons for mixing and aeration and secondary treatment. The receiving stream is Bear Creek, a tributary of Wiconisco Creek. The excess sludge will be left in detention until disposal is necessary.

The new WWTF has replaced all existing disposal facilities within the Wiconisco Village Area as well as a small treatment plant serving a 20 unit public housing development called Minnich Terrace.

Wiconisco Township is in charge of regular operation and maintenance duties as well as handling the billing. The billing is based on a flat rate per customer.

Sewerage Planning

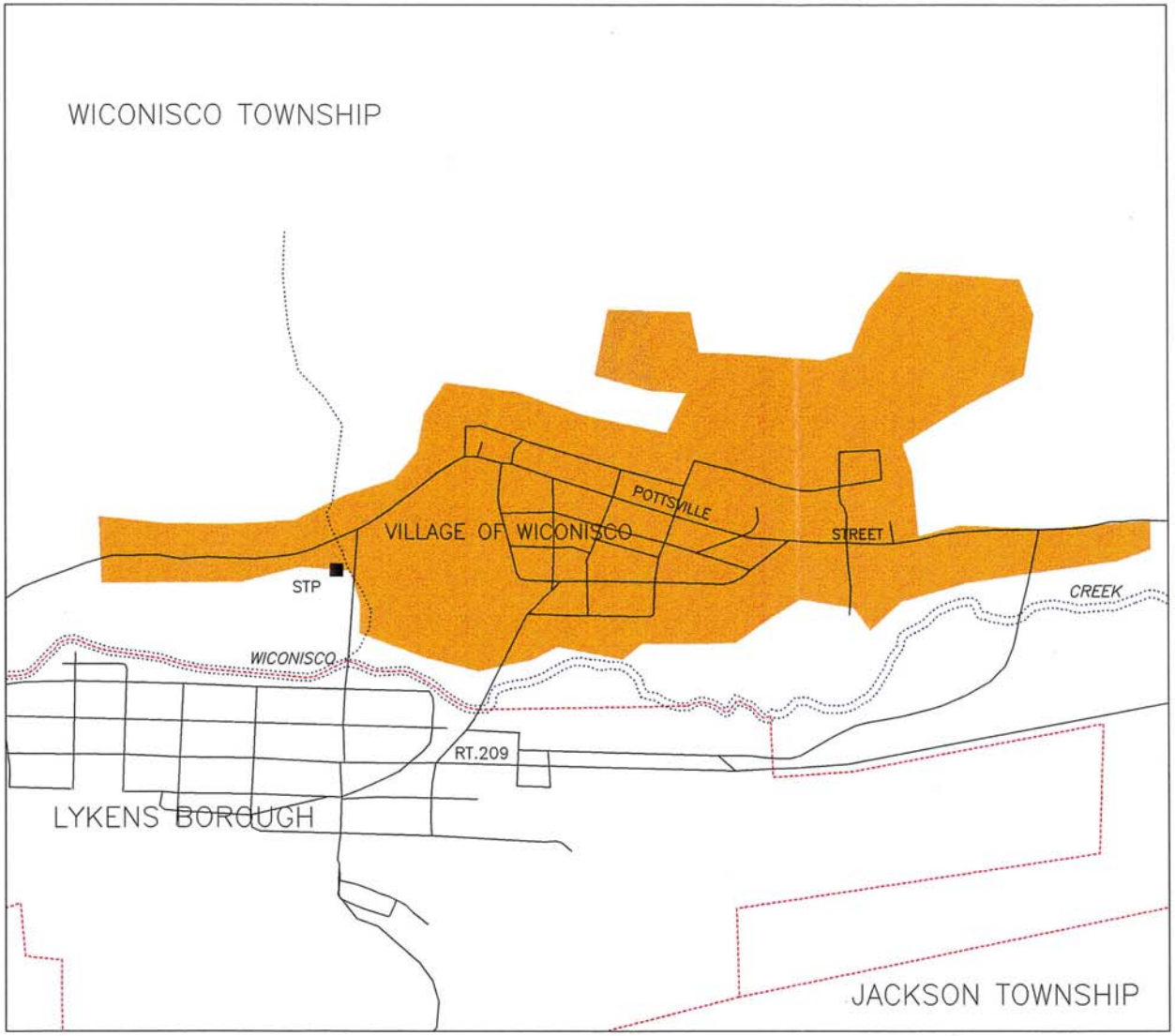
The sewage treatment plant and collection lines are newly constructed. There are no additional extensions planned or problems requiring corrections at the present time.

Williamstown Borough Authority

The Williamstown Wastewater Treatment Facility was built in 1965 and is located in Williams Township. The facility serves Williamstown Borough and a small portion of Williams Township. The plant serves approximately 1,500 people all of which are billed quarterly based on a flat rate. This rate differs according to usage (residential, commercial, and institutional).

The facility utilizes high rate tricking filters followed by secondary sedimentation. The hydraulic and organic daily loading capacity of the facility is 0.375 mgd and 625.5 lbs BOD_5/day.

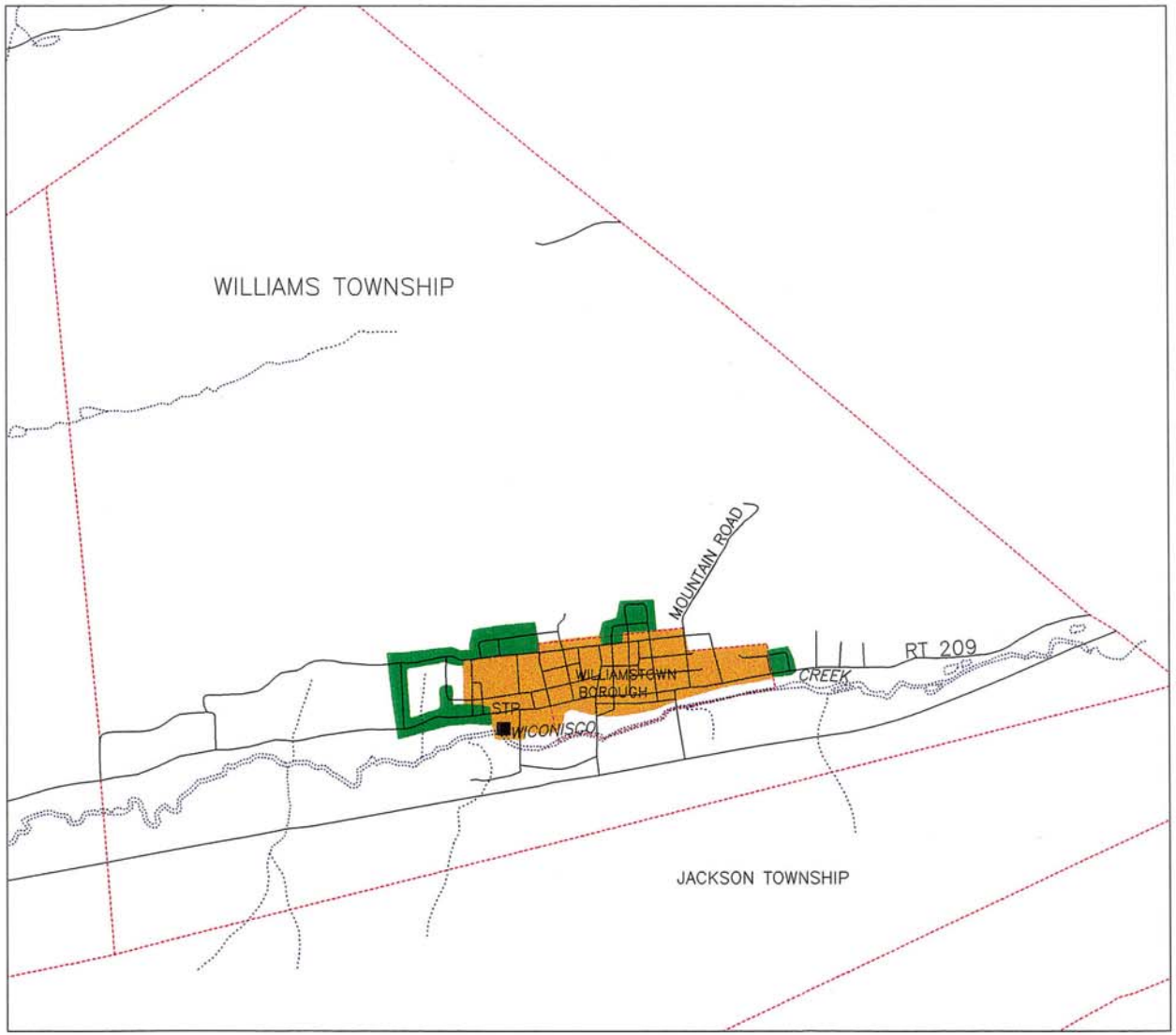
The five year (1988-1992) annual average hydraulic and organic loading was 0192 mgd and 249 lbs BOD_5/day respectively. Hydraulic or organic overloads are not expected within the next five years.



MAP 7-23
WICONISCO TOWNSHIP
SERVICE AREA

EXISTING

* THERE ARE NO SEWER EXTENSIONS PLANNED FOR YEAR-2004 OR FUTURE



MAP 7–24
WILLIAMS TOWNSHIP
AND WILLIAMSTOWN BOROUGH
SERVICE AREA

EXISTING

YEAR – 2004

* THERE ARE NO FUTURE SEWER PLANS

B. Private Wastewater Treatment Facilities

There are sixteen (16) private wastewater facilities including one (1) single family plant. Table 7.3 presents the owner's name, permit number, the municipality in which it operates and the type of system. The locations of these facilities are provided on the Dauphin County Sewage Treatment Plant Map.

Private wastewater facilities are effectively utilized in areas which do not have public sewerage facilities available and when it has been determined that on-lot disposal is impractical or unavailable. These facilities require regular maintenance to operate within the facilities discharge permit.

PADER advocates the use of larger municipal wastewater facilities that are permanent structures maintained by licensed operators.

TABLE 7.3
PRIVATE WASTEWATER FACILITIES

OWNERS' NAME	NPDES PERMIT NUMBER	MUNICIPALITY	TYPE OF SYSTEM
Guy & Carol Weaver	0082091	East Hanover Township	Tank/Sand Filter
Chesapeake Estates of Grantville	0082317	East Hanover Township	Extended Aeration
Clarks Ferry Auto/Truck Plaza	0084115	Reed Township	Extended Aeration
Custer Homes	0084018	Middle Paxton Township	Extended Aeration
Leonard Dobson	0033391	Londonderry Township	Extended aeration Sand Filter
GPU Nuclear	0081698	Londonderry Township	Extended Aeration
Mountainview Thoroughbred Racing	0081264	East Hanover Township	Contact Stabilization Sand Filter
Henry Nolt	0033054	Londonderry Township	Extended Aeration Anthracite Filter
Frank Perano	0080721	Londonderry Township	Oxidation Ditch
Frank Perano	0034754	Halifax Township	Package Extended Aeration
RMC Enterprises, Inc.	0041220	Conewago Township	Aeration and Sand Filter
SMD Enterprises, Inc.	0082325	East Hanover Township	Extended Aeration
Larry Strohecker	0084492	Halifax Township	Extended Aeration
Truckstops of America	0080560	West Hanover Township	Extended Aeration, Pot Removal, Filtration
United Medical Management	0081680	Derry Township	Package Extended Aeration
UNCCAL Corporation	0024945	West Hanover Township	Extended Aeration Micro Strain

C. Wastewater Planning Summary

1. Planned Sewer Service Areas

A summary listing of the planned and projected sewage facilities projects including sewer system extensions and capacity upgrades, as described in Section 7 of the Plan for the two 10-Year planning periods is presented in Table 8.3. These projects were identified in the available Municipal Act 537 Plan and related studies or by municipal officials in the sewage facilities survey and through an engineering assessment of projected and potential future sewage facility requirements. The projected 10-year and 20-year sewer service areas for each municipality with existing or planned sewer service are delineated on the respective maps of each municipality.

Existing and projected sewer service areas for the entire County are shown on Map 7-1. The total land area currently being served and projected areas to be served by or immediately accessible to, public sewers for each municipality in the County are tabulated in Table 7.4. Approximately 12% of the total land area within the County is currently served by public sewers. This sewer service area is projected to increase to 13% by 2004 and 17% by 2014.

As indicated in Table 7.4, the following municipalities in Dauphin County are almost entirely served by public sewers:

Elizabethville Borough
Halifax Borough
Harrisburg City
Highspire Borough
Hummelstown Borough
Middletown Borough
Millersburg Borough
Paxtang Borough
Penbrook Borough
Royalton Borough
Steelton Borough
Williamstown Borough

The following municipalities are projected to be entirely or almost entirely served by public sewers by 2014:

Lower Paxton Township
Susquehanna Township
Swatara Township
Dauphin Borough

Substantial development and related sewer system extensions are anticipated to occur in the following municipalities during the 20-year planning period:

Halifax Township
East Hanover Township
Lower Paxton Township
South Hanover Township

TABLE 7.4
TABULATION OF EXISTING AND PROJECTED
SEWER SERVICE LAND AREAS BY CONTRIBUTORY MUNICIPALITY

Municipality	Existing Service Area (Ac)	Add'l 2004 Service Area (Ac)	Total 2004 Service Area (Ac)	Add'l Future Service Area (Ac)	Total Future Service Area (Ac)	% of the Municipality Served by Year	
						2004	2014
Berrysburg Boro.	50	---	50	33	83.0	11	19
Conewago Twp.	9	---	9	---	9.0	---	---
Dauphin Boro.	87	45	132	29	161	52	63
Derry Twp.	3,904	355	4,259	3,051	7,310	24	42
East Hanover Twp.	119	1,422	1,541	348	1,889	6	8
Elizabethville Boro.	326	---	326	---	326	92	92
Halifax Boro.	134	---	134	---	134	97	97
Halifax Twp.	83.0	---	83.0	197	280	.4	2
Harrisburg City	5,260	---	5,260	---	5,260	69	69
Highspire Boro.	310	---	310	---	310	72	72
Hummelstown Boro.	770	---	770	---	770	93	93
Londonderry Twp.	---	250	250	5,112	5,362	2	32
Lower Paxton Twp.	9,136	---	9,136	---	9,136	49.9*	49.9*
Lower Swatara Twp.	3,819	721	4,540	---	4,540	49	49
Lykens Boro.	356	---	356	---	356	62	62
Middletown Boro.	1,041	---	1,041	---	1,041	90	90
Middle Paxton Twp.	17	---	17	732	749	.01	2
Millersburg Boro.	447	---	447	4	451	91	92
Paxtang Boro.	241	---	241	---	241	100	100

*No available Year 2004 or future projections

TABLE 7.4
TABULATION OF EXISTING AND PROJECTED
SEWER SERVICE LAND AREAS BY CONTRIBUTORY MUNICIPALITY

Municipality	Existing Service Area (Ac)	Add'l 2004 Service Area (Ac)	Total 2004 Service Area (Ac)	Add'l Future Service Area (Ac)	Total Future Service Area (Ac)	% of the Municipality Served by Year	
						2004	2014
Penbrook Boro.	298	---	298	---	298	100	100
Royalton Boro.	142	17	159	11	170	63	66
South Hanover Twp.	286	333	619	1,125	1,744	8	24
Steelton Boro.	1,097	---	1,097	---	1,097	51	51
Susquehanna Twp.	6,043	---	6,043	---	6,043	60	60
Swatara Twp.	6,639	---	6,639	1,491	8,130	69	85
Upper Paxton Twp.	853	---	853	154	1,007	4	5
Washington Twp.	180	44	224	270	494	2	5
West Hanover Twp.	---	2,387	2,387	1,322	3,709	16	25
Wiconisco Twp.	420	---	420	---	420	7	7
Williams Twp.	56	76	132	---	132	4	4
Williamstown Boro.	136	2	138	---	138	72	72
TOTALS	**42,259**	**5,652**	**47,911**	**13,879**	**61,790**		

*No available Year 2004 or future projections

2. Sewerage Needs Analysis

To summarize the sewerage needs section of this study a "Sewerage Needs Analysis Matrix" was created and is presented in Table 7.5. Only those municipalities which had possible needs were listed in the matrix. Table 8.3 summarizes the sewered municipalities which have ongoing or planned Year 2004 projects.

Matrix shows very strong sewerage needs in Halifax Township, Lower Paxton Township, and in East and South Hanover Townships.

The matrix shows very strong sewerage needs in Halifax Township, Lower Paxton Township, and in East, West, South Hanover Townships, and Washington Township. At the time of this writing, sewerage needs have been addressed by these aforementioned municipalities with the exception of Halifax and South Hanover Townships. Due to strong growth projections and soil limitations, Halifax should begin Act 537 Planning. South Hanover Township had prepared an Act 537 Plan update in 1985, but is unable to afford the recommendations of the Plan. It is expected that the Duke Street sewer extension to the Derry Township Municipal Authority AWTF will be the first project undertaken.

Act 537 Sewage Facility Planning is needed in nine (9) municipalities: Reed, Williams, Rush, Lykens, Halifax, and Mifflin Townships, and Gratz Borough. On-Lot Disposal System Management and Maintenance Education for residents in Dauphin County is encouraged (see Appendix III - On-Lot Management Model Ordinance).

The population projections predict Conewago, Halifax, East Hanover, South Hanover, Lower Paxton, and Susquehanna Townships to have strong growth potential. A majority of these Townships are planning for public sewer service expansion in these growth areas. It is recommended Conewago and Halifax Townships develop up-to-date Act 537 Plans as well as future land use plans in order to zone accordingly. Future land development directly relates to its present and future infrastructure planning.

3. Regional Considerations

Of the 16 municipally owned wastewater treatment facilities operating in Dauphin County 11 provide wastewater treatment services to more than one municipality. The existing wastewater treatment facilities and the respective municipalities tributary to these facilities, as described in Section 7 of the plan are summarized in Table 7.6.

The total permitted treatment capacity in Dauphin County is approximately 57 mgd. The reported 1993 average daily flow for each facility was tabulated from Table 7.1. The total daily flow for these treatment facilities is estimated to 32.16 mgd. Therefore, approximately 43 percent of the available treatment capacity in the County is currently used.

The regional nature of the wastewater treatment facilities in Dauphin County is attributed to the topography and related natural drainage basins within the County. Continued intermunicipal cooperation is encouraged in the expansion of sewer service areas to sustain orderly development throughout the County.

TABLE 7.5
SEWERAGE NEEDS ANALYSIS MATRIX

Municipality	On-Lot Soil Suitability	Existing Public Facilities	PennVEST/ PADER Info	Act 537 Plan Review	Population Projections	Needs Assessment
Conewago Twp.	Slight to moderate limitations	None	No Information	Possible Joint Authority	Strong growth	Creation of an Authority to plan sewered areas
East Hanover Twp.	Grantville/Shellsville Area have OLDS problem	Some private systems exist No WW planning projects	No WW planning projects	Grantville/Shellsville Area to be publicly sewered	Strong growth	Sewer those areas identified in Act 537 Plan and OLME implementation
Gratz Boro.	Severe soil limitations	None	PennVEST ranked WWTP planned for construction for the entire Borough	No 537 Plan	Decreasing	Public sewer services are needed; Act 537 planning
Halifax Twp.	Moderate to severe soil limitations with steep slopes	One private system exists	No WW planning projects	No 537 Plan	Strong Growth	Act 537 planning and OLME
Londonderry Twp.	Few soil limitations	None	Project rank 36 by PennVEST	Establish 3 primary sewer districts	Steadily increasing	OLME sewer service in designated districts
Lower Paxton Twp.	Severe soil limitations	Harrisburg STP Swatara STP	No WW planning projects		Very strong growth	Act 537 Amendment
Lykens Boro.	Borough is totally sewered	Lykens Borough Authority	Project Rank 55 by PennVEST - line extension for existing cesspools	No 537 Plan	Decreasing	Act 537 planning
Lykens Twp.	Northern region is considered severe	None	Malfunctioning OLDS	No 537 Plan	Steadily increasing	Act 537 planning and OLME
Mifflin Twp.	Severe soil limitations with steep slopes	None	No WW planning projects	No 537 Plan	Steadily increasing	Act 537 planning and OLME
Reed Twp.	Severe soil limitations	None	No WW planning projects	No 537 Plan	Decreasing	Act 537 planning OLME
Rush Twp.	Severe soil limitations and steep slopes	None	No WW planning projects	No 537 Plan	Stagnant	Act 537 planning and OLME
South Hanover Twp.	Slight to moderate in the north; hazardous in the south	Derry STP	No WW planning projects	Well monitoring and start a construction fund for future sewer extensions	Strong growth	OLME; sewer line construction, revolving planning fund for future line extensions for problem areas

TABLE 7.5
SEWERAGE NEEDS ANALYSIS MATRIX

Municipality	On-Lot Soil Suitability	Existing Public Facilities	PennVEST/ PADER Info	Act 537 Plan Review	Population Projections	Needs Assessment
Susquehanna Twp.	Severe to hazardous soil limitations	Harrisburg City Authority line extensions	No WW planning projects	Sewer Mountainview Road and Progress Avenue	Steadily increasing	Maintain cooperative municipal agreements with The HAWTF
Upper Paxton Twp.	Severe soil limitations and steep slopes	Millersburg and Upper Paxton Area Authority	Act 537 Plan Update	No current Act 537 Plan	Steadily increasing; residential & commercial growth expected	OLME Act 537 Plan Update
Washington Twp.	Severe soil limitations and steep slopes	Elizabethville Borough Area Authority and the Upper Dauphin Area Middle School STP	Project Rank 155 by PennVEST for Route 209	Creation of Authority, Study I/I, empower SEO	Small growth, almost stagnant	Regional STP System with Elizabethville
West Hanover Twp.	Severe soil limitations	No public sewer	Project Rank 187 - STP and collection lines	STP and collection lines - construction planned for May 1996	Small decrease predicted	Sewer those areas identified in Act 537 Plan and OLME
Wiconisco Twp.	Severe soil limitations and steep slopes	None	No WW planning projects	No 537 Plan	Decreasing	Act 537 planning
Williams Twp.	Severe soil limitations	Williamstown WWTP	No WW planning projects	No 537 Plan	Steadily increasing	Act 537 planning OLME

WW - Wastewater
OLME - On-Lot Disposal System Maintenance Education

TABLE 7.6
REGIONAL WASTEWATER TREATMENT FACILITIES AND CONTRIBUTORY MUNICIPALITIES

Treatment Facility	Contributory Municipality
Dauphin Borough	Dauphin Borough Middle Paxton Township
Derry Township (North)	Derry Township South Hanover Township Hummelstown Borough Conewago Township
Derry Township (Southwest)	Derry Township Lower Swatara Township
Elizabethville Borough	Elizabethville Borough Washington Township
Halifax Borough	Halifax Borough Halifax Township
Harrisburg City	Harrisburg City Lower Paxton Township Paxtang Borough Penbrook Borough Steelton Borough Susquehanna Township
Highspire Borough	Highspire Borough Lower Swatara Township Middletown Borough
Middletown Borough	Middletown Borough Lower Swatara Township Royalton Borough
Millersburg Borough	Millersburg Borough Upper Paxton Township
Swatara Township	Swatara Township Lower Paxton Township South Hanover Township Hummelstown Borough
Williamstown Borough	Williamstown Borough Williams Township

8. WASTEWATER INFRASTRUCTURE COSTS AND FINANCING

A. Project Costs

The costs of wastewater infrastructure and the methodology of financing those costs are most often the largest barrier in providing the necessary wastewater facilities for a given municipality. Wastewater infrastructure consists of the following major components:

- Wastewater Treatment Facility
- Sanitary Sewer Lines
- Manholes
- Pumping Stations (may not be necessary)

The wastewater treatment facility may consist of the following: wastewater treatment unit processes, sludge and storage facilities, stabilization, dewatering and an operation building for the plan.

Sanitary sewer lines may be gravitational or pressured depending upon the contours of the area to be served, and the costs of the construction. A major consideration in the installation of sanitary sewer pipe is the depth of soil overburden that exists over bedrock and how easy bedrock may be removed. The installation of sanitary sewers within bedrock often requires blasting bedrock which can be very costly.

Manholes are constructed to provide maintenance access to the sewer pipe. Manholes must be installed at all changes in grade, line size, direction, and typically every 400 feet of sewer.

Pumping stations are necessary when wastewater is unable to flow by gravity through the sewer pipe. This is often due to the need of sewering an area which is topographically lower than the wastewater facility.

Additional components of the infrastructure may include: monitoring wells, outside piping, electrical controls, site work, and land acquisition.

Table 8.1 presents the following major components of wastewater infrastructures and their expected range of costs in 1994 dollars.

Operating costs associated with pumping stations and treatment facilities are provided in Table 8.2. These costs are based on EPA Technical Report, Analysis of Operations and Maintenance Costs for Municipal Wastewater Treatment Systems, February, 1978; and inflation rate of 6%/year.

Additional costs are always associated with wastewater facility projects. These expenses involve fees for: engineering, legal, administrative, financial services and contingencies. These expenses, in addition to construction costs, are the project costs. The ratio of project costs to construction costs ranges from 1.2 to 1.4.

TABLE 8.1
1994 CONSTRUCTION COSTS OF
WASTEWATER INFRASTRUCTURE COMPONENTS

Wastewater Infrastructure Component	1994 Range of Costs
WASTEWATER TREATMENT FACILITY	
Wastewater Treatment	$2 - $15/GAL
Sludge Treatment	$5,000,000 - $6,000,000
Operations Building	$150,000 - $300,000
SANITARY SEWER PIPE INSTALLATION	
8" Gravity Line	$40-$60/Ft.
MANHOLES	$950 - $1300/300 Feet Sewer
PUMPING STATIONS W/GRINDER	$50,000 - $100,000

Sludge treatment costs based on EPA Handbook, Estimating Sludge Management Costs, June 1985; a 20 mgd WWTF and inflation rate of 4%/year.

TABLE 8.2
1994 OPERATING COSTS ASSOCIATED WITH
WASTEWATER TREATMENT FACILITIES

Wastewater Infrastructure Component	Operating Costs
Activated Sludge WWTF	$35 per capita per year
Advanced WWTF	$43 per capita per year
Pumping Station	$12,000/MGD

B. Dauphin County Project Summary

Estimated project implementation costs for the 10-year and future projects in Dauphin County are described in Table 8.3. Wherever possible, the cost estimates are based on information presented in the respective Municipal Act 537 Sewage Facilities Plans.

TABLE 8.3
SUMMARY OF PLANNED AND PROJECTED SEWERAGE FACILITIES PROJECTS

Municipality	10-Year Projects	Future Projects
Dauphin Borough	Sewer line extension along Stoney Creek Road (1994 Cost = $172,000)	
East Hanover Township	WWTP, collection and conveyance system (1994 Cost = $5,338,000)	
Londonderry Township		WWTP, collection and conveyance system in Sewer District #2 (1994 Cost = $4,140,000)
Lower Swatara Township	Vine Street Sewer Extension	
Lykens Borough	Treatment process conversion, sludge stabilization, dewatering, and storage (1994 Cost = $1,049,000)	
South Hanover Township	■ Duke Street sewer extension to Derry North WWTP (1994 Cost = $2,000,000) ■ Crestview sewer extension to Swatara WWTP ■ Diff's Corner sewer extension to Derry North WWTP	Sand Beach sewer extension to Derry North WWTP

TABLE 8.3
SUMMARY OF PLANNED AND PROJECTED SEWERAGE FACILITIES PROJECTS

Municipality	10-Year Projects	Future Projects
Washington Township	Wetland lagoon WWTF and sewer construction with pump station to serve Village of Loyalton (1994 Cost = $1,100,000) Sewer construction and connection of the Upper Dauphin School	
West Hanover Township	WWTP (SBR), sewer collection and conveyance construction to serve Manada Heights and Skyline View Package WWTP to serve Ritzie Village	Sewer extension to Sandy Hollow

C. Funding Sources

Most political subdivisions utilizing a public sewer system already have an Authority responsible for financing planned sewerage projects. As defined by the Pennsylvania Municipality Authorities Act of 1945, an Authority is a public corporation organized by a government unit to carry on a specific function outside the regular structure of government. These Authorities may be either of the operating or lease-back type. An operating Authority finances the construction or acquisition of facilities necessary to perform the intended service by issuing bonds. Then, as the name implies, the Authority operates the facilities retaining the responsibility for providing the service and for proper management of the operation. On the other hand, a lease-back Authority finances the facilities via a bond issue but in turn leases them back to the government unit for operation. The rentals paid by the lessor are used to retire the Authority's debt. Authorities may be formed by a single municipality, a group of municipalities, or a larger government unit such as a county or the state.

A significant fact in Authority financing is that costs are paid from user charges. Sufficient revenue must be collected from sewer rentals and other charges to pay operating costs and debt service. These revenues are normally obtained from front-foot assessments, tapping fees, and annual user charges. The front foot assessment is a way of reducing long-term debt but produces revenue only at the time sewers are built. Also, it may not be practical to make front-foot assessments in municipalities where such

charges have not been made for previous sewer construction. Tapping fees yield significant revenue only when collection systems are being rapidly expanded. Sewer rentals are normally determined as a flat annual rate or based on metered water consumption. If the flat annual charge method is used, the sewer rent for commercial or industrial establishments is normally based on water usage to avoid placing an undue burden on the residential user. There are valid arguments both for and against the different methods of making annual sewer use charges so the selection of which one to use is left to the individual sewerage system owner.

For projects that require a larger amount of money than can be comfortably borrowed from the local bank, regional banks are typically a good source or the Authority may choose to sell short term notes. Again, this money borrowed would be repaid in between two and five years.

Short term notes are generally issued to provide large amounts of money to undertake a project through some prescribed milestone. For very large projects where preliminary costs may total an excess of $1,000,000, the notes may be issued to pay these costs and then refinanced as part of a permanent financing after construction bids have been received. Under certain circumstances, the Authority may wish to borrow enough money to provide for both the preliminary costs and the construction of the project. This may be useful if the permanent financing is being provided by some federal or state agency or if there are several stages to a project that make the calculation of the long term debt amount uncertain.

This is not a financing vehicle for everyone since there are very stringent treasury regulations governing the issuance of such debt and limitations imposed by the state if these notes must be guaranteed by the sponsoring municipality. Finally, the success of such a financing is dependent upon specific marketing conditions including the size of the issuer and general economic forecast and activity.

Long term financing or permanent financing, as it is sometimes referred to, is usually necessary in order to distribute the cost of major capital improvements over many years and for growth communities, over a larger population base. There are several sources of long term financing commonly used in Pennsylvania. These sources have interest rates ranging from 1% per annum to whatever the current market demands. The terms will vary from a short 10 years to a long 40 years. Each of these principal methods, along with their advantages and disadvantages, is described on the following pages.

1. Pennsylvania Department of Community Affairs/Community Block Grants

A. General

(1) The Pennsylvania Department of Community Affairs administers a grants program for the U.S. Department of Housing and Urban Development. The grants are available to qualified projects. These projects include the construction of water and wastewater facilities.

(2) The program has two segments. Approximately 50% of the money allocated to Pennsylvania is in turn reallocated to various entitlement communities. Each county in

Pennsylvania is an entitlement community as are most major cities. The remaining funds are allocated through a statewide competitive program.

(3) Request for funding for county entitlement funds is made through the County Planning Commission which acts as a screening agency for the County Commissioners. applications for funding through the statewide competitive grant process are submitted to the PA Department of Community Affairs.

(4) The basic eligibility criteria established by the Department of Community Affairs requires that 51% of the project benefit low and moderate income households in the project area.

B. Advantages

(1) One of the primary advantages of the county entitlement program is the ease of the application and the ability to discuss project merits with the decision makers.

(2) The potential exists for multiple year fundings once a project has qualified.

C. Other Considerations

(1) The grants are typically small relative to project size. Grants through the county entitlement program seldom exceed $20,000 -$30,000. The maximum grant through the statewide program is $350,000.

(2) As a condition of the grant, tapping fees for low/moderate income households must be eliminated or reduced to recognize the impact of the grant.

(3) Grants are made annually and funds must be used within the fiscal year awarded or they will be reassigned to other projects.

(4) It is often difficult to establish the exact percentage of low/moderate income households in a project area without conducting a house-to-house income survey.

(5) A separate accounting of all Community Development Block Grant (CDBG) funds must be maintained.

2. Pennsylvania Infrastructure Investment Authority (PENNVEST)

A. General

(1) Governed by Board of Directors (Governor Casey is Chairman); Administered by PENNVEST staff in conjunction with Pennsylvania Department of Environmental Resources: Address:

PENNVEST
22 South Third Street
4th Floor, Keystone Building
Harrisburg, PA 17101
(717) 787-8137
Paul K. Marchetti, Executive Director

(2) Twenty year construction loans at subsidized interest rates based on County unemployment rates, Commonwealth cost of funds and affordability factors; interest rates as low as 1% (subject to increase after five years to predetermined rate).

(3) Application for construction funding is generally not considered for approval by PENNVEST Board until:

a. Act 537 Plan approval
b. Design completion
c. PADER permits (NPDES and Water Quality Management) issued or verbally approved by PADER
d. Technical evaluation and priority rating of application by PADER representative concluded

(4) PENNVEST obtains funds from capital budget appropriation ($150 million to fund projects in capital budget appropriation bill), borrowed funds, leftover State funds (water only) and Water Pollution Control Revolving Fund (Federal funds).

(5) PENNVEST applies prescribed health, safety and environmental criteria in determining funding priority; maximum $11 million per project for single municipality.

(6) Grant funding is authorized by statute and limited to $250,000 for sewer projects.

(7) Local or Project Counsel required to render enforceability and rate opinions and obtain approval of Department of Community Affairs (DCA) for municipal guaranty.

(8) Construction cannot commence until funding is approved and receipt of written consent to proceed from PENNVEST, or receipt of PENNVEST "Letter of No Prejudice".

(9) Monthly progress reports must be submitted to PENNVEST.

B. Advantages

(1) Lower interest rates available - presently as low as 1.0% for qualified communities (increased after 5 years); affected by Commonwealth borrowing rate.

(2) Projects are rated by same the agency approving Act 537 Sewage Facilities Plan and mandated projects should receive favorable review.

(3) PENNVEST may accept subordinate or party lien position (will accommodate outstanding debt).

(4) Lower issuance costs.

(5) No negative arbitrage.

(6) Funding for design and other preconstruction costs are available.

(7) A trustee is not required.

C. Other Considerations

(1) There are only two board meetings each year; however, approval is uncertain. There are difficulties in coordination project and financing timetables.

(2) There are risks to financing and undertaking design without commitment for permanent financing.

(3) Much competition for funding.

(4) There is the possibility of only partial PENNVEST funding (complexity of undertaking two financing simultaneously); however, lien priority and parity debt requirements become an issue.

(5) Few grants are given yearly and they are only provided if it is proven necessary to make project "affordable".

(6) Municipal guaranty probably will be required for start-up project (legal procedures required for DCA approval); pledge of full faith, credit and taxing power.

(7) Interim financing may be necessary to speed up the project and meet PADER commitments (may be for term of no more than five years and must have short call feature to allow current refunding with PENNVEST loan proceeds).

(8) Documents may limit future borrowing.

(9) PADER rates design and project scope for financing (rating uncertain).

(10) Loss of Act 339 annual operating grant eligibility.

(11) If WPCRF loan funds are applied then Federal requirements under Title II and Title VI of Water Quality Act also apply to project (Davis-Bacon Act, etc.)

(12) There are limitations on using financing capital contributions to purchase existing treatment capacity.

3. Public Bond Issue

A. General

(1) Select underwriter or financial advisor is used to structure and sell bond issue, the traditional method of long term financing of municipal utility projects in Pennsylvania.

(2) Long term fixed rates are available. A debt service established upon issuance - facilitates budgeting and rate-making better than adjustable rate; up to 30 or 35 year term.

(3) Financial security is assured the same as a bank loan. A Municipal Guaranty may be required. 10% cover in rate covenant; Debt Service Reserve Fund equal to 100% of maximum annual debt service.

(4) A bond may be sold as rated or non-rated; bond issuance may be available (AAA rating).

(5) A Bank or Trust Company may be appointed to serve as trustee. All rates and charges are deposited in a trust account under a Trust Indenture. Investments and fee collection are monitored by the trustee and the trustee must then send any interest checks to the bondholders.

B. Advantages

(1) Long term fixed interest rate financing

(2) Traditional method; municipal bonds in high demand

(3) Local investment opportunity

(4) Generally, no third-party review of design or specifications

(5) Establishes municipal credit

(6) Flexibility in future borrowing

(7) Shorter and more definite timetable to implement financing with the FmHA or PENNVEST

C. Other Considerations

(1) Market interest rates are higher than PENNVEST

(2) Project wholly locally funded (no grants)

(3) Municipal Guaranty usually required

10% cover (unless non-rated)

(4) Reserve Fund generally required

(5) Trustee fees and expenses

(7) Higher issuance costs

Federal and state grants are available to assist in financing sewerage projects. Both federal and state laws include specific provisions governing appropriation and allocation of funds to eligible political subdivisions for assistance in constructing projects. Although the requirements for eligibility may be met, there are limitations to the funds available under the appropriations. The principal federal and state aid programs are described below:

4. Farmers Home Administration (FmHA) - U.S. Department of Agriculture

Provides for construction of sewage treatment works, interceptors and outfall sewers, as well as certain pumping stations and force mains. Portions of project over-head are also included in the eligible costs. Grants of up to 50 percent of eligible costs are provided. This program is administered by the Federal Water Quality Administration through the Pennsylvania Department of Environmental Resources.

Grants up to 75 percent are authorized; however, a review of grants previously made indicated that amounts less than this should be expected. This act also authorizes loans to finance eligible projects. Loans are made at normal commercial rates. The grant and loan provision of this program are primarily available for facilities serving the most financially needy communities to reduce user costs for eligible grant recipients to a reasonable level.

A. General

(1) FmHA provides long term (40 years) fixed rate financing for qualified municipal utility projects; eligibility is based on "median household income" (MHI) of residents of the

municipality. Grant funding may also be available for qualified projects which are considered necessary to make project affordable.

(2) The availability of loan and grant funds is determined by the Federal budget. Competition is strong among applicants in Pennsylvania.

(3) Local and Bond Counsel are required to render various enforceability and tax law opinions to the municipality.

(4) Eligibility criteria for the second quarter of 1993 was:

MHI*	Lending Rate	Maximum Grant	Percentage of MHI Limitation **
0 - $25,198	5.0%	75%	.5%
$25,199 - $31,498	5.25%	55%	1.0%
$31,499 and above	5.625%	No Grants	No Grants

* Median Household Income
** Grant shall not exceed the maximum grant percentage of the maximum debt service portion of the sewer rentals as a percentage of MHI.

B. Advantages

(1) Low interest rate - 5% for low income municipalities or based on average municipal bond rates; usually better than market in increasing rate environment because quarterly determination lags behind market.
(2) Longest fixed rate term available - 40 years.
(3) Probably lowest debt service payments available
(4) Grant eligibility up to 75%
(5) Loan and grant eligibility determined by MHI
(6) Rates calculated on MHI and affordability analysis
(7) Assistance of FmHA staff and engineers
(8) Program well established
(9) Low connection charges
(10) Municipal guaranty probably not required
(11) Low issuance costs
(12) No negative arbitrage
(13) FmHA provides commitment for permanent financing prior to authorizing design
(14) Trustee not required

C. Other Considerations

(1) FmHA's project involvement from funding through design and construction can add significant delays to project progress
(2) FmHA approves project scope
(3) Interim construction financing generally required (may be waived in certain cases)
(4) Additional borrowing and expansion subject to FmHA approval
(5) Possibility of future graduation (loan called in)
(6) 10% Reserve Fund (10 year build-up)
(7) FmHA must approve design and specifications, costs, etc.
(8) Rate adjustments subject to FmHA approval
(9) Financing may require refunding of outstanding bonds
(10) State prevailing wages apply
(11) Interest rate and grants not established until time of settlement

5. State Aid

The Pennsylvania legislature has created several programs that have the purpose of assisting political entities in funding sewerage projects. These programs are dependent upon budget appropriations.

The Clean Streams Act (Act 339) provides for grants-in-aid for eligible intercepting sewer and treatment facilities. Grants equal to two percent of eligible project costs are made annually. To arrive at eligible project costs, amounts of other grants are first deducted from total project costs. The 2% annual funding is based on total local funding contributions towards the cost to build the treatment facility. Long-range benefits possible under provisions of this act are substantial. All eligible costs may be realized within 50 years.

Community Facilities Program

The Community Facilities Program is administered by the Pennsylvania Department of Commerce and provides grant-in-aid assistance for needed public facilities in municipalities with a population of 12,000 or less. Under this program grants are limited to projects with a total cost of $2 million or less. Eligible projects include the construction, rehabilitation, alteration, expansion, or improvement of water facilities, sanitary sewage disposal facilities and access roads to serve a public water or sanitary sewer facility. Generally, grants are limited to $50,000 or 50 percent of the total project cost. However, this may be increased to $75,000 or 75 percent of the total eligible project cost for economically distressed communities.

Eligible projects are evaluated competitively on the following factors:

- the projects improvement of health and safety within the municipality;
- the degree of economic distress in the locality;

- project readiness; and
- cost effectiveness of the project

6. Business Infrastructure Development Grant Program

The Business Infrastructure Development Grant Program (BID) is administered by the Pennsylvania Department of Commerce. This program provides grants or loans to local sponsors (such as local governments, authorities and development districts) in order to install specific infrastructure improvements necessary to complement industrial investment by private companies which Pennsylvania's share of domestic and international commerce and create net new jobs. To be considered eligible, the participating private companies must be involved in agricultural, industrial, manufacturing or research and development enterprises.

This program requires a private company funding match which must be at least $2 for every $1 of BID monies appropriated. The program considers the private matching funds in the form of the private company's industrial investment.

Eligible costs under this program include construction, expansion, improvement, rehabilitation or repair of the eligible infrastructure.

7. Industrial Site Development Program

Administered by the Pennsylvania Department of Commerce, this program provides grants to municipalities and public non-profit agencies for developing sites for economic development. Projects which qualify include construction, rehabilitation, expansion, or improvement of water facilities, sanitary sewage collection lines, access roads, channel realignment and land acquisition in urban areas. Generally, grants are limited to $50,000 or 50 percent of the total project, which ever is less. In economically distress communities, a maximum grant of $100,000 may be permitted.

8. Planning Aid

In addition to construction grants and loan programs previously discussed, three programs that refer to grants and loans for sewage planning pertain to this discussion. Descriptions of these follow:

A. The Federal Housing Act (P.L. 89-560) authorizes interest-free loans to finance the cost of preliminary and final planning of sewage facilities. Loans are made from a revolving fund replenished by loan repayments rather than through legislated appropriations. Because of this, funds available from this source have been very limited. Increases in funds to implement this program are not expected at this time. The Department of Housing and Urban Development administers this program.

B. The Pennsylvania Sewage Facilities Act (Act 537) Provides for reimbursement up to 50 percent of the cost of preparing sewage facilities plans. The program is administered through the Pennsylvania Department of Environmental Resources. Political entities undertaking detailed sewage facilities planning may participate in this program. Continued funding of this program is expected.

C. Community Development Block Grant Program (CDBG)
The Department of Community Affairs provides funding low to moderate income municipalities. These funds can be used for the planning design and construction of a proposed project. CDBG funds are primarily used for community facilities upgrading and housing rehabilitation projects. The funding can be applied for either by single or multi-year funding depending on the cost of planning and construction.

9. MANAGEMENT

Possible management programs range from those involving a single large sewer system for the entire Tri-County region to those involving independent municipal or even smaller systems. Due to the distances between the sewer service areas, formation of a regional or county organization to be responsible for all aspects of sewerage is not practical at this time. Also, consolidation of the existing systems under a single agency would present legal and financial problems. Basically, control of sewerage functions should remain with the municipalities although it may be advantageous for some municipal governments to turn all or part of the operations over to another organization. Several methods of cooperation are being used now by places that do work together on sewerage problems.

The basic unit of most municipal sewer organizations is a Municipal Authority. Only an operating Authority can take an active part in joint sewer operations. Therefore, the term Authority will refer to operating Authorities throughout the remainder of this discussion unless otherwise stated. If a lease-back Authority exists, the following pertains to the local government or any other party responsible for operating the sewerage system.

As previously stated, an Authority can be jointly formed by more than one municipality, so one approach to cooperative management would be to form joint Authorities. Existing authorities may also be expanded into joint Authorities. All municipalities included in any joint Authority must be represented by at least one member on the Board of such an Authority. The principal advantage to a joint Authority is to develop a broader financial base, while the principal disadvantage is that the individual municipalities that are members lose some of their control over the actions of the Authority. This same loss of individual flexibility applies to any multi-municipal organization.

Being corporations, Authorities may also become customers of other Authorities, municipal governments, or corporations. In this manner an Authority could retain the sewage collection system and pay another Authority for transmission and treatment. A municipal authority may extend its services across political boundaries with may also cross into other towns but in so doing that portion becomes subject to control of the Public Utility Commission. Authorities do not come under the jurisdiction of the PUC.

On a smaller scale of cooperative management, certain functions of sewer system operation could be turned over to a central agency or association. For instance, a central billing agency could be formed. Another possibility would be a central pool of emergency and construction equipment. If such a pool of special equipment were to be maintained, each individual municipality would not have to own items that might go unused for long periods. The establishment of central purchasing of materials and equipment could also effect substantial savings due to large-volume purchasing.

Municipalities with adopted Act 537 Sewage Facilities Plans most likely have also adopted a Management and Maintenance Ordinance for on-lot disposal systems (See Appendix III - On-Lot

Management Model Ordinance). This ordinance generally monitors how often individual on lot disposal systems are to be pumped out, water testing for those utilizing private wells and proper installation of septic systems. The primary objective of this ordinance is to ensure groundwater protection for the residents it serves.

In conclusion, although providing sewer service is primarily a municipal responsibility, certain economies can be realized by operating on a larger scale. Location alone dictates that not all municipalities can or should individually provide all phases of sewerage from collection through treatment. This fact when combined with the necessity of an immediate construction program in all the sewer service areas shows the advantages of coordinating sewer system management and operation.

10. ACT 537 SEWAGE FACILITIES PLANNING

A. Act 537 Sewage Facilities Plan Basic Requirements

The Pennsylvania Sewage Facilities Act (Act 537), enacted by the Pennsylvania Legislature in 1966, requires that every municipality in the state develop and maintain an up-to-date sewage facilities plan. The main purpose of a municipality's sewage facility plan is to protect the health, safety, and welfare of the citizens living in the municipality by correcting malfunctioning on-lot septic systems, overloaded treatment plants or sewer lines and wildcat sewers.

A typical sewage facilities plan includes a description of existing facilities, area geology, the comprehensive plan, subdivision activity, sewage treatment needs, sewage treatment alternatives and a fiscal evaluation for the methods of financing the selected alternatives.

The Department of Environmental Resources (DER) recommends consultation with the Department and the use of professional assistance, even in the early stages of planning, in the development of an ACT 537 plan. Professional assistance can come from a planning agency, municipal authority or consulting firm. Planning that addresses new collection, conveyance and treatment facilities requires engineering expertise and practical experience in the planning of sewer systems. The consultant will prepare a plan that meets local, state and federal requirements. The municipality retains the right to make final decisions regarding alternatives and implementation of the plan.

The following suggestions can be followed to assist in selecting a consultant:

- Establish a list of qualified consultants.
- Solicit letters of interest and references.
- Narrow the list to 3-5 firms and request proposals.
- Interview each firm to discuss the proposal and their qualifications.
- Check each firm's references.
- Select the most qualified firm.

Once the consultant has been selected, the plan must be developed. Specific information which should be included in the Act 537 Plan is listed below:

A. Adoption Resolution
B. County Comments (Local Planning Commission comments)
C. Executive Summary
D. Table of Contents
E. Description of Existing Physical and Demographic Environment
    (1) Base Line Mapping Using Latest USGS Topographical Mapping
        a. Municipal Boundaries
        b. Existing Communities and Developments indicating subdivisions since 1972
        c. Drainage Basins/Streams
        d. Soils Mapping describing on-lot suitability of each soil type

e. Geologic Mapping
f. Existing Sewage Facilities
g. Topography/Slopes

(2) Existing On-Lot Problems - includes testing of wells
a. Existing Malfunctions
b. Potential Malfunctions

(3) Future Growth and Development
a. Existing Development, Zone Areas, Areas Adjacent to Existing Municipal Facilities, Existing Needs Areas will be addressed.
b. Five (5) Years
c. Ten (10) Years
d. Existing Facility and Capacity Needs

F. Chapter 71.21(5)(1) Consistency Review
(1) COWAMP Plan Consistency
(2) Chapter 94
(3) PennVEST Program
(4) Act 247 Ordinances
(5) Impact on Water Quality (DER's Chapters 93, 95, and 102)
(6) State Water Plan
(7) Pennsylvania Prime Agricultural Land Policy
(8) Approved plans under the Storm Water Management Act
(9) Wetland protection under DER's Chapter 105
(10) Pennsylvania Natural Diversity Inventory
(11) Archaeological Areas and Historical Areas

G. Alternative Evaluation (Address existing and future needs)
(1) Collection, Conveyance and Treatment Alternatives
(2) Individual and Community On-Lot Alternatives
(3) On-Lot Management Concept
(4) Cost Analysis Based on 20 year Analysis using Federal Discount Rate
(5) Sludge Disposal

H. Institutional Evaluation
(1) Potential for Establishment of Sewer District
(2) Intermunicipal Agreements
(3) Other Municipal Adoptions

I. Selected Alternatives

J. Public Meetings
(1) Proof of Publication
(2) Official Municipal Response to all comments

K. Implementation
(1) Implementation Schedule
(2) Implementing Ordinances

Frequent discussions between the consultant and the municipality are required in order to arrive at the appropriate plan for the municipality. These discussions will minimize the amount of modifications and revision to the plan, and will accelerate the plan development process. The consultant should be requested to attend public meetings to provide technical responses to any questions raised concerning the proposals contained in the plan.

Once the Act 537 Plan is complete, a final draft is submitted to the Township for review and approval. If the Township is satisfied, public notification is made and the plan becomes available for review and comment by the public. A public comment period of thirty days, including a public meeting, allows input from the community on the plan. All comments made concerning the plan are addressed, either by comment or by modification of the plan. After these final adjustments are made, and Township adopts the plan by Adoption Resolution and the plan is submitted to PADER for final approval. PADER has 120 days from the time of submittal to review the plan.

B. Dauphin County Act 537 Plan Status

Several municipalities in Dauphin County have completed Act 537 Plans as well as other vital planning documents and ordinances.

A listing of municipalities who are preparing or have completed Official Act 537 Sewage Facilities Plans as well as zoning, subdivision, and comprehensive planning are shown on Table 10.1.

TABLE 10.1
DAUPHIN COUNTY MUNICIPALITY
1993 PLAN STATUS

Municipality	Act 537 Plan	Comprehensive Plan	Zoning Ordinance	Municipality	Act 537 Plan	Comprehensive Plan	Zoning Ordinance
Berrysburg Boro.	1981	No	No	Middletown Boro.	No	No	Yes
City of Harrisburg	1972	1974/1994	1989	Mifflin Twp.	No	No	No
Conewago Twp.	76	1981	1985	Millersburg Boro.	1969	1973	No
Dauphin Boro.	1987	1975	1993	Paxtang Boro.	No	No	1987
Derry Twp.	1987	1991	1993	Penbrook Boro.	No	1979	1993
East Hanover Twp.	1989	1993	1992	Pillow Boro.	No	No	No
Elizabethville Boro.	No	No	No	Reed Twp.	1971	No	No
Gratz Boro.	No	No	No	Royalton Boro.	No	1985	1985
Halifax Boro.	No	No	No	Rush Twp.	No	No	No
Halifax Twp.	No	No	No	South Hanover Twp.	1989	1991	1983
Highspire Boro.	No	1974	1990	Steelton Boro.	No	No	1993
Hummelstown Boro.	No	1987	1988	Susquehanna Twp.	Yes	1986	1989
Jackson Twp.	Yes	No	No	Swatara Twp.	1991	1976	1993
Jefferson Twp.	No	No	No	Upper Paxton Twp.	1969	1993	No
Londonderry Twp.	1989	1991	1978	Washington Twp.	1990	Yes	No
Lower Paxton Twp.	Yes	1992	1993	Wayne Twp.	No	No	No
Lower Swatara Twp.	1983	1989	1993	West Hanover Twp.	1992	1993	1990
Lykens Boro.	Draft - 1994	No	1975	Wiconisco Twp.	1990	No	1990
Lykens Twp.	No	1992	No	Williams Twp.	1989	No	No
Middle Paxton Twp.	Legal Dispute	1988	1979+	Williamstown Boro.	No	No	No

APPENDIX I

GLOSSARY OF TERMS

GLOSSARY OF TERMS

Certain technical terms used in this report must be defined in order to establish their meaning in the context of this plan. These definitions are as follows:

AAF - Average Annual Flows

AAOL - Average Annual Organic Loading

Activated Sludge Process - A biological unit process used to convert the finely divided and dissolved organic matter in wastewater into efflocculant settleable biologic and inorganic solids which can be removed through settling.

ADF - Average Daily Flow

ADOL - Average Daily Organic Loading

Advanced Wastewater Treatment - The additional treatment needed to remove suspended and dissolved substances remaining after conventional secondary treatment. Quite frequently it refers to the removal of nitrates and phosphates.

BOD - This is an abbreviation for Biochemical Oxygen Demand, which is the most widely used method of measuring pollution.

BOD_5 - The BOD recorded after 5 days. Quicker and more common than full BOD test.

Construction Cost - This is the actual cost of constructing a facility and does not include other factors that constitute total project cost.

Cesspool - Excavations, usually lined with rocks, that serve the dual purpose of holding wastewater and allowing wastewater seepage into the subsurface.

GPM - This is an abbreviation for Gallons per Minute. When used to state the capacity of a pumping station, it refers to the peak pumping rate.

Hydraulic Loading - The actual flow rate of wastewater through the treatment facility and usually expressed in millions of gallons of wastewater per day (MGD).

Indicator Microorganisms - Microorganisms (usually coliform bacteria) normal to the digestive tracts of warm blooded animals that are used to suggest the presence of pathogenic (disease causing) microorganisms. Indicator microorganisms are utilized due to their abundance, easier detection, and longer survival periods.

Lateral or Lateral Sewer - The collecting sewer that receives flow directly from the service user is called a lateral. This term does not include the service line, which

connects the lateral or collecting sewer with the individual house or other user. Although some are individual sewers, most of them are serviced by a lateral sewer.

M1MOL - Maximum One-Month Organic Loading

M3MAF - Maximum Three-Month Annual Flow

MGD - This is an abbreviation for Million Gallons per Day. When used in reference to the capacity of a sewage treatment plant, mgd means average flow.

O & M Cost - This is an abbreviation for annual operation and maintenance cost.

Organic Loading - The mass rate or organics, usually measured as BOD, that are imposed upon a wastewater treatment facility. The organic loading is usually expressed as pounds of BOD per day (lb. BOD/day).

Oxidation Ditch - a ring or oval shaped channel that is equipped with mechanical aeration devices. Wastewater is treated through the activated sludge process. Sewered wastewater enters the ditch, is aerated, and circulates at about 0.8 to 1.2 ft/s. Secondary sedimentation tanks are used for most applications.

Phosphate - Phosphate is one of the chemical nutrients necessary for algae growth. Only small amounts are removed in conventional treatment processes.

Population Served - This is the residential population served by a sewerage system and does not include an equivalent population for industrial flows. Allowances have been made for the industrial contribution to sewage flow, but this is not reflected in the population served figure.

Private Treatment Plant - A treatment plant constructed for the sole use of the owner is called a private treatment plant. These treatment plants may be owned by public bodies such as school districts, but they do not receive flow from public sewer systems. This term does not include industrial treatment plants, which are necessary to treat wastes peculiar to a particular industrial operation.

Pumping Station - Any system for lifting sewage to a higher elevation is called a pumping station. A pumping station can be a small air ejector or a more elaborate station with pumps, comminuter, and chlorination facilities. Force mains, regardless of length, have not been mentioned in the written descriptions although every pumping station requires a force main.

Secondary Treatment - The level of treatment which includes the removal of BOD as the primary objective.

Sequencing Batch Reactors (SBR) - A fill and draw activated-sludge treatment system used for removing organics from wastewater. Aeration and sedimentation/clarification are carried out sequentially in the same tank.

Tertiary Treatment - See Advanced Wastewater Treatment.

Treatment Plant - This term refers to a sewage treatment plant with secondary treatment, unless otherwise designated. A secondary treatment plant is called for in all cases where BOD removals up to and including 90 percent are required. Such removal efficiencies can only be achieved consistently with some types of secondary treatment processes.

Trickling Filter - A bed of highly permeable medium to which microorganisms are attached and through which wastewater is percolated. The attached microorganisms are responsible for removing organics from wastewater. They may also be used to convert ammonia to nitrate.

Trunk or Intercepting Sewer - Any sewer that conveys flow from a system of collecting sewers to another large sewer or treatment plant is a trunk or intercepting sewer. Most sewers shown on the maps are trunk sewers. Generally, trunk or intercepting sewers are 12 or more inches in diameter. However, this criterion does not apply to small sewer systems in which all pipes are eight or ten inches in diameter.

Wildcat Sewers - Sewer line that discharges wastewater without a permit to discharge.

APPENDIX II

SEWERAGE FACILITIES PLANNING MODULES

ER—BWQ—359: Rev. 4/90

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES

APPLICATION FOR SEWAGE FACILITIES PLANNING MODULE

Development is essential to the economic vitality of Pennsylvania. However, growth must be consistent with practices that will not degrade our environment or create health hazards to the citizens of this State. This is why the Pennsylvania Sewage Facilities Act was enacted. The Pennsylvania Sewage Facilities Act requires, in part, the submission by municipalities of revisions to the Offical Sewage Facilities Plan to the Pennsylvania Department of Environmental Resources (DER) for approval. In order to accomplish the approval of revisions to plans the DER has designed a Sewage Facilities Planning Module. The module has 4 components that must be completed depending on the proposed type of sewage disposal and size of the land development project being proposed. Proposals for the use of individual on-lot sewage systems serving detached single family dwelling units in a subdivision, of 10 lots or less, that is not part of an existing subdivision, require the completion of Component 1. Contact your local municipality for this component. For all other proposals please complete this mailer and forward it to the local or regional office of DER. See instructions for completing the mailer on the reverse side.

---------- CUT ON DOTTED LINE ----------

Return Address

_____
_____
_____
_____

First Class
Postage

DEPARTMENT OF ENVIRONMENTAL RESOURCES

_____
_____
_____

DER USE
Components Sent
On-Lot Disposal ☐
Collection and Treatment ☐
Planning Agency Review ☐
Code _____
Date _____

ER–BWQ–350: Rev. 2/90

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF WATER QUALITY MANAGEMENT

Code No. _____

SEWAGE FACILITIES PLANNING MODULE

1. Minor Subdivision

A. GENERAL INFORMATION

The use of this module is restricted to detached single family dwelling units in a subdivision of 10 lots or less *(including residual lands)* proposing to utilize individual on-lot sewage systems. The enumeration of lots shall include only those lots created after May 15, 1972. Refer to the guidance document to assist in completing this component.

NOTE: All soil testing must be field verified by the Sewage Enforcement Officer (SEO). The SEO must notify the Department verbally or in writing at least 10 days prior to testing. In some cases the Department may wish to observe the soil testing.

B. SUBDIVISION INFORMATION

Name of Subdivision _____

_____

County(ies) _____ Municipality(ies) _____

Location of Subdivision: (Use landmark coordinates, for example, north side of RT 75, 2.0 miles east of intersection of RT 75 and State Route (SR) 2422, as well as local road names)

_____

_____

_____

Total Number of Lots Proposed _____

Owner(s) of Subdivision _____

_____

Address(es): _____

_____

(Area Code) Telephone Number ( ) _____

DRINKING WATER SUPPLY

Proposed subdivision will be provided with drinking water supplied from: (Check appropriate box)

Individual Wells ☐ Public Water Supply ☐

Name of Water Company _____

If the use of a public water supply is proposed, attach a letter from the water company stating that it will serve the development.

Provide a description of the use of adjacent properties, including the name of any subdivision of two or more lots, multiple family dwellings, commercial or industrial establishments and describe the use of residual land. Also include a description of sewage disposal facilities serving the adjacent properties and the distance to the nearest existing or proposed sewer line within 1 mile of the project and its size. (attach additional sheets if necessary).

_____

_____

_____

_____

C. SITE SUITABILITY AND SOILS TESTING INFORMATION

Attach copies of "Site Investigation and Percolation Test Reports", Appendix A for the proposed subdivision.

Attach a copy of the plot plan of the proposed subdivision showing the following information:

1. LOCATION OF ALL SOILS PROFILE EXCAVATIONS
2. LOCATION OF ALL PERCOLATION TESTS
3. SLOPE AT EACH TEST AREA
4. SOIL TYPES (SCS CLASSIFICATION) AND BOUNDARIES
5. LOCATION OF ADJACENT STREETS
6. LOT LINES OF PROPOSED LOTS
7. SHOW ALL LAND ADJACENT AND UNDER SAME OWNERSHIP
8. LOCATION OF PROPOSED BUILDINGS AND STREETS
9. LOCATION OF PROPOSED AND EXISTING DRINKING WATER SUPPLIES IN THE AREA
10. EXISTING AND PROPOSED RIGHTS-OF-WAY
11. ANY DESIGNATED OPEN SPACE AREA
12. CONTOUR LINES AS PER 7.5 MINUTE TOPOGRAPHIC MAP
13. WETLANDS
14. FLOODPLAINS
15. ANY OTHER INFORMATION REQUIRED BY THE MUNICIPALITY
16. ORIENTATION TO NORTH

SEWAGE FACILITIES PLANNING MODULE

Code No. _____

2. Site Evaluation for On-Lot Disposal of Sewage

(Return completed module package to appropriate municipality)

This Component must be completed for all subdivisions proposing on-lot disposal of sewage, (on-lot systems) or retaining tanks (holding tanks, privies) with the exception of projects qualifying as minor subdivisions under 71.55. This Component, along with other appropriate Components must be submitted to the municipality with jurisdiction for their review. All appropriate documentation must be attached before the Sewage Facilities Planning Module package will be considered complete by the municipality or the Department. Refer to the attached guidance document to assist in completing this Component.

A. GENERAL INFORMATION

1. Name of Land Development Project _____
   Location of land development project. *(Use landmark coordinates, for example, north side of RT 75, 2.0 miles east of intersection of RT 75 and SR 2422)* _____
2. Nature of Development. Check appropriate box and provide flows.
   ☐ Residential. Total Flows (gpd) _____ ☐ Commercial. Total Flows (gpd) _____
3. USGS Topographic Map Identification
   a. Attach original or copy of 7½ minute USGS topographic map which includes the general area of the development and the area of the proposed land development plotted and labeled. All maps should be folded to 8½ x 11 inches in size.
   b. USGS Topographic Map Name: _____
   c. Inches up _____ and over _____ from the bottom right hand corner of the map to the approximate center of the development.
4. Ownership of Land Development

Name(s)	Address(es)
_____	_____
_____	_____

5. Applicant (Subdivider, Developer, or Responsible Project Agent)
   Name _____
   Address _____
   Telephone _____

B. NARRATIVE

The following information is required to be provided in narrative form and attached to the module package. Title the attachment Project Narrative.

1. Nature of development project. *(Residential, Commercial, Institutional, Industrial, etc).* If the project is commercial, institutional or industrial describe the activity, such as light manufacturing, private hospital, or heavy manufacturing.
2. The number of Lots or Equivalent Dwelling Units in the development project. Lots refer to single family residential dwellings. For commercial, industrial and institutional facilities the number of lots in a subdivision are determined through the use of Equivalent Dwelling Units.
3. Proposed sewage disposal method (individual on-lot, community on-lot, holding tanks, etc.) including a description of collection and conveyance facilities, if applicable.
4. Sewage flows in gallons per day.
5. Total acreage of the proposed land development project.
6. Describe the use of any acreage or parcels under the same ownership and adjacent to the property.
7. Any other information that is relevant to the project.

C. AVAILABILITY OF DRINKING WATER SUPPLY

1. Proposed subdivision will be provided with drinking water supplied from: (Check appropriate box)
   Individual wells, cisterns ☐
   Public water supply. Proposed public supply ☐ Existing public supply ☐
   Name of water company _____
   If an existing public water supply is to be used, attach a letter of from the water company stating that it will serve the development.

F. GENERAL SITE SUITABILITY

This section must be completed when the proposed method of sewage disposal is on-lot sewage disposal systems or privies. The information provided in this section is for the purpose of determining general suitability of the site for on-lot disposal of sewage. Approval shall not be construed as approval for permit issuance. Additional testing may required for permit issuance.

1. The following information is to be submitted on a plot plan of the proposed subdivision or development:

   a. Existing buildings, if applicable.
   b. Lot lines and lot sizes.
   c. Adjacent lots.
   d. Remainder of tract.
   e. Any existing sewage systems (subsurface) and sewerage systems (municipal and private).
   f. Existing and proposed water supplies and surface water (wells, springs, ponds, streams) for proposed and adjacent lots.
   g. Rights-of-way.
   h. Existing streets, roadways, access routes, etc.
   i. Proposed streets, roadways, access routes, etc.
   j. Any designated open space area.
   k. Contour lines as per U.S.G.S. 7.5 minute topographic mapping or more precise if such mapping exists.
   l. Wetlands areas.
   m. Flood plains.
   n. Prime agricultural lands.
   o. All other facilities (surface or subsurface) in use or abandoned (pipelines, transmission lines, etc.).
   p. Orientation to North.

2. **Wetland Protection**

   a. Are there wetlands present in the project area? (Y/N) ____ . If yes, indicate these areas on the plot plan as shown in the mapping or through on-site delineation.

   b. Are there any construction activities (encroachments, or obstructions) proposed in, along, or through the wetlands? (Y/N) ____ . If yes, contact the Division of Scenic Rivers and Wetlands Conservation at 717-787-6816 for information on any additional requirements.

3. **Consistency with Pennsylvania Historic Preservation Act.**

The applicant is required to submit Form A (attached) to the Pennsylvania Historical and Museum Commission (PHMC). The PHMC will respond to the submittal within 60 days of receipt of Form A. Upon receipt by the applicant from the PHMC the applicant is required to check the appropriate boxes below. Consult the guidance document for assistance in completing this section.

Check the appropriate boxes:

☐ a. Notification from the PHMC is attached which documents the proposed sewage facility will not affect a significant archeological or significant historic resource and is not in a high probability archaeological area.

☐ b. Notification from the PHMC is attached which documents that the sewage facilities serving this project ***could affect*** a high probability area and a survey was conducted voluntarily. PHMC comments and any necessary approvals are also attached.

☐ c. Notification from the PHMC is attached which documents that the proposed sewage facilities serving this project ***could affect*** a "high probability site" and evidence is attached that the applicant notified PHMC of the decision not to conduct a survey.

☐ d. Notification from the PHMC is attached which documents that a "significant known archaeological resource" or a "significant historical resource" ***will be effected*** by the proposed sewage facility and a mitigation avoidance plan was required by PHMC and submitted to PHMC. PHMC comments on the survey and the PHMC decision to approve or disapprove the mitigation plan are attached.

☐ e. Proof is attached that shows the PHMC failed to respond to Form A submittal with the required 60 day period.

☐ f. Proof is attached that shows PHMC failed to respond to a survey report or a mitigation plan submission within the required 30 day period.

3. The following information is to be submitted:

   a. Description of soils and geology at the site and the characteristics of these which may limit the horizontal or vertical movement of sewage.

   b. Description, location and results of any permeability testing performed, including:
      (1) Identification and description of restrictive layers of soil, parent material and bedrock.
      (2) Rate of flow through and laterally over those restrictive layers in inches per hour.
      (3) Calculation of potential ground-water mounding expected from the additional flows.

   c. Recommendations on system design modifications needed because of poor permeability including:
      (1) Absorption area sizing or placement and dosing rates for on-lot disposal.
      (2) Spray rates and pretreatment for spray irrigation and/or overland flow.

Note: The Department may require more detailed hydrogeolgic information based on the information submitted in this section.

☐ I DETAILED HYDROGEOLOGIC STUDY

This section must be completed when the Department has determined that the proposed system(s) may degrade ground-water or surface water to the point that it will not protect existing or potential ground-water uses or designated stream uses.

The following must be included in the detailed hydrogeologic study:

1. Type of Discharge to ground-water.
   - Dry stream channel
     - Intermittent stream (dry under low flow conditions)
     - Stormwater drainage ditch (flow in wet season or during and immediately after storms)
   - On-lot subsurface disposal
     - Individual on-lot systems.
     - Community on-lot systems.
     - Large Volume Systems.
   - Spray irrigation
   - Overland flow
2. Topographic location of the discharge.
3. Relationship of topography to ground-water flow.
4. Geologic characteristics which influence ground-water flow.
   (a) Faults and lineaments
   (b) Bedding features
   (c) Sinkholes, solution channels, pinnacles or other specific features
   (d) Range of bedrock depth
   (e) Nature of unconsolidatd material
   (f) Thickness and texture of unconsolidated bedrock
   (g) Confining formations (fragipans, impermeable rock formations)
   (h) Bedrock formation and lithologic relationships
   (i) Description of glacial material
   (j) Nature and degree of bedrock fracturing
5. Ground-water/surface water charcteristics.
   (a) Depths of water table, including seasonal variations.
   (b) Existing ground-water quality and quantity, including but not limited to the following analysis:
      (1) Total coliform
      (2) Fecal coliform
      (3) pH
      (4) Total iron
      (5) Turbidity
      (6) Alkalinity
      (7) Nitrate-Nitrogen
      (8) Chloride
      (9) Ammonia-Nitrogen
      (10) Total Manganese
      (11) Sodium
      (12) Magnesium
      (13) Calcium
      (14) Potassium
      (15) Sulfate
      (16) Total Dissolved Solids
      (17) Hardness
      (18) Volatile Organic Compounds
   (c) Name, location, flow characteristics, and flow volume (cfs) of any receiving streams.
   (d) Existing surface water quality and designated use of any receiving streams.

☐ K. RETAINING TANKS

This section must be completed if the proposed disposal method described in the narrative is holding tanks or privies.

1. **Holding Tanks** — are to be used only as an interim sewage disposal method for a period of time determined by the Department. A replacement sewage disposal method is required and an implementation schedule for that replacement method must be developed. Local ordinances must also be ***in place*** to provide for the maintenance of the tanks. Complete a. and b. below. For exceptions to these requirements see Chapter 71.63 (Retaining Tanks).

   a. The following questions will help determine if a holding tank can be used.

      1) Does the Official Sewage Facilities Plan or revision provide for replacement of the tanks by adequate sewage services? (Y/N) _____
      If yes, what is the replacement sewage disposal method? _____
      Attach replacement method implementation schedule.
      If no, holding tanks may not be used.

      2) Does the Official Sewage Facilities Plan or revision include financial assurances for the implementation of the replacement method? (Y/N) _____
      If yes, attach description of financial assurances.
      If no, holding tanks may not be used.

   b. Chapter 71 requires that the municipality, sewer authority or other Department approved entity with responsibility over the holding tank have ***in place*** ordinances, regulations or restrictions established to maintain the tanks as outlined in Chapter 71.63(c)(3). Attach documentation that the responsible agency has developed these ordinances or restrictions. These projects must also complete Part 3 below (Retaining Tank Pumping and Content Disposal).

2. **Privies/Chemical Toilets**

Projects that propose privies as the method of sewage disposal must complete a, b and c below. For exceptions to these requirements see Chapter 71.63 (Retaining Tanks).

   a. Complete Section F of this Component.

   b. The municipality, sewer authority, management agency or other Department approved entity with responsibility over the site must have ordinances, regulations or restrictions established that assume responsibility for the removal of a privy and installation of an approved on-lot sewage disposal system when water under pressure is provided to that lot. Attach a copy of these ordinances, regulations or restrictions.

   c. These projects must also complete Part 3 below (Retaining Tank Pumping and Content Disposal).

3. **Retaining Tank Pumping and Content Disposal**

   a) Name of Retaining Tank Cleaner _____
   (This can be municipality or contracted cleaner)

   Address _____

   Telephone Number _____

   b) Name of Disposal Site _____

   Type of treatment facility _____

   NPDES or Land Disposal permit number _____

   County _____ Municipality _____

   Attach letter of agreement with disposal site verifying adequate capacity for disposal needs. Proposed disposal sites for retaining tank wastes must be approved by the Department of Environmental Resources, Bureau of Water Quality Management if a wastewater treatment plant is proposed as the disposal site, or the Bureau of Waste Management if land disposal is proposed.

   c) A municipality, sewer authority, or sewage management agency may delegate or contract for the collection and disposal of retaining tanks contents, except that the ultimate responsibility for the proper collection and disposal of the contents shall remain with the municipality, authority or agency.

Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Water Quality Management

FORM A
NOTIFICATION OF POTENTIAL EFFECT OF PROPOSED ACTION ON ARCHAEOLOGICAL AND HISTORICAL RESOURCES

This is to notify the Pennsylvania Historical and Museum Commission in writing of the potential effect of a proposed action on an archaeological or historical resource in accordance with the Pennsylvania Historic Preservation Act, 37 PA. CSA, Sections 501-512.

This action involves:

Development Name _____

Development Location *(Example- 3 miles south of intersection of SR 345 and SR 360 on the east side of SR 360.* _____

_____

U.S.G.S. 7.5 minute topographic map name which includes development area. _____

Plot location of development on map and provide inches up and over from bottom right hand corner of the topographic map.

Inches up _____ and _____ over.

It is understood that your agency will advise the applicant within 60 days of the receipt of this notice if the project will not affect a known archaeological or historical resource or, if a significant known archaeological or historic resource, as determined by the PHMC using Secretary of Interior criteria for determining resource significance, requires protection or if a "high probability archaeological area" could be affected by the proposed sewage facilities.

Questions concerning this proposal and the results of the search should be directed to:

Applicant's Name: _____

Address: _____

_____

Telephone: _____

This form and any questions concerning the status of the submittal, must be forwarded to the:

Pennsylvania Historical and Museum Commission
Bureau of Historic Preservation
P.O. Box 1026
Harrisburg, PA 17108
Telephone: 717-787-4363

ER–BWQ–353: Rev. 4/90

SEWAGE FACILITIES PLANNING MODULE

Code No. _____

3. Sewage Collection and Treatment Facilities

(Return completed module package to appropriate municipality)

This Component must be completed for projects that propose: (1) Subdivisions to be served by sewage collection, conveyance or treatment facilities (2) A tap-in with flows on a lot of 2 EDU's or more to existing collection systems (3) The construction or modification of collection, conveyance or wastewater treatment facilities that will require the issuance or modification of a Clean Streams Law permit. Refer to the attached guidance document to assist in completing this Component.

A. GENERAL INFORMATION

1. Name of Land Development Project _____
   Location of land development project. *(Use landmark coordinates, for example, north side of RT 75, 2.0 miles east of intersection of RT 75 and SR 2422)*_____
   _____
   _____
2. Nature of Development. Check appropriate box and provide total flows.
   ☐ Residential. Total Flows (gpd)_____ ☐ Commercial. Total Flows (gpd) _____
3. USGS Topographic Map Identification
   a. Attach original or copy of 7½ minute USGS Topographic Map which includes the general area of the development and the area of the proposed land development plotted and labeled. All maps should be folded to 8½ x 11 inches in size.
   b. USGS Topographic Map Name: _____
   c. Inches up _____ and over _____ from the bottom right hand corner of the map to the approximate center of the development.
4. Ownership of Land Development

Name(s)	Address(es)
_____	_____
_____	_____

5. Applicant (Subdivider, Developer, or Responsible Project Agent)
   Name _____
   Address _____
   Telephone _____

B. PROJECT NARRATIVE

The following information is required to be provided in narrative form and attached to the module package. Title the attachment **Project Narrative.**

1. Nature of development project. *(Residential, Commercial, Institutional, Industrial, etc).* If the project is commercial, institutional or industrial describe the activity, such as light manufacturing, private hospital, or heavy manufacturing.
2. The number of Lots or Equivalent Dwelling Units in the development project. Lots refer to single family residential dwellings. For commercial, industrial and institutional facilities the number of lots in a subdivision are determined through the use of Equivalent Dwelling Units.
3. Proposed sewage disposal method (municipal treatment facility, small flow, etc.) including description of collection and conveyance facilities, if applicable.
4. Sewage flows in gallons per day.
5. Location of discharge or disposal point.
6. Total acreage of the proposed land development project.
7. Describe the use of any acreage or parcels under the same ownership and adjacent to the property.
8. Any other information that is relative to the project.

C. AVAILABILITY OF DRINKING WATER SUPPLY

1. Proposed subdivision will be provided with drinking water supplied from: (Check appropriate box)
   Individual wells, cisterns ☐
   Public water supply. Existing supply ☐ Proposed supply ☐
   Name of water company _____
   If an existing public water supply is to be used, attach a letter from the water company stating that it will serve the development.

F. WASTEWATER DISPOSAL FACILITIES

Check all boxes that apply, and provide information on collection, conveyance and treatment facilities and EDU's served. This information will be used to determine consistency with Chapter 93 (Relating to Water Quality Standards), Chapter 94 (Relating to Municipal Wasteload Management), and Chapter 95 (Relating to Wastewater Treatment Requirements).

1. COLLECTION SYSTEM

   a. Check appropriate box concerning collection system

   ☐ New collection system ☐ Extension to existing collection system ☐ Tap-ins to existing collection system

   b. Answer questions below on collection system

   Number of EDU's and proposed connections to be served by collection system. EDU's _____

   Connections _____

   Name of existing collection or conveyance system _____

   Name of interceptor _____

2. WASTEWATER TREATMENT FACILITY

   a. Check appropriate box and provide requested information concerning the treatment facility

   ☐ New facility ☐ Existing facility ☐ Upgrade of existing facility ☐ Expansion of existing facility

   Name of existing facility _____

   NPDES Permit Number for existing facility _____

   Location of discharge point for new facility. Latitude _____ Longitude _____

3. PLOT PLAN

   The following information is to be submitted on a plot plan of the proposed subdivision.

   a. Existing buildings.
   b. Lot lines and lot sizes.
   c. Adjacent lots.
   d. Remainder of tract.
   e. Existing and proposed sewerage facilities. Plot location of discharge point if a new treatment facility is proposed.
   f. Show tap-in or extension to the point of connection to existing collection system.
   g. Existing and proposed water supplies and surface water (wells, springs, ponds, streams, etc.).
   h. Existing and proposed rights of way.
   i. Existing and proposed streets, roadways etc.
   j. Any designated open space area.
   k. Wetland areas.
   l. Flood plains.
   m. Prime Agricultural Land.
   n. Any other facilities (pipelines, power lines, etc.).

4. WETLAND PROTECTION

   a. Are there wetlands present in the project area? (Y/N) _____ .
   If yes, indicate these areas on the plot plan as shown in the mapping or as identified through on-site delineation.

   b. Are there any construction activities (encroachments or obstruction) proposed in, along, or through the wetlands?
   (Y/N) ____ If yes, contact the Division of Scenic Rivers and Wetlands Conservation at 717-787-6816 for information on any additional requirements.

5. CONSISTENCY WITH PENNSYLVANIA HISTORIC PRESERVATION ACT

The applicant is required to submit Form A to the Pennsylvania Historical and Museum Commission (PHMC). The PHMC will respond to the submittal within 60 days of receipt of Form A. Upon receipt by the applicant from the Commission the applicant is required to check the appropriate boxes below. Consult the guidance document for assistance in completing this section.

Check the appropriate boxes:

☐ a. Notification from the PHMC is attached which documents the proposed sewage facility will not affect a significant archeological or significant historic resource and is not in a high probability archaeological area.

☐ b. Notification from the PHMC is attached which documents that the sewage facilities serving this project *could affect* a high probability area and a survey was conducted voluntarily. PHMC comments and any necessary approvals are also attached.

2. **Total Sewage Flows to Facilities**

a. Enter average and peak sewage flows for each proposed or existing facility as designed or permitted.

b. Enter the present average and peak sewage flows for the critical sections of existing facilities.

c. Enter the average and peak sewage flows projected for 5 years through the critical sections of existing facilities which includes existing, proposed or future projects.

To complete the table, refer to the guidance document, Section H.

	a. Design and/or Permitted Capacity		b. Present Flows		c. Projected Flows in 5 years	
	Average	Peak	Average	Peak	Average	Peak
Collection						
Conveyance						
Treatment						

3. **Collection and Conveyance Facilities**

The questions in a. are to be answered by the sewer authority, municipality or agency responsible for completing the Chapter 94 report for the collection and conveyance facilities. These questions should be answered in coordination with the latest Chapter 94 annual report and the information contained in the above table.

a. If this project proposes sewer extensions or tap-ins, will these actions create a hydraulic overload within five years on any existing collection or conveyance facilities that are part of the system? (Y/N) _____ .

(1) If yes, this planning module for sewage facilities will not be accepted for review by the municipality or the Department until all inconsistencies with Chapter 94 are resolved or unless there is an approved plan and schedule granting an allocation for this project. A letter granting allocations to this project under the plan and schedule must be attached to the module package.

(2) If no, the sewer authority, municipality or agency responsible for completing the Chapter 94 report for the collection and conveyance facility must sign below to indicate that the collection and conveyance facilities have adequate capacity and are able to provide service to the proposed development in accordance with Chapter 94 requirements and that this proposal will not impact this status.

(3) Collection System

Name of Agency, Authority, Municipality _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

(4) Conveyance System

Name of Agency, Authority, Municipality _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

Commonwealth of Pennsylvania
Department of Environmental Resources
Bureau of Water Quality Management

FORM A
NOTIFICATION OF POTENTIAL EFFECT OF PROPOSED ACTION ON ARCHAEOLOGICAL AND HISTORICAL RESOURCES

This is to notify the Pennsylvania Historical and Museum Commission in writing of the potential effect of a proposed action on an archaeological or historical resource in accordance with the Pennsylvania Historic Preservation Act, 37 PA. CSA, Sections 501-512.

This action involves:

Development Name _____

Development Location *(Example- 3 miles south of intersection of SR 345 and SR 360 on the east side of SR 360.* _____

_____

U.S.G.S. 7.5 minute topographic map name which includes development area. _____

Plot location of development on map and provide inches up and over from bottom right hand corner of the topographic map.

Inches up _____ and _____ over.

It is understood that your agency will advise the applicant within 60 days of the receipt of this notice if the project will not affect a known archaeological or historical resource or, if a significant known archaeological or historic resource, as determined by the PHMC using Secretary of Interior criteria for determining resource significance, requires protection or if a "high probability archaeological area" could be affected by the proposed sewage facilities.

Questions concerning this proposal and the results of the search should be directed to:

Applicant's Name: _____

Address: _____

_____

Telephone: _____

This form and any questions concerning the status of the submittal, must be forwarded to the:

Pennsylvania Historical and Museum Commission
Bureau of Historic Preservation
P.O. Box 1026
Harrisburg, PA 17108
Telephone: 717-787-4363

ER-BWQ-353: Rev. 8/91

COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF ENVIRONMENTAL RESOURCES
BUREAU OF WATER QUALITY MANAGEMENT

Code No.

SEWAGE FACILITIES PLANNING MODULE

3.z. Sewage Collection and Treatment Facilities-Minor Subdivision

(Return completed module package to appropriate municipality)

This Component may be used for projects on 10 acres or less that propose connecting to municipal collection, conveyance and treatment facilities that are in compliance with Chapter 94, Municipal Wasteload Management Regulations.

A. GENERAL INFORMATION (see Section A of attached guidance)

1. Name of Land Development Project _____
   Location of land development project. *(Use landmark coordinates, for example, north side of RT 75, 2.0 miles east of intersection of RT 75 and SR 2422)* _____
   _____
   _____

2. Nature of Development. Check appropriate box and provide total flows.
   ☐ Residential. Total Flows (gpd) _____ ☐ Commercial Total Flows (gpd) _____
   ☐ Industrial Total Flows (gpd) _____

3. Acreage of development _____ acres

4. Ownership of Land Development

Name(s)	Address(es)
_____	_____
_____	_____

5. Applicant (Subdivider, Developer, or Responsible Project Agent)
   Name _____
   Address _____
   Telephone _____

B. WASTEWATER DISPOSAL FACILITIES (see Section B of attached guidance)

Provide information on collection and treatment facilities and EDU's served.

1. COLLECTION SYSTEM
   Number of proposed connections to be served by collection system.
   Connections _____
   Name of existing collection or conveyance system _____
   Name of interceptor _____
   Number of new pump stations _____

2. WASTEWATER TREATMENT FACILITY
   Name of treatment facility _____

3. PLOT PLAN
   The following information is to be submitted on a plot plan of the proposed subdivision.
   a. Existing buildings.
   b. Lot lines and lot sizes.
   c. Remainder of tract.
   d. Show proposed sewer line to the point of connection to existing collection system. Including all components (collection & conveyance lines, pumps etc.).
   e. Existing and proposed rights-of-way.
   f. Existing and proposed streets, roadways etc.
   g. Wetland areas.
   h. Orientation to North.
   i. Existing and proposed water supplies, lines and surface waters (wells, springs, ponds, streams, etc.).

4. WATER SUPPLY
   Proposed Drinking Water Supply
   ☐ Individual wells, cisterns ☐ Public Water Supply
   Attach a letter from the Public Water Company stating that it will serve the development proposed in this module.

Code No. _____

SEWAGE FACILITIES PLANNING MODULE

4a. Municipal Planning Agency Review

(Return completed module package to appropriate municipality)

A. GENERAL INFORMATION

This Component and copies of the proposed plan revision along with supporting Components and data must be forwarded to the appropriate municipal planning agency for comments. All land development projects, other than those qualifying as exceptions under Chapter 71.55, which are being proposed as revisions to the municipalities Official Sewage Facilities Plan must include:

1. Comments from the appropriate planning agencies and county or joint county health departments regarding the consistency of the proposal with planning programs in the area. Or,
2. The municipality must document that the proposed plan revision has been before the appropriate planning agencies or county or joint county health department for 60 days without comment. The planning module package should not be considered complete until either of these conditions are met.

Note: Municipalities shall not adopt revisions to the Official Sewage Plan until such comments are received from the municipal planning agencies, planning agency with area wide jurisdiction if one exists, and the county or joint county health department. Additionally, all comments must be addressed and attached to the package.

Note to developer: *To expedite the review of your proposal, one copy of your completed planning module package and one copy of this* ***Planning Agency Review Component*** *should be sent to the existing local municipal planning agency, for their comments.*

B. REVIEW SCHEDULE (To be completed by municipal planning agency)

1. Date revision received by municipal planning agency _____
2. Date comments completed by agency _____

C. MUNICIPAL PLANNING REVIEW (See page 1 of attached guidance)

1. Is there a municipal comprehensive plan adopted under Act 247? (Y/N) _____
2. Is this proposed plan revision consistent with the comprehensive plan for land use? (Y/N) _____
   If no, describe the inconsistencies _____
3. Is there a municipal zoning ordinance? (Y/N) _____
   If yes, is this revision consistent with the ordinance? (Y/N) _____
   If no, describe the inconsistencies _____
4. Is there a municipal subdivision and land development ordinance? (Y/N) _____
   If yes, does this revision meet the requirements of the ordinance as it relates to the proposed sewage disposal method? (Y/N) _____
   If no, describe the inconsistencies _____
5. Are there any wastewater disposal needs in the area adjacent to the new land development that should be considered by the municipality? (Y/N) _____
   If yes, describe _____
6. Is this plan revision consistent with the municipal official plan for sewage disposal. (Y/N) _____
   If no, describe the inconsistencies _____
7. Is the proposed plan revision consistent with the use, development, and protection of water resources as identified in the comprehensive plan? (Y/N) _____
   If no, describe the inconsistencies _____

Code No. _____

SEWAGE FACILITIES PLANNING MODULE

4c. County or Joint County Health Department Review

(Return completed module package to appropriate municipality)

A. GENERAL INFORMATION

This Component and copies of the proposed plan revision along with supporting Components and data must be forwarded to the county or joint county health department (if one exists) for comments. All land development projects, other than those qualifying as exceptions under Chapter 71.55, which are being proposed as revisions to the municipalities Official Sewage Facilities Plan must include:

1. Comments from appropriate planning agencies and county or joint county health departments regarding the consistency of the proposal with planning programs in the area. Or,
2. The municipality must document that the proposed plan revision has been before the appropriate planning agencies or county or joint county health department for 60 days without comment. The planning module package should not be considered complete until either of these conditions are met.

Note: Municipalities shall not adopt revisions to the Official Sewage Plan until such comments are received from the municipal planning agencies, planning agency with area wide jurisdiction if one exists, and the county or joint county health department. Additionally, all comments must be addressed and attached to the package.

Note to developer: *To expedite the review of your proposal, one copy of your completed planning module package and one copy of this **Planning Agency Review Component** should be sent to the county or joint county health department for their comments.*

B. REVIEW SCHEDULE (to be completed by county or joint county health department)

1. Date revision received by county or joint-county health department _____
   Agency name _____
2. Date comments completed by agency _____

C. COUNTY OR JOINT COUNTY HEALTH DEPARTMENT (See page 1 of attached guidance)

1. Is the proposed revision consistent with the municipality's Official Sewage Facilities Plan. (Y/N) _____
   If no, what are the inconsistencies _____
2. Are there any waste water disposal needs in the area adjacent to the new land development that should be considered by the municipality? (Y/N) _____
   If yes, describe _____
3. Is there any known groundwater degradation in the area of the proposed subdivision? (Y/N) _____
   If yes, describe _____
4. The county-joint county health department recommendation concerning this revision is as follows: _____
5. Name, title and signature of person completing this section:
   Name _____
   Title _____
   Signature _____
   Date _____
   Name of County Health Department _____
   Address _____
   Telephone Number _____

APPENDIX III

ON-LOT MANAGEMENT MODEL ORDINANCE

MODEL ORDINANCE

AN ORDINANCE GOVERNING MUNICIPAL MANAGEMENT OF ON-LOT SUBSURFACE SEWAGE DISPOSAL FACILITIES THE (BOROUGH, TOWNSHIP) OF _____, _____ COUNTY, PA

The [Council, Board of Supervisors] of the [Borough, Township] of _____, in the County of _____ and the Commonwealth of Pennsylvania, hereby ordains:

Section I. Short Title; Introduction; Purpose

A. This ordinance shall be known and may be cited as "An ordinance providing for a Sewage Management Program for _____ [Borough, Township]."

B. In accordance with municipal codes, the Clean Streams Law (Act of June 27, 1937, P.L. 1987., No. 394 as amended, 35 P.S. §§691.1 to 691.1001), and the Pennsylvania Sewage Facilities Act (Act of January 24, 1966, P.L. 1535 as amended, 35 P.S. §750.1 et seq., known as Act 537), it is the power and the duty of [Name of Borough or Township] to provide for adequate sewage treatment facilities and for the protection of the public health by presenting the discharge of untreated or inadequately treated sewage. The Official Sewage Facilities Plan for _____ indicates that it is necessary to formulate and implement a sewage management program to effectively prevent and abate water pollution and hazards to the public health caused by improper treatment and disposal of sewage.

C. The purpose of this ordinance is to provide for the regulation, inspection, maintenance and rehabilitation of on-lot sewage disposal systems; to further permit intervention in situations which may constitute a public nuisance or hazard to the public health; and to establish penalties and appeal procedures necessary for the proper administration of a sewage management program.

Section II. Definitions

A. Authorized Agent: A sewage enforcement officer, employee of the [Borough or Township], professional engineer, plumbing inspector, or any other qualified or licensed person who is authorized to function within specified limits as an agent of [_____] to administer or enforce the provisions of this ordinance.

B. Board: The Board of Supervisors, _____ Township, _____ County, Pennsylvania.[1]

C. Borough: The Borough of _____, _____ County, Pennsylvania.

1. For Townships definitions B. and R. should be used.
For Boroughs definitions C. and E. should be used.

tions and inspections, review permit applications, issue or deny permits and do all other activities as may be provided for such person in the Sewage Facilities Act, the rules and regulations promulgated thereunder and this or any other ordinance adopted by the [Borough or Township].

O. Sewage Management District: Any area or areas of the [Borough or Township] designated in the Official Sewage Facilities Plan adopted by the [Council or Board] as an area for which a Sewage Management program is to be implemented.

P. Sewage Management Program: A comprehensive set of legal and administrative requirements encompassing the requirements of this ordinance, the Sewage Facilities Act, the Clean Streams Law, the regulations promulgated thereunder and such other requirements adopted by the [Council or Board] to effectively enforce and administer this ordinance.

Q. Subdivision: The division or redivision of a lot, tract or other parcel of land into two or more lots, tracts, parcels or other divisions of land, including changes in existing lot lines. The enumerating of lots shall include as a lot that portion of the original tract or tracts remaining after other lots have been subdivided therefrom.

R. Township: The Township of _____, _____ County, Pennsylvania.

S. For the purposes of this ordinance, any term which is not defined herein shall have that meaning attributed to it under the Sewage Facilities Act and the Regulations promulgated thereto.

Section III. Applicability

A. From the effective date of this ordinance, its provisions shall apply in any portion of the [Borough or Township] identified in the Official Sewage Facilities Plan as a sewage management district. Within such an area or areas, the provisions of this ordinance shall apply to all persons owning any property serviced by an on-lot sewage disposal system and to all persons installing or rehabilitating on-lot sewage disposal systems.

Section IV. Permit Requirements

A. No person shall install, construct or request bid proposals for construction, or alter an individual sewage system or community sewage system or construct or request bid proposals for construction or install or occupy any building or structure for which an individual sewage system or community sewage system is to be installed without first obtaining a permit from the Sewage Enforcement Officer which permit shall indicate that the site and the plans and specifications of such system are in compliance with the provisions of the Clean Streams Law and the Pennsylvania Sewage Facilities Act and the regulations adopted pursuant to those Acts.

B. No system or structure designed to provide individual or community sewage disposal shall be covered from view until approval to cover the same has been given by a sewage enforcement officer. If 72 hours have elapsed, excepting Sundays and Holidays, since the sewage enforcement officer issuing the permit received notification of completion of construction, the applicant may cover said system or structure unless permission has been specifically refused by the sewage enforcement officer.

representative of DER, then action by the property owner to mitigate the malfunction shall be required.

G. There may arise geographic areas where numerous on-lot sewage disposal systems are malfunctioning. A resolution of these areawide problems may necessitate detailed planning and a revision to the portion of the Sewage Facilities Plan pertaining to areas affected by such malfunctions. When a DER authorized Official Sewage Facilities Plan Revision has been undertaken, mandatory repair or replacement of individual malfunctioning sewage disposal systems within the area affected by the revision may be delayed, pending the outcome of the plan revision process. However, immediate corrective action may be compelled whenever a malfunction, as determined by [Borough or Township] officials and/or the Department, represents a serious public health or environmental threat.

Section VI. Operation

A. Only normal domestic wastes shall be discharged into any on-lot sewage disposal system. The following shall not be discharged into the system.

1. Industrial waste.

2. Automobile oil and other non-domestic oil.

3. Toxic or hazardous substances or chemicals, including but not limited to, pesticides, disinfectants (excluding household cleaners), acids, paints, paint thinners, herbicides, gasoline and other solvents.

4. Clean surface or ground water, including water from roof or cellar drains, springs, basement sump pumps and french drains.

Section VII. Maintenance

A. Each person owning a building served by an on-lot sewage disposal system which contains a septic tank shall have the septic tank pumped by a qualified pumper/hauler within six months of the effective date of this ordinance. Thereafter that person shall have the tank pumped at least once every three years or whenever an inspection reveals that the septic tank is filled with solids or with scum in excess of 1/3 of the liquid depth of the tank. Receipts from the pumper/hauler shall be submitted to the [Borough or Township] within the prescribed six months and three year pumping periods.

B. The required pumping frequency may be increased at the discretion of an authorized agent if the septic tank is undersized, if solids buildup in the tank is above average, if the hydraulic load on the system increases significantly above average, if a garbage grinder is used in the building, if the system malfunctions or for other good cause shown. If any person can prove that such person's septic tank had been pumped within three years of the six-month anniversary of the effective date of this ordinance, then that person's initial required pumping may be delayed to conform to the general three-year frequency requirement except where an inspection reveals a need for more frequent pumping frequencies.

C. Any person owning a property served by a septic tank shall submit, with each required pumping receipt, a written statement, from the pumper/hauler or from any

D. A sewage enforcement officer shall have the authority to require the repair of any malfunction by the following methods: cleaning, repair or replacement of components of the existing system, adding capacity or otherwise altering or replacing the system's treatment tank, expanding the existing disposal area, replacing the existing disposal area, replacing a gravity distribution system with a pressurized system, replacing the system with a holding tank, or any other alternative appropriate for the specific site.

E. In lieu of, or in combination with, the remedies described in Subsection D above, a sewage enforcement officer may require the installation of water conservation equipment and the institution of water conservation practices in structures served. Water using devices and appliances in the structure may be required to be retrofitted with water saving appurtenances or they may be required to be replaced by water conserving devices.

F. In the event that the rehabilitation measures in Subsections A through E are not feasible or effective, the owner may be required to apply to DER for a permit to install an individual spray irrigation treatment system or a single residence treatment and discharge system. Upon receipt of said permit the owner shall complete construction of the system within thirty (30) days.

G. Should none of the remedies described in this Section be totally effective in eliminating the malfunction of an existing on-lot sewage disposal system, the property owner is not absolved of responsibility for that malfunction. The [Borough or Township] may require whatever action is necessary to lessen or mitigate the malfunction to the extent necessary.

Section IX. Liens

The [Borough or Township], upon written notice from a sewage enforcement officer that an imminent health hazard exists due to failure of a property owner to maintain, repair or replace an on-lot sewage disposal system as provided under the terms of this ordinance, shall have the authority to perform, or contract to have performed, the work required by the sewage enforcement officer. The owner shall be charged for the work performed and, if necessary, a lien shall be entered therefore in accordance with law.

Section X. Disposal of Septage

A. All septage originating within the sewage management district shall be disposed of in accordance with the requirements of the Solid Waste Management Act (Act 97 of 1980, 35 P.S. §§6018.101 et sec.) and all other applicable laws and at sites or facilities approved by DER. Approved sites or facilities shall include the following: septage treatment facilities, wastewater treatment plants, composting sites, and approved farm lands.

B. Pumper/haulers of septage operating within the sewage management district shall operate in a manner consistent with the provisions of the Pennsylvania Solid Waste Management Act (Act 97 of 1980, 35 P.S. §§6018.101-6018.1003) and all other applicable laws.

for a period of not more than thirty (30) days. Each day of noncompliance shall a constitute a separate offense.

Section XIV. Repealer

All ordinances or parts of ordinances inconsistent with the provisions of this ordinance are hereby repealed to the extent of such inconsistency.

Section XV. Severability

If any section or clause of this ordinance shall be adjudged invalid, such adjudication shall not affect the validity of the remaining provisions which shall be deemed severable therefrom.

Duly Enacted and Ordained this _____day of _____, 19 ____ by the [borough council/board of supervisors] of the (borough/township) of _____, County, Pennsylvania, in lawful sessions duly assembled.

ATTEST:

[borough, township] of _____
_____ County, Pennsylvania

_____
Secretary

BY: _____
Chairman of the (borough council, board of supervisors)