PERRY COUNTY SEWERAGE PLAN

1994

Prepared For:
Perry County Board of Commissioners

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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 Perry County. Historically, Perry County has been primarily rural, but continuing population growth requires expanded community services. 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 and Act 537 Sewage Facilities Plans, among others, will benefit by the completion of this County Sewer Plan. Eligibility for federal and state grant programs is also dependent upon conformity with a plan for sewerage development.

During the study it was found that ten (10) municipal sewer systems now provide sewage collection and treatment for about 27 percent of the county's population. Residents of the areas where sewers are not available at present must depend on on-lot subsurface methods for sewage disposal.

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, this 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 Perry County Comprehensive Plan. Thus, except for a brief discussion of population projections, no general background information is presented in this report.

This plan should not be considered to be 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 of an engineering study. Where results of engineering studies were available, information pertaining to existing conditions was assumed to be correct unless proof otherwise was found. All estimates of sewage flows and costs were 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 30 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, 2000 and Future. The construction prescribed for 1994 will satisfy existing needs for facilities, and that set for 2000 should be built within the next six 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 2000. 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 to existing Municipal Act 537 Sewage Facilities Plans.

Map 1 illustrates the sanitary sewer service areas for the three periods of sewerage planning for Perry County. Detailed maps and descriptions of the work required to serve these areas can be found in the Sewage Facilities Plan section of this report.

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, assumptions can be made concerning service line expansions and future service areas. Population changes result from the movement of people from one place to another for various reasons and from natural increase or decrease of population through births and deaths. Many factors influence the movement of people, but economic opportunity, housing, environment, and education are of prime importance.

In 1980 Tri-County Regional Planning Commission published estimates for Perry County's future population originally derived by establishing a growth pattern based on the historical growth rate for each municipality. 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 2010, 2020, and 2030 were estimated based on the average growth of the population in the decades from 1970 to 2000.

According to the population data from 1970 to 1980, the population increased approximately 24.8 percent. From 1980 to 1990 the rate of increase slowed to 15.3%, a drop of 9.5% since 1970. This rate is projected to decrease again through the year 2000. However, the rate of increase for the entire state has decreased significantly, leaving Perry County to be one of three counties showing the highest rate of population increase in the state.

Factors contributing to a steady increase in population are available lower cost housing, low congestion, easy access routes to the major work centers such as Harrisburg, Carlisle, and Mechanicsburg/Camp Hill Area, and a growing service area. From this it can be assumed that the trend will remain constant. Population estimates and percentages for the municipalities in Perry County are listed in Table 1. Figure 1 graphically shows the Perry County Population Trends since 1970. Figure 2 shows the population change projected from 1970 to 2040 for Perry County. Figure 2 shows a significant decrease in rate of population growth.

POPULATION TRENDS
PERRY COUNTY

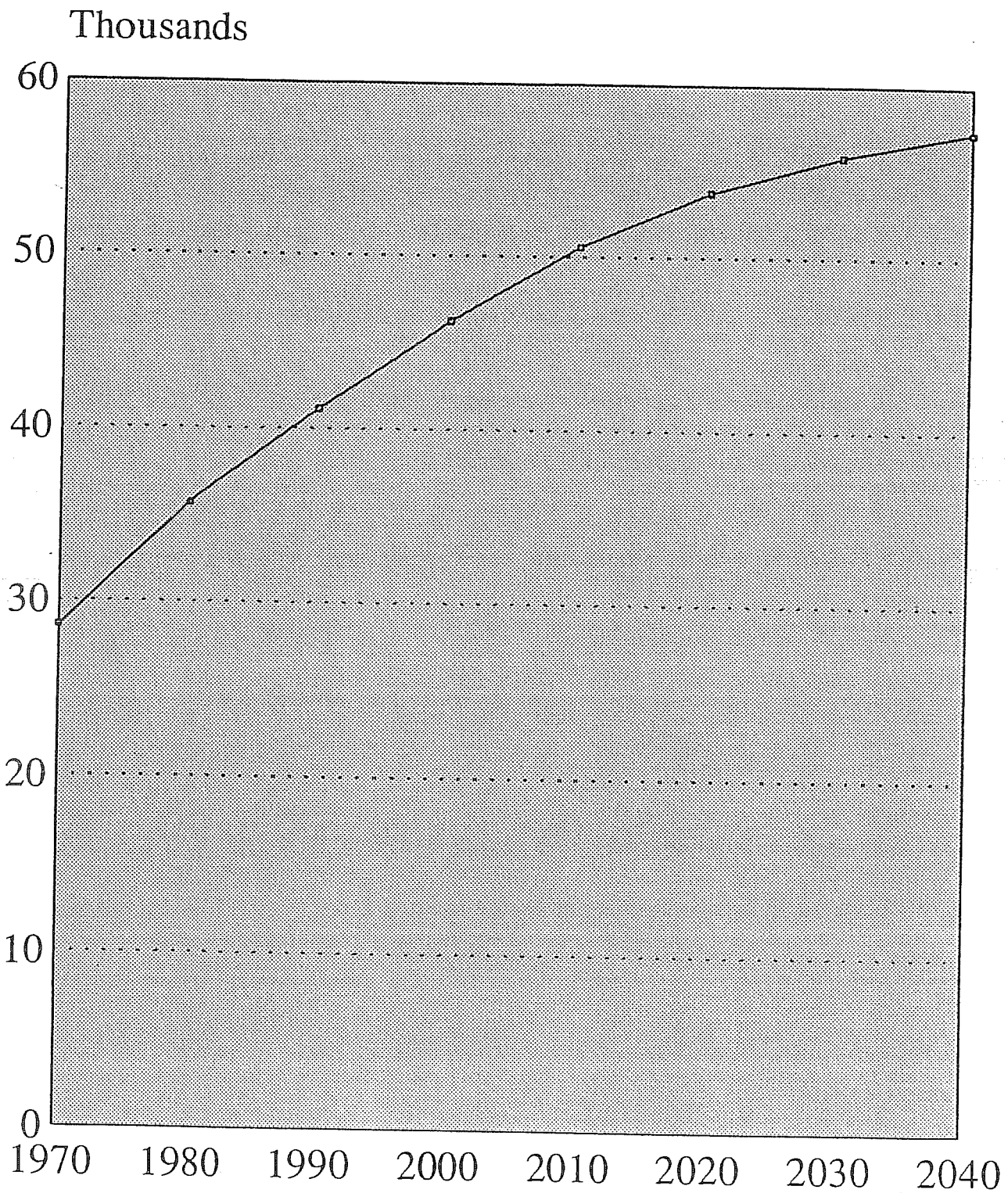

Figure I

PROJECTED POPULATION CHANGE
PERRY COUNTY

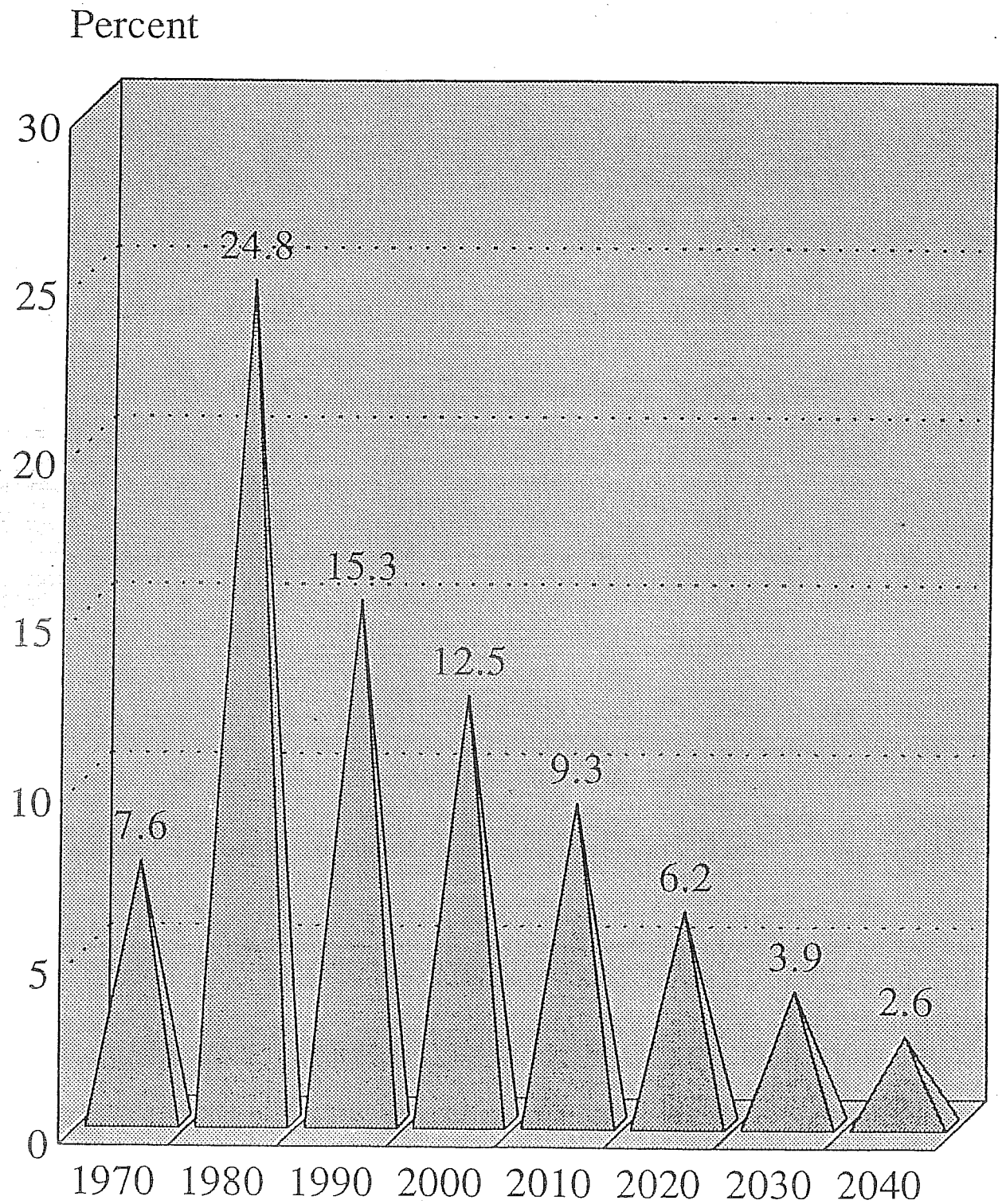

Figure II

TABLE 1
PERRY COUNTY
POPULATION DATA

MUNIC NAME	1970	1980	1990	2000	2010	2020	2030	2040
MARYSVILLE	2,328	2,452	2,425	2,446	2,545	2,726	2,863	2,971
BLAIN	287	274	266	259	280	299	314	326
BLOOMFIELD	1,032	1,109	1,092	1,106	1,146	1,228	1,290	1,338
BUFFALO	599	902	1,080	1,247	1,367	1,441	1,478	1,492
CARROLL	1,904	3,173	4,597	5,938	7,013	7,812	8,384	8,800
CENTRE	1,109	1,663	1,974	2,265	2,472	2,595	2,652	2,668
DUNCANNON	1,739	1,645	1,450	1,412	1,522	1,630	1,712	1,777
GREENWOOD	747	947	943	945	990	1,060	1,114	1,156
HOWE	397	460	459	459	482	516	542	562
JACKSON	413	437	489	524	542	550	578	599
JUNIATA	800	1,046	1,278	1,496	1,657	1,760	1,817	1,845
LANDISBURG	269	227	178	173	187	200	210	218
LIVERPOOL BORO	847	809	934	968	981	1,050	1,103	1,145
LIVERPOOL	553	781	915	1,041	1,129	1,179	1,200	1,202
MILLER	458	660	894	1,114	1,286	1,409	1,492	1,548
MILLERSTOWN	612	550	646	655	677	726	762	792
NEW BUFFALO	150	156	145	141	151	163	172	177
NEWPORT	1,747	1,600	1,568	1,526	1,645	1,761	1,852	1,921
NORTHEAST MADISON	419	564	674	776	848	890	908	911
OLIVER	1,557	1,749	2,039	2,275	2,430	2,505	2,519	2,497
PENN	2,269	2,841	3,283	3,695	3,973	4,119	4,163	4,143
RYE	1,316	1,642	2,136	2,600	2,956	3,209	3,359	3,457
SAVILLE	1,200	1,622	1,818	2,000	2,112	2,156	2,148	2,227
SOUTHWEST MADISON	537	658	745	825	876	898	897	912
SPRING	1,070	1,537	1,665	1,782	1,840	1,870	1,965	2,039
TOBOYNE	292	402	455	504	534	546	544	556
TUSCARORA	624	884	1,024	1,173	1,269	1,322	1,341	1,339
TYRONE	1,430	1,590	1,741	1,880	1,956	1,971	2,054	2,133
WATTS	613	962	1,152	1,329	1,455	1,530	1,565	1,575
WHEATFIELD	1,297	2,376	3,097	3,773	4,293	4,654	4,886	5,033
COUNTY TOTALS	28,615	35,718	41,172	46,327	50,614	53,768	55,884	57,359
CHANGE IN POPULATION								
(PERCENTAGE)	7.6	24.8	15.3	12.5	9.3	6.2	3.9	2.6

However, the county rate of growth remains higher than the states projected rate of growth. The County has experienced most of its growth extending from the Harrisburg Area and along the main routes of interstate and intercounty transportation.

A population projection is a guide for planning, whether it be local, municipal and/or county. It is not a prediction of an inevitable future population. Local changes could alter the future population of any given area.

The following table gives an up-to-date listing of the National Register File of historic homes, bridges, and other buildings of historical significance, all located in Perry County.

TABLE 2
PENNSYLVANIA HISTORICAL & MUSEUM COMMISSION
BUREAU OF HISTORIC PRESERVATION
NATIONAL REGISTER FILE
PERRY COUNTY

MUNICIPALITY REGISTERED	HISTORIC NAME	ADDRESS	DATE
CENTRE TWP.	CLAYS COVERED BRIDGE	SR1011, LITTLE BUFFALO STATE PARK	8/25/80
CENTRE/JUNIATA	LITTLE BUFFALO HISTORIC	S.W. OF NEWPORT OFF PA. 34	4/3/78
JACKSON TWP.	BOOK'S COVERED BRIDGE	SR3003, OVER SHERMANS CREEK	8/25/80
	MT PLEASANT COVERED BRIDGE	T304, S OF MT PLEASANT	8/25/80
	NEW GERMANTOWN COVERED BRIDGE	T02, S OF NEW GERMANTOWN	8/25/80
LANDISBURG	DUNBAR-CREIGH HOUSE	WATER STREET	8/25/80
LIVERPOOL TWP.	RED COVERED BRIDGE	OFF LR50023, W OF LIVERPOOL	8/25/80
NEW BLOOMFIELD	PERRY COUNTY COURTHOUSE	CENTER SQUARE	2/24/75
OLIVER TWP.	FLEISHER COVERED BRIDGE	T477, NW OF MILFORD	8/25/75
SAVILLE TWP.	KOCHENDEFER COVERED BRIDGE	SR4001, OVER BIG BUFFALO CREEK	8/25/80
SW MADISON TWP.	ADAIRS COVERED BRIDGE	SR3009, OVER SHERMANS CREEK	8/25/80
	BISTLINE COVERED BRIDGE	SR3005, OVER SHERMANS CREEK	8/25/80
TOBOYNE TWP.	O'DONEL HOUSE & FARM	RT.274, .5MI W OF NEW GERMANTOWN	7/17/86
TYRONE TWP.	RICE COVERED BRIDGE	T333, SE OF LANDISBURG	8/25/80
TYRONE/NE MADISON TWPS	WAGGONER COVERED BRIDGE	T579, E OF FORT ROBINSON	8/25/80
WHEATFIELD TWP.	DELLVILLE COVERED BRIDGE	T456, S OF DELLVILLE	8/25/80

3. ON-LOT SEWAGE DISPOSAL

Dwellings in many areas of Perry County are not sufficiently developed to warrant community sewerage and will continue to use individual on-lot subsurface systems for the treatment of sewage. These systems generally consist of a septic tank with a tile (pipe) soil absorption field. Within this plan, cesspools and privies are not considered acceptable on-lot disposal systems.

The successful operation of an on-lot subsurface disposal system depends greatly upon the characteristics of the site. Specific criteria are:

A. 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.

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

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

D. Slope: The rise or fall of the land; usually measured in feet per hundred feet (or percent). Map 2 shows the County's slope areas from 0-15%, 15-25%, and 25% or greater.

E. Flooding: A condition experienced when water overtops the natural banks of a creek, stream, or river. Map 3 shows the County's floodplain areas.

The Pennsylvania Department of Environmental Resources has adopted four classifications of soils with regard to their suitability for on-lot subsurface sewage disposal system. Absorption by the soil is the primary consideration because public health and nuisance problems will result when the soil cannot properly absorb liquid portions of the wastes. The four categories of soil limitations for on-lot sewage disposal are:

A. Slight: These soils have few, if any, limitations on the use of on-lot subsurface systems.

B. Moderate: These soils have one or more properties that may limit their use. Further investigation into the specific site is needed to determine the adequacy for sewage disposal.

C. Severe: These soils have one or more properties that seriously limit their use. It may be possible to correct these problems at a greatly increased cost.

D. Hazardous: These soils present a definite hazard of groundwater pollution.

The soil classifications in Perry County have been evaluated with respect to their ability to support on-lot disposal systems. The degrees of soil limitation for sewage effluent disposal are shown on Map 4. A review of the map reveals that most Perry County soils are rated severe or hazardous. Slopes greater than 15 percent and a low permeability rate are the reasons for the severe rating in most cases.

Soils are given a hazardous rating where the depth to either bedrock or water table is insufficient. The Pennsylvania Department of Environmental Resources requires a minimum of seven feet of suitable soil to bedrock or water table for on-lot sewage systems. This seven-foot minimum is divided into three feet of cover for the tile field and four feet between the tile field and bedrock or water table.

Failures of on-lot disposal systems have been experienced throughout the county. The Pennsylvania Department of Environmental Resources County Sanitarian has designated some areas as having a significant incidence of on-lot disposal system failures. These areas are shown on the detailed sewer maps presented later as sewage problem areas. Failures are caused by many reasons, but the most common are improper soils and inadequate absorption fields.

The Pennsylvania Sewage Facilities Act (Act 537), as amended, requires that permits be obtained for the installation of all on-lot sewage disposal systems except those for rural residences. A rural residence is defined as "a structure...intended to be occupied by not more than two families on a tract of land of ten acres or more." The granting of permits is dependent upon the results of site specific investigations, including percolation tests, of soil suitability.

As a rule, development in areas of Perry County not served by community sewer systems should be severely restricted. 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 on-lot sewage disposal at individual sites in areas rated severe or hazardous. Each site proposed for on-lot sewage disposal 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 the absorption field on each lot. This requirement normally increases minimum lot size in order to accommodate municipal regulations.

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4. REGULATORY REQUIREMENTS

A. Act 537 Planning Modules:

Act 537 planning is required for all projects and subdivisions and all projects of existing lots that propose sewage flows of 800 gallons per day (gpd) or greater. With every land development plan a completed Sewage Facilities Planning Module is required to be submitted to the Pennsylvania Department of Environmental Resources (PADER). The County Planning Commission is required to review each planning module using a set of regulations developed by PADER. Therefore, it is necessary that Perry County continue its efforts to update its sewerage plan in order to correctly review each sewage planning module. The developer must take into consideration any existing state requirements affecting the development, use, and protection of water and other natural resources. This also includes archaeologic and historic preservation. Table 2 (on page 5) lists areas on the National Register File within Perry County.

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. The Component 1 is then submitted to DER, who must act on the module within sixty (60) days. If DER fails to take action within the allotted sixty (60) days the Module is considered approved.

Major subdivisions require the submission of an Application for Sewage Facilities Planning Module (post card application) to DER. Upon receipt of the post card application, DER 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.

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 DER for action. DER is required to act on the revision within 120 days. If DER fails to act on the revision within the allotted 120 days, the revision is considered approved.

Copies of Sewage Facilities Planning Module Components developed by PA DER Bureau of Water Quality Management are included as Appendix I.

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. (See Table 2, Page 5)
- Alternative Sewage Facilities Analysis
- General Site Suitability
- Wetland Protection
- Planning Agency Review

The Department of Environmental Resources (DER) provides technical assistance to counties, municipalities and authorities in coordinating official plans for sewage systems.

DER also administers grants to counties, municipalities and authorities to assist them in preparing official 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]

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

B. Permitting Requirements:

Permits issued by DER, 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, authorizes 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.

5. EFFLUENT QUALITY STANDARDS

To control pollution and properly manage waters within the Commonwealth, stream quality standards are set by the DER. These standards are based upon the "protected use" of the stream. Protected uses to be considered for each stream are recorded in Chapter 93 of the DER's Rules and Regulations and are as follows:

- Aquatic Life: (a) Warm water fishes; (b) Cold water fishes; (c) Migratory fishes; (d) Trout stocking.
- Water Supply: (a) Public; (b) Industrial; (c) Livestock; (d) Wildlife; (e) Irrigation.
- Recreation: (a) Boating; (b) Fishing; (c) Water contact sports; (d) Esthetics.
- Special Protection: (a) High quality; (b) Exceptional Value.
- Others: (a) Navigation.

The protected uses of a stream comes into play when the DER determines the effluent limitations as part of the Part I (NPDES) Permitting Process previously discussed. Effluent limitations are established for a discharger to meet the protected uses of a stream through a stream modeling process. Limitations are generally set for carbonaceous biochemical oxygen demand (CBOD), suspended solids (SS), pH, fecal coliforms, and in some cases ammonia nitrogen (NH_3/N) and phosphorous (P).

NH_3/N limitations are set based on the volume of the discharge with respect to the volume of the stream flow. Generally NH_3/N limits are not set unless the discharge is large and/or the stream small. Phosphorous limitations come into play in the lower Susquehanna River Basin (below the confluence of the Juniata River and the Susquehanna River). A portion of Perry County is located in this area. If the phosphorous loading to the stream is greater than 0.25% of the total stream loading, a discharge limit of 2.0 mg/l is set; if it is less than 0.25% of the total stream loading, no limit is set.

An additional consideration in establishing effluent limitations is that secondary treatment is the minimum level of treatment acceptable for effluent discharged to streams of the Commonwealth. Where stream quality standards require treatment in excess of this minimum amount, advanced secondary treatment processes will be required. Secondary treatment for publicly owned treatment works (POTW) has been defined in Chapter 95 of DER's Rules and Regulations as being:

"...that treatment which shall accomplish the following:

- 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 a five (5) consecutive day average of values.

- Remove practically all of the suspended solids.
- Provide effective disinfection to control disease-producing organisms during the swimming season - May 1 to September 30.
- Provide satisfactory disposal of sludge.
- Reduce the quantities of oils, greases, alkalis, toxic, taste and odor-producing substances, color and other substances inimical to the public interest to levels which will not pollute the receiving stream."

Effective disinfection is defined as follows:

> "Effective disinfection to control disease-producing organisms shall be the production of an effluent which will contain a concentration not greater than 200/100 milliliters (ml) of fecal coliform organisms as a geometric average value nor greater than 1000/100 ml of these organisms in more than 10 percent of the samples tested."

With respect to the effluent limitations that would be set in a Part I (NPDES) Permit, secondary treatment is defined as follows:

$CBOD_5$	-	25.0 mg/l
SS	-	30.0 mg/l
Ph	-	6.0 to 9.0

fecal coliforms - as defined in Effective Disinfection, above.

BOD removals by secondary treatment processes generally range from 85 percent to 95 percent. For consistently higher BOD removals, advanced treatment (i.e. effluent filtration) is required. Costs of providing advanced treatment are high, therefore, discharges to streams requiring such treatment should be avoided if possible. Additional effluent limits can be ammonia-nitrogen and phosphorus.

Complete nitrification (i.e. > 90 % reduction in effluent ammonia nitrogen levels) can be achieved in some secondary treatment processes if sufficient aeration, solids retention, and alkalinity are present. Many wastewaters have insufficient alkalinity occurring naturally, necessitating alkalinity addition in order to maintain a stable nitrification process.

Phosphorus removal from wastewater generally requires some advanced treatment process in addition to secondary treatment processes, although biological processes capable of removing phosphorus have recently been developed. Advanced treatment processes

employed most frequently used to remove phosphorus involve the addition of lime, salts of aluminum, or salts of iron. In addition, coagulant aides (i.e. polymer addition) are usually required to facilitate the removal of the phosphorus through settling. One drawback in providing for phosphorus removal is that large quantities of sludge are produced, subsequently increasing the sludge handling and ultimate disposal requirements.

6. EXISTING SEWAGE TREATMENT FACILITIES AND SEWAGE FACILITIES PLANNING

This section of the plan contains information on various aspects of municipal sewerage systems serving Perry County. A municipal system is defined as one which is owned by a municipality or operating authority to manage the sewage collection and/or treatment systems. This section will inventory the facilities and service areas for the various systems. A description of each treatment and collection system and sewerage facility planning are included in this section, along with a table listing various characteristics of the facilities and their service areas.

Recommendations will be made concerning the use of existing facilities, as well as development and plans for new facilities. New facilities considered included new treatment plants, pumping stations, gravity and pressure sewer mains, trunk and intercepting sewers. Sizes shown for the sewers shown were based on the assumption that the lines will be laid at minimum grades. All costs are stated in terms of present (1993) dollars. Alternate plans were considered and the most economical and practicable plan was selected and presented in this report.

The primary factors used in consideration of this plan's development were natural drainage patterns, existing sewer systems, local Act 537 Sewage Facilities Plans, the Perry County Act 537 Sewage Facilities Plan, and discussions with local Sewage Enforcement Officers and engineering firms representing local municipalities. Political boundaries were used only in coordination with existing service boundaries and or when they coincide with natural features. The mapping included details the areas for existing, year 2000, and future sewer facilities. Again boundaries are not set partially unless coincidentally. The future service areas have largely been predicted for extensions of existing facilities. Only a few other "new service areas" have been designated according to population/development growth. A listing of private sewerage treatment facilities is located at the end of this section.

A. BLOOMFIELD BOROUGH AUTHORITY

1. Population Served

The Bloomfield Borough has a sewer collection system and treatment facility, and uses the County Plan for its Act 537 Plan. This system serves all developed areas in the Borough plus the Perry Village Nursing Home and several residences in Centre Township located to the east of the Borough via sewer extensions. Carson Long Institute, a military academy and the Perry County Prison and administrative offices are large customers of the system.

2. Intermunicipal Agreement

The treatment plant and collection system is owned by the Bloomfield Borough Authority, however, the Borough Council maintains and operates the system on a daily basis. Customers are billed in a quarterly manner based on a flat rate. The flat rate differs depending on the type of use, i.e. residential, commercial, industrial or institutional. Additional capacity is not a necessity at the present time. However, discussions of upgrading the system to include portions of Centre Township in the future have occurred.

3. Treatment Plant

The treatment process includes trickling filter and final settling of the effluent. The effluent flows through a chlorine contact tank and is then discharged into the Little Juniata Creek. The excess sludge is aerobically digested and applied to permitted local farmland. The sewage treatment facility was built in 1955. The system was designed to handle 0.150 MGD, and currently has an average daily flow of 0.121 MGD, serving a population of 1032. Since construction, infiltration and inflow (I/I) problems have developed. The Borough has received Community Development Block Grant (CDBG) Program funds for the televising of lines of the collection system. Some corrections to the system have been made.

4. Sewerage Planning

A residential development, Lakeside PRD, is being planned for vacant land located in the southwestern corner of Bloomfield Borough. The PRD is comprised of four phases: Phase 1, on 6.77 acres, will contain 30 EDUs. Phase 2 is planned to contain 15 EDUs. The details of Phases 3 & 4 are not known. To date, the Borough approved Planning Modules for Phase 1 and they were submitted to DER for approval. Wastewater services will be provided by the Bloomfield system. Planning Modules for subsequent phases have not yet been approved by the Borough.

B. BLAIN BOROUGH

Blain Borough has a public water system but no public sewer system. The Borough is comprised of old houses with small lots. Malfunctioning on-lot disposal systems are prevalent.

C. BUFFALO TOWNSHIP

1. Buffalo Township does not have public sewer service available and does not foresee, in a ten year period, a need for the service because of a stagnant growth rate.

2. On-Lot Problem Areas

    a. Montgomery Ferry - Located along Route U.S. 11 and 15 in Buffalo Township. Montgomery Ferry consists of older homes (potentially unpermitted on-lot systems) and is located near the Susquehanna River (concerns with flood plains, potentially high groundwater tables, and possibly wetlands).

D. CARROLL TOWNSHIP

Carroll Township is one of the more rapidly developing Townships in Perry County. Located in the southeastern portion of the county, it's location is ideal for people who commute to Carlisle and Harrisburg for employment. During the seventies, the Township had a 66.7% growth rate followed by 45% in the eighties. The Township's 1990 Census population was 4,597. From 1980 to 1990, Carroll Township led the County in numbers of new dwelling units constructed. In 1991, four new subdivisions totalling 515 acres with 42 residential lots were approved for development in the Township. This growth is a continuation of a trend in new home construction which has been apparent in Carroll since 1978. The Township has been plagued with on-lot malfunctions and in 1987, DER issued a "Limitation of Sewage Permits" for the Shermansdale area of the Township until an Act 537 Study could be completed. In February, 1988, the Township entered a Consent Order and Agreement with DER relative to planning and permitting under the Sewage Facilities Act. An Act 537 Study was prepared in January, 1989 and approved by DER in April, 1989.

1. On-Lot Problem Areas

   a. Fox Hollow Road and Route 34 - Heavy development exists in this area, including a high number of older homes (potentially unpermitted on-lot systems).

   b. Shermans Dale - Cluster of homes and businesses without centralized sewage collection and treatment. A holding tank is in use at the Unimart located in this area. Also, a private treatment plant is proposed for the Village Square Shopping Center (IGA, etc.).

   c. Orchard Hills Mobile Home Park on Windy Hill Road has a high incidence of malfunctioning on-lot systems.

   d. Crum's Corner (Rte. 34 and Windy Hill Road) has significant development including a high incidence of older homes (potentially unpermitted on-lot systems).

   e. White Oaks Inn (Rte. 34 west of Meck's Corner) is to be placed on a holding tank due to on-lot malfunctions.

   f. Shermans Dale Heights development on Burn Hill Road has incidences of small lots and malfunctions.

   g. Perry Estates and Mountain View Manor Developments of Church Road have existing on-lot malfunction problems.

h. Forest View Development (Rte. 34 east of Crums Corner) has an area of steep slopes (upper portion) and some homes with sand mounds located within an intermittent drainage way (lower portion).

i. Meck's Corner has documented well contamination problems.

2. Sewerage Planning

The Act 537 recommended that the majority of the Township continue to utilize on-lot sewage disposal systems with implementation of a Land Development & Subdivision Ordinance, a Water Conservation Ordinance and a Holding Tank Ordinance. These ordinances were submitted to DER in July, 1989. The Township also revised their zoning ordinance to require a minimum lot size of 1.5 acres. The Act 537 also recommended the construction of two package plants by private developers: the Village Square STP in the Shermansdale area and the Orchard Hills/Creek View Farms STP located slightly north of Shermansdale. Both plants have since been constructed. The Village Square STP, planned for 30,000 gpd, serves the Village Square development at the corner of Routes 34 and 850. It discharges to Shermans Creek. It was constructed with 5,250 gpd of reserve capacity to accommodate existing Township needs as well as the developer's future needs. The developer plans to construct additional store space (14,500 sq. ft.), a self-serve laundry, a car wash and a 28-unit apartment building in the area. These establishments would be connected to the STP. To date, however, only the shopping center has been connected. The Orchard Hills/Creek View Farms STP, designed for a flow of 100,000 gpd, is located southeast of T-327 directly north of the Shermansdale area. The STP discharges to Shermans Creek. The plant, which went into operation in 1993, could also provide for future expansion of properties associated with each of the mobile home parks. The West Perry Carroll Township Elementary School, located on Route 34, recently constructed a 12,500 gpd package plant to serve the school. The remainder of Carroll Township will be served by on-lot systems and there are no plans for a community-wide system.

E. CENTRE TOWNSHIP

Centre Township uses the County Plan for its Act 537 Plan. The Township receives a few minor subdivisions to subdivide farms into 6-7 lots for residential development served by on-lot systems. No public sewage facilities are being planned, designed or constructed by the Township.

1. On-lot Problem Areas

   a. Mansville - Located along Little Buffalo Creek in the western portion of the Township. Potential concerns are related to flood plains, seasonal high water table, and wetlands.

   b. Country Meadows Apartments - Located in the south central portion of the Township, the Country Meadows Apartments are served by a malfunctioning on-lot septic system. Septic tanks are being pumped approximately twice a week.

   c. Hardy Acres - Located east of Bloomfield Borough, the Hardy Acres Development is comprised of older homes (potential unpermitted on-lot systems) on steep slopes with poor soils.

   d. Hickory Ridge Development - Located northeast of Bloomfield Borough, the Hickory Ridge Development has had on-lot malfunction repair permits issue due to systems being installed incorrectly. The soils in the area are generally suitable for on-lot disposal.

2. Sewerage Planning

   There are two areas immediately outside of Bloomfield Borough in Centre Township where public sanitary sewage service may be required to serve existing and future developments during the planning period. These areas are in close proximity to the Bloomfield system and could be largely served by gravity sewers. They are:

   a. SR 4005 north of Bloomfield Borough

      (1) This area may require the extension of the Bloomfield Borough collection system by the Year 2000 to provide service to Mahanoy Centre, a new shopping center located approximately 500 feet north of the Borough line. At the time of construction arrangements could not be made for connection to the public sewer to the satisfaction of each party within the timeframe required by the developer. An elevated sand mound system with 1,500 gpd capacity serves this

commercial area. The owner reports a current flow of 1,025 gpd. The private system serves a grocery store (Riverside) and a drug store (White Shield) in one building and a small office complex containing three professional offices in another building. The developer is preparing planning modules to increase the permitted flow to 4000 gpd. Potential development includes a third retail establishment and three (3) additional offices. Following completion of the commercial area, preliminary plans call for the development of federally subsidized elderly housing immediately east of the commercial area. These plans are largely dependent upon the availability of public sanitary sewage.

b. SR 0274 west of Bloomfield Borough to serve existing residences

(1) The existing residences along SR 0274 to the west of Bloomfield Borough are desirous of obtaining public sanitary sewage service. There are approximately 12 single-family dwellings and a bank in this area. This is a complicated area to serve, however, as pumping is required to serve all the homes.

F. DUNCANNON BOROUGH MUNICIPAL AUTHORITY (DBMA)

The Act 537 Plan was completed in August, 1990, and amendments were prepared January, 1991, to respond to both DER's and Perry County Planning Commission's comments. Under DER Orders (3/70) to upgrade treatment to secondary with phosphorus removal and to work jointly with Penn Township. This was a result of the establishment of new water quality criteria and treatment requirements for the Susquehanna River. Federal funding was not received and project was put on hold until 1985 when DER notified DBMA that it was not meeting its effluent limitations as per its NPDES permit and must correct the problem.

1. Population Served

All residents of the Borough plus portions of Penn Township. The Borough is completely developed and virtually 100% sewered. Little growth is expected over the next 20 years. Act 537 flow projections included 5 new EDUs per year for next 20 years in Duncannon. The sewerage facility serves a population of 1,490 from Duncannon and a population of 1,263 from Penn Township.

2. Intermunicipal Agreement

An Intermunicipal Agreement with Penn Township was executed in October of 1989, and defines the basis by which capital and operating costs will be shared between the Borough and the Township for the upgrade and expansion of the Duncannon STP.[2] Capital costs are split on a pro-rated reserve capacity flow basis, and operating costs are to be shared on an actual usage basis. The agreement allows for average daily flows of 0.50 MGD for Duncannon and 0.24 MGD for Penn Township. If I/I is removed successfully from the system and Penn Township requires additional capacity, the agreement provides language for redistributing the reserved capacity under mutually acceptable terms.

3. Treatment Plant

The Treatment Plant was built by Duncannon Borough Municipal Authority in 1965 and was upgraded to provide phosphorous removal in 1970. The STP is owned by the Authority and operated by Duncannon Borough, and is located in the southwestern corner of the Borough adjacent to Penn Township. An expansion to 0.74 MGD and upgrade to provide secondary treatment with phosphorous removal utilizing the SBR process was completed in the Spring of 1993 at cost of $6.331 million. The upgrade will permit additional connections from Penn Township. Approximately 400 connections from Penn Township

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[2]. Borough of Duncannon and Duncannon Borough Municipal Authority, Act 537 Sewage Facilities Plan Revision, 1990.

were completed in 1993. Construction was financed through PennVEST funds. The Susquehanna River receives treated effluent, and excess sludge is disposed at the Cumberland County landfill. Projected flows for the STP is 0.74 mgd for design year 2010 which includes Duncannon Borough and Penn Township. The average daily flow is currently 0.47 MGD for Duncannon Borough and 0.080 MGD for Penn Township. I/I problems exist within the Borough's system, however, no further improvements are planned.

4. Sewerage Planning

The Borough is virtually 100 percent sewered except for some steep slope areas which are not developed. No major growth is projected in Duncannon since the Borough is completely developed. Census indications support the fact that Duncannon's population is stable or slightly declining.

G. GREENWOOD TOWNSHIP

1. There are no public sewerage treatment facilities located in the Township.

2. On-lot Disposal Problem Areas

   a. Area south of Millerstown Borough (south of treatment plant) is of concern. The SEO did not specify the problems encountered there.

   b. Reward - Located in the eastern portion of Greenwood Township, Reward consists of older homes (potentially unpermitted on-lot systems) and has a significant number of gray water discharges.

H. HOWE TOWNSHIP

1. Newport Borough is the closest operating authority to Howe Township. However, there are no collection lines located in the Township. The entire Township relies on on-lot disposal systems. Connection to Newport Borough's STP is unlikely since it would entail the construction of lines crossing the Juniata River.

2. On-lot Disposal Problem Areas

   a. Three areas along the Juniata River below Route 322 were noted by the SEO as having problems, but the type of on-lot disposal problem was not specified.

3. Future Service Areas

   a. Red Hill, located south east of the Rte. 34 exit off of U.S. Rte. 322, is the proposed site for a commercial strip center, including a grocery store, bank, and fast food restaurant.

I. JACKSON TOWNSHIP

1. Jackson Township does not contain any public sewer service facilities. To date, the Township's low population does not warrent the need for such a service.

2. On-lot Disposal Problem Areas

   a. Manassa Area - Located along Bull Run, the Manassa Area potentially has on-lot systems located in the flood plain, soils with a seasonally high water table, and wetlands.

J. JUNIATA TOWNSHIP

1. Act 537 Sewage Facilities Plan

The Juniata Township Act 537 Sewage Facilities Plan calls for the implementation of an on-lot management ordinance (requiring periodic inspection of on-lot systems) and a subdivision and land development ordinance (with specific provisions for monitoring nitrate levels in the groundwater). Juniata Township approved the Township's Act 537 Study in July, 1992 and the DER approved the study in September, 1992. The plan recommended the continued use of on-lot disposal systems. The entire Township utilizes on-lot disposal systems and wells although there are severe soil limitations throughout the Township. Topographical constraints and scattered developments throughout the Township make centralized wastewater treatment systems unfeasible. Further, future growth is expected to be minimal as the Township does not lie in the path of development and is isolated from the growth experienced by other areas more accessible to transportation facilities and employment opportunities.

2. Growth Trends

During the seventies and eighties, growth rates of 30% and 22%, respectively, were experienced by Juniata Township. However, actual growth was only around 250 people per decade. DER's projections show decrease in the continued rate of growth for the Township for the years 2010 and 2020. The future growth areas of the Township are Markelsville and Wila which are both subject to flooding and water inundated soils. These two areas are the only ones in Juniata with any commercial development. The projected population growth for the next decade will necessitate 40 new homes in order to accommodate the projected 117 additional persons. Potential for growth in the Township exists along SR 4008 on an east- west axis through the Township, T-400 near Markelsville, T- 487, SR 4007, SR 1009 and PA 849 near Markelsville.

3. Waterways Concerns

Buffalo Creek is the major drainage basin in the Township. The entire drainage basin is classified as a high quality cold water fishery. Little Buffalo Creek, from its source to the Little Buffalo State Park dam, is also a high quality stream, and the entire basin to mouth segment is a cold water fishery.

4. Treatment Facilities

There is one retaining tank temporarily in use in Markelsville. Also, Little Buffalo Creek State Park utilizes a small treatment plant for the park. The closest municipal treatment plants are in Newport Borough and Ickesburg

Village, too distant from the developed areas of Juniata Township. Prior to 1989, a total of 222 lots were created but only 85 were built upon. Now, many of these lots will not be built upon as the original on-lot sewage disposal permits have expired and elevated sand mound systems will be required to receive a new permit. This would add to the housing cost and it is believed that the demand for housing in Juniata may not support the additional cost associated with the elevated sand mound system. Presently, the number of available lots is two times greater than needed for the next decade. The Act 537 Study recommended that a Sewage Facilities Management Ordinance be adopted to regulate all on-lot disposal sewage facilities.

5. On-lot Disposal Problem Areas

   a. Wila - Located along Buffalo Creek, an interview with the Township SEO reports that Wila is suspected of discharging sanitary wastewater into a storm sewer system.

   b. Marklesville - Located along Buffalo Creek, Markelsville is suspected by the SEO of having on-lot disposal problems due to its proximity to Buffalo Creek.

   c. Walnut Grove - A small community located along Buffalo Creek. The SEO suspects on-lot disposal problems due to its proximity to Buffalo Creek.

K. LANDISBURG BOROUGH SERVICE AREA

Landisburg Borough prepared and adopted an Act 537 Plan following the issuance of DER Orders to Tyrone Township to provide sanitary sewage service to those areas of the Township adjacent to the Borough. Further, Tyrone was ordered to work with the Landisburg Borough Municipal Authority to accomplish this objective. Landisburg completed their Act 537 in July, 1987 and the study was subsequently approved by DER. At the time of this report writing, the Borough reports that their Act 537 is still current and in force.

1. Population Served

   The STP currently only serves the Borough of Landisburg and a small portion of Tyrone Township. The treatment facility is located in the low end of the collection system southwest of the Borough in Tyrone Township, just off of PA 233 near the Montour Creek Crossing. The Landisburg STP currently serves 230 customers from Landisburg and 22 customers from surrounding Tyrone.

2. Intermunicipal Agreements

   The Landisburg system is owned and operated by the Landisburg Borough Municipal Sewer Authority. The Authority bills the residents using public sewer service quarterly based on a flat rate.

3. Treatment Facilities

   The plant was recently constructed and went into full operation in 1991. The plant provides secondary treatment utilizing the Extended-Aeration type activated sludge process. Its design capacity is 0.030 mgd and the current average daily flow is 0.014 mgd. The plant is operating at approximately 30-35% capacity and is meeting its permit requirements. Sludge drying beds are used at the STP and the dried sludge is hauled to the Borough of Newport's STP by agreement. The Borough is currently seeking a permit from the DER to use excess sludge as fertilizer for local permitted farm fields. The STP discharges into Montour Creek, the receiving stream.

4. Sewerage Planning

   a. Future line extensions are possible into areas of Tyrone Township immediately adjacent to the existing Landisburg service area. The Borough has received Planning Modules to extend service to a commercial establishment (2.15 EDUs) and four residences along SR 3017 on property owned by L. Gene Lyons. Three areas are potential service areas based on the reported on-lot system malfunctions which have been investigated

by the Township's SEO. They are: 1) SR 0233 near the STP, 2) SR 0850 east of the Borough, and 3) Township Road T-333.

b. One area of the Township has been defined as a "needs" area by DER - Kennedy's Valley - Barkley Road east of the Township line area. DER has called for the correction and repair of the malfunctioning systems in this area prior to permitting the Township to undertake any additional planning activities. Another problem area is located in the western portion of the Township along McCabe Road where 18 on-lot systems were documented by the SEO as having problems. This area is too remote to connect to one of the centralized treatment systems, however, it does appear to being large enough to warrant a community system.

L. LIVERPOOL BOROUGH MUNICIPAL AUTHORITY

1. Population Served

The STP serves only the Borough of Liverpool. The system serves approximately 800 persons and several commercial establishments as well as two convalescent homes.

2. Intermunicipal Agreements

The plant was completed in 1968. System owned/operated by the Liverpool Borough Municipal Authority. The Authority has appointed a sewage treatment officer to manage daily activities at the plant. Customers are billed on a quarterly basis according to household water usage metered daily.

3. Treatment Facilities

The Liverpool STP utilizes primary settling and contact aeration with chlorination to achieve its permit requirements for discharge into the Susquehanna River. The plant will soon be changed to extended aeration. The plant's design capacity is 100,000 gpd and average daily flows are approximately 65,000 gpd. Due to the I/I problems experienced at the plant, an accurate base flow is not known. Sludge is disposed from the liquid digester and transferred by truck to the Harrisburg Advanced Wastewater Treatment Facility. Because of hauling costs and disposal costs, the Borough hopes to obtain a permit from DER for the use of landfill disposal. The biggest problems at the Liverpool STP are those associated with infiltration and inflow. I/I can cause the plant to exceed its capacity by 100,000 gpd. Liverpool received a grant from the Department of Community Affairs to correct the I/I problems and televised the system in the Spring of 1993. Repairs to laterals, manholes, and line grouting are planned to reduce I/I within the Borough at a cost of $20,000. Once the I/I problems are corrected, the Borough will study the need for possible plant expansions based on projected growth. At present, no system or STP expansion is envisioned as there are no definite plans for development within the Borough or in adjacent Liverpool Township.

4. Sewerage Planning

At present, no sewage system or sewage treatment plant expansion is envisioned, as there are no definite plans for development within the Borough or in adjacent Liverpool Township.

A local developer has informal plans for the development of approximately 200 acres of land in the southern portion of the Borough. Preliminarily, his plans call for the development of commercial property along the road frontage on Route 17 and old 11/15. The remainder of the property will be utilized for residential purposes, 80 lots anticipated. To date, the Borough has not received planning modules for this development.

Liverpool Borough may be in a position to experience future growth with the completion of the widening of Route 11/15 to 5 lanes, which is scheduled for early 1996. Good accessibility, a large supply of vacant land, and available sewage treatment plant capacity (or simply the presence of a plant) may stimulate development in Liverpool Borough. At this time, all plans for future development are speculative and, therefore, no immediate expansion of the service area is called for; however, the Borough's leaders are "pro-development" and the service area population is expected to double following the completion of the Route 11/15 widening product. A plant expansion and/or upgrade may be necessary to accommodate this growth once the outcome of the I/I study is known.

M. LIVERPOOL TOWNSHIP

1. There are no public sewerage treatment facilities, including collection lines, located in the Township.

2. On-lot Disposal Problem Areas

   a. Centerville - Located in the southwest corner of the Township along Bargers Run. The SEO expressed concern with this area due to its proximity to the creek.

   b. Area along Susquehanna River north of Liverpool Borough was identified by the SEO as having some malfunctions. Originally the homes were seasonal homes, which are now permanently occupied.

3. Sewerage Planning

   A local developer has informal plans for the development of approximately 200 acres of land in the southern portion of the Township. Preliminarily, his plans call for the development of commercial property along the road frontage on Route 17 and Old 11/15. The remainder of the property will be utilized for residential purposes. To date, the Township has not received planning modules for this development. Liverpool may be in a position to experience future growth with the completion of the widening of 11/15 which is scheduled for early 1996. Good accessibility, vacant land and available sewage treatment plant capacity may stimulate development in Liverpool Township in and around Liverpool Borough. At this time, all plans for future development are speculative and therefore, no immediate expansion of the service area is called for.

O. MARYSVILLE BOROUGH

1. Population Served

The STP currently only serves the Borough of Marysville. This system services approximately 3,000 residents and commercial establishments located in the Borough.

2. Intermunicipal Agreements

The collection and treatment system is owned, operated and maintained by Borough of Marysville; the operating Authority was dissolved in 1988. The Borough was directed to work with Rye Township by DER in the preparation and completion of the Marysville and Rye Township Act 537 Studies. Act 537 Study approved by Resolution of the Borough Council on March 8, 1993; Act 537 study has been approved by PaDER.

3. Treatment Facilities

The primary STP was built in 1962 and was updated to secondary treatment with sludge drying in 1972; The current STP is a 0.5 mgd secondary plant providing phosphorous removal via aluminum sulfate addition. The wastewater is processed first through the primary portion of the plant then secondary processes are performed; chlorination takes place and the treated effluent is discharged into the Susquehanna River. The plant is operating at capacity and is inefficient due to the age of its equipment and tributary sewer lines. The Marysville system has been subject to a voluntary connection ban of 24 EDUs until such time as the Act 537 Plan was approved and construction work completed. This limit, agreed to by the Borough and DER, is expected to be lifted at the end of 1993 now that the Borough's Act 537 Plan has been completed. Marysville has an I/I problem and an I/I study is complete which indicates that the river interceptor as the system's largest inflow problem. The river interceptor from Manhole 120 to 110 will be rehabilitated along with the plant by 1998 at a cost of $3,384,960, according to the Act 537 Implementation Schedule. The plant will be rehabilitated to utilize sequencing batch reactors and it will initially be expanded to 1.25 mgd. Ultimately, the plant will be expanded to 2.5 mgd. No increased O&M costs are expected. Sludge is being hauled to the Cumberland County Landfill.

4. Sewerage Planning

Land development in Marysville has been under the 24 connection limit permitted by the Borough's agreement with DER. Residential development is expected in the central portion of the Borough prior to 2000. The Pace & Pace

Subdivision Plan, comprised of 30 residential units, was given preliminary plan approval by Borough Council in April, 1993. Growth is also expected in the southeastern portion of the Borough on farmland lying between Kings Highway and Private Drive which runs parallel to Trout Run. Service to the Route 850 area in Rye Township will be provided by the Marysville system when desired by Rye Township. 250,000 gpd of the Marysville plant's capacity has been set aside for the Township's future use. The Township stated that no flows will be sent to Marysville for at least a ten year period (2003).

P. MILLER TOWNSHIP

Perry County is currently in search of a suitable tract of land to locate an industrial park. Miller Township appears to be the best suited location. Careful review of proposed sewage handling should be performed prior to construction activity.

1. On-lot Disposal Problem Areas

   a. Leshtown - Located along Juniata River, Leshtown consists of old houses many of which are served by privies.

Q. MILLERSTOWN BOROUGH

Millerstown Borough Municipal Authority owns a public sewage treatment facility located just off Route 22/322 in the southern portion of the Borough next to the Juniata River.

1. Population Served

   Currently, only residents and commercial establishments within the Borough are serviced by the STP. The plant serves largely residential land uses with a mixture of commercial land uses as well. The system serves approximately 615 persons and is running at 40-50% capacity.

2. Intermunicipal Agreements

   The STP is owned by the Municipal Authority and operated and maintained by the Borough by agreement between the two parties. Sewer rates are based on a flat rate and the customers are billed on a quarterly basis.

3. Treatment Facilities

   The original construction was in the 1960s and was upgraded in 1975 to secondary treatment. The plant is designed for 0.1 mgd and currently uses an average flow of 0.04 mgd. The treatment process includes primary settling, extended aeration using activated sludge treatment. The effluent is discharged into the Juniata River. The excess sludge is aerobically stabilized and applied to local permitted farmlands. The STP is reported to be in good operating condition with the exception of some aging equipment.

4. Sewerage Planning

   The Borough adopted a Comprehensive Plan in 1984. The future land use plan, as well as the 1990 Census show areas planned for future mixed commercial and a small industrial section. However, in 10 years that have passed, the Borough has not experienced any commercial or residential growth and does not foresee the need for additional future sewerage planning.

R. NEWPORT BOROUGH AUTHORITY AND OLIVER TOWNSHIP MUNICIPAL AUTHORITY

The Borough of Newport uses the County Sewerage Plan for its Act 537 and there are no plans to prepare one for the Borough.

NEWPORT BOROUGH

1. Population Served

   The STP serves all of the Borough of Newport and the areas of Oliver Township directly north and south of the Borough. The Newport STP provides treatment services for 1,575 persons in Newport and 1,100 persons in Oliver Township for a total service area population of 2,675. The STP primarily services residential and commercial land uses.

2. Intermunicipal Agreements

   Newport Borough Authority owns the sewage treatment facility, while Borough Council maintains and operates the system on a daily basis and administers the billing system. Customers of Newport Borough are billed quarterly based on water consumption metered in that time period. Customers in Oliver Township are billed quarterly based on a flat rate depending upon the type of land use i.e. residential, commercial, or industrial.

3. Treatment Facilities

   The Newport STP was originally built in 1959 and was upgraded and expanded in 1973 to provide secondary treatment. The plant was designed for 0.400 mgd and currently receives an average daily flow of 0.251 mgd. It meets all its permit requirements. The plant processes include: primary sedimentation, activated sludge process, secondary sedimentation, chlorination, aerobic and anaerobic sludge digestion, and dewatering by sand drying beds. The treated effluent is discharged into the Juniata River. Sludge is analyzed for proper pH levels and is disposed by agricultural utilization on permitted farmlands.

   There are I/I problems at the plant due to combined sewers. Newport is correcting the I/I problems on a section by section basis using Community Development Block Grant Program funds. Televising and smoke testing will be completed in 1993, and separation will progress as funds become available. There is no need for additional capacity as development is occurring at a pace with which sewage flows can be handled by current STP.

4. Sewerage Planning

The Borough is nearly completely developed and future development will be constrained by the lack of available land in the Borough. Additional expansion will include development in Oliver and Howe Townships.

OLIVER TOWNSHIP

The Oliver Township Municipal Authority owns a collection and conveyance system which transports wastewater generated in those portions of Oliver Township tributary to the Newport STP.

1. Population Served

The Newport STP provides treatment services to approximately 1,100 residents of Oliver Township residing in those areas directly north and south of the Borough.

2. Intermunicipal Agreements

The Oliver Township Municipal Authority owns the sewage collection and transmission facilities. The Newport Authority bills Oliver on a bulk rate basis two times per year based on actual flows.

3. Treatment Facilities

The collection system was built in 1971 with Farmer's Home Administration assistance. There are I/I problems in the system due to the lack of any storm sewers and the connection of roof and cellar drains into the sanitary sewer system. Most of the system's manholes have been paved over creating problems with location and access for maintenance for the Authority. The Authority would like to raise all the manholes to alleviate this problem. In addition, the Authority desires to correct the I/I problems and has applied for CDBG program funds. It is expected that a grant will be received in FY 1994 to begin televising and smoke testing as a first step towards removing surface water out of the system. Approximately 100,000 gpd of storm water is getting into the system during the rainy season. Correcting the I/I problems will alleviate any problems with capacity at the Newport STP.

4. On-lot Disposal Problem Areas

Areas Contiguous to Newport Borough which should be considered for connection to the Newport Sewer System based on discussions with the SEO:

a. The Fair Ground area north of Newport Borough.

b. Lower Bailey, south of Newport Borough.

c. Route 34 corridor west of Lower Bailey - malfunctions documented (SEO) in the area of Everhartsville.

5. Sewerage Planning

Based on discussions with the Township's SEO and the Chairman of the Municipal Authority, several areas of the Township should be considered for connection to the Newport Borough system:

a. Route 34 corridor west of Lower Bailey. Approximately 40 residences located in this area have public water but are served by on-lot disposal systems. Many malfunctions were documented by the SEO in the Everhartsville area.

b. Lower Bailey, south of Newport Borough. Three dwellings in this area are reported to be having problems. This area could be serviced once the extension for the Fahnestock/Maxwell development is completed. Planning modules were approved by the Township and Newport Municipal Authority for the Fahnestock/Maxwell Development. This development includes the construction of 74 apartments units designed for the elderly and 8 townhouse units. In addition, the extension of the collection system to serve the new construction will permit the connection of 5 existing EDUs. Total flow from the Fahnestock/Maxwell development is projected to be 12,000 gpd.

c. Area north of Newport Borough by the fairgrounds. It is expected that development will occur in this area. Oliver Township was originally given an allocation of 170,000 gpd at the Newport STP. It is conservatively estimated that approximately 20,000 gpd remain for the Township's use at the Newport STP. If I/I can successfully be removed from both the Newport and Oliver systems, then capacity may be available for some time in the future. However, it is expected that development pressures will soon be experienced along the Route 322/15 corridor within Oliver Township. Due to more available land at a lesser cost, Oliver will experience an increase in demand for wastewater treatment service as on-lot systems will not be adequate to handle the anticipated flows.

S. NEW BUFFALO BOROUGH

1. There are no sewage treatment facilities located in or near the Borough.

2. On-lot Disposal Problem Areas

   a. There is no evidence of surface malfunctions in New Buffalo Borough, but sandy soil conditions exist. Therefore, there is a potential for well water contamination. New Buffalo Borough has no municipal sewer system.

T. NORTHEAST MADISON TOWNSHIP

1. There are no sewage treatment facilities operating in Northeast Madison Township.

2. On-lot Disposal Problem Areas

   a. Kistler Village - Located along Bixler Run, the village consists of older homes. The SEO expressed concern with respect to malfunctioning on-lot disposal systems due to its proximity to the creek.

   b. Along Rte. 850 in the central portion of the Township there are approximately 100 hunting cabins located by a lake. The cabins are situated on small lots which does not allow for an alternate on-lot disposal system site.

U. PENN TOWNSHIP

1. Act 537 Sewage Facilities Plan

The Act 537 Plan was developed in response to DER notification to the Township (dated 11/20/85) stating that Duncannon was under Orders to upgrade its STP and that Penn Township was to update its Act 537 Plan in accordance with that action. An Act 537 Plan for the portion of the Township adjacent and draining naturally to Duncannon was completed and approved by DER in November 1989. The remainder of the Township's Act 537 Plan, addressing Perdix and the remainder of Penn Township, is scheduled to be complete by 1995. During the Act 537 Plan Study's preparation, all major land holders within the Duncannon drainage area were contacted to determine their plans for future development.

2. Population Served

The Penn Township Act 537 Plan concluded that the majority of the Township is not in need of public sanitary sewage since homes are located a considerable distance from each other. The most dense populated areas, immediately surrounding the Borough of Duncannon, were proposed for connection to the Duncannon Borough system. Many new homes are being built in this area of the Township and it is expected that it will continue to develop with residential areas at a density to warrant service.

Areas receiving public Sewer service by Duncannon Borough are:

a. Little Boston Area
b. Butchershop Road
c. Lower Duncannon Area
d. Skyview Drive (T-509)
e. Pfautz Rd. (T-534)
f. Eisenhower Blvd. (T-501)
g. Jefferson St. (T-505)
h. Lincoln St.
i. Muhlenburg Ave. (T-532)
j. Princeton St. (T-503)
k. Newport Road [PA RTE. 849, (Southern Portion)]
l. Rt. 274 (Adjacent to Borough)
m. PeeWee Lane
n. Duncannon Plaza

3. Intermunicipal Agreements

Penn Township created the Penn Township Municipal Authority (PTMA) in 1971; the Authority performed design in early to mid 70's, however, never constructed the facility because of lack of financial assistance. The Authority was reactivated in 1986 when the Act 537 needed to be developed. Agreements between Duncannon Borough and Penn Township and their respective municipal authorities was executed in October of 1989. The purpose of the Agreement was to enable Duncannon Borough Municipal Authority (DBMA) to construct an upgraded addition to the Duncannon STP by assigning project costs and operation and maintenance costs to each party to the agreement. Under the terms of the agreement, metering stations measure flow received by Duncannon Borough STP. Each party is liable for and pays its pro-rated share of the total project cost. Penn Township received Community Development Block Grant funds as well as Penn Vest Funds to construct the sanitary sewer lines and the associated pumping stations.

4. Existing Treatment Facilities

Treatment in the Township is currently provided by 3 STPs; two (2) owned by the Penn Township Municipal Authority (PTMA) and the other owned by Duncannon Borough Municipal Authority (DBMA). The third plant, located at Kinkora Nursing Homes and owned by PTMA, went on-line in October, 1993.

a. Duncannon Borough Municipal Authority STP - Penn Township received CDBG funds and PennVEST funds to construct sanitary sewer lines and associated pumping stations to provide service to those areas of the Township in need of service as identified by the Act 537 Plan. Construction of the expansion/upgrade of the plant to 0.74 MGD secondary treatment facility was recently completed. Construction to provide service to the Township was initiated in Spring, 1992 and all connections were essentially completed by Fall, 1993.

b. Cove STP (Perdix area)

The Cove/Perdix area was not included in the original Penn Township Act 537 Plan, however, the study must be completed by 1995. In the Cove area of the Township, the PTMA owns and operates a 50,000 gpd extended aeration plant which serves approximately 80 EDUs. It has an average daily flow of 20,000 gpd. Its primary customer is the Susquenita Area School District school which accounts for 65 EDUs out of a total of 80. The plant also provides service to a mini-industrial park, motel, restaurant, gas station and some other commercial establishments for another 15 EDUs. Sludge is disposed of at the Harrisburg Advanced

Wastewater Treatment Facility. Other methods of disposal are being evaluated. It discharges to an unnamed tributary of the Susquehanna and is currently meeting its NPDES limits.

c. Kinkora STP

The Kinkora STP serves the Kinkora Nursing Home and is owned by the PTMA. Its primary customer is the Kinkora Nursing Home. It is a 15,000 gallon extended aeration facility, located on Cove Road near its intersection with SR 11/15. It is currently treating between 2,500 to 3,000 gallons per day.

5. On-lot Disposal Problem Areas

a. Perdix - Perdix is comprised of old, formerly seasonal homes. Homes are now permanently occupied.

b. Cove (near Rts. 11 and 15) - The same condition exists as for the Village of Perdix.

c. North side of Shermans Creek - The SEO reports malfunctions exist in this area.

d. Housing Development above Kinkora Nursing home has small lots which cannot meet on-lot disposal system requirements.

6. Sewerage Planning

a. Cove STP (Perdix area)

The Cove STP service area is planned to be extended southward along SR 11/15 to Marysville Borough line incorporating the Schoolhouse Road area, northward along SR 11/15 to Sawmill Road westward to St. Johns Road and Susquenita Hill Road by the year 2000. Future service area identified to the north of Sawmill Road along SR 0011. The future service area population is not currently known. The future service areas will be better defined upon completion of the Township's Act 537.

b. Kinkora STP

A 15,000 gpd expanded aeration facility came on-line in October, 1993, on Cove Road near its intersection with SR 11/15, with its primary customer being the Kinkora Nursing Home.

V. RYE TOWNSHIP

1. Rye Township's Act 537 Study is currently under study. The Township plans to adopt the Plan in the near future. The entire Township is served by on-lot septic systems even though the Township has moderate to severe limitations for on-lot sewage disposal. The Township revised their Zoning Ordinance to require a minimum lot size of two (2) acres in the R-1 zoning districts of the Township. Smaller lots are permitted in other zoning districts only when public water and sewerage is available. Further, an On-lot Management and Maintenance Program was recommended for implementation to regulate the continued use of on-lot disposal systems.

2. Growth Trends

   a. The Township experienced high growth rates during the seventies and eighties, but these high growth rates largely reflect residential development in a sparsely populated Township. Although the 1990 census reported a 30% increase over the Township's 1980 population, the actual growth in real numbers was only 494 persons. The Township's 1990 population was 2,136. 279 new dwelling units were constructed in Rye Township from 1981 to 1991.

   b. Growth is projected to continue in the range of 13-15% for the years 2000 and 2010, however, actual growth in the Township will be dependent upon the availability of water and sewage. Public water is currently available out to Lambs Gap Road, but several developments in this area are utilizing on-lot wells. The availability of public sewerage will constrain development in the future.

3. Act 537 Sewage Facilities Plan

   a. The Plan calls for the implementation of a septic system management and maintenance program. The plan requires each resident with an on-lot disposal system to have their septic tank pumped and cleaned once every 5 years. Initially, the process will be voluntary, allowing the resident to submit proof of services to the Township. If there is not 100% compliance by Township residents within 5 years, the regulation of the pumping will be transferred to the Township Supervisors.

4. On-lot Disposal Problem Areas

   a. Fishing Creek Valley along Rte 850 from Dickens Drive Development (eastern portion of the Township to Lamb's Gap Road (central portion of Township) - The SEO has identified this area as having on-lot disposal problems. Specifically the Dickens Drive Development (malfunctioning on-lot systems), Leewood Village Development, and Keystone Village (older homes) were identified as problem areas.

5. Sewerage Planning

a. Most new growth in Rye Township will be along Rt. 850 and New Valley Road, the primary east-west corridors in the Township, and in the Village Area zoning district along SR 850. The Township's Act 537 Plan assumes that 20 new homes will be built per year in the area of the Township east of Lambs Gap Road based on building permit trends reported for the last 5 years. Flow projections were developed in the Act 537 Plan for the developed areas east of Lambs Gap Road. The Village Area, west of Lambs Gap Road, was not studied in detail in the Township's Act 537 Plan as this area would require separate sewerage facilities. Township officials have made a policy decision not to participate in developing their own sanitary system and have elected to utilize zoning and subdivision regulations to control land development in the Village area.

b. The area of the Township immediately adjacent to Marysville, situated in the Township's 114 acre R-2 zoning district, is most likely to be developed with public water and sewer in the future. High density development is permitted in this area which also lies adjacent to the Township's eastern border with Marysville Borough. More single family and multi-family development may occur in this area. Zoning would permit densities up to 8 units/acre or a total of 730 units. Projected flows are estimated to be 250,000 gpd. This flow would be collected and transmitted to Marysville after the year 2000. Connection lines would be planned by either constructing a trunk line along New Valley Road or the installation of a pumping station situated at the mouth of Kings Highway.

c. In the R-1 zoning district east of Lambs Gap Road has a 2 acre minimum lot size; 53 new homes are projected by 1997 and another 53 homes by the year 2002. Total homes in the R- 1 area east of Lambs Gap Road would be 528 in 1997; 581 by 2002. Sewerage needs will continue to be provided by on-lot systems in this area until such time as development pressures or malfunctioning systems dictate a central collection system be installed. To serve this area will require the construction of a 4-mile trunk sewer.

d. The Township plans to re-study connection with Marysville by the Year 2003 for the area which lies closest to the Borough in the R-2 zoning district. At the present, however, costs associated with the upgrade/expansion of the Marysville plant and extension of a 4-mile trunk sewer to serve the areas of the Township east of Lambs Gap Road were found to be cost-prohibitive for Rye given its current customer base.

W. SAVILLE TOWNSHIP

1. Population Served

Ickesburg Village STP, located in Saville Township, currently serves approximately 250 people all located in the "Village Area". The plant was built and completed for operation approximately 8 years ago (1983-84) with a capacity of 0.03 MGD and average daily flow of 0.02 MGD. The STP offers service to the Village Area only, however, extensions of particular lines are possible at the expense of the owner. There are no current plans for line expansions or additional capacity, although such projects may be foreseeable in the future.

2. Treatment Facilities

Ickesburg Village, a part of Saville Township, is served by a centralized wastewater collection and treatment system handling a population of 250. The construction of the treatment facilities was completed in 1984.

The type of treatment process includes spray irrigation and has the design capacity of 0.03 MGD. Currently, the STP is operating at approximately 67% or 2/3 of its total design capacity. This process sends effluent to a lagoon system and the wastewater is then disinfected and sprayed over local permitted farmlands for irrigation purposes. The system has experienced some surface water getting into the collection lines. Most of these problems have been corrected by resealing manholes and other open points. The residents utilizing public sewer services are billed quarterly and any new dwelling units must pay for the initial hook-up as well as quarterly user's fees.

3. On-lot Disposal Problem Areas

a. Eschol - Located in the eastern portion of the Township, Eschol is identified as a problem area due to its proximity to Buffalo Creek.

b. Roseburg - Located south west of Eschol along Buffalo Creek. Roseburg is identified due to its proximity to Buffalo Creek and being an area underlain by limestone.

c. Erly - Located south west of Roseburg along Little Buffalo Creek, Erly is identified as a problem area due to its proximity to the Creek and potential wetlands.

5. Sewerage Planning

The future service area, noted on the Ickesburg Village map, shows some areas possibly requiring future extensions, specifically, to the north of the Village along PA Route 17 and to the west of the Village along PA Route 74. Service laterals to vacant lots have all been connected. There is no other development in the area other than single family lots.

X. SOUTHWEST MADISON TOWNSHIP

1. There are no public sewerage treatment facilities located in the Township.

2. On-lot Disposal Problem Areas

   a. Andersonburg - Located in the western portion of the Township along an unnamed tributary to Shermans Creek. Andersonburg was identified due to its proximity to the stream, the age of the homes, and documented gray water discharges to the surface of the ground.

Y. SPRING TOWNSHIP

1. There are no public sewerage treatment facilities located in the Township.

2. On-lot Disposal Problem Areas

   a. Oak Grove Area - Located of Rte. 74 in the southwestern portion of the Township, the Oak Grove Area was identified as a potential problem area due to steep slopes.

   b. Alinda - Located in the western portion of the Township along Backen Creek, Alinda was identified as a problem area due to its proximity to the stream and population density.

   c. Milltown - Located in the western portion of the Township along Backen Creek, Milltown was identified due to its proximity to the stream and the age of the houses.

   d. Elliotsburg - Located in the northwest portion of the Township, Elliotsburg was identified due to the age of the houses and due to the area possibly being underlain by limestone.

Z. TOBOYNE TOWNSHIP

1. There are no public sewerage treatment facilities located in the Township.

2. On-lot Disposal Problem Areas

   a. New Germantown - Located along Rte. 274, New Germantown was identified as a problem area due to the age of the homes and small lot sizes.

   b. Two areas of seasonal homes using holding tanks or privies were identified. The first, located along Rte. 274 west of New Germantown and a second in the area of the intersection of Back Hollow Road and Shultz Road.

AA. TUSCARORA TOWNSHIP

1. There are no public sewerage treatment facilities located in the Township.

2. On-lot Disposal Problem Areas

   a. Donnally Mills Area - Located along Rte. 17, the Donnally Mills Area was identified due to six (6) residences that discharge into Raccoon Creek.

BB. TYRONE TOWNSHIP AND LOYSVILLE

Tyrone Township is a rural and sparsely populated municipality, with a 1990 Census population of 1,741 and a land area of 35.1 square miles. The Township's population density is 49.6 persons per acre. The Township was issued a Consent Decree in March, 1990 to update its Act 537 Plan and to prepare: 1) a Land Development and Subdivision Ordinance, 2) Regulations to govern the issuance of building permits and sewage permits, and 3) to create a Planning Commission.

In 1989, the Township Supervisors established the Tyrone Township Planning Commission which subsequently developed a Land Development and Subdivision Ordinance for the Township. This Ordinance went into effect in April, 1990. It established a minimum lot size of 1.5 acres for those lots in the Township which will utilize on-site sewage disposal systems and wells. At the same time, the Township's Building Permit Ordinance went into effect. Tyrone Township completed its Act 537 Plan, and it was approved by DER in August, 1991. Although the majority of the Township is served by on-lot systems, two areas of the Township are connected to a centralized wastewater collection and treatment system: the Loysville Village area and surrounding portions of Tyrone, and the area of Tyrone Township which surrounds Landisburg Borough. Information concerning the Landisburg Borough Municipal Authority can be found in this report on page 27.

1. Act 537 Sewerage Facilities Plan

    a. The Act 537 Plan calls for the construction of a privately funded collection system for the Hidden Valley Development connecting to the Loysville Wastewater Treatment Facility. In addition the Plan calls for the construction of a sewer extension approximately 430 lineal feet to serve an existing restaurant and two (2) existing dwellings.

2. On-lot Disposal Problem Areas

    a. Kennedy Valley Area - The Kennedy Valley Area (McCabe Run) is identified as an on-lot disposal problem area. In particular, Carpenter's Camp Ground located in Kennedy Valley has had water quality complaints in the past stemming from an illegal on-lot disposal system which has been corrected.

    b. Barkleytown - Located west of Landisburg along Rte. 233 near the confluence of Laurel Run and Shermans Creek, is identified as an problem area due to documented malfunctions, the age of the homes, and its proximity to the streams.

    c. Green Park - Green Park located along Rte. 233 is identified due to its proximity to Montour Creek.

3. Loysville Village Service Area

The Loysville Village wastewater collection and treatment system is owned and operated by the Loysville Village Municipal Authority. The STP basically serves the "Village Area" of Loysville. However, adjacent portions of Tyrone Township may require public sewer services in the future. The 110,000 gpd STP was completed in 1975 and was in full operation in 1976.

a. Population Served

The system currently serves approximately 500 persons and a variety of commercial establishments as well as industrial and community institutional uses. Some of the system's major customers include Parolo Ridge, a low income elderly housing complex, Dallco Industries, Youth Development Center, Perry Health Center, and several restaurants. Customers are billed quarterly for sewer services. Planning Modules have been approved for the extension of sanitary service along Old LR 50010 in the vicinity of the Loysville STP to property owned by Hidden Valley Associates to provide service to Hidden Valley Estates, a 9 lot residential development. The developer agreed to extend service at their own expense of approximately $30,000. This extension will permit two existing residences and the Red Rock Restaurant to tap into the system by a 430 lineal foot extension from the southern end of the Hidden Valley property. This extension will be constructed at the owners' expense and dedicated to the Authority upon completion.

b. Treatment Facilities

The Loysville secondary treatment facility was designed for 0.110 mgd and currently receives average daily flows at approximately 55% of its design capacity (0.0605 mgd). During heavy rain events, higher flows are recorded. The Authority has recently replaced its flow metering equipment. There are I/I problems in the system and problem sections of the collection lines have been televised. Some minor corrections to the system have been completed. Studies are being continued to further eliminate I/I from the system. I/I studies are considered to be normal ongoing system O&M costs. Sludge is primarily applied in both liquid and dry forms to local permitted farmlands. Recent construction of sludge drying beds allow for a reduction in volume of the applied sludge. A permit is maintained for hauling sludge to the Harrisburg Advanced Wastewater Treatment Facility for disposal when application to permitted farm fields is not possible. The effluent is discharged into Muddy Run, a tributary of Shermans Creek.

c. Sewerage Planning

The fact that there is available capacity at the Loysville STP may spur development in the surrounding areas. The Act 537 Plans indicate seven systems with graywater problems along SR 0274 (LR 122) east of Loysville in the Green Park area. There are approximately 15 residences in this area. Also, almost one-third of the systems along Route 850 from Loysville to Ernest Road are reported as having blackwater or graywater problems. The residences in this area are scattered and too distant from the existing service area to be considered for service.

CC. WATTS TOWNSHIP

1. There are no public sewerage treatment facilities located in the Township.

2. On-lot Disposal Problem Areas

   a. Huggins Road Corridor - The Huggins Road Corridor throughout the majority of the Township is identified due to it containing the majority of the development within the Township.

DD. WHEATFIELD TOWNSHIP

1. There are no public sewerage treatment facilities located in the Township.

2. On-lot Disposal Problem Areas

   a. Rose Glen - Rose Glen located along Route 274 northwest of Duncannon was identified as having problems.

   b. Pfautz's Mobile Home Park and Adjacent Area Along Route 274 - This area was identified as a problem area due to the presence of older homes and its proximity to Dark Run.

   c. Wheatfield Estates - Located in the northeast section of the Township, Wheatfield Estates has a high number of sand mounds some of which have failed. Also, this development's on-lot permits were issued by an SEO who has since been decertified.

   d. Craig Run Hills - This development is located in the northeast section of the Township. Well contamination problems have been identified.

   e. Myerstown - Located west of Craig Run Hills, the Myerstown Area has been identified as having gray water surface discharges.

PRIVATE FACILITIES

A. Buffalo Township

A proposed mobile home park in Montgomery Ferry, Buffalo Township plans to utilize a package wastewater treatment plant.

B. Carroll Township

1. Sportsmen's Inn - Served by an existing holding tank. A package wastewater treatment plant has been proposed.

2. Brunner's IGA and Plaza - Served by a package wastewater treatment plant.

3. Carroll Elementary School - Served by a package wastewater treatment plant.

4. Orchard Hills Mobile Home Park and Creekview Farms Mobile Home Park - Wastewater collection and treatment system (100,000 gpd) under construction.

C. Juniata Township

1. Little Buffalo State park - Served by a package wastewater treatment plant.

D. Penn Township

1. Dersham's Mobile Home Park - existing wastewater treatment plant.

E. Spring Township

1. West Perry High School - Served by an existing package wastewater treatment plant. An expansion is proposed.

F. Wheatfield Township

1. Pfautz's Mobile Home Park - Served by an existing package wastewater treatment plant. Concerns have been expressed with water quality downstream of plant discharge.

7. DESIGN CRITERIA

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

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

- Maximum hourly quantity of wastewater from domestic, commercial, and other potential users.
- Additional maximum wastewater flow from potential industrial users.
- Ground water infiltration.
- Topography of area.
- Proposed 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 where conditions are conducive to infiltration. Generally, the sewers should be designed to carry, when flowing full, not less than the following daily per capita contributions of sewage, exclusive of sewage or other waste from industrial plants:

- Laterals and sub-main sewers - 400 gallons per capita per day (gpcd).

- Collecting sewers, intercepting sewers, and outfalls - 250 gpcd.

- Interceptors carrying combined sewage normally - not less than 350 percent of the gauged or estimated average dry weather flow.

During the design and construction of sewers and appurtenances details are considered such as: minimum pipe size; pipe depth; minimum slopes; alignment; minimum manhole spacing; transitions from smaller to larger pipe sizes; junctions of two (2) or more pipes; high velocity protection against displacement by shock and erosion; sewer placement in relation to streams, waterworks structures, and water mains; protection against interconnection

between public or private water supply systems and sewers; pipe materials; trenching; pipe embedment; trench backfill; and pipe and manhole testing.

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 serve approximately twenty (20) years projected population. Phasing of the construction of units which can be readily increased in capacity is a consideration to minimize initial project costs.

Plant location is an important consideration. A sewage treatment site should be as far as practical from any present built-up area or any area proposed for future development. It is recommended that a treatment plant be located a minimum of 250 feet from an occupied dwelling or recreational area, and that the direction of the prevailing winds be considered when selecting a plant site. Sufficient space for future plant expansion should be considered. Compatibility of the proposed treatment process with the present and planned future land use should be considered, including noise, potential odors, air quality, anticipated sludge processing and disposal techniques, and local soils characteristics, geology, hydrology, and topography.

Plant design is the another important issue which deserves careful consideration. 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 probable type of supervision and operation which the plant will have and;
- present and future effluent requirements.

There are other important factors to consider such as ultimate disposal or utilization of sludge; energy requirements; process complexity; environmental impact on present and future adjacent land uses; and construction in floodplains and wetlands.

A. Sewage Treatment System design involves analyzing the following:

1. Design Flows - In general, the design flow of a treatment plant includes domestic wastewater, commercial wastewater, industrial wastewater, and the infiltration/inflow within the collection system. The design flow reflects the flow (MGD) up to which the facility should be capable of a predetermined level of treatment efficiency (i.e. Water Quality Management Part I Permit limitations). Treatment unit process design uses various design flow parameters such as peak hourly flow, peak instantaneous flow, and minimum hourly flow to express different design flow conditions. period of discharge.

   For existing systems, the design annual average flow shall be based on the past three (3) to five (5) years of flow data.

In the lack of existing flow data (i.e. new system) the following standard should be used:

a. For municipal systems and subdivisions over 150 homes, the design annual average flow shall be based on 100 gpcd (infiltration allowance included) and a 24 hour runoff period. For subdivisions less than 150 homes the design annual average daily flow may be based on 75 gpcd (infiltration allowance included) and a 16 hour runoff period.

b. Deviations from these values shall be based on actual water consumption and projected flow due to infiltration.

c. Design annual average flows for institutional and recreational facilities should be based on water consumption, if available. If no such data is available, the design average flow should be projected based on the design data contained in Section 43.51 of the Pennsylvania Sewerage Manual dated August 1991.

d. Design flows for commercial and industrial users shall be based on the amounts of process wastewater, sanitary wastewater, and cooling water projected to be discharged into the collection system.

2. Flow Equalization - Facilities for equalization of flows shall be considered at all plants in order to ease plant operation and optimize plant performance to better insure that the desired effluent quality will be consistently obtained.

3. Organic Design

a. New Systems

(1) Domestic waste treatment design shall be on the basis of at least 0.17 pounds of BOD per capita per day and 0.20 pounds of suspended solids per capita per day, unless information is submitted to justify alternate designs.

(2) 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 per capita per day and 0.25 pounds of suspended solids per capita per day.

(3) Domestic waste treatment plants that will receive industrial wastewater flows shall be designed to include these industrial waste loads.

b. Existing Systems - When an existing treatment works is to be updated, or expanded, the organic design shall be based on the maximum monthly average organic loading derived from historical data plus the annual

projected maximum monthly average organic loading due to growth over the design life of the facility. The determination should take into consideration both dry and wet weather conditions.

The design of sewerage collection, conveyance, and treatment systems are detailed and require comprehensive planning and a thorough review process. The location of the system proves to be as important as the type of system planned. Many factors are considered, as discussed in this Chapter, when finalizing design plans for a sewer system and or treatment facility. The final design should prove to be the safest and most effective and efficient design to offer the residents of a particular municipality.

4. On-Lot Disposal System Design Criteria - Before the design for an on-lot disposal system can be finalized 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. Percolation tests shall also be conducted at this time. An absorption area must be designated and must meet PA DER requirements.

For single family dwelling units the following minimum septic tank design criteria must be utilized. Specific design criteria for absorption areas and sand mounds is available in Chapter 73 of DER's Rules and Regulations.

a. The minimum liquid capacity of a septic tank for any installation shall be 900 gallons.

b. 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 or dishwashers, and water softeners. Septic tanks may be connected in series to attain required capacity.

Regulations for design standards for on-lot disposal systems should be enforced throughout the county. Design information for septic tanks can be obtained from the PA Department of Environmental Resources.

SOURCE: SEWERAGE 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. 1, 6th Edition. Rev. 8/91.

SOURCE: Pennsylvania Code: Title 25. Environmental Resources, Chapter 73. Standards for Sewage Disposal Facilities. Section 73.31

8. COSTS AND FINANCING

The opinion of probable costs presented in Table 4 are estimates, in terms of 1993 dollars, of the project costs and operation and maintenance costs expected to be incurred as a result of extending public sewer to meet the year 2000 and future needs of the municipalities. The historical trend of constantly rising costs is expected to continue because an annual cost increase of as much as 3.5 to 4.0% can be anticipated over the next 10 years. The following unit costs and assumptions were used in preparing the Opinion of Probable Costs for the project cost, annual debt service, and operation and maintenance costs.

A. Construction Costs

1. Forcemain (2 to 6 inch diameter) complete in place — $35.00 per linear foot

2. Sanitary Sewers (8 to 10 inch diameter) complete in place — $45.00 per linear foot

3. Pump Station (Duplex submersible) complete in place — $50,000 each

The above-referenced costs for the sanitary sewers and forcemain includes the furnishing and installation of the pipe and manholes as applicable, excavation, backfill, trench and pavement restoration. The above-referenced costs for the pump station includes the furnishing and installation of duplex submersible pump stations complete in place including grading, access drive, fencing, electric service, controls, and emergency generator connection. Generators are not included in the costs.

B. Financing

With regard to calculating the annual debt for the proposed improvements, there are a variety of methods of project financing available for municipalities to use from municipal bonds to PennVest to the Farmer's Home Administration. Each of these have varying interest rates as well as varying loan terms. For the purpose of the plan, a six (6) percent interest rate for a 30-year loan term has been used in the calculation.

The annual debt service which has been calculated is additional to any debt service on existing outstanding bonds. The debt service and total annual cost figures were computed assuming that the total project would be financed with long-term municipal bonds. Government grants, tap-on-fees, front-foot assessments were not considered, therefore, the figures on Table 4 should represent the maximum probable amount.

The debt service shown in Table 4 for the design years (2000 and future) are cumulative.

C. Ways for estimating costs:

1. Cost per unit area

   a. Residential/Commercial
   b. Industrial/Institutional

2. Lineal foot per unit length

3. Operating costs for pumping stations and treatment plants.

D. Expenses involved in a sewer project:

1. Engineering

2. Legal & fiscal services

3. Lands & right-of-way

4. Bond interest accrued

5. Project management and supervision

6. Percent difference between project cost and estimated construction cost.

E. Sources of funds for sewerage projects:

1. Current operating revenues.

2. Local government loans or bonds

3. Developer financing

4. Municipal Authority bonds

5. Connection fees and/or user charges.

Current operating revenues do not normally yield sufficient funds for major construction projects. The most economical method of constructing sewage collection systems is to require real estate developers to install sewers as development progresses, deed them to the municipality in accordance with current state law under Act 209.

F. Ways of lowering construction costs:

Most political subdivisions with sewer systems already have an Authority for financing 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 also finances the facilities via a bond issue which in turn leases back to the governmental 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, tap-on 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. Tap-on fees yield significant revenue only when collection systems are being rapidly expanded. Sewer rentals are normally determined as a flat annual rate or according to 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.

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 on the following pages.

CURRENT COSTS

Table 4 reveals the total annual costs for the various public sewer facilities in the County for projected year 2000 and future. The projects planned for Perry County's public sewer facilities are as follows:

A. Duncannon Borough

In Duncannon, current construction, as discussed on page 22, is complete at a cost of approximately $6.3 million. Anticipated O&M costs can be found in the Duncannon Borough Act 537 Sewage Facilities Plan.

B. Liverpool Borough

Current I/I reduction plans in the Borough are expected to cost approximately $20,000. O&M costs are not expected to increase as a result of the ongoing project.

C. Loysville Village, Tyrone Township

The current sewer extensions as discussed on page 47, are funded by developers, and are projected to cost approximately $30,000.

D. Marysville Borough

Marysville's rehabilitation of sanitary interceptor and treatment plant are expected to cost $3,384,960 without increasing O&M costs. See page 31 for detailed sewerage planning efforts.

E. Newport Borough

The current I/I project is expected to take five to ten years for completion. The cost is projected to cost over $1 million. Funding for the project has come from local funds as well as state grant programs. Additional studies are necessary to come up with costs involved with the preparation of the combined sanitary sewer and stormwater line. The cost of separation is not known at this time. Additional sewerage planning can be found on pages 34 and 35.

TABLE 4
TOTAL ANNUAL COSTS

Sewer Service Area	Project Cost ($)	Annual Debt Service ($)	O&M Cost ($)	Total Annual Cost ($)
2000				
Carroll	445,900	32,400	11,000	43,400
Duncannon/Penn	252,000	18,300	3,000	21,300
Ickesburg	239,400	17,400	2,500	19,900
Landisburg	41,000	3,000	800	3,800
Liverpool	-0-	-0-	-0-	-0-
Loysville	378,000	27,500	10,400	37,900
Marysville	330,400	24,000	8,500	32,500
Millerstown	-0-	-0-	-0-	-0-
New Bloomfield	451,700	32,800	10,800	43,600
Newport	529,500	38,500	10,600	49,100
Penn Twp./Cove-Perdix	1,446,900	105,100	15,800	120,900
Future				
Carroll	-0-	32,400	11,000	43,400
Duncannon	189,000	32,000	6,000	38,000
Ickesburg	-0-	17,400	2,500	19,900
Landisburg	206,100	17,900	3,800	21,700
Liverpool	554,400	40,300	5,500	45,800
Loysville	-0-	27,500	10,400	37,900
Marysville	1,519,000	110,400	36,500	146,900
Millerstown	-0-	-0-	-0-	-0-
New Bloomfield	63,000	37,400	11,400	48,800
Newport	1,668,100	159,700	26,100	185,800
Penn Twp/Cove-Perdix	584,850	147,600	23,900	171,500

The cost figures listed under Future Annual Debt Service and Annual O&M costs represent the costs of future projects plus the addition of the costs incurred as a result of the construction projects proposed during the year 2000 planning period.

*The project cost includes construction costs, a ten (10) percent contingency as well as an allowance of thirty (30) percent for administrative, legal, rights-of-way, and engineering costs (See APPENDIX III for a detailed cost analysis).

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.

E. Appalachian Regional Development Act:

1. Appalachian Regional Commission (ARC): The ARC provides funding to promote the long-term economic development of the Appalachian Region. The Commission operates through a partnership among federal, state and local governments. The ARC provides funding relative to highway and infrastructure projects.

F. Department of Community Affairs:

1. Community Development Block Grants (CDBG): Provides assistance for qualifying low to moderate income municipalities for planning and construction of water and sewage facilities as well as other projects. These funds come only in the form of grants-in-aid. Projects depending on the total cost could be funded 100%. If a grant did not cover the cost of a proposed project, funding can be applied for again in the next funding year. With respect to funding municipal wastewater facilities, CDBG funds may be used to defray the connection fees for low to moderate income households. Although this will have a beneficial affect to the households in question, it will not impact the user costs of any proposed facilities, because it will not lower the costs to be financed.

2. Financially Distressed Municipalities Act of 1987 (FDMA) (Act 47): The FDMA is designed to avoid municipal bankruptcy. The FDMA is invoked prior to a municipality filing for bankruptcy and involves a three (3) pronged effort to prevent a municipality from filing for bankruptcy and to aid in its recovery. Upon the FDMA being invoked, a recovery plan for the municipality is prepared with extensive technical assistance from the Department of Community Affairs (DCA).

   Next, the FDMA can provide emergency loans and grants to the municipality as required to aid in the municipality's recovery. Finally, other state agencies (such as Pennvest, PA Department of Commerce, etc.) target resources to aid the municipality in recovery.

   In summary, the FDMA is not something a municipality wants to invoke to obtain grants or loans to fund municipal wastewater collection and conveyance facilities.

G. Pennvest Obtains funds from capital budget appropriations, borrowed funds, and water pollution control Revolving Fund (Federal funds). There is a maximum funding amount set for each project per municipality. Grant funding is limited to $500,000 for sewer projects. The Department of Community Affairs must review and approve the proposed grant application and project for municipal quarterly. One advantage to the PENNVEST loan program is its low rates. Presently (1993) Rates are as low as 1.0%. Projects located in municipalities with approved Act 537 Sewage Facilities Plan would received a more favorable review for funding. One disadvantage among others is the lengthy application process.

1. State Program - The Pennvest State Program provides financial assistance in the form of low interest loans and supplemental grants for the construction, improvement, expansion, extension, acquisition, repair or rehabilitation of all or part of any publicly or privately owned water or wastewater facility or system, with a total project cost less than $750,000.

2. State Revolving Fund (SRF) - The SRF was established with federal seed money provided under the Water Quality Act. The SRF provides low interest loans and supplemental grants for wastewater treatment plant construction and modification. Also, some low interest loans and supplemental grants are available for sewer construction and rehabilitation. To be eligible for funding through the SRF, a project must meet all applicable federal planning and design requirements.

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.

Preliminary estimates of average annual debt service and total annual costs for the work prescribed in this plan are presented in Table 4. The debt service figure was calculated assuming 40-year, seven percent bonds with 20 percent coverage and is additional to any debt service on existing outstanding bonds. Operation and maintenance costs relate solely to the construction projects proposed herein. The debt service and total annual cost figures were computed assuming that the total project cost would be financed with long-term Authority bonds. Government grants, front-foot assessments, etc. were not considered so the figures shown represent the maximum probable amounts. Debt service for the several phases of the plan is, of course, cumulative. Total annual cost per dwelling unit may seem high, but when the liberal capacity allowance for industry, alternative construction financing methods and grant programs are considered the costs should be more reasonable. A detailed study of costs and financing should be undertaken before deciding on any of the projects.

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. This ordinance

generally monitors how often individual systems are 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. A model On-lot Management Ordinance is included in Appendices III. It should be noted that this is a model (sample) and it SHOULD be reformatted/modified to meet the needs of each municipality. The DER recently modified the requirement for the need of such an ordinance only where sewage malfunctions are widespread in an area and endanger public health by discharging into public areas or private property or threaten to contaminate drinking water supplies.

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 PLANNING

Act 537 was passed in 1966 to entrust municipalities with the primary responsibility of protecting the public health, safety and welfare from the negative impacts of improper sewage treatment. The act was designed to ensure that on-lot sewage systems are located and installed in an environmentally sound manner and that adequate sewage service is provided to handle anticipated growth. Act 537 mandates that every municipality must develop, and update as necessary, a plan to address the sewage needs of the municipality. Table 5 addresses the communities in Perry County and their individual Act 537 Plan status. All areas not having an individual Act 537 Plan are believed to use the county Act 537 Plan.

Act 537 Plans vary from being simple enough to address repair, replacement and maintenance of malfunctioning on-lot systems in a small municipality using local resources to being complex plans covering funding, design and construction of large collection, delivery and treatment systems for a large township.

A typical plan includes geological reports, description of existing facilities, zoning, use and growth plans, sewage treatment alternatives and fiscal evaluation and methods of financing selected alternatives. Municipalities are required to update their plan when it becomes obsolete due to growth, current problems or other planning modifications.

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 addressing 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 (See APPENDIX II ON-LOT Management Model Ordinance)
   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 discussion making between the consultant and the municipality is essential concerning the type of wastewater treatment desired and the plan contents expected. This 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 DER for final approval. DER has 120 days from the time of submittal to review the plan. A listing of municipalities who are preparing or have completed Official Act 537 Sewage Facilities Plan is shown on Table 5.

TABLE 5
STATUS OF INDIVIDUAL ACT 537 PLANS

Municipality	ACT 537 Plan	DER Approval Date
Blain Borough		
Bloomfield Borough		
Buffalo Township		
Carroll Township	X	March 1989
Center Township		
Duncannon Borough	X	September 1990
Greenwood Township		
Howe Township		
Ickesburg Borough		
Jackson Township		
Juniata Township	X	September 1992
Landisburg Borough	X	1987
Liverpool Township		
Loysville		
Marysville Borough	X	1993
Miller Township		
Millerstown Borough		
New Buffalo Borough		
Newport Borough		
NE Madison Township		
Oliver Township		
Penn Township	X	November 1989
Rye Township	X	
Saville Township		
SW Madison Township		
Spring Township		
Toboyne Township		
Tuscarora Township		
Tyrone Township	X	August 1991
Watts Township		
Wheatfield Township		

APPENDIX I

SEWERAGE PLANNING MODULES

R-8WQ-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 ----------

eturn Address

_____
_____
_____
_____

First Class
Postage

DEPARTMENT OF ENVIRONMENTAL RESOURCES

_____
_____
_____

DER USE

Components Sent

On-Lot Disposal ☐
Collection and Treatment ☐
Planning Agency Review ☐

Code _____

Date _____

nstructions:

The following instructions are to be read carefully before completing the mailer. This information will be used by the Department to determine which components of the Sewage Facilities Planning Module must be completed. The appropriate components of the module that pertain to your project will be mailed directly to you for completion. Once completed, the components must be submitted to the municipality in which the project is proposed. The municipality will act on the components and, if adopted, forward the completed module to the appropriate office of DER. This mailer is to be utilized for projects that propose subdivisions, or projects that propose construction requiring a Clean Streams Law Permit and for projects on existing lots that propose sewage flows of 800 gallons or more per day. The Component for projects proposing 10 residential lots or less utilizing on-lot systems can be obtained from the local municipality. Equivalent Dwelling Units (EDU) is defined, for the purpose of determining the number of lots in a subdivision, as that part of a multiple family dwelling, commercial or industrial establishment with flows equal to 400 gallons per day.

1. Print the name and address of the sponsor of the development.
2. Indicate location of project—enter county, municipality name and road coordinates for the project. *Example—1 mile south of intersection of T-235 and RT 15 on west side of T-235.* Also indicate the USGS 7.5 minute quadrangle map name containing the proposed development area and enter inches up and over from bottom right corner, to the approximate center of the development project.
3. Check the appropriate block and describe the type of land development project proposed. Residential is single family lots. Multi-residential includes apartments. Institutional includes schools and hospitals. Commercial includes retail centers or industrial establishments.
4. Enter the number of single family residential lots or EDU's proposed. Also indicate development acreage and remaining acreage (land not proposed to be developed but under the same ownership and adjacent).
5. Enter proposed daily domestic sewage flows in gallons per day.
6. Check the block that describes the method of sewage disposal that will ultimately serve the land development and answer questions relating to that disposal type. A *tap-in* is a connection which does or could generate hydraulic or organic loads to an *existing* sewage collection system. A *sewer extension* is the *construction* of a sewage collection system to serve more than one tap-in. *Individual on-lot sewage system* is a system of piping, tanks or other facilities for collecting, treating and disposing of sewage into a subsurface absorption area. *Community on-lot system* is a facility publically or privately owned for the collection and disposal of sewage from two or more lots or EDU's into a subsurface absorption area. *A large volume on lot system* is defined as an individual or community on-lot sewage system with flows in excess of 10,000 gallons per day. *Retaining tanks* include holding tanks and privies.

Project Agent:

Name_____

Address _____

_____

Telephone # _____

Location of Development:

a. County _____

b. Municipality _____

c. Road or Street Coordinates_____

_____

_____

d. USGS Quad Name _____

inches up _____ over _____ from bottom right corner.

Type of Development Proposed:
(check appropriate box)

☐ Residential

☐ Multi-Residential

Describe _____

_____

☐ Commercial

Describe _____

_____

☐ Institutional

Describe _____

☐ Other (specify) _____

4. Size

a. Number of lots _____

b. Number of EDU's _____

c. Development Acreage _____

d. Remaining Acreage _____

5. Sewage Flows

_____ gpd.

6. Proposed Sewage Disposal Method (check appropriate boxes):

☐ Tap-in to existing sewage collection system

Name of existing collection system

_____

Number of Tap-in(s) _____

Treatment Facility Name_____

_____

☐ Sewer Extension

Name of existing system being extended

_____

Interceptor Name _____

Treatment Facility Name _____

_____

Number of Tap-in(s) to extension

_____

☐ Construction of Treatment Facility With Stream Discharge

☐ Spray Irrigation

Location of proposed spray area or point of stream discharge

Latitude_____

Longitude _____

Name of waterbody, municipality and county where point of discharge is proposed or located

_____

_____

☐ On-lot Sewage Disposal Systems
(Check appropriate line)

_____ Large Volume On-lot system

_____ Community On-lot system

_____ Individual On-lot system(s)

☐ Retaining Tanks

_____ Number of Holding Tanks

_____ Number of Privies

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 _____

Owner(s) of Subdivision _____

Address(es): _____

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)

(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.

Total Number of Lots Proposed _____

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

Both the soils description preparer and subdivider must sign below indicating acknowledgement of false swearing statement.

I verify that the statements made in this component are true and correct to the best of my knowledge, information and belief. I understand that false statements are made subject to the penalties of 18 Pa.C.S.A. §4904 relating to unsworn falsification to authorities.

Soils Description Preparer Name (Print)

Subdivider Name (Print)

Signature Date

Signature Date

D. TO BE COMPLETED BY MUNICIPALITY'S CERTIFIED SEWAGE ENFORCEMENT OFFICER

☐ This subdivision is suitable for the use of individual on-lot sewage disposal systems as verified by soil profile excavations, percolation tests, and site characteristics.

☐ This subdivision is not suitable for the use of individual on-lot subsurface absorption areas because:

To the best of my knowledge and belief the information contained in Sections I-B and I-C of this module is true and correct. THIS MODULE DOES NOT CONSTITUTE INDIVIDUAL PERMIT APPROVAL. Additional soils testing may be required prior to the issuance of any permit.

SIGNATURE OF SEO CERTIFICATION NUMBER DATE

E. FOR MUNICIPAL ACTION (Check appropriate boxes)

☐ This planning module has been reviewed by the existing municipal planning agency and zoning officer and has been found to be consistent with the municipality's official plan for the provision of adequate sewage systems.

Municipal Planning Agency Name

Planning Agency Signature (Secretary)

Zoning Officer Signature

☐ No municipal planning agency exists ☐ No municipal zoning agency exists

The municipality must act within 60 days of receipt of a complete package.

☐ This planning module has been reviewed by the municipal governing body and has been found to be acceptable and consistent with the requirements of Chapter 71.21(a)(5)(i—iii).

☐ This planning module is not acceptable because:

(Circle Appropriate Reason(s))

. The subdivision does not comply with municipal comprehensive plans.
. The subdivision is not suitable for the use of individual on-lot subsurface absorption areas.
. The subdivision does not meet the requirements for use of this module or other provisions of Chapter 71, (Administration of Sewage Facilities Planning Program).
. Other (Explain) _____

Secretary of Governing Body

Signature Date

Municipality Name

Address

Area Code Telephone No. ( )_____

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.

D. ALTERNATIVE SEWAGE FACILITIES ANALYSIS

This analysis is comprised of a narrative that will require the developer to support the choice of the disposal method by comparing it to methods in use in the area or any other available method. Attach the narrative to the package and title it **Alternative Analysis.** The narrative shall describe:

1. The chosen sewage disposal method and if the method is interim (to be replaced within 5 years) or ultimate (will serve the development beyond 5 years). Also provide the number of lots or EDU's that the method will serve.
2. Types of land uses adjacent to the project area (Agricultural, Residential, Commercial etc.) and the type of sewage disposal method serving each of those land uses.
3. If these sewage facilities are in need of improvement due to high rates of on-lot malfunction or overloaded public sewers.
4. The sewage disposal method indicated in the municipality's Official Sewage Facilities Plan for the development area.
5. Existing sewage management programs in the area.
6. Potential alternative sewage disposal methods that are available for the project.
7. Why the proposed disposal method was chosen over the alternative methods discussed.
8. Who will be the owner of the facility and who will be responsible for operation and maintenance of the facility.
9. Sewage management programs that the development is required to participate in and the program requirements.
10. Any other information that the developer feels will support the choice of the disposal method.

E. PUBLIC NOTIFICATION REQUIREMENT

1. The questions in this section will be used to determine if the publishing of certain facts about the land development project is required. Each question must be answered with a yes or no answer.
   a. Does the project propose the construction of a sewage treatment facility? _____
   b. Will the project change the flow at a sewage treatment facility by greater than 50,000 gallons per day? _____
   c. Will the project result in a public expenditure in excess of $100,000? _____
   d. Will the project lead to a major modification of the existing municipal administrative organizations within the municipal government? _____
   e. Will the project require the establishment of *new* municipal administrative organizations within the municipal government? _____
   f. Is the project proposing a subdivision of 50 lots or more? _____
   g. Does the project involve a major change in established growth projections as set out in the Official Sewage Facilities Plan? _____
   h. Does the project involve a different land use pattern than that established in the Official Sewage Facilities Plan? _____
   i. Does the project involve the use of large volume on-lot sewage disposal systems? (Flow > 10,000 gpd) _____
   j. Does the project require resolution of a conflict between the proposed alternative and consistency requirements contained in Chapter 71.21(a)(5)(i),(ii),(iii)? _____

2. Contents of Publication Notice. Publication is required if any of the above were answered yes. The following items must be contained in the notice.
   a. Name of project.
   b. Type of development (residential, multi-residential, commercial, industrial).
   c. Location, including road and street markers, municipality and county.
   d. Acreage under development and number of equivalent dwelling units proposed.
   e. Type of sewage disposal proposed (individual, community or large volume on-lot, holding tanks)
   f. Establishment of a 30 day comment and review period.
   g. Where and when the land development plan can be seen for comment and review, preferably, the municipal office.
   h. Address of municipal office where comments will be accepted.

All comments and the municipal response to comments and proof of publication shall be submitted to the Department with the Sewage Facilities Planning Module package.

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.

SOILS INFORMATION

A complete soils report and soils map plotted directly on the plot plan must be attached to this module. Information relating to percolation tests and test pit evaluations must be recorded on Department form ER—BWQ—290A and visually verified at the site of the proposed development by the Municipal Sewage Enforcement Officer. The Department may wish to observe the testing. The SEO should notify the local office of the Department at least ten days in advance of any testing activities. The following information is to be included:

1. List of soils mapped in area of the proposed disposal site(s) as described in the soil conservation service report.
2. Description of *all* test pits to generally verify soils mapping and limiting zones, including soil textures for each horizon, mottling, percent coarse fragments, depth to water seepage, depth to water level in excavation, and other pertinent data.
3. Results of *all* percolation tests conducted on the site, including depths, date, and rates.
4. Boundary of soil mapping units as per the soil conservation service map, or equivalent as mapped by a qualified consulting soil scientist.
5. Location of *all* test pit excavations on plot plan or map. Use the symbol ▲ to indicate the location of all test pits.
6. Location of *all* percolation tests on plot plan or map. Use the symbol ● to indicate the location of all percolation test holes.
7. Slopes as measured in field at the site of each soil test area and recorded on ER—BWQ—290A.

The Department may require additional soils, permeability or hydrogeologic information based on the information submitted in this section.

Complete only those section checked ☑

☐ G. PRELIMINARY HYDROGEOLOGY

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1. This section must be completed when soil dependent treatment methods are proposed and any of the following apply:
   a. A large volume system will be used. (Flow > 10,000 g/d)
   b. A subdivision of more than 50 equivalent dwelling units with a density of more than one EDU per acre is proposed.
   c. The Department has determined that water supplies within a ¼ mile of the proposed development site exceed 5 parts per million (ppm) nitrate-nitrogen (NO_3-N).
   d. The Department has determined that known geological conditions for the proposed site may contribute to the potential for ground-water pollution from such systems.
2. The following information is to be submitted on a copy of the topographic map of the area and in narrative form:
   a. Results of background sampling for total coliform, fecal coliform, pH, nitrate-nitrogen.
   b. Topographic location of the proposed system(s).
   c. Estimated area of impacted ground-water (dispersion plume and mixing zone within the dispersion plume) calculated from the surface topography and known geologic conditions.
   d. Identification of existing and potential ground-water uses within the dispersion plume.

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

☐ H. PERMEABILITY TESTING

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1. This section must be completed when a large volume on-lot system will be used (Flow > 10,000 gpd)
2. Completion of this section may be required when any of the following exist:
   a. An on-lot system where total absorption area is greater than 5,000 square feet will be used.
   b. The Department has determined that the soil, underlying parent material, geology at the site or volume of the discharge may cause adverse ground-water mounding or inadequate sewage treatment.

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.

(e) Down gradient ground-water uses, including:
  (1) water supply locations
  (2) volume of water used
  (3) estimated cones of depression
  (4) influence of pumping on direction of flow (existing and potential water supplies)
(f) Influence of surface water runoff and ground-water recharge on ground-water characteristics.
(g) Calculation of ground-water mounding under the disposal site.
(h) Designation of any watershed area that is utilized for a water supply, recreation, or agricultural irrigation.

USE THE INFORMATION IN THE HYDROGEOLOGIC STUDY TO ESTABLISH:

1. A delineation of a dispersion plume within the ground-water system in which the existing water quality will be degraded.
2. A delineation of a mixing zone within the dispersion plume in which chemical or biological concentrations will exceed the Federal Drinking Water Quality Standards. This must include calculations to define expected dilution of the concentrations of contaminants within the mixing zone.
3. A delination of a buffer zone that shows the anticipated encroachment of the mixing zone into the plume of dispersion as the result of seasonal flow characteristics of the ground-water system. Identification of existing and potential ground-water uses in the delineated mixing zone and in the buffer zone.
4. That the mixing zone will not adversely affect existing or potential future ground-water uses.
5. That the dispersion plume discharge will meet surface water quality standards after complete mixing if ground-water mixing zones extend to surface water.
6. That suitable natural and artifical control exists to confine dispersion plume flow.
7. Mounding characteristics in the soil, parent material and underlying bedrock and the impact of this mounding on system function.
8. The monitoring locations and method of monitoring on the perimeter of the mixing zone to test ground-water which may be affected by the facility.

IN NARRATIVE FORM ESTABLISH:

1. A monitoring program for ground-water and/or surface water where appropriate.
2. Authority for control of ground-water use in the mixing and buffer zones and access right for abatement purposes should the contaminant leave control of the mixing zone.
3. Contingencies available to abate pollution should the contaminant leave control of the mixing zone.
4. Treatment capabilities of any pre-treatment system components proposed to decrease contaminant levels prior to discharge to ground-water. This must include design and testing data which supports claims of consistent, reliable and measurable improvements in treatment.
5. System design, placement and sizing recommendations based on the hydrogeologic study.
6. Controls of present and future water usage within the mixing and buffer zone.

J. SEWAGE ENFORCEMENT OFFICER ACTION

I have confirmed the information relating to the general suitability for on-lot sewage disposal contained in *Section F* of this Component. Confirmation of this information must be based upon on-site verification of soil tests, general site conditions and other generally available soils informations. The proposed site:

☐ is generally suitable for on-lot disposal.

☐ is not generally suitable for on-lot disposal.

☐ cannot be evaluated for general site suitability because of insufficient soils testing.

Signature of Certified Sewage Enforcement Officer having jurisdiction in municipality where development is proposed

Certification #

Date

☐ 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.

FALSE SWEARING STATEMENT

The individual performing the tests and field evaluations necessary to complete *Section F* must provide name, title, address, telephone number and sign false swearing statement found to the right.

I verify that the statements made in this component are true and correct to the best of my knowledge information and belief. I understand that false statements in this component are made subject to the penalties of 18 PA C.S.A. §4904 relating to unsworn falsification to authorities.

Name (Print)

Title

Address

Telephone Number

Signature

Date

The individual completing the rest of the component must provide name, title, address and telephone number and sign false swearing statement found to the right.

I verify that the statements made in this component are true and correct to the best of my knowledge information and belief. I understand that false statements in this component are made subject to the penalties of 18 PA C.S.A. §4904 relating to unsworn falsification to authorities.

Name (Print)

Title

Address

Telephone Number

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

☐ 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 approval 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.

Complete only those sections marked with ☑

☐ G. SMALL FLOW TREATEMENT FACILITIES

Small Flow Treatment Facilities (SFTF) are defined as treatment facilities with flows of 2,000 gallons per day or less.

1. What is the proposed disposal method? (Check appropriate box) ☐ Stream Discharge ☐ Spray Irrigation ☐ Overland flow ☐ Dry Stream Channel.
2. The following information must be provided for all SFTF proposals.
   a. Most recent 7½' topographic map with disposal or discharge point plotted.
   b. Discharge rate (gpd) in narrative.
   c. Site and soil evaluation which includes at least 1 soil profile examination and complete percolation test for each change in soil type, slope and erosion characteristic, that documents site conditions or soils are unsuitable for individual or community on-lot systems. This information shall be recorded on the Site Investigation and Percolation Test report form (ER-BWQ-290A) and submitted with the Component.
3. If spray irrigation is proposed as final disposal, the following additional information is required:
   a. Document that site and soil conditions are suitable for spray irrigation using the information generated in 2(c).
   b. Identify all existing groundwater uses within 200 feet of the spray area on the topographic map.
4. If overland flow (undefined channels, grass covered slopes) is proposed as final disposal, identify all existing ground-water uses within 200 feet of the disposal area on the topographic map.
5. If discharge to a dry stream channel is proposed as final disposal, identify all existing ground-water uses for 200 feet on each side of the channel downstream until perennial stream conditions are reached, on the topographic map. Plot the point at which perennial stream conditions are reached.

☐ H. CHAPTER 94 CONSISTENCY DETERMINATION

Land development projects that propose the use of existing municipal collection, conveyance or wastewater treatment facilities or the construction of collection and conveyance facilities to be served by existing municipal wastewater treatment facilities, are required to be consistent with Chapter 94 requirements of the Department's rules and regulations (Relating to Municipal Wasteload Management).

1. Project Flows _____ gpd

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 _____

4. Treatment Facility

The questions below are to be answered by the facility permittee in coordination with the information in the table and the latest Chapter 94 report.

a. If this project proposes the use of an existing wastewater treatment plant for the disposal of sewage, will these actions create a hydraulic or organic overload within 5 years at that facility? (Y/N) _____ .

(1) If yes, this planning module for sewage facilities will not be reviewed by the municipality or Department until this inconsistency with Chapter 94 is 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 treatment facility permittee must sign below to indicate that this facility has adequate treatment capacity and is able to provide wastewater treatment services for the proposed development in accordance with Chapter 94 requirements and that this proposal will not impact this status.

(3) Name of Agency, Authority, Municipality _____

Name of Responsible Agent _____

Responsible Agent Signature _____

Date _____

I. FALSE SWEARING STATEMENT

I verify that the statements made in this Component are true and correct to the best of my knowledge, information and belief. I understand that false statements in this Component are made subject to the penalties of 18 PA C.S.A. §4904 relating to unsworn falsification to authorities.

Name (Print)	Title
Signature	Address
Telephone Number	

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.

C. CHAPTER 94 CONSISTENCY (See Section C of attached guidance)

The following certification is to be completed by the sewer authority, municipality or agency responsible for completing the Chapter 94 report for the collection, conveyance and treatment facilities.

I/we certify that the sewerage facilities proposed to serve the new land development described in this Planning Module are in compliance with the provisions of Chapter 94, Municipal Wasteload Management and have adequate capacity to serve the sewage flows to be generated by that development, without creation of an overload or projected overload or are being proposed as part of an allocation approved by a corrective plan and schedule.

Name of Agency, Authority, or Municipality _____

Name of Responsible Agent _____

Agent Signature _____

Date _____

D. PLANNING AGENCY REVIEW (See Section D of attached guidance)

Note: Component 4 is not required for this submittal. Agency sign-offs may be attached on a separate document if that document identifies the name of the development and subdivider's name and DER Code Number.

Municipal Planning Agency
This sewage facilities planning module has been reviewed and:

☐ is consistent
☐ is not consistent (objections attached)

with programs of planning for the area of the proposed development administered by this planning agency under the municipalities Planning Code (53 P.S. §§10101-11202).

_____ Municipal Planning Agency Name

_____ Municipal Planning Agency Signature

County Planning Agency
This sewage facilities planning module has been reviewed and:

☐ is consistent
☐ is not consistent (objections attached)

with programs of planning for the area of the proposed development administered by this planning agency under the municipalities Planning Code (53 P.S. §§10101-11202).

_____ County Planning Agency Name

_____ County Planning Agency Signature

County or Joint County Health Department
This Sewage Facilities Planning Module has been reviewed and:

☐ approval is recommended
☐ approval is not recommended (objections attached)

_____ Health Department Name

_____ Health Department Signature

E. FALSE SWEARING STATEMENT (To be completed by individual completing component)

I verify that the statements made in this Component are true and correct to the best of my knowledge, information and belief. I understand that false statements in this Component are made subject to the penalties of 18 PA C.S.A. §4904 relating to unsworn falsification to authorities.

_____ Name (Print)

_____ Title

_____ Signature

_____ Address

_____ Telephone Number

F. MUNICIPAL ACTION (See Section F of attached guidance.)

Transmittal Form ER-BWQ-355, attached to this module for your use & Resolution of Adoption must be attached to the module prior to submittal to the Department.

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 _____

8. Is the proposed plan revision consistent with municipality land use planning relative to Prime Agricultural Land Preservation as identified by the comprehensive plan? (Y/N) _____
   If no, describe the inconsistencies _____

9. Does the project propose encroachments, obstructions, or dams that will effect wetlands identified by the comprehensive plan? (Y/N) _____
   If yes, describe impacts _____

10. Are there any known historical or archeological resources identified in the comprehensive plan that will be impacted by this project? (Y/N) _____
    If yes, describe impacts _____

11. Are there any known endangered or threatened species of plants or animals identified in the comprehensive plan that will be impacted by the development project? (Y/N) _____
    If yes, describe impacts _____

12. Name, title and signature of planning agency staff completing this section:
    Name: _____

    Title: _____

    Signature: _____

    Date: _____

    Name of Municipal Planning Agency: _____

    Address: _____

    Telephone Number: _____

D. ADDITIONAL COMMENTS

This Component does not limit municipal planning agencies from making additional comments concerning the relevancy of the proposed plan revision to other plans or ordinances. If additional comments are needed, attach additional sheets.

The planning agency must complete this Component within 60 days.

This Component and any additional comments are to be returned to the applicant.

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 _____

D. ADDITIONAL COMMENTS

This Component does not limit the county health department from making additional comments concerning the relevancy of the proposed plan revision to other plans or ordinances. If additional comments are needed, attach additional sheets.

The health department must complete this Component within 60 days.

This Component and any additional comments are to be returned to the applicant.

APPENDIX II

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.

D. Community Sewage System: Any system, whether publicly or privately owned, for the collection of sewage from two or more lots, and the treatment and/or disposal of the sewage on one or more lots or at any other site.

E. Council: The Council of the Borough of _____, _____ County, Pennsylvania.

F. Department: The Department of Environmental Resources of the Commonwealth of Pennsylvania (DER).

G. Individual Sewage System: A system of piping, tanks or other facilities serving a single lot and collecting and disposing of sewage in whole or in part into the soil or into any waters of this Commonwealth.

H. Malfunction: A condition which occurs when an on-lot sewage disposal system discharges sewage onto the surface of the ground, into ground waters of this Commonwealth, into surface waters of this Commonwealth, backs up into a building connected to the system or in any manner causes a nuisance or hazard to the public health or pollution of ground or surface water or contamination of public or private drinking water wells. Systems shall be considered to be malfunctioning if any condition noted above occurs for any length of time during any period of the year.

I. Official Sewage Facilities Plan: A comprehensive plan for the provision of adequate sewage disposal systems, adopted by the [Board or Council] and approved by the Pennsylvania Department of Environmental Resources, pursuant to the Pennsylvania Sewage Facilities Act.

J. On-lot Sewage Disposal System: Any system for disposal of domestic sewage involving pretreatment and subsequent disposal of the clarified sewage into a subsurface soil absorption area or retaining tank; this term includes both individual sewage systems and community sewage systems.

K. Person: Any individual, association, public or private corporation for profit or not for profit, partnership, firm, trust, estate, department, board, bureau or agency of the Commonwealth, political subdivision, municipality, district, authority, or any other legal entity whatsoever which is recognized by law as the subject of rights and duties. Whenever used in any clause prescribing and imposing a penalty or imposing a fine or imprisonment, the term person shall include the members of an association, partnership or firm and the officers of any local agency or municipal, public or private corporation for profit or not for profit.

L. Rehabilitation: Work done to modify, alter, repair, enlarge or replace an existing on-lot sewage disposal system.

M. Sewage: Any substance that contains any of the waste products or excrement or other discharge from the bodies of human beings or animals and any noxious or deleterious substances being harmful or inimical to the public health, or to animal or aquatic life, or to the use of water for domestic water supply or for recreation or which constitutes pollution under the Act of June 22, 1937 (P.L. 1987, No. 394), known as "The Clean Streams Law," as amended

N. Sewage Enforcement Officer (SEO)--A person certified by DER who is employed by the [Borough or Township]. Such person is authorized to conduct investiga-

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.

other qualified individual acceptable to the [Borough or Township], that the baffles in the septic tank have been inspected and found to be in good working order. Any person whose septic tank baffles are determined to require repair or replacement shall first contact a sewage enforcement officer for approval of the necessary repair.

D. Any person owning a building served by an on-lot sewage disposal system which contains an aerobic treatment tank shall follow the operation and maintenance recommendations of the equipment manufacturer. A copy of the manufacturer's recommendations and a copy of the service agreement shall be submitted to the [Borough or Township] within six months of the effective date of this ordinance. Thereafter, service receipts shall be submitted to the [Borough or Township] at the intervals specified by the manufacturer's recommendations. In no case may the service or pumping intervals for aerobic treatment tanks exceed those required for septic tanks.

E. Any person owning a building served by a cesspool or dry well in an area of numerous malfunctions or in an area where a repair is not technically feasible, shall have that system pumped according to the schedule prescribed for septic tanks to mitigate potential pollution. As an alternative to this scheduled pumping of the cesspool or dry well, and pending any scheduled replacement of the substandard system as identified in the Official Sewage Facilities Plan, the owner may apply for a sewage permit from a sewage enforcement officer for a septic tank to be installed preceding the cesspool or dry well. For this interim repair system consisting of a cesspool or dry well preceded by an approved septic tank, only the septic tank must be pumped at the prescribed interval.

F. Additional maintenance activity may be required as needed including, but not necessarily limited to, cleaning and unclogging of piping, servicing and the repair of mechanical equipment, leveling of distribution boxes, tanks and lines, removal of obstructing roots or trees, the diversion of surface water away from the disposal area, etc.

Section VIII. System Rehabilitation

A. No person shall operate or maintain an on-lot sewage disposal system in such a manner that it malfunctions. All liquid wastes, including kitchen and laundry wastes and water softener backwash, shall be discharged to a treatment tank. No sewage system shall discharge untreated or partially treated sewage to the surface of the ground or into the waters of the Commonwealth unless a permit for such discharge has been obtained from DER.

B. A written notice of violation shall be issued to any person who is the owner of any property which is found to be served by a malfunctioning on-lot sewage disposal system or which is discharging sewage without a permit.

C. Within seven (7) days of notification by the [Borough or Township] that a malfunction has been identified, the property owner shall make application to the sewage enforcement officer for a permit to repair or replace the malfunctioning system. Within thirty (30) days of initial notification by the [Borough or Township], construction of the permitted repair or replacement shall commence. Within sixty (60) days of the original notification by the [Borough or Township], the construction shall be completed unless seasonal or unique conditions mandate a longer period, in which case the [Borough or Township] shall set an extended completion date.

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.

Section XI. Administration

A. The [Borough or Township] shall fully utilize those powers it possesses through enabling statutes and ordinances to effect the purposes of this ordinance.

B. The [Borough or Township] shall employ qualified individuals to carry out the provisions of this ordinance. Those employees shall include a sewage enforcement officer and may include an administrator and such other persons as may be necessary. The [Borough or Township] may also contract with private qualified persons or firms as necessary to carry out the provisions of this ordinance.

C. All permits, records, reports, files and other written material relating to the installation, operation and maintenance and malfunction of on-lot sewage disposal systems in the sewage management district shall become the property of, and be maintained by, the [Borough or Township]. Existing and future records shall be available for public inspection during regular business hours at the official office of the [Borough or Township]. All records pertaining to sewage permits, building permits, occupancy permits and all other aspects of the sewage management program shall be made available, upon request, for inspection by representatives of the Pennsylvania Department of Environmental Resources.

D. The [township board/borough council] shall establish all administrative procedures necessary to properly carry out the provisions of this ordinance.

E. The [township board/borough council] may establish a fee schedule, and authorize the collection of fees, to cover the cost to the [Borough or Township] of administering this program.

Section XII. Appeals

A. Appeals from final decisions of the [Borough or Township] or any of its authorized agents under this ordinance shall be made to the [borough council/board of supervisors] in writing within thirty (30) days from the date of written notification of the decision in question.

B. The appellant shall be entitled to a hearing before the [borough council/board of supervisors] at its next regularly scheduled meeting, if a written appeal is received at least fourteen (14) days prior to that meeting. If the appeal is received within fourteen (14) days of the next regularly scheduled meeting, the appeal shall be heard at the next regularly scheduled meeting. The municipality shall thereafter affirm, modify, or reverse the aforesaid decision. The hearing may be postponed for a good cause shown by the appellant or the [Borough or Township]. Additional evidence may be introduced at the hearing provided that it is submitted with the written notice of appeal.

C. A decision shall be rendered in writing within thirty (30) days of the date of the hearing.

Section XIII. Penalties

Any person failing to comply with any provision of this ordinance shall be subject to a fine of not less than one-hundred dollars ($100) and costs, and not more than three-hundred dollars ($300) and costs, or in default thereof shall be confined in the county jail

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)

APPENDIX III

PROBABLE CONSTRUCTION COST &
PROBABLE ANNUAL OPERATION & MAINTENANCE COSTS
EXAMPLE: PENN TOWNSHIP

OPINION OF PROBABLE CONSTRUCATION COST

Example: Penn Township
Cove/Perdix/Kinkora STP(s)

YEAR 2000

19,500 L.F. 8" Gravity Sewer x $45/L.F. x 1.4[1] = $1,228,500 (Engineering Legal & Admin)

1,600 L.F. 4" Forcemain x $35/L.F. x 1.4 = $ 78,400

2 Pump Stations x $50,000 ea. x 1.4 = $ 140, 000

Year 2000 Total $1,446,900

FUTURE

5,000 L.F. 8" Gravity Sewer x $45/L.F. x 1.4 = $315,000

2,650 L.F. 4" Forcemain x $35/L.F. x 1.4 = $129,850

2 Pump Stations x $50,000 x 1.4 = $140,000

Future Total $584,850

Total Costs $2,031,750

Line Lengths Scaled from Map
Between Pages 41 & 42 in the Plan

[1] 10% Contingency & 30% Right Of Way

OPINION OF PROBABLE ANNUAL OPERATION AND MAINTENANCE

Year 2000

Power	4,000
Salary	6,000
Oper. & Maintenance Sewers, Pump Stations, STP	5,800
	15,800

Future

Power	2,000
Salary	2,000
O & M Sewers, Pump Station, STP	4,100
	8,100

Total O & M Costs $23,900

Annual Debt Service
(6% for 30 years - See page 57)

A = P(A/P, 6%,30)
A = 1,446,900 (0.07265) = $105,117 = Year 2000 Debt Service

Year 2000 Total Annual Cost

$105,117 (Debt. Serv.) + 15,800 = $120,917 = Year 2000 Total Annal Cost

Future Debt Service
(6% for 30 Years)

$2,031,750 (0.07265) = $147,607

Future O & M Cost

$23,900 (refer to total O & M costs)

Future Total Annual Cost

$147,607 + $23,900 = $171,507

MAP 1

PERRY COUNTY
Sewerage Plan

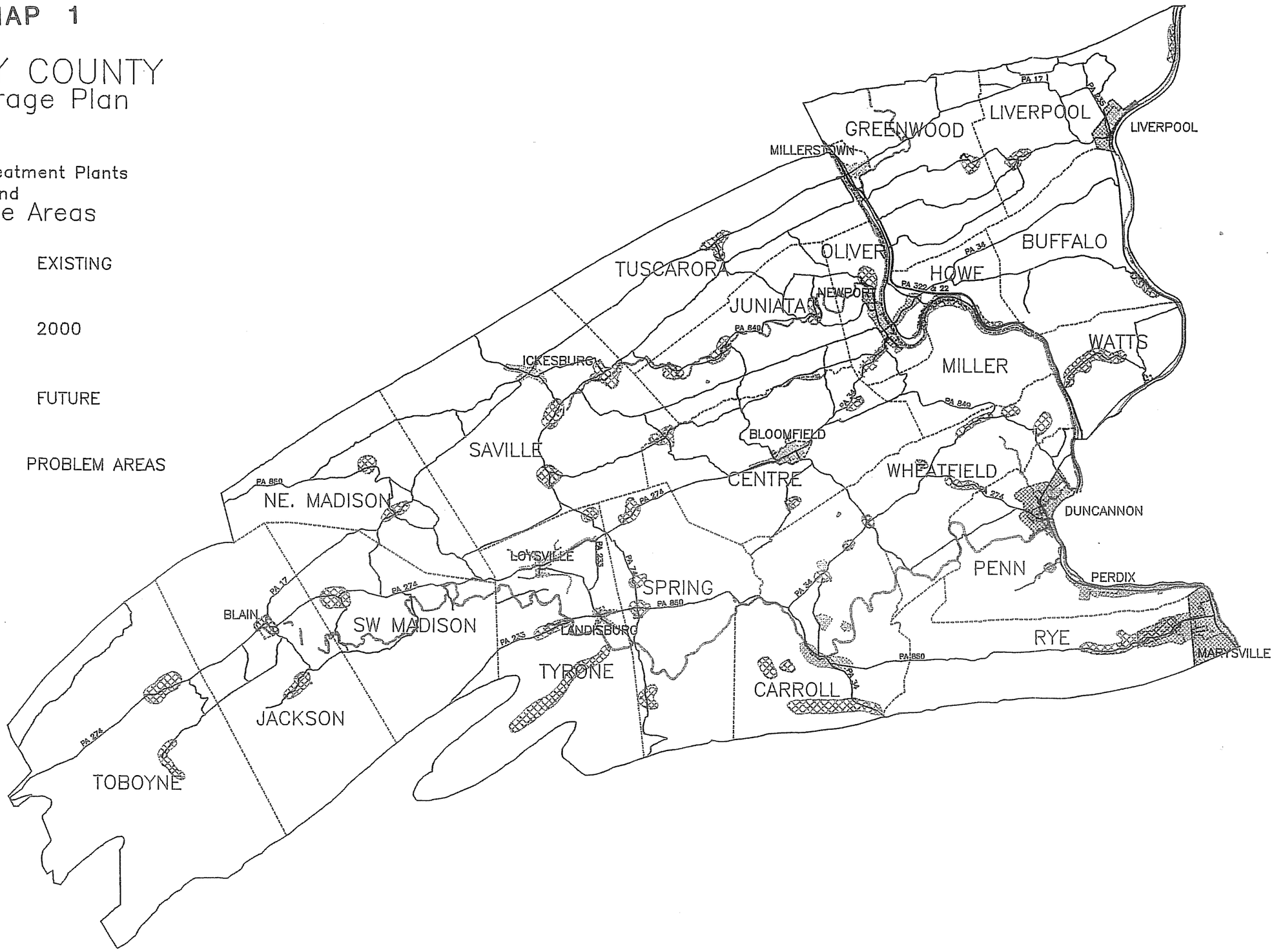
Sewage Treatment Plants
And
Service Areas

EXISTING

2000

FUTURE

PROBLEM AREAS



MAP 2

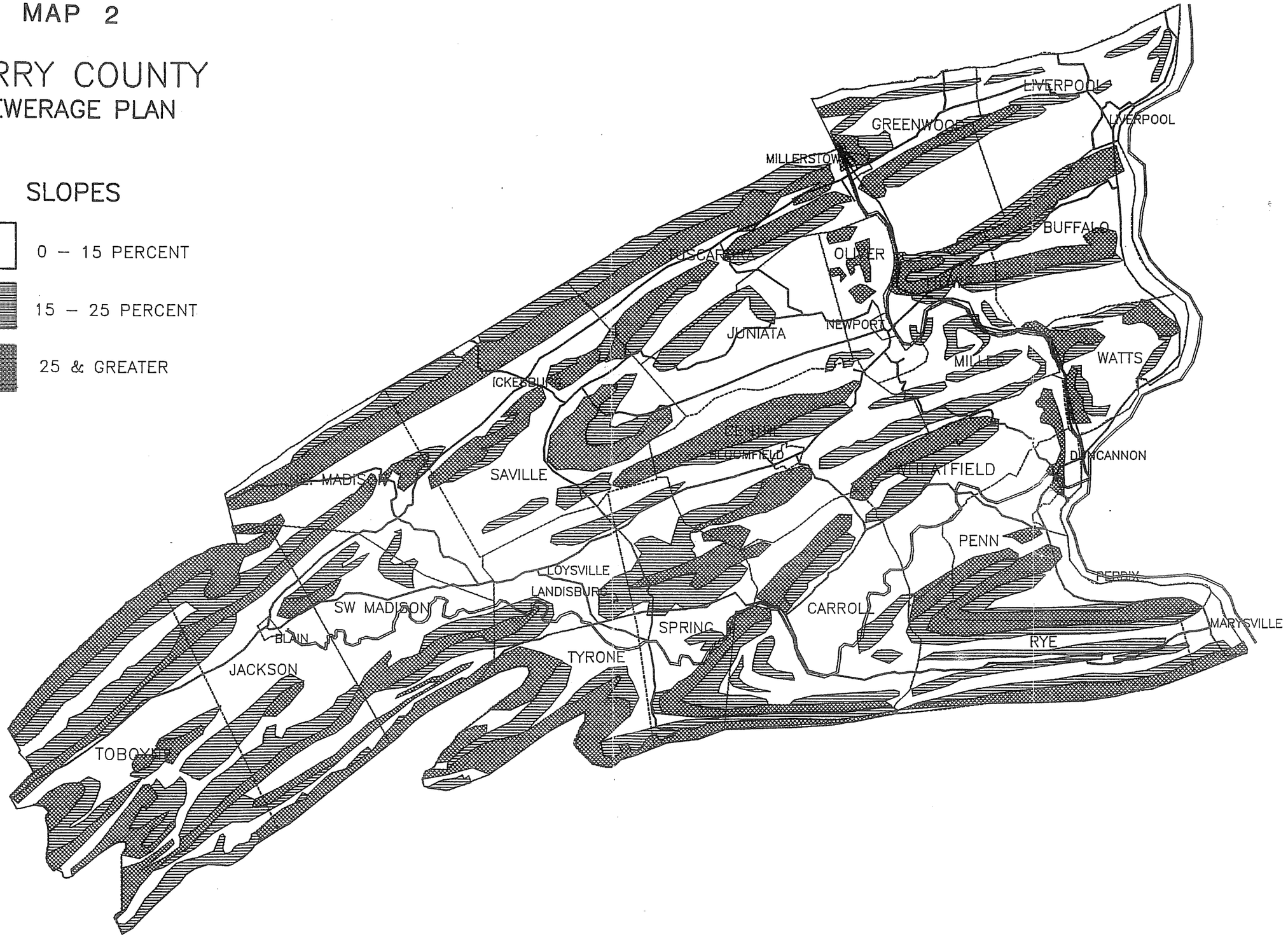
PERRY COUNTY
SEWERAGE PLAN

SLOPES

0 – 15 PERCENT

15 – 25 PERCENT

25 & GREATER



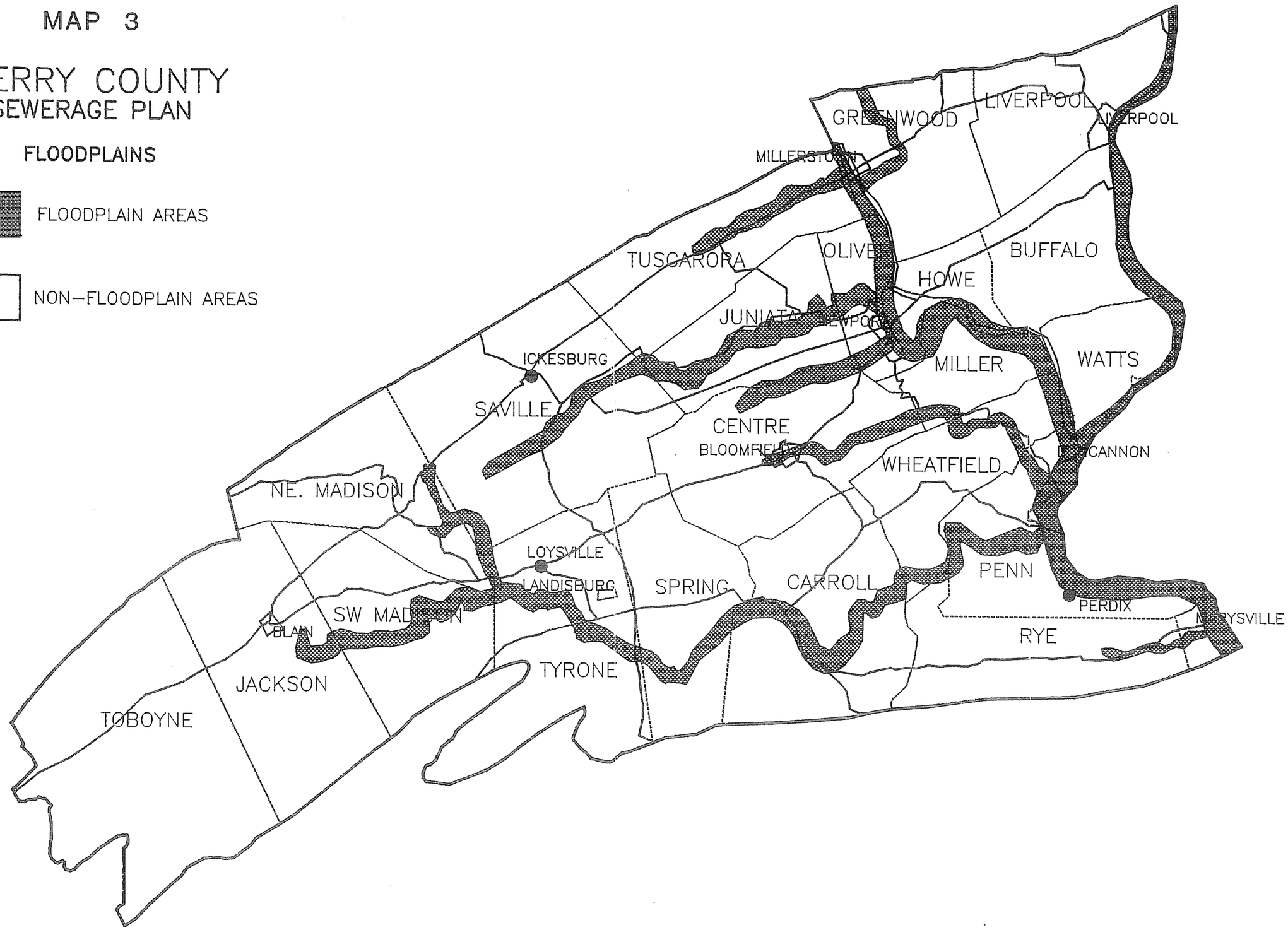
MAP 3

PERRY COUNTY
SEWERAGE PLAN

FLOODPLAINS

FLOODPLAIN AREAS

NON–FLOODPLAIN AREAS



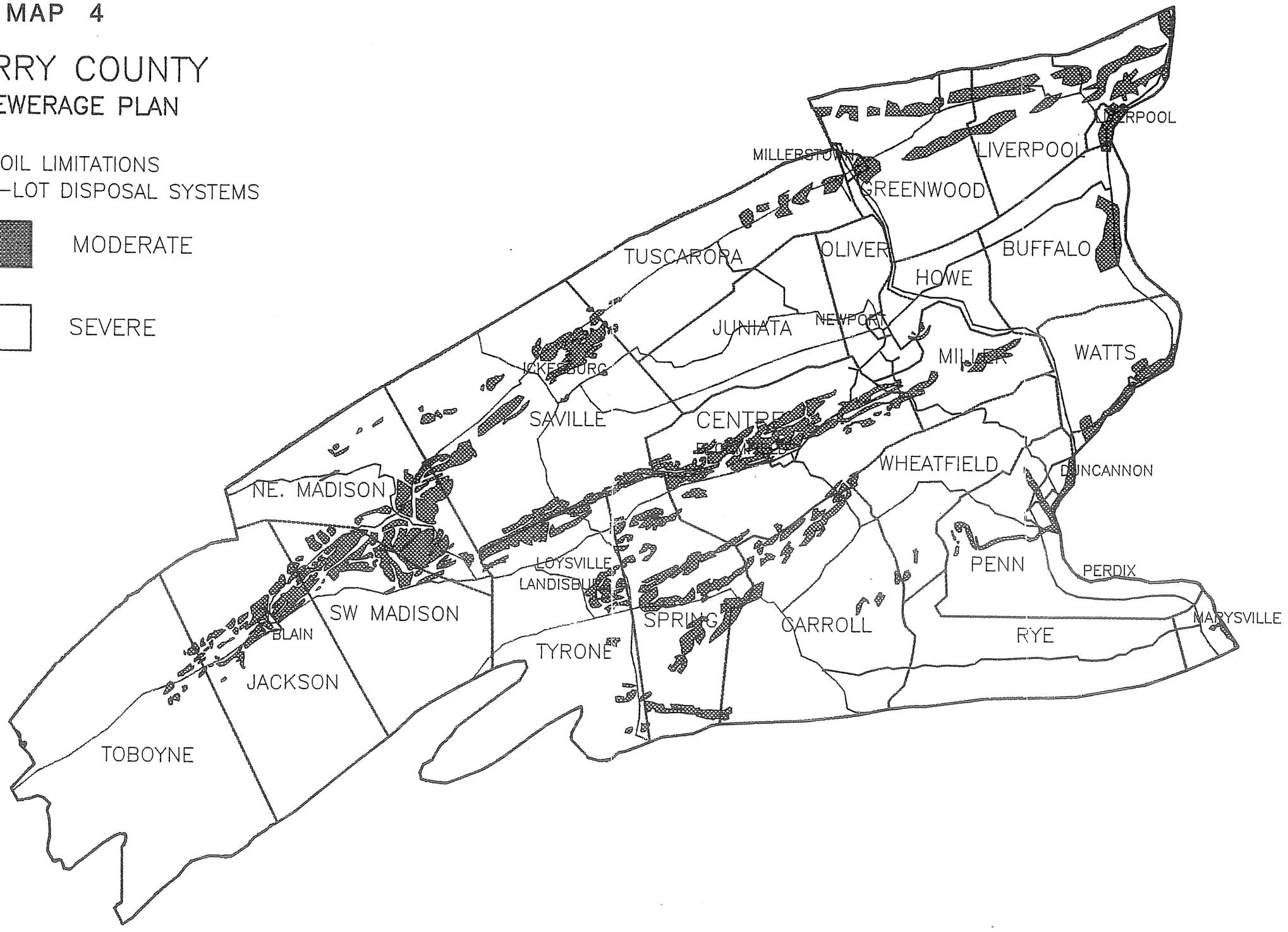
MAP 4

PERRY COUNTY
SEWERAGE PLAN

SOIL LIMITATIONS
FOR ON–LOT DISPOSAL SYSTEMS

MODERATE

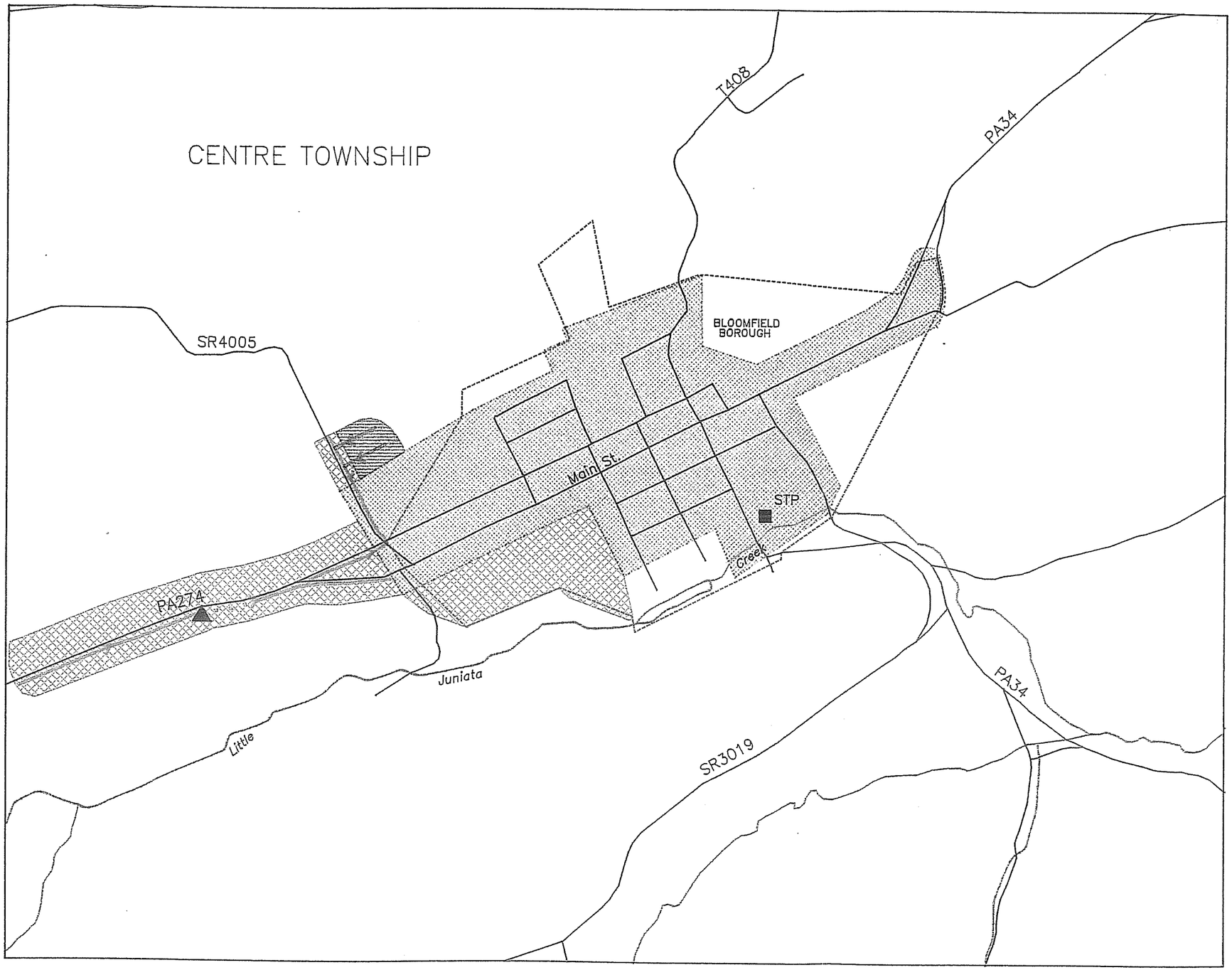
SEVERE



MAP 5

BLOOMFIELD BOROUGH

Sewer Service Area



EXISTING

2000

FUTURE

8" SEWER LINE – YEAR 2000

8" SEWER LINE – FUTURE

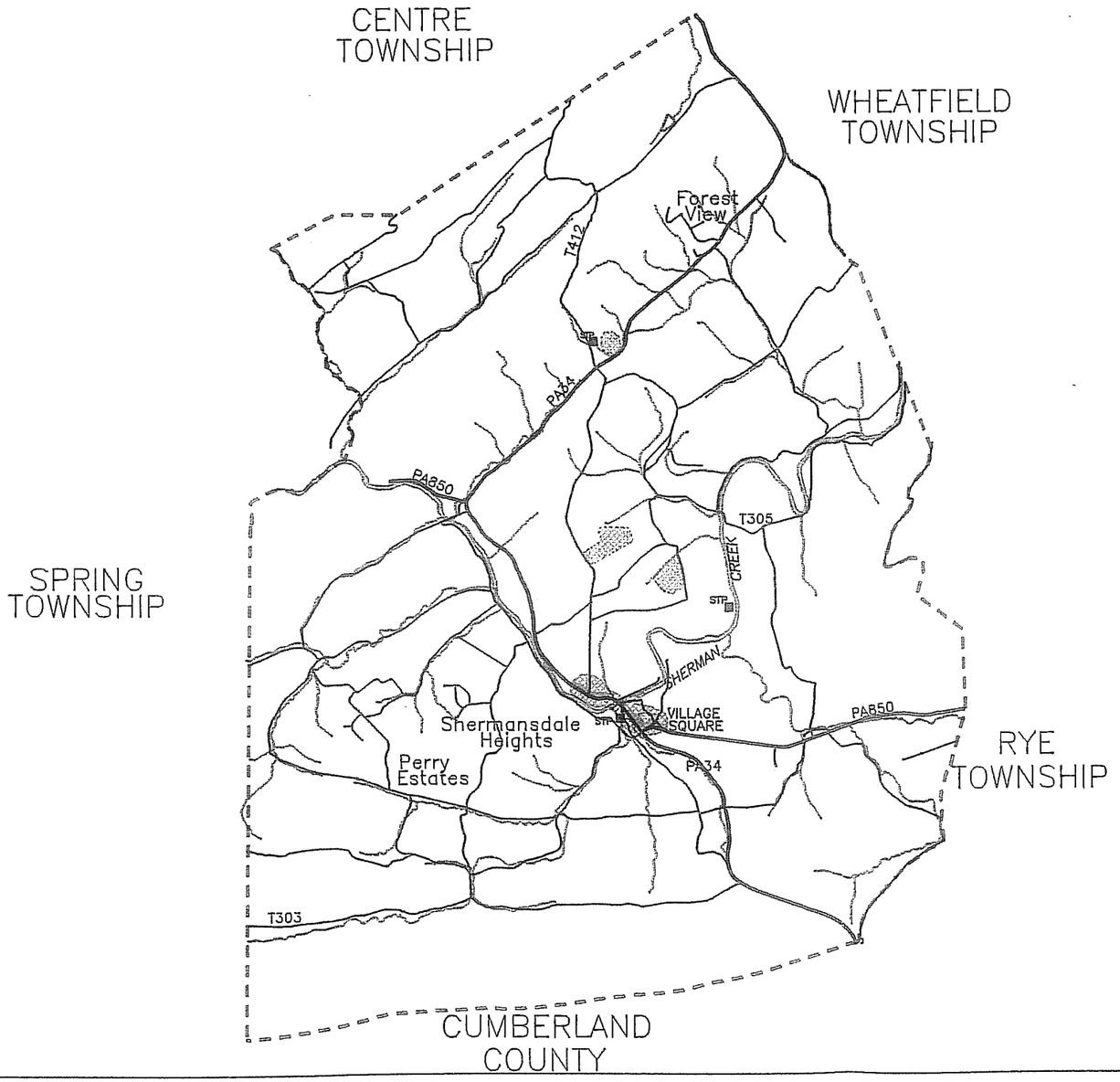
4" FORCEMAIN

FLOW DIRECTION ARROW

PUMPING STATION

MAP 6

CARROLL TOWNSHIP



Sewer Service Area

EXISTING

2000

8" SEWER LINE – YEAR 2000

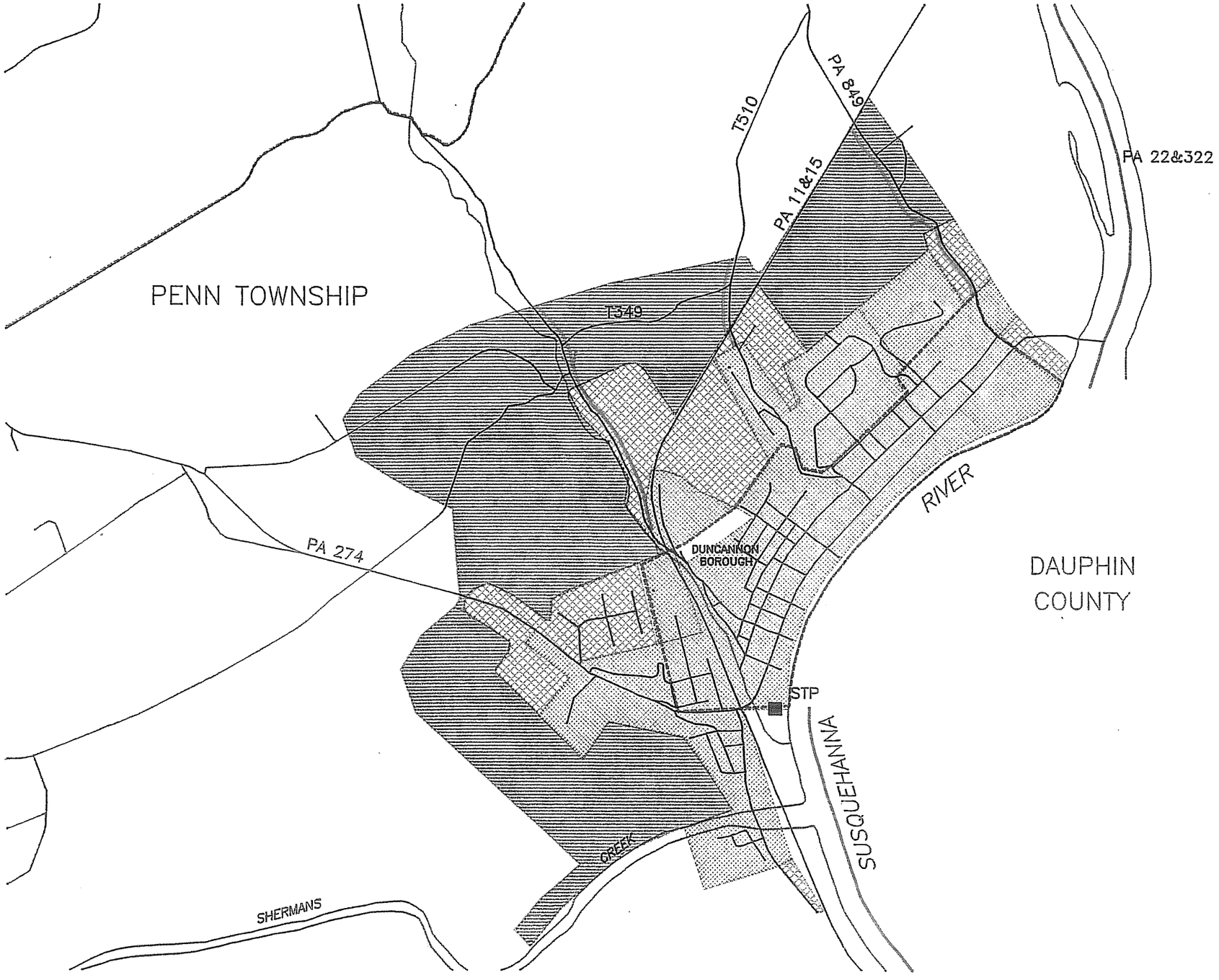
4" FORCEMAIN

FLOW DIRECTION ARROW

PUMPING STATION

MAP 7

DUNCANNON BORO.
PENN TOWNSHIP



DAUPHIN
COUNTY

Sewer
Service Area

EXISTING

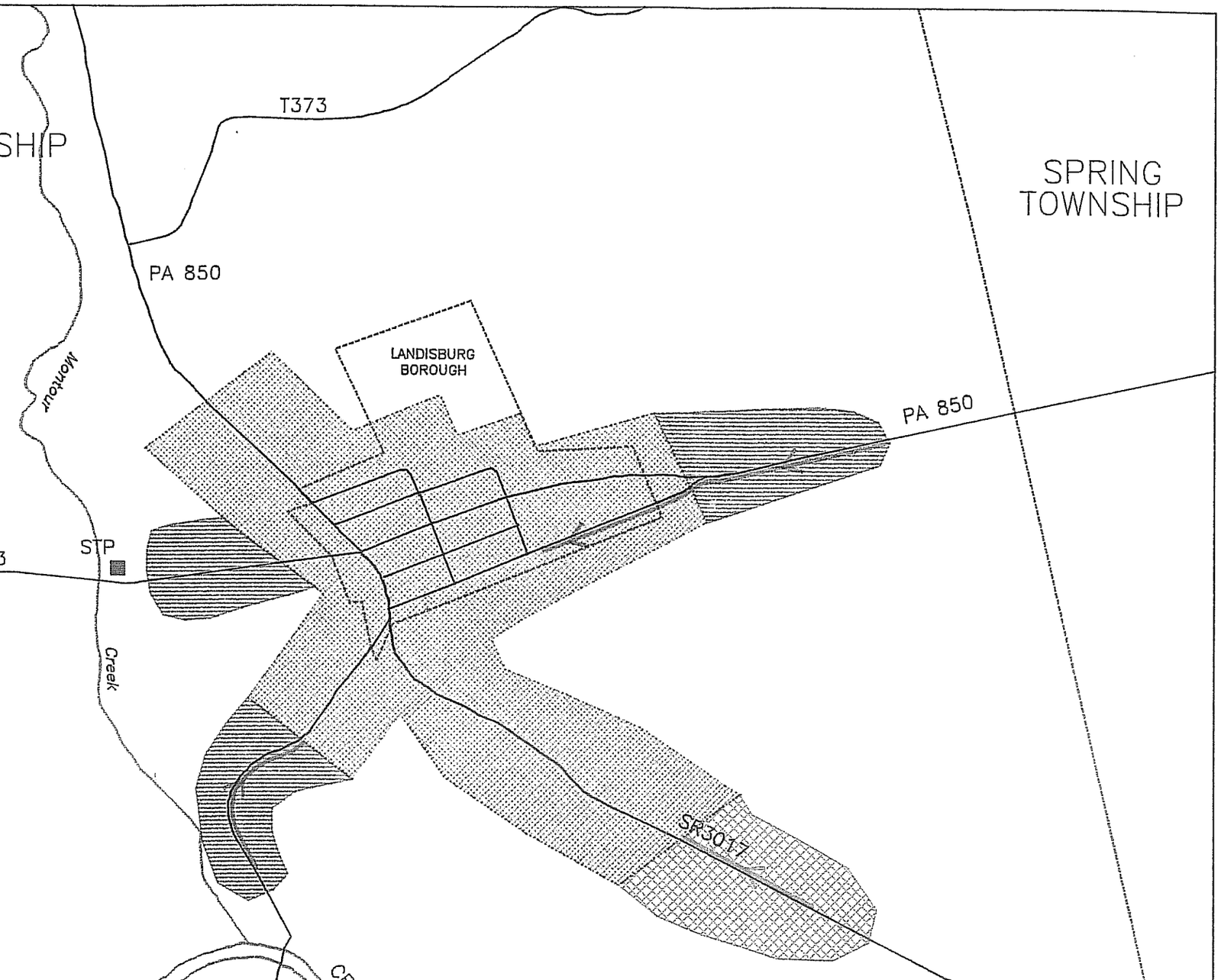
2000

FUTURE

8" SEWER LINE – YEAR 2000

8" SEWER LINE – FUTURE

FLOW DIRECTION ARROW



MAP 8

LANDISBURG BOROUGH

Sewer
Service Area

EXISTING

2000

FUTURE

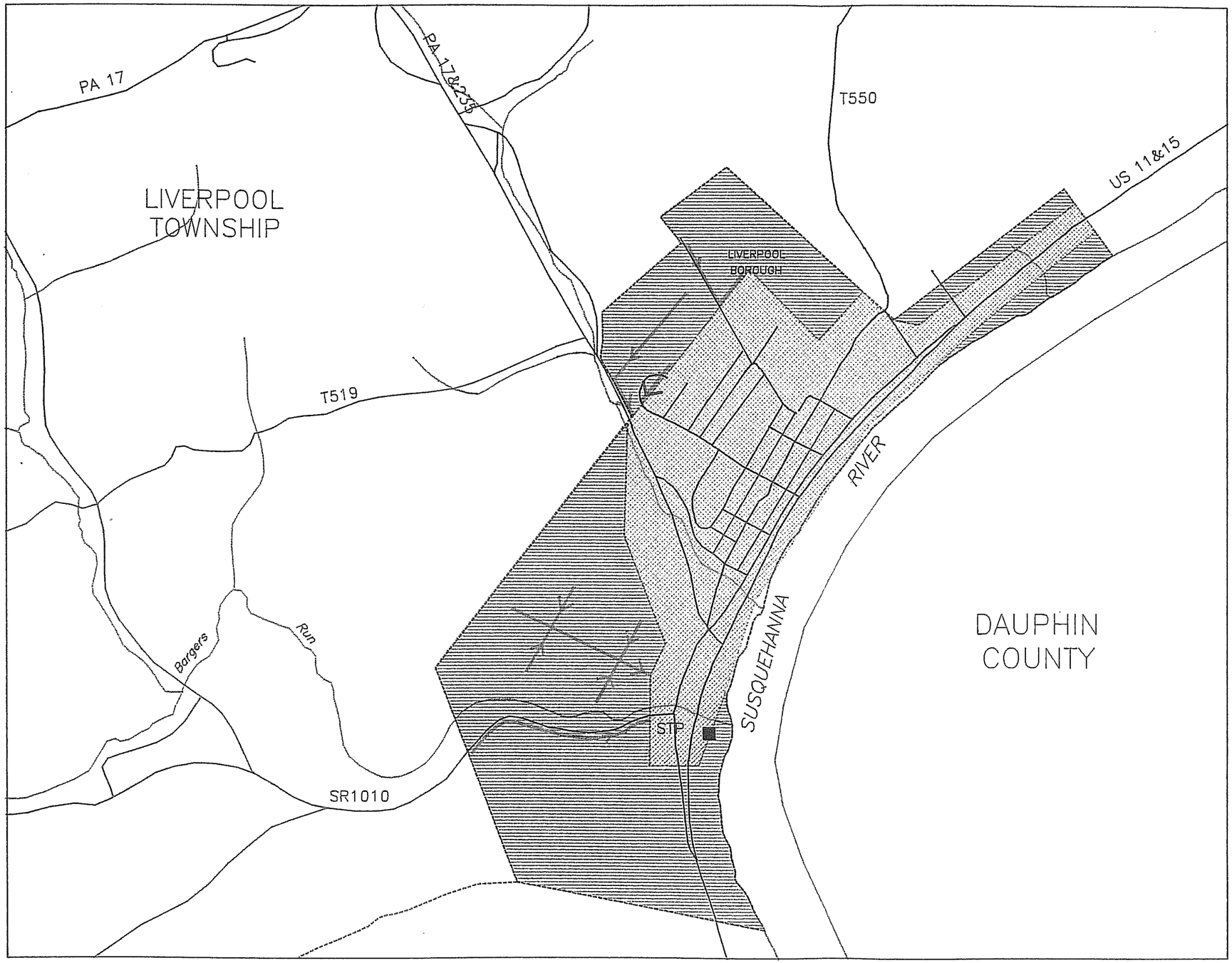
8" SEWER LINE – YEAR 2000

8" SEWER LINE – FUTURE

FLOW DIRECTION ARROW

MAP 9

LIVERPOOL BOROUGH



Sewer Service Area

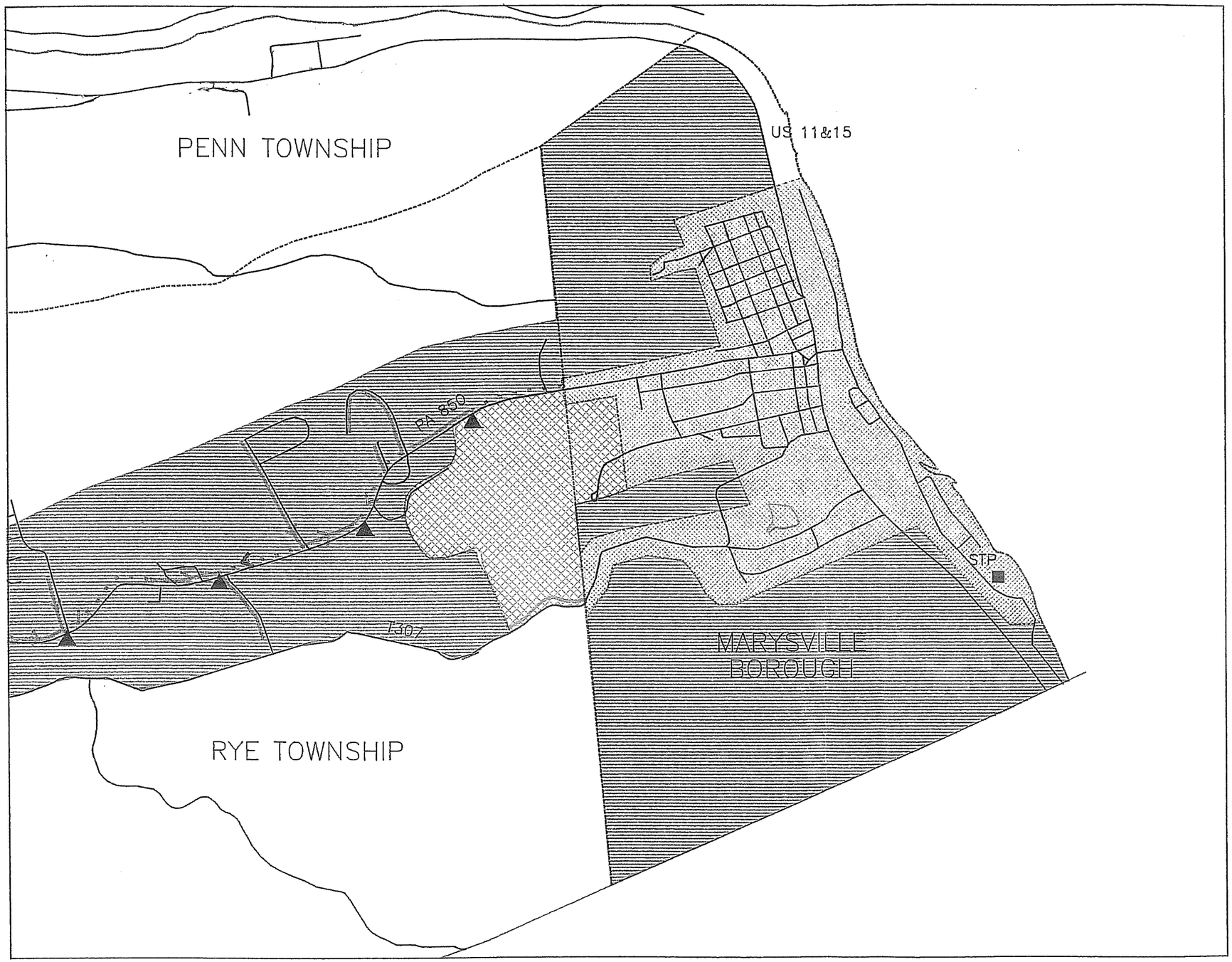
EXISTING

FUTURE

8" SEWER LINE – FUTURE

FLOW DIRECTION ARROW

★ There are no sewer extensions planned for the immediate future



MAP 10

MARYSVILLE BOROUGH

Sewer Service Area

EXISTING

2000

FUTURE

8" SEWER LINE – YEAR 2000

8" SEWER LINE – FUTURE

FORCEMAIN

FLOW DIRECTION ARROW

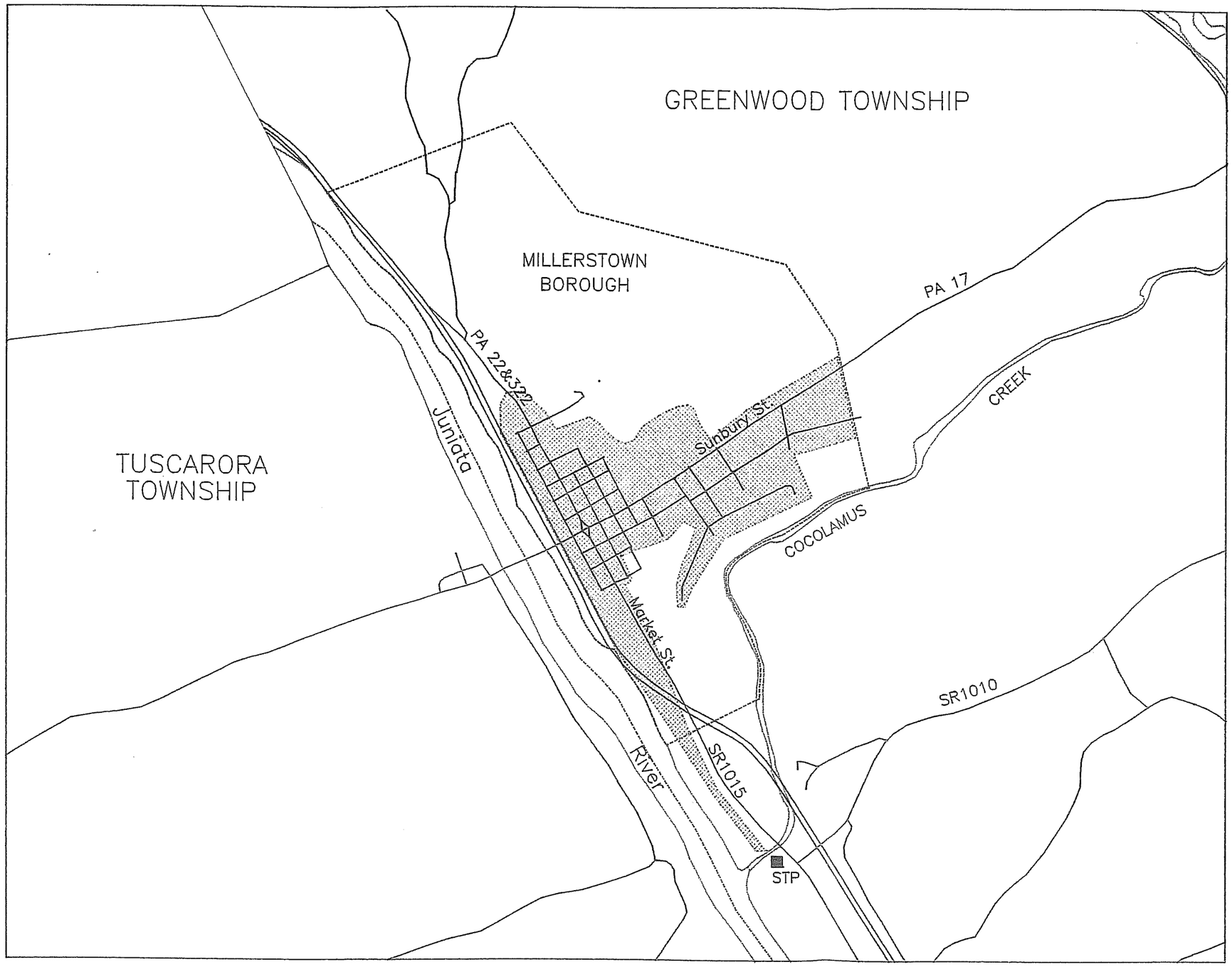
PUMPING STATION

MAP 11

MILLERSTOWN BOROUGH

Sewer Service Area

EXISTING



★ There are no sewer extensions planned for Yr–2000 or Future

MAP 12

NEWPORT BOROUGH

Sewer Service Area

EXISTING

2000

FUTURE

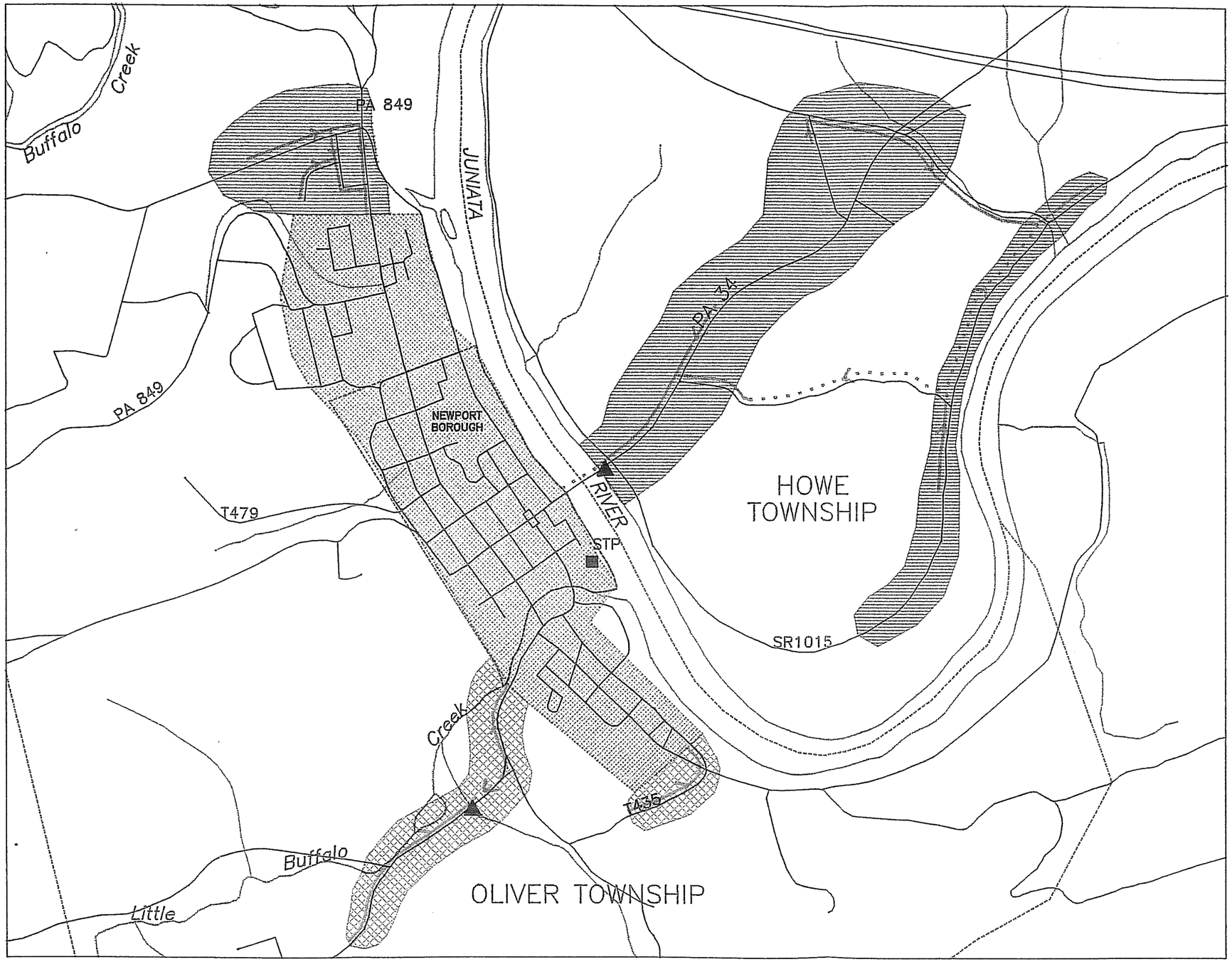
8" SEWER LINE – YEAR 2000

8" SEWER LINE – FUTURE

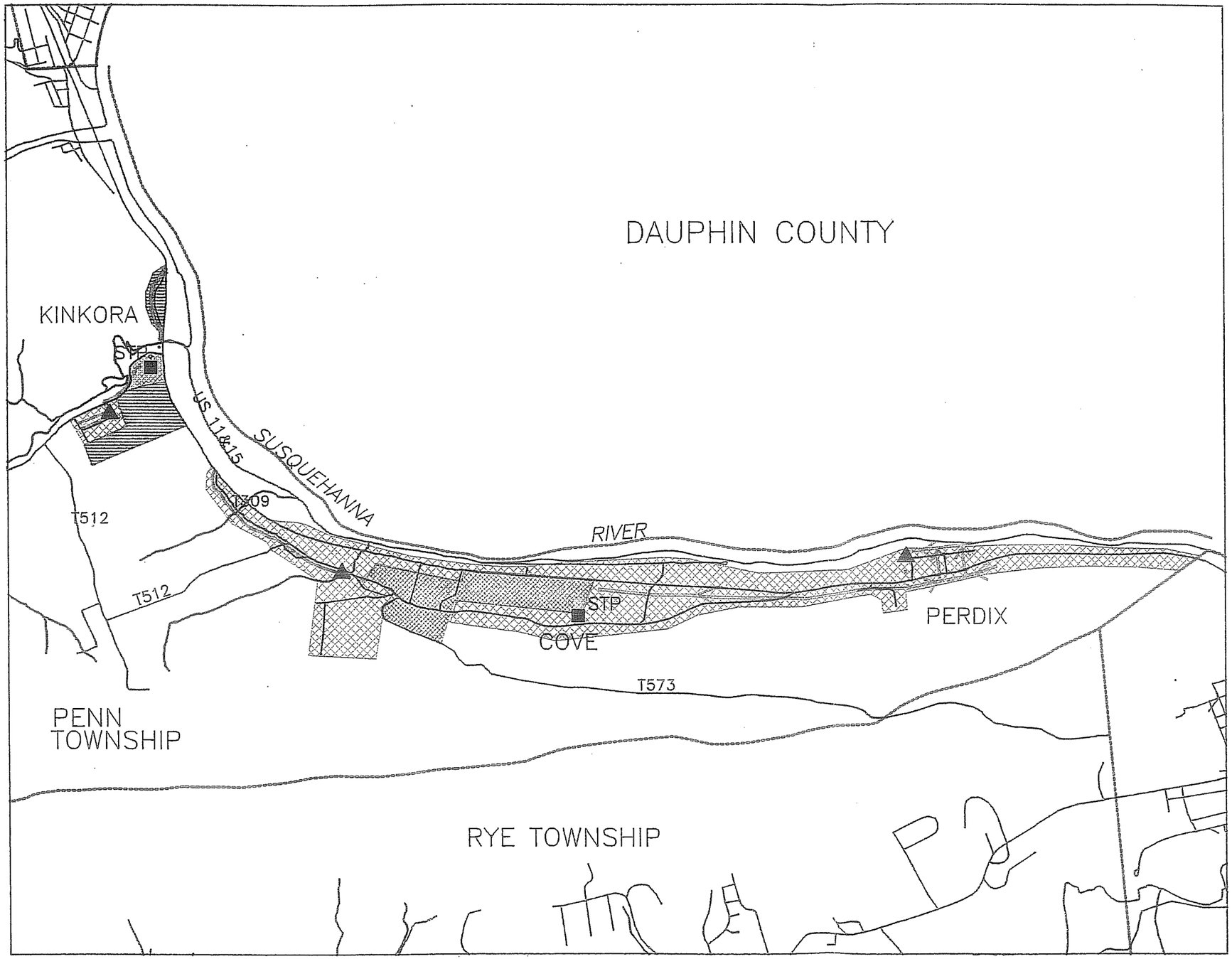
FORCEMAIN

FLOW DIRECTION ARROW

PUMPING STATION



DAUPHIN COUNTY



MAP 13

PENN TOWNSHIP

COVE/KINKORA
Sewer
Service Area

EXISTING

2000

FUTURE

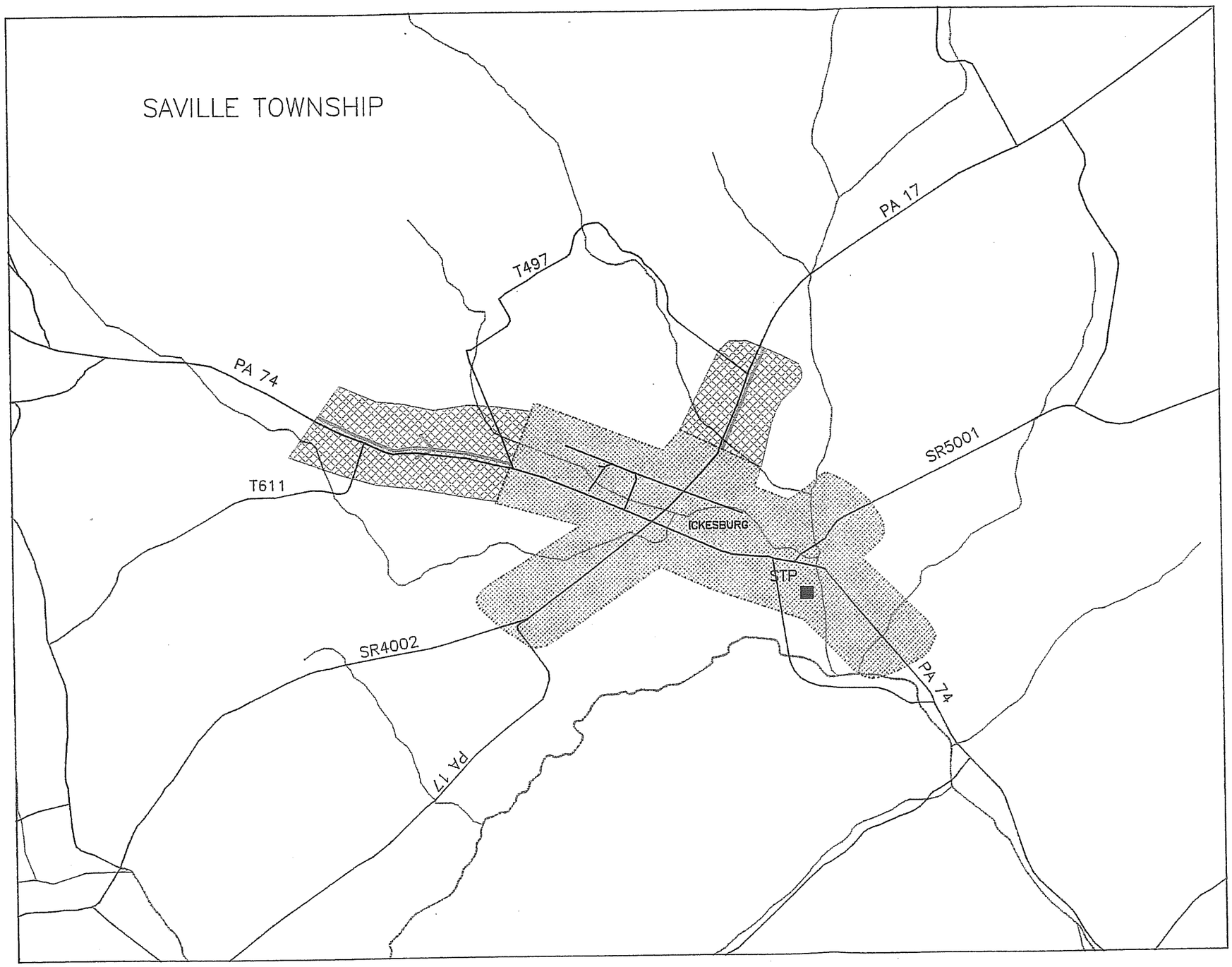
8" SEWER LINE – YEAR 2000

8" SEWER LINE – FUTURE

FORCEMAIN

FLOW DIRECTION ARROW

PUMPING STATION



MAP 14

SAVILLE TOWNSHIP

ICKESBURG VILLAGE

Sewer Service Area

EXISTING

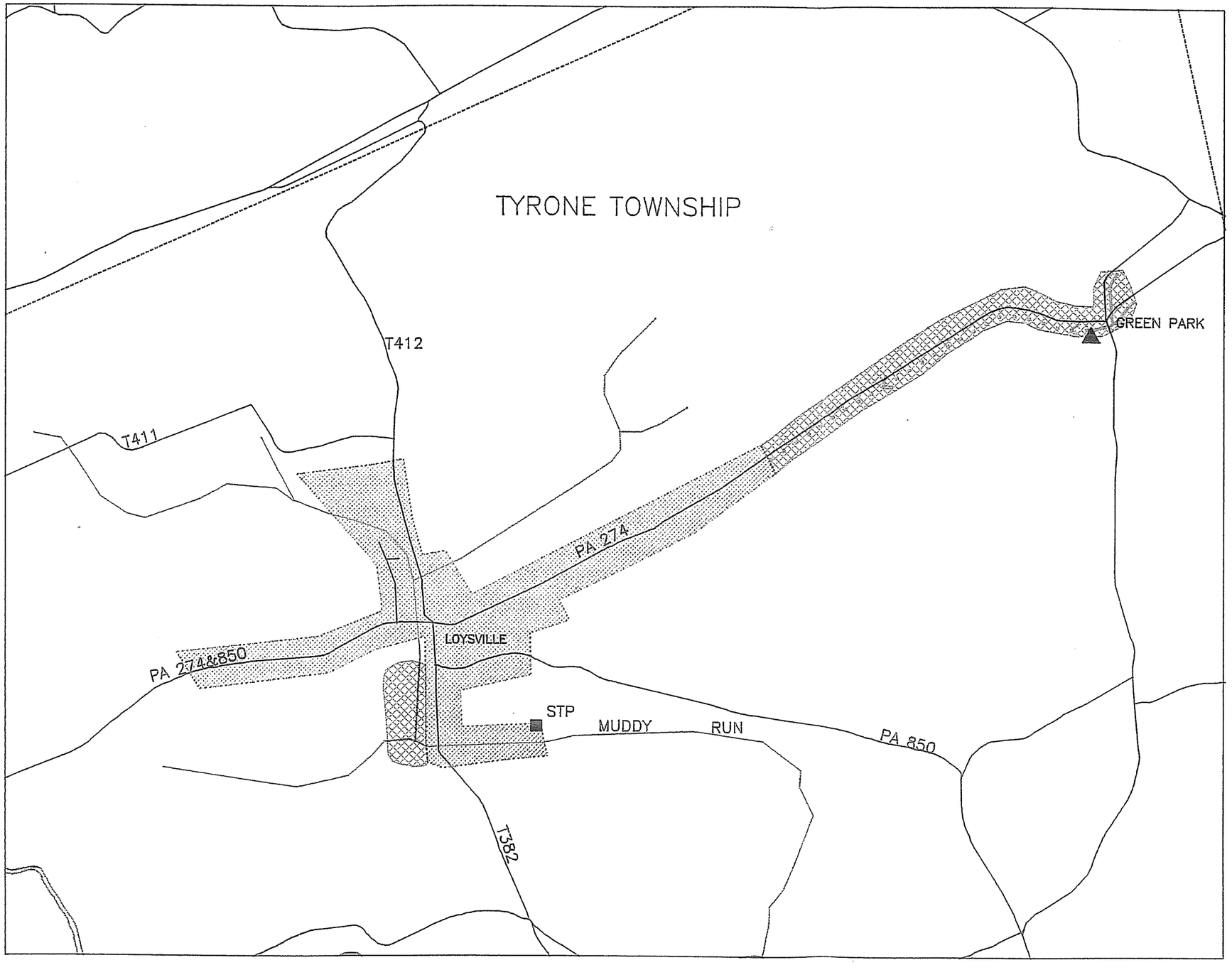
2000

8" SEWER LINE – YEAR 2000

FLOW DIRECTION ARROW

MAP 15

TYRONE TOWNSHIP



LOYSVILLE
Sewer
Service Area

EXISTING

2000

8" SEWER LINE – YEAR 2000

4" FORCEMAIN

FLOW DIRECTION ARROW

PUMPING STATION

★ There are no extensions planned for future